Handbook of Instruction

for Operators of

Burroughs Adding and Listing Machines

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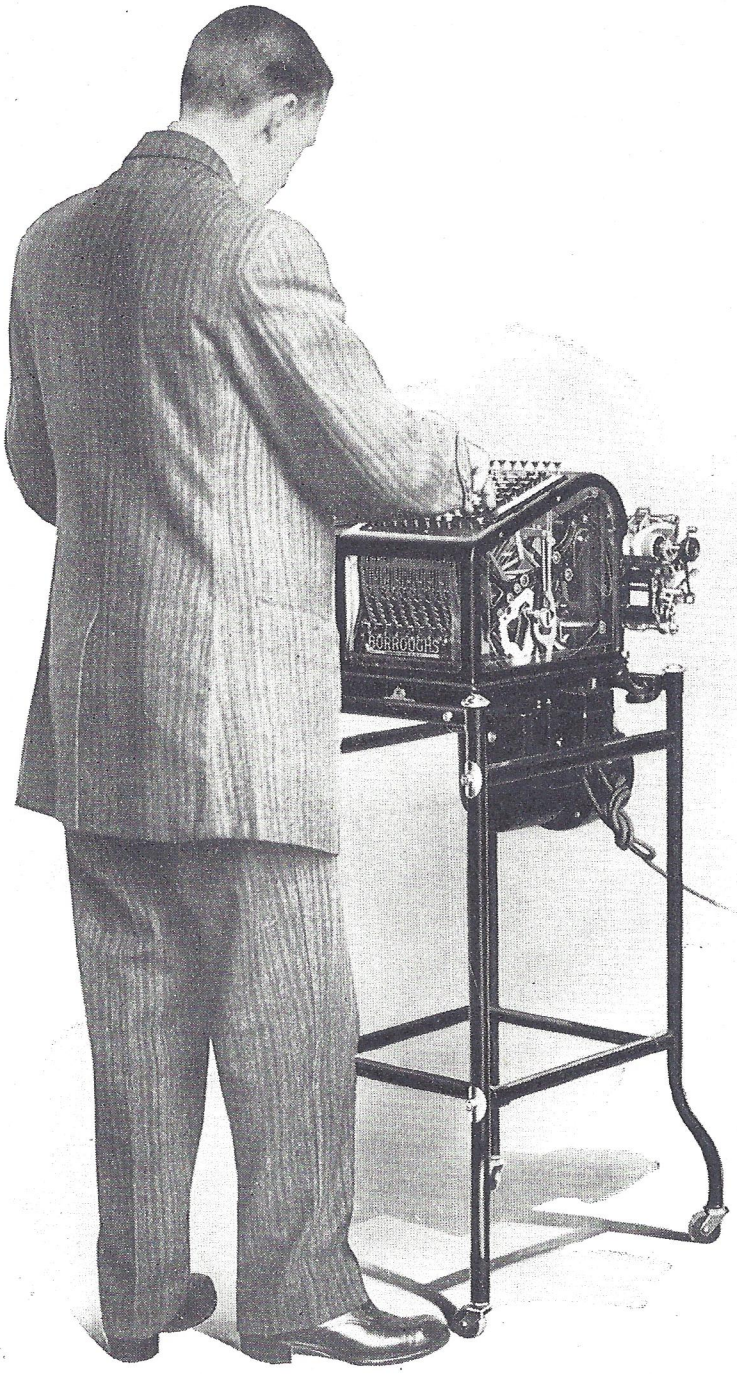


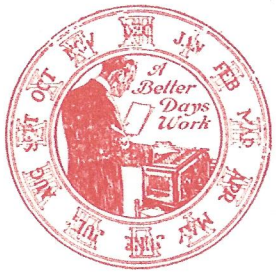
Operating the Burroughs Electric Adding and Listing Machine

HANDBOOK OF INSTRUCTION

for Operators of

BURROUGHS

Adding and Listing Machines



Detroit, Michigan, U. S. A.

Burroughs Adding Machine Company

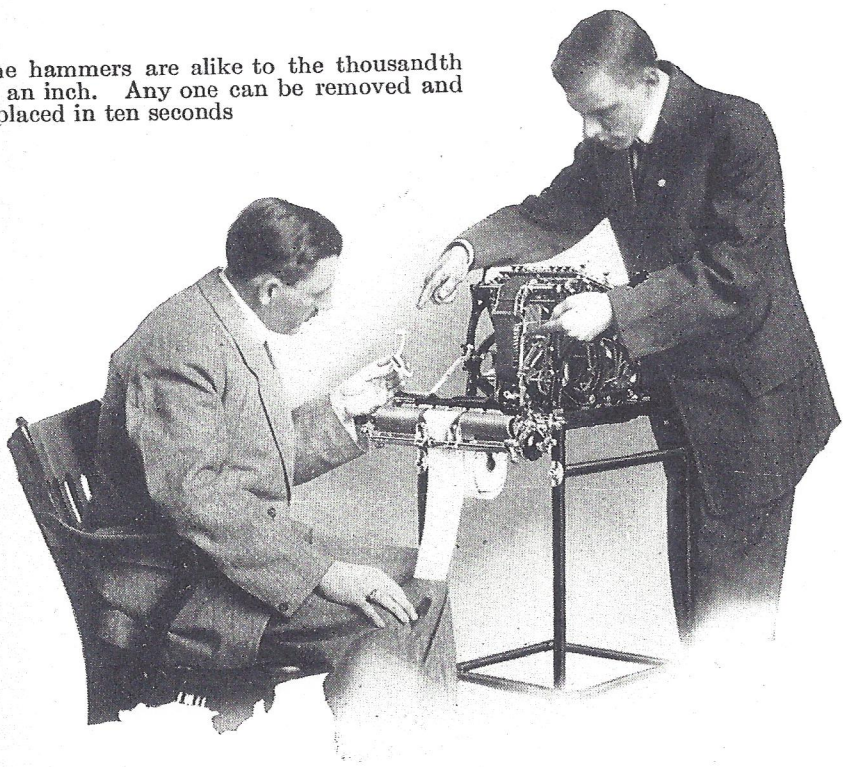
1911

Written and Designed by the
Advertising Department

Introduction

THIS book contains all the instructions necessary for the successful operation of the Burroughs Adding and Listing machine, also a few suggestions for keeping it in perfect order.

Much is said in these days about modern manufacturing methods and the attention paid to standardization, accessibility and interchangeability. These qualities in a machine mean that all working parts are quickly gotten at, that each individual piece is absolutely accurate to a standard, and that, should an accident happen to the machine, a new part can be substituted almost instantly.

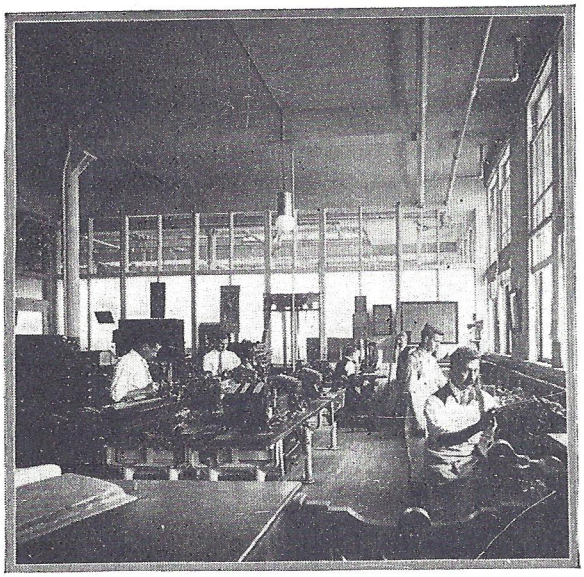


The hammers are alike to the thousandth of an inch. Any one can be removed and replaced in ten seconds

These qualities are of vital importance to the user of an adding machine because they insure to him the uninterrupted use of the machine.

It is our policy to build the Burroughs machine so that it will give continuous service for a business life-time, so we put into

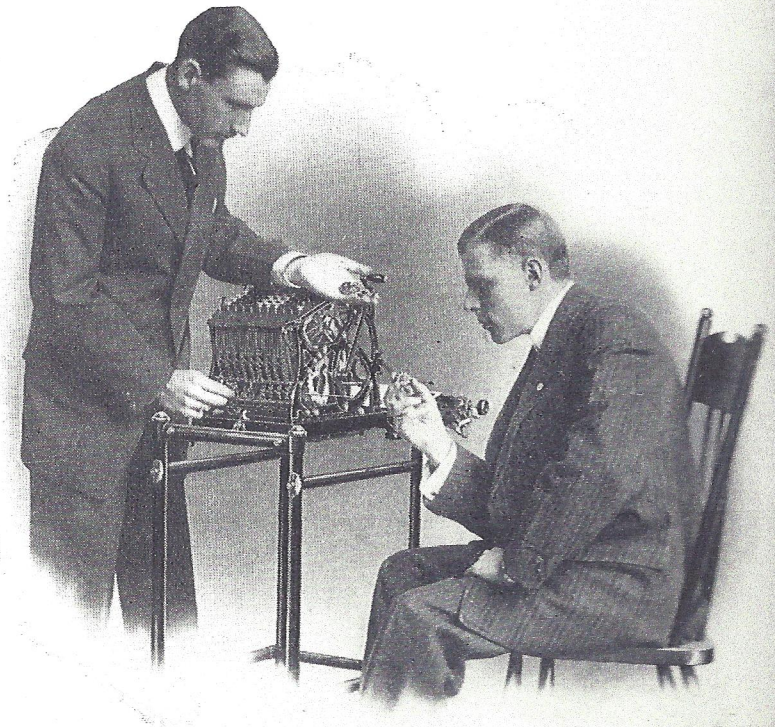
it the best workmanship and materials that can be obtained. Every working part is made of hardened steel. Every bearing is subjected to a special treatment.



The Standards Department. Tests daily all tools and gauges used in making Burroughs parts

The mechanical perfection of the Burroughs is the result of an immense organization, with nineteen years of experience and five and one-half millions of capital. In our factory we maintain a Standards Department whose sole function is to guarantee absolute accuracy of all gauges, jigs and tools used in the manufacture of our machine. Every working part is accurate to within one-thousandth of an inch, hence the parts are interchangeable.

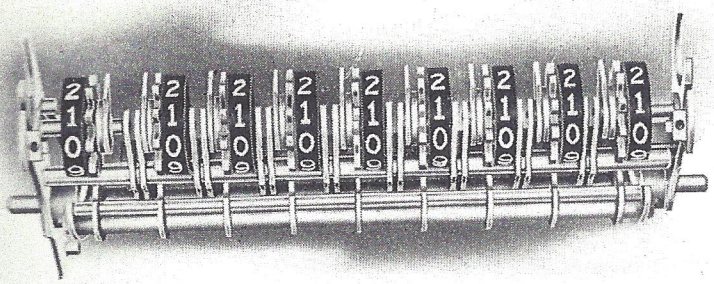
In the keyboard there are just three parts involved in setting up any item. Any parts, the keystems, for instance, can be taken out almost instantly, and put back at random. In the adding section, that most important part of an adding machine, all the adding wheels can be removed by simply pulling out a rod, they can be jumbled together and put back in any order. This means that in case one adding wheel should become dam-



Take any of the adding wheels out easily, put them back anywhere— they'll fit perfectly

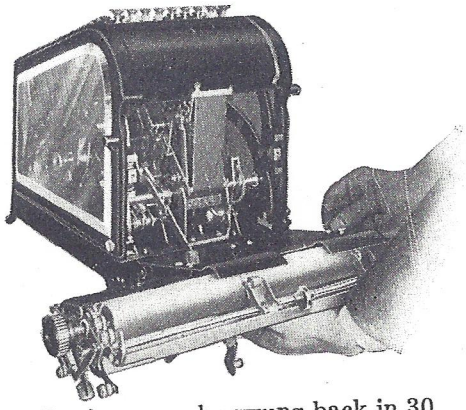
aged or worn it can be removed and a new one inserted in the time it takes to tell about it, and at a very small cost.

The adding wheels are locked at all times, either in mesh with the adding rack or with solid teeth in front. The racks which do the adding also do the carrying, and remain in mesh with the adding wheels during the entire operation.



The heart of the Burroughs—big, strong, simple; no springs

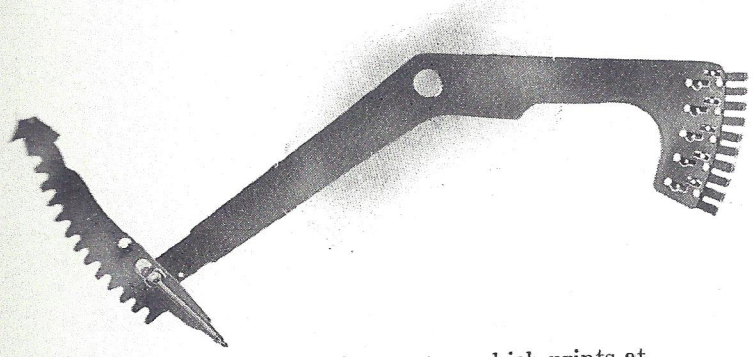
By merely removing two screws, the rear of the Burroughs drops back taking the carriage with it. Thus the whole interior of the machine is exposed in a few seconds.



Carriage may be swung back in 30 seconds without removing the case. Simply take out two screws and disconnect the paper feed arm. It is easy to get inside a Burroughs

Next to adding, the most important work of the machine is the printing. Here, as in other places, the mechanism is refined to the smallest number of parts, each part can be removed almost instantly and each is absolutely like every other part of its kind. Only one set of springs is used in this section.

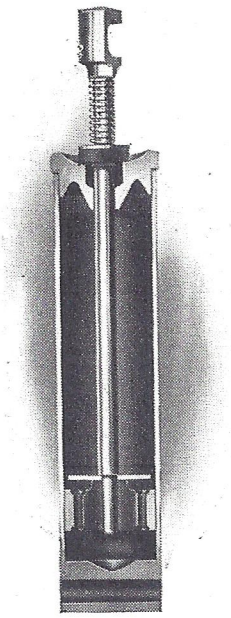
A balanced one-piece steel sector connects the adding mechanism with the printing mechanism. Like every other important element in the machine, this swings upon a single central pivot bearing.



The balanced one-piece sector, which prints at one end and adds at the other

The type construction is extremely simple, only five springs and five pieces of hardened steel for ten type.

In the entire machine there are the smallest number of springs possible and they are so adjusted as to be permanently soft and flexible. Each of the springs is long and elastic and the distribution of spring tension is uniform throughout. Burroughs springs eighteen years in service, are still doing as efficient work as ever—proof conclusive of their durability.

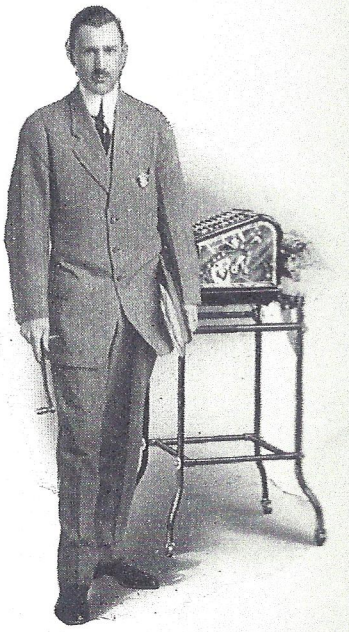


The Burroughs automatic governor. Made from a solid bar of steel. It times the mechanism on both the forward and backward strokes. The "watch dog" of the machine. One of the reasons for Burroughs durability

Our nineteen years' experience has clearly demonstrated the value of a device which will time the operation of every moving part and which will prevent the operation of the mechanism beyond a certain pre-determined speed. The Burroughs governing and timing device consists of two principal parts; a set of large springs which act as shock absorbers when the handle is jerked faster than 120 strokes per minute, and a large cylinder or dash pot which controls the speed of operation. These prevent careless operation from injuring the machine or interfering with its accuracy.

The whole machine is very compact. The carriage is only five inches from the rear of the keyboard, making little effort necessary to insert forms or shift it in cross-tabulating. The key depression is light and short.

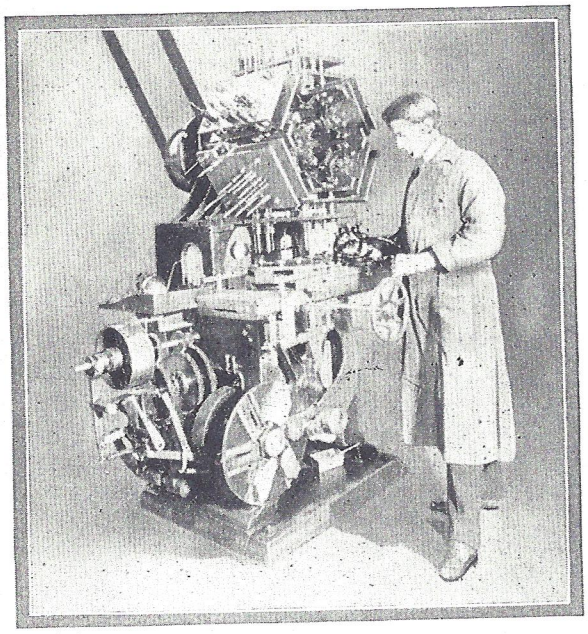
In every respect the Burroughs is designed for convenience and certainty of operation. The removable handle safeguards unfinished work while the operator is away. Dates are printed in red and items in purple for clearness. Any Burroughs but the smallest can be furnished equipped with electric drive. The locked keyboard prevents errors in setting items, although a flexible keyboard may be had if desired. The full keyboard (81 keys in the 9 column machine) gives visibility to the setting of items and reduces the labor



Removing the handle protects unfinished work

because ciphers need not be set and forty per cent of commercial figures are ciphers.

The case can be removed and the back with the carriage let down in less than a minute, exposing the entire interior with its remarkable Burroughs unit construction. Contrary to what might be expected, there are no fine adjustments. The parts are large and heavy, with ample leeway for wear and tear.



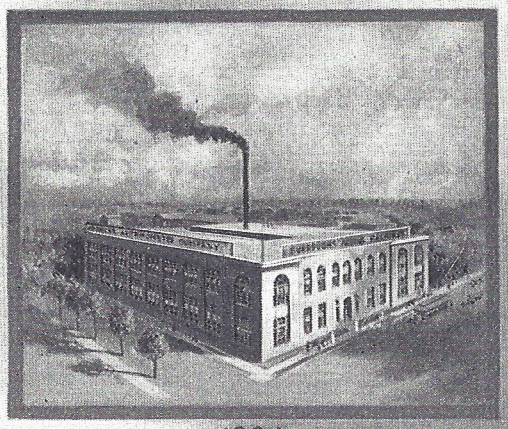
One of the automatic machines that insures Burroughs accuracy

The Burroughs is not a delicate machine; only gross neglect or abuse can injure it. It is built to last a business lifetime and we have never known a Burroughs to wear out. Machine No. 482, for example, has been used continuously since 1897 by the Manufacturers National Bank in Racine, Wisconsin. It has given fourteen years of continuous service and is still "on the job."

We are not satisfied with merely building a good machine, we are organized to insure the uninterrupted use of the machine.

Through our Service Stations scattered over the country we are rendering a Service that guards your investment for a business lifetime just as an insurance policy guards against loss by fire.

One of these Burroughs Service Stations is at the end of your telephone wire



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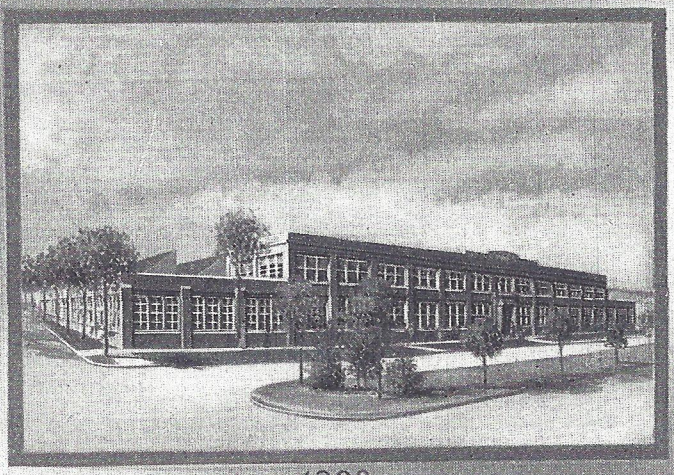

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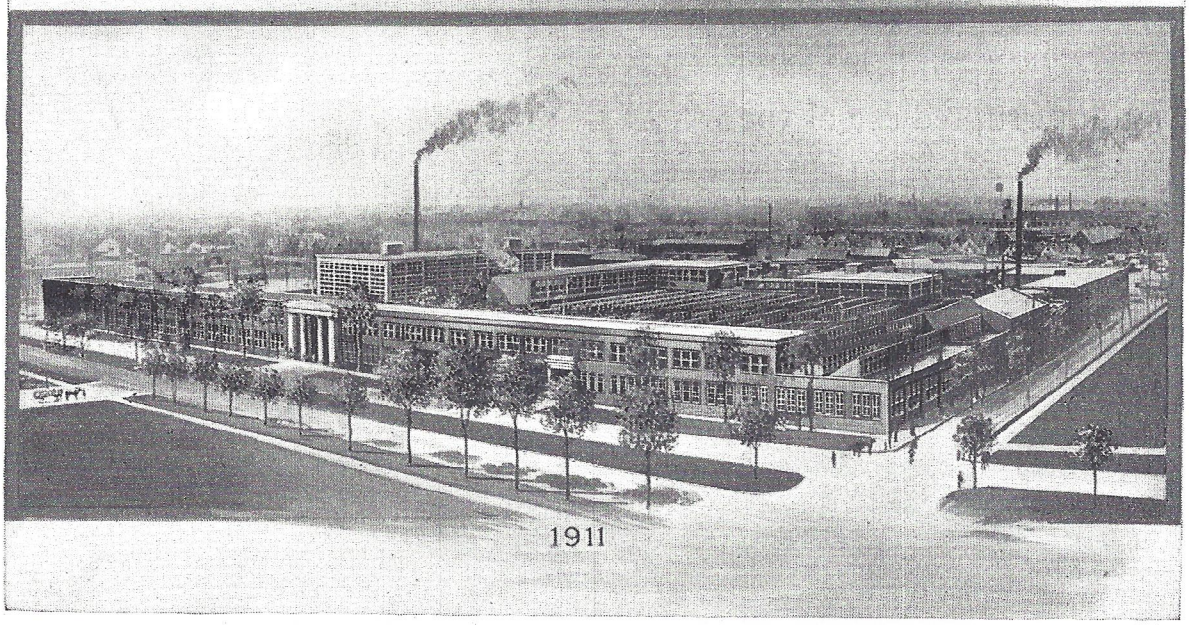


1911

The Growth of the Largest Adding Machine Factory in the World
Now covers 7½ acres and employs 2300 men

Table of Contents

H. W. Carmichael Company, Dairy, Rockford, Illinois, send their customers statements made on a Burroughs

The Burroughs is a Protected Machine

Protected by a dust and dirt proof case which adds to the ability of the machine to resist wear and tear.

Protected against innocent mistakes by a locked keyboard when the item is placed, by the automatic locking of all operating devices when the handle is in motion.

Protected against careless handling or willful manipulation on both forward and backward strokes of the handle.

Protected against interference in the absence of the operator by the removable handle.

How to Unpack and Set Up a
BURROUGHS

Joseph Mack Printing House, Detroit, Michigan, use a Burroughs to compute hours and minutes and wages in making up their pay-roll
Also for figuring costs in making estimates

THE SHIPPING BOX

Fig. 1
Preserve the shipping box

EVERY Burroughs machine is packed in a specially constructed box like the one illustrated—(Fig. 1). This is arranged so that the machine may be unpacked without destroying the box, which should be carefully preserved.

Directions for unpacking the Burroughs Electric are given on page 52.

If it is necessary at any time to repack and ship the machine, its safe carriage will be insured by using the same box in which it was originally delivered.

Do Not Destroy the Shipping Box

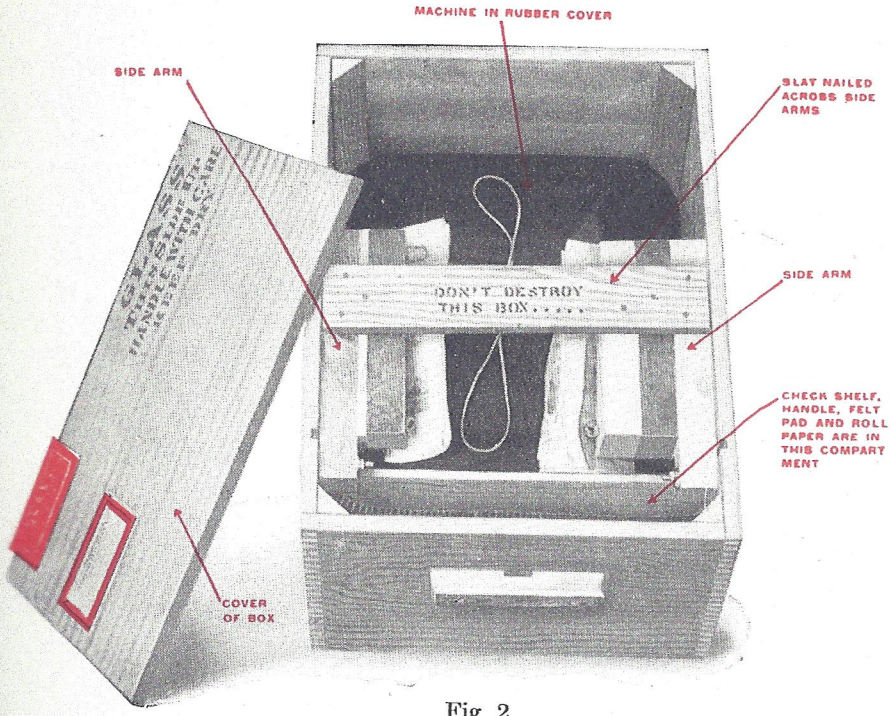
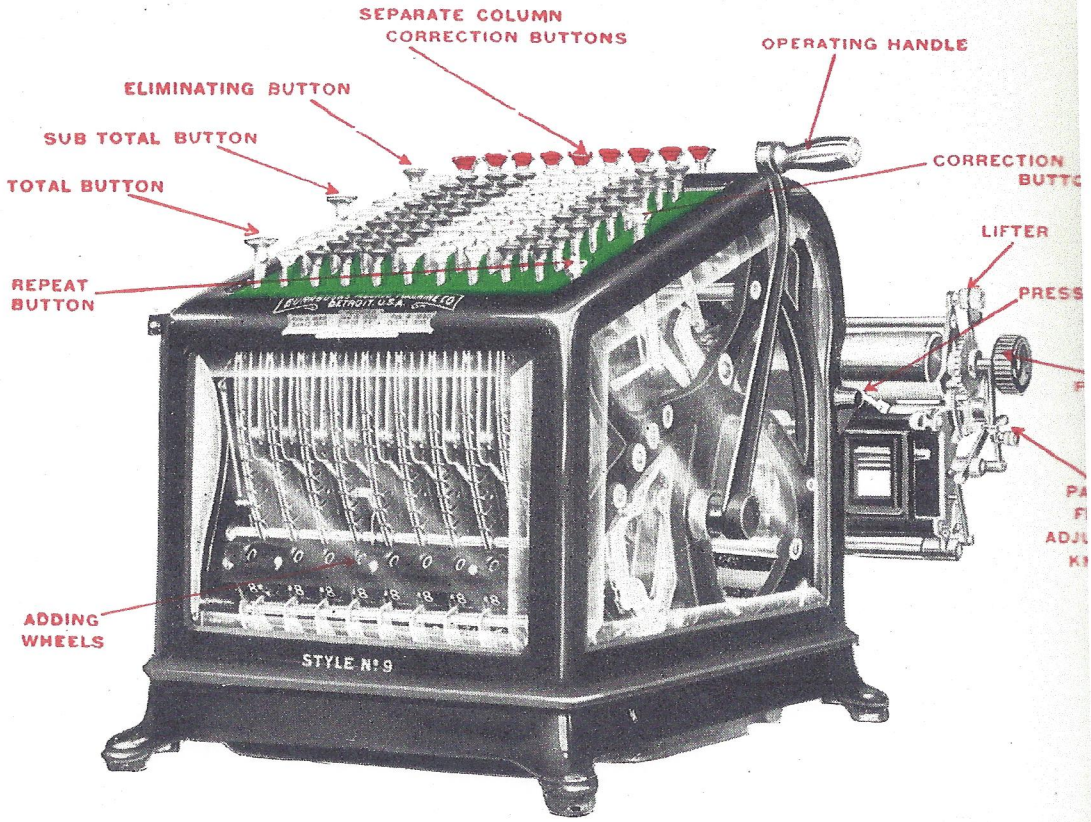


Fig. 2
Inside the special shipping box after removing cover

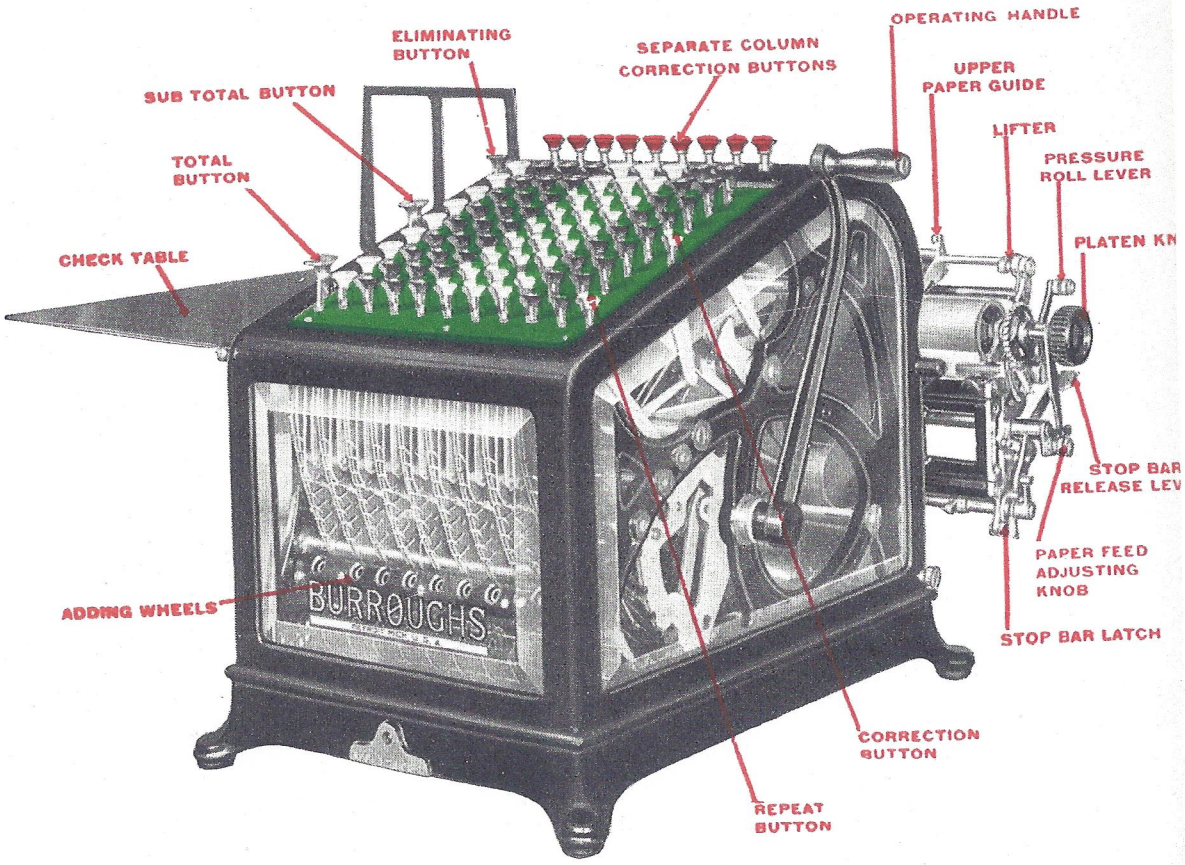
After removing the cover of the box, take out the screws from the centers of the sides and swing up the wooden arms which hold the machine in position—(Fig. 2). (Do not remove the iron bolts on which the arms are pivoted.) Lift the machine carefully out of the box by means of the cords (Fig. 3) and set it on a substantial desk or table, or on a machine stand.

Remove the cords and place them with the screws, in the packing box for safe keeping and for use in case it should be desired at any time to repack the machine.

Fig. 3
Lift the machine carefully out of the box by means of the cords



Style No. 9–15 Construction—Front Right View



Style No. 9–18 Construction—Front Right View

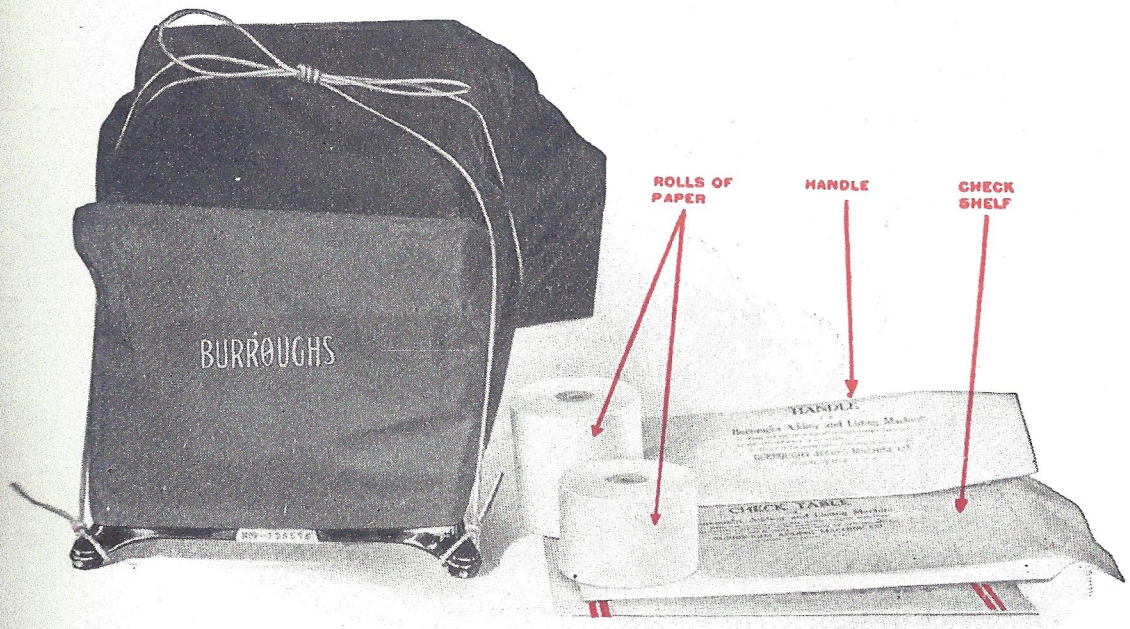


Fig. 4
Unpack the check shelf, handle and rolls of paper

Setting up. —Remove the rubber cover or hood from the machine. Remove the cords which hold the printing carriage.

Attaching the Check Shelf. A metal check shelf for the left side of the machine is packed in the box, also a small, flat bar.

To attach the check shelf to the machine, first remove the screw from the front lug on the left side of the case, then insert the curved end of the flat bar in the small lug at the bottom of the case and the other end through the slot in the check shelf. Move the check shelf to a horizontal position, and slip the hinge on the check shelf over the pin on the back lug. Then replace the screw in the front lug to hold the other end of check shelf, and screw it up snug with a small screw-driver—(Fig. 5).

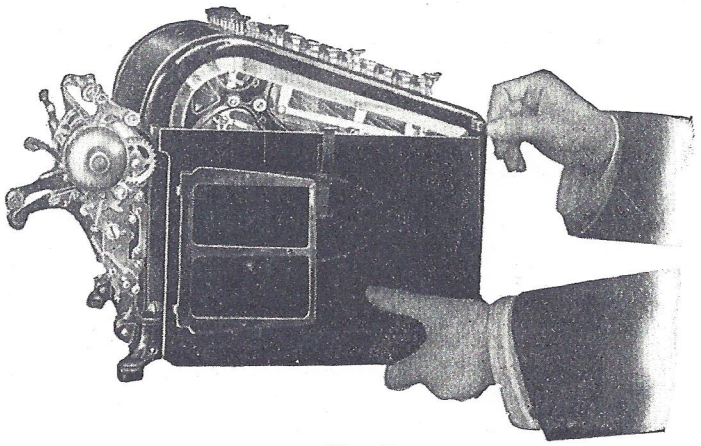
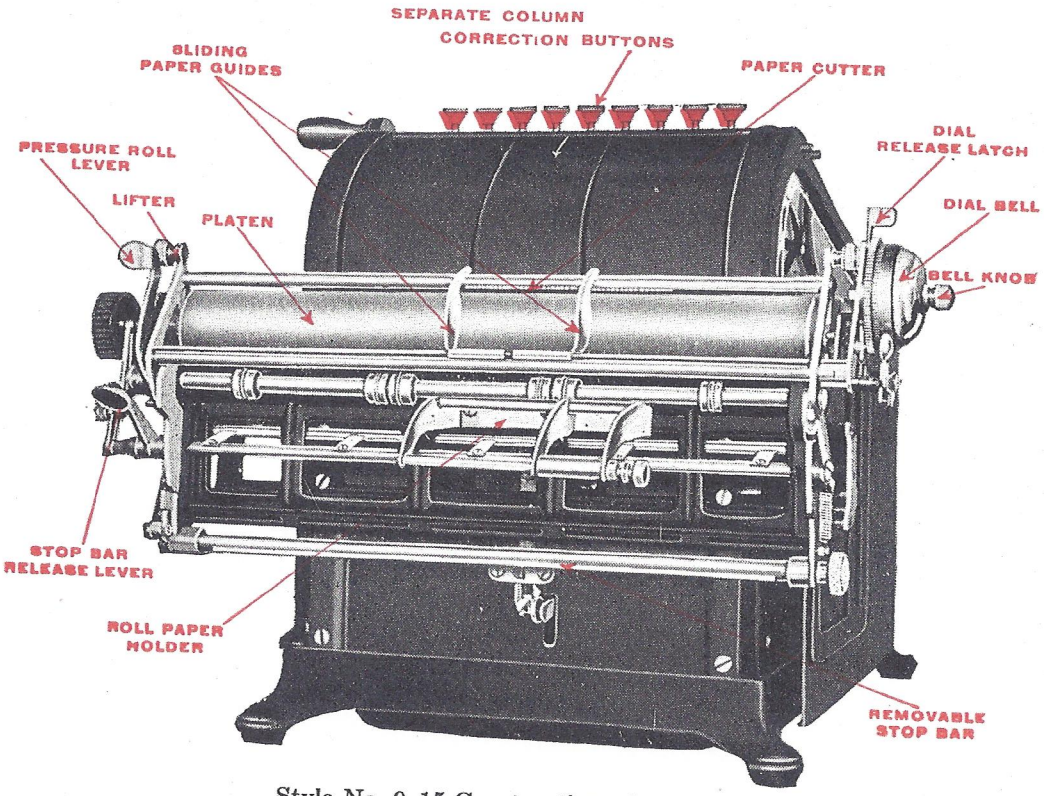
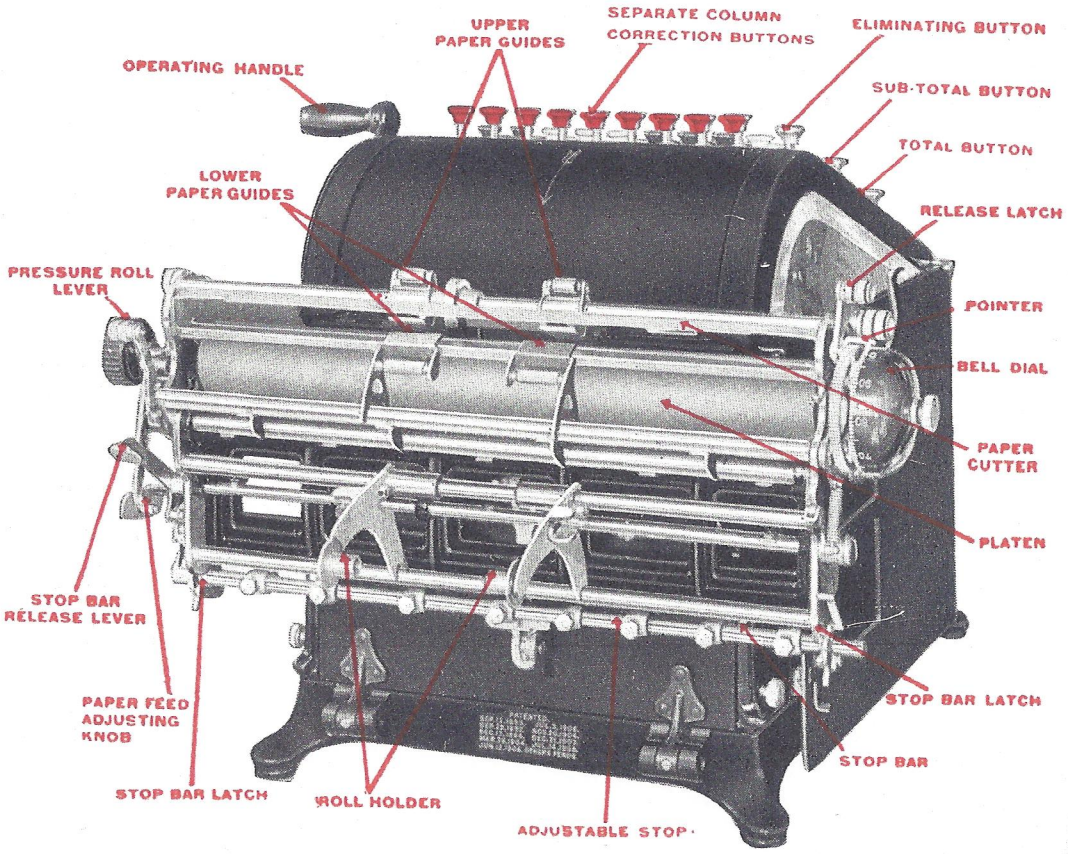


Fig. 5
After removing the rubber cover, the check shelf is attached



Style No. 9–15 Construction—Rear View



Style No. 9–18 Construction—Rear View

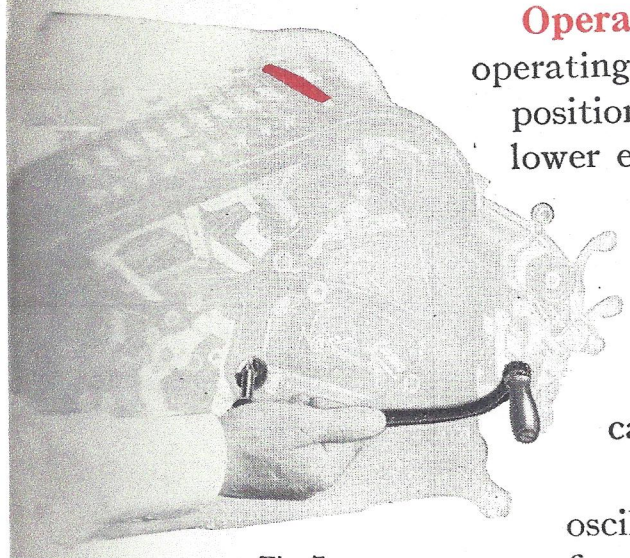


Fig. 7
Hold the handle so that the shank is parallel to the base of the machine

Operating Handle.—To insert the operating handle, hold it in a horizontal position with the pointed pin at the lower end in the hole in the glass at the right of the machine. The shank of the handle should be parallel with the base of the machine and pointing toward the printing carriage—(Fig. 7).

Give the handle a slight oscillating motion and force it firmly in with the palm of the hand. It will snap into position and spring upright. Then the machine is ready for operation.

To Insert Roll Paper.—Remove the rod from between the paper hangers and pass it through the wooden core on the roll of paper. Place the roll between the hangers so that the paper will feed off the top and toward the platen.

On "18 construction" machines there is no rod to remove. The paper hangers slide to the exact width of the roll paper, which is held in place by pins on the inside of the hangers.

Set the sliding paper guides just far enough apart to take the width of the paper, which should be led between the guides under and around the platen and under the nickeled rod above the platen, so as to bring it under the paper cutter—(Fig. 8).

When using wide sheets, the sliding paper guides are set at the width of the sheet which is brought around the platen in the usual manner, disregarding the paper hangers entirely.

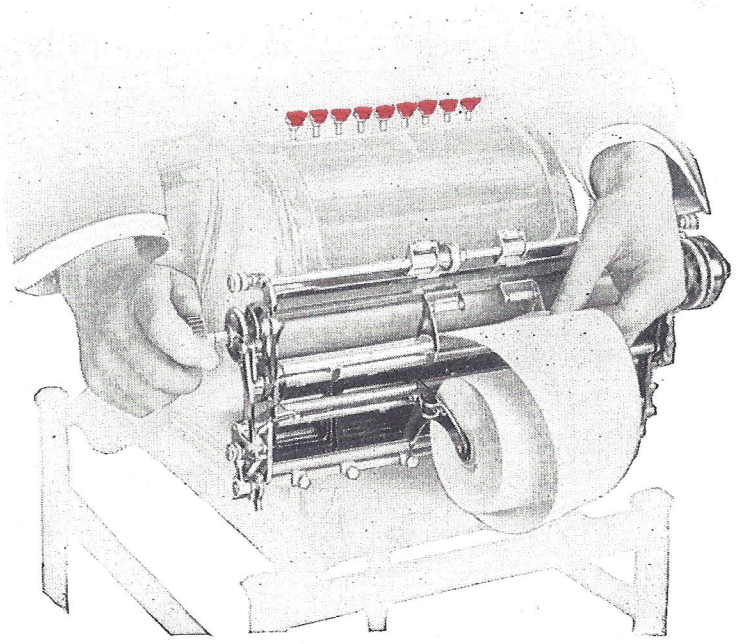


Fig. 8
Feed the paper off the top of the roll and under the platen

The Burroughs Full Keyboard

IT HAS been found by analysis of a very large number of items that over forty percent of the figures handled in mercantile houses are ciphers and that more than sixty percent of the figures handled in banks are ciphers. It is because of this large proportion of ciphers that the Burroughs full keyboard (81 keys in the 9 column machine) is the most rapid device ever produced for putting figures into a machine.

Since the machine automatically prints ciphers wherever they are needed, no thought need be given to them. Amounts such as 50,000.00, 100.00 etc., are set up by merely depressing one key. Amounts such as 5,060.00, 150.00, etc., require the depression of only two keys. The colors of the columns of keys make setting up so simple that a child can learn it in a few minutes.

Of course, rapidity of operation of the adding machine depends solely upon the frequency of the handle-pull; the fewer depressions to be made in setting up any item, the sooner the handle can be pulled. Hence the great saving in time of not being obliged to depress keys for the ciphers.

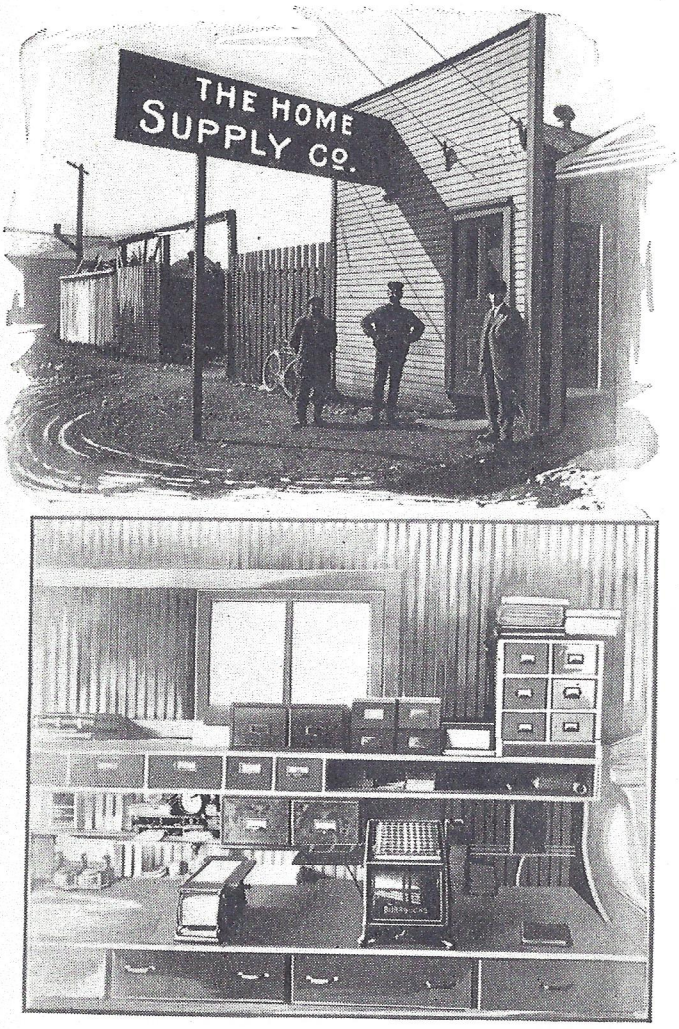
Considerable time in setting up is also gained by depressing two or more keys at once in such items as 5.55, 5.75, 234, etc., which is possible only on the full keyboard.

The complete visibility of the Burroughs keyboard enables the operator to "catch" a mistake after depressing the wrong key and to correct it readily before the item is printed.

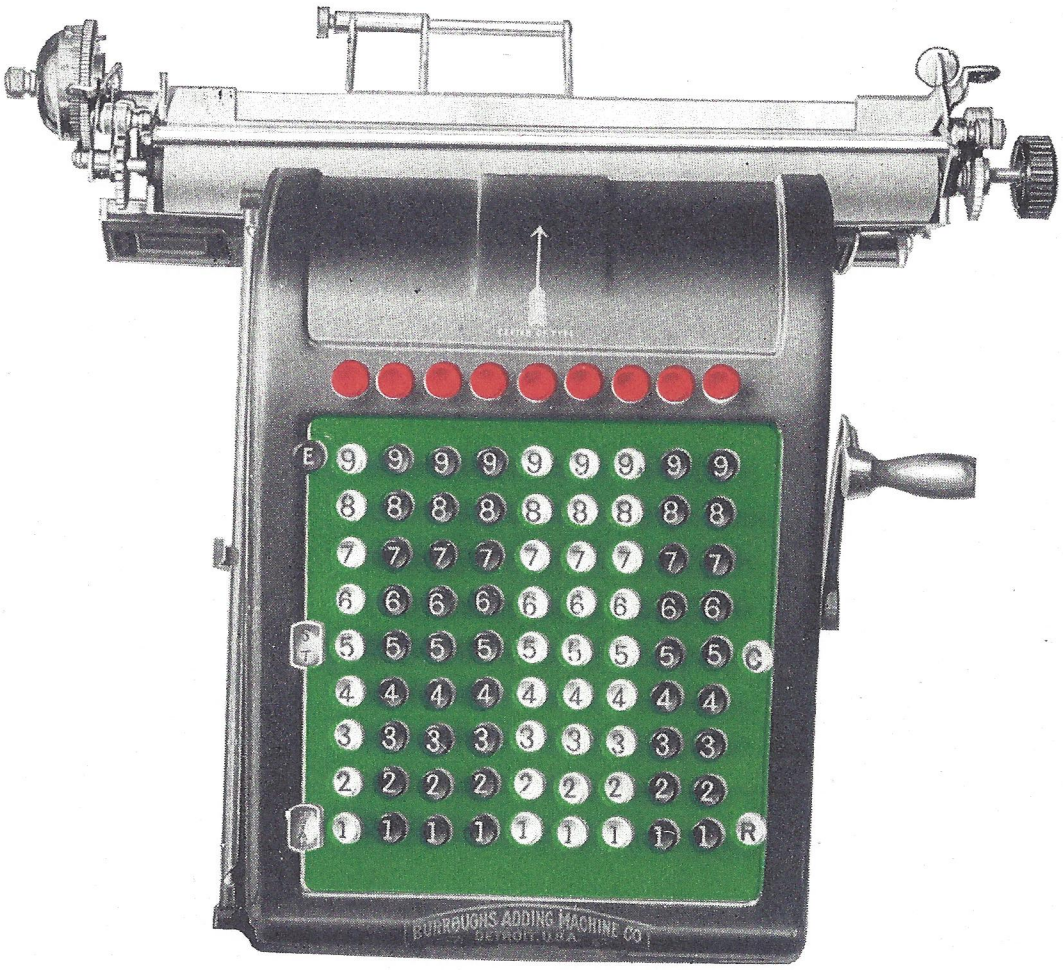
The single Column Correction Button does away with the necessity for re-setting the entire number, thereby saving much time. Progressive numbers can be listed very rapidly with the repeat button down, by using the single column correction button for changing the last figure only after each operation.

In a split machine the advantage of the full keyboard is obvious for quickly placing the figures in the proper position in the two or more sections. In the multiplications involving decimal fractions an arbitrary decimal point may be taken between any two columns of keys.

How to Operate the BURROUGHS



Home Supply Coal Company, Fort Wayne, Ind., check invoices and weights of coal, prove postings, make trial balances, etc., on a Burroughs



View of Keyboard of
No. 9–15 Construction Machine

The Burroughs Punctuated Visible Keyboard is the one on which all world's records for speed and accuracy have been made

KEYBOARD

THE object of the colors (black and white) of the keys on the board is to punctuate the keyboard and enable the operator to locate amounts quickly and accurately. Ordinarily the punctuation is for dollars and cents, though it may be had in any other way. The first column of keys on the right is units of cents, the second column tens of cents, the third column units of dollars, the fourth column tens of dollars, etc., toward the left (See illustration on page 24.) There are no keys for ciphers, these being printed automatically by the machine when needed, without the depression of any keys.

On the Burroughs Statement Machine the keys in the three left hand columns are used for printing names of months and the number of days in the month.

Clearing the Machine

BEFORE beginning to list items the operator should always be sure the machine is clear, or in other words, set to zero. To make sure of this, draw the operating handle forward, remove the hand, and allow it to return to normal position; next depress the button marked "total"

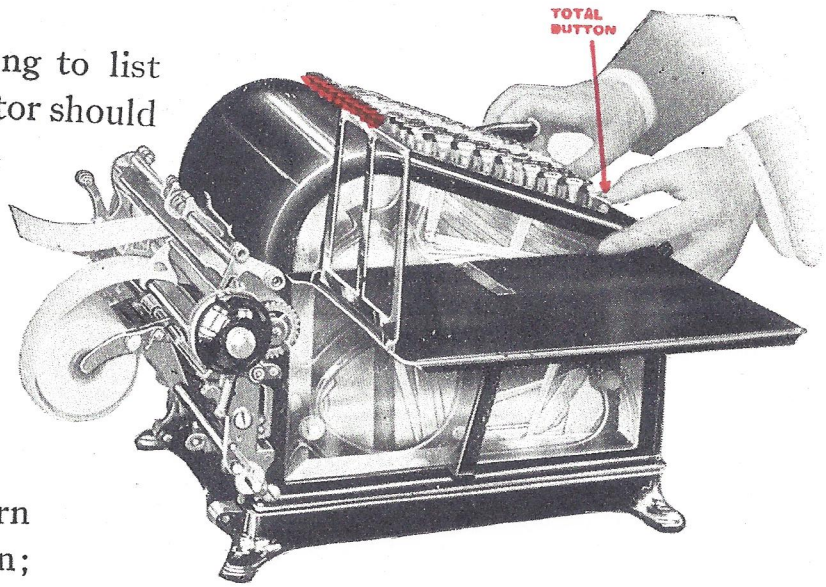


Fig. 9
Depress the total button and hold it firmly down until the handle is started forward

(Fig. 9) and hold it down until the handle is started forward. If there has been a previous total left in the machine, this total will be printed on the paper, together with an asterisk, or star (*), to distinguish it from an ordinary item.

An inspection of the adding wheels will also show whether or not the machine has been cleared. If the above operation is performed when the machine is already set at zero, the asterisk, or star, alone will be printed—(Fig. 10).

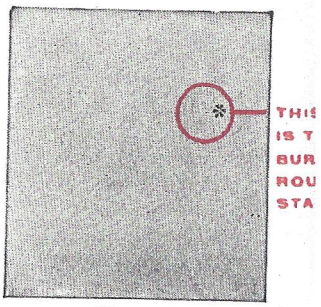


Fig. 10
A symbol, such as the Burroughs' star, is the only method of assuring the operator that the machine was absolutely clear at the start—key board, eliminating button and adding wheels included

A star should always be printed at the top of the column of figures, to indicate that the machine was clear.

Printing or Listing Items

THE operation of listing items is very simple and can be learned in a few minutes, it being necessary only to depress the keys representing the figures in the items desired and to pull the operating handle. For instance—in order to list and add $34.50, depress the "3" in the tens of dollars column, the "4"

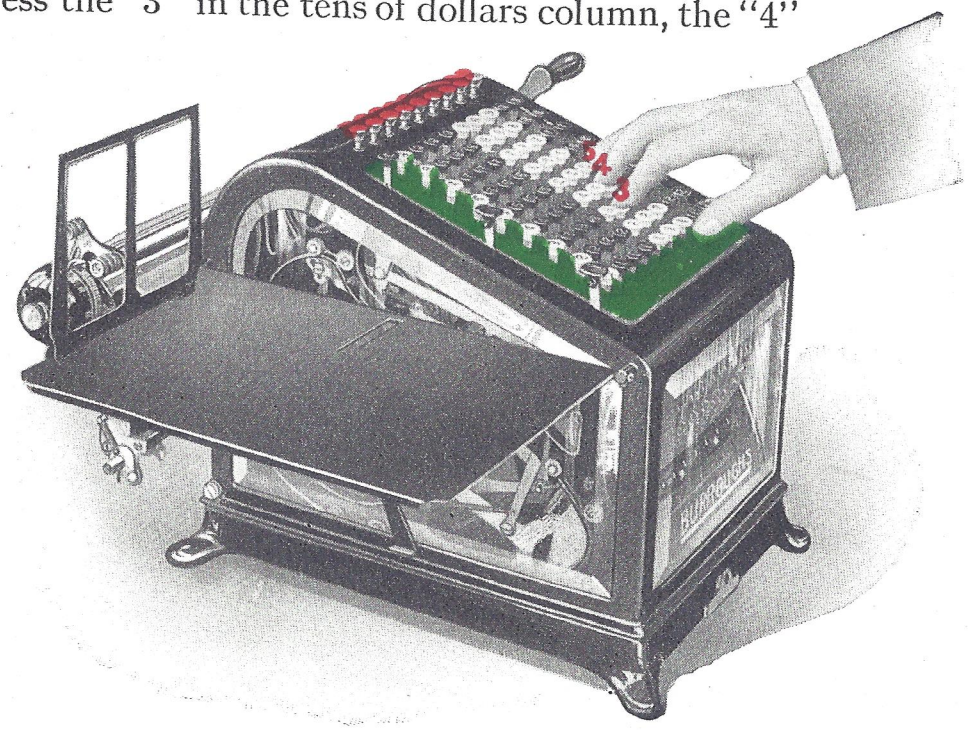


Fig. 11
Press keys in proper columns corresponding to the figures in the item desired; all ciphers print automatically

in the units of dollars, the "5" in the tens of cents column (Fig. 11), then pull the operating handle and release it (Fig. 12), when $34.50 will show on the dials at the front of the machine (Fig. 13), and will also be printed on the paper (Fig. 14).

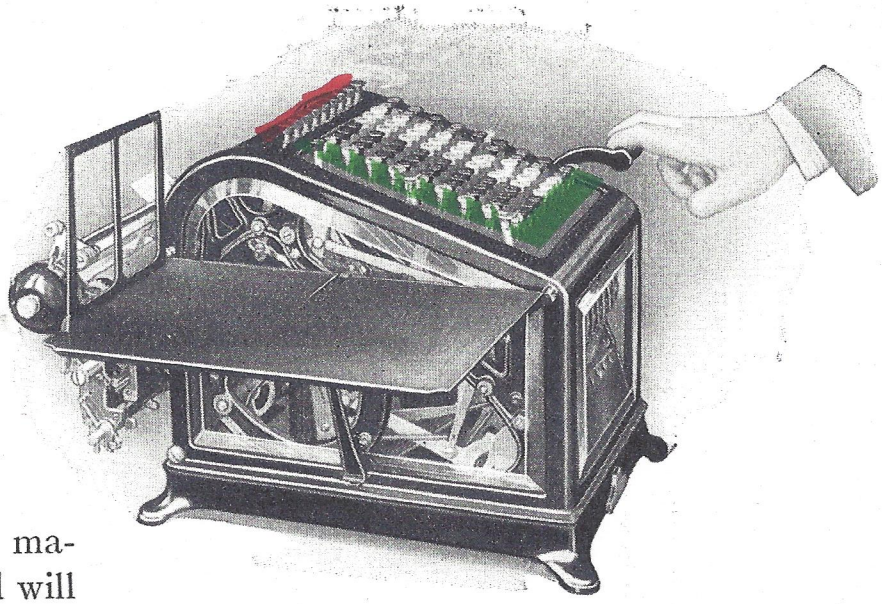


Fig. 12
The depressed keys are automatically locked down by the forward movement of the handle preventing accidental change in the item to be listed

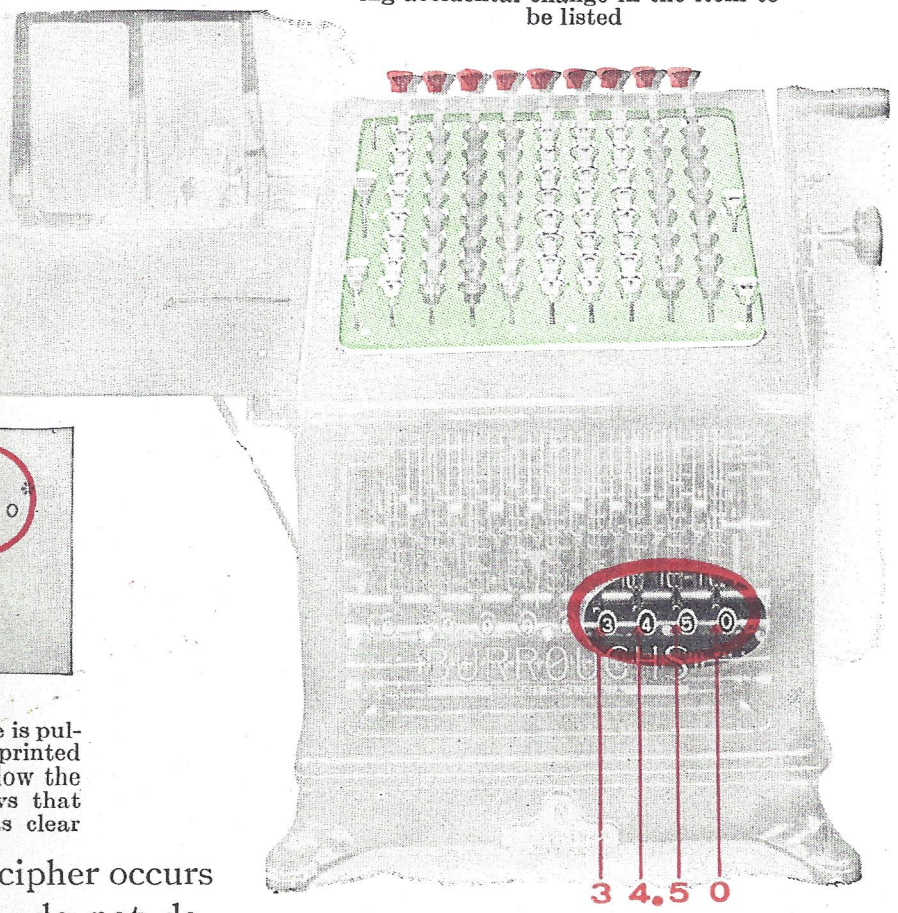


Fig. 13
The item printed shows in the total wheels just inside the glass front of the machine

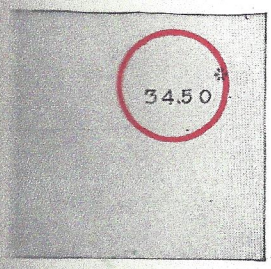


Fig. 14
When the handle is pulled the item is printed on the paper below the star which shows that the machine was clear

When a cipher occurs in the item, do not depress any key in the column or row of keys in which it occurs. For instance $10,010.00 is "set up" by merely depressing the "1" in the 7th column and the "1" in the 4th column; i. e., by the depression of only two keys.

Keyboard Corrections

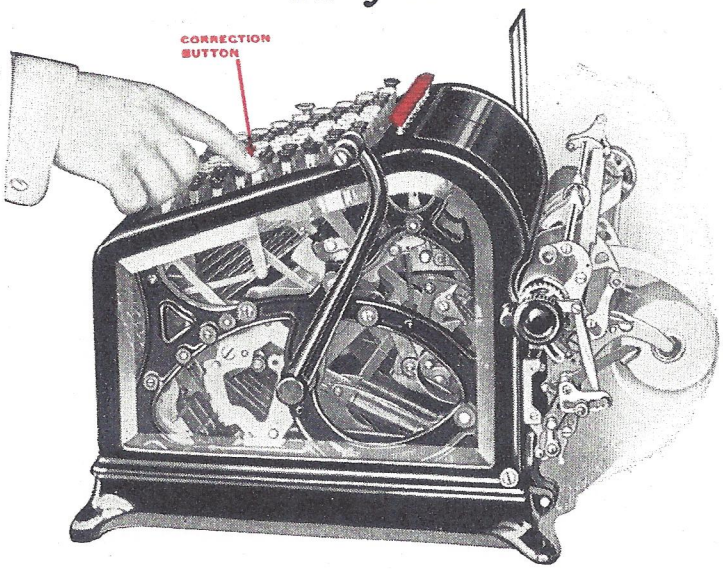


Fig.15
The general "Correction Button" is very conveniently placed near the right hand

IN case a key is wrongly depressed, the mistake can be corrected before any printing is done, by means of the "Correction" or "Error" Button (Fig. 15), on the right side of the keyboard near the middle, or by using one of the "Separate Column Correction Buttons" (Fig. 16) in the row at the head of the keyboard. The "Correction Button" on the side of the keyboard restores all keys depressed, while each "Separate Column Correction Button" at the head of the keyboard controls only the keys in its corresponding column. For instance—if the operator in attempting to depress $125.36 should depress $125.35, he may either restore all of the keys by using the side "Correction Button" or simply restore the "5" in the cents column by depressing the "Correction Button" at the head of that column—(Fig. 16). Please notice that when the Eliminating, or Non-Add, Button (see page 32) is depressed, the side "Correction Button" will restore it, while the "Separate Column Correction Buttons" will not.

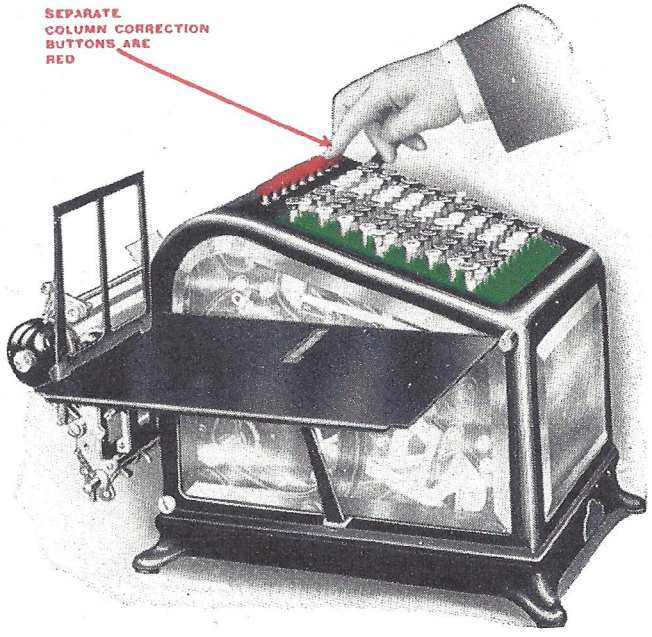


Fig. 16
Burroughs "Separate Column Correction Buttons" come on both locked and flexible keyboards, being valuable on the latter to secure a cipher after the numeral is set

To Print the Total

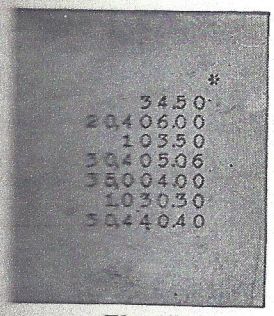


Fig. 17
Items are printed in regular columns on the paper

SUCCEEDING items are listed in the same manner, are printed in regular columns on the paper (Fig. 17), and the adding wheels change to include in the total the last item listed—(Fig. 18). Thus a correct total of all items listed may be transferred to the paper at any time.

After listing and adding the last item, make a complete movement of the operating handle without any keys depressed. This makes a blank space on the paper between the last item and the place where the total will appear, and is called the "spacing stroke." Then depress the total button and hold it firmly down until the operating handle is started on its forward stroke —(Fig. 9).

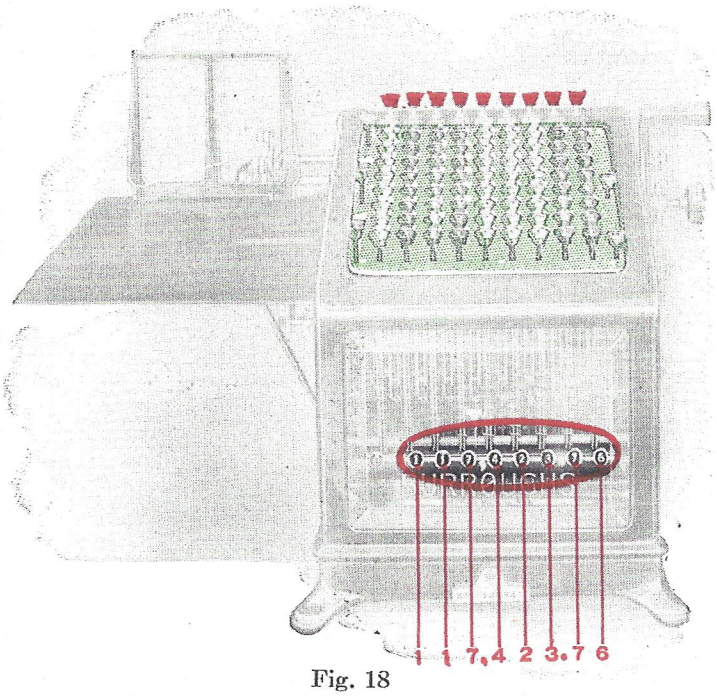


Fig. 18
The adding wheels always show the total in plain sight

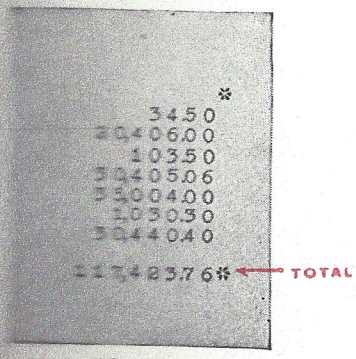


Fig. 19
Note star after the total. This being also shown on carbons avoids all possibility of misprints

The accumulated total will then be printed on the paper (Fig. 19), and in connection with it the star (*) to distinguish it from the items. If it is impossible to depress the total button, it is because the spacing stroke has been omitted.

Printing the total as outlined above also automatically sets the machine at zero, or, in other words, "clears it."

To Print the Sub-Total

IF desired, the accumulated total at any point in the list of items can be printed without "clearing" the machine so that other items may be added, or in other words, the total may be carried forward. In order to print the sub-total, first make the spacing stroke, then depress the "Sub-Total Button" (Fig. 20) and hold it firmly down until the operating handle has started forward. The sub-total is often used in work where items are listed and added in parallel vertical columns and where it is necessary to print the total of the column at the bottom and then carry it forward to the next column. A "sub-total symbol" is also automatically printed after each sub-total. This consists of the letter "S" after the amount (Fig. 21), though some of the earlier machines print the star (*) the same as after a grand total.

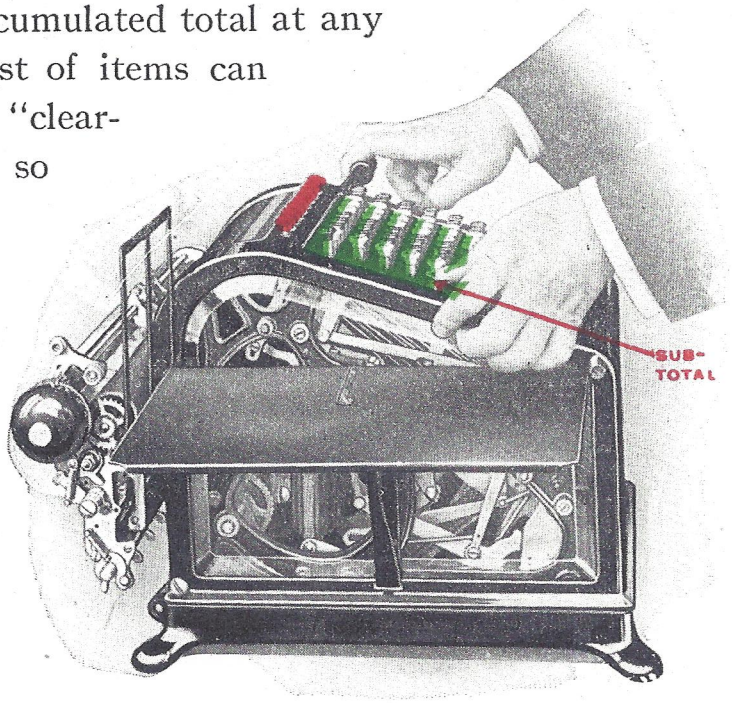


Fig. 20
A separate sub-total button makes manipulations unnecessary and errors impossible

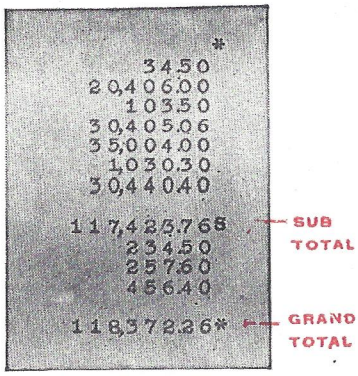


Fig. 21
A distinctive marking for total and sub-total gives a conclusive record of every operation

On the early models only one button was provided for taking both totals and sub-totals. Holding this button down during a complete forward and return stroke of the handle printed the total. Releasing it when the handle was farthest forward printed the sub-total. It was necessary to properly "manipulate" the button in order to get the proper result. This objection is overcome in all present models by having separate buttons and distinctive symbols for totals and sub-totals.

The Repeat Button

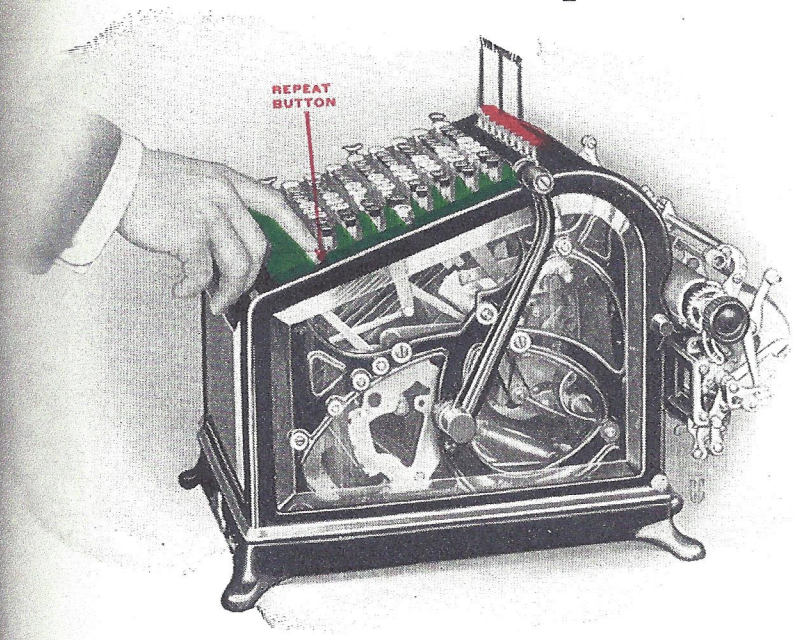


Fig. 22
The "Repeat Button" is locked by pressing it down and slightly away from the operator. To restore it, pull it forward gently when it will spring into place automatically

WHEN several items of the same amount are to be listed in succession, the keys for the item may be depressed, and the "Repeat Button" (located at the lower right-hand corner of the keyboard—Fig. 22), may be locked down, after which it is simply necessary to draw the operating handle as many times as the item is to be listed—(Fig. 23). When the last item has been listed, release the "Repeat Button" by pulling it toward the front of the machine, and then restore the keys with the side Correction Button after which the spacing stroke and total may be taken in the regular manner—(Fig. 24).

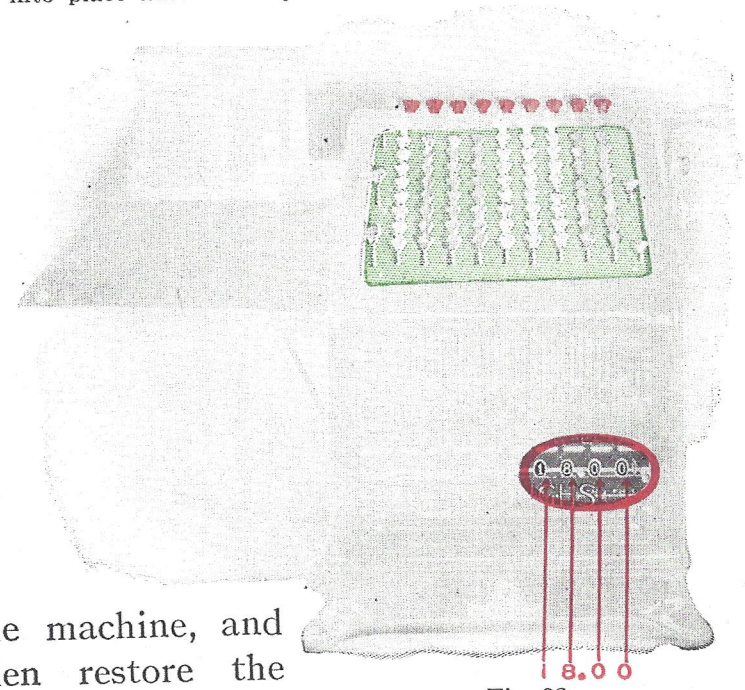


Fig. 23
The item $4.50 has been set up on the keyboard with "Repeat Button" locked down and the handle pulled four times. The total ($18.00) is read in the total wheels—

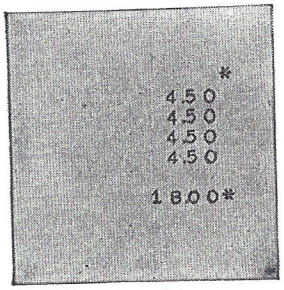


Fig. 24
and is printed on the paper in the usual manner

The Eliminating, or Non-Add, Button

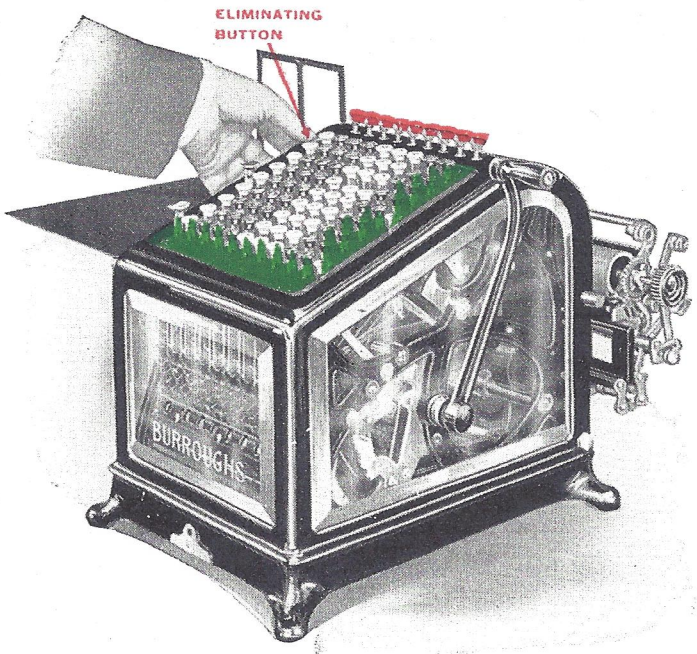


Fig. 25
Merely depressing the "Eliminating, or Non-Add Button," prints but does not add the item

THIS button has several distinct uses. First, it may be used to print, without adding, some abstract number such as clerk number, department number, car number, voucher number, etc. (See Figure 26.) Second, it can be used to mark certain items in a list when those items are not to be carried into the total but are to be later added separately; for example, in listing a lot of both debit and credit items the debits can be listed and added and the credits listed only. The total then shows the sum of the debits, and the credits can then be listed and totaled by simply "picking up" the marked (#) items and listing them in the regular way. (See Figure 27.) Third, it can be used to mark certain items in a list, all of which are added; for example, in listing the charges for a month it is desired to mark those items that are "net," the others being "2% 10 days." This is done by first adding and listing the item in the regular way, then turning the platen back one notch and without setting any figures in the keyboard depressing the elimin-

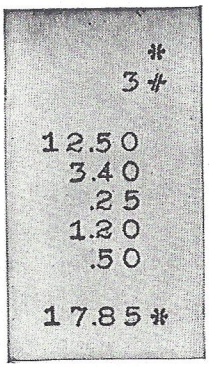


Fig. 26.
The eliminating sign is essential to mark on the printed record every item not added in the total

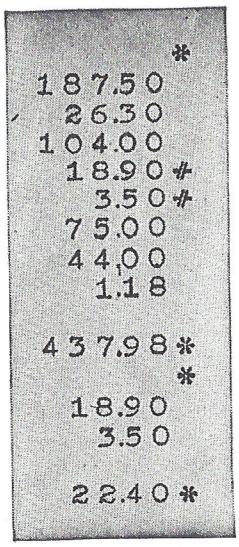


Fig. 27
Use of the eliminating sign to mark credits

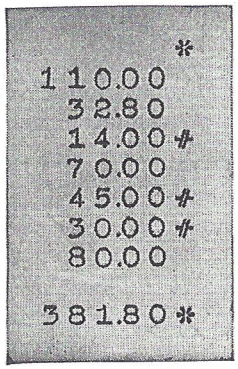


Fig. 28
Net cash items can be distinctively marked on statements

ating button and pulling the handle. This causes the symbol (#) alone to be printed, but as the carriage was turned back to the item just listed the symbol will come to the right of it and will thus give it the distinguishing mark which means "net cash." (See Fig. 28.) Fourth, the operator may occasionally list and add an item which he at once realizes should not have been taken. He can then hold back the carriage, subtract that item out of the machine, turn the platen back one notch and print the elimination symbol to show that the item was not added into the total. (See Subtraction, page 65.)

The Eliminating or Non-Add Button remains down during one operation only. *It restores automatically after each operation.*

Use as Non-Listing Calculator

To use the Burroughs as a non-lister, i.e., to simply add items without printing them, throw back the carriage and fasten it down with the small "carriage lock" (Fig. 29) found at the left of the carriage on the under side. When the machine is used in this manner, the paper feed is automatically thrown out so that there is no waste of paper.

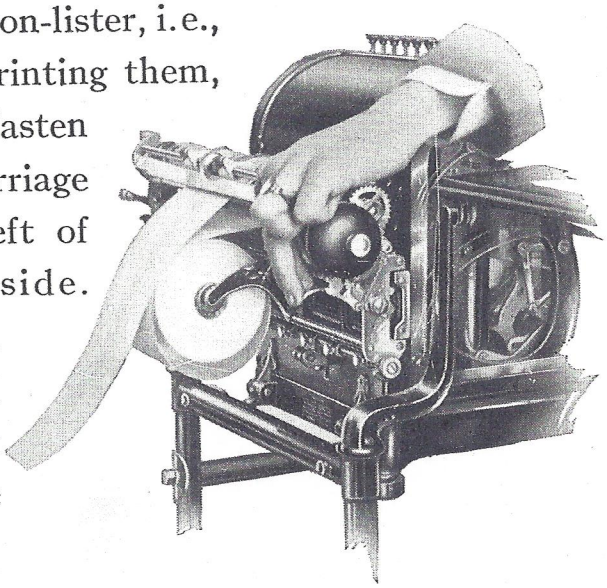
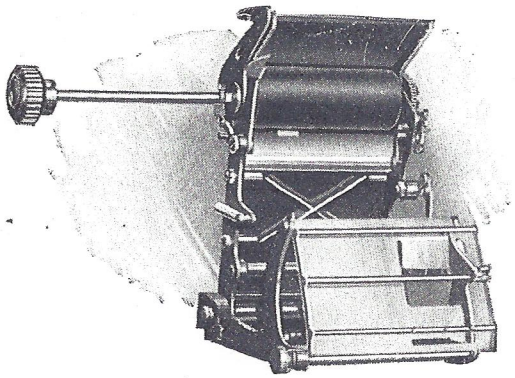


Fig. 29

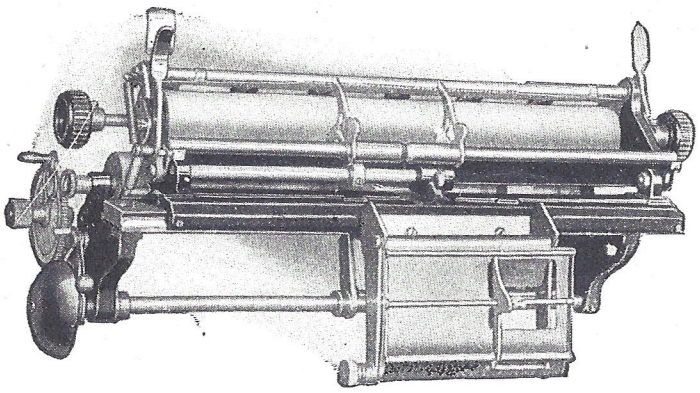
Burroughs Carriages

BURROUGHS machines are ordinarily furnished with one of five different size carriages, $2\frac{5}{16}$ inches wide, $3\frac{1}{2}$ inches wide, $10\frac{3}{8}$ inches, $12\frac{1}{4}$ inches or 18 inches. The $2\frac{5}{16}$ and $3\frac{1}{2}$ inch carriages can be used for roll paper only, but the three larger carriages can be used for both roll paper and sheets up to the width of the carriage.

Burroughs carriages are made with the same thorough care used in making the machine proper, every part is absolutely accurate to standard, hence both the parts and the complete carriages are interchangeable. This fact is of great importance to the user because should any part become damaged through accident, another can be put in its place with assurance that it will fit and work perfectly. The ease with which this can be done cuts the cost of making repairs to a minimum. Then, when business grows and there is need of a larger carriage to accommodate wider forms, it is only a matter of a few minutes to remove the narrow and attach the wide carriage.



F Carriage $3\frac{1}{2}$-inch

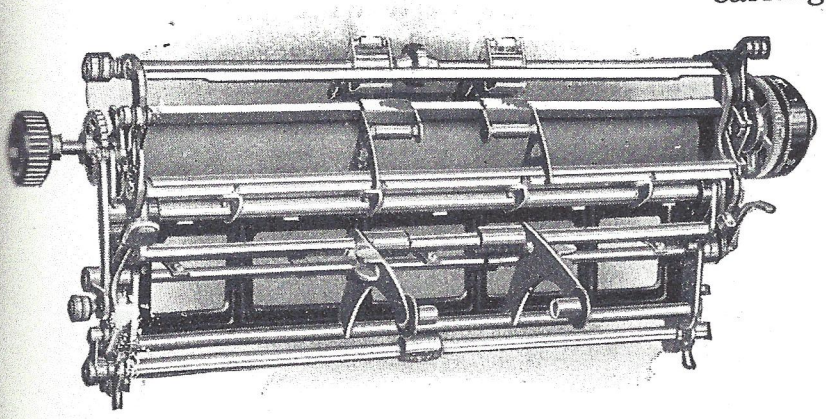


G Carriage $10\frac{3}{8}$-inch

No one feature of the Burroughs has done more to widen its scope of usefulness than the paper carriage. It has not been enough that we had a device for holding a sheet of paper while it received the figures, but we have developed a carriage into which we can put a sheet quickly and square it up to a printing position which is easily and positively determined.

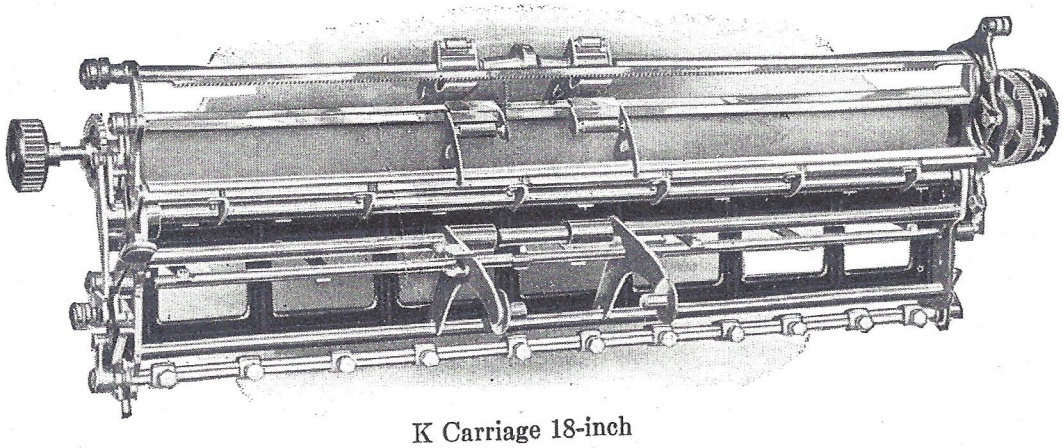
Even though the carriage has no direct part in the adding function, it does its work with a precision thoroughly in keeping with the positive accuracy of the machine.

In addition to the carriages illustrated and described in these pages there are several others requiring more detailed description than the scope of this book allows.



H Carriage 12¼-inch

Among these special carriages may be mentioned the "Shuttle Carriage" which automatically "shuttles" back and forth so as to print alternately in two columns; the Automatic Cross-Tabulating Carriage which automatically shifts from column to column across the width of the entire form and then automatically returns to printing position for the first column; the Semi-Automatic Cross-Tabulating Carriage and others. Where one of these carriages is supplied on a machine



K Carriage 18-inch

it is our custom to place a booklet describing it in the pocket inside the rear cover of this book.

Every Burroughs carriage is properly adjusted and ready for operation when the machine is delivered. While the wide carriages differ somewhat in the details of their construction, the general method of operation of the ordinary carriages is the same and is given in the pages that follow.

Handling Sheets and Roll Paper

THE insertion and handling of roll paper is described in detail on page 21. When the machine has been handling roll paper and it is desired to change to a wide sheet, it is not necessary to remove the roll paper from the hangers. Simply remove the end of the roll paper from the platen and shift the sliding paper guides to the width of the sheet. Then insert the sheet in the platen, disregarding the roll paper entirely and bring it out under the paper knife—(Fig. 31). It may be adjusted to any desired position by holding up the paper release lever. (See Fig. 35, page 38.) The paper release lever may be locked up by merely pulling it upward until the small projection on it enters the depression in the frame of the carriage. In the locked position both of the operator's hands are free to adjust the paper. Before operating the machine it is necessary to unlock the paper release so that the paper will feed.

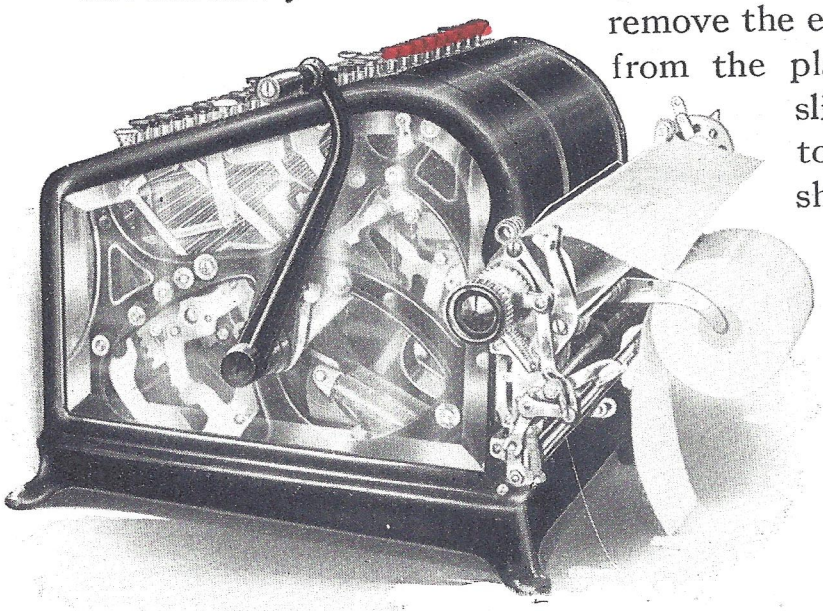


Fig. 31
Roll paper may be left on the machine indefinitely

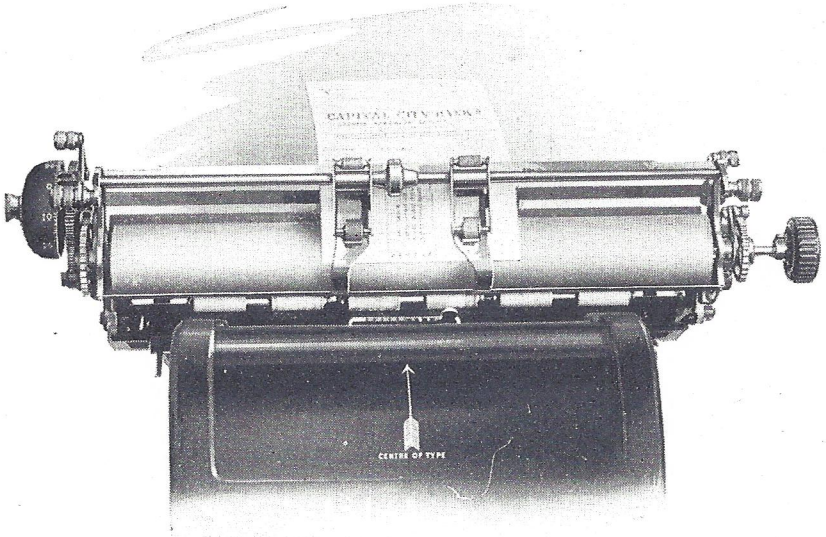


Fig. 32
The paper fingers of the Burroughs carriage permit the printing of figures to the very end of the sheet

Position the paper roll hangers for narrow or wide roll paper by placing them so that

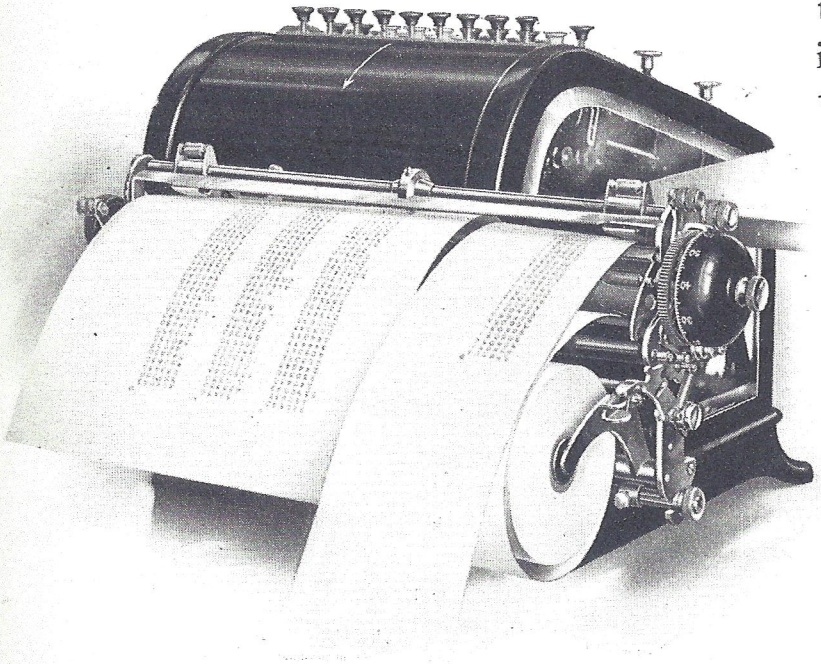


Fig. 33
Using wide sheet and roll paper at the same time

their catches rest in the grooves in the rod which carries them.

By compressing the finger grips of the paper hangers and shifting as desired, roll paper can be placed at any point on the carriage. This makes it possible to use the roll and sheet paper together in operations, for instance, involving the addition of a list of items on the roll and the entry of the amounts on the sheets or vice versa.

Carbon Copies

CARBON copies may be made on machines having wide paper carriages in the same manner as on a typewriter—(Fig. 34).

Where many copies are desired at one writing, a machine specially prepared for such purpose should be used, in which the stroke of the type hammers is heavier.

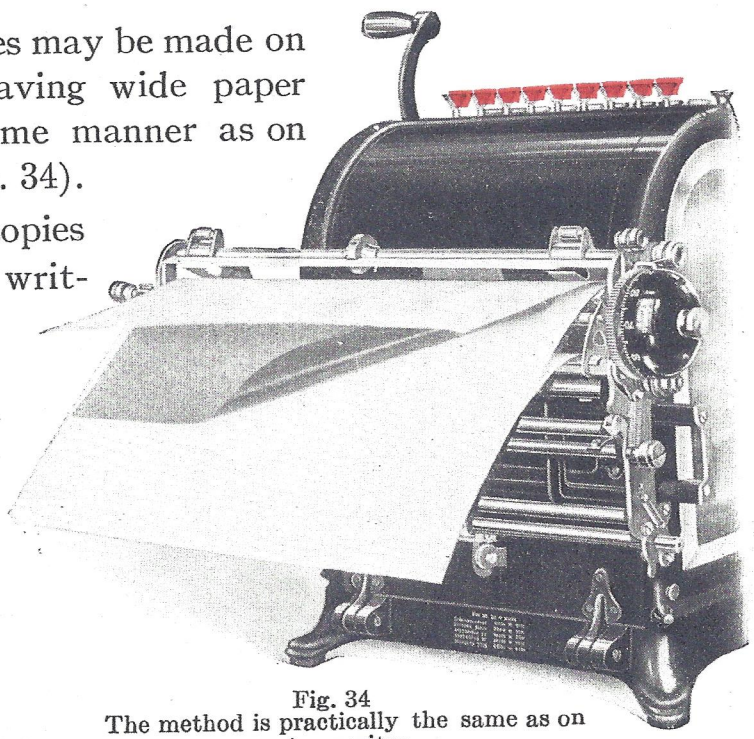


Fig. 34
The method is practically the same as on a typewriter

To Shift the Paper Carriage

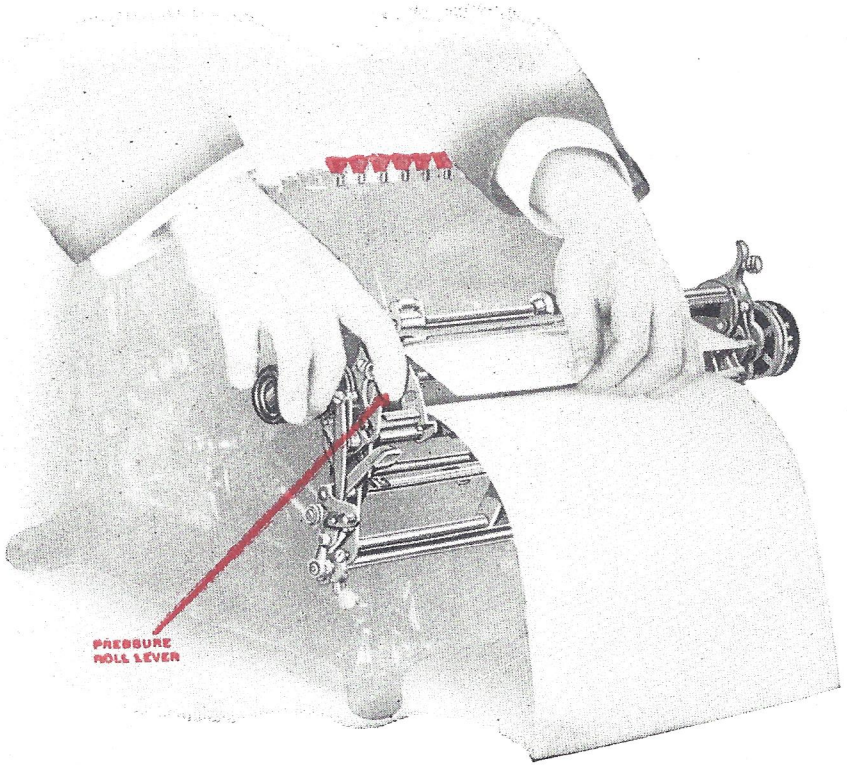


Fig. 35
By holding the paper release lever the paper may be adjusted to any position on the carriage

THE carriage may be shifted by compressing the shift lever — (Fig. 36). This lifts the stop-bar so that the stops do not fall into the seat in the triangular plate just under the stop-bar. (See illustration on page 20.)

When using the friction stop-bar (see page 39), the carriage may be stopped at any point merely by releasing shift lever.

Fig. 36
By holding the shift lever the carriage may be shifted back and forth to any desired position

Changing the Stop-Bar

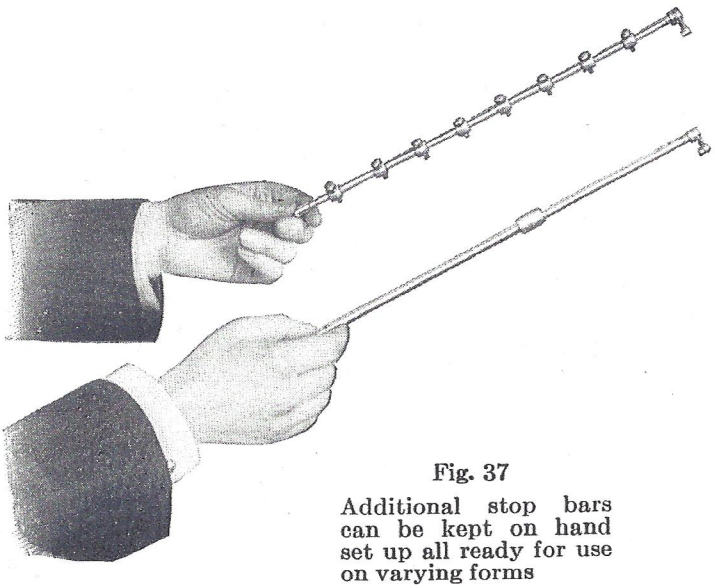


Fig. 37
Additional stop bars can be kept on hand set up all ready for use on varying forms

ALL 15 and 18 Construction machines are furnished with a friction stop-bar in addition to the adjustable stop-bar —(Fig. 37). To remove the stop-bar, lift the stop-bar latches (Fig. 38) at either end of the bar, and move the bar outward.

To insert the stop-bar, hold it with the crank end to the right of the machine, slipping its grooves under the stop-bar latches. Lift upward and press toward the front of the machine, guiding the crank into the notch in the shift lever above—(Fig. 38). When

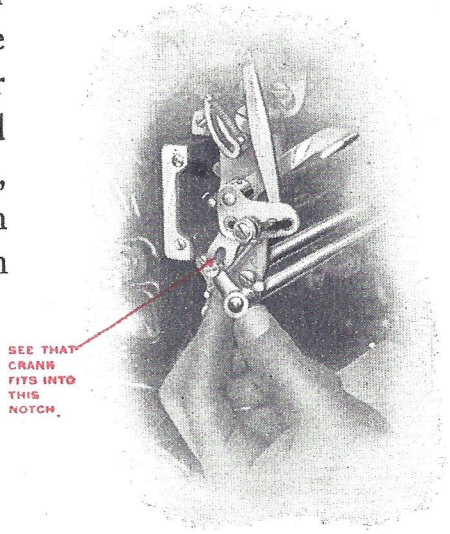


Fig. 38
Guide the crank into the notch in the shift lever

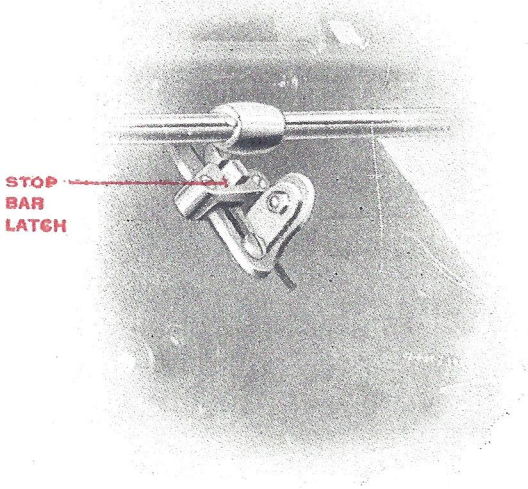


Fig. 39
(View from below)
See that the stop slips into the stop-bar latch

inserting the friction stop-bar, with finger on the shift lever, slide the carriage in either direction until the stop "snaps" into the stop-bar latch on the back of the machine—(Fig. 39).

Changing the Stops on Adjustable Stop-Bar

THE stops on the adjustable stop-bar may be rearranged at will by compressing the shift lever and loosening the little nuts on the stops with a wrench, as shown (Fig. 41), after which the stops may be moved to any desired position on the bar. This is convenient where, in the course of a day's work, several different forms may be used, requiring a different column arrangement on each.

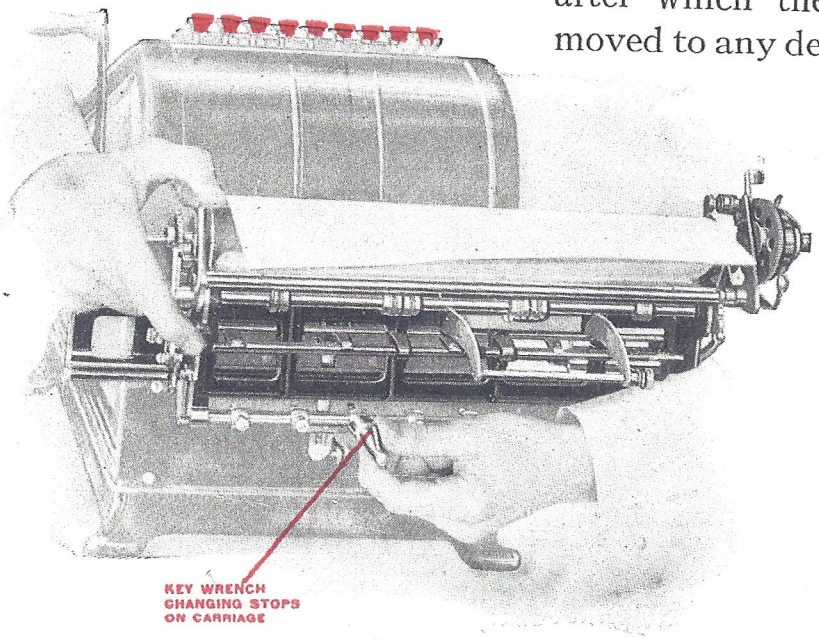


Fig. 41
Merely loosen the nuts and adjust stops as desired

Adjusting the Paper Feed

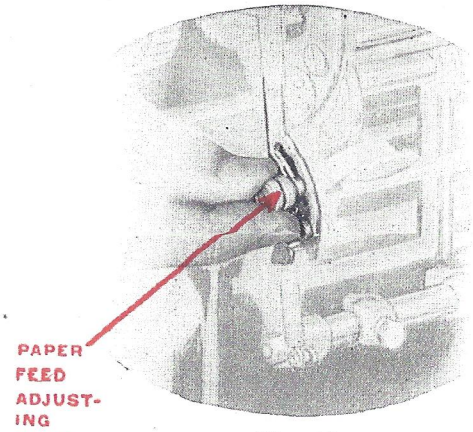


Fig. 42
Simply moving this knob to proper position gives desired spacing between items—three changes and a non-space being possible

FOR varying the feed of the paper, a knurled knob on the right end of the carriage may be moved to any one of four different positions in the link operating the feed pawl—(Fig. 42). When the knob is in the innermost position the platen does not feed on operation of the machine, so that in this position items may be listed in the several columns and on the same horizontal line, as for instance, in those cases where it is desired to cross-add and print the total all on one line. The next outer and the third and fourth positions cause the machine to print one, two and three spaces respectively.

Printing in Parallel Columns

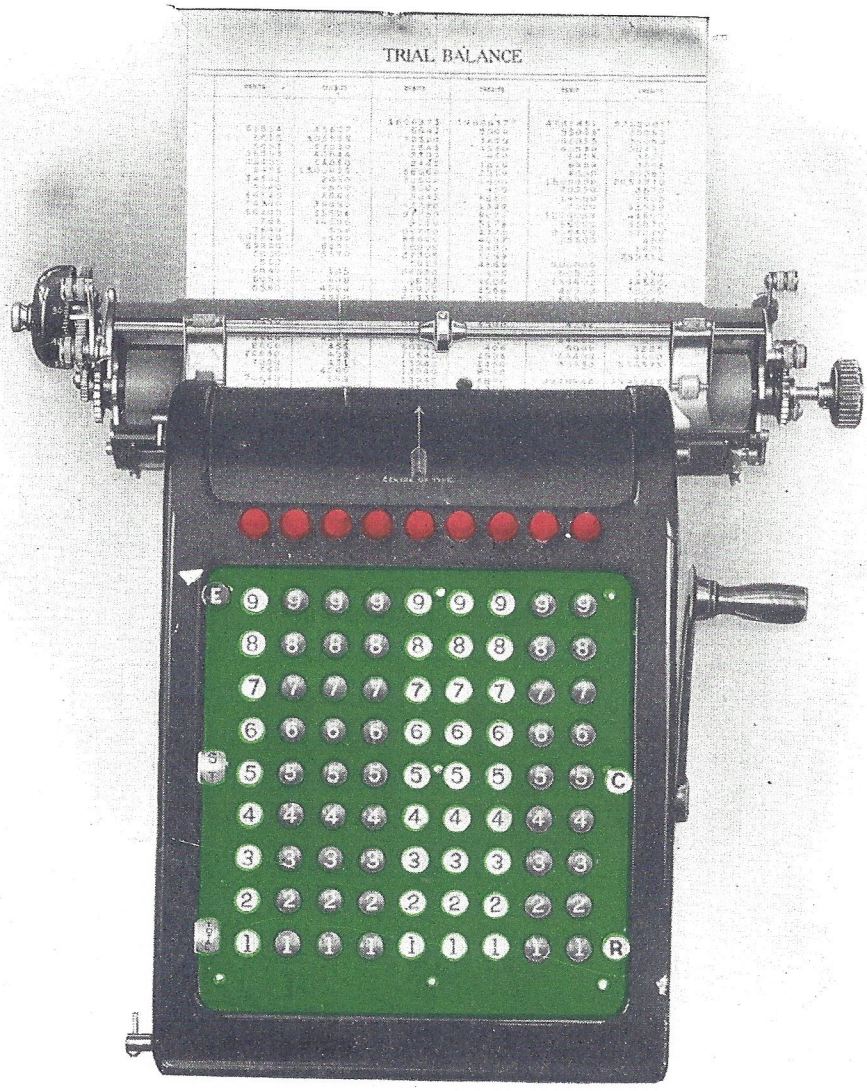


Fig. 43
Showing items listed on wide sheets in parallel columns

BURROUGHS paper carriages have been developed to the point where they handle wide sheets with great ease and rapidity. The shifting of the carriage from column to column is described on page 38 and the uses of the bell signal and paper return lock are described on page 42. These devices make it unnecessary to even glance at the paper after the work is started.

Burroughs carriages have the same spacing as the standard makes of typewriters, hence the Burroughs and the typewriter may be used on the same sheet for billing and other similar work.

The Finder

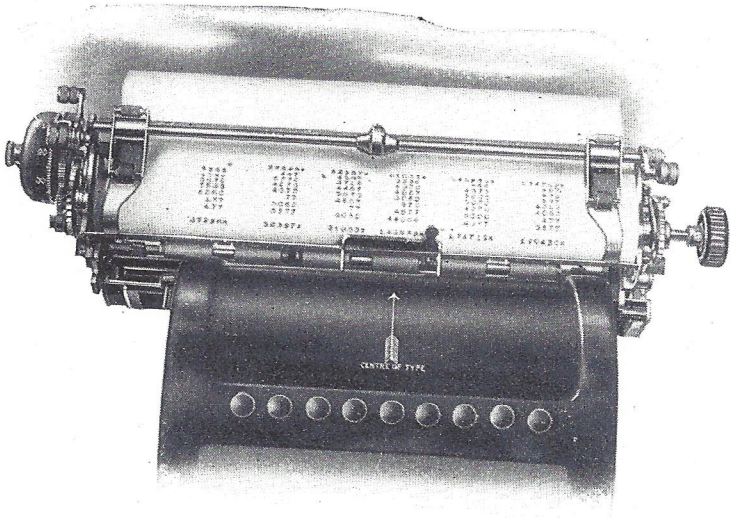


Fig. 44
The Burroughs Finder is the only device which enables the operator to locate the exact printing point instantly, both vertically and horizontally

WHEN the carriage is thrown back out of the printing position, a nickeled indicator with graduated edge (Fig. 44) falls on the paper with its edge at the exact printing line of the next item. The graduations on the finder show the lateral position in which the figures will be printed.

The Bell

ON the left side of those carriages which handle sheet paper, will be found a dial and bell (Figures 45, 46, 47) in connection with an automatic paper return lock. These, operating in conjunction, form a device which has three very important uses.

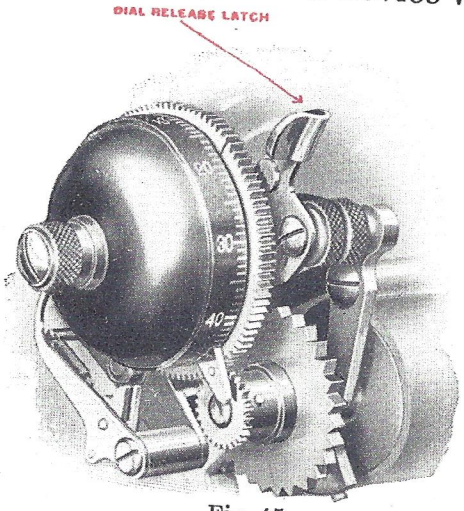


Fig. 45
The "15 Construction" Bell

1. It enables the user to start the various columns of a wide form on exactly the same horizontal line, without even looking at the work. (See Fig. 43.) To do this insert the paper so that the finder indicates the desired printing line of the first item, lift the dial latch and immediately depress it; this sets the paper return lock for the desired upper position. When

the first column is finished simply turn back the platen until it stops, shift the carriage and it will be found that the first item in the second column is printed in the same horizontal line with the first item in the first column.

2. The bell may be set to ring on completion of any desired number of items. If, for example, it is desired to list one or more columns of ten items each, turn the paper to the desired starting position, lift the dial latch and immediately depress it; pull out the knurled knob on the bell and turn it until the graduation 10 on the dial of the bell comes opposite the small pointer over the large gear. With the dial set in this position the bell will ring at the indicated number of items when the carriage is feeding single space. For double space set the pointer at twice the number of items desired, and for triple space set the pointer at three times the number of items desired.

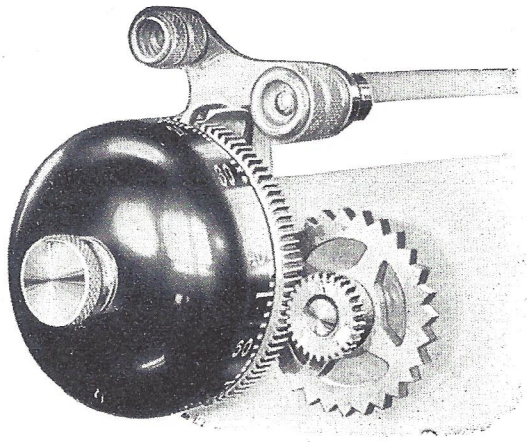


Fig. 46
The "18 Construction" Bell
The Bell Alarm, when set as desired, warns the operator that a specified number of items has been listed or that he has reached the end of his sheet

3. The device can be used to both begin and end the columns of figures at certain desired positions on the sheet, without determining the number of the items. The method of setting the device for this purpose is as follows: Insert the paper so that the finder indicates the desired printing line of the first item, lift the dial latch and immediately depress it; this sets the paper return lock for the desired upper position. Revolve the platen by hand thus feeding the sheet to the point where the finder will indicate the desired position of the last item. Pull out the knurled knob on the

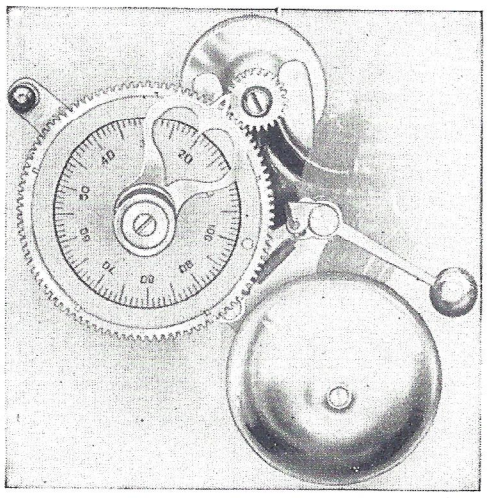
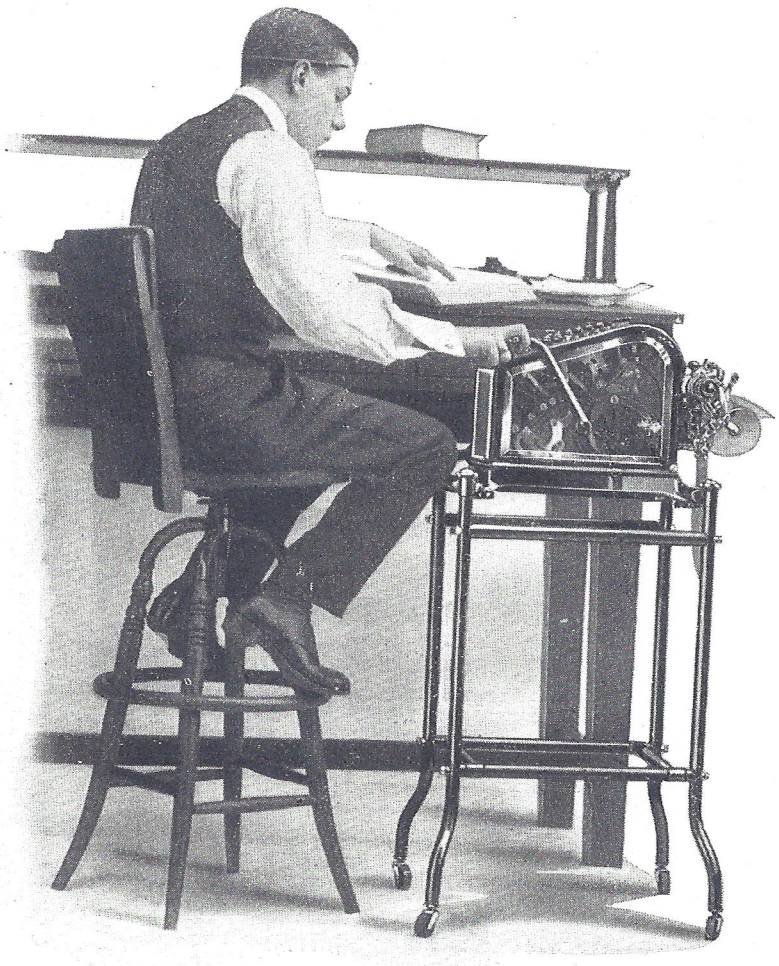


Fig. 47
The "10 Construction" Bell

bell and turn the bell to the left until it stops with the pointer at zero. Now revolve the platen backward until the return lock causes it to stop at printing position for the first item. Upon operating the machine the bell will ring when the sheet reaches the position fixed for the last item.

The bells furnished on 10, 15, and 18 Construction Carriages vary in the details of construction, but the principle of operation is the same. The pointer is set to the desired number on the dial, and the bell rings at the proper moment.



On the Burroughs Stand the machine can be easily moved to the most convenient place

Attaining Speed in Operation

IN fingering the keyboard, rapidity is gained by moving the hand toward the handle thus working *up* the keyboard. Time may also be saved when the same figure occurs twice in an item by depressing the two keys at the same time. For instance, if we wish to record the item $911.53, we should first depress the two 1's, using two fingers of the right hand, and then the 3, 5 and 9 in order, finishing with the hand in the position nearest the handle. The keys may be depressed in any desired order, taking care only that the figures fall in the proper columns. This system of working up the keyboard is also useful in case a correction is to be made in any column, as the hand finishes the item at a point near the Column Correction Buttons.

Some practice is of course necessary to accustom one's self to this method of operation, but the saving of time amounts to considerable in the course of a year.

Operating Handle Returns Automatically

WE strongly recommend that in operating the machine the right hand be used, both for depressing keys and for drawing the handle. This leaves the left hand free to turn checks or follow the items to be listed—(Fig. 49). Simply pull the handle forward as far as it will go and release it, when it will return to position automatically. This not only facilitates the operation of the machine, but it leaves the right hand free to depress the next item while the handle is returning.

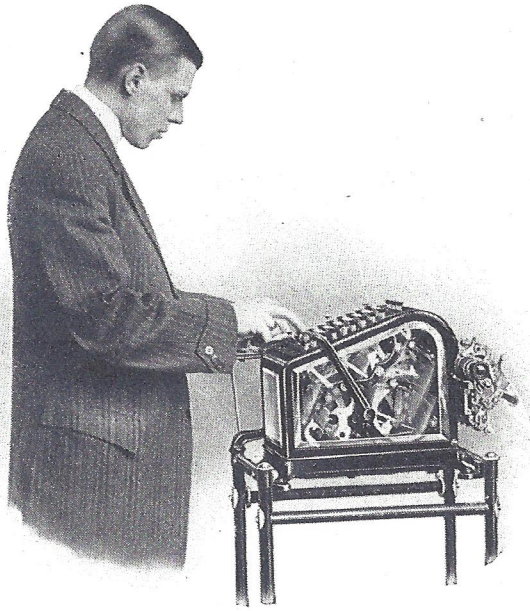


Fig. 49
The Burroughs handle pull is short, easy, and absolutely uniform in listing, totaling, or blank strokes

The Importance of Burroughs Symbols

WITHOUT the Burroughs arbitrary signs to distinguish various operations on the printed record, much of the value of an adding and listing machine would be lost. The operator could not tell when the work was "cold," exactly what he did or where he did it.

A difference in color is not enough—If this were the only method, carbon copies—those often essential duplicates—would be valueless; for the distinguishing color could not, of course, be recorded on the copy.

For every Burroughs operation, there is a special Burroughs symbol recorded on all copies every time the operation is performed. Absolutely no opening is left for confusion or doubt. The unmarked items only are *known* to be added in the grand total and a star printed at the beginning shows that the machine was clear.

In addition to symbols, color is also used in some cases, to call extra attention to various operations as well as to add to the appearance of the work; but without the star (*), the subtotal mark (S), the eliminating sign (#) and other specific Burroughs symbols for specific operations, the user would have to rely upon his memory for the details of his work. If he chanced to forget, as he most certainly would, his work would be useless, and would have to be repeated.

Burroughs symbols avoid this in every instance. Not only can the operator tell at any time exactly what he has done, *but so can any other person*, and this is the reason Burroughs Adding Machine work can be preserved *as permanent accounting records.*

This is the importance of Burroughs Symbols.

Special Devices on the
BURROUGHS

C. E. Fort Coal Company, Rockford, Illinois

Use a Burroughs to check weights of coal, figure gross, tare and net, keep accounts with their drivers and with their customers

machine for straight listing and adding.

In nearly all machines equipped with the split and normal device, it is desired to list and not add in the left hand section set at "date" or "split." Such machines may be arranged

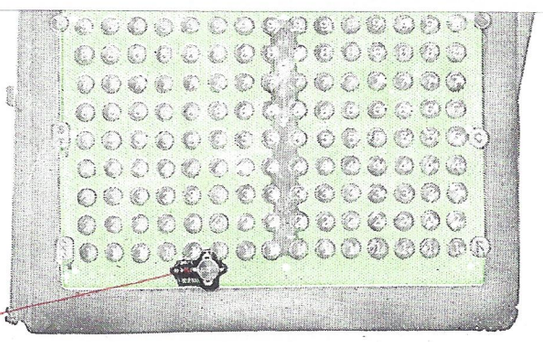


Fig. 52

Removable markers are furnished for convenience in marking location of splits

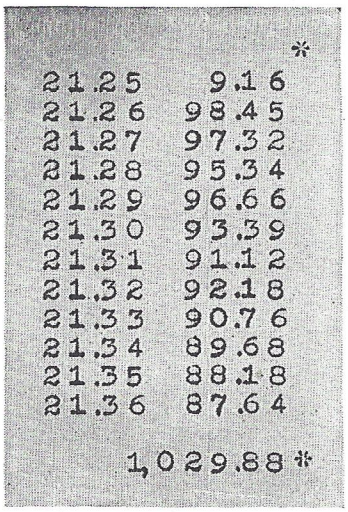


Fig. 53
Extended Total

(without extra charge) to give an extended total; that is, the total from the right hand section is extended across the split, giving the right hand adding section a totaling capacity greater than its listing capacity. In the sample of work shown in figure 53, the four left hand columns are for numbers; the five right hand columns are for amounts; the total extending across the split into the adding wheels to the left. The extended total may also be had on a machine with permanent split.

Date, Count and Normal Device

THIS feature is controlled by a movable button operating in a small plate on the keyboard just below the row of "1" keys. When the button is at "Normal" position, the machine will list and add to its full capacity.

By simply moving the button to "Date" position, the machine is split to list dates in the left section and to list and add amounts in the right hand section. This is the position used in making monthly statements. The left hand "date" section of the machine does not add. In "date" position the machine is also used in classifying sales by days, clerks, or departments; the abstract number being printed in the left section and the amount being listed and added in the right. It is also used for classifying values by order, case, or style number.

With the controlling button in "Count" position the machine counts, in the left section, the number of the items listed and added in the right hand section; it automatically omits to count either blank strokes or eliminated (#) items. When the total of the items is printed, the number of the items is also printed to the left of it.

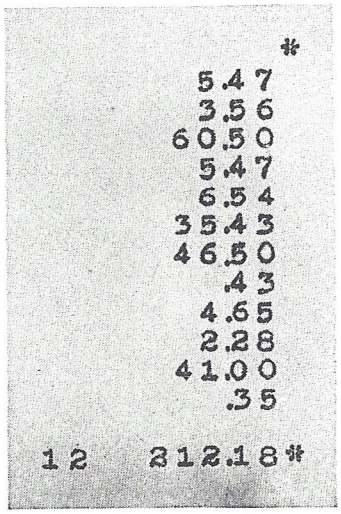


Fig. 54
Only the items that are added in the right hand section are automatically counted in the left

The Variable Split Device

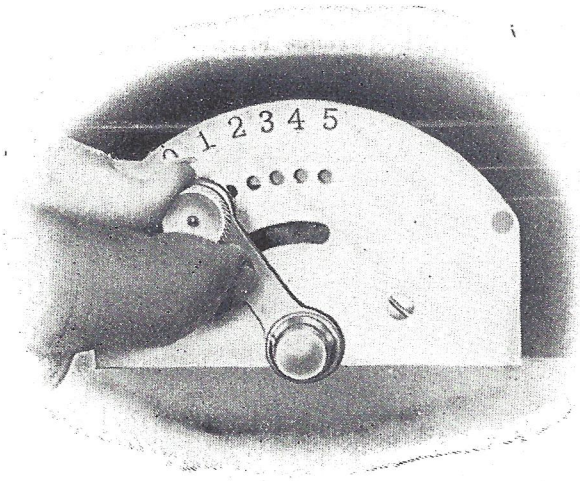


Fig. 55
Merely shift this lever to get arrangement of columns wanted

THE Variable Split is controlled by a small handle moving in front of a graduated plate on the lower part of the front case (Figs. 55-56). Five different "splits" are usually provided, besides the normal, though a sixth split may be had in place of the normal. It may have a keyboard button, which determines whether or not the different divisions of the machine shall list and add, or list only. Extended total may be had without charge.

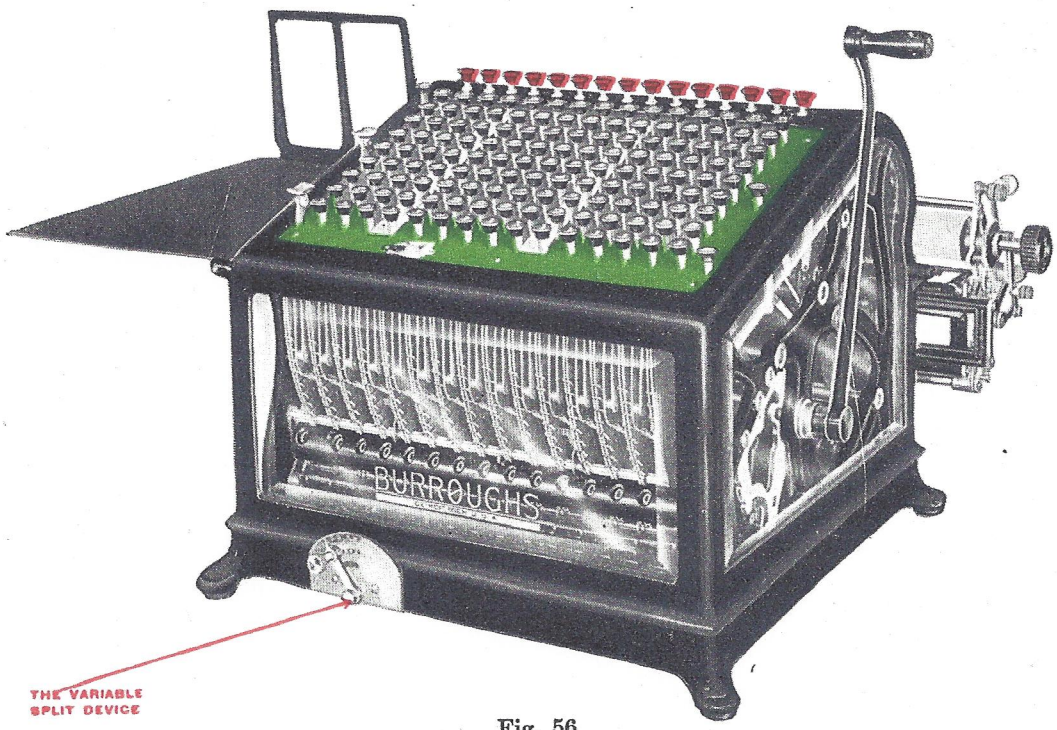


Fig. 56
The variable split device turns a single Burroughs into a number of machines suitable for a great variety of purposes

The Tag.—Variable Split machines are delivered with a tag attached, which gives the location of the different splits for every possible position of the splitting mechanism. Full explanation is given on the back of the tag.

The Burroughs Electric Drive

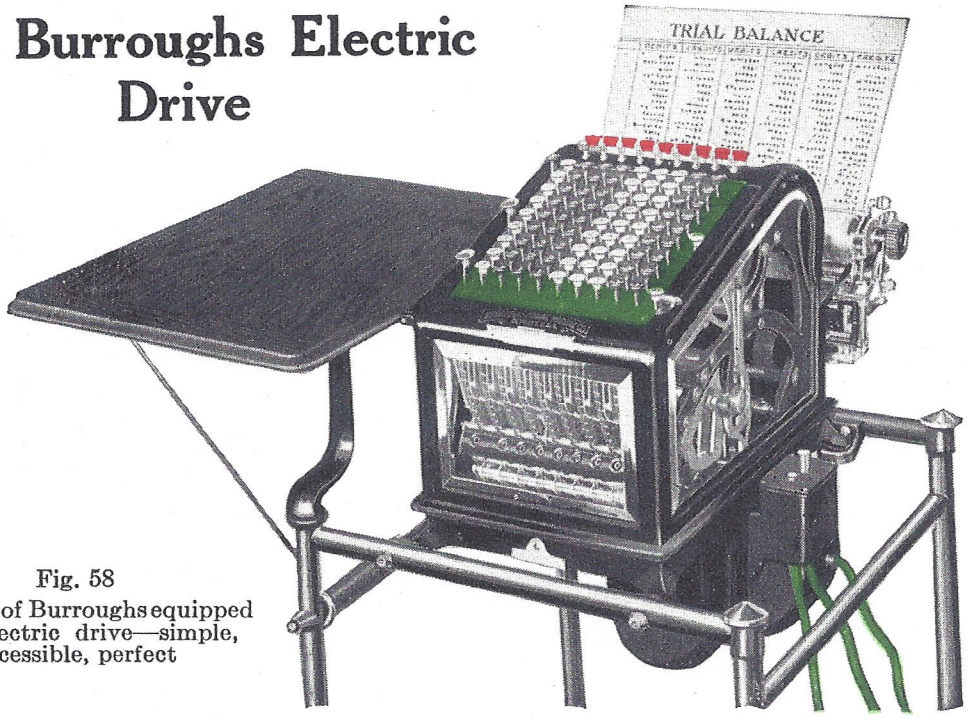


Fig. 58
Side view of Burroughs equipped with electric drive—simple, accessible, perfect

ANY Burroughs Adding and Listing Machine can be furnished equipped with electric drive (Fig. 58), except the very smallest. With the Burroughs Electric it is necessary only to touch a bar with the finger to operate the machine, as the motor takes the place of the handle pull.

If, however, for any reason it is desired to operate the machine by hand, it is but the work of a moment to attach the handle in the same manner as described in the first section of this book—(Page 21).

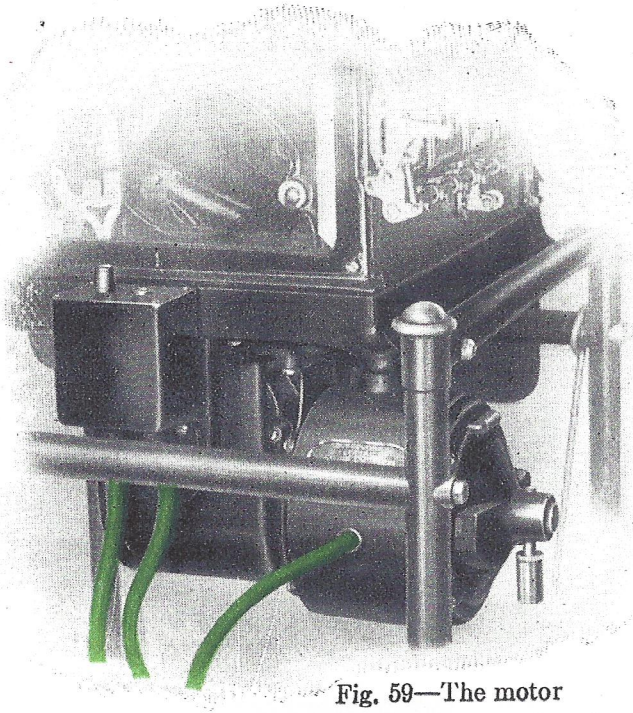


Fig. 59—The motor

The Burroughs motors (Fig. 59), are furnished to run on any commercial current, either alternating or direct, and consume about as much current as an ordinary 16 c. p. lamp. When the machine is not in use the current is disconnected by means of the flush switch at the right side of the case.

The motor is fully covered by the Guaranty.

General Directions for the Use of the Burroughs Electric

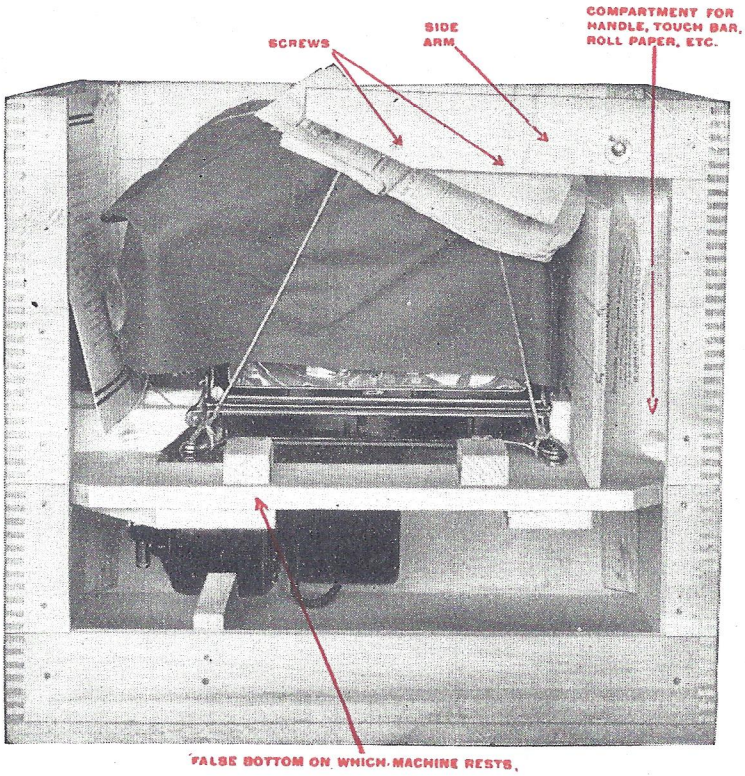


Fig. 60 Electric machine packed as received

ELECTRIC machines are packed in special cases—Fig. 60. The stand is crated separately, and should be unpacked first. In unpacking the machine, proceed exactly as directed on page 17 until ready to remove the machine from the box. Grasp the cords with the right hand, and tip the machine slightly towards the back, just enough to get the left hand under the middle of the base at the front—Fig. 61. Now, with the right hand under the printing frame at the rear and still tipping the machine toward the back, lift it carefully up and out of the box. Be sure that the motor clears the false bottom on which the Adding Machine rests. Place the machine on the stand, after which the hood, the cords, etc., which hold the printing carriage in position, may be removed. Insert the operating handle in the machine before attempting to connect with the electric current, and operate the machine several times to be sure that it has not been injured in any way in transit.

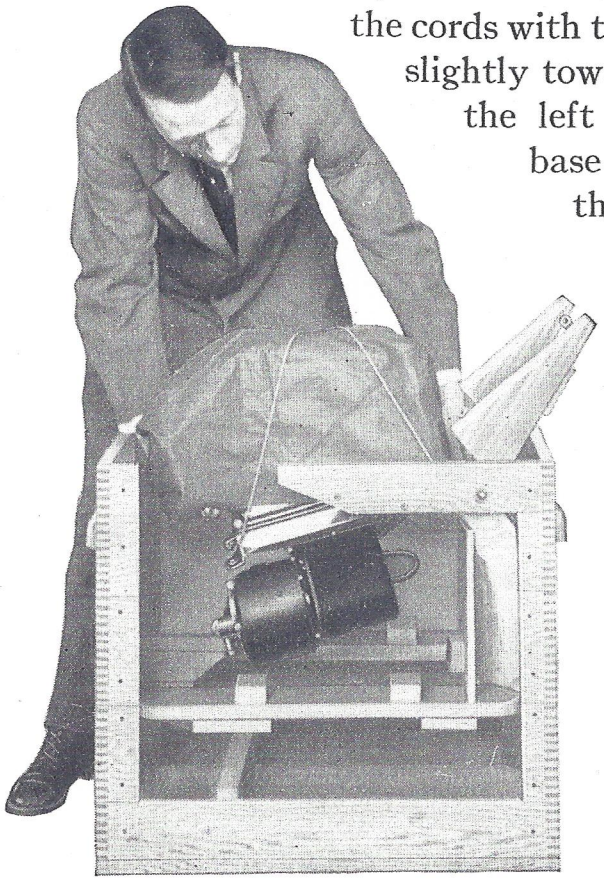


Fig. 61
Lift the machine out of the box by means of the cords, taking care that the motor clears the false bottom

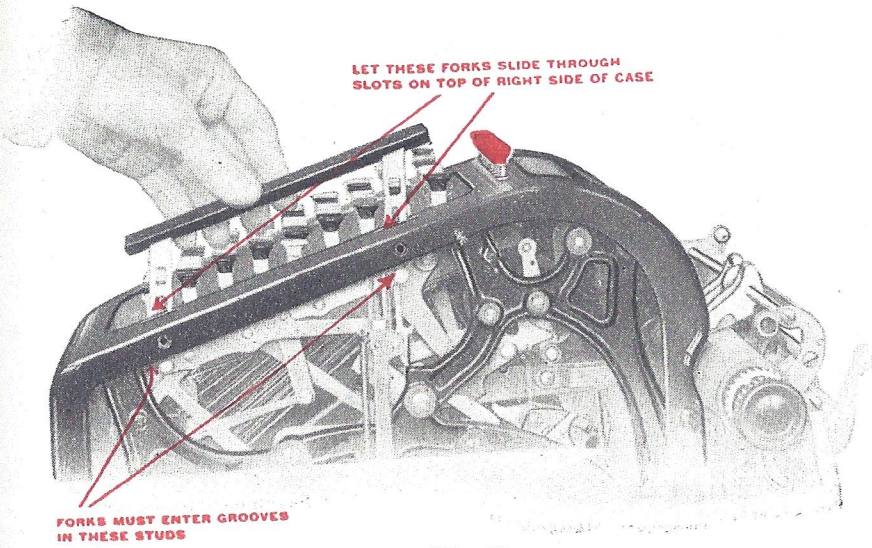


Fig. 62
Insert the forks on the touch bar through the slots in top of case

Remove the handle, also the two screws on the right hand upper edge of the case near the Correction (or Error) and the Repeat Buttons, and insert the touch bar through the slots in the top of the case (Fig 62) with the forks under the bar riding over the grooved studs inside the machine.—Fig. 63. (These may be seen by looking through the right hand glass panel.) Replace these screws to hold the touch bar in position, but see that the bar is free to operate and is not binding in any way.

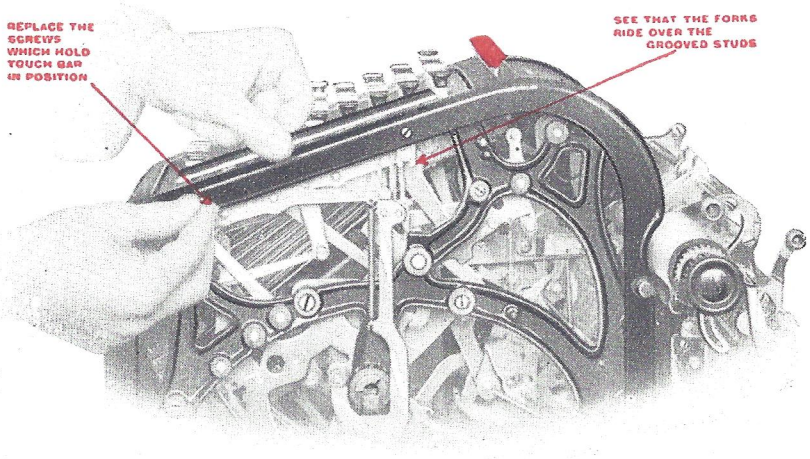


Fig. 63
See that the forks ride over studs beneath. Replace the screws which hold touch bar in position

Before connecting the motor with the nearest electric light socket, examine the name plate on the motor casing (Fig. 64) to see if the current corresponds. If the current is alternating, the *voltage and cycles* should correspond with the marking on the motor. If the current is direct, the *voltage only* may be considered. A variation of 10 volts, higher or lower, will not make any particular difference. **Always turn off the current when not using the machine.**

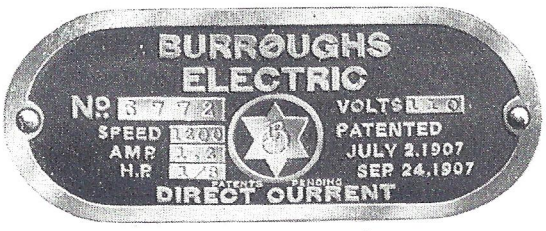


Fig. 64
Examine the name plate to see if the current supplied corresponds

One User's Philosophy

"WHEN I buy for service, I would rather know the firm which makes the machine than to listen to wearisome talks about superior materials and brilliant engineering skill.

¶ I don't know much about those qualities of different metals which make them the best for different purposes—nor do I know anything of the technical laws of mechanical engineering—but I do know human nature.

¶ I know that a concern with the right ideals of service to its customers—the concern that has succeeded—has done so because its product has made good with the people who bought it.

¶ I'll bet on that concern—and I feel comfortable when I have bought its product.

¶ It isn't good business for me to trade anywhere else. I cannot afford to do so."

How to Care for the
BURROUGHS

Store of R. J. Nickles, Madison, Wisconsin

With his Burroughs, Mr. Nickles knows, each day, his sales, costs and profits. He knows which goods bring most profit and which clerks sell profit goods
This knowledge helps him make more money

To Remove the Case

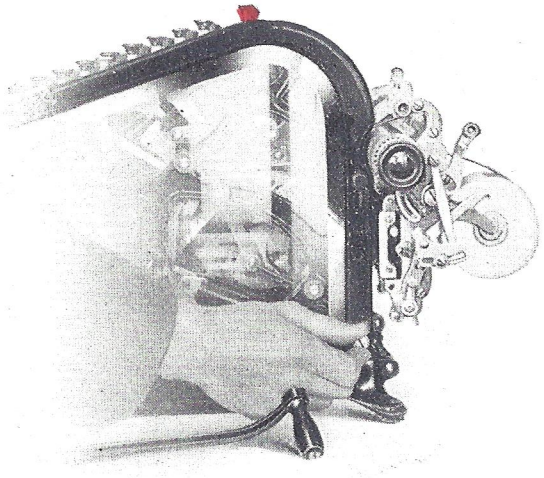


Fig. 67
Remove the knurled screws from back frame

REMOVE the handle from the machine by turning it back as far as possible and pulling it out. Remove the two screws at the lower back corners of the case—Fig. 67. Insert the key in the lock at the front, making a quarter turn to the left and at the same time lifting the case about ¼ inch—Fig. 68.

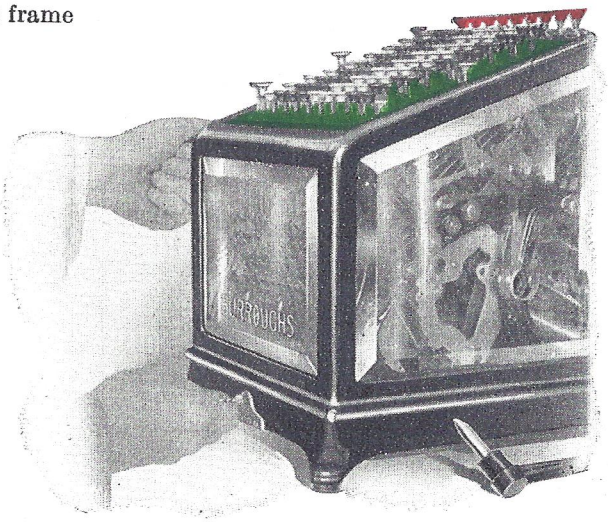


Fig. 68
Unlock by making quarter turn of key

Holding the case in this position, release the key, and lift the case straight up and off the machine—Fig. 69.

On swing-back machines remove the small stud roller and hexagon nut on the vertical feed slide under the carriage.

Slide the carriage to the right as far as it will go, and remove the screw which is plainly visible in the stationary casting of the carriage. Then slide the carriage to the left, and remove the screw on the other side, when the back of the case will swing down out of the way.

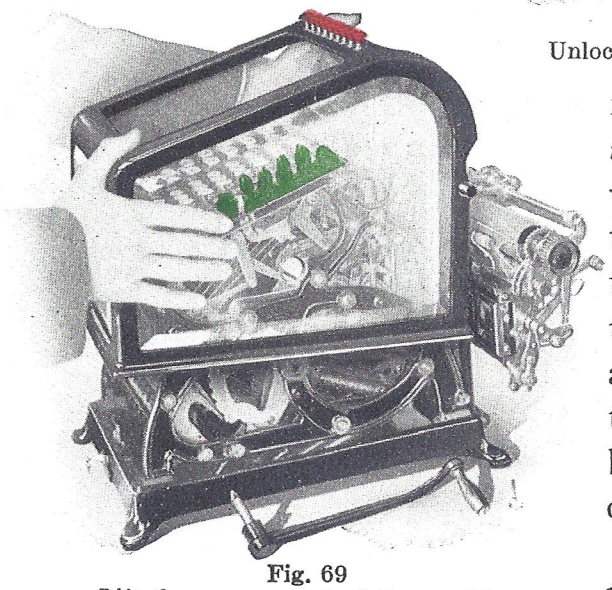


Fig. 69
Lift the case up and off the machine

To remove the case on a machine not having the

swinging back, the carriage of which has a platen 12¼ inches or larger, take off the carriage by removing the four screws which are located in the stationary casting of the carriage directly behind the side frames. Then remove the stud, roller and nut on the vertical feed slide, and the four screws fastening the back to the side frames. Then proceed as directed on page 56.

To replace parts on this style machine; put on the case, replace the two screws in the lower back corners, put the back in place and fasten it to the side frames by the four screws. Replace the stud, roller and nut on the vertical feed slide. Fasten the stationary casting of the carriage to the side frames by the four screws, taking care that the rod between the castings fits into the slots of the upper part of the paper feed connection. Operation of the machine depends on getting the rod in the slots.

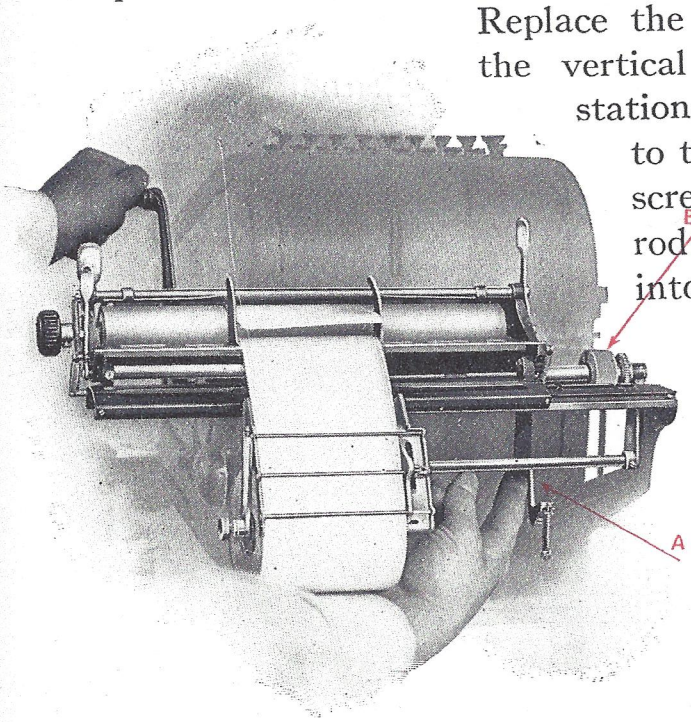


Fig. 70—Unhook small arm

On a machine not having the swinging back, the carriage of which has a platen 10¼ inches wide, first pull the handle forward to within about an inch of the full stroke where it will remain because the full stroke has not been taken, press the handle backward and remove it, then with your finger unhook the small arm (A) in the lower right-hand corner of the back of the machine—Fig. 70. Then loosen the two outside metal feed rollers (B) which drive the platen, and move them toward the center on their shaft, after which the case may be unlocked, lifted about ¼ inch at the front, pushed ¼ inch toward the back and lifted vertically off the machine.

To replace parts on this style machine: put on the case, making certain that the arm (A) enters the slot in the rear of the case, fit the case snugly to the base; push the two metal feed rollers (B) to the extreme ends of their shaft and fasten

them there by the set screws; look through the glass panel and with your finger hook the end of arm (A) over the stud on the feed mechanism inside the case; replace the handle, complete its stroke and the machine is ready to operate.

To Remove Old Ribbon

AFTER removing the case, grasp the ribbon and pull it off the lower ribbon shaft until you reach the tape to which the ribbon is pinned. Remove the pin which holds it to the tape on the lower shaft, and then pull the ribbon off the upper shaft, removing the pin at the end from the slot in the shaft.

To Put on New Ribbon

BURROUGHS ribbons are wound on metal spools, ready to go into the machine. Enclosed in each ribbon box will be found instructions, including a diagram of the position of the ribbon in the machine.

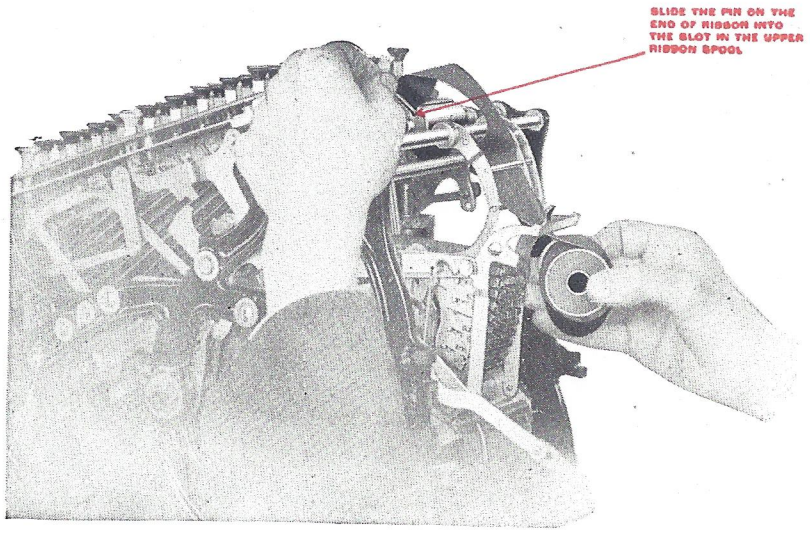


Fig. 71
Thread the ribbon through the guides

Holding the ribbon spool in the right hand, thread the ribbon through the guides (Fig. 71) and insert the pin at the end of the ribbon into the slot in the upper ribbon spool, holding the long end of the pin in the left hand.

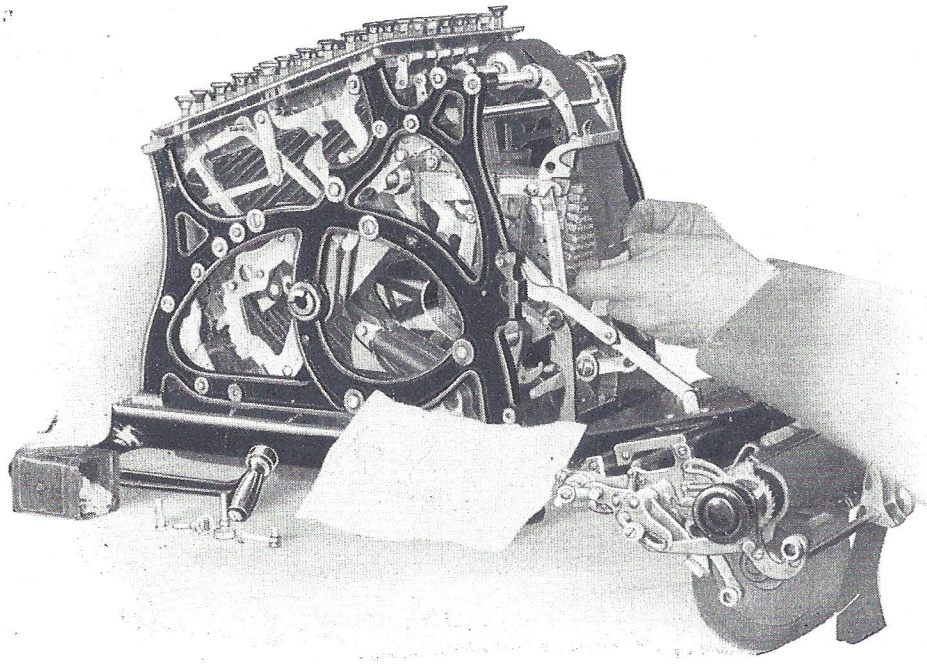


Fig. 72

The ribbon is made accessible by removing case and swinging down back—an operation requiring less than a minute

Lay the ribbon spool conveniently near and in line with the guides, so that with an ordinary cord wound about the two ribbon shafts (Fig. 73) the ribbon can be wound slowly upward and over the upper shaft. As it reaches the end, draw out the piece of tape attached to the lower ribbon shaft and pin the ribbon to it—Fig. 72. See that the tape and ribbon are pinned about the center, so that the ribbon will run straight, and under the little roller marked 705 on the printed instructions in the ribbon box.

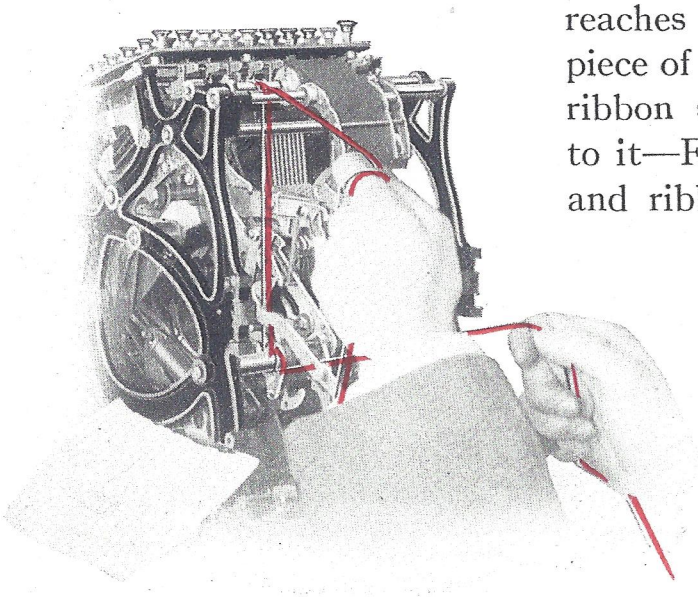
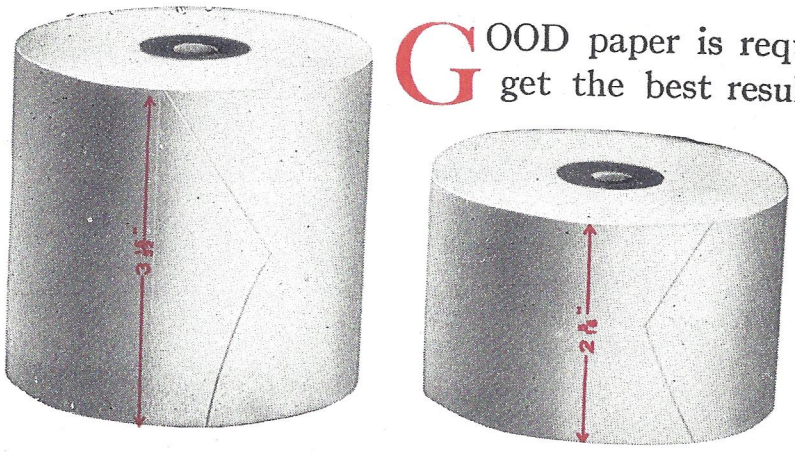


Fig. 73

Wind the ribbon on upper ribbon shaft by means of an ordinary cord wound about the upper and lower shafts

Take up the slack in the ribbon by revolving the upper ribbon shaft with the fingers.

Burroughs Paper



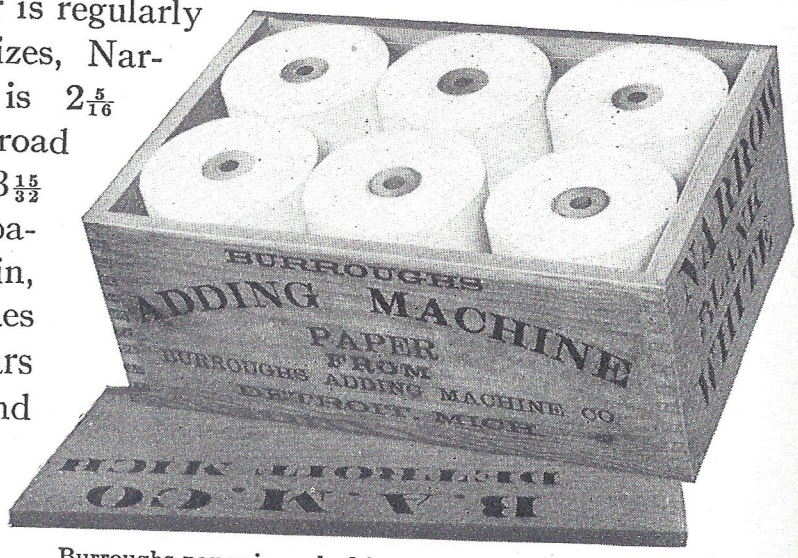
Narrow and broad paper

GOOD paper is required in order to get the best results from the operation of the Burroughs. It must be of such strength that it will not tear under the tension required for feeding in the carriage; it must have a surface that will take a clear impression and give carbon copies; and above all it must be free from "paper lint."

This latter is most important. After each operation the paper is torn off, and ordinary paper will deposit minute particles, or lint, which fly into the mechanism and ultimately cause mechanical trouble.

After considerable difficulty we have obtained a paper which is made at one of the largest mills to our special order, and which we recommend as being almost entirely free from such defects.

Burroughs paper is regularly furnished in two sizes, Narrow paper which is $2\frac{5}{16}$ inches wide, and Broad paper which is $3\frac{15}{32}$ inches wide. This paper is furnished plain, or ruled with red lines between the dollars and cents columns, and between the hundreds and thousands of dollars.



Burroughs paper is packed in wooden boxes containing 12, 25, 50 or 100 rolls

Monthly Statements in Rolls

Statement heads in rolls ready for use on the machine

Many concerns are making Customer's Monthly Statements on the Burroughs, printing the dates and the amounts and adding the amounts at one operation.

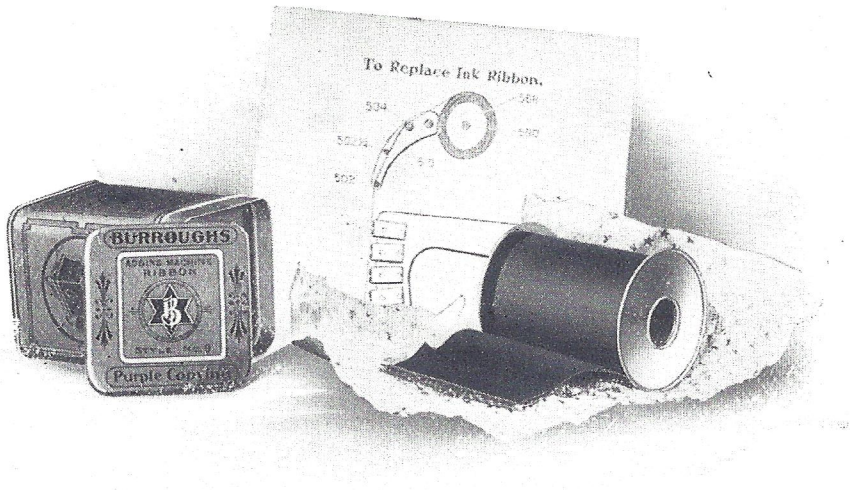
At considerable expense, special machines have been installed, to turn out regular printed statement heads in rolls. This enables the user to put a roll of statement heads in position in the carriage, and as fast as a statement is made to tear it off and go on with the next.

Bond paper is used exclusively in making roll statements.

All roll paper is tightly wound on wooden cores.

Apply for paper to the Burroughs Office nearest you, and state whether ruled or plain paper is desired. Also please state whether shipment is to be by freight or express.

Burroughs Ribbons

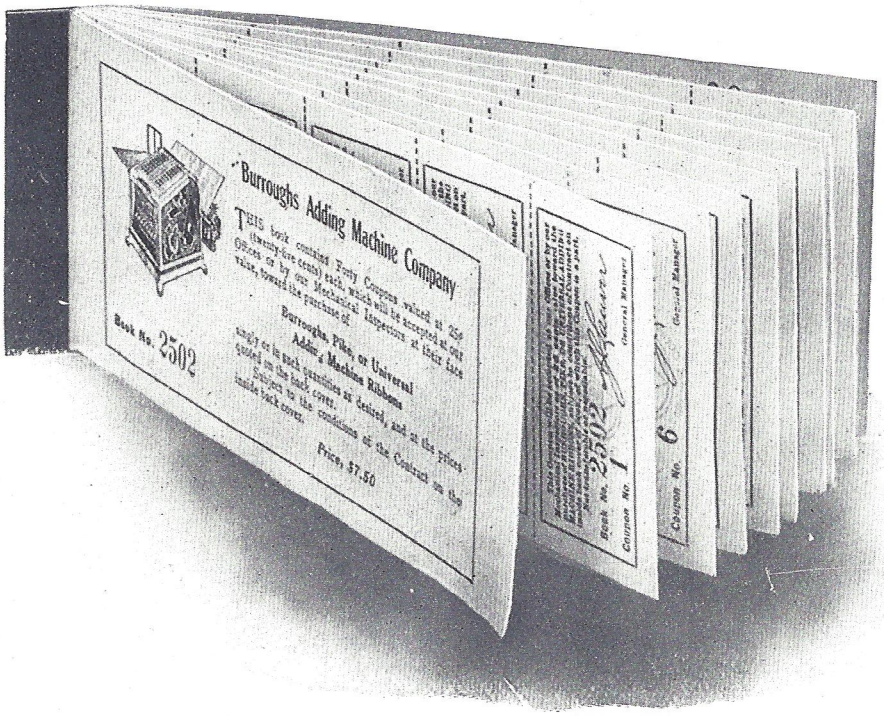


Each ribbon is carefully packed in a metal box

THOUGH the item of ribbon expense is small, it is none the less important to get the best service in this particular.

Burroughs ribbons are made of woven fabric, especially designed to retain the ink, give a clear impression, and prevent ravelings, which are liable to get into the mechanism when inferior ribbons are used. Every Burroughs ribbon is packed in a metal box, wound on a metal spool and wrapped in tin foil. Each ribbon is full eighteen feet long, and as the ribbon feeds vertically the full width is used, and one ribbon will last a long time.

For the convenience of our users we issue Coupon Ribbon Books at reduced rates which can be exchanged for ribbons as needed.



Coupon book can be purchased at reduced rates which can be exchanged for ribbons as needed

Subtraction, Multiplication and Division

Checking Invoices, Figuring Discounts, Computing Interest

Bert M. Allen, Ice Cream Manufacturer, Rockford, Ill., figures costs, checks invoices for materials and supplies, makes out bank deposit slips, lists C. O. D.'s, balances his books and totals deliveries on a Burroughs

Definitions

Minuend . . . . . The number from which another is to be subtracted.

Subtrahend . . . . . That which is to be subtracted.

Multiplicand . . . A number to be multiplied by another.

Multiplier . . . . . A number by which another is to be multiplied.

Dividend . . . . . A number to be divided.

Divisor . . . . . That by which a number is divided.

Complement . . . The complement of a number is another number, which, when added to the first number, will give a sum equal to ten, or a power of ten, *i.e.*, 10, 100, 1000, 10000, etc. Thus the complement of 7 is 3; of 38 is 62; of 3467 is 6533.

Subtraction

TO perform subtraction on the Burroughs, it is only necessary to add to the minuend the *complement* of the subtrahend and also all of the 9's to the left of the subtrahend. The result will be the remainder.

To determine the complement of a number commence at the left of the number and add to *each* figure enough more to make 9—except to the last figure, add enough to make 10. When the last right hand figure or figures are ciphers, disregard them, adding enough to make ten to the last figure which is not a cipher.

Suppose we desire to find the complement of 1604. Commence at the left and set down under the 1 an 8, under the 6 a 3, under the 0 a 9, under the 4 a 6. These figures, 8396, are the complement of 1604.

The complement added to the first number will make 10,000 or the 4th power of 10.

```
             *
      298.72
       16.04 #
9,999,983.96

      282.68 *
```

If it is required to subtract 1604 from 29,872, we first put the minuend, 29,872, in the machine. Then strike the complement of 1604, viz. 8396, as illustrated, also all of the 9 keys to the left of the subtrahend, 999998396, pull the handle and the result on the dials will be the remainder, or 28,268.

The object in striking the row of 9's is to carry the 1, which would otherwise appear on the dial to the left of the remainder, out of and beyond the capacity of the machine. It will be seen by this that subtraction is but complementary addition. We simply add to the minuend the complement of the subtrahend and carry the resulting 1, at the left, out of the machine.

Multiplication

MULTIPLICATION on the Burroughs is repeated addition. To multiply 55566 by 435. First lock the repeat button in depressed position. Then depress the keys corresponding to the multiplicand, 55566, and pull the handle five times. This operation will appear on the paper as illustrated—Fig. 75.

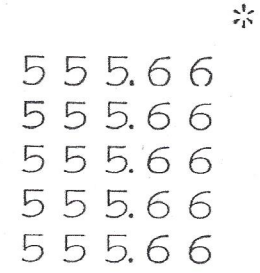


Fig. 75
The Number Multiplied by 5

Now release the keys by depressing the correction button and set the multiplicand, 55566, over one column to the left. Then, keeping the repeat button depressed, pull the handle three times. This multiplies the multiplicand, 55566, by 30, and the operation appears as shown—(Fig. 76).

Then, again release the keys by depressing the correction button and set the multiplicand, 55566, over one more column to the left. With the repeat button depressed, pull the handle four times.

This multiplies 55566 by 400 and completes the operation as shown in Fig. 77.

Then release the keys with the correction button, make a spacing stroke, and take the total in the regular manner. The product, 24171210, will be transferred to the sheet of paper as shown in Fig. 77. Release the repeat key if no further multiplications are to be made.

If it is desired to print only the product on the paper, without showing the intermediate processes of obtaining it, throw back the carriage out of printing position while the multiplication is made. With the carriage

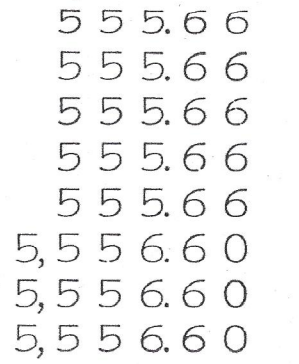


Fig. 76
The Number Multiplied by 35

thrown back, the amounts are not printed and the paper roll does not feed, but the accumulation continues. When ready to print the product, simply restore the carriage to its printing position.

Multiplication is especially easy when the electrically operated Burroughs is used. It is not necessary to pull the handle for every item repeated.

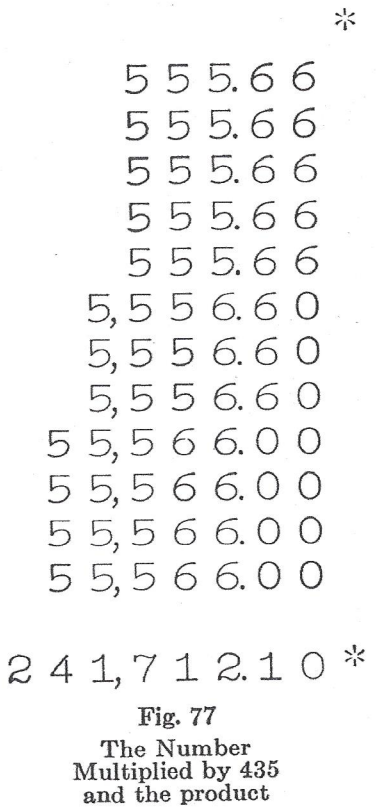


Fig. 77
The Number Multiplied by 435 and the product

Method, When the Multiplicand is in the Machine

WE will assume that the dials show 181,473 and it is required that this amount be multiplied by 766. It is obvious that having the multiplicand on the dials, it will only be necessary to add to it 765 times itself to produce the correct result.

Lock down the repeat button. Then set 765 on the keys so that the 5 comes directly over the left hand figure 1 on the dial. Then with the eyes on the dials pull the handle as many times as the figures on the dials show. Thus one stroke at the beginning as there is a 1 on the dial. Then release the keys by pressing the correction button and set the multiplier 765 one place *to the right* and pull the handle eight times because 8 is the next figure to the right on the dials. Then continue setting the multiplier one place to the right and pull the handle as many times as the corresponding figures on the dials show. Finally release the keys, make a spacing stroke and take the total. The dials then read 139,008,318, which is the product of 181,473 times 766.

This method of working from left to right is advantageous where an addition has been made which requires the total to be multiplied. Using this method it can be done without

cancelling the machine, setting the figures down on paper or memorizing them. This is particularly useful in computations of interest where one multiplication is made and the product is multiplied by another amount.

Division

DIVISION on the Burroughs Adding and Listing Machine is somewhat more difficult to explain in print than addition, multiplication or subtraction, but the process is quite simple when once it is learned.

Example—Divide 3455 by 15.

In the first place, to more readily explain the process, we must consider that the division of 3455 by 15 means practically the process by which we find out how many times 15 can be subtracted from 3455. In order to do this we first put 3455 in the machine. We now endeavor to find out how many times the divisor (15) is contained in the first two figures (34) of the dividend 3455.

Use the complement of the divisor throughout.—Put the complement of 15, which is 85, on the keyboard in the columns directly over the dial wheels in which the number 34 appears. Depress 9 in the first column to the left of the figures 85 (depressing the 9 causes the machine to carry into the next column to the left).

With the repeat button locked down pull the handle once.

The dials now show 000101955, and the two dials which formerly showed 34 now show 19. 15 has therefore been subtracted from 34 once. As 19 is larger than 15, pull the handle once more. The dials now show 000200455 and the two dials which originally showed 34 now show 04. 15 has been subtracted from 34 twice, leaving a remainder of 4 and the first subdivision is finished.

It now becomes necessary to "bring down" the next figure (5) of the dividend and this is done by moving the complement of the divisor one space to the right. To do this release the depressed keys by means of the correction button and depress

the same keys (985) one column further to the right, the 85 appearing in the columns directly over the dials which read 45 and the 9 in the first column to the left.

After pulling the handle three times we find that two ciphers appear on the dials where the figures 45 appeared before. We have, therefore, subtracted 15 from 45 three times, leaving no remainder.

The next step would be to bring down the fourth figure (5) of the dividend, but that will not, of course, contain the divisor 15, hence our problem is finished. Looking at the dials we find that 15 has been subtracted 230 times from 3455, leaving a remainder of five.

Depress the correction button to restore the depressed keys, make the usual spacing stroke, and take a total. This will show the amount 230005. This is read $230\frac{5}{15}$.

Always point off from the right as many spaces as there are figures in the divisor. Cross out one cipher to the left of this point. The figures on the left of the cipher which we have crossed out represent the integral part of the answer. The figures on the right of that cipher represent the numerator of the fractional remainder, the denominator being, of course, the same as the divisor.

Second Method of Division

THE second method of division is preferred by some users especially those dealing with large problems, as it does not require the use of the 9, thus omitting the cipher between the quotient and remainder and increasing the capacity of the machine for division.

Example—Divide 122345 by 387.

Set the dividend in the machine so that it will appear on the dials. Now take the complement of the divisor, *i. e.*, 613, and with the repeat button locked down set it over the first group of figures in the dividend that will contain the divisor at least once. In this example, it comes over the figures 1223 on the dials. This will cause the divisor to act on the first four figures of the dividend only.

The first figure on the dials to the left of the complement is 1. Consider the dial on which this 1 stands as the stroke wheel, and because it reads 1, pull the handle once. Keep the eyes on the stroke wheel until it ceases to advance.

After the first handle-pull the stroke wheel does not advance, therefore, forget it from now on, but consider the three figures on the dials immediately to the right of the stroke wheel. As they show an amount greater than the divisor 387, continue to pull the handle until these figures become less than the divisor. Two pulls of the handle are sufficient, and the dials now show as the result of the first subdivision a quotient 3 and a remainder 062.

Now shift the complement of the divisor one column to the right, thus "bringing down" one more figure (2) in the dividend. The stroke wheel now shows 0 which indicates that there are no handle pulls to be made on account of the stroke wheel, therefore, forget it, but consider the next three figures (624) to the right of it on the dials. As they show an amount greater than the divisor (387) pull the handle until the amount becomes less than the divisor. One handle pull is sufficient, and the second subdivision is finished, giving a quotient 1 and a remainder 237.

Now bring down the last figure (5) of the dividend by moving the complement of the divisor one more place to the right. The stroke wheel is now 2, therefore pull the handle twice. This causes the stroke wheel to advance one unit, therefore pull the handle once. This again causes the stroke wheel to advance one unit so pull the handle once more. This time the stroke wheel remains stationary, hence forget it, but as the next three figures (827) to the right of it are larger than the divisor continue to pull the handle until they become less. Two strokes are sufficient and we have the final answer—quotient 316 and remainder 053.

Release the keys by the correction button, make a spacing stroke and print the total. Point off in the answer as many places from the right as there are figures in the divisor. The figures to the left of the point are the integral part of the quotient and those to the right of the point are the numerator of

the fractional remainder, the denominator being, of course, the divisor. The complete answer is therefore read $316\frac{53}{387}$.

NOTE—The total number of handle-pulls on account of the Stroke wheel must always equal the final figure on that wheel.

To carry out the remainder as a decimal fraction.—In the example cited above this is performed as follows: first set the dividend in the machine two columns farther to the left than in the first instance. This, in a No. 9 Machine, will put the first figure of the dividend in the column next to the extreme left column of the machine and cause the dials to read 012234500. We have, in effect, taken a dividend one hundred times as large as the example calls for. The answer that we will get will, therefore, be one hundred times as large as the correct answer.

```
                    *
122,345.00
 61,300.00
 61,300.00
 61,300.00
  6,130.00
    613.00
    613.00
    613.00
    613.00
    613.00
    613.00
    613.00
     61.30
      6.13
      6.13
      6.13

316,132.69 *
```

Place the complement of the divisor over the dials 223 and continue exactly as described above, until the last subdivision is made which will, in this case, cause the dials to read 013605300.

Then continue the process of division. Move the complement of the divisor one place to the right, the stroke wheel is zero, forget it, but pull the handle until the next three dials (530) show an amount less than the divisor. One pull is enough. Move the complement of the divisor one more place to the right, the stroke wheel is 1, pull the handle once; it advances to 2, pull it once more, it remains stationary; but the remainder is still greater than the divisor, so pull it once more.

We have now come to the right of the keyboard. Release the depressed keys by the correction button, make a spacing stroke and print the total which reads 31613269.

To separate the whole number from the decimal, always point off in the answer as many places as there are figures in

Table of Decimal Equivalents

	6ths	7ths	8ths	9ths	11ths	12ths	13ths	14ths	15ths	16ths
1.....	.1667	.1429	.125	.1111	.0909	.0833	.0769	.0714	.0667	.0625
2.....	.3333	.2857	.25	.2222	.1818	.1667	.1538	.1429	.1333	.125
3.....	.5	.4286	.375	.3333	.2727	.25	.2308	.2143	.2000	.1875
4.....	.6667	.5714	.5	.4444	.3636	.3333	.3077	.2857	.2667	.25
5.....	.8333	.7143	.625	.5555	.4545	.4167	.3846	.3571	.3333	.3125
6.....		.8571	.75	.6667	.5455	.500	.4615	.4286	.4000	.375
7.....			.875	.7778	.6364	.5833	.5358	.5000	.4667	.4375
8.....				.8889	.7273	.6667	.6154	.5714	.5333	.5
9.....					.8183	.75	.6923	.6428	.6000	.5625
10.....					.9091	.8333	.7692	.7143	.6667	.625
11.....						.9167	.8462	.7857	.7333	.6875
12.....							.9231	.8571	.8000	.75
13.....								.9286	.8667	.8125
14.....									.9333	.1875
15.....										.9375

NOTE—See "The Use of Decimal Equivalents in Multiplying Fractions" on page 73.

the divisor plus the number of places the dividend has been set over. In this example, we must point off five places because there are three figures in the divisor and the dividend was set over two places. Thus the answer reads 316.13269.

Setting the dividend in the machine two columns to the left makes the decimal absolutely accurate to the second decimal place but after that merely approximate. If absolute accuracy to the third decimal place is desired set the dividend in the machine three columns to the left, if to the fourth place, four columns to the left, as is possible in the larger Burroughs or with small dividends.

NOTE—In no case can the dividend be set in the machine, beginning with the extreme left column. This one column at least, must be left unused.

The Use of Decimal Equivalents in Multiplying Fractions

THE table of decimal equivalents on page 72 will be found useful when it is desired to use the Burroughs for any purpose which involves the handling of fractions such as checking up invoices, etc.

The denominators (or fractional parts into which the unit is divided) will be found in the first horizontal row of the table. The numerators (or number of fractional parts making up any particular fraction) will be found in the first column to the left of the table. To find the decimal equivalent of any desired fraction, pick out the denominator in the first horizontal row, run down the column in which it appears until you come to the decimal in the same horizontal row as the numerator of the fraction. This is the decimal equivalent of the fraction in question. In a reverse manner, a decimal being given, the approximate fractional equivalent can be found.

Using this decimal equivalent in place of the fraction, multiply in the usual manner and point off from the right of the product as many figures as there are places in the decimal. It will be noticed that the decimal equivalents for 3rds, 4ths, 5ths, and 10ths are not given in the table—these being perfectly obvious or instantly ascertainable.

Checking Invoices

BILL clerks make mistakes now and then and bills containing errors do go out from even the largest concerns, as they will testify. It is not safe to pay invoices until they have been refigured and found correct.

The Burroughs can be made extremely valuable in this work alone. Take an invoice like the following, for instance:

25	yds.	gingham at	$	.15
124½	"	silk	"	2.16
8½	"	muslin	"	.03¼

As a rule only the total of the invoice is wanted, and we will show how it may be figured rapidly and accurately on the machine. First, we will consider the division between the 5th and 6th columns of keys as the decimal point, the black and white keys marking this on the keyboard and the comma marking it on the paper. Considering the first item of the invoice, we lay our fingers on the 25 immediately to the left of the decimal division. Now look at the cost per yard. If it were $1.00 per yard it is evident that we would depress the keys in that position, but since there are no dollars we move our fingers one column, or order, to the right, *i. e.*, to the tens of cents position, and depress the keys. Our multiplier is 15. Pull the handle once. Release the keys and set over another order to the right and pull the handle five times. This completes the first multiplication, but do not total here; merely release the keys.

Now, take up the second item of the invoice: 124½ is 124.5, so lay the fingers on the 124 to the left of the decimal division and on 5 to the right. We have dollars to multiply by here, so depress the keys in this position and pull the handle twice to correspond. Move to the right one order and pull the handle once; again to the right and pull the handle six times. This completes the second multiplication.

Now take up the third item. Lay the fingers on 8 to the left of the decimal division and on the 5 to the right, then look at the multiplier. There are no dollars, so move the fingers one order to the right. There are no tens of cents, so move another

order to the right, and, as we have units of cents, depress the keys which are under the fingers, *i. e.*, the 8 and 5 keys. Now pull the handle three times. ¼ is .25, so move one order to the right and pull the handle two times, and then one order to the right and pull the handle five times.

Clear the keyboard and take the total. The paper shows 272,946.25, which is read $272.95; the comma, as before mentioned, being the decimal point.

It will be noticed that this method positions each item correctly upon the keyboard, and solves the usual difficulty of pointing off the results.

The advantages of this method are that we consider only one thing at a time. By placing the fingers on the keys to the left of the decimal division and then moving to the right, if there are no dollars to be multiplied by, or to the left if there are tens of dollars, we have a simple logical way of starting right, and that is all that is necessary. Again, if there are large decimal fractions the items can run off the keyboard to the right without affecting the commercial accuracy, as we drop figures that are beyond the fifth decimal place only.

It is surprising how quickly such work can be run off on a Burroughs, and the method once learned is never forgotten.

*
2,500.00
250.00
250.00
250.00
250.00
250.00
124,500.00
124,500.00
12,450.00
1,245.00
1,245.00
1,245.00
1,245.00
1,245.00
1,245.00
85.00
85.00
85.00
8.50
8.50
85
85
85
85
85
272,946.25 *

Should the extension of each item be wanted, of course it is only necessary to total after each item has been multiplied, but the extensions would have to be recapitulated when done this way. With a Duplex Burroughs you can get the extension of each item, and then have an automatic recapitulation at the end for the total amount of the invoice.

Burroughs Table of Chain Discounts

Rate %	10 Net	12½ Net	15 Net	16⅔ Net	20 Net	22½ Net	25 Net	27½ Net	30 Net	32½ Net	33⅓ Net	35 Net	37½ Net	40 Net	42½ Net	45 Net
	.9	.875	.85	.8333	.8	.775	.75	.725	.7	.675	.6667	.65	.625	.6	.575	.55
And 2½	.8775	.8531	.8287	.8125	.78	.7556	.7312	.7069	.6825	.6581	.65	.6337	.6094	.585	.6506	.5362
And 5	.855	.8312	.8075	.7917	.76	.7362	.7125	.6887	.665	.6412	.6333	.6175	.5937	.57	.5462	.5225
5 and 2½	.8336	.8105	.7873	.771	.741	.7178	.6947	.6715	.6484	.6252	.6175	.6021	.5789	.5557	.5326	.5094
5 and 5	.8122	.7897	.7671	.7521	.722	.699	.6769	.6543	.6317	.6092	.6017	.5866	.5641	.5415	.5189	.4964
5, 5 and 2½	.7919	.7699	.7479	.7333	.7039	.681	.66	.638	.616	.594	.5866	.572	.5499	.528	.506	.484
And 7½	.8325	.8094	.7862	.7708	.74	.716	.6937	.6706	.6475	.6244	.6167	.6012	.5781	.555	.5319	.5687
7½ and 2½	.8117	.7891	.7666	.7516	.7215	.699	.6764	.6539	.6313	.6088	.6012	.5862	.5637	.5411	.5186	.496
7½ and 5	.7909	.7689	.7469	.7323	.703	.681	.6591	.637	.6151	.5931	.5859	.5712	.5492	.5272	.5053	.4833
And 10	.81	.7875	.705	.75	.72	.6975	.675	.6801	.63	.6075	.6	.585	.5625	.54	.5175	.495
10 and 2½	.7897	.7678	.7459	.7312	.702	.6801	.6581	.6362	.6142	.5923	.585	.5704	.5484	.5265	.5046	.4826
10 and 5	.7695	.7481	.7267	.7125	.684	.6626	.6412	.6199	.5985	.5771	.57	.5557	.5344	.513	.4916	.4702
10, 5 and 2½	.7503	.7294	.7086	.6947	.6609	.6461	.6252	.6044	.5835	.5627	.5557	.5419	.521	.5002	.4973	.4585
10 and 10	.729	.7087	.6885	.675	.648	.6277	.6075	.5872	.567	.5467	.54	.5265	.5062	.486	.4657	.4455
10, 10 and 5	.6925	.6732	.6541	.6412	.6156	.5963	.5771	.5579	.5386	.5194	.513	.5002	.4809	.4617	.4425	.4232
10, 10 and 10	.6561	.6378	.6196	.6075	.5832	.565	.5467	.5285	.5103	.4921	.486	.4738	.4556	.4374	.4192	.4009

Rate %	47½ Net	50 Net	52½ Net	55 Net	57½ Net	60 Net	62½ Net	65 Net	66⅔ Net	70 Net	72½ Net	75 Net	77½ Net	80 Net	85 Net	87½ Net
	.525	.5	.475	.45	.425	.4	.375	.35	.3333	.3	.275	.25	.225	.2	.15	.125
And 2½	.5119	.4875	.4631	.4387	.4144	.39	.3656	.3412	.325	.2925	.2681	.2437	.2194	.195	.1462	.1219
And 5	.4987	.475	.4512	.4275	.4037	.38	.3562	.3325	.3167	.285	.2612	.2375	.2137	.19	.1425	.1187
5 and 2½	.4863	.4631	.44	.4168	.3937	.3705	.3473	.3242	.3087	.2779	.2547	.2316	.2084	.1852	.1389	.1158
5 and 5	.4738	.4512	.4287	.4061	.3836	.361	.3384	.3159	.3009	.2707	.2482	.2256	.2031	.1805	.1354	.1128
5, 5 and 2½	.462	.44	.418	.396	.3739	.352	.33	.308	.2934	.264	.2421	.22	.198	.176	.132	.11
And 7½	.4856	.4625	.4394	.4162	.3931	.37	.3469	.3237	.3083	.2775	.2544	.2312	.2081	.185	.1387	.1156
7½ and 2½	.4735	.4509	.4284	.4058	.3833	.3607	.3382	.3157	.3006	.2706	.248	.2255	.2029	.1804	.1353	.1127
7½ and 5	.4613	.4394	.4174	.3954	.3735	.3515	.3295	.3076	.2929	.2636	.2417	.2197	.1977	.1757	.1318	.1098
And 10	.4725	.45	.4275	.405	.3825	.36	.3375	.315	.3	.27	.2475	.225	.2025	.18	.135	.1125
10 and 2½	.4607	.4387	.4168	.3949	.3729	.351	.3291	.3071	.2925	.2632	.2413	.2194	.1974	.1755	.1316	.1097
10 and 5	.4489	.4275	.4061	.3847	.3634	.342	.3206	.2992	.285	.2565	.2351	.2137	.1924	.171	.1282	.1069
10, 5 and 2½	.4376	.4168	.396	.3751	.3543	.3334	.3126	.2918	.2779	.2501	.2292	.2084	.1876	.1667	.125	.1042
10 and 10	.4252	.405	.3847	.3645	.3442	.324	.3037	.2835	.27	.243	.2227	.2025	.1822	.162	.1215	.1012
10, 10 and 5	.404	.3847	.3655	.3463	.327	.3078	.2886	.2693	.2525	.2308	.2116	.1924	.1731	.1539	.1154	.0962
10, 10 and 10	.3827	.3645	.3463	.328	.3098	.2916	.2734	.2551	.243	.2187	.2005	.1822	.164	.1458	.1093	.0911

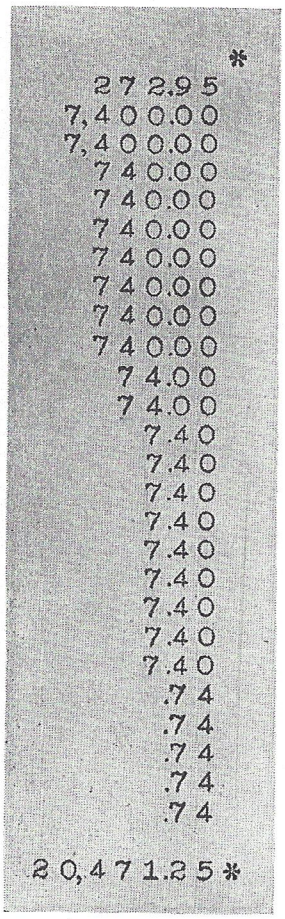
Figuring Discounts

COMPLICATED problems in discount are handled with extreme simplicity and rapidity on the Burroughs. To obtain the net amount of a bill, there are but two general rules to govern, viz.—

(1) If the amount to be discounted is on the adding wheels, multiply it by one unit less than the constant for the rate as given in the table on page 76. The multiplication is performed as described on page 67.

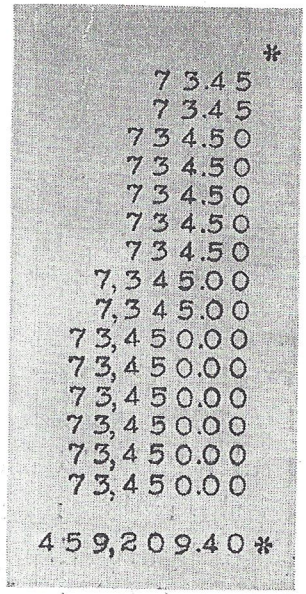
(2) If the amount to be discounted is not on the adding wheels, multiply directly by the constant, using the method described on page 66.

Example 1. $272.95 less 25%. Assuming that the amount $272.95 is on the adding wheels, look at the table and find the constant to be "75." Multiplying by one unit less depress 4 over the left hand figure (2) on the adding wheels, and depress 7 in the column to the left of it. Now multiply from left to right pulling the handle in accordance with the figures in the adding wheels. The wheels will then show 2047125. As there were two decimal places in the multiplicand and two in the multiplier, point off four places in the product, giving the net amount of the bill as $204.71.



Example 1

Example 2. $73.45 less 25–10–5–2½%. We will assume the machine is clear. The constant for 25–10–5–2½% from the table is .6252. Setting 7345 on the keyboard multiply by 6252 in the regular way, going from right to left. The adding wheels show 45920940, and as there are four decimal places in the constant and two in the gross amount, point off six places in the product giving $45.92 as the net amount of the bill.



Example 2

The Burroughs System of Computing Interest

MULTIPLY the principal by the number of days; then, leaving that product in the machine, set it, with cents omitted, on the keyboard and multiply from left to right by the constant for the rate of interest required.

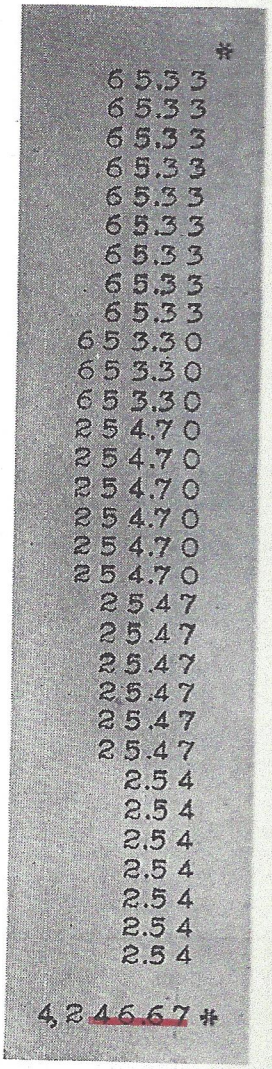
If the rate is.....	2%	2½%	3%	3½%	4%	4½%	5%	5½%
Multiply by.....	0556	0694	0833	0972	1111	1250	1389	1528

If the rate is.....	6%	6½%	7%	7½%	8%	8½%	9%	9½%
Multiply by.....	1667	1806	1944	2083	2222	2361	2500	2629

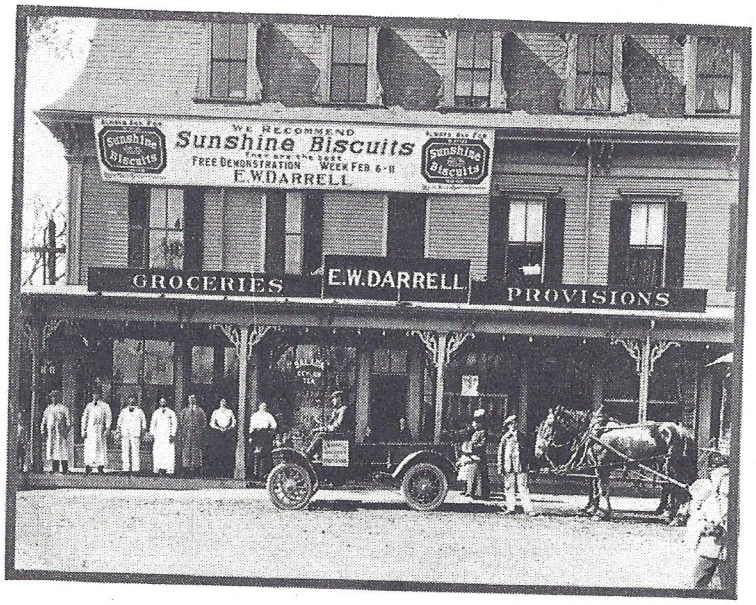
If the rate is 3½% or less, draw a line through the first five figures on the right, if the rate is 4% or more draw a line through the first four figures on the right. The figures to the left of the line will be the interest expressed in cents.

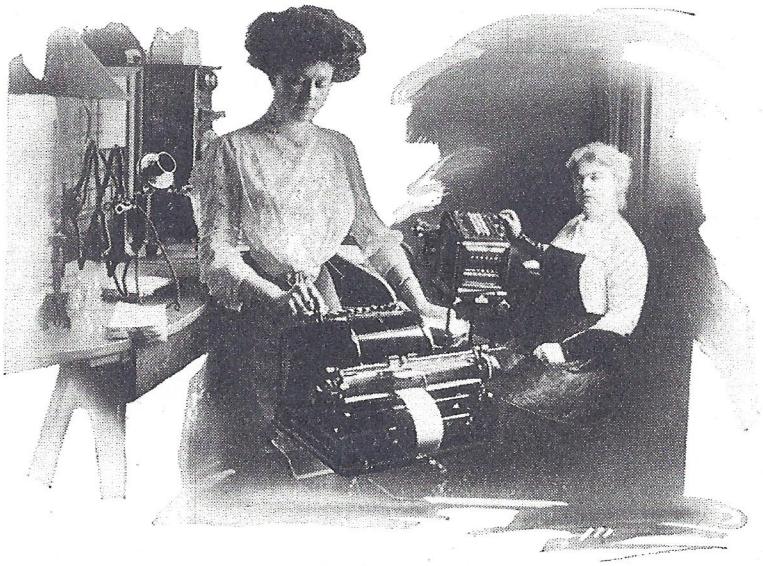
Problem:—What is the interest on $65.33 for 1 month, 9 days at 6%?

Solution:—Considering that there are 30 days to the month, we have 30 plus 9 or a total of 39 days. Multiplying the principal by 39 we have 254787 on the dials. The constant for 6% from the table is .1667. Since we already have it once in the machine, we disregard the "1," and, setting 2547 on the keyboard, omitting the cents, one order to the right of their position on the dials. Multiply by "6"; set it over one order to the right, multiply by "6" again; set it over one order to the right and multiply by "7"; the right-hand figures dropping off the keyboard. Now take a total, which shows 424667. Draw a line through the first four figures to the right, and the remaining figures give the interest in cents.

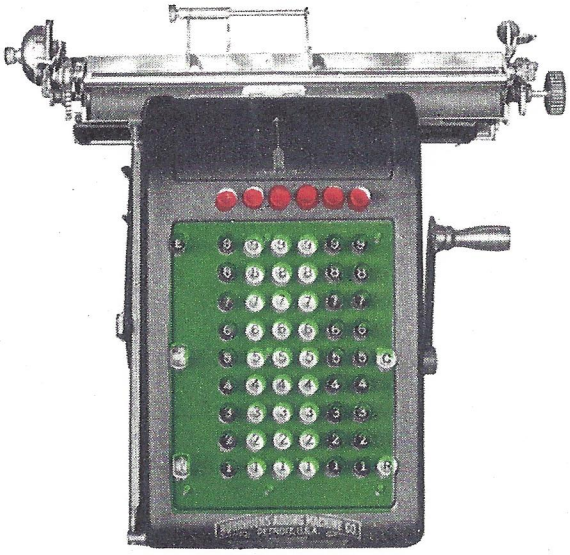


The Various Models and Burroughs Service

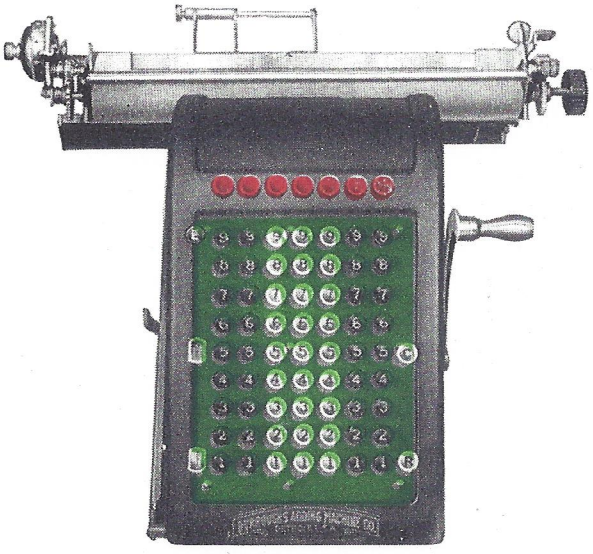




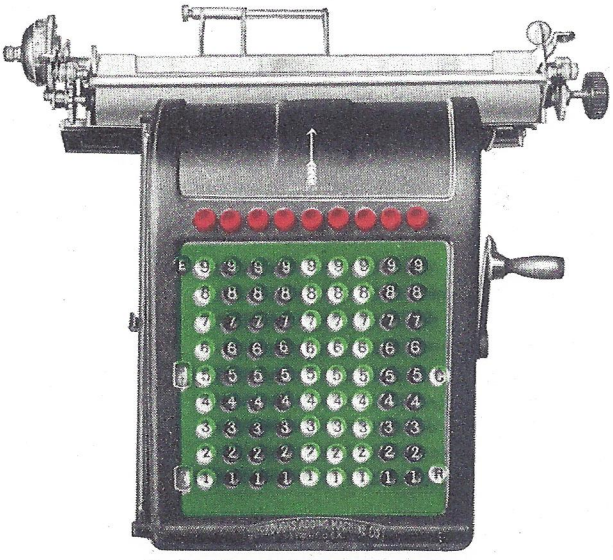
E. W. Darrell, Groceries and Provisions, Newton Center, Mass., uses two Burroughs Machines. "Every 24 hours," he says, "I get an exact statement of my business. Knowledge I must have, and with the Burroughs I get it."



Style No. 6 (six columns)



Style No. 7 (seven columns)



Style No. 9 (nine columns)

78 Distinct Styles of Burroughs Machines

BURROUGHS Adding and Listing Machines are made in 7 different sizes and in 78 different styles. The method of operation is the same, however, for all styles. The proper amount is, in every case, set up on the keyboard, then registered and printed by pulling the operating handle. There are different combinations possible on different keyboards, but the principle of operation is the same in every case.

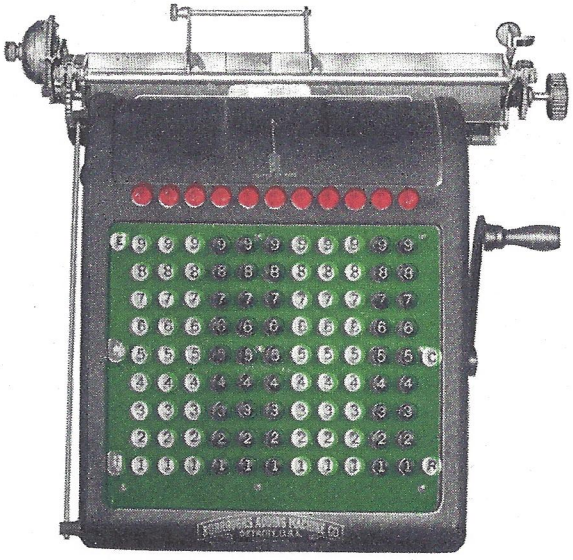
The capacities run from the No. 6 with a totaling capacity of 9,999.99 to the No. 17 with a capacity of 999,999,999,999,999.99, the intermediate machines being those with capacities of 7, 9, 11, 13 and 15 columns respectively. The No. 9 is the machine in most general use, and the explanatory photographs in this book show that machine.

The Burroughs is not confined to the adding and listing of figures expressed by the decimal system. There are Burroughs which add feet and inches, tons and hundredweights, pounds and ounces, hours and minutes—machines which handle quarter, eighth, twelfth and sixteenth fractions, reducing them to a

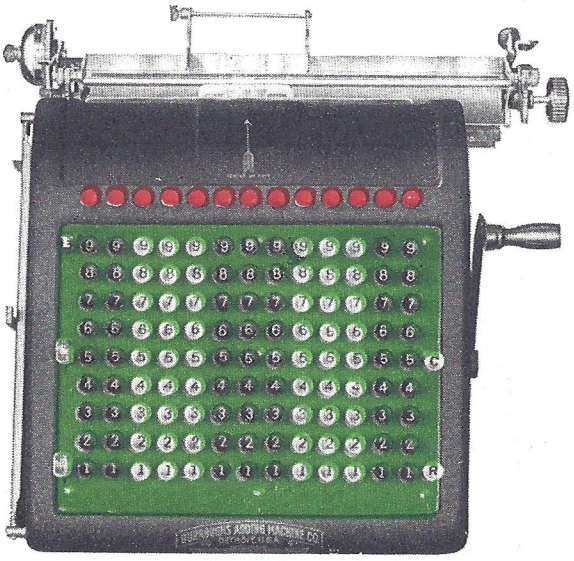
common denominator automatically and converting them into whole numbers—as well as machines to handle any monetary system.

There are machines which can be divided into two or more sections which list and add independently and simultaneously. (See pages 48-50 on Split and Normal and Variable Split Machines.) There are machines which print the date opposite amounts, so that Monthly Statements can be made from a continuous roll of statement forms held at the back of the machine. Any Burroughs may be equipped as a Duplex with two separate sets of adding wheels which carry two distinct totals each of which may equal the full capacity of the machine. Thus a No. 9 Duplex will add debits to a capacity of 9,999,999.99 and credits to a capacity of 9,999,999.99.

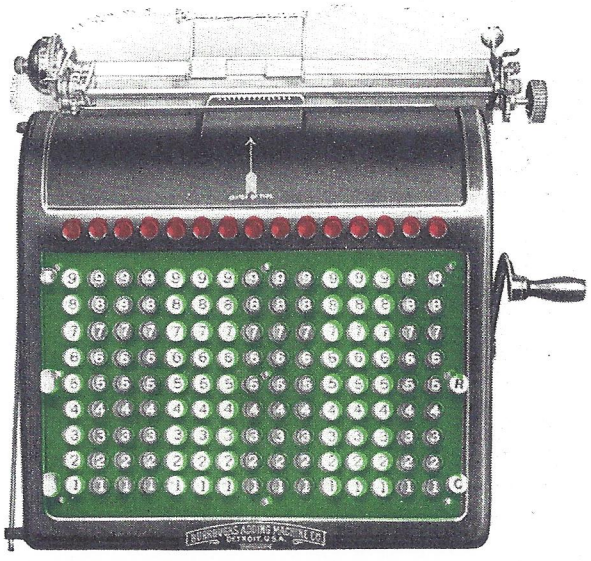
There is a shuttle carriage duplex Burroughs with nine rows of keys that will add nine figures of debits and nine figures of credits *in separate columns without touching the carriage.* Other Burroughs will list and add six separate columns with a totaling capacity of six figures each, all



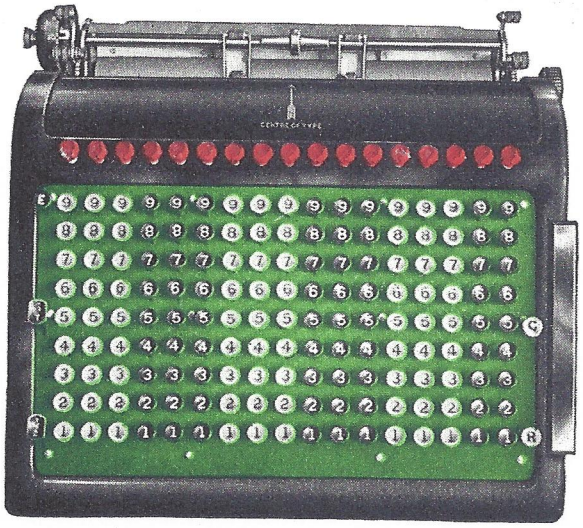
Style No. 11 (eleven columns)



Style No. 13 (thirteen columns)



Style No. 15 (fifteen columns)



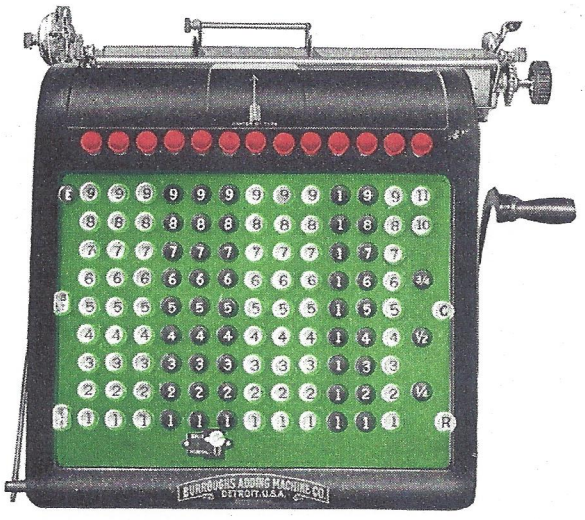
Style No. 17 (seventeen columns)

in the machine at the same time. Another type has a cross tabulating carriage that moves into its various positions automatically upon operating the machine.

In brief, there is a Burroughs for almost every conceivable operation with figures. The work need not be changed to fit the machine for, with 78 models and over 300 combinations of features, practically every particular requirement can be satisfied. But the underlying principle is the same in each, and the method of operation the same in the most complete as in the most simple.

The Burroughs in all Countries of the World

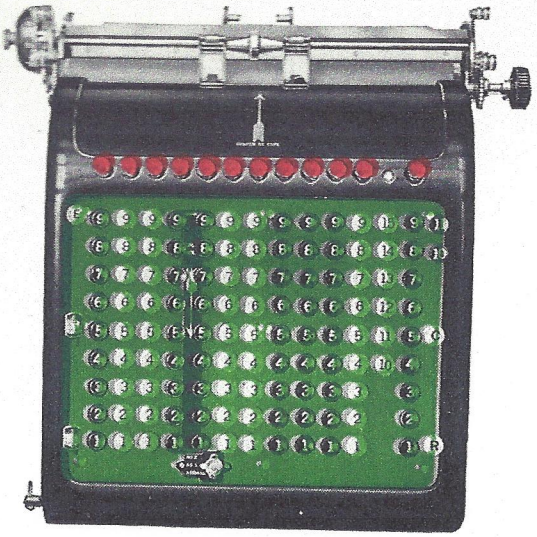
Recognition of the utility of the Burroughs Adding Machine is by no means limited to the United States—nor even to countries having decimal monetary systems. The Burroughs has been adapted to practically every monetary system in the world. Machines are made to handle the British system with its pounds, shillings, pence and farthings, the Portuguese system with its milreis and reis, the Indian system with its rupees, annas and pies, etc. Any feature of the decimal machine can be applied to any of the other machines. This makes Burroughs improvements of world-wide importance and value.



British Machine

To care for this world business, three large and completely equipped Burroughs

headquarters have been established. The headquarters for European business is London; South American business is handled by the Burroughs headquarters at Buenos Ayres; Australasian business is cared for by the headquarters in Sydney, N. S. W.



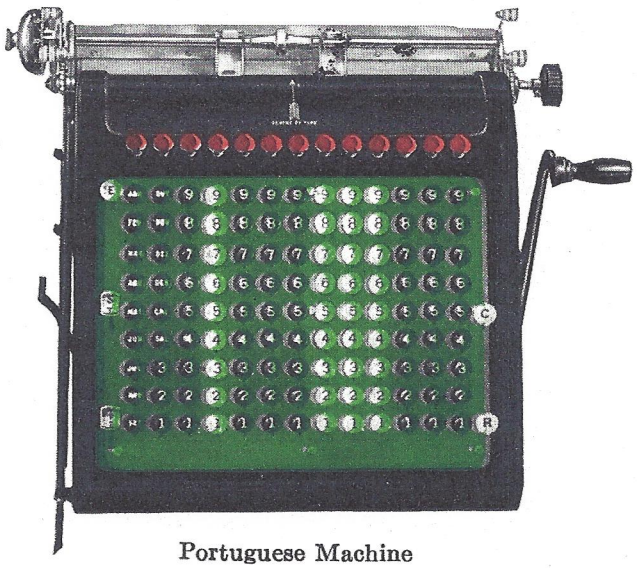
Indian Machine

Users or prospective users in the territory of any of these headquarters will find them equipped to give full measure of Burroughs service.

In addition to these large central headquarters, there are Burroughs representatives in practically every important city in the world, whose business is to see that local users secure the same continuous perfect service that the Service Stations in the United States give the American user.

Business men who visit the world's metropolis find a cordial welcome at the London Headquarters in 76 Cannon Street, E. C. Every provision is made to assist the traveler and it is deemed a favor to be given an opportunity to show the Burroughs machines though there be no intention to purchase. Located at Nottingham (England) is the Burroughs European factory where a great many of the machines used in Europe are manufactured.

Thanks to the merit of the machine itself, to Burroughs service and to Burroughs methods of doing business, the Burroughs Adding Machine has gained favor abroad as rapidly as at home, and is saving an ever increasing amount of time and labor in in the conduct of the world's business.



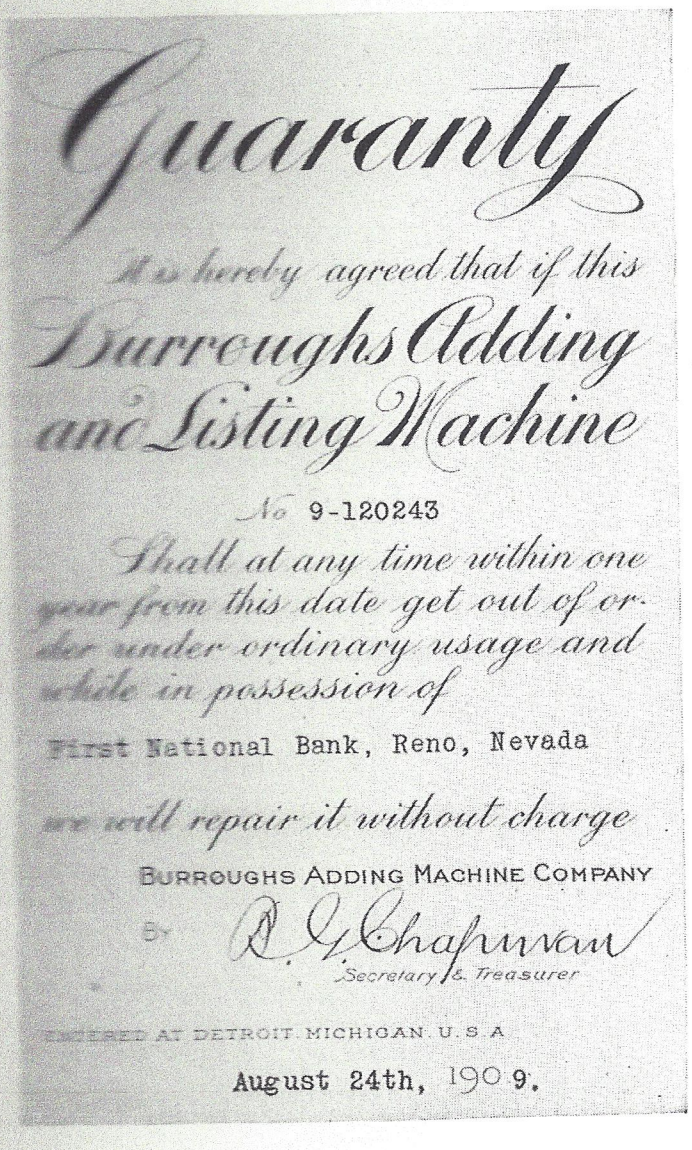
Portuguese Machine

European Headquarters in London
76 Cannon Street, E. C.

This entire building, in the heart of the world's metropolis, is occupied as headquarters for the sale and care of Burroughs Machines in Europe. There are Burroughs representatives in 104 of the leading cities of Europe, Asia, Africa, Australasia, Central and South America.

The Burroughs Guaranty

EVERY Burroughs Machine, before it leaves the factory, must pass through the hands of a corps of inspectors, who test it in every conceivable way to see that it performs all of its functions properly.



Guaranty

It is hereby agreed that if this

Burroughs Adding and Listing Machine

No 9-120243

Shall at any time within one year from this date get out of order under ordinary usage and while in possession of

First National Bank, Reno, Nevada

we will repair it without charge

BURROUGHS ADDING MACHINE COMPANY

By D. G. Chapman

Secretary & Treasurer

ENTERED AT DETROIT, MICHIGAN, U. S. A.

August 24th, 1909.

We might rest satisfied with that, but as it is true that sometimes there are defects in material which the utmost vigilance cannot detect, we furnish this guaranty of the machine for a full year after purchase.

The material from which Burroughs Machines are made is the best for the purpose, regardless of cost; and no trouble or expense is spared which will improve their construction.

If there is any defect in the material, it is almost sure to be discovered within a year, but if at any time after the expiration of the written guaranty it is necessary to replace any of the parts of the machine (ribbons excepted), and it is shown that the trouble was due to defective material we will replace those parts gratis, it being the spirit of our guaranty to give each user a perfect machine.

The Systems Service Department at Work

The Clearing House of System and Accounting Ideas

THE services of this department are offered free of charge to all users and others interested in Burroughs Adding and Listing Machines.

Through our sales force we have access to the offices of over 120,000 firms who use Burroughs, and who have worked out in actual practice new systems for doing their work quicker and more easily. The Systems Service Department is maintained solely for the purpose of collecting this material, and making it available for the use of others.

We employ a corps of experts in this department, and have full descriptions and life-size forms illustrating hundreds of time and labor-saving systems. It is likely that we have a system which will help you in your work.

We have sold Burroughs to over 120,000 firms, in 400 different lines of business. The Burroughs saves every one of these concerns time and money, or they would not have bought it. It saves by doing some particular things quicker and easier than they can be done in any other way. It is the sole object of the Systems Service Department to find out what these particular things are, how the Burroughs does them, and then to pass the knowledge along.

This service is yours for the asking. It is extremely probable—almost certain, indeed—that we have sold Burroughs to some other concerns in your line, by whose experience you may profit. Many firms, for instance, are saving time and worry on trial balance days by using the Burroughs Proof of Posting System. We'll explain the system gladly, and send you a set of the markers which go with it.

Then there is the Cash Received System, the Imprest Cash System and Four Ways of Taking a Trial Balance with the Burroughs. Any one of these may give you a suggestion which will make the Burroughs more efficient in your service.

We have scores of forms (full-size, actual forms) showing the work of the Burroughs in Banks, Wholesale Houses, Retail Stores, Cotton and Flour Mills, Breweries, Creameries—in almost any line of business you can name. And they are all actual, practical systems in daily use.

This service doesn't cost a penny. Just address

SYSTEMS SERVICE DEPARTMENT
BURROUGHS ADDING MACHINE COMPANY
FACTORY AT DETROIT, MICHIGAN, U.S.A.

Part of the Inspection Service Department

The Inspection Service Department

THE Burroughs Company is built upon the idea of service—that every machine shall give continuous service for a business lifetime. We are not satisfied merely to sell a machine, for we know that the best possible advertisement for Burroughs machines is the service rendered by the machines we have already sold.

It pays us to do this, certainly, but it means a great deal to every user of a Burroughs.

We have established throughout the country a chain of Service Stations in charge of factory graduates whose sole duty is to keep Burroughs machines in perfect working order. These men are trained experts, who know the Burroughs Adding and

Listing Machines as no local mechanic can possibly know them, and whose experience has taught them how to make any adjustment which may be desired.

This corps of inspectors is under the supervision and direction of the Inspection Service Department at the factory. To this Department they report daily, giving details, so that we know just what service every machine is giving.

Adding Machines, like any other piece of mechanism, need a little oil and a brush once in a while. During the guaranty period—one year from the date of delivery—our service inspector gives your machine necessary attention. Afterwards, for a small charge he will clean and oil the machine; or, the owner can do it for himself. It is by no means difficult.

The great advantage of this system of inspection is that it brings always within reach a man who *knows*. If an accident happens, and the machine is injured, don't let the local mechanic try to fix it. Don't experiment. Phone or wire the nearest Burroughs office—there is a list of them in the back of this book—and it is probable that the trouble can be remedied very quickly.

If not—and it takes a severe accident to put the Burroughs out—our man will send you a substitute machine to use while yours is being repaired.

Remember that the Burroughs is not delicate, and will stand a great deal of what would be abuse to the average typewriter, but it is, nevertheless, a piece of machinery, and a certain amount of intelligence is necessary to its proper care.

Burroughs Publications

BELOW will be found a brief description of some publications of the Advertising and Systems Service Departments which explain the application of Burroughs Machines to various lines of business. Any of these will be sent upon request, free and postpaid.

A Better Day's Work—

135,000 copies of this 192-page book have already been distributed. It has been pronounced the greatest business book ever published for gratuitous distribution.

The Book of the Burroughs—

A history of mechanical accounting from the stone age to the Burroughs Age telling what the Burroughs does, what it is, how it came into existence, and the story of the company behind it. More like a catalog than any other of our books.

Cost-keeping Short Cuts—

A book of 192 pages dealing in a clear and readable way with the important subject of cost finding as practically applied in various lines of business.

Why Don't You Go Home—

A 48-page book of practical suggestions for retailers.

The Statement Book—

Making customers' monthly statements on the Burroughs with great saving of time and work.

$300,000 a Year for Burroughs Service—

The watchword of modern merchandising is Service. In this little book we tell how we are equipped for giving Service and how that Service pays our users as well as ourselves.

Ten Ways of Saving Money in Any Bank—

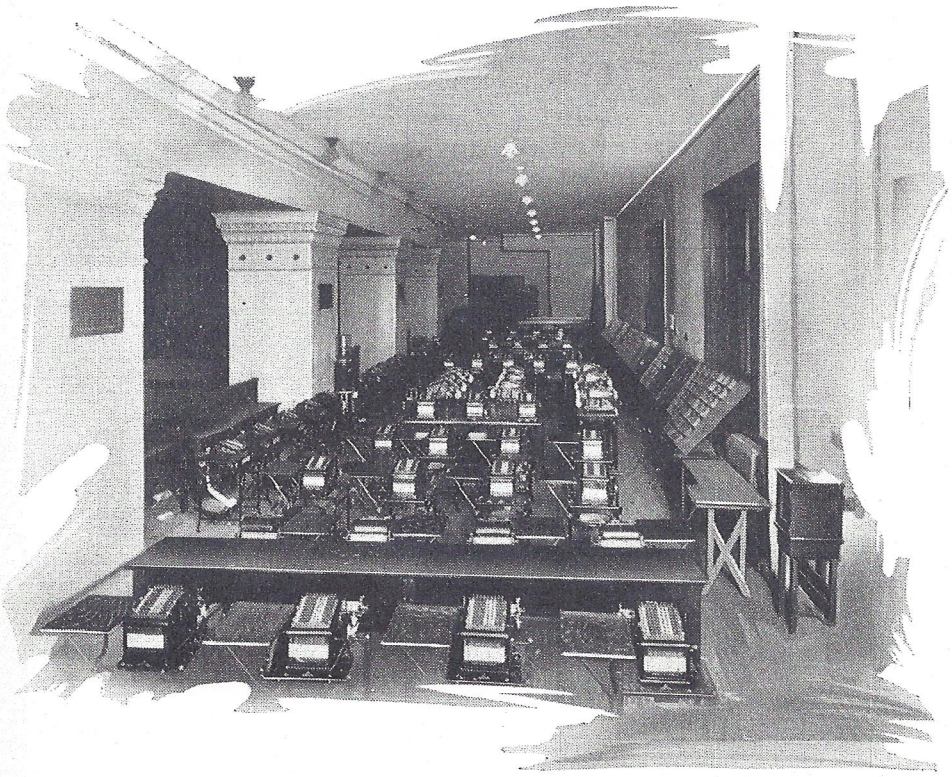
Some suggestions and illustrations of how the Burroughs is applied in Banks and Trust Companies.

The Burroughs in the Lumber Business—

The Burroughs in the Hay and Grain Business—

And many others about other businesses. All Free.

How to Pack Machine for Shipment



Continental and Commercial National Bank, Chicago, use 165 Burroughs Machines, about half of them are shown here

General Directions

WHEN machines are to be shipped, the Burroughs office in whose territory you are will give full directions as to where to send the machine. Follow these instructions implicitly, and do not send machines to Detroit unless so instructed.

Follow the packing instructions carefully, and use nothing but the special shipping box in which you received your machine. If the box has been destroyed or lost, another can be procured through the nearest Burroughs office.

All machines are to be shipped by freight unless otherwise ordered. Send a copy of the bill of lading to destination.

Do not place any valuation on the machine whether sent by freight or by express.

See that the address label on the shipping box bears the name and address of the sender. Otherwise we may not be able to identify shipments.

WEIGHTS OF BURROUGHS MACHINES

HAND OPERATED				ELECTRICALLY OPERATED			
Mach.	Construction	Gross in lbs.	Net in lbs.	Mach.	Construction	Gross in lbs.	Net in lbs.
6	N.	97	60	6	N.	140	88
7	N.	80	57	7	N.	140	88
6	10 Con.	100	59	6	10 Con.	150	93
7	10 Con.	100	59	7	10 Con.	150	93
6	15 Con.	110	62	6	15 Con.	165	97
7	15 Con.	110	62	7	15 Con.	165	97
9	N.	100	53	9	N.	155	103
9	G.	97	60	9	10 Con.	155	103
9	10 Con.	105	66½	9	15 Con.	170	105
9	15 Con.	115	67½	11		180	127
11		118	74	13	10 & 15 Con.	180	127
13	10 & 15 Con.	125	80	15	10 & 15 Con.	195	127
15	10 & 15 Con.	130	85	17	10 & 15 Con.	205	131
17	10 & 15 Con.	142	94				

Preparing the Burroughs for Shipment

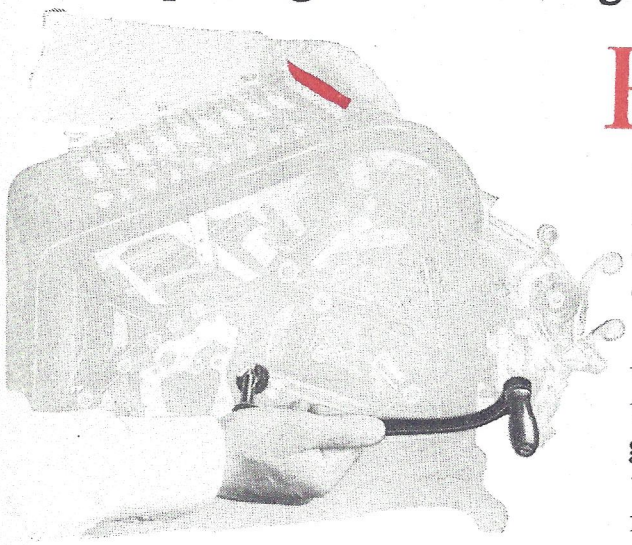


Fig. 81
Remove the operating handle

FIRST of all, see that the roll of paper is removed from the paper hangers. See that the machine is at normal position by making one full movement of the operating handle.

Remove the handle by turning it toward the rear of the machine as far as it will go, and pulling outward with a slight oscillating motion—(Fig. 81).

Remove the check shelf by unfastening the screw on the front lug, sliding the check shelf forward to free it from the pin on the back lug, and removing the supporting bar from the slot in the shelf and the small lug at the bottom of the case. Replace the screw in the front lug.

Wrap the handle and check shelf in paper, and put them in the compartment at the front of the box—(See page 94, Fig. 85).

Tie the carriage with strong twine to the rear lug of the check shelf support—(Fig. 82).

Put on the rubber cover. Raise the side arms of the shipping box as far as possible. Fasten the strong cords which came with the machine—if these were not saved, get others, but be sure they are strong enough—to the feet, one cord to each side of the machine. Grasp these cords in the middle, above the keyboard, and lower the machine gently into the box. (See Fig. 3 on page 17.)

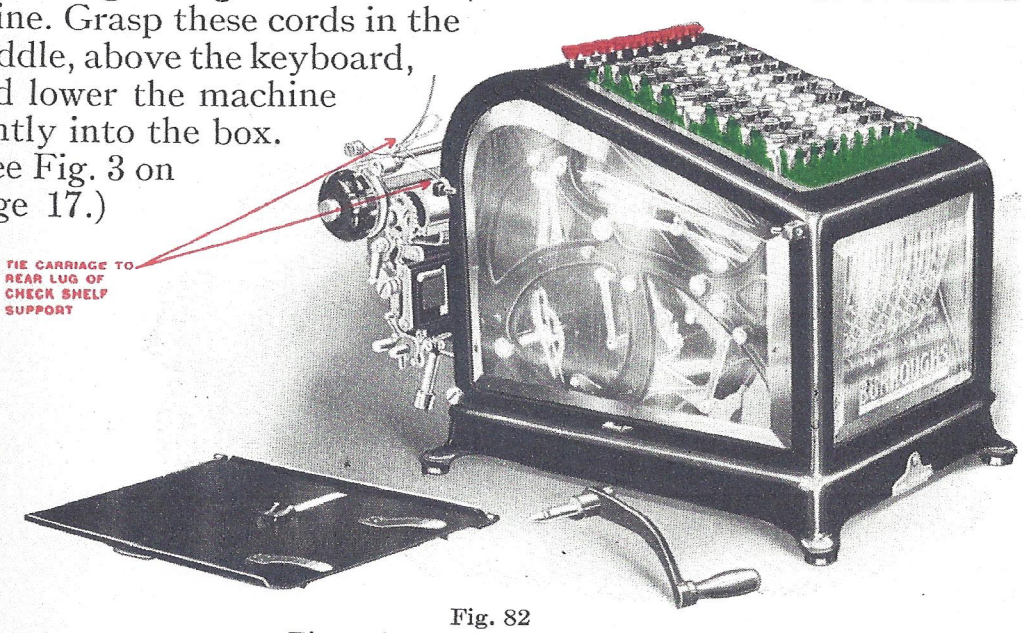


Fig. 82
Tie carriage to check shelf support

Place the machine in the box so that it rests upon the rubber bumpers which are nailed on the inside of blocks lettered 'D' in Figure 83. See that the number plate on the front of the machine comes snugly against block 'E'. When the machine is thus placed, block 'F' will just clear the back of the case, and the

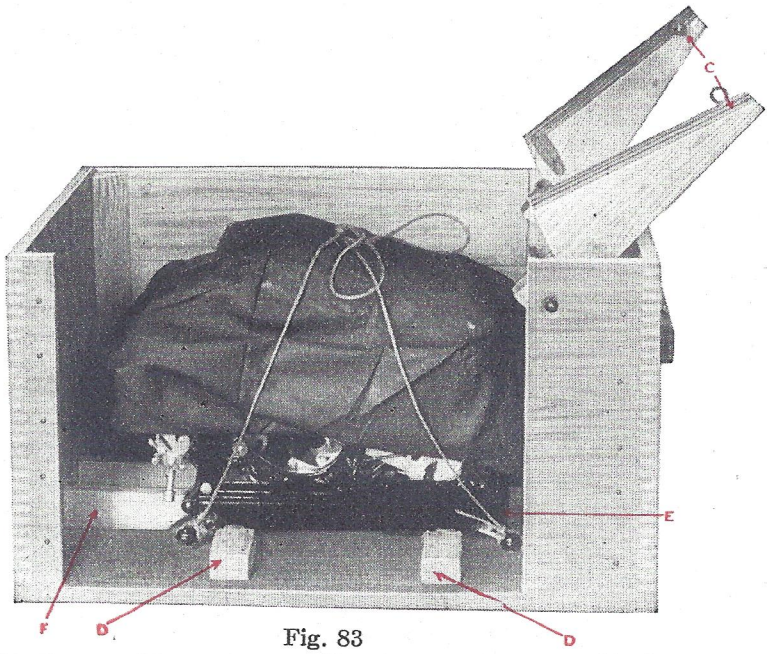


Fig. 83
See that machine rests on rubber bumpers nailed on blocks

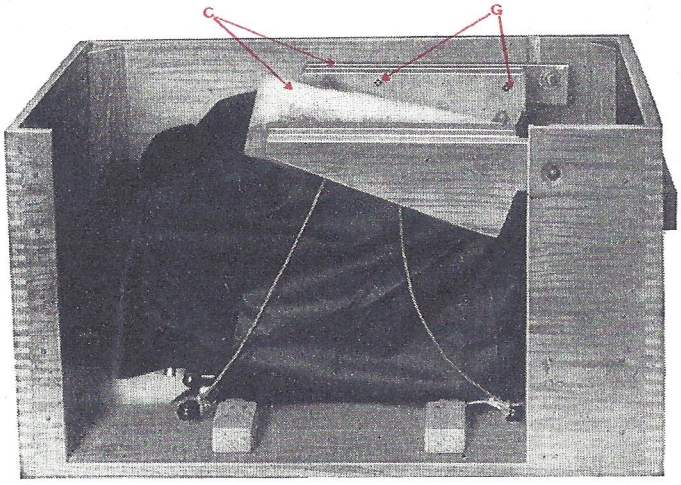


Fig. 84
Fasten the side arms down with screws

machine will be held firmly on its base.

It cannot be jarred forward, backward or from side to side.

Place several thicknesses of paper on the rubber cover over the keyboard, and swing side arms ('C') down close over the machine, so that it is held firmly against the bottom of the box. Fasten the side arms in place with screws ('G' in Figure 84) driven from the outside of the box.

After the arms have been securely fastened, nail a strip of board across on top of them—(Fig. 85).

Put on the cover and fasten securely with stout screws.

Do not forget to put in the handle and check shelf.

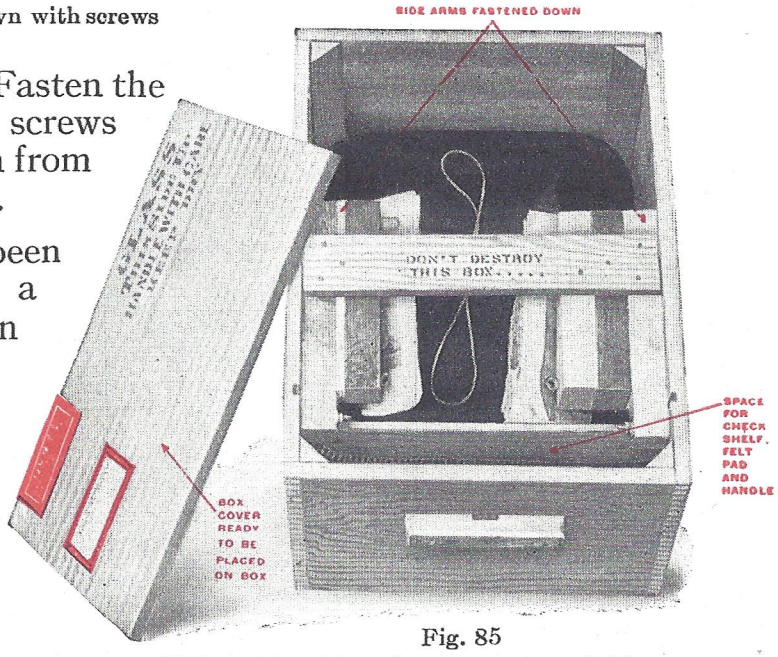


Fig. 85
Nail a strip of board across on top of side arms

Index

Index—Continued

Burroughs Offices in the United States and Canada

Aberdeen, South Dakota	320 Citizens Bank Building
*Albany, New York	123 North Pearl Street
*Atlanta, Georgia	163 Peachtree Street
Altoona, Pennsylvania	84 Altoona Trust Building
Augusta, Georgia	Union Savings Bank Building
*Baltimore, Maryland	12 St. Paul Street
*Binghamton, New York	Press Building
*Birmingham, Alabama	2119 First Avenue
Bismarck, North Dakota	16 City National Bank Building
*Boston, Massachusetts	John Hancock Building
*Bridgeport, Connecticut	28 Lincoln Building
*Buffalo, New York	212-214 Pearl Street
Burlington, Iowa	308 North Third Street
Burlington, Vermont	163 Pearl Street
*Cedar Rapids, Iowa	127 North Third Street
Charleston, West Virginia	Boyce Building
*Chattanooga, Tennessee	416-426 James Building
*Chicago, Illinois	18th floor Majestic Building
*Cincinnati, Ohio	538 Main Street
Clarksburg, West Virginia	318 Oak Hall Building
*Cleveland, Ohio	Rockefeller Building
*Columbus, Ohio	226-227 Columbus Savings & Trust Building
*Dallas, Texas	1105 Commerce Building
*Davenport, Iowa	117 Brady Street
*Dayton, Ohio	Bimm Homestead Building
*Denver, Colorado	1526-1528 Court Place
*Des Moines, Iowa	700 Grand Avenue
*Detroit, Michigan	208-209 Majestic Building
Detroit, Michigan	Factory
Dubuque, Iowa	Care of Dennis Brothers
*Duluth, Minnesota	230 West First Street
El Paso, Texas	P. O. Box 702
*Erie, Pennsylvania	408-409 Downing Building
*Evansville, Indiana	318 Upper Second Street
Fargo, North Dakota	1-2 Magill Building
Ft. Smith, Arkansas	15 South Sixth Street
*Ft. Wayne, Indiana	300-301 Peoples Trust Building
*Ft. Worth, Texas	305 West Seventh Street
Fresno, California	932 H Street
Glen Falls, New York	2 Knickerbocker Block
*Grand Rapids, Michigan	Murray Building
*Harrisburg, Pennsylvania	45-46 Union Trust Building
*Hartford, Connecticut	423-425 Connecticut Mutual Life Building
*Houston, Texas	315-316 Lumbermen's Bank Building
*Indianapolis, Indiana	204 State Life Building
*Jackson, Michigan	24 Union Bank Building
*Jackson, Mississippi	115 North State Street
*Jacksonville, Florida	228 West Bay Street
*Johnstown, Pennsylvania	109 Franklin Street
Joliet, Illinois	409 Joliet National Bank Building
Joplin, Missouri	122 East Fourth Street
*Kalamazoo, Michigan	233 East Main Street
*Kansas City, Missouri	1012 Baltimore Street
Knoxville, Tennessee	406 Empire Building
*Lincoln, Nebraska	136 North Eleventh Street
*Little Rock, Arkansas	205 West Markham Street
*Los Angeles, California	310 South Hill Street
*Louisville, Kentucky	420 West Main Street
*Lynchburg, Virginia	Burroughs Building
Macon, Georgia	P. O. Box 454
*Memphis, Tennessee	Business Men's Club Building
*Milwaukee, Wisconsin	419 Broadway

*Minneapolis, Minnesota	422-426 Second Avenue South
*Mobile, Alabama	84 St. Michaels Street
*Montgomery, Alabama	118 Bibb Street
*Muskogee, Oklahoma	Leighton Building
*Nashville, Tennessee	414-415 First National Bank Building
*Newark, New Jersey	405 Union Building
*New Orleans, Louisiana	233 Baronne Street
*New York, New York	20-24 Vesey Street
Northern Michigan	Algoma Building, Oshkosh, Wisconsin
*Oakland, California	460 Thirteenth Street
*Oklahoma City, Oklahoma	414 North Broadway
*Omaha, Nebraska	309 South Thirteenth Street
*Oshkosh, Wisconsin	Algoma Building
Parkersburg, West Virginia	515 Union Trust Building
*Peoria, Illinois	602 Main Street
*Philadelphia, Pennsylvania	827 Chestnut Street
Phoenix, Arizona	618 North Fourth Avenue
*Pittsburg, Pennsylvania	803 Liberty Avenue
*Portland, Maine	Fidelity Building
*Portland, Oregon	Commercial Club Building
*Providence, Rhode Island	17 Customs House Street
Reno, Nevada	Masonic Temple Building
*Richmond, Virginia	Mutual Assurance Building
*Rochester, New York	439-441 Powers Building
*Rockford, Illinois	508 Rockford Trust Building
*Sacramento, California	1112 Eighth Street
*Saginaw, Michigan	506-507 Kirby Building
*St. Joseph, Missouri	410 German American Bank Building
*St. Louis, Missouri	516-519 Fullerton Building
*St. Paul, Minnesota	137 Endicott Arcade
*Salt Lake City, Utah	216 Southwest Temple Street
*San Antonio, Texas	425-7 Bedell Building
*San Francisco, California	201 Kamm Building
*Savannah, Georgia	20 Whittacker Street
*Scranton, Pennsylvania	612-613 Traders National Bank Building
*Seattle, Washington	Henry Building
*Shreveport, Louisiana	513 Marshall Street
*Sioux City, Iowa	519 Pierce Street
Sioux Falls, South Dakota	502 Minnehaha Building
*South Bend, Indiana	Studebaker Building
Southern Illinois	520 Fullerton Building, St. Louis, Missouri
*Spokane, Washington	336 First Avenue
*Springfield, Massachusetts	206 Myrick Building
*Syracuse, New York	441 South Salina Street
*Tacoma, Washington	326-327 Provident Building
*Toledo, Ohio	7 Spitzer Arcade
*Washington, D. C.	814 Fourteenth Street, N. W.
*Wheeling, West Virginia	608-609 Schmulbach Building
*Wichita, Kansas	203 East First Street
*Williamsport, Pennsylvania	45-46 Trust Building
*Wilmington, Delaware	104-105 Dupont Building
*Worcester, Massachusetts	830 Slater Building

CANADA

*Montreal, Quebec	392 St. James Street
Ottawa, Ontario	234 Wellington Street
*Toronto, Ontario	146 Bay Street
St. John, New Brunswick	147 Prince William Street
Vancouver, British Columbia	347 Pender Street
*Winnipeg, Manitoba	317 Kennedy Building

*Inspection Service Stations

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