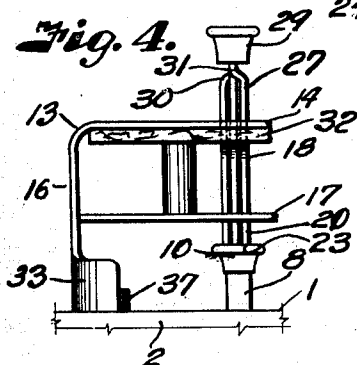
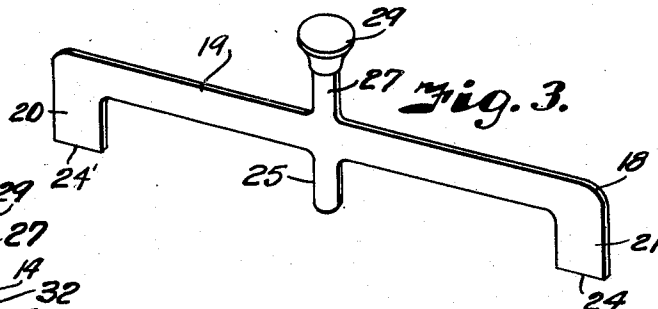
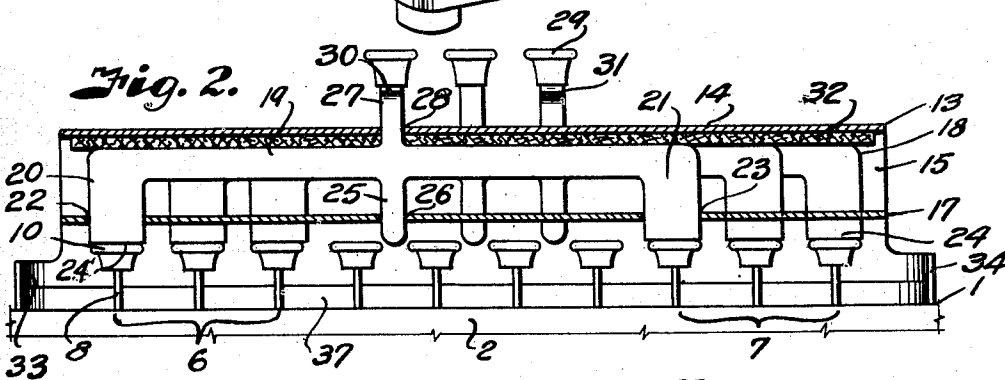
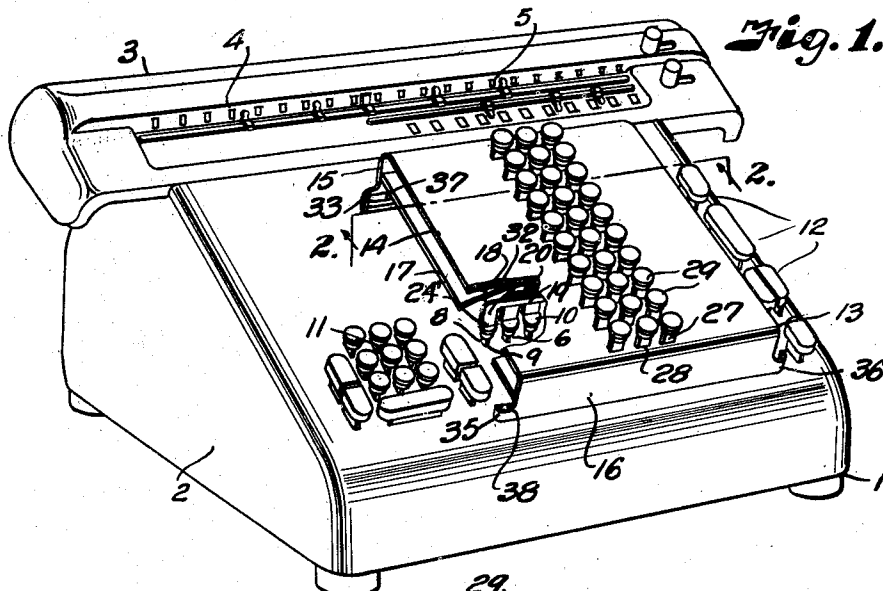


Dec. 26, 1950

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AUXILIARY KEYBOARD
Filed March 15, 1948

2,535,178



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2,535,178

AUXILIARY KEYBOARD

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Application March 15, 1948; Serial No. 14,885

5 Claims. (Cl. 235-146)

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This invention relates to calculating machines particularly of the type having a plurality of sets of calculating mechanisms for obtaining related tabulations and has for its principal object to provide a machine of this character with a single bank of keys for simultaneously setting up the sets of calculating mechanisms for operation thereby simplifying the operating procedure and increasing the rapidity with which such machines can be operated.

Further objects of the invention are to provide an attachment for present calculating machines that is readily applied merely by placement over the keyboard thereof; which is readily removed when it is desired to use the calculating machine in conventional manner; and which is retained in fixed position by providing the attachment with means for engaging existing parts on the case of the calculating machine.

In accomplishing these and other objects of the invention hereinafter pointed out, I have provided improved structure, the preferred form of which is illustrated in the accompanying drawing wherein:

Fig. 1 is a perspective view of a calculating machine equipped with an attachment embodying the features of the present invention.

Fig. 2 is a cross section on the line 2-2 of Fig. 1.

Fig. 3 is a perspective view of one of the key bars of the attachment mechanism.

Fig. 4 is a partial side elevational view of the attachment illustrating one set of key bars.

Referring more in detail to the drawings:

1 designates a calculating or tabulating machine having a casing 2 for enclosing a plurality of calculating mechanisms (not shown) by which the result of calculations are set up on dial mechanism of a carriage 3 having reciprocatory movement on the casing incidental to operation of the machine; the carriage being provided with left and right sets of windows 4 and 5 through which the dials are exposed. The top of the casing is provided with an inclined top or keyboard having a plurality of banks of keys 6 and 7 for respectively operating the left and right sets of dials in the carriage 3. Each bank of keys includes a plurality of columns and each column has ten keys. Each key has a shank 8 reciprocable through an opening 9 in the inclined top of the casing and is provided with a finger touch knob 10. The knobs in each column are usually designated with the numerals 0 to 9 and there may be any number of columns in each bank depending upon the capacity of the machine. The machine illus-

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trated also includes a set of multiplier keys 11 (Fig. 1) as well as the various manipulation keys indicated at 12. With ordinary use of the machine, for example, in preparing an itemized invoice of tabulated items, the individual calculation for each item is set up by pressing the proper keys in one bank to effect a recording of the calculation on one set of the register dials and corresponding keys in the other bank are similarly operated to set up an accumulative total by another set of dials.

It is thus obvious that operation of the machine requires duplicate key manipulation in both banks of keys. For example, in obtaining an amount of a given quantity of articles at a given price per article, the price (multiplicand) is set up by pressing the proper keys, for example, in the bank 6 and to obtain an accumulative total the corresponding keys are also operated in the bank 7. Then when the machine is again manipulated to obtain the calculations for the amount of the next item and the machine is operated, the amount of the first item is cleared and the amount for the second item is set up on that set of registering dials. Simultaneously, the amount of the second item is added to the amount registered by the other side of the dials so as to obtain an accumulative total which gives the total amount of invoice after all of the various items have been calculated.

As above pointed out, it is the purpose of the present invention to avoid duplicate manipulation of the banks of keys by providing the machine with a supplementary keyboard or attachment having a single bank of keys for simultaneously operating corresponding keys in the banks of keys 6 and 7.

In carrying out the invention, the attachment comprises a key supporting member 13 which includes a plate 14 having flanged ends 15 and 16 for forming leg portions which support the body portion of the plate the required distance above the tops of the touch buttons of the key banks 6 and 7. The plate 13 is preferably of a width and length to span the key banks. The plate cooperates with a lower plate 17 to support a plurality of sets of key bars 18. The plate 17 is carried by the flanges 15 and 16 in slightly spaced relation with the tops of the touch knobs 10 of the key banks 6 and 7 as best shown in Fig. 2. Since in ordinary calculation machines only three columns of keys are used in each bank, each set of keys therefore comprise three bar transverse portions 19 arranged in face to face relation so that depending legs 20 and 21 on respec-

tive ends register with the related keys in the key banks. The legs 20 and 21 extend through slot-like openings 22 and 23 in the supplemental plate 17 so that the edges 24 and 24' thereof rest upon or are in close relation to the keys in their respective key banks. The key bars also include depending guide stems 25 that are preferably located midway between the leg portions 20 and 21 and which are reciprocable in slot-like openings 26 in the plate 17. The openings 26 are out of registry with the keys of the key banks so that when the bars are depressed the guide stems will pass through the spaces between the keys.

In order to actuate the bars, each bar is provided with an upwardly extending shank 27 that reciprocates through slot-like openings 28 in the plate 13. The slot-like openings 28 are formed in laterally spaced rows corresponding with the spacing of the keys in the columns of the key banks so that the stems are located in face to face relation, the openings 28 for the shanks of each set of bars are offset substantially the thickness of the bars, and in order to transversely align the touch knobs 29 that are provided on the respective stems, the upper portions of the stems of the inner and outermost bars are offset as indicated at 30 and 31 (Fig. 4). With this arrangement the touch buttons align transversely in the same manner as the touch buttons for the key banks previously described. If desired, the offsets may be made in the fork or leg portions so that the stems will align transversely.

With the arrangement illustrated, the bars are supported upon related keys of the key banks so that when one bar is depressed the keys of the key banks are depressed therewith against action of the springs to set up the desired digits for the multiplicand. When the machine is operated to actuate the dials, the keys of the key banks are released and the springs (not shown) raise the bars to their original position as shown in Fig. 2.

In order to prevent contact of the bar portion with the underside of the plate 13 and thereby eliminate noise, the underside of the plate 14 is preferably provided with a resilient or sound deadening pad 32 that is suitably secured thereto and which acts to cushion the bars when they are returned to their idle position.

The support is carried on the key board in fixed relation with the keys of the key banks by providing ends of the flanges 15 and 16 with laterally directed ears 33, 34, 35 and 36 which may be curved to engage the ends of transverse cleats or ribs 37 and 38 that form parts of the calculating machine. The support for the supplemental key bank is thus retained from sliding movement in any direction of the keyboard yet it may be readily removed merely by lifting the attachment from engagement with the cleat or rib members of the casing.

When the attachment is to be applied, it is readily positioned by sliding the flanges 15 and 16 over the outer sides of the cleats and positioning the attachment laterally so that the ears 33-34 and 35-36 engage the ends of the cleats as shown in Figs. 1, 2 and 4.

In using the attachment it is applied as shown in Fig. 1 so that the legs on the key bars of the lefthand keys in the supplemental key bank register with the lefthand keys in the key banks 8 and 7 respectively and the legs on the key bars of the righthand keys register with the righthand keys of the key banks, while the legs of

the key bars of the intermediate keys register with the intermediate keys of the respective key banks. Thus, when a key in any one of the columns in the supplementary attachment is operated, the corresponding keys in the respective key banks are also operated. The machine is otherwise operated in the customary manner.

It is thus obvious that I have provided an attachment for calculating machines which reduces the number of key operations required in setting up a plurality of tabulations as when itemizing bills, invoices and the like where both amounts and total amounts are required.

What I claim and desire to secure by Letters Patent is:

1. An attachment for calculating machines having related banks of tabulating keys arranged in parallel columns with the columns in one bank corresponding to the columns in the other bank, said attachment comprising a unitary actuating means for simultaneously actuating the corresponding keys of each of the corresponding columns of keys and having portions adapted to engage said keys, and means for removably supporting said actuating means on said calculating machine.

2. In an attachment for a calculating machine having a keyboard including a plurality of banks of keys with individual keys in one bank corresponding to keys of the other bank and rib-like members at opposite sides of the keyboard, said attachment comprising supplemental keys having portions adapted to engage substantially simultaneously the corresponding keys, and supporting means for the supplemental keys and having portions adapted to seat upon the keyboard and adapted to slide over sides of said rib-like members to position said portions of the supplemental keys relatively to the related keys of the calculating machine.

3. An attachment for a calculating machine having related banks of tabulating keys with said keys arranged in parallel columns with the columns in one bank related to columns in the other bank, said attachment including a supporting frame having portions adapted for removable support on said calculating machine, and actuating means carried by the supporting means and adapted to interconnect corresponding keys in the related columns when the supporting frame is placed over said machine with said portions in contact with the keyboard.

4. An attachment for calculating machines having a keyboard including a plurality of laterally arranged banks of keys with individual keys in one bank corresponding with individual keys in the other bank, said attachment comprising spaced upper and lower plate members, key actuators for simultaneous actuating of the corresponding keys including bar portions arranged in sets within the space between said plates, said bar portions of each set arranged in side to side relation, key engaging means on ends of the bar portions and projecting substantially equal distances through slots in the lower plate member for engaging the related keys, stems on the bar portions and extending through slots in the upper plate, and finger touch knobs on the stems, means carrying the plate member and having portions adapted to rest removably on the keyboard for supporting the plate members on the keyboard with the key engaging portions in registry with said keys, said finger knobs for each set of keys being located in transverse alignment.

5. An attachment for calculating machines

having a keyboard including a plurality of laterally arranged banks of keys with individual keys in one bank corresponding with individual keys in the other bank, said attachment comprising spaced upper and lower plate members, key actuators for simultaneous actuation of the corresponding keys including bar portions arranged in sets within the space between said plates, said bar portions of each set arranged in side to side relation, key engaging means on ends of each bar portion and projecting through slots in the lower plate member for engaging respectively a key in one bank and a corresponding key in the other bank, stems on the bar portions and extending through slots in the upper plate, finger touch knobs on the stems, means extending downwardly from the lower plate and having portions adapted to rest upon the keyboard for supporting the plate members on the keyboard with the key engaging portions in registry with said keys, said

finger knobs for each set of keys being located in transverse alignment, and cushioning means on the underside of the upper plate member for engagement by said bar portions.

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