Jan. 19, 1943. W. A. ANDERSON 2,308,907

PRINTING MECHANISM FOR ACCOUNTING MACHINES

Filed June 29, 1939 4 Sheets-Sheet 1

Fig. 1

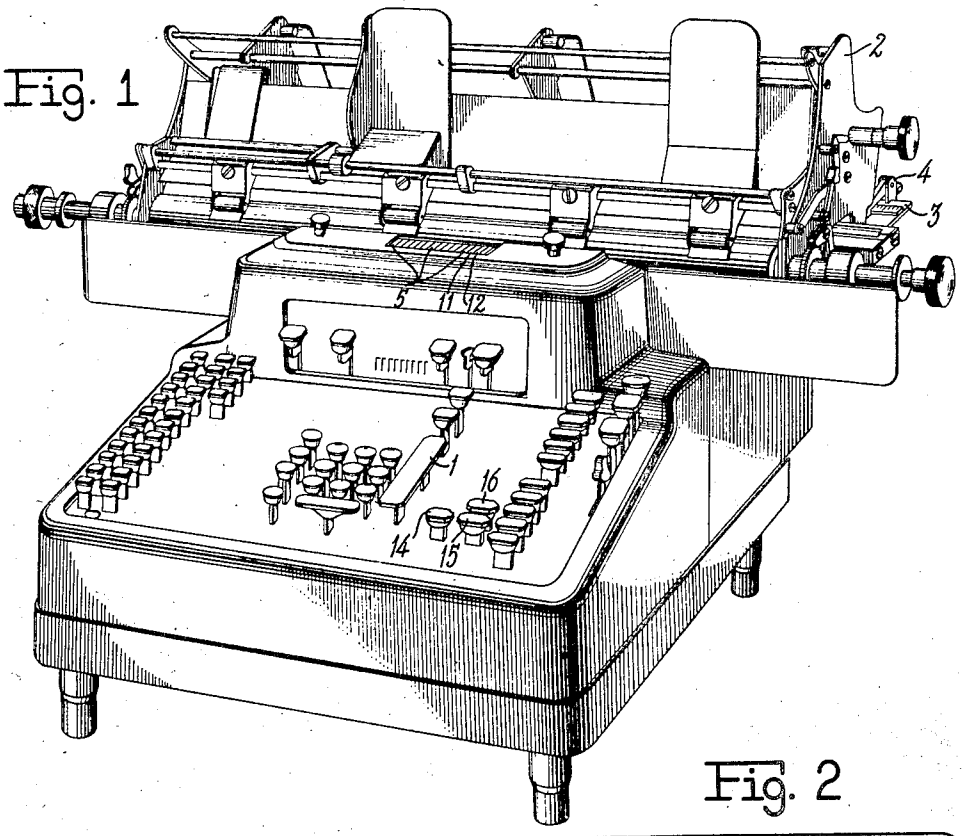
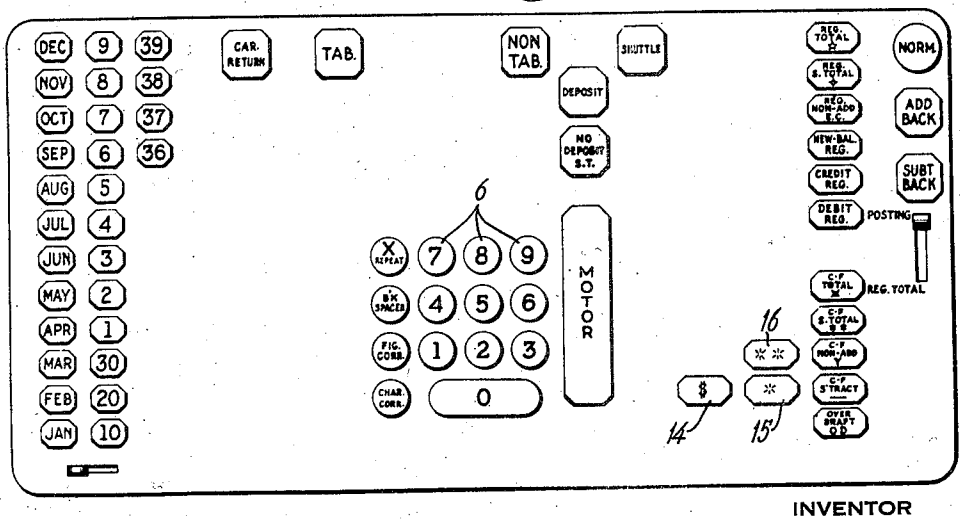


Fig. 2



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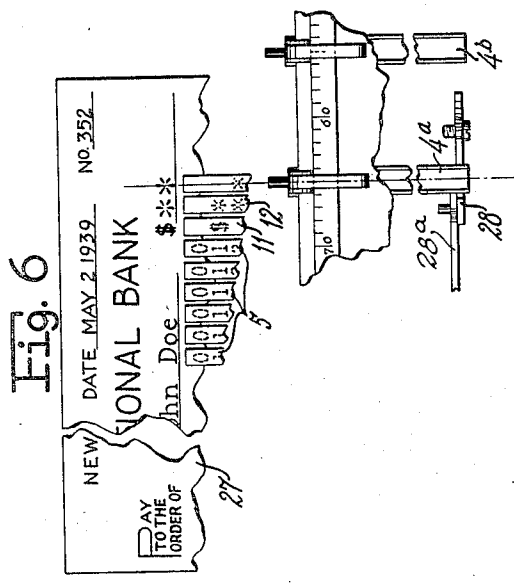

Fig. 6

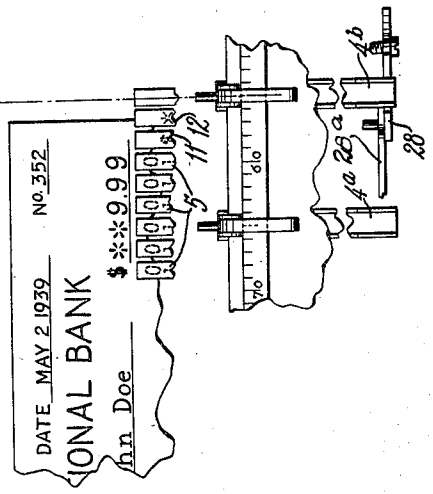

Fig. 7

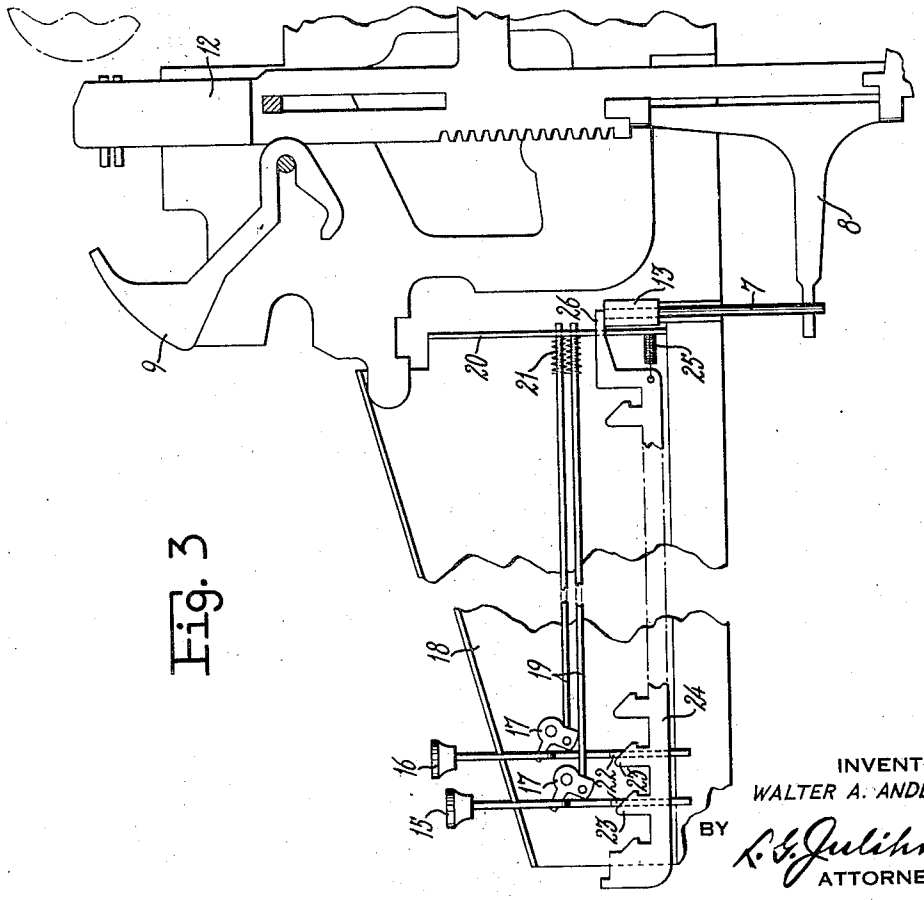

Fig. 3

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Fig. 4

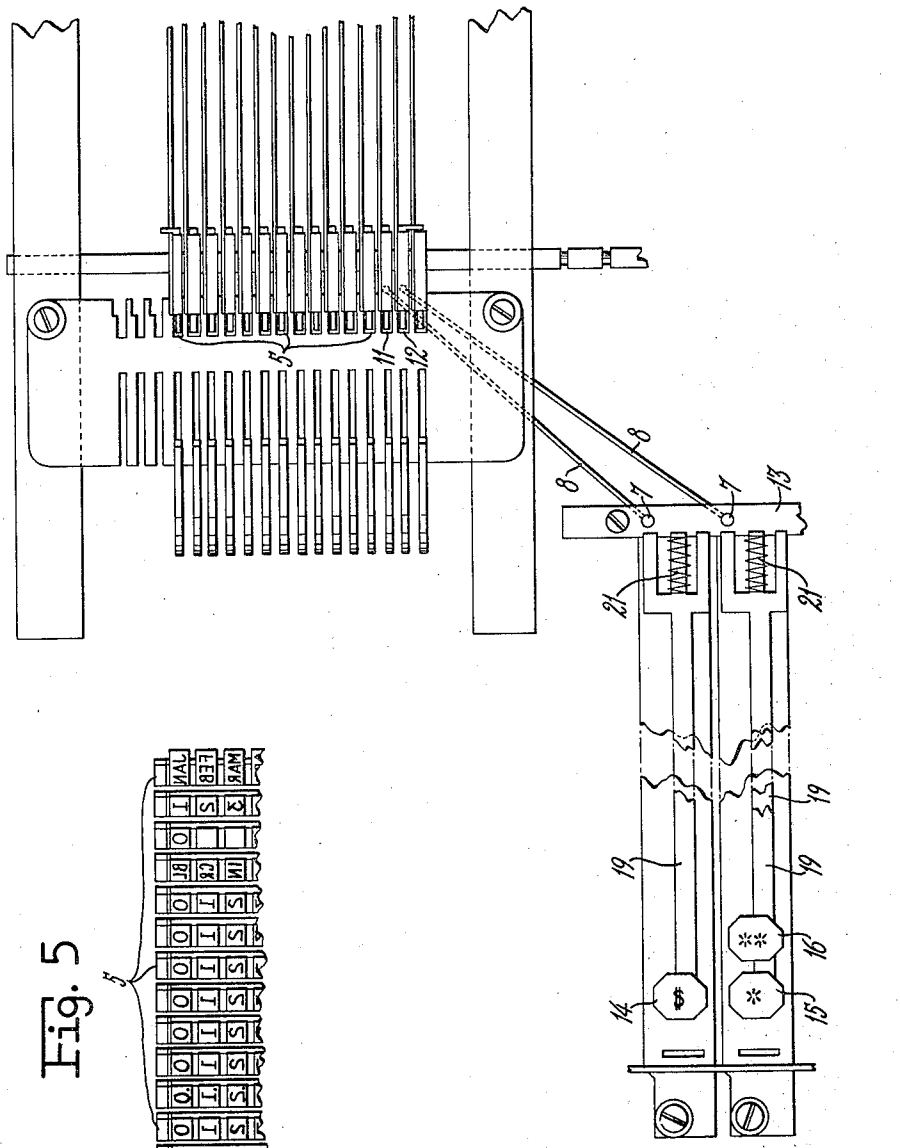

Fig. 5

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Fig. 8.

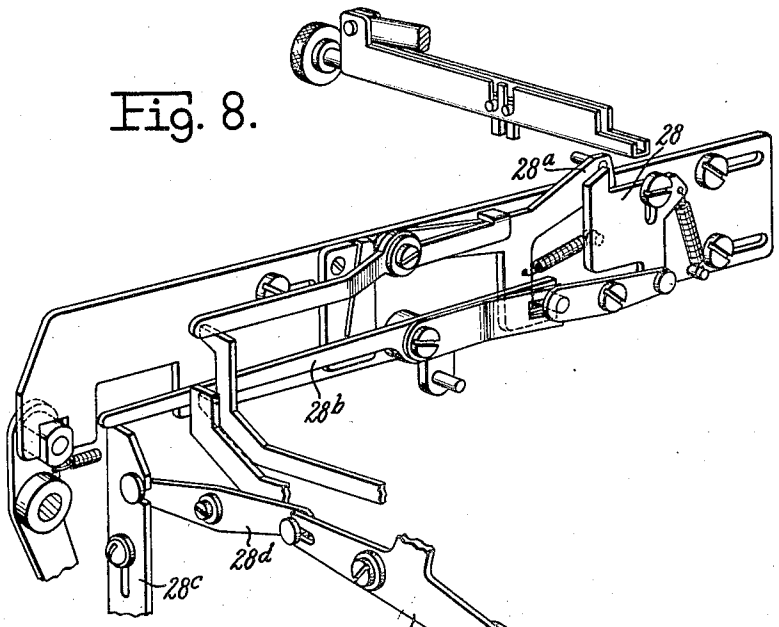
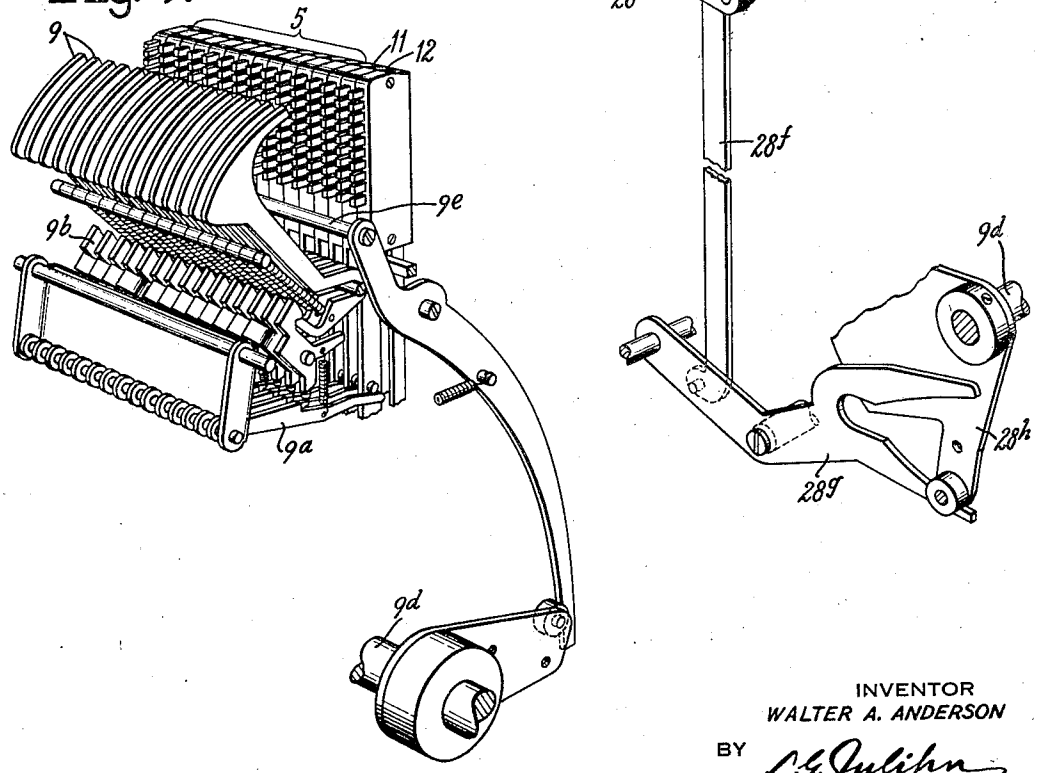


Fig. 9.



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Patented Jan. 19, 1943 2,308,907

UNITED STATES PATENT OFFICE

2,308,907

PRINTING MECHANISM FOR ACCOUNTING MACHINES

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Application June 29, 1939, Serial No. 281,778

3 Claims. (Cl. 101—93)

This invention relates to accounting machines having a traveling paper carriage, and more particularly to a mechanism for printing amounts on bank checks inserted in the carriage.

It is desirable in printing these amounts to have protective marks immediately to the left of the highest order digit to prevent alteration by insertion of additional figures to raise the value of the check.

It is an object of the present invention to provide a simple and effective means, coordinated with the tabulation of the carriage, to enable preprinting of protective characters to the extent necessary in accordance with the amount of a check, the characters being printed before the carriage is tabulated to the position where the amount is printed.

With this and incidental objects in view, the invention consists in certain novel features of construction and combinations of parts, the essential elements of which are set forth in appended claims, and a preferred embodiment of which is hereinafter described with reference to the drawings which accompany and form part of the specification.

In the drawings:

Figure 1 is a perspective view of an accounting machine embodying the invention,

Figure 2 is a diagrammatic view of the keyboard,

Figure 3 is a fragmental right side elevation of the printing mechanism in normal position,

Figure 4 is a top plan view thereof,

Figure 5 is a rear view of the bank of type,

Figure 6 is a diagrammatic view showing the pre-printing of the protective characters on the check as it is stopped in one columnar position,

Figure 7 is a view similar to Figure 6, showing the printing of an amount to the right of the protective marks after the check has been advanced to the next columnar position,

Figure 8 is a perspective of the tabulating mechanism to allow the carriage to move from one columnar position to another, and

Figure 9 is a perspective of the printing mechanism.

Printing mechanism in general

The present invention is shown applied to a machine similar to the one disclosed in the application of Oscar J. Sundstrand, Serial No. 581,800, filed December 18, 1931, now Patent No. 2,194,270.

The machine is operated by an electric motor (not shown) under control of motor bar 1, or under control of a traveling paper carriage 2 in the manner disclosed in said application. The carriage includes a control plate 3, carrying a series of magazines such as 4, with control lugs for automatically controlling the numerous operations that are controlled manually by the keyboard. The carriage is automatically tabulated from column to column and automatically returned. Printing is accomplished by type bars 5, 11 and 12 that are guided for vertical movement in the machine frame, and arranged to be raised and lowered under the control of mechanism such as that disclosed in the above mentioned application. The extent of vertical movement of the type bars is controlled by pins (not shown) that are moved by amount keys 6 into the path of vertically disposed rods such as 7 (Figure 3) connected to the forward ends of arms such as 8 of amount type bars 5 (Figures 1 and 4). Shortly after the type bars have risen to their fullest extents, as determined by the amount indexed on the keyboard, hammers 9 are tripped and strike the type to effect the impression. The tripping of the hammers is effected by fingers 9^a operating their respective hammer latches 9^b as fully explained in the above mentioned application. The parts are restored to their normal positions by a bail 9^e operated by the main drive shaft 9^d, as is also explained in said application.

Protective character printing mechanism

Immediately to the right of the amount type bars 5 are two type bars 11 and 12 (Figure 4). The type bar 11 carries a dollar sign type (Figure 5), and the type bar 12 carries a single asterisk type and a double asterisk type. Type bars 11 and 12 are mounted and operated similarly to type bars 5. Each of these bars has forwardly extending arms 8 that carry upstanding pins 7, guided in a guide block 13 secured to the machine frame. The extent of vertical movement imparted to these bars is controlled by keys 14, 15 and 16, the key 14 controlling the type bar 11 and the keys 15 and 16 controlling the type bar 12. The stem of each key is slotted to receive an arm of a bell crank 17, pivoted in a frame 18 secured to the machine frame. The other arms of the bell cranks are pivoted to the left ends of slides 19, whose right ends serve as stops and extend through openings provided in a flange 20 on the right end of frame 18.

Springs 21, extending between flange 20 and shoulders provided on the slides, normally tension the slides toward the left and maintain the keys in their upper position.

Beveled lugs 22 on the stems of the keys rest on correspondingly beveled surfaces of upstanding hooks 23, formed on a latch slide 24 mounted for sliding movement in frame 18. A spring 25, connected between slide 24 and the machine frame, normally tensions this slide toward the right so that an extension 26 thereof normally overlies pins 7 in block 13, to prevent upward movement of the bars.

Upon depression of one of the keys 14, 15 or 16, its corresponding slide 24 is cammed toward the left, withdrawing extension 26 from above pins 7, the lug 22 being engaged by the hook 23 to hold the key depressed. Simultaneously, the slide 19 corresponding to the key depressed is thrust toward the right so that its right end lies in the path of pin 7 to stop its corresponding bar in the correct position to print from the corresponding type.

Printing of protective characters

The check 27 (Figure 6) is inserted around the platen of the paper carriage 2 in the usual manner, and the carriage is tabulated until a magazine 4^a abuts the usual tabular stop 28^a, as shown diagrammatically in this figure. The protective character keys 14, 15 and 16 are then depressed in accordance with the number of digits in the amount of the check to be printed.

For example, the amount of the check to be printed is "9.99." Therefore, the operator depresses key 14 and key 16 and cycles the machine to print the dollar sign and two asterisks ($**), as shown in Figure 6. During this cycle, tabulating stops 28 and 28^a (Figure 8) are reciprocated by the train of connections 28^b, 28^c, 28^d, 28^e, 28^f, 28^g and 28^h, operated by the main drive shaft 9^d, in the manner described in application Serial No. 581,800, to allow the carriage to advance until the next adjacent magazine 4^b abuts stop 28^a, as shown in Figure 7. The amount "9.99" is then indexed on the amount keys 6 and the machine again cycled to print the amount immediately to the right of the protective characters, as shown in Figure 7.

If the amount of the check involved tens of dollars, such as, for example, "99.99," the operations would be identical with those above described except that in the protective character printing operation, the operator would depress key 14 with key 15 instead of key 16, causing the dollar sign and a single asterisk ($*) to be printed instead of the dollar sign and the double asterisk.

If the amount of the check to be printed involved hundreds of dollars, such as, for example, "999.99," the operations would again be identical with those above described except that only key 14 would be depressed to cause printing of the dollar sign ($) alone.

The distance between magazines 4^a and 4^b with respect to type bars 11 and 12 and the amount type bars 5 is such that it insures printing of the protective characters in such position on the amount space of the check that they lie immediately adjacent the highest order digit of the amount and in correct spacing alignment therewith.

It is apparent from the foregoing that I have provided a simple and effective means for printing protective characters to the extent necessary in accordance with the amount of the check to be printed, and that by such printing arrangement, in combination with the usual column to column tabulation of the traveling carriage, have provided an efficient method of check protection on an accounting machine, eliminating the necessity of repeatedly handling the checks.

While the form of mechanism herein shown and described is admirably adapted to fulfill the objects primarily stated, it is to be understood that it is not intended to confine the invention to the one form of embodiment herein disclosed, for it is susceptible of embodiment in various forms, all coming within the scope of the claims which follow.

What is claimed is:

1. In an accounting machine having a plurality of independently and differentially settable amount printing type, means for causing the type to print in a plurality of decimal orders simultaneously, a traveling paper carriage, and carriage tabulating mechanism, the combination of a mechanism for printing one or more protective characters, the number of characters printed being dependent upon the size of the amount printed and being determined by the operator, the character printing mechanism including manually controlled protective type in a plurality of decimal orders and means to print from the protective type simultaneously, the tabulating mechanism being arranged to arrest the carriage at two predetermined columnar positions, at one of which printing is effected by the amount type and at the other of which printing is effected by the protective type to the left of and adjacent the printed amount.

2. In an accounting machine having a plurality of independently and differentially settable amount printing type, means for causing the type to print in a plurality of decimal orders simultaneously, a traveling paper carriage, and carriage tabulating mechanism, the combination of a mechanism for printing one or more protective characters, the number of characters printed being dependent upon the size of the amount printed and being determined by the operator, the character printing mechanism including manually controlled protective type in a plurality of decimal orders and situated to the right of the amount type, and means to print from the protective type simultaneously, the tabulating mechanism being arranged to arrest the carriage at two predetermined columnar positions, at one of which printing is effected by the amount type and at the other of which printing is effected by the protective type to the left of and adjacent the printed amount.

3. In an accounting machine having a plurality of independently and differentially settable amount printing type, means for causing the type to print in a plurality of decimal orders simultaneously, a traveling paper carriage, and carriage tabulating mechanism, the combination of a mechanism for printing one or more protective characters, the number of characters printed being dependent upon the size of the amount printed and being determined by the operator, the character printing mechanism including manually controlled protective type in a plurality of decimal orders and means to print from the protective type simultaneously, the tabulating mechanism being arranged to arrest the carriage at two predetermined columnar positions, at one of which printing is effected by the amount type during one operation, and at the other of which printing is effected by the protective type to the left of and adjacent the printed amount during the next operation.

WALTER A. ANDERSON.