W. B. STEVENS.

EXPENSE REGISTER.

APPLICATION FILED SEPT. 16, 1919.

1,409,608.

Patented Mar. 14, 1922.

2 SHEETS—SHEET 1.

Fig. 2.

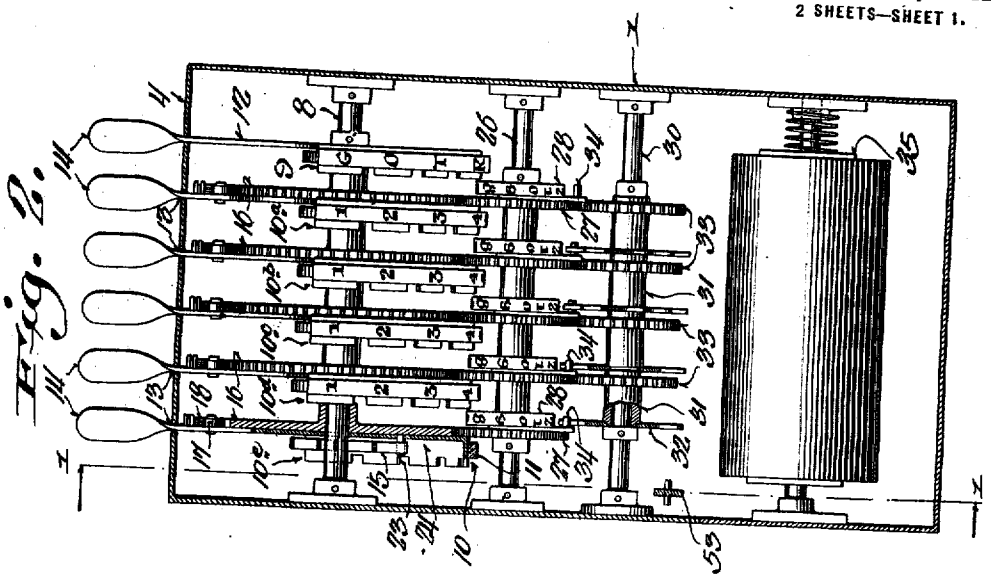
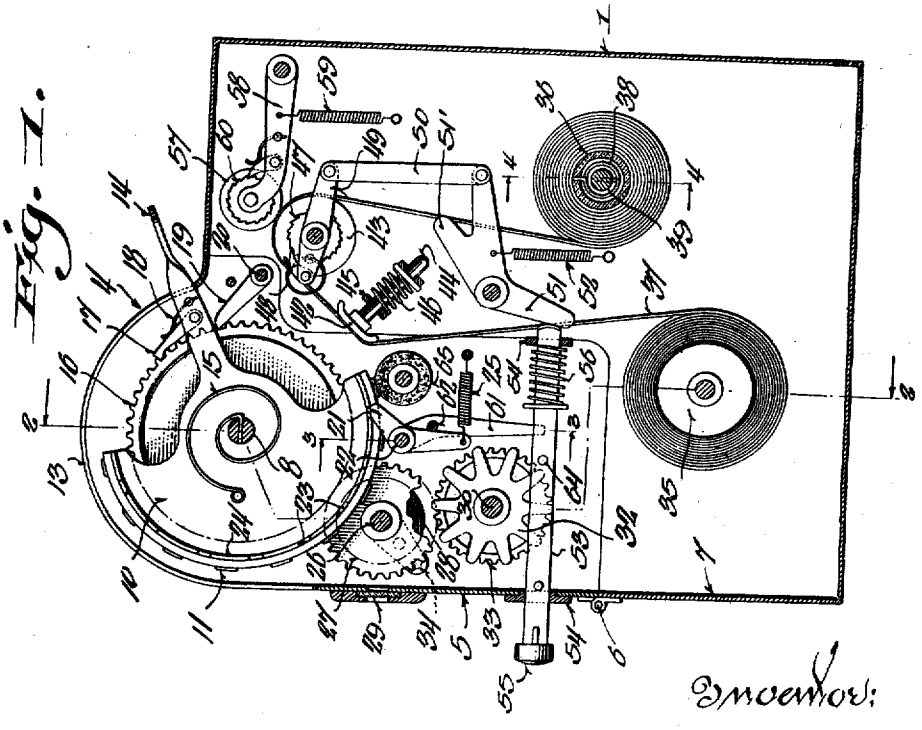


Fig. 1.



Witness:

Inventor:

Waldo B. Stevens

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Attorneys.

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2 SHEETS—SHEET 2.

Fig. 3.

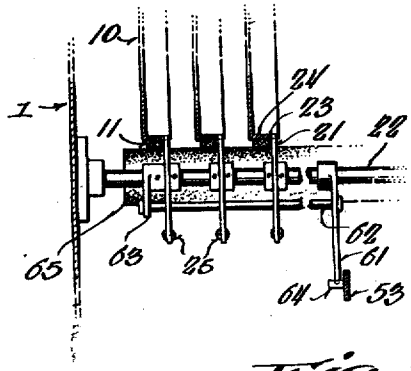
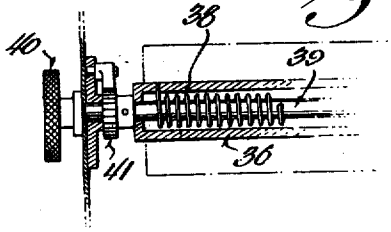


Fig. 4.



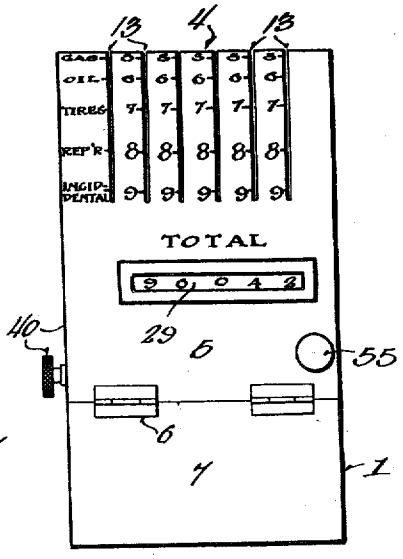


Fig. 5.

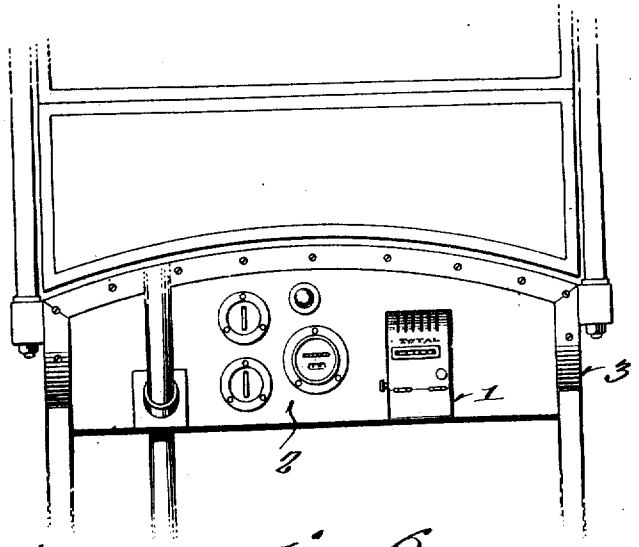


Fig. 6.

Witness:

Inventor:

Waldo B. Stevens

By Young & Young

Attorneys

UNITED STATES PATENT OFFICE.

WALDO B. STEVENS, OF CLINTONVILLE, WISCONSIN.

EXPENSE REGISTER.

1,409,608. Specification of Letters Patent. Patented Mar. 14, 1922.

Application filed September 16, 1919. Serial No. 324,070.

To all whom it may concern:

Be it known that I, WALDO B. STEVENS, a citizen of the United States, and resident of Clintonville, in the county of Waupaca and State of Wisconsin, have invented certain new and useful Improvements in Expense Registers; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to new and useful improvements in integrating registers, particularly those of the recording type.

The primary object of the invention is to provide a means whereby the various items of expense connected with the operation of an automobile may be tabulated and recorded so that a permanent record of operating costs may be preserved. In this connection it is desirable that the mechanism be secured to the automobile, for instance upon the dashboard, so as to become a more or less permanent accessory thereof.

It is another object of the invention to provide a register of this type in which the several expense items may be individually recorded upon a strip of paper or the like and in which the total of the several items will always be visible to the machine operator.

A still further object is to provide a simply constructed recording register, the interior mechanism of which is readily accessible to permit replacement or repair of parts and the insertion of new recording ribbons, etc.

With these several objects in view, the invention consists in the novel features of construction, combination and arrangement of parts which will be hereinafter more particularly described and claimed.

In the accompanying drawings:

Figure 1 represents a vertical transverse sectional view taken substantially on the plane of the line 1—1 of Figure 2.

Figure 2 is a vertical sectional view taken approximately at right angles to the plane of the section of Figure 1 and substantially on the plane of the line 2—2 of Figure 1.

Figure 3 is a detail sectional view on the line 3—3 of Figure 1.

Figure 4 is a similar view on the line 4—4 of the same figure.

Figure 5 is a front elevational view of the register, and

Figure 6 is an elevational view of the interior portion of the front end of an automobile showing the location of my invention upon the dashboard thereof.

Referring more particularly to the drawings, especially to Figure 6, it will be seen that substantially all of the operating parts of the invention are enclosed within a suitable sheet metal or similar casing 1 which can be readily mounted upon the dashboard 2 of an automobile body 3 and located adjacent the other indicating or registering devices thereon. It is obvious, however, that said casing 1 may be conveniently located elsewhere, but it is desirable that it be secured against ready removal upon some portion of the motor vehicle, the expense of operation of which is to be kept.

The casing 1 is substantially rectangular except at its upper front portion which is approximately semi-cylindrical as at 4. This latter portion forms a part of a removable front 5 which is hinged at its lower edge as at 6 to the stationary front panel 7 of the casing. By swinging the removable front outwardly the interior of the casing will be exposed thereby permitting an examination of the operating mechanism or a replacement of exhausted parts as will hereinafter be more particularly set forth.

The removable portion 5 of the casing 1 carries a fixed shaft 8 which is positioned concentrically with the semi-cylindrical portion 4 and has journaled thereon a plurality of type plates 9 and 10, each of the plates being substantially semi-circular and having type 11 on their peripheries. The type on the plate 9, which will be hereinafter referred to as the items disk, are in the form of letters, such as G, O, T, etc., to designate the several ordinary items of expense which it is desired to record; the several plates 10, on the other hand, however bear numerals running from 1 to 9. From Figure 2 it will be seen that there are five of the numbered plates 10; the plates 10^a, 10^b and 10^c being hereinafter referred to as the dollars disks, and the plates 10^d and 10^e the cents disks.

Each of the several plates 9 and 10 has a radially projecting arm 12 which extends through a slot 13 in the arcuate portion 4 of the casing and terminates in a finger-piece 14. When the several plates 9 and 10 are in

their inactive positions, the arms 12 will seat against the rear ends of the slots 13, the parts will be retained in this position by return springs 15, one of which is carried by each of the plates, one end being connected thereto and the other end to the stationary shaft 8 as clearly shown in Figure 1. Thus when either of the plates 9 or 10 is rotated in one direction by movement of the arm 12 thereof toward the front of the casing, it will be automatically returned to its normal inactive position as shown in the last mentioned figure upon release of the finger-piece 14 on said arm.

A type gear 16 is journaled on the shaft 8 adjacent each of the dollars and cents disks, and is adapted to be revolved in one direction by the rotation of the adjacent plate 10 in a counterclockwise direction as seen from Figure 1. Thus simultaneous movement of either of the plates 10 and the adjacent type gear 16 is procured by means of a pivoted dog or pawl 17 mounted on the arm 12 of the particular plate which is being moved. The several dogs are each held in engagement with their respective type gears by leaf springs 18, but the shape of the former is such that upon return of the plates 10 to normal position, they will ride over said teeth. Retrograde action of the type gears 16, or movement thereof in a clockwise direction as viewed in Figure 1, is prevented by a gravity actuated detent 19 pivoted as at 20 on a shaft or rod carried by the swinging part 5 of the casing.

Each of the several type plates 9 and 10 are held in any one of several different positions and against the tension of their return springs 15 by a latch bar 21, the same being pivoted upon a release shaft 22. Each of the latch bars 21 is in the form of an intermediate pivoted lever, one end of which is designed to rest in a latch bar seat 23, several of which are formed in an arcuate flange 24 carried by each of the plates 9 and 10. The number of these seats 23 in each of the flanges 24 depends upon the number of points at which it is desired to stop the items disk 9 or any of the several dollars and cents disks 10. A contractile spring 25 connected with the opposite end of each of the latch bars normally urges the seat engaging portions thereof toward the flanges 24. The several latch bars 21 are adapted to be simultaneously moved away from the flanges 24 against the tension of said springs 25 in a manner to be hereinafter more particularly explained.

Below the shaft 8 and substantially parallel thereto is fixed an intermediate shaft 26 on which is journaled a plurality of intermediate gears 27, each of these gears being meshed with one of the type gears 16 as most clearly shown in Figure 2. Each of the gears 27 is preferably of such a diameter that it will make one complete revolution for each half revolution of the type gear 16 with which it is connected, or in other words for each complete movement of each of the plates 10 one revolution of the adjacent intermediate gear 27 will have been made. Each of the intermediate gears 27 has a totals disk 28 fixed thereto, each of these disks having numerical symbols thereon which run from zero to 9. As the disks 28 are rotated the symbols thereon will be successively brought into registration with a window or sight opening in the front of the casing 1, said opening being covered by a pane 29.

A third or lower stationary shaft 30 is positioned below and parallel to the intermediate shaft 26 and journally carries a plurality of sleeves 31. On one end of each sleeve is fixed a ten-point star wheel 32, and on the opposite end is secured a star wheel gear 33. From Figure 2 it will be seen that there is a star wheel gear meshing with each of the intermediate gears 27 with the exception of the intermediate gear which is rotated by the movement of the cent disk 10^c. Likewise it will be seen that each of the star wheels 32 is designed to be engaged by a finger 34 carried by each of the totals disk 28 with the exception of the one actuated by the dollar disk 10^a. The parts carried by the two shafts 26 and 30 may be designated the totals register and comprise an integrating mechanism which will always show the total of the several items recorded in the manner to be explained.

Located in the stationary part of the casing 1 and adjacent the lower portion thereof is a supply roll 35 and a receiving roll 36 around which a sheet or strip of recording paper or the like 37 is wound. The supply roll 35 is removably journaled in the opposite side walls of the casing 1, it being readily removable so that a new or full supply of paper may be placed in the machine. The receiving roll is similarly journaled and is likewise removable, but in addition to these features it is provided with a tension spring 38 which will tend to urge it to rotate in one direction whereby the paper strip will always be retained taut.

Figure 4 illustrates the manner in which proper tension may be procured on this receiving roll 38 from the exterior of the casing 1, the shaft 39 of the roll being extended through one wall of the casing and having a hand wheel 40 fixed thereto. Thus upon rotation of the wheel 40 in a proper direction, the tension of the spring 38 is increased, this tension being retained in view of a pawl and ratchet arrangement 41 as shown in said figure.

The paper strips 37 in passing from the supply roll to the receiving roll move over the face of a platen bar 42 and around a feed roller 43. The platen bar is provided with a

plurality of guide pins 44 which slide in suitably carried guides 45 as in Figure 1. Said bar is normally held in retracted position by expansile coil springs 46 which are disposed around the guide pins 44.

The feed roller 43 is moved step by step by means of a ratchet 47 and a pawl 48, the former being carried by the roller itself and the pawl by a lever 49 pivoted upon the journal of the roller. One end of the lever 49 is connected by means of a link 50 with one arm of an angle lever 51. The other arm of said lever 51 is urged by means of a contractile spring 52 into engagement with the inner end of a push rod 53.

This push rod 53, which is preferably in the form of a flat bar, extends horizontally and through the front of the casing 1, it being slidable in bearings 54 carried by said casing and has a head or finger piece 55 on its outer end. An expansile spring 56 surrounding the push rod and engaging a stop thereon and one of the bearings 54 normally urges the same outwardly of the casing. When the push rod 53 is moved inwardly, the angle lever 51 will be rocked to engage a finger 51′ thereof with the inner end of one of the guide rods 44; the platen is thereby projected toward the type plates 9 and 10, the plane of direction being radial to the shaft 8. Upon release of the push rod 53, the contractile spring 52 will return the angle lever 51 to normal position, thus rocking the lever 49 and rotating the feed roller 43 through the instrumentality of the pawl and ratchet arrangement connected therewith.

A tension roller 57 which is of a floating type is designed to press against the strip of paper 37 as it passes around the feed roller 43, this tension roller being journally carried by pivoted arms 58 which are urged downwardly by a contractile spring 59. A pawl and ratchet arrangement 60 connected with the roller 57 prevent rotation thereof in one direction while permitting the same to be moved in the opposite direction by the rotation of the feed roller 43.

The hereinbefore referred to release mechanism for the retaining latch bars 21 is operated by the shifting of the push rod 53 and comprises a releasing lever 61 fixed to said release shaft 22, a release rod 62 one end of which is carried by the lever 61 and the other end carried by an arm 63 extending from said release shaft 22, and a releasing pin 64 projecting from said push rod 53. From Figure 1 it will be seen that the lower or free end of the releasing lever 61 extends into the path of movement of the pin 64, but owing to the location of the pivot point of said lever, the same will ride over said pin during both the inward and outward movement of the push rod 53. When the latter element is shifted inwardly of the casing 1, the pin 64 will swing the lever 61 in such a direction that the release rod 62 will be moved away from the latch bars 21, but upon the return of the push rod to the position indicated in Figure 1, the pin 64 will carry the lever 61 in the opposite direction or outwardly so that the rod 62 will engage and rock the latch bars; the disengagement of the active ends thereof from the seats 23 will result.

During the movement of the type 11 of the several type disks 9 and 10 from inactive to active position and vice versa, they will pass over and wipe against an ink roll 65. This roll is of the ordinary absorbent type which, when treated with the proper kind of inking materials, will store up a sufficient amount of ink to coat the several type 11 an infinite number of times.

Assuming that the parts of the invention are arranged as shown in Figure 1, with the roll 65 properly inked, and a strip of recording paper 37 disposed on the supply and receiving rolls 35 and 36 respectively with the intermediate portion thereof over and around the platen 42 and the feed roller 43, the operation of the invention will be substantially as follows: For convenience it will be considered that the machine has already been in use a considerable length of time and that there has been recorded a total of $959.00 in operating expenses, such as for repairs, gasoline, tires and the like, and that there has been a recent purchase of gasoline totalling $1.42 which is still to be recorded. All of the several items that make up this total of $959.00, which is visible through the window 29, are recorded individually on the strip of paper 37.

Now, therefore, to record the new item of $1.42 for gasoline and thus raise the total to the amount indicated in Figure 5, the finger-piece 14 of the items disk 9 will be moved to the front of the casing until it coincides with the indicator designated "gas" as shown in Figure 5, this designation being on the outside of the curved portion 4 of said casing. This movement of the items disk 9 will position the character G thereon, which is the abbreviation used to represent gas or gasoline, in the plane of the path of movement of the platen bar 42.

Thereafter the finger-piece 14 of the dollars disk 10^c is moved in the same direction as the first mentioned finger-piece of the items disk until it coincides with the indicated point designated by the symbol "1" painted or otherwise marked on the arcuate part 4 of the casing 1. The type "1" on the disk 10^c will thereby be brought into alignment with the platen bar 42 as in the case of the type "G". In the same way both of the cents disks 10^d and 10^e will be rotated to position the proper types "4" and "2" in alignment with the platen bar. Each

of the several disks 9, 10^c, 10^d and 10^e will be held in these adjusted positions by the latch bars 21 and the latch bar seats 23.

As hereinbefore mentioned, prior to the movement of the disks 10^c, 10^d and 10^e, the total of $959.00 appears through the window 29, the character "9" being on the totals disk 28 operated by the dollar disk 10^a, the character "5" being on the totals disk operated by the dollar disk 10^b, the character "9" being on the totals disk rotatable by the dollar disk 10^c, while the zeros indicating the zero number of cents were on the totals disks operable by the cents disks 10^d and 10^e. In view of such an arrangement of the disks, movement of the disk 10^c to place the character "1" in printing position causes the totals disk 28 connected therewith to move to expose its zero instead of the "9" previously exposed. This shifting of this totals disk rotated the star wheel adjacent thereto with the consequent movement of the star wheel gear 33 on the same sleeve 31 as said star wheel with the result that the next adjacent totals disk, or the one actuated by the dollar disk 10^b, is shifted to move the character "5" out of alignment with the window 29 and to expose the character "6". In a similar manner the movement of the cents disks 10^d and 10^e causes a slight movement of the star wheels connected therewith, but such movement is insufficient to actuate the star wheels or totals disks of the dollar disks 10^a, 10^b or 10^c. However, owing to the integrating nature of the totals register, a sufficient number of these slight movements would influence the rotation of the dollar totals disks 28 as is obvious.

The types 11 on the disks 9 and 10, which have been shifted as above set forth, having been inked by engagement with the ink roll 65, will record on the paper 37 when the platen bar is moved theretoward. Such movement of the bar is carried out in the manner hereinbefore mentioned, that is to say by pressing the finger-piece 55 of the push rod 53. After the recording of this item is complete, the disks 9, 10^c, 10^b and 10^a are returned to their normal positions by their return springs 15 upon release of the push rod 53, outward movement of said push rod procuring the disengagement of the latch bars 21 from their seats 23 as hereinbefore particularly set forth. Likewise the platen bar 42 is returned to retracted position and the paper strip 37 shifted to expose a new and unprinted surface, said paper strip having been shifted by the actuation of the feed roller 43.

I claim:

1. An expense register adapted to be attached to the instrument panel of an automobile, said register comprising a casing rectangular in general outline, with the front half of the upper end curved upwardly to form a segment of a cylinder, said segment being provided with slots, recording disks mounted concentrically within said cylindrical segment, means extending through said slots for setting said disks, means for holding said disks in their set position, means for recording the amount represented by said disks, a reciprocable member extending through the front wall of said casing, means actuated by said reciprocable member on its inward stroke to operate said recording means, and means actuated by said reciprocable member on its return stroke to release said disks.

2. A device of the character described comprising a casing provided with slots, recording disks mounted within said casing, means extending through said slots for setting said disks, means for holding said disks in their set position, means for recording the amount represented by said disks, a reciprocable member extending through the walls of the casing, means actuated by said reciprocable member on its inward stroke to operate said recording means, and means actuated by said reciprocable member on its return stroke to release said disks.

3. An expense register adapted to be attached to the instrument panel of an automobile, said register comprising a casing rectangular in general outline, with the front half of the upper end curved upwardly to form a segment of a cylinder, said segment being provided with slots, recording disks mounted concentrically within said cylindrical segment, means extending through said slots for setting said disks, means for holding said disks in their set position, means for recording the amount represented by said disks, a reciprocable member extending through the front wall of said casing, means actuated by said reciprocable member on its inward stroke to operate said recording means, means actuated by said reciprocable member on its return stroke to release said disks, and means for visually totalizing all amounts recorded.

4. A device of the character described comprising a casing provided with slots, recording disks mounted within said casing, means extending through said slots for setting said disks, means for holding said disks in their set position, means for recording the amount represented by said disks, a reciprocable member extending through the walls of the casing, means actuated by said reciprocable member on its inward stroke to operate said recording means, means actuated by said reciprocable member on its return stroke to release said disks, and means visually totalizing all amounts recorded.

5. In a machine of the class described, a movable symbol carrying member, said member being normally urged to one position, a

platen, a recording sheet carried by the platen, a dog and ratchet for holding the member in any one of several positions to align one of the symbols thereon with the platen, resilient means normally holding said platen in retracted position, a lever for raising said platen to print said symbols on the recording sheet, a slidable spring returned rod for actuating said lever and means on said rod for setting and releasing said dog and ratchet.

6. In a machine of the class described, a plurality of movable symbol carrying members, the same being independently shiftable to procure a plurality of combinations of symbols, each of said members being normally urged to inactive position, a platen, a recording sheet carried by the platen, a dog and ratchet for holding the several members in any one of a plurality of positions to align the desired symbols with the platen, resilient means normally holding said platen in retracted position, a lever for raising said platen to print said symbols on the recording sheet, a slidable spring returned rod for actuating said lever and means on said rod for setting and releasing said dog and ratchet.

7. In a machine of the class described, a plurality of movable symbol carrying members, each being independently shiftable to procure a plurality of combinations of symbols, said members being normally urged to inactive position, an integrating totals register connected with the several symbol carrying members, a platen, a recording sheet carried by the platen, means for moving the symbol carrying members to selectively align the symbols thereon with said platen, a dog and ratchet for holding the members in said selected position, resilient means normally holding said platen in retracted position, a lever for raising said platen to print said symbols on the recording sheet, a slidable spring returned rod for actuating said lever, and means on said rod for setting and releasing said dog and ratchet.

In testimony that I claim the foregoing I have hereunto set my hand at Milwaukee, in the county of Milwaukee and State of Wisconsin.

WALDO B. STEVENS.