

Sept. 22, 1925.

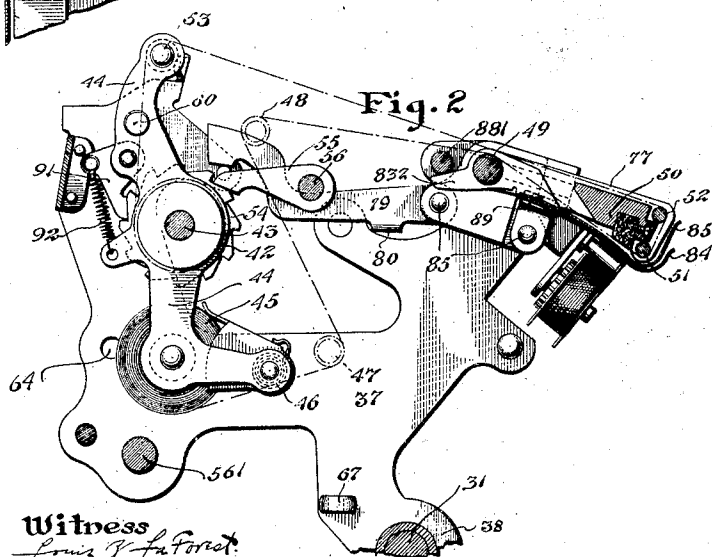
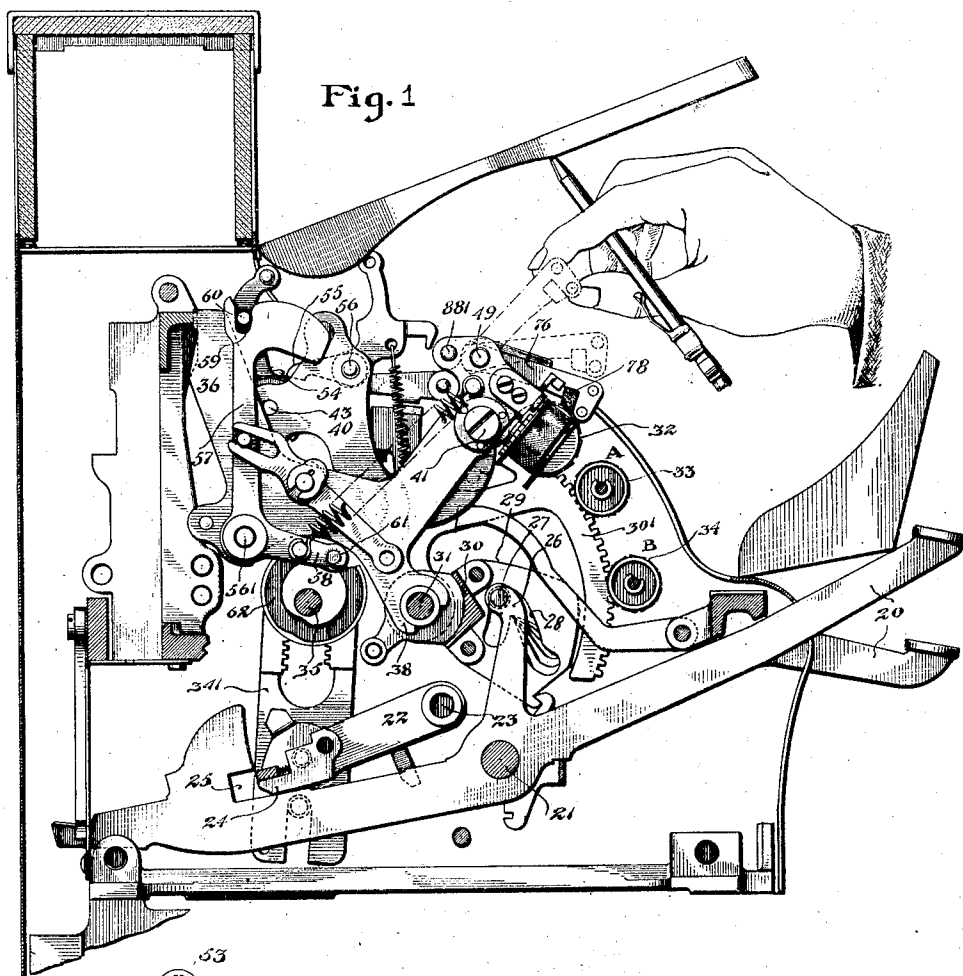
1,554,761

R. E. RICE

PRINTING MECHANISM FOR ACCOUNTING MACHINES

Filed Aug. 28, 1922

2 Sheets-Sheet 1



Witness  
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Fig. 3

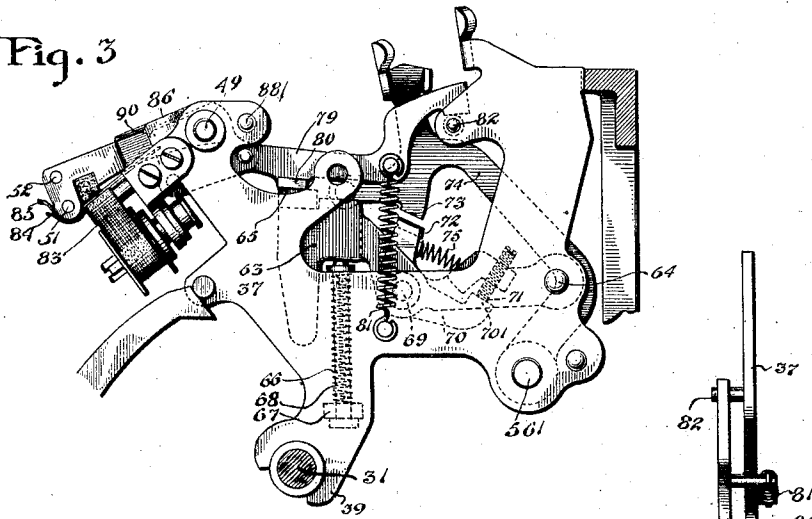


Fig. 4

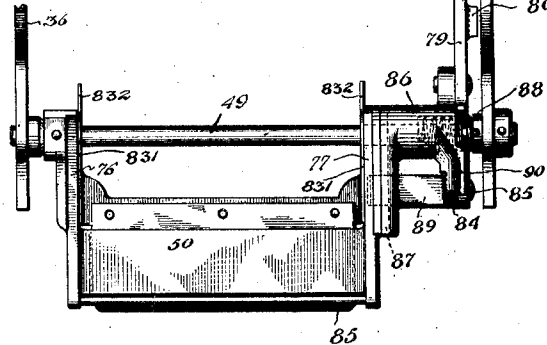
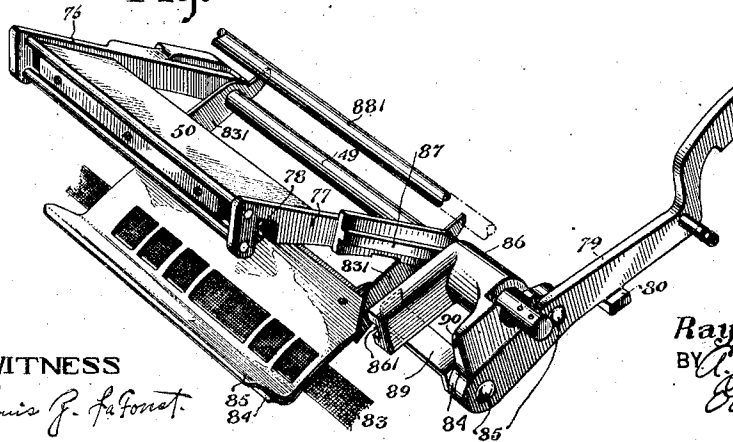


Fig. 5



WITNESS

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Patented Sept. 22, 1925.

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# UNITED STATES PATENT OFFICE.

RAYMOND E. RICE, OF ILION, NEW YORK, ASSIGNOR TO REMINGTON ARMS COMPANY, INC., A CORPORATION OF DELAWARE.

## PRINTING MECHANISM FOR ACCOUNTING MACHINES.

Application filed August 28, 1922. Serial No. 584,722.

*To all whom it may concern:*

Be it known that I, RAYMOND E. RICE, a citizen of the United States, residing at Ilion, in the county of Herkimer and State of New York, have invented certain new and useful Improvements in Printing Mechanism for Accounting Machines, of which the following is a specification.

This invention relates to accounting machines and more particularly to the printing mechanism of the same.

One object of the invention is to improve the construction of that type of printing mechanism disclosed in the British Patents 135,465; 140,363; 157,823; 157,824; 157,825, of July 11, 1921, and in the application filed by Frederick L. Fuller, S. N. 263,125, filed Nov. 19, 1918, and to provide an improved type of platen which may be raised at will in order to gain access to the printing wheels and ribbon.

Another object is to provide means for locking the platen in its normal position where it is effective for printing items and totals in connection with means for automatically moving the platen away from its normal position whenever the manipulative releasing means is operated. As will be more clearly apparent later on, however, the improvements are capable of being applied to or embodied in other accounting machines without departing from the spirit of the invention.

With these and incidental objects in view, the invention consists in certain novel features of construction and combination of parts, a preferred form of embodiment of which is hereinafter described with reference to the drawings which accompany and form part of the specification.

Fig. 1 is a central transverse sectional view of the type of machine disclosed in the Fuller application with this invention applied thereto. Fig. 2 is a view partly in elevation and partly in section showing one side of the printer frame and associated mechanism. Fig. 3 is a view similar to Fig. 2 showing the opposite side of the same printer frame. Fig. 4 is a top plan view showing the platen, means for operating the same and the manipulative device whereby the platen may be disconnected from the operating means and raised at will. Fig. 5 is a view in perspective of the parts

illustrated in Fig. 4 with the platen in elevated position.

Described in general terms the illustrative machine comprises a series of manipulative devices such as keys 20 operable to actuate totalizing mechanism and mechanism for entering the items on a record strip.

The keys 20 are pivoted upon a rod 21 and resting upon the rear ends of the keys is a key coupler 22 pivoted at 23. When the outer ends of the keys are depressed the coupler is rocked clockwise about its pivot and its nose 24 enters the notch 25 in the rear ends of the keys. The construction and purpose of key coupler mechanisms are well known in the art and need not be discussed herein.

As shown in Fig. 1 each key 20 is formed with an upwardly extending arm 26 carrying a stud 27 engaging a slot 28 in a plate 29 rigidly mounted in a frame 30 loosely mounted on the shaft 31. The slots 28 in plates 29 are graduated so that each of the keys will impart a differential movement to the frame 30. Secured to the frame 30 is a segmental rack 301. It is to be understood that the keys 20 are arranged in banks and that for each bank there is a differentially actuated frame 30 and its corresponding segment rack. Each segment meshes with a pinion rigid with its corresponding item type wheel 32 and sets up numbers which correspond to the value of the key depressed.

Pivotaly mounted below the item type carrier 32 and engaging the segmental rack hereinbefore mentioned are two totalizers 33 and 34, designated as totalizers "A" and "B" in Fig. 1 of the drawings. These may be utilized for the purpose of registering amounts for separate departments or clerks and they have manipulative means associated therewith in order that either totalizer may be operated to register amounts of the various transactions. The totalizer engaging mechanism is not directly involved in the present invention and is not shown or described in this application, and for a detailed description thereof reference may be had to the Fuller application above mentioned.

Connected to the key coupler is a double rack 341, the connection being such that as

the coupler is rocked by the keys the rack is raised or lowered, and drives a shaft 35 in such a manner that a complete reciprocation of the coupler will effect a complete rotation of the shaft. The shaft 35 carries cams and other devices for operating various parts of the mechanism. The mechanism for effecting rotation of the shaft has not been shown or described in detail because it is old and well known in the art.

Referring more particularly now to the printing mechanism of the machine whereby the items of the various transactions may be printed upon a record strip, two side plates 36 and 37 are provided with claws 38 and 39 engaging the rod 31. The paper rolls and paper feed mechanism are carried in a separate frame 40, which is pivoted to the side plate 36 by a stud shaft 41 in order that it may be rotated about this shaft when it is necessary to replenish the paper supply. A storage roll 42 is journaled on a shaft 43 secured to the plate 40 and serving as a pivot for a rocking arm 44.

As described more fully in the Fuller application referred to, the paper passes from a supply roll 45 under rollers 46 and 47 over roller 48, over a shaft 49, under a platen 50, around rollers 51 and 52, to and around a roller 53 carried by the arm 44 and then to the storage roll 42. The arm 44 is given a rocking movement at each operation of the machine by means hereinafter to be described, and the rocking of said arm will draw the paper around the platen to a position where it may be printed upon by the item type carriers and then back past its original position in order that the last impression may be read.

The storage roll is provided with a ratchet wheel 54 (Fig. 2) which engages a retaining pawl 55 pivoted to the plate 40 at 56. The arm 44 also carries a feeding pawl 91 held in engagement with the ratchet wheel 54 by means of a spring 92. It will be evident that when the arm 44 is rocked clockwise about the shaft 43 the storage roll will be held stationary by the retaining pawl 55 and the feeding pawl 91 will be moved to engage the next tooth of the ratchet, and on the return movement will cause the feeding pawl to rotate the ratchet and the storage roll one step forward. By this means the items which have been printed upon the record strip will be spaced at regular intervals.

The means for rocking the arm 44 will now be described. Fast to the main operating shaft 561 of the printer frame is a bell crank lever 57. The vertical arm of the bell-crank lever is provided with a notch 59 which receives a stud 60 fast to the rocking arm 44. The horizontal arm 58 of the bell crank lever carries a roller 61 which coacts with a box cam 62 fast to the shaft

35. As has been mentioned heretofore, the shaft 35 is given a complete rotation at each operation of the machine and rotation of the cam will thereby rock shaft 561, and, thru the vertical arm of the bell crank lever, will rock the arm 44 to perform the various functions described.

The platen is actuated by a hammer 63 pivoted to the side frame 37 by a stud 64, (Fig. 3). The hammer is provided with a hammer portion 65 and is forced upwardly by a spring 66 bearing against a lug 67 and guided by a pin 68. The hammer is provided with a pivot 69 upon which is mounted a hammer retracting pawl 70 having a tail 701 bearing against an adjustable stop 71 on the hammer arm. This pawl is provided with a bent over portion or lug 72 co-operating with the nose 73 of an arm 74. A spring 75 tends to keep the tail 70 of the pawl in contact with the adjustable stop. The arm 74 is secured to the shaft 561 which, as before explained, is rocked at each operation of the machine.

Extending transversely between the printer side frames 36 and 37 is a platen shaft 49 upon which is supported the platen 50 by means of arms 76 and 77 (see Fig. 4) secured to the said shaft. The under face of the platen is provided with a rubber cushion 78, as clearly shown in Fig. 2.

Extending rearwardly from and connected to the platen by means to be described hereinafter is an arm 79. The arm 79 carries a lug 80 which is actuated by the hammer to force the platen against the type to take a printing impression. A spring 81 tends to draw the rear end of the lever 79 downwardly against a stud 82 carried by the printer side frame 37.

The operation of the parts just described will now be described. When the arm 73 is rocked counter-clockwise (Fig. 3) by means of shaft 561, the nose 73 on the arm will bear against the lug 72 of the pawl 70 and retract the hammer against the tension of the spring 66. Upon a further movement the nose 73 will clear the lug of the pawl and permit the hammer to strike the lug 80 of the arm 79 and rock the platen downwardly to effect a printing impression from the type carriers.

An inking ribbon 83 is interposed between two plates 84 and 85 supported by arms 831 loosely mounted on shaft 49 and passes between the rubber cushion 78 of the platen and the type wheels 32. The arms 831 are provided with rearwardly extending tails 832 which engage the underside of a shaft 881 extending transversely between the printer side frames 36 and 37. This provides means for retaining the ribbon guide in its normal position and limits the downward movement thereof. The means for feeding the inking ribbon is described in de-

tail in the Fuller application referred to and since the same is not involved in this invention it will not be described in this application.

5 Coming now more particularly to the invention disclosed in this application, and referring to the perspective view shown in Fig. 5, there is provided a latch or clutch 86 loosely mounted on the shaft 49 and adapted  
10 to connect or disconnect the arm 79 and the platen at will. The clutch is provided with a downwardly extending ear 84 secured at 85 to the arm 79 hereinbefore referred to. The clutch is provided with a notch 861  
15 which is adapted to engage with a rib 87 formed on one side of the platen arm 77. A spring 88 surrounding shaft 49 interposed between a collar fast to said shaft and the clutch tends to force the notch 861 and the  
20 locking rib 87 into their normal or locking position, (see Fig. 4). While it is not an indispensable feature, in the preferred form a leaf spring 89 (Figs. 4 and 5) carried by the arm 79 extends under the arm 77 of the  
25 platen 50, as clearly shown in Fig. 4. When the platen is in its normal position, as shown in Fig. 2, the leaf spring 89 is tensioned by the arm 77 of the platen.

From the above description it is evident  
30 that if at any time the operator is desirous of obtaining access to the printing type wheels or ribbon in order to clean the various parts of the printing mechanism, he may readily do so by resting his thumb upon  
35 the finger-piece 90 and sliding the clutch to the right as viewed in Fig. 4, against the tension of the spring 88. The notch 88 and rib 87 will become disengaged and the tension stored in the leaf spring 89 will throw  
40 the platen upwardly. By releasing the pressure on the finger piece the coiled spring 88 will provide sufficient frictional restraint between the shoulder 87 and the face of the clutch and retain the platen in any position  
45 desired. By lowering the platen to the position shown in Fig. 2 the spring 88 will snap the clutch in place and the platen will then be locked in position ready to resume the printing operation.

50 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 shown and described as it is  
55 susceptible of embodiment in various forms all coming within the scope of the claims which follow:

60 1. In an accounting machine, the combination with type carriers, of a platen for taking impressions from the type carriers, an invariably moved element, and a latch or clutch normally connecting the platen and  
65 said element for movement in unison for a complete operation of the machine.

2. In an accounting machine the combination with type carriers, of a platen for taking impressions from the type carriers, an invariably moved element, and a latch or  
70 clutch normally connecting the platen and said element for movement in unison and means for moving the platen away from the type carriers when the latch or clutch is released.

3. In an accounting machine, the combination with type carriers, of a platen for taking impressions from the type carriers, an invariably moved element, a latch or  
75 clutch normally connecting the platen and said element for movement in unison, and means comprising a spring for automatically moving the platen away from the type carriers when the latch or clutch is released.  
80

4. In an accounting machine, the combination of a type carrier and a platen, one of  
85 which is movable relative to the other to effect printing, an invariably moved element, and a releasable spring pressed latch or clutch normally effective to transmit the movements of the invariably moved member  
90 to the movable printing member.

5. In an accounting machine, the combination with an operating mechanism, of type carriers, a platen movable toward and from  
95 the type carriers to take impressions, and means comprising a releasable clutch or latch to move the platen at each operation of the operating mechanism, said latch or clutch being normally in engaging position during  
100 the complete operation of the machine.

6. In an accounting machine, the combination with an operating mechanism, of type carriers, a platen movable toward and from  
105 the type carriers to make impressions, connections intermediate said operating mechanism and said platen comprising a releasable clutch or latch normally effective to move the platen at each operation of the operating mechanism, and a normally tensioned  
110 spring freed when the clutch or latch is released to move the platen relative to the type carriers.

7. In an accounting machine, the combination with a set of type carriers, of a platen  
115 supported for movement toward and from the type carriers to effect printing, an invariably moved element, and a releasable spring pressed latch or clutch normally rigidly connecting the invariably moved element to the platen throughout operation of  
120 the machine.

8. In an accounting machine, the combination with a pivoted platen support, of a pivoted lever, means for rocking the lever at  
125 each operation of the machine, and a manually releasable clutch or latch normally connecting the platen support and lever for unitary movement.

9. In an accounting machine, the combination with a pivoted platen support, of a piv-  
130

oted lever, an operating shaft means for rocking the lever at each operation of the operating shaft, a manually releasable clutch or latch normally connecting the platen support and lever for movement in unison, and a spring for holding the latch in its normal condition.

10. In an accounting machine, the combination with a pivoted platen support of a pivoted lever, means for rocking the lever at each operation of the machine, a manually releasable clutch or latch normally connecting the lever and platen support for movement in unison, and means comprising a spring for effecting a relative movement of the platen support and lever when the clutch is released.

11. In an accounting machine, the combination with a pivoted platen support, of a pivoted lever, means for rocking the lever at each operation of the machine, a manually releasable clutch or latch normally connecting the lever and platen support for movement in unison, and means comprising a spring for moving the platen support relative to the lever when the clutch or latch is released.

12. In an accounting machine, the combination with a pivoted platen support, of a pivoted lever, means for rocking the lever at each operation of the machine, a manually releasable clutch or latch normally connecting the lever and platen support for movement in unison, and means for automatically effecting a relative movement of the platen support and the lever when the clutch or latch is released.

13. In an accounting machine, the combination with type carriers, a platen for taking impressions from the type carrier, an invariably moved element, a latch or clutch normally connecting the platen and said element for movement in unison, means for moving the platen relative to the type carriers when the clutch is released and means for retaining the platen when elevated in any desired set position.

14. In a machine of the class described, the combination with type carriers, of a platen, means for effecting printing operations of the type carriers and platen, and a manually releasable clutch normally holding the platen in printing position but when disengaged permitting the movement of the platen to an ineffective position.

15. In an accounting machine, the combination with type carriers, of a platen for

taking impressions from the type carriers, an invariably moved element, and a slidable latch or clutch normally directly connecting the platen and said element for movement in unison for a complete operation of the machine.

16. In an accounting machine, the combination of a type carrier and a platen, one of which is movable relative to the other both to effect printing and to render it ineffective, an invariably moved element, and a releasable spring pressed latch or clutch normally effective to transmit the movements of the invariably moved member to the movable printing member.

17. In an accounting machine, the combination with an operating mechanism, of type carriers, a platen movable toward and from the type carriers to take impressions, and means comprising a slidably mounted releasable clutch or latch to directly engage and move the platen at each operation of the operating mechanism, said latch or clutch being normally in engaging position during the complete operation of the machine.

18. In an accounting machine, the combination with a set of type carriers, of a platen supported for movement toward and from the type carriers to effect printing or a relatively greater distance away from the type carriers to render it ineffective, an invariably moved element, and a releasable spring pressed latch or clutch normally rigidly connecting the invariably moved element to the platen thruout operation of the machine.

19. In an accounting machine, the combination with a pivoted platen support, of a pivoted lever, means for rocking the lever at each operation of the machine, and a slidable manually releasable clutch or latch normally connecting the platen support and lever for unitary movement.

20. In an accounting machine, the combination with a pivoted platen support, of a pivoted lever, an operating shaft, means for rocking the lever at each operation of the operating shaft, a manually releasable and slidable clutch or latch normally connecting the platen support and lever for movement in unison, and a spring for holding the latch in its normal condition.

In witness whereof I have signed my name hereto this 25th day of August, 1922.

RAYMOND E. RICE.