

April 27, 1937.

H. F. SADGEBURY

2,078,282

CASH REGISTER

Original Filed Sept. 25, 1926 2 Sheets-Sheet 1

FIG. 1

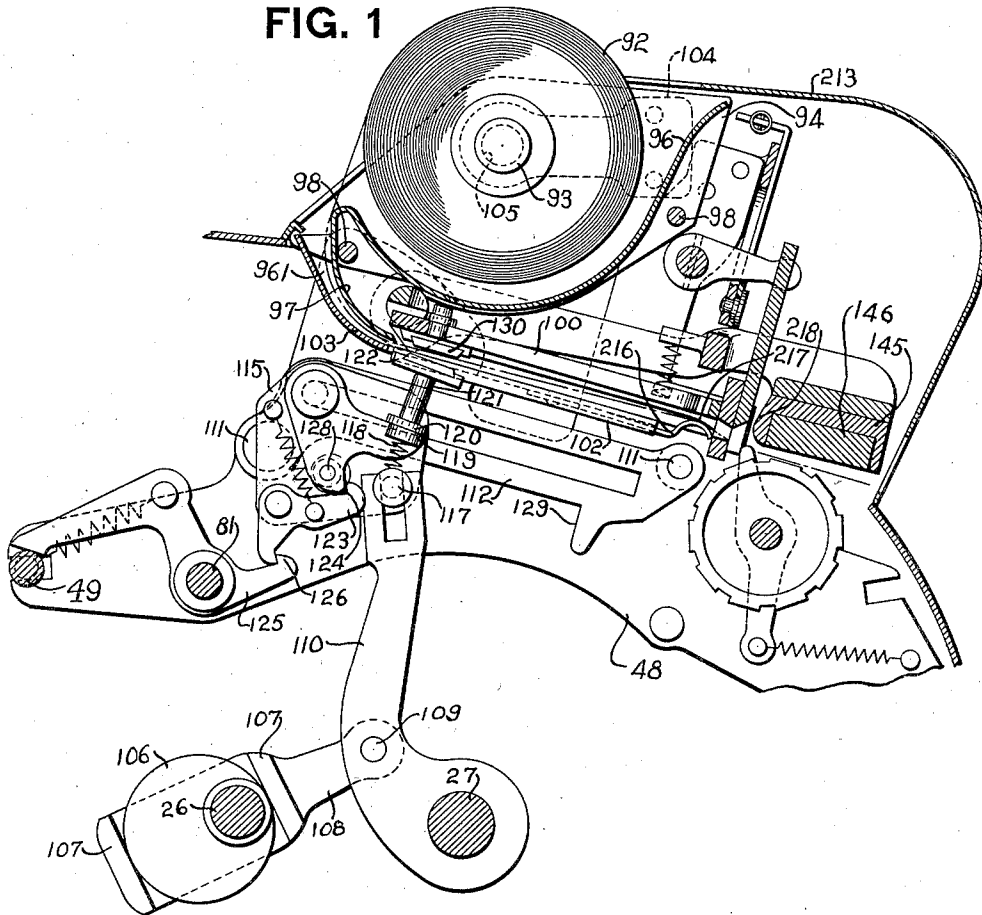
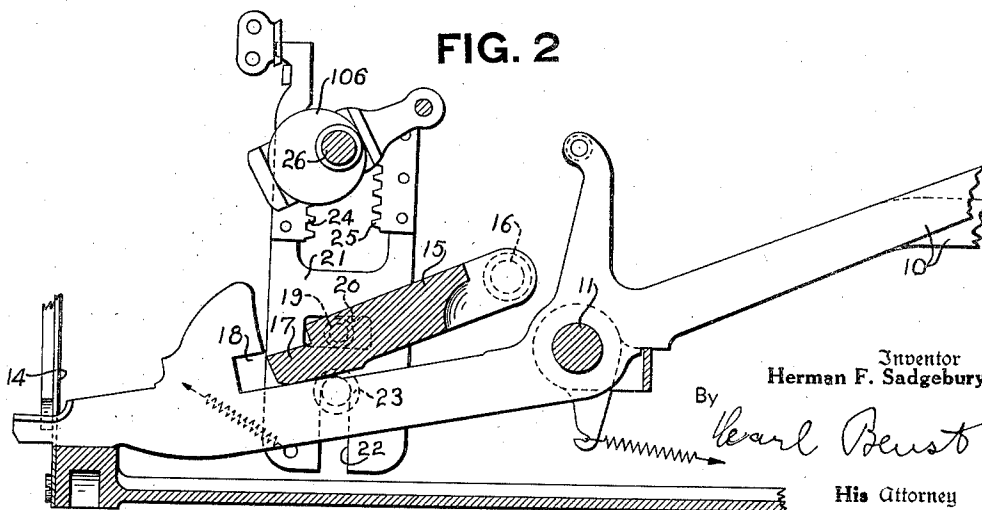


FIG. 2



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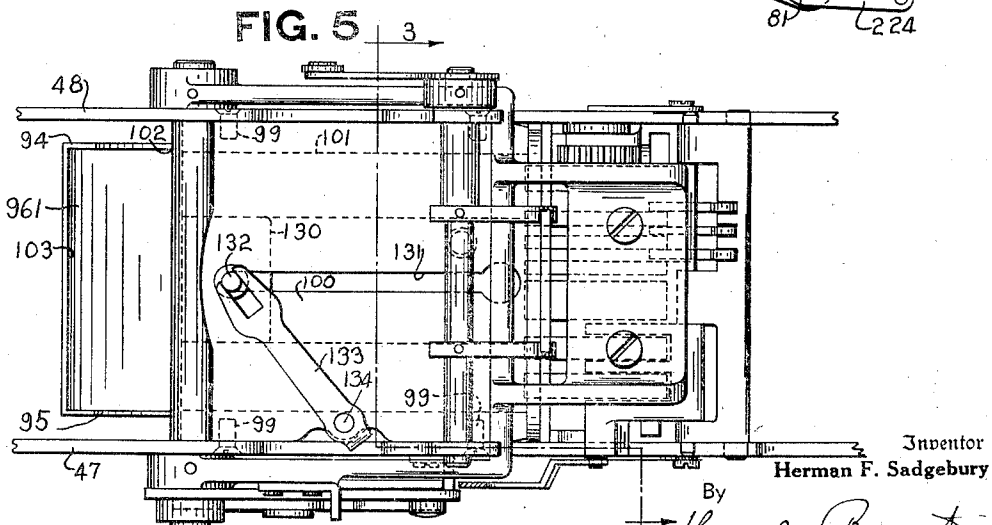
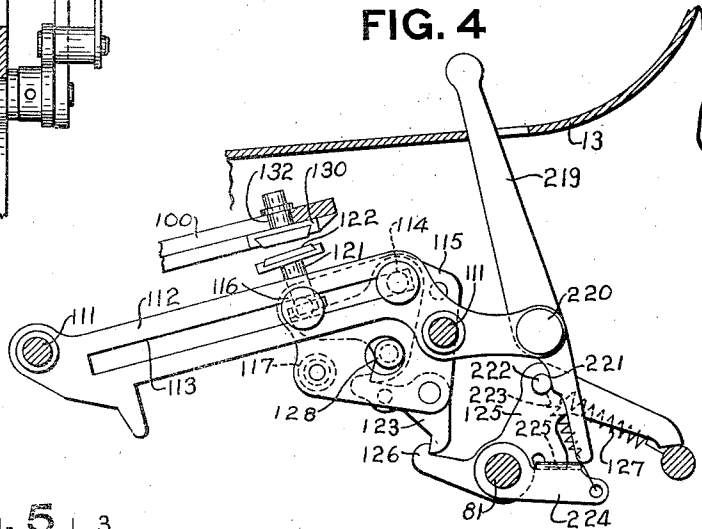
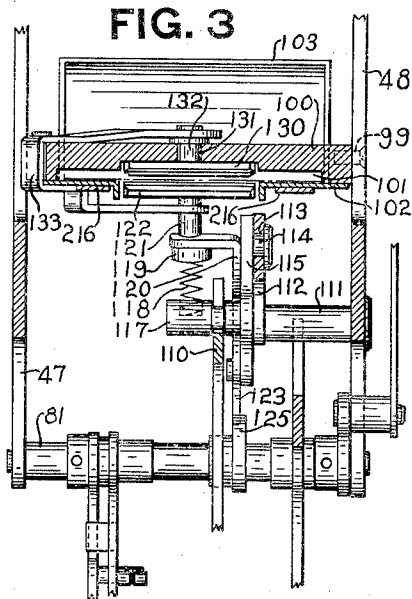
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Original Filed Sept. 25, 1926 2 Sheets-Sheet 2



UNITED STATES PATENT OFFICE

2,078,282

CASH REGISTER

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Original application September 25, 1926, Serial
No. 137,664, now Patent No. 1,957,671, dated
May 8, 1934. Divided and this application
October 12, 1933, Serial No. 693,269

10 Claims. (Cl. 271—2.5)

This invention relates to improvements in cash registers and accounting machines and has more particular reference to that class which are adapted to issue checks or tickets having amounts printed thereon commensurate with the value of the keys depressed, and is a division of the application for letters patent of Herman F. Sadgebury, Serial No. 137,664, filed Sept. 25, 1926, now Patent No. 1,957,671, dated May 8, 1934.

Machines of the class operable by a crank or electric motor are usually equipped with a printing mechanism which serves satisfactorily to print and issue checks during operations of the prime mover. The devices utilized to perform these functions include parts which are usually heavy and rugged, and, therefore require considerable power to operate. The feeding devices usually comprise a pair of feeding rollers which are geared to the prime mover, the check paper being usually inserted between these rollers so as to feed the check out of the machine. Moreover, the devices utilized to print and sever the check comprise heavy parts which in themselves require considerable power to operate. Attempts have been made in the past to apply to machines of the key-operated class the same type of printing mechanism employed in key-set machines, with the result that such machines were hard to operate and in order to overcome the hard operation auxiliary power devices were usually added, which in themselves, were complicated, and apparently did not solve the problem of attaching a check-printing mechanism to key-operated machines.

The principal object of this invention is to provide a check printing mechanism for a key-operated machine so that all the functions incidental to check printing and issuing may automatically be performed by a manual depression of the keys without sacrificing speed of operation and requiring but a slight additional load upon the keys.

In order that the key-operated machines to which the improved printing devices are applied may be operated with a minimum of time and expenditure of energy it is an object of the invention to provide a novel paper feeding device which is positive in its operation and requires little power to operate. In the illustrative em-

bodiment of the invention this comprises a pair of normally separated reciprocating members which, during their initial movement, are adapted to positively grip and hold the paper so that upon a continued operation of the machine the check will be fed to the proper point.

In connection with the novel paper feeding devices embodied in the illustrative machine, it is also an object to provide improved devices whereby the paper strip will be caused to be fed in substantially a straight line either during manual feeding operations or during feeding operations performed by the machine. This overcomes to a great extent the disabling of the machine which usually occurs when printing mechanisms are jammed by the accumulation of check paper caused by the natural curl of the paper. The improved machine employs a very simple device for counteracting the natural curl of the paper.

The arrangement of the printing attachment is such that the roll from which the checks are drawn is visible, and in front of the operator, so that he will readily know when the supply of paper has been exhausted, and the design is such, furthermore, that a new roll of paper may be readily inserted by those unfamiliar with mechanical devices and within a minimum of time.

Due to the peculiar and advantageous arrangement of the paper feeding devices the check paper may be readily inserted in the printing mechanisms and when it is desired to discontinue check issuing, the paper may readily be withdrawn since it is accessible and visible to the operator. However, by the employment of a special manipulative device with which the illustrative machine may be provided, a more convenient means of discontinuing issuing of checks may be afforded.

In the accompanying drawings the invention is shown applied to a cash register such as that fully illustrated and described in the U. S. Patent to Frederick L. Fuller, No. 1,742,701, January 7, 1930. The invention is not limited in its application to any one particular kind of machine but is capable of application by various modifications to accounting machines in general.

With these and incidental objects in view the invention consists in certain novel features of construction and combination of parts, the essen-

tial elements of which are set forth in the appended claims, and a preferred form of embodiment of which will now be described with reference to the drawings which accompany and form part of the specification.

Of said drawings:

Fig. 1 is a sectional view of the illustrative machine showing the improved feeding mechanism.

Fig. 2 illustrates the keys and main operating mechanism.

Fig. 3 is a sectional view through the printing mechanism taken on line 3—3 of Fig. 5.

Fig. 4 is a fragmentary sectional view showing in detail the paper feeding devices in cooperation with the special manipulative device whereby the feeding devices may be enabled or disabled at will.

Fig. 5 is a top plan view of the printing mechanism some of the members being removed to more clearly show other parts.

Detail description

The amount keys 10 (Fig. 2) are loosely pivoted upon a key shaft 11 so that they may be moved through an angle about said shaft as a pivot. The amount keys 10 are guided in their movements at their forward ends by slots formed in a cabinet 13, and at their rearward ends by slots formed in a plate 14 which is attached to a portion of the framework. Resting upon the rear ends of the keys is a key coupler 15 provided with trunnions 16 by which it is pivoted, and with a flange 17 coacting with notches 18 formed in each of the operating keys. The key coupler serves in the usual way to insure simultaneous and uniform depression of the keys.

The key coupler is provided with a pin 19 extending through a horizontal slot 20 in an upright double rack member 21. The rack has a slot 22 embracing a fixed pin 23 and is thus guided in its vertical movement by the pin, but is rocked around the pin so that the sets of teeth 24, 25 carried by the rack member 21 will alternately engage a pinion (not shown) attached to the main driving shaft 26 of the machine.

The devices for printing and issuing checks are, in the main, carried by two side frames 47 and 48 (Fig. 3). The side frames are connected together in spaced relation by shafts and cross members so that most of the elements comprising the check printing devices may be carried by said framework. These side frames and the parts carried thereon may be readily detached from the machine for the purpose of inspection, adjustment, etc.

The checks which are issued are drawn from a check roll 92 (Fig. 1) the paper being wound upon the usual form of spool 93. The check roll receptacle comprises two side plates 94 and 95 (Figs. 1 and 5) between which is extended a curved plate 96 which is bent so as to form a curved paper guiding plate 97. The members just referred to may be connected or attached to each other by any suitable means so as to form an integral unit and in the illustrative machine the unit is attached to the printer frame by screws 98 which pass through the plates 94 and 95 and into the side frame 47 (Fig. 1).

Secured by screws 99 (Fig. 5) between the side frames 47 and 48 is a block 100 which is undercut at 101 (Fig. 3) to a width substantially the width of the check strip. As best shown in Fig. 1 the check strip passes under the curved

plate 97 and between the block 100 and the plate 102 which is provided with an integral rearwardly extending portion 103 curved and bent at its sides to form a paper guide or chute.

The check roll 92 is held in its proper position by means of spring grippers 104 (one only being shown Fig. 1) which are riveted to the side plates 94 and 95 and are formed with concave depressions 105 which project through apertures in the plates 94 and 95 to engage apertures formed in the ends of the spool 93. By this means the roller may readily be placed in the container or detached therefrom. By the present construction the engagement between the concave depressions 105 and the ends of the spool 93 creates little frictional resistance when the check roll is rotated as the paper is fed by means which will now be described.

The paper feeding devices for the illustrative machine comprise an eccentrically mounted disk 106 (Fig. 1) cooperating with lugs 107 integral with a pitman 108 which is attached by a pin 109 to an arm 110 loosely mounted upon the shaft 27. By the mechanism just described the arm 110 is given a reciprocating movement during each operation of the machine.

Attached to the check printer side frame 48 by means of studs 111 (Figs. 3 and 4) is a guide plate 112 which is formed with a slot 113 in which projects a stud 114 carried by a plate 115 and another stud 116 also carried by the plate 115. The plate 115 has also attached to it a stud 117 (Fig. 1) engaging an open-ended slot formed in the arm 110, the stud being suitably recessed so as to receive a spring 118. The spring 118 also fits in a cup shaped member 119 (Fig. 3) which is attached to a plate 120 by an upwardly extending stud 121, the plate being loosely pivoted on the stud 114. The stud 121 is upset at one end to attach the cup 119 to the plate 120. The stud 121 has secured to its upper end a gripping member 122.

The spring 118 normally tends to force the gripping member 122 upwardly but is prevented by means of a bell-crank 123 (Fig. 1) loosely mounted on the plate 115, the bell-crank being formed with a hooked portion engaging a shoulder 124 formed in the lower part of the plate 120. In order to disengage the hooked portion from the plate 120 at the desired time there is provided a second bell-crank 125 loosely pivoted upon the shaft 81 and having a hooked portion 126 engaging an extension of the bell-crank 123. The bell-crank 125 is urged by a spring 127 so that its rearward arm engages a stud 49. As best shown in Fig. 4 the plate 120 is provided with a stud 128 projecting through an aperture formed in the plate 115, the stud 128 being adapted to engage a shoulder 129 formed on the guide plate 112 when the plate 115 is shifted.

As best shown in Fig. 3 the check strip is located between the gripping member 122 and a cooperating gripping member 130 which fits in a recess formed in the block 100 and is slidably mounted in the block 100 by means of a stud 132 fitting in a slot 131 (Fig. 5). In order to insure that the gripping member 130 may receive the same movement as the associated gripping member 122 there is provided a bail or yoked member 133 pivoted to the block 100 by means of a stud 134. The free end of the upper portion of the bail is forked to receive the stud 132 (Fig. 5) which carries the gripping member 130 and its lower portion (Fig. 3) is bifurcated to

receive the stud 121 attached to the gripping member 122. The gripping surfaces may be comprised of rubber or any other suitable material so that at the desired times they may grip the check paper and feed it forwardly, the operation of the above described mechanism being as follows:

When one of the keys is depressed the shaft 26 will be rotated and the arm 110 will be rocked to the right as viewed in Fig. 1 and since the bell-crank 125 will hold the lower end of the bell-crank 123 against movement as the plate 115 is moving forwardly continued movement of the plate 115 and the plate 120 will cause the bell-crank 123 to rock clockwise (Fig. 1) to positively disengage the hooked portion of this bell-crank from the shoulder 124 of the plate 120. This will permit the spring 118 to raise the gripping member 122 to positively grip the check paper between it and the associated gripping element 130. Further depression of the keys will move the plate 120 and the gripping members still further forwardly and their gripping action upon the check paper will positively feed the latter over the adjusted type carriers.

When the keys reach their extreme downward movement a printing impression is effected. At about this time the stud 128 cooperating with the shoulder 129 will rock the plate 120 clockwise as viewed in Fig. 1, permitting it to be again latched by the bell-crank 123 whereby the two gripping members are separated. During the return movement of the keys the arm 110 will be moved in a reverse direction and when the plate 120 reaches its extreme rearward movement the bell-crank 125 will again engage the bell-crank 123, the parts then being in the position shown in Fig. 1. It will be obvious that since during each operation of the machine the gripping members grip the check paper at substantially the same time and feed it similar amounts the successively issued checks will be of a uniform length.

In some machines equipped with printing devices considerable annoyance is caused the operator when a new supply of paper is inserted in the machine primarily due to the fact that on account of the natural curl of the end of the check paper the strip tends to deviate from the proper course. The result of this is that the operator is required to spend considerable time in threading the paper strip and to obviate this difficulty the illustrative machine is provided with a simple and effective device.

Attached to the underside of the plate 102 is a pair of forwardly extending springs 216 (Figs. 1 and 3) which are suitably bent so as to leave an opening between the underside of the block 100 and the top of the spring to permit the passage of the check paper between. The ends of the springs underlie the extreme forward end of the block 100 which end is machined so as to form a curved extension 217 (Fig. 1). When the end of the check strip is passed into the chute 961 and forced forwardly the natural curl of the paper, would, if no means were provided to prevent it, tend to pass upwardly and possibly behind the platen. With the provision of the curved extension 217 and the springs 216 when the end of the check strip passes between these elements the curl of the paper will be counteracted with the result that the check paper will pass straight forwardly beneath the platen and over the inking ribbon. In the event that the end of the check strip should strike the platen

it will strike a beveled portion 218 (Fig. 1) of the casting 145 so that it will be directed downwardly to the proper position. It is to be understood that this construction does not only function during manual feeding operations but also during the feeding operations of the check strip by operations of the machine.

When it is desired, as is often the case in some lines of business or under certain conditions to use the machine without the check printing attachment, the check strip may be simply withdrawn from the chute and reinserted in the same way when it is desired to renew the issuing of checks.

In the illustrative machine this can be performed in a very facile manner since the cooperating feeding elements are normally separated as well as due to the simple and effective devices which have been provided for guiding the check strip. As a more convenient means for throwing the paper feeding device out of operation and into operation at will, there may be provided a check controlling lever 219 (Fig. 4). The lever is pivotally mounted by means of a stud 220 and extends upwardly through a slot in the cabinet 13 of the machine so as to be adjustable to either a "check" or "no check" position. The position shown in the drawings is the one it assumes when it has no control over the paper feeding devices and therefore permits them to operate in the usual manner. However, when it is desired to discontinue check feeding without withdrawing the paper strip from the machine the lever 219 may be forced rearwardly so that a shoulder 221 cooperating with the stud 222 attached to the bell-crank lever 125 will rock the bell-crank counterclockwise thereby disengaging the hooked end 126 from the extension of the bell-crank 123. Loosely mounted upon the shaft 81 and urged upwardly by a spring 223 is a detent plate 224 having a lug provided with an aperture 225 which cooperates with the lower end of the lever 219 when the latter is moved to the "no check" position. It is to be understood that since the hooked portion 126 is entirely disengaged from the bell-crank 123 the latter will not be tripped during an operation of the machine thus permitting the paper gripping elements to remain disengaged so that they will not be operative to feed the check paper.

Summary of operation

A resumé of the general operation of the machine will now be given to coordinate the operations and functions of the various parts which have been described in detail.

It will be assumed that the operator desires to issue a check for the amount of 20¢. In the illustrative machine to issue a check commensurate with this amount it is only necessary to depress the appropriate key and permit it to return to its normal position, the various functions of check issuing, printing and severing being performed during this cycle of operation.

When the appropriate key in the dimes bank is depressed the notch 18 (Fig. 2) in the rear end of the key will engage the flange 17 of the key coupler and since the coupler is connected to the rack plate 21 the latter will be elevated and by the alternate engagement of its rack teeth 24 with the pinion attached to the driving shaft 26 it will give the latter a complete operation.

Assuming that the check strip is properly located between the associated gripping members

it will be obvious that when the key is depressed the cam 106 (Fig. 1) co-operating with the lugs 107 will rock the arm 110 forwardly and since the bell-crank 125 will hold the lower end of the plate 115 is moved forwardly, the continued movement of the plate 115 and the plate 120 will cause the bell-crank 123 to rock clockwise to positively disengage the hooked portion of the bell-crank 123 from the shoulder 124 of the plate 120. This will permit the spring 118 to raise the gripping member 122 to positively grip the check paper between it and the associated gripping member 130. The gripping action upon the check paper occurs at substantially the initial movement of the keys so that further depression of the keys will feed the check paper over the type carriers.

When the supply of paper is exhausted which is readily noted, due to the fact that the paper roll projects through the hinged cover 213, the spool 93 (Fig. 1) around which the check paper is rolled is withdrawn from co-operation with the spring-urged fingers 104 and a new roll placed therein. The end of the check paper is then passed into the chute 961 between both paper feeding elements, forwardly over the type carriers and beneath the rubber impression block 146. The machine is now conditioned for further printing and issuing of 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 this embodiment is merely illustrative, as the invention is susceptible of embodiment in various other forms all coming within the scope of the claims which follow:

What is claimed is:

1. In a machine of the class described, a frame, a normally inoperative paper gripping device carried thereby, means for moving said frame, and means for rendering the gripping device operative for paper feeding immediately upon movement of the frame.

2. In a machine of the class described, a movable frame, a normally inoperative paper gripping device carried thereby, means for rendering said gripping device operative, and manipulative means for disabling said last mentioned means.

3. In a machine of the class described, a reciprocating frame, a device carried thereby for gripping a paper strip, means normally latching the gripping device in ineffective position, means for disabling the latching means, and a manipulative device for disabling said disabling means.

4. In a machine of the class described, a frame, a normally inoperative paper gripping device carried thereby, a latch for maintaining said device in inoperative position, means for moving said frame, means whereby said latch is disabled immediately upon movement of said frame, and means for moving said gripping device into operative position after said latch is disabled.

5. In a machine of the class described, a frame, a normally inoperative paper gripping device carried thereby, a latch for maintaining said device in inoperative position, means for moving said

frame forward and backward, means whereby said latch is disabled at the beginning of the forward movement of said frame, and means whereby the latch is restored to its operative position at the end of the forward movement.

6. In a machine of the class described, a frame, a pair of paper gripping elements mounted thereon, a lever mounted thereon and connected to one of the gripping elements, the lever and its associated gripping element being spring pressed toward gripping position, a latch for normally holding said lever and gripping element away from gripping position, operating means for moving the frame, and means for causing the latch to release the lever and gripping element for movement into gripping position upon movement of the operating means.

7. In a machine of the class described, a frame, a pair of gripping elements mounted thereon, a lever mounted thereon and connected to one of the gripping elements for movement therewith, means normally holding the lever and its associated gripping element away from gripping position, operating means for moving the frame forward and backward, means for releasing the lever and its associated gripping element for movement into gripping position at the beginning of the forward movement of the frame, and means for moving the lever and its associated gripping element out of gripping position at the end of the forward movement.

8. In a machine of the class described, a movable frame, a pair of paper gripping elements carried thereon, a lever pivoted thereon and associated with one of the gripping elements for movement therewith, a spring pressed pawl to normally hold the lever and its associated gripping element in ineffective position, and a second spring pressed pawl to trip the first pawl upon movement of the frame.

9. In a machine of the class described, a reciprocating paper feed mechanism including a pair of paper gripping elements, a latch holding the elements normally separated, and means normally engaging the latch and operable to trip the latch upon movement of said paper gripping elements so that they may be brought into cooperative relationship to grip the paper, further movement of said elements being effective to feed the paper to printing position.

10. In a machine of the class described, the combination of paper feed mechanism including a pair of paper gripping elements constantly urged to gripping position; a latch movable with the elements and normally holding the elements separated; means for imparting reciprocating movement to the paper feeding means; and means normally engaging the latch and operable to trip the latch upon the initial movement of the feeding means whereby the gripping elements are brought into cooperative relationship to grip the paper, further movement of the feeding means being effective to feed the material, which is gripped between the elements, into printing position.

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