

Jan. 4, 1927.

W. H. ROBERTSON

1,613,129

CASH REGISTER

Filed Jan. 22, 1925

2 Sheets-Sheet 1

FIG. 1

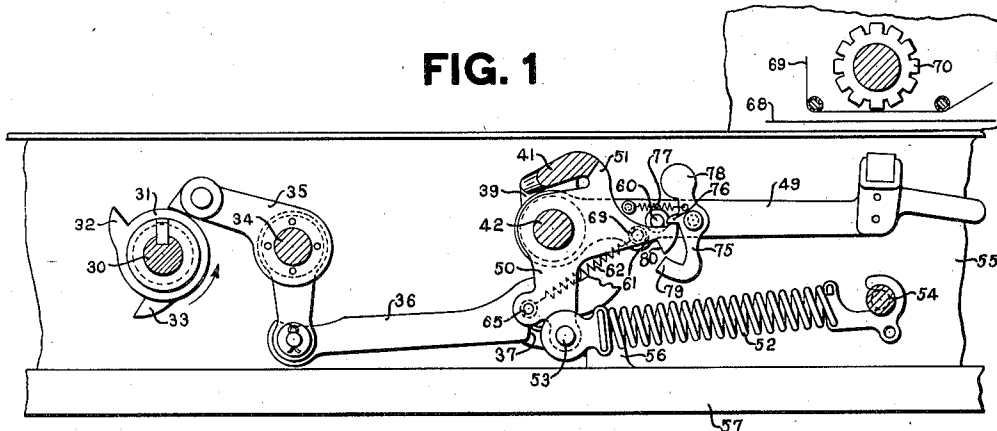


FIG. 2

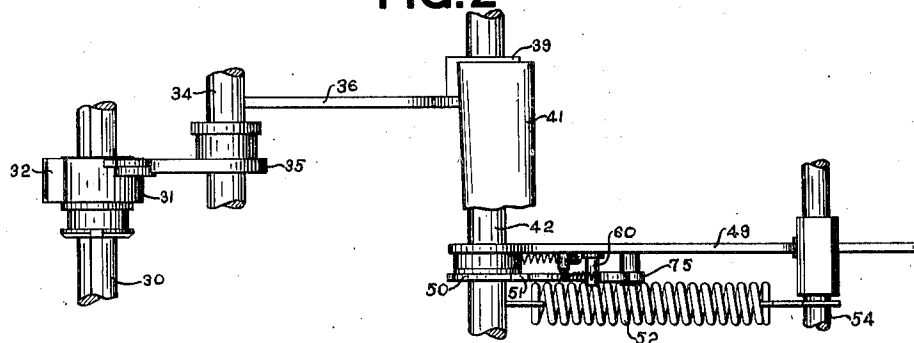


FIG. 3

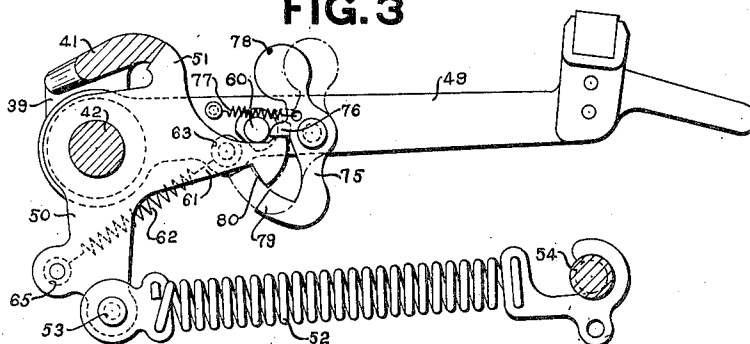
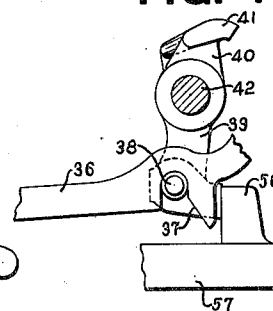


FIG. 4



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FIG. 5

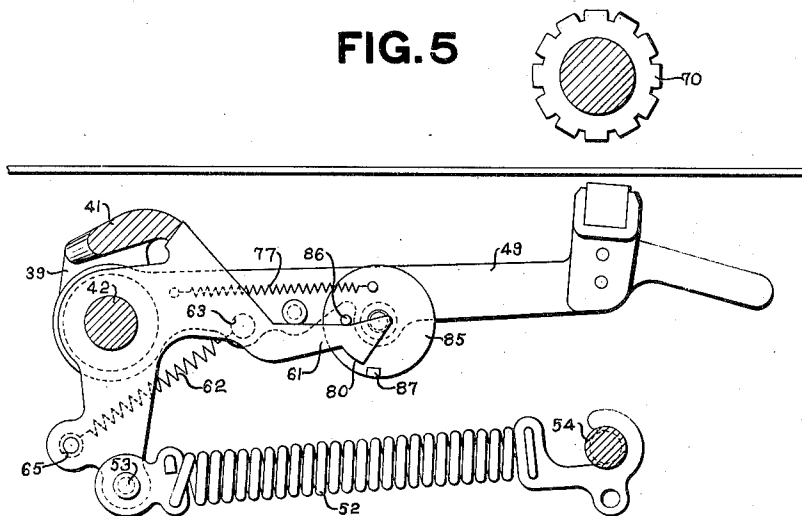
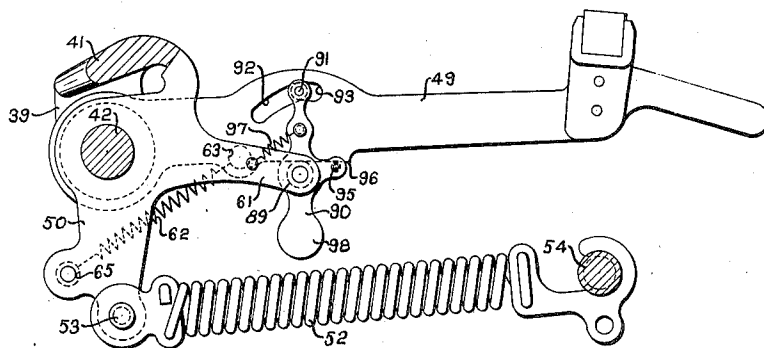


FIG. 6



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UNITED STATES PATENT OFFICE.

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CASH REGISTER.

Application filed January 22, 1925. Serial No. 3,998.

This invention relates to cash registers, and more particularly to improvements in impression hammers of the kind used in machines of the type shown and described in Letters Patent of the United States No. 1,311,884, issued to Frederick L. Fuller, August 5, 1919, and a co-pending application by Bernis M. Shipley, Serial No. 610,273, filed January 2, 1923.

The principal object of this invention is to provide mechanism to prevent rebound of spring-actuated printing hammers.

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

Of said drawings:

Fig. 1 is a side elevation of the printing hammer and its associated mechanism.

Fig. 2 is a plan view of the mechanism shown in Fig. 1.

Fig. 3 is an enlarged detail side view of the printing hammer and the mechanism for preventing rebound.

Fig. 4 is a detail side view of a part of the driving mechanism.

Fig. 5 is a side view of a modified form of the mechanism shown in Fig. 3.

Fig. 6 is a side view of another modified form of the mechanism shown in Fig. 3.

In general.

In impression hammer mechanisms of the type herein disclosed the hammer is actuated by a powerful spring, which when released forces the hammers against type carriers with a sudden blow. In the above mentioned co-pending application, when the hammer falls back to its normal position, it reacts against the driving spring, which causes the hammer to rebound, and in some instances this rebound is sufficient to cause a second impression to be made. In the present application an unyielding member is provided to decrease this rebound and thereby prevent the hammer from striking the type carriers the second time.

Driving mechanism.

In the embodiments herein shown the

mechanism is operated from the main printer cam shaft 30 (Figs. 1 and 2), which may be driven in any suitable manner. In the above mentioned patent and application this cam shaft is driven from the main operating shaft of the machine, which in turn is driven by a motor. Slidably mounted on this shaft 30, and keyed thereto, is an impression hammer actuating cam 31 having two high points 32 and 33. Loosely mounted on a shaft 34 is a bell crank 35, the upper end of which is adapted to be engaged by the above mentioned high points 32 and 33. The lower arm of the bell crank has pivoted thereto a link 36 (see also Fig. 4), which is bifurcated at 37 to surround a stud 38 mounted on an arm 39. The arm 39 is connected to an arm 40 by a cross bar 41. The arms 39 and 40 are loosely mounted on a shaft 42.

The cam 31 is slidably mounted on the shaft 30 so that the hammer can be controlled to make one or two impressions. The high point 32 extends across the width of the cam 31. The high point 33, however, is substantially one-half the width of the cam 31. From this it can be seen that if the cam 31 is shifted to one position, two impressions are made, while if the cam is shifted to the other position only one impression is made. This shifting mechanism forms no part of the present invention and no further description is thought necessary. A complete disclosure and description can be had by referring to the above mentioned co-pending application.

Impression mechanism.

In the present application only one impression hammer is shown. Any number of hammers 49 may be mounted on the shaft 42, all of which may be held in engagement with the cross bar 41, as shown in the above mentioned co-pending application.

Loosely mounted on the shaft 42 (Figs. 1, 2 and 3) is an actuator 50, one arm 51 of which is normally held in engagement with the cross bar 41 by a spring 52 stretched between a stud 53 on the actuator 50 and a stud 54 mounted in a frame 55. The spring 52 normally tends to rock the actuator 50 counter-clockwise, but this movement is prevented by the engagement of the arm 39 of the actuator 50 with a lug 56 on the base 57 of the machine. Mounted on the impres-

sion hammer 49 is a stud 60 which is normally held in engagement with an arm 61 of the actuator 50 by a spring 62. The spring 62 is stretched between a stud 63 on the hammer 49 and a stud 65 on the actuator 50. When the actuator 50 is rocked clockwise by the cross bar 41 and the impression hammer 49 is rocked clockwise, the stud 60 is held in engagement with the arm 61 of the actuator 50 by the spring 62. When the bell crank 35 is released by one of the high points of the cam 31, the spring 52 is released and rocks the actuator 50 rapidly in a counter-clockwise direction. This counter-clockwise movement of the actuator 50 rocks the impression hammer 49 by means of the arm 61 and stud 60 until the cross bar 41 is stopped by the lug 56 on the base 57. The momentum of the impression hammer at this time is sufficient to overcome the tension of the spring 62 and it therefore travels on and carries a record 68 and an ink ribbon 69 (Fig. 1) against the type carrier 70 and takes an impression therefrom. After taking the impression, the hammer drops back until the stud 60 engages the arm 61. This reaction of the hammer 49 is taken up by the actuator 50 and the spring 52 and is sufficient to slightly stretch the spring, which upon contraction will cause the hammer 49 to rebound and take a second impression from the type carrier.

In order to prevent this rebound, the hammer 49 has pivoted thereon a spring-pressed pawl 75. The pawl 75 has a lug 76 which is normally held in engagement with the outer end of the arm 61 by a very light spring 77. The pawl 75 is counterbalanced by an enlarged portion 78.

When the actuator 50 is stopped during its rapid counter-clockwise movement and the hammer 49 travels on to take the impression, the pawl 75, being mounted on the hammer, travels therewith. When the hammer moves away from the actuator, the spring 77 gives the pawl 75 a slight counter-clockwise movement. This movement of the pawl is sufficient to permit the lug 76 thereon to strike the arm 61 before the stud 60 engages the actuator, when the hammer 49 drops back after the impression has been taken. The force with which the lug 76 strikes the arm 61 is sufficient to cause the pawl 75 to rock clockwise. The momentum given to the counter balance is sufficient to overcome the force of the spring 77 and thereby rocks a tail 79 beneath a surface 80 on the arm 61, as shown in dot and dash lines in Fig. 3. The reaction of the spring 52 on the impression hammer 49 is quick enough to throw it upward before the tail 79 gets out from beneath the surface 80 and in this manner stops the hammer 49 and arrests the reaction caused by the spring 52. This prevents the hammer 49 from rebound-

ing against the type carrier 70. After the hammer comes to rest, the spring 77 returns the pawl 75 to its home position, as shown in Fig. 1.

Fig. 5 shows a modified form of mechanism for obtaining the same results as with the mechanism shown in Fig. 1. The only difference between the two forms is that instead of having a spring-actuated pawl 75 mounted on the impression hammer 49, a disk 85 is mounted thereon. By using a disk as shown, it is apparent that a counterweight is unnecessary, because the disk, being of uniform shape, will always be balanced. A lug 87 is formed on the disk 85 which is adapted to engage the surface 80 to prevent rebound in the same manner as the projection 79 of the pawl 75, as described above. From this it can be seen that when the hammer 49 falls back, the stud 86 strikes the arm 61 and thereby rotates the disk 85 and rocks the projection 87 beneath the surface 80, preventing the hammer 49 from rebounding. After the mechanism comes to rest a light spring 77 returns the disk 85 to its home position, as shown in Fig. 5.

Fig. 6 shows another modification of a mechanism to prevent the hammer 49 from rebounding. In this modification a pawl 90 is pivoted on a stud 89 on the arm 61 and carries at its upper end a stud 91 which projects into a slot 92 cut in the arm of the impression hammer 49. The slot 92 has a portion 93 which is concentric with the pivot of the pawl 90 when the pawl is in the home position. The pawl 90 also has mounted thereon a stud 95 which is normally held in engagement with a surface 96 on the arm of the hammer by a light spring 97. The pawl 90 is counter-balanced at its lower end by an enlarged portion 98. When the cross bar 41 rocks the actuator 50 in a clockwise direction to stretch the spring 52, as described for the first modification, the spring 62 holds the hammer 49 in engagement with the stud 89 and carries the arm 49 downward. When the spring 52 is released and causes rapid counter-clockwise rocking movement of the actuator 50 the impression hammer 49 is returned by the stud 89. When the cross bar 41 is stopped by the projection 56, and suddenly stops the actuator 50, the momentum of the hammer 49 is sufficient to carry it on to take an impression from the type carrier 70. When the hammer moves away from the actuator, the spring 97 rocks the pawl in a counter-clockwise direction so that when the hammer drops back after the impression has been taken, the surface 96 will strike the stud 95 before it engages the stud 89. The force with which the hammer strikes the stud 95 is sufficient to cause the pawl 90 to rock clockwise. The momentum given to the counter balance 98 is sufficient to overcome

the force of the spring 97 and thereby rocks the stud 91 into the right hand end of the portion 93 of the slot 92. The reaction of the spring 52 on the impression hammer 49 is quick enough to throw it upward before the pawl rocks back to its home position, and in this manner stops the hammer 49 and arrests the reaction caused by the spring 52. After the hammer comes to rest, the spring 97 returns the pawl to its home position, as shown in Fig. 6.

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

What is claimed is:

1. The combination of an impression hammer, type carriers, an actuator for impelling the hammer against the type carrier, means for stopping the actuator, and a spring-actuated pawl adapted to couple the hammer to the actuator for preventing rebound of the hammer after an impression has been taken.

2. The combination of an impression hammer, type carriers, an actuator for impelling the hammer against the type carrier, and an oscillating member on said hammer adapted to engage said actuator for preventing rebound of said hammer after an impression has been taken.

3. The combination of an impression hammer, type carriers, an actuator for impelling the hammer against the type carriers, an arm on said actuator, a spring-actuated pawl on said hammer, a projection on said pawl

adapted to engage said arm for oscillating said pawl after said hammer has taken an impression, and a tail on said pawl adapted to engage said arm for preventing rebound of said hammer.

4. The combination of an impression hammer, type carriers, an actuator for impelling the hammer against the type carriers, a spring-actuated pawl, a projection on said pawl adapted to engage said actuator for oscillating said pawl, a counter-weight on said pawl, and a tail on said pawl adapted to engage said actuator for preventing rebound of the hammer after an impression has been taken.

5. The combination of an impression hammer, type carriers, an actuator for impelling the hammer against the type carrier for taking an impression therefrom, and a spring-actuated pawl carried by said hammer for arresting the hammer after an impression has been taken.

6. The combination of an impression hammer, a spring-actuated means for oscillating said hammer, a spring-actuated pawl on said hammer, and means for engaging said pawl with the actuator when the hammer returns to its home position.

7. The combination of an impression hammer, an actuator therefor, a spring-actuated pawl on said hammer, a tail on said pawl adapted to engage the actuator to prevent rebound of the hammer, and a projection on said pawl for preventing said tail from engaging the actuator when the hammer is being actuated and for engaging said tail with the actuator after an impression has been taken.

In testimony whereof I affix my signature.

WILLIAM H. ROBERTSON.