April 12, 1927. E. J. VON PEIN 1,624,124

PRINTER

Filed May 4, 1925 2 Sheets-Sheet 1

FIG. 1

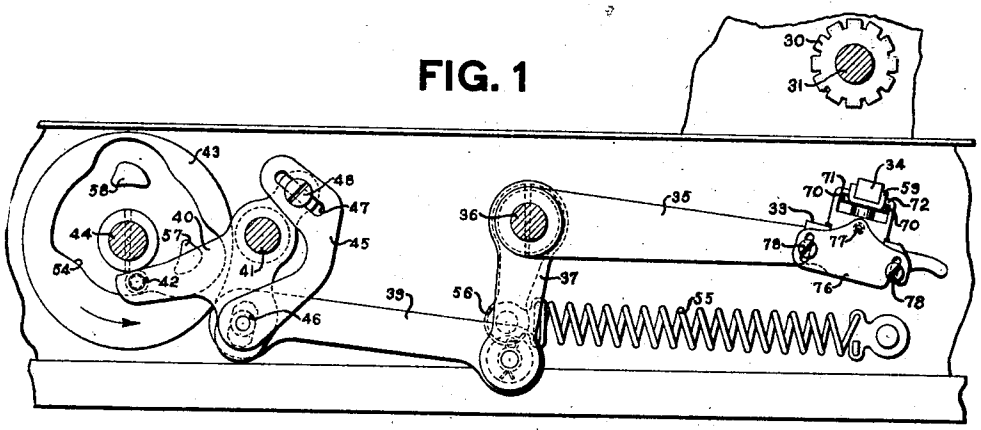


FIG. 2

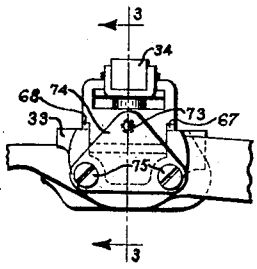


FIG. 3

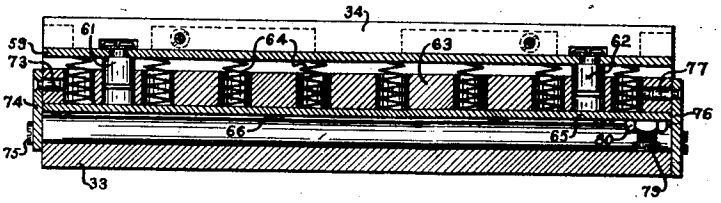


FIG. 4

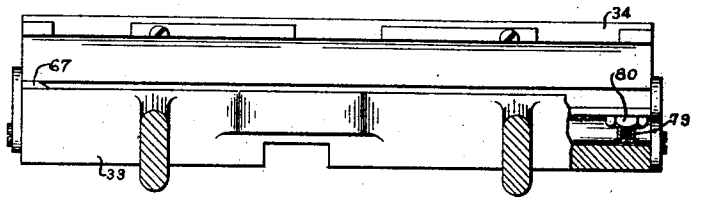


FIG. 5

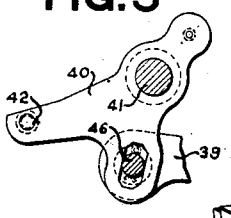
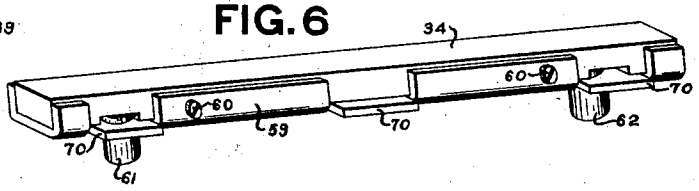


FIG. 6



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April 12, 1927. E. J. VON PEIN 1,624,124

PRINTER

Filed May 4, 1925 2 Sheets-Sheet 2

FIG. 7

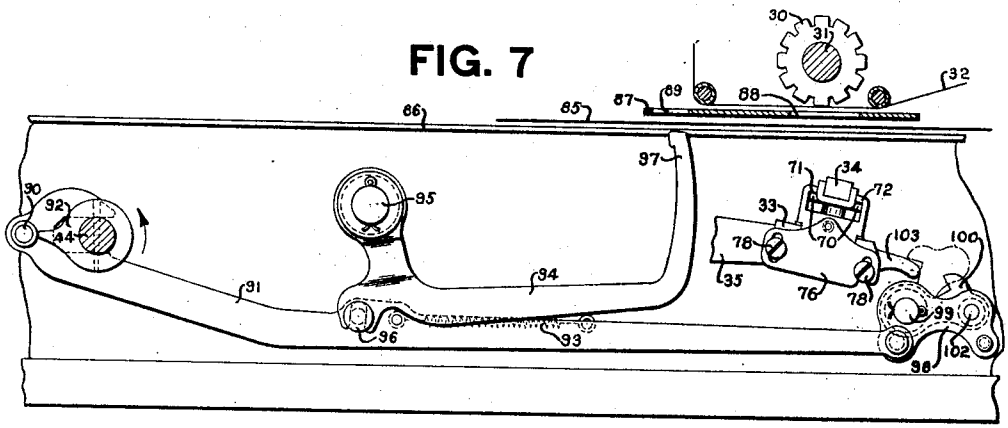
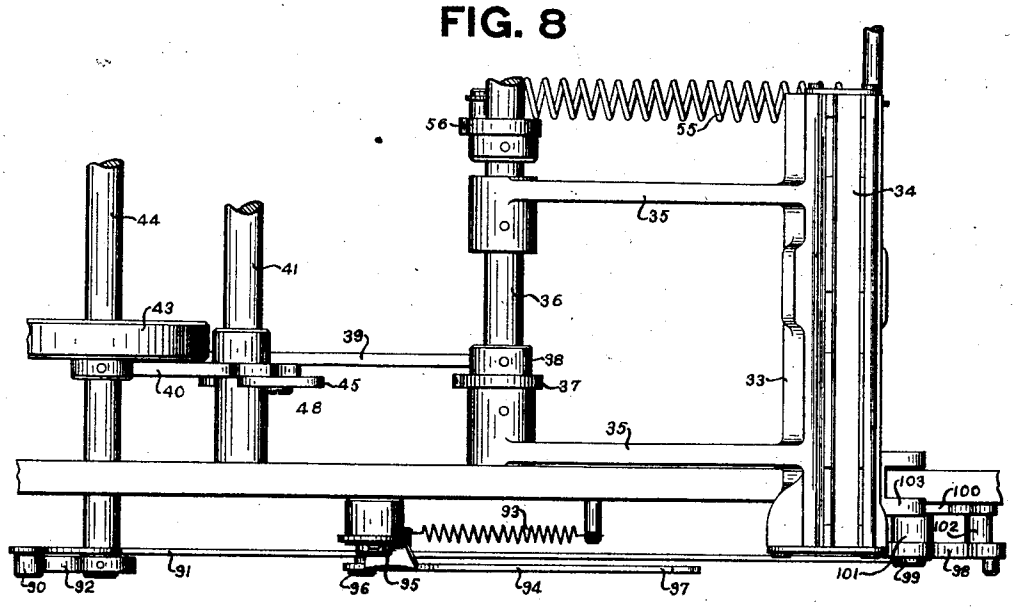


FIG. 8



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Patented Apr. 12, 1927. 1,624,124

UNITED STATES PATENT OFFICE.

EDWARD J. VON PEIN, OF DAYTON, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE NATIONAL CASH REGISTER COMPANY, OF DAYTON, OHIO, A CORPORATION OF MARYLAND.

PRINTER.

Application filed May 4, 1925. Serial No. 27,831.

This invention relates to improvements in printing mechanism for accounting machines and has more particular relation to the type of machine shown and described in Letters Patent of the United States issued to B. M. Shipley, Feb. 3, 1925, and Number 1,524,755.

It is an object of this invention to provide an impression means that will take care of any unevenness of the face of the type at the printing line.

Another object of this invention is to provide an impression hammer operating means that will cause the impression platen to effect a squeeze impression.

Another object is to provide an impression actuating means that will permit an impression platen of hard material to produce manifold printed copies without undue wear on the type members and the inking ribbon.

Still another object is to provide means for adjusting the impression hammer to control the impression without effecting a change in the normal home position of the hammer.

With these 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 form of embodiment of which is hereinafter described with reference to the drawings which accompany and form part of this specification.

Of said figures:—

Fig. 1 is a side elevation of the impression hammer mechanism.

Fig. 2 is an enlarged detail rear end view of the impression hammer.

Fig. 3 is an enlarged sectional view of the impression hammer, taken on the line 3—3 of Fig. 2.

Fig. 4 is an enlarged side elevation of the impression hammer.

Fig. 5 is a detail view of the impression adjusting means.

Fig. 6 is an enlarged perspective view of the impression platen.

Fig. 7 is a side elevation of the impression hammer disabling device.

Fig. 8 is a top plan view of the mechanism shown in Fig. 7.

In its general operation and construction the printing mechanism in which the improvements shown in this application are made, is substantially like that shown in the Shipley Patent previously referred to.

Described in detail the mechanism comprises the usual type members 30 supported on a shaft 31. Legible impressions are made from the type members upon any suitable record material by an ink ribbon 32.

An impression hammer 33 supports a platen 34 which may be of either pliable or hard material adapted to cooperate with the type members by a squeeze impression to produce a plurality of legible impressions on record material by the aid of the ink ribbon 32 or carbon coated paper not shown. The impression hammer 33 is supported by two arms 35 secured to a rod 36 journaled in the frame of the printer. This rod is rocked so as to raise and lower the impression hammer during the operation of the machine by an arm 37 secured to a hub 38 which is pinned to the rod 36. The lower end of the arm 37 is connected by a link 39 to a lever 40 pivoted on a rod 41 and carrying a roller 42 cooperating with a cam member 43 secured to a driving shaft 44.

The left hand end of the link 39 (Fig. 1) is connected to the lever 40 through an adjustable plate 45, the lower end of which carries a pin 46. This pin extends through an elongated opening in the lever 40 to form a connection with the link 39. The upper end of the plate 45 has a slot 47 through which a screw stud 48 passes to clamp the plate 45 to the lever 40. By loosening the screw stud 48 the pin 46 can be moved closer to the rod 41 or farther away as may be desired to vary the movement of the impression hammer without changing the home or normal position of the hammer.

During the normal operation of the printing mechanism the roller 42 (Fig. 1) is caused to follow the outer wall 54 of the groove in the cam member 43 by the tension of a spring 55 attached to the printer frame and to an arm 56 secured to the rod 36.

Referring to Fig. 1 it can be seen that the cam member 43 has within the grooved portion two lugs 57 and 58 which cam the roller 42 positively outward as it passes between them and the outer wall 54. By this positive

camming action squeeze impressions are effected by the platen 34.

The platen is supported in a holder 59 and held in place by two screws 60. Projecting downwardly from the bottom of the holder are two plungers 61 and 62 engaging holes in a bar 63 to guide the platen during its impression movements. The platen holder 59 rests upon a plurality of springs 64 which are placed in holes in the bar 63 and supported at their lower ends by a plate 65 secured to the bar by four screws 66. By having springs under the platen it is possible to obtain a squeeze impression with a platen composed of either hard or pliable material and to take care of any unequality of the type faces.

The platen holder 59 is equipped with three ears 70 on each side, which engage with flanges 71 and 72 (Fig. 7) integral with the bar 63 to limit the upward movement of the platen holder caused by the springs 64. The bar 63 which is adjustably mounted on the impression hammer 33 is supported on one end by a pin 73 freely engaging a hole in the end of the bar. The pin is secured in a plate 74 (Figs. 2 and 3) which is fastened to the hammer by two screws 75. This end of the bar 63 is permitted to rest upon projections 67 and 68 of the impression hammer 33 (Fig. 2), there being sufficient clearance between the pin 73 and the hole in the end of the bar so that the impression pressure will not be on the pin. The opposite end of the bar is supported by an adjustable plate 76 (Fig. 7) supporting a pin 77 (Fig. 3) freely engaging a hole in the bar. The plate 76 is retained in adjusted position by two screws 78 (Fig. 7) engaging elongated openings in the plate. To relieve the impression strain on the adjusting screws 78 there is provided a screw 79, the head of which engages the hammer 33. This screw is adapted to be adjusted and locked in position by a nut 80.

The impression hammer is operable only when there is record material in the proper place to receive an impression for a record of a transaction. The record material 85 (Fig. 7) is supported by a table 86 and under a plate 87 which is provided with two openings 88 and 89.

As the machine is operated and the driving shaft 44 moves in the direction of the arrow, a roller 90 (Fig. 7) carried on a pitman 91 and normally engaging the high point of a cam 92, will, through the influence of a spring 93, follow the contour of the cam. But if the record material 85 is in its proper position, a lever 94 pivoted on a pin 95 and engaging a stud 96 mounted on the pitman 91, will at its upper end 97 engage the record material and allow but a slight movement of the pitman 91. If the record material is not in the proper place, the upper end 97 of the lever 94 is permitted to pass through the opening 89 in the plate 87. This allows the roller 90 to follow the contour of the cam 92 to permit the pitman 91 to be moved to the right. The right hand end of the pitman is pivotally connected to a bell crank 98 pivoted on a pin 99 supported in the frame of the printer. The bell crank 98 is connected to a latch plate 100 by a hub 101 and a pin 102. As the pitman 91 moves toward the right when there is no record material in place, the latch plate will move over a projection 103 on the impression hammer and prevent taking of an impression. The latch plate is shown in its operated or disabling position by a dot and dash line in Fig. 7.

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 a printing mechanism, a type member, an impression hammer adapted to take impressions from said type member on record material, a driving shaft, a disk secured to said driving shaft, a groove in said disk formed concentric with said shaft, a second groove in said disk portions of which coincide with said first mentioned groove and other portions of which are eccentric, means for disabling said impression hammer, and means operatively connected to said impression hammer adapted to move in the concentric groove when said hammer is disabled and in a portion of the concentric groove and in the eccentric groove when said hammer is not disabled.

2. In a printing mechanism, an impression hammer, means for disabling said impression hammer, a driving shaft, a disk secured to said driving shaft, a concentric groove formed in said disk, an eccentric groove formed in said disk, means intermediate said hammer and said disk supporting a roller normally engaging said concentric groove, and spring-actuated means adapted to cause said roller to move in said eccentric groove when said impression hammer disabling means is ineffective.

3. In a printing mechanism, a movable impression hammer, movable means adapted in its effective position to retain said hammer in its home position, an oscillating member, means connecting said oscillating member with said impression hammer, a cam adapted to operate said oscillating member when said impression hammer retaining means is in ineffective position, and means permitting an operation of said cam with-

out operating said oscillating member when said retaining means is in its effective position.

4. In a printing mechanism, a movable impression hammer, an oscillating member, means connecting said oscillating member with said impression hammer, a cam provided with an operating groove and a non-operating groove, a roller carried by said oscillating member engaging said grooves, and means determining which groove said roller will operate in during an operation of said cam.

5. In a printing mechanism, a type member, an impression hammer adapted to take impressions from said type member on record material, a driving shaft, a disk secured to said driving shaft, a groove in said disk formed with the inner side concentric with said shaft, and a part of the outer side eccentric with said shaft, means for disabling said impression hammer, and means operatively connected to said impression hammer adapted to engage the concentric side when said hammer is disabled and with the eccentric part of the outer side when said hammer is not disabled.

6. In a printing mechanism, an impression hammer, a driving shaft, a cam member secured to said shaft, an oscillating arm adapted to be operated by said cam member, and adjustable means adapted to connect said hammer with said oscillating arm adapted to vary the movement of said hammer without changing its home position.

7. In a printing mechanism, an impression hammer, means for retaining the hammer in home position to prevent an impression being taken thereby, an operating means for causing the hammer to take an impression, and an adjustable connection between said operating means and hammer for varying the distance through which said hammer moves without effecting its relation to said retaining means.

8. In a printing mechanism, an impression hammer, a driving means adapted to operate said impression hammer, a spring supporting member, a non-adjustable means supporting said member on said hammer at one end, an adjustable means supporting said member on said hammer at the other end, an impression platen, an impression platen holder, guide plungers intermediate of said impression platen holder and said spring supporting member, and a plurality of springs intermediate of said impression platen holder and said spring supporting member.

In testimony whereof I affix my signature.

EDWARD J. VON PEIN.