Oct. 1, 1929. F. W. F. BERGER 1,730,052

CASH REGISTER

Filed March 28, 1927

FIG. 1

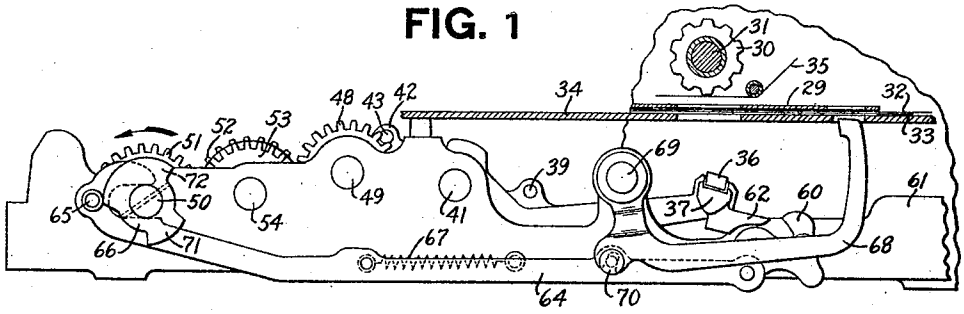
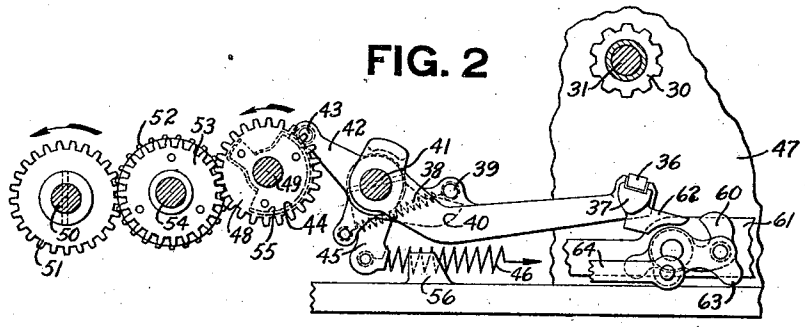


FIG. 2



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UNITED STATES PATENT OFFICE

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CASH REGISTER

Application filed March 28, 1927, Serial No. 179,080, and in Germany April 7, 1926.

This invention relates to cash registers and the like machines, and more particularly to printing mechanisms therefor.

The invention is shown applied to a machine of the type illustrated and described in Letters Patent No. 1,619,796 of the United States, issued to Bernis M. Shipley, March 1, 1927.

The principal object of this invention is to provide mechanism, under the control of a plurality of insertable record materials, whereby the impression hammer will make two impressions when two record materials are inserted in the machine, will be prevented from making one impression when one record material is omitted from the machine, and will be prevented from making any impression when both record materials are omitted from the machine.

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 claim and a preferred form or 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 view in front elevation of a part of the printing mechanism.

Fig. 2 is a detail view of the operating means for the impression hammer.

The present invention includes a plurality of type wheels which are adapted to be differentially positioned by any suitable means, an impression hammer for taking legible impressions from the type wheels, mechanism for operating the hammer to make two impressions on each operation of the machine when two record materials are in the machine, and a disabling means under control of a feeler for preventing one or both operations of the hammer when one or both record materials have been omitted.

The type wheels 30, one of which is shown, are mounted on a shaft 31. The record materials 32 and 33 are placed in position on a table 34 and under a guide plate 29. An ink ribbon 35 is interposed between the record material and the type wheels. Only a fragment of the ink ribbon is shown herein as any one of the well known ink ribbons and ribbon feeding devices may be used.

The table 34 is provided with an opening through which an impression platen 36, carried by a hammer 37, is adapted to be moved to take the impression.

The hammer is retained in its normal position, as shown, by a spring 38, stretched between a pin 39, projecting laterally from one arm of the hammer, and a pin carried by a downwardly extending portion of an arm 40. The arm 40 is fast on a hub pinned to a shaft 41. Also pinned to the shaft 41 is an arm 42. This arm carries a roller 43 which co-operates with a cam 44. An arm 45 is fastened to the opposite end of a hub fast on the arm 40. A strong spring 46 is stretched between a stud on the arm 45 and a stud, not shown, mounted in frame 47. This spring 46 is under tension and tends to rock the arms 40, 42 and 45 counter-clockwise. Two cams 44 and 55 are secured to a gear 48 rotatably mounted on a shaft 49. These cams receive one complete counter-clockwise rotation at each operation of the machine. Pinned to a shaft 50, which is the printer drive shaft, is a gear 51. A pair of gears 52 and 53 are fast together and rotatably mounted on a shaft 54. These gears are separated by a thin disc for the purpose of alignment. The teeth of the gear 52 mesh with the teeth of the gear 51, and the teeth of the gear 53 mesh with the teeth of the gear 48. The drive shaft 50 is given one counter-clockwise rotation at each operation of the machine. This rotation, through the gearing just described, is transmitted to the cams 44 and 55. The cam 55 cooperates with the arm 42, which is extended to continue its contact with the cam after the radial portion of the cam 44 has passed beyond the roller 43. As the counter-clockwise movement of the cam continues, the radial portion of the cam 55 passes from underneath the arm 42, which, urged by the spring 46, will move rapidly counter-clockwise until a flattened edge of the arm 45 strikes, and is arrested by a projection 56 on the base of the machine.

After the arm 45 is stopped by this projection, the momentum of the hammer causes it to continue its movement until the platen 36 contacts the type, making an impression thereof on the inserted record material.

The cams 44 and 55 are each provided with two recesses, shown in Fig. 2. Clearly, as the cams rotate, the arm 42 and its coacting members will be actuated to give the hammer two excursions, thus causing two impressions to be made, on one rotation of the cams. It sometimes happens that one record material is omitted from the machine. In this case, as the card, upon which the first impression is made, is immediately thereafter ejected from the machine, the hammer, on its second excursion, would contact the ink ribbon 35, causing a smear on the platen 36, which would subsequently be transferred to the card.

It is, therefore, desirable to prevent the impression hammer from making its second excursion when but one card is in position to receive an impression; and also, to prevent both excursions of the hammer when both record materials have been omitted from the machine.

This hammer crippling or disabling mechanism will now be described.

A hook or latch 60, pivoted on a stud mounted in the frame 61, is adapted to be moved into engagement with a projection 62 on the impression hammer, to hold the hammer in its normal position against the tension of the spring 46, when the recesses of the cams 44 and 55 are opposite the roller 43 and arm 42. This prevents an upward or impression taking movement of the hammer. An arm 63, secured to the hook 60 by a pin, is operatively connected to a pitman 64. At its left hand end the pitman is guided by the shaft 50. A roller 65 carried by the pitman, co-operates with a cam 66 pinned to the shaft 50, to hold the pitman in the position shown, against the tension of the spring 67, stretched between a stud on the pitman and a stud on the frame 61. As the shaft 50 and the cam 66 rotate in the direction of the arrow, the low part of the cam will be positioned adjacent the roller 65, whereupon the pitman, urged by the spring 67, will move toward the right. It is clear from the drawings, that, as the pitman moves toward the right, the arm 63 and the hook 60 will be rocked counter-clockwise to disable the hammer, as above described.

A feeler arm 68 is pivoted on a stud 69 in the frame 61, and is operatively connected to the pitman 64 by a pin 70 thereon, co-operating with a slot in the arm 68. As the pitman is moved to the right by the spring, it can be seen that the feeler arm 68 will be rocked counter-clockwise. If no slip has been placed in position, the feeler arm will continue its upward movement through openings in the guide plate 29 and the table 34, provided therefor, until arrested by the roller 65 contacting the low portion of the cam 66. In this position of the pitman 64, the hook 60 will be in engagement with the projection 62 on the hammer, which will be prevented from delivering an impression blow.

The cam 66 is provided with two high portions 71 and 72, the purpose of which will now be described. Let it be assumed that two sheets of record material have been placed in the machine. The high portion 72 of the cam 66 will retain the hammer-disabling mechanism in its ineffective position until shortly before the hammer is released to make its first excursion. At this time the portion 72 of the cam has passed the roller 65, whereupon the pitman is moved toward the right. At the same time the feeler 68, arm 63 and the hook 60 are rocked counter-clockwise until arrested by the feeler contacting the record material. The movement of the hook 60 has not been sufficient, at this time, to engage it with the projection 62, and consequently, the hammer is free to deliver its first blow. After the first impression has been made, the hammer is lowered to its normal position. The high portion 71 cams the pitman toward the left, restoring the feeler arm 68 and the hook 60 to their normal positions. At this time the record material upon which the first impression has been made, is ejected from the machine.

The ejecting mechanism is not shown or described herein, but it is to be understood that any of the well known ejecting devices adapted to the machine to which this invention is shown applied, may be used.

After the first record material has been ejected, and shortly before the hammer is released for the second impression, the cam 66 will permit the feeler arm 68 to move upwardly again. This time the feeler will contact the second record material, which will result in arresting the hook 60 in its ineffective position, as described above. Near the end of the operation, the cam 66 will again restore the pitman 64 to its normal position. If, however, but one card has been inserted in the machine, the feeler arm 68 will not be arrested on its second excursion. Therefore, the hook 60 will engage the projection 62 on the hammer, and prevent it from delivering a second blow.

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 form or embodiment herein disclosed, for it is susceptible of embodiment in various forms all coming within the scope of the claim which follows.

What is claimed is:

In a printing mechanism; in combination with a printing element; a normally retracted

impression hammer adapted to take impressions on each of two superimposed records, one of said records being removable immediately after printing thereon; a normally idle hooked latch adapted to hold the hammer in its retracted position; and a slip feeler; of a spring-pressed pitman to actuate the feeler and the hooked latch; a cam having a plurality of alternately arranged high and low portions of varying lengths operable on the pitman to control said feeler and said hooked latch at successive periods of varying extents in a single operation to determine the number of operations of said hammer, thus preventing a second operation of the hammer when only one record is placed in the machine and said record is removed immediately after the impression is made thereon, to prevent the hammer from striking the ribbon and becoming smudged when no record is in the machine; and means to turn the cam through a single rotation in one direction.

In testimony whereof I affix my signature.

FRIEDRICH W. F. BERGER.