Aug. 8, 1939. F. W. F. BERGER 2,168,511

CASH REGISTER

Original Filed Sept. 5, 1935

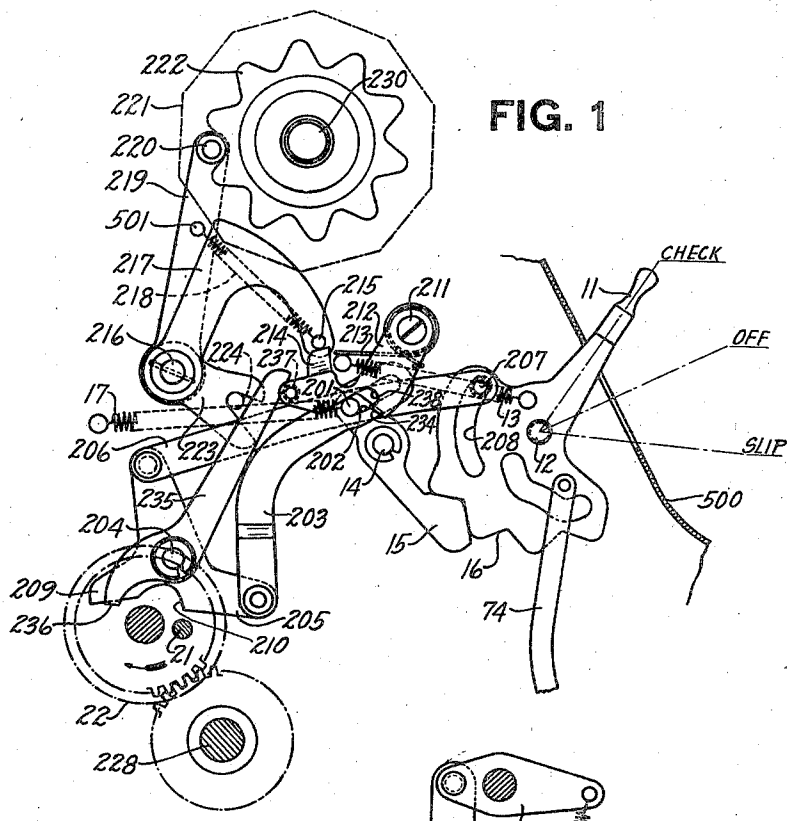


FIG. 1

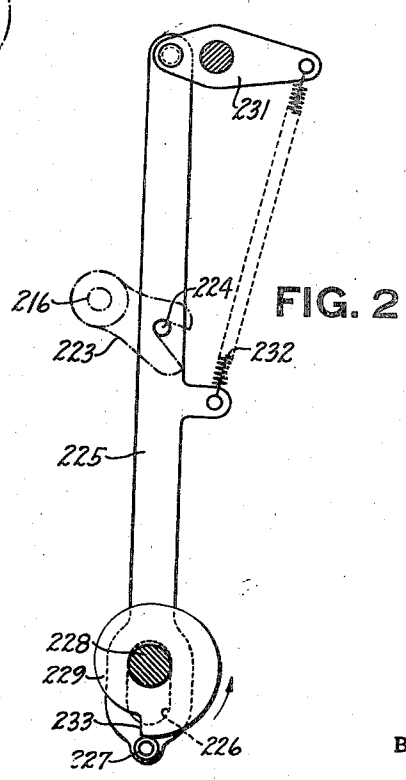


FIG. 2

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CASH REGISTER

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4 Claims. (Cl. 101—93)

This invention relates to improvements in the controlling mechanisms of cash registers and accounting machines of the type illustrated and described in Letters Patent of the United States No. 751,611 issued February 9, 1904, to Thomas Carroll, United States Patent No. 1,594,167, issued July 27, 1926, to Frederick L. Fuller, and the more recent United States Patent No. 2,080,519 patented May 18, 1937, by Kurt Vogelgesang and Erich Wagner, and is a division of the United States application of Friedrich W. F. Berger and Erich Wagner, Serial No. 39,211, filed September 5, 1935.

The present machine is provided with a single line of type wheels and a single impression hammer for making a varying number of impressions or imprints upon an insertable slip or upon an issuing check. In this case two identical imprints are made upon the slip, one upon the main portion and one upon the stub thereof, and one imprint is made upon the issuing check.

Inasmuch as the impression hammer makes two impression strokes each machine operation, in order to print both upon the main portion and the stub of the slip, it is necessary to disable one stroke of the printing hammer in check printing operations so that only one imprint will be made upon the check.

Accordingly it is broadly an object of this invention to provide means for controlling the impression mechanism to cause two imprints to be made upon an insertable slip or one imprint to be made upon an issuing check in one machine operation.

Another object of this invention is the provision of control means, including a manipulative member, for controlling the impression mechanism to cause a varying number of imprints to be made upon an insertable slip and an issuing check.

A further object of this invention is to provide means, automatic in its operation, for locking the manipulative impression control member during a certain part of machine operations.

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

In the drawing:

Fig. 1 is a side elevation, as observed from the left of the machine, showing the impression mechanism and the manipulative member for controlling same.

Fig. 2 is a detail view of a portion of the mechanism that controls the lock for the manipulative impression control member.

General description

The printing mechanism of the machine embodying the instant invention, consisting of a single impression hammer and a single line of type wheels, is arranged to print either upon an issuing check or an insertable slip. With this type of impression mechanism it is normally impossible to make imprints upon both the check and the slip at the same time. Consequently it is necessary to incorporate controlling mechanism in the machine that prevents the insertion of a slip when it is desired to issue a check or receipt, and likewise prevents the issuing of a check when it is desired to print upon an insertable slip.

The impression or the printing mechanism of the instant machine is arranged to make a varied number of imprints upon the slip and check. For example, either one or two imprints may be made upon the insertable slip, during one machine operation, or one imprint may be made upon the issuing check in one machine operation. This varying of the number of imprints upon the insertable slip and the issuing check necessitated the development of the novel controlling mechanism, which is the subject of this invention.

This novel mechanism includes a settable member movable to three positions, namely, an intermediate or "off" position, an upper or "check printing" position, and a lower or "slip printing" position. The settable member remains normally in "check printing" position and is automatically returned from any other position to this position near the end of each machine operation. The impression hammer of the instant machine is arranged to make two printing strokes each machine operation. When the settable member is in "off" position, the check feeding mechanism is disabled and the impression hammer is blocked against printing movement.

When the settable member is in "check printing" position, the hammer disabling mechanism is rendered ineffective. After the hammer performs one printing stroke the settable member is automatically moved to "off" position to prevent the second stroke of the hammer so that only one impression will be made upon the issuing check. Also, when the settable member is in

"check printing" position the check feeding mechanism is rendered effective to issue checks with a single impression thereon.

Moving the settable member to "slip printing" position moves the hammer disabling mechanism to ineffective position and disables the check feeding mechanism. The slip feeding mechanism is rendered operative during this machine operation to cause either one or two impressions to be made upon the insertable slip. The number of impressions made upon the slip is governed by an adjustable stop located in the slip chute. After the first impression is made upon the main portion of the slip, it is fed forwardly by the slip feeding mechanism and the second impression is made upon the stub of said slip. When the slip stop is adjusted for a single impression, the feeding of the slip after the first impression moves it out of the path of the impression hammer.

As the present invention is directed particularly to the printing control member and the automatic control thereof, a showing of the printing mechanism, the check and slip feeding mechanisms, and the feeler mechanism for controlling the operation of the printing mechanism, in slip operations, has been omitted in this specification. However, reference may be had to the United States Patent No. 2,080,519, referred to hereinbefore, for a full disclosure of these mechanisms.

Detailed description

Referring to Fig. 1, the functioning of the printing mechanism of the machine embodying the instant invention is controlled by a settable lever **11**, a finger-piece of which extends through a slot in a cabinet **500**, which encloses the mechanism of the machine. The lever **11** has three positions, namely, an upper or "check printing" position, an intermediate or "off" position, and a lower or "slip printing" position. Three V-shaped notches **16**, in a segmental portion of the lever **11**, corresponding to the three positions of said lever, in cooperation with the angular nose of an aligning and locking pawl **15**, free on a fixed stud **14** and urged into communication with said notches by a spring **17**, retains said lever **11** in any of its set positions, against the action of a spring **13**, tensioned to urge said lever **11** to its upper or "check printing" position. The pawl **15** carries a stud **201**, which extends through a slot in a link **203** the lower end of which link is pivotally connected to one arm of a bell crank **205** loose on a stationary stud **204**. Another arm of the bell crank **205** has pivotally connected thereto one end of a link **206**, the other end of which carries a stud **207** which extends into a concentric slot **208** in the segmental portion of the lever **11**.

As previously stated, the impression hammer, of the instant machine, makes two impression strokes each machine operation in order to print identical data upon the main portion and the stub portion of an insertable slip. When the impression control lever **11** is in "check printing" position, as shown in Fig. 1, the first impression stroke of the hammer makes one imprint upon the check, after which the lever **11** is automatically moved to "off" position, in which position the impression hammer is blocked against printing movement, thereby preventing a second imprint being made upon the check. When the lever **11** is in "slip printing" position, the first impression stroke of the printing hammer imprints the data relating to the particular transaction upon the main portion of the insertable slip. Next the slip is fed a slight distance forwardly and the second impression stroke of the printing hammer imprints the identical data upon the stub portion of said slip. Near the end of each machine operation the locking pawl **15** is rocked clockwise, in a manner presently to be explained, out of engagement with the V-shaped notches **16**, so that the spring **13** will return the settable lever **11** to "check printing" position, which is the normal or home position of said lever.

A main drive shaft **228** (Fig. 1) is geared to a disc **22**, and drives said disc one clockwise rotation each machine operation. With the control lever **11** in "check printing" position, after the first impression stroke of the hammer has made the imprint upon the issuing check, and somewhat after the first half of machine operation, a stud **21** carried by the disc **22** engages the sole of a foot-shaped extension **209** of the bell crank **205** and rocks said bell crank clockwise. Clockwise movement of the bell crank **205**, by means of the link **206**, the stud **207** and the slot **208**, rocks the settable lever **11** clockwise from "check printing" position to "off" position, so that the second impression stroke of the hammer will be obstructed. Continued rotation of the disc **22** causes the stud **21** to ride off of the foot-shaped extension **209** and into contact with a surface **210**, of the bell crank **205**, to rock said bell crank counter-clockwise. Counter-clockwise movement of the bell crank **205**, by means of the slot **202** in the link **203**, in cooperation with the stud **201**, rocks the locking pawl **15** clockwise, against the action of the spring **17**, out of engagement with the V-shaped notches **16** in the lever **11** to permit the spring **13** to return said lever counter-clockwise to "check printing" position. When the lever **11** is in either "off" or "slip printing" position, the stud **207** rides idly in the slot **208** without imparting any movement to said lever; however, in these operations, the locking pawl **15** is rocked out of engagement with the notches **16** to permit the lever **11** to be returned to "check printing" position.

Means now to be described, cooperating with the pawl **15**, (Fig. 1) locks the lever **11** against displacement until after the first impression stroke of the hammer. The stud **201** (Fig. 1), in the locking pawl **15**, cooperates with a locking arm **212** free on a stationary stud **211** and urged clockwise by a torsion spring **213**, to normally maintain an extension **214** thereof in contact with a stud **215** in a curved extension of an arm **217** secured on a shaft **216** journaled in the framework of the machine. Also secured on the shaft **216** is an arm **223** having a notch which cooperates with a stud **224** (Figs. 1 and 2) in a pitman **225**. The lower end of the pitman **225** is slotted to straddle the shaft **228** while the upper end of said pitman is pivotally connected to one arm of a lever **231**, free on a stationary stud. A spring **232**, tensioned between a right-hand extension of the lever **231** and the pitman **225**, urges said pitman upwardly to normally maintain a roller **227**, mounted on the lower end thereof, in contact with the periphery of a plate cam **229** secured on the shaft **228**, which shaft, it will be recalled, makes one counter-clockwise revolution each machine operation.

When the machine is at rest, the stud **201** is opposite a clearance notch **238** in the locking arm **212**, thereby permitting the lever **11** to be set

to any one of its three positions. At the beginning of machine operation the high point or node 233 of the cam 229 moves beyond the roller 227, freeing the pitman 225 to the action of the spring 232, which immediately shifts said pitman upwardly, which movement by means of the stud 224, in cooperation with the arm 223, rocks the shaft 216 and the arm 217 counter-clockwise. Counter-clockwise movement of the arm 217 withdraws the stud 215 from the projection 214 to free the arm 212 to the action of the torsion spring 213, which immediately rocks said arm clockwise to move a projection 234, of said arm, into the path of the stud 201 to lock the pawl 15 in one of the notches 16, to prevent displacement of the lever 11.

Counter-clockwise movement of the arm 217 (Fig. 1) in cooperation with a stud 501 in an aliner 219, free on the shaft 216, rocks a roller 220, carried by said aliner, out of engagement with one of a series of V-shaped alining notches in an alining disc 222 integral with an indicator roller 221 free on an indicator shaft 230 supported by the framework of the machine. A spring 218, stretched between the studs 215 and 501, forms a flexible connection between the arms 217 and 219.

After the type wheels and indicators have been positioned, in accordance with the depressed amount keys the contour of the cam 229 (Fig. 2) shifts the pitman 225 downwardly to rock the shaft 216 clockwise to cause the arm 217 and the spring 218 to resiliently engage the roller 220 with the proper notch in the disc 222 to aline the indicator 221. This clockwise movement of the arm 217 causes the stud 215, in cooperation with the projection 214, to rock the arm 212 counter-clockwise to move the projection 234 out of the path of the stud 201 and to move the clearance notch 238, in said arm 212, in the path of said stud 201.

It will be recalled that in "check printing" operations the settable lever 11 is automatically rocked from "check printing" position to "off" position, after the first impression is made, to cause the second impression stroke of the hammer to be blocked. It is, therefore, obvious that in "check printing" operations it is necessary to provide means to move the locking arm 212 (Fig. 1) to ineffective position, immediately after the first stroke of the hammer, so that the lever 11 may be automatically moved to "off" position.

Clockwise movement of the arm 212, under influence of the arm 217 and associated parts, at the beginning of machine operation, causes a stud 237, in said arm 212, in cooperation with the upward extension of a lever 235, free on the stud 204, to rock said lever counter-clockwise to move a projection 236, on the lower end thereof, into the path of the stud 21 in the disc 22. After the first impression stroke of the hammer has been completed the stud 21 engages the projection 236 to rock the lever 235 clockwise, which movement in turn rocks the locking arm 212 counter-clockwise to ineffective position, as here shown. This frees the locking pawl 15 until the settable lever 11 has been returned to "off" position, by the stud 21 in cooperation with the bell crank 205, in the manner explained previously herein. After the lever 11 has been moved to "off" position the stud 21 rides off the projection 236, and this would ordinarily permit the spring 213 to return the arm 212 to locking position, however, the cam 229 becomes effective at this time to rock the arm 217 clockwise to retain the arm 212 in ineffective position.

Obviously when the stud 21 rocks the bell crank 205 counter-clockwise, near the end of machine operation, to release the locking pawl 15, as explained above, the arm 212 is held in ineffective position by the arm 217.

A link 74 (Fig. 1), one end of which is pivotally connected to the settable lever 11, is similar to the link of the same number in the United States Patent No. 2,080,519, and by means of mechanism similar to that shown in Fig. 1 of the patent, controls the impression strokes of the hammer.

A statement of operation has been omitted in this case, as it is believed that a thorough understanding of the functioning of the mechanism of this invention will have been obtained from a perusal of the foregoing specification.

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 or 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 machine of the class described, the combination of a manipulative member, settable to a plurality of positions, to control machine operations; means operable, during an operation controlled by the member when it is set in one position to shift the member from said one position to another of said positions; a locking means for said member; means for rendering said locking means effective at the beginning of the operation and for rendering it ineffective near the end of the machine operation; and means operable to render the lock ineffective when the member is being shifted during the machine operation.

2. In a machine of the class described, the combination of a control member normally in a home position and settable to a plurality of positions; means operable, during an operation in which said member is in its normal position, to shift the member from its home position into one of said other positions; means for operating said shifting means; means for restoring said member to its home position near the end of the operation; means to lock the member against improper movement during a machine operation; means for operating said lock to render it effective near the beginning of the operation and to render it ineffective before the member is to be restored to its home position; and means actuated by the means for operating the shifting means, for rendering the lock ineffective while the member is being shifted.

3. In a machine of the character described, the combination of a manipulative member, adapted to be moved to several positions to control operation of the machine; means to yieldingly retain the member in its various positions; normally ineffective means to lock the retaining means to prevent displacement of the member; means, effective during a certain machine operation, to move the member from one position to another position to vary the control of the machine by said member; means, effective at the beginning of machine operation, to render the locking means effective; and automatic means to render the locking means ineffective, while the manipulative member is being moved during said certain machine operation.

4. In a machine of the character described, the

combination of a manipulative member, movable to several positions to control the operations of the machine; yieldable means to return the member to a certain position; means to yieldingly retain the member in each of its positions; means to lock the retaining means to prevent displacement of the member during machine operation; means, effective during a certain machine operation, to move the member from said certain position to another position to vary the control of the machine by said member, said moving means also adapted to release the retaining means, near the end of machine operation, to permit the yieldable means to return said member to said certain position; means to render the locking means effective at the beginning of machine operation and to render said locking means ineffective before the moving means functions, to release the retaining means; means to render the locking means ineffective while the member is being moved from said certain position to said another position; and common operating means for the moving means and the last named rendering means.

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