April 9, 1935. A. S. LUPTON ET AL 1,997,372

CASH REGISTER

Filed March 13, 1930 3 Sheets-Sheet 1

FIG. 1

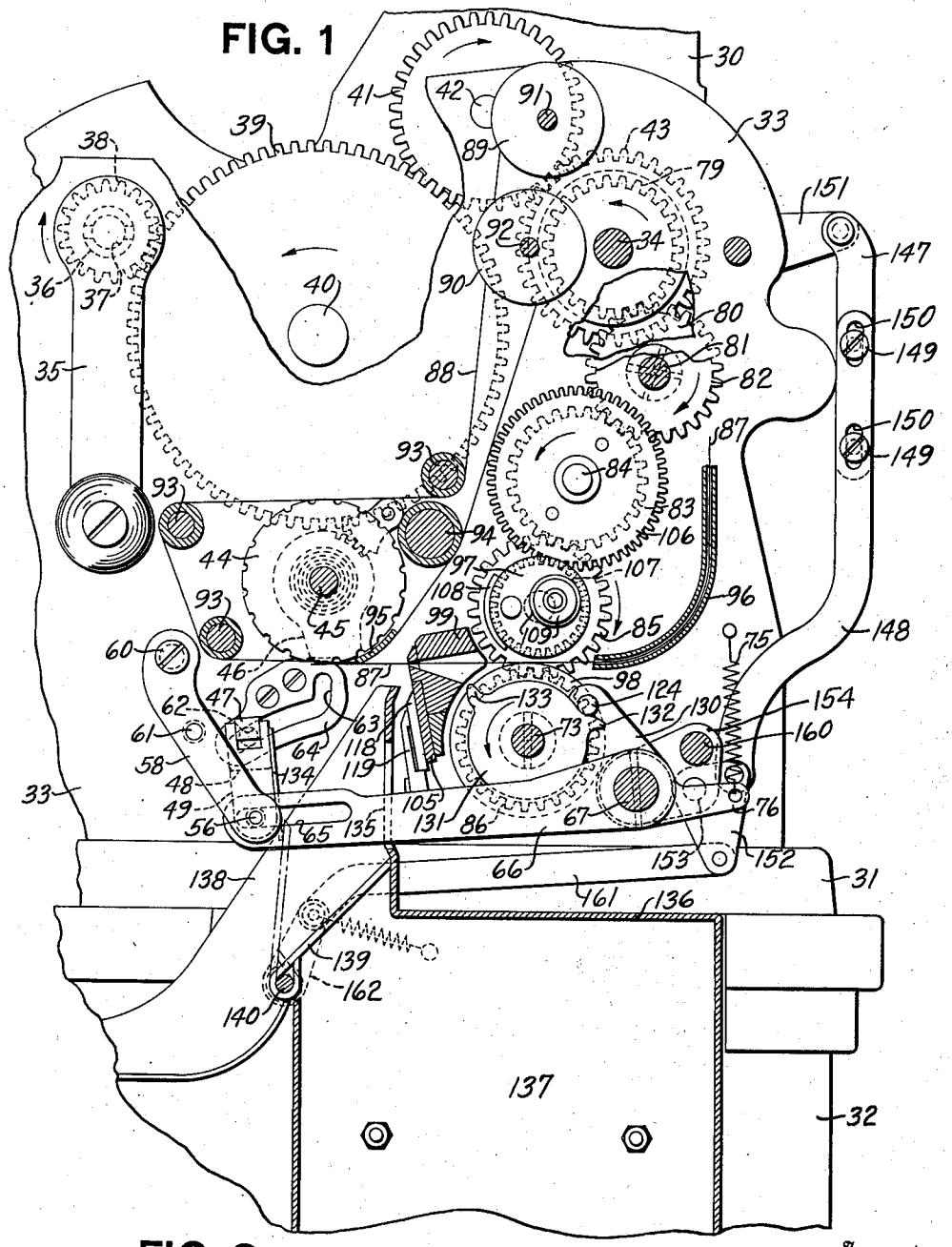
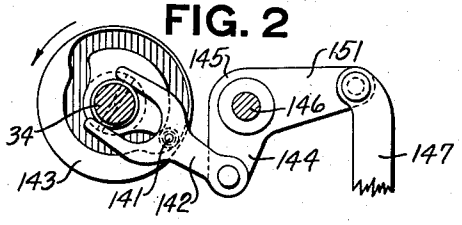


FIG. 2



Inventors

Arthur S. Lupton and
Wilhelm Kropff

By Pearl Brust

His Attorney

April 9, 1935. A. S. LUPTON ET AL 1,997,372

CASH REGISTER

Filed March 13, 1930 3 Sheets-Sheet 2

FIG. 3

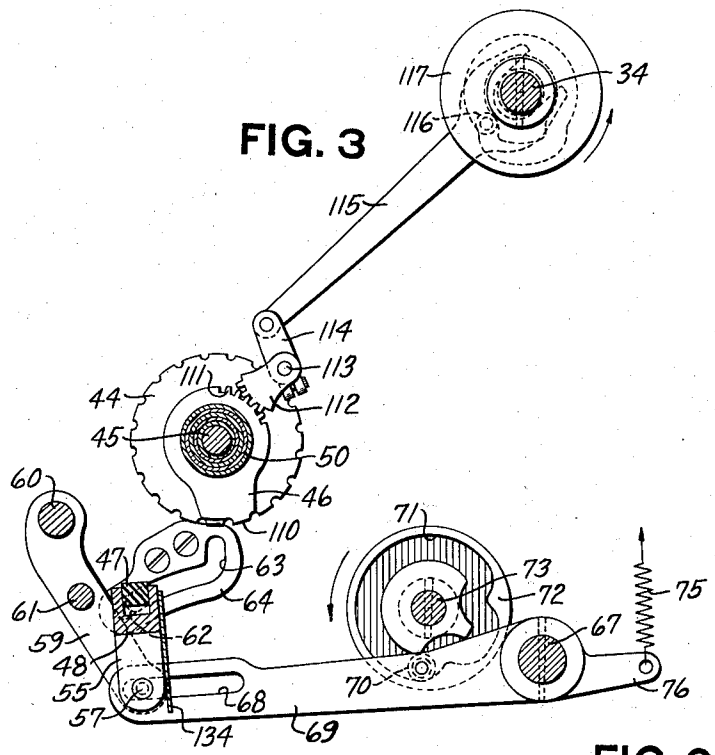


FIG. 4

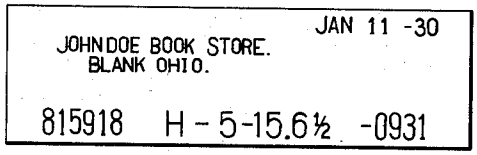


FIG. 5

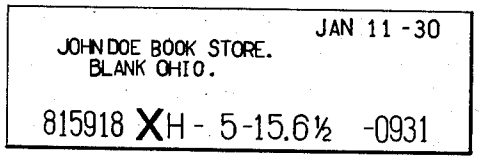
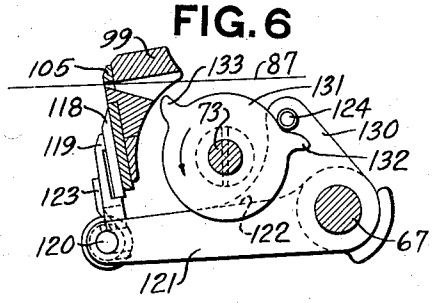


FIG. 6



Inventors
Arthur S. Lupton and
Wilhelm Kropff

By Hearl Beust

His Attorney

April 9, 1935. A. S. LUPTON ET AL 1,997,372

CASH REGISTER

Filed March 13, 1930 3 Sheets-Sheet 3

FIG. 7

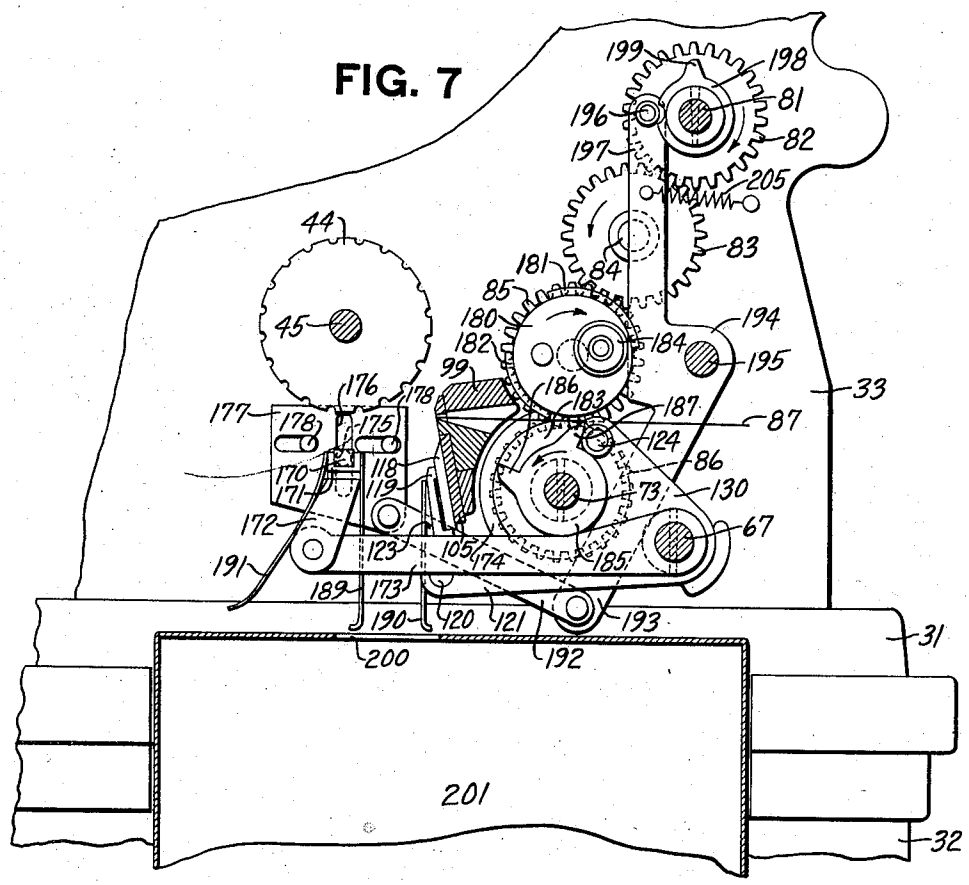
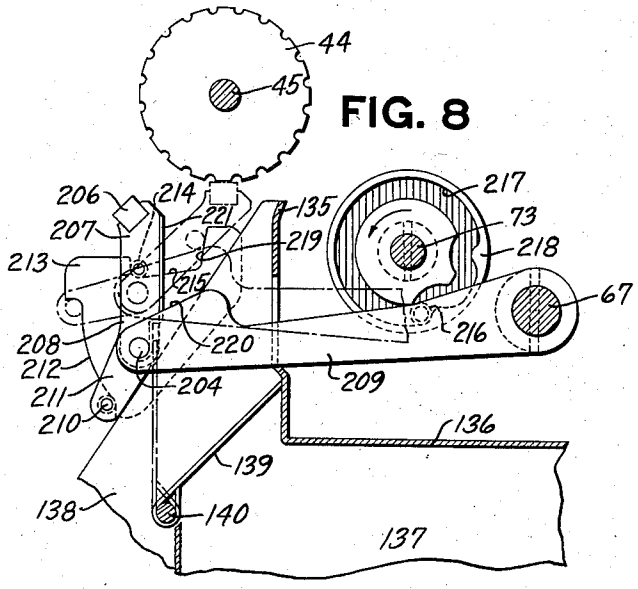


FIG. 8



Inventor
Arthur S. Lupton and
Wilhelm Kropff

By Pearl Benedict

His Attorney

Patented Apr. 9, 1935 1,997,372

UNITED STATES PATENT OFFICE

1,997,372

CASH REGISTER

Arthur S. Lupton, London, England, and Wilhelm Kropff, Berlin, Germany, assignors to The National Cash Register Company, Dayton, Ohio, a corporation of Maryland

Application March 13, 1930, Serial No. 435,514
In Great Britain March 16, 1929

13 Claims. (Cl. 235—3)

This invention relates to cash registers and like machines, and more particularly refers to improvements in printing mechanisms for machines of the type disclosed in Letters Patent of the United States, Nos. 1,198,492 and 1,539,447, issued to Edward J. Von Pein on September 16, 1916 and May 26, 1925, respectively.

It is an object of this invention to provide a machine of the type indicated with a novel printing mechanism adapted to print on two checks of the same size, one of which checks, as it is severed from a supply roll, is delivered from the machine, the other check being deposited in a receptacle provided for that purpose.

Another object is to provide a machine of the type indicated with novel means to speed up the check feed mechanism to provide time for a plurality of printing and severing operations.

A further object of this invention is to provide in a machine of the type indicated in the above mentioned patents a novel printing hammer and operating means therefor.

Still another object is to provide a machine of the type indicated with novel mechanism to eject a printed receipt from the machine.

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 drawings which accompany and form a part of this specification.

In said drawings:

Fig. 1 is a view in right elevation of the improved printing mechanism, shown partly in section for clearness.

Fig. 2 is a detail view of the cam for operating the lid for the check receptacle.

Fig. 3 is a detail view of the hammer operating means and the means for setting the special character type.

Fig. 4 is a facsimile of the check issued to the customer.

Fig. 5 is a facsimile of the check deposited in the receptacle.

Fig. 6 is a detail view of the check severing device and its operating mechanism.

Fig. 7 shows a modified form of hammer and check chute operating mechanisms.

Fig. 8 shows another modified form of hammer and check chute operating mechanisms.

General description

The machine disclosed in the above mentioned patents, and to which the present invention is particularly adapted to be applied, includes generally a plurality of banks of amount keys and a bank of clerks' initial keys. A totalizer and the usual differential mechanism to add the amount set up on the amount keys onto the totalizer is provided.

The registering mechanism disclosed in the above mentioned patents forms no part of the present invention except insofar as it forms new combinations with the remaining structure. For a full and complete understanding of the machine to which the present invention is adapted to be applied, reference may be had to the above mentioned patents, and also to Letters Patent of the United States, No. 580,387, issued to Cleal and Reinhard on April 13, 1897, and Letters Patent of the United States, No. 754,049, issued March 8, 1904 to Thomas Carroll.

Generally speaking the printing mechanism disclosed in the above mentioned patents is the same as the improved form disclosed herein, the differences in structure and the improvements will be apparent as the invention is described.

However, it is not intended to limit the application of the present invention to the particular machine disclosed in the above mentioned patents, since, by making a few slight changes, the improved printing mechanism is susceptible of application to almost any cash register of the same general type.

The printing mechanism prints on two checks, such as are illustrated in Figs. 4 and 5. The check shown in Fig. 4 is printed first. It is then severed from the check web and falls out of the machine onto a platform from where the operator may pick it up and present it to the customer.

The check web is then fed and the second check, the one shown in Fig. 5, is printed. This check is not severed at the operation at which it is printed, but is retained in the machine and is severed at the beginning of the next following operation. This check, when it is severed, drops into a receptacle provided for that purpose, the receptacle being provided with a normally closed lid or closure which opens automatically at the beginning of an operation, at the same time the knife operates, to receive the second check printed at the last preceding operation of the machine.

The main body of the machine to which the invention is adapted to be applied, is carried between two side frames, only one of which appears in the drawings of this application. These side frames are supported on and secured

to a base 31 which, in turn, rests on a cabinet 32. The printing mechanism is supported on a printer frame 33, suitably supported by and spaced apart from the side frame 30.

Operating mechanism

The main registering mechanism of the machine, as well as the printing mechanism, is operated from a main drive shaft 34 journaled in the machine side frames 30 and in the printer frame 33.

The drive shaft 34 may be operated by an electric motor of suitable design, or it may be operated manually by a crank 35 (Fig. 1). The crank 35 is secured to one end of the tubular shaft 36 rotatably mounted on a stud 37 projecting from the frame 30, the shaft bearing in the printer frame 33. A pinion 38 secured to the opposite end of the shaft 36 meshes with a large intermediate gear 39 journaled on a stud 40 on the frame 30. The gear 39 meshes with a gear 41 mounted on a rod 42, supported between the frame 30 and the printer frame 33. The gear 41 in turn meshes with a gear 43 secured to the main drive shaft 34.

The ratio of the pinion 38 and of the gear 43 is such that two clockwise turns of the crank 35 and of the gear 38 are necessary to rotate the gear 43 and the main drive shaft one complete rotation in a counter-clockwise direction at each operation of the machine.

Type wheels

The impressions are made on the checks from the type wheels 44 (Figs. 1 and 3) secured to the end of nested tubes 50 surrounding a shaft 45 supported in the printer frame 33 and in a printer bracket (not shown). These type wheels are arranged in groups, and from left to right, as viewed in Fig. 4, print a ledger number, clerk's initial, amount and consecutive number.

The means for setting the type wheels of the different groups are not shown herein as said means is not pertinent to this invention. However, the ledger or index number type wheels (not shown) may be set by any suitable means. The clerk's initial type wheel may be set by a differential under the control of a group of clerks' keys in a manner well known in the art. The amount type wheels are, of course, set in the usual manner, according to the keys depressed in the several amount banks, and any suitable means, preferably of the type illustrated in the patent to Von Pein, No. 1,198,492, may be provided to advance the consecutive number type wheels of lowest order one step of movement at each operation of the machine.

A special type element 46 (Figs. 1 and 2) is set automatically at each operation, in a manner to be later described, to print an identifying character on the check to be deposited in the check receptacle.

Printing hammer

The printing hammer provided in the machine of the present invention is operated twice at each operation of the machine to print first the customer's check and then, after this check has been severed from the check web and the web fed, prints on the check to be deposited in the receptacle.

The hammer includes a platen 47 (Figs. 1 and 3) mounted in a channel bar 48, at the ends of which are arms 49 and 55 extending downwardly therefrom, said arms being pivoted on studs 56 and 57, projecting from links 58 and 59 respectively, journaled on a stud 60 supported by the printer frame 33. A rod 61 rigidly joins the links 58 and 59.

The hammer is held in an upright position by a stud 62 on the inner end of the channel bar 48 projecting into a cam slot 63 in a cam plate 64 secured to the printer frame 33.

An elongated slot 65 (Fig. 1) in an arm 66 fast on a shaft 67 embraces the stud 56 on the link 58 interjacent the link and the arm 49 of the hammer. The shaft 67 is journaled in the printer frame 33 and in a printer bracket (not shown). A slot 68 in an arm 69 (Fig. 3) also fast on the shaft 67, embraces the stud 57 in the link 59 interjacent the link and the arm 55 of the hammer.

A stud 70 (Fig. 3) on the arm 69 projects into a cam groove 71 in a cam 72 fast on a shaft 73 journaled in the frames 30 and 33. The cam 72 is rotated once at each operation of the machine in a counter-clockwise direction by a train of gears driven from the main drive shaft 34. This train of gears includes a gear 79 (Fig. 1) fast on the drive shaft 34 and meshing with a gear 80 fast on a shaft 81 journaled in the frames 30 and 31. The gear 82, also fast on the shaft 81, meshes with a gear 83 on a stud 84 supported in the frames 30 and 33. A gear 85 on a stud (not shown) projecting from the printer frame 33 meshes with the gear 83 and also with a gear 86 fast on the shaft 73.

The drive shaft 34, it will be remembered, makes one counter-clockwise rotation at each operation of the machine, and this shaft, by the train of gears 79, 80, 82, 83, 85 and 86, rotates the shaft 73 and the cam 72 counter-clockwise one complete rotation at each operation of the machine.

The hammer normally rests below and to the left of the printing position in order to form a chute or guide for the severed checks. It can be seen by inspection of Fig. 1 that if the hammer moved up and down radially with the printing line and the shaft 45, that there would be insufficient space to the right of the hammer to accommodate the severed check. For this reason the hammer is not only lowered from the printing position, but is moved bodily leftward away from the printing line.

The configuration of the cam groove 71 is such that it rocks the arms 66 and 69 and the shaft 67 first clockwise and then counter-clockwise twice at each operation of the machine. The clockwise movement of the arms 66 and 69 carries the hammer upwardly, the stud 62 following the cam slot 63 and the studs 56 and 57 swinging in the arc described by their respective links 58 and 59. At this movement the cam slot 63 carries the channel bar toward the right, as viewed in Figs. 1 and 3, into alinement with the particular type in the printing position at this time, and the links 58 and 59 carry the lower ends of the arms 49 and 55 into radial alinement with the platen 47 and the shaft 45. Continued movement of the arms 66 and 69 carries the platen 47 into contact with the type to take an impression therefrom on a check web 87 previously fed into printing position.

Counter-clockwise movement of the arms 66 and 69 reverses the movement of the hammer and restores it to normal position. A spring 75, having one end attached to the projection 76 in the

hammer arm 69 assists in restoring the hammer to normal position.

The movement of the hammer closely approximates a parallel movement until the stud 62 enters the radial portion of the slot 63. The remainder of the printing movement of the hammer is then nearly radial with the shaft 45, supporting the type wheels.

In order to take the impression from the type wheels on the check web, the usual ink ribbon 88 (Fig. 1) is provided. The ribbon is wound and unwound from two spools 89 and 90 mounted on studs 91 and 92, respectively, projecting from the frame 33. The ribbon is guided by studs 93, a stud 94, and a curved guide 95, all supported between the printer frame 33 and the printer bracket (not shown). Suitable reversing mechanism and feeding mechanism may be provided to reverse the direction of feed of the ribbon 88.

Check feeding mechanism

Printing mechanisms in machines of this type usually print either once or twice on an issuing receipt. When two impressions are made on the receipt, it is fed between impressions, and the receipt is then severed from its web near the end of the operation. In such cases there is sufficient time between impressions to feed the check web. In the present invention, however, it is not only desired to feed the web between the two impressions, but also to sever the already printed check. This requires considerably more time since the web may not be fed until the check is completely severed therefrom. This makes it necessary to feed the web very rapidly. To accomplish this the feed cylinder usually provided in printing mechanisms of this type is rotated twice at each operation of the machine, instead of but once as heretofore. The cylinder, therefore, rotates twice as fast and the feeding action is accomplished in one-half the time, making possible operation of the severing device between impressions.

The checks are printed on the web 87 unwound from a supply roll (not shown) suitably supported in the machine. The check web 87 passes downwardly through a curved chute 96, which changes the direction of the web toward the left, as viewed in Fig. 1. After leaving the chute 96 the web 87 passes between a check feeding and date printing cylinder 97, rotatably mounted on a stud (not shown), supporting the gear 85, and an impression roller 98 rotatably mounted on the shaft 73. The web 87 then passes through an opening in a knife block 99 supporting a stationary knife blade 105. The chute 96 and the knife block 99 are suitably supported between the printer frame 33 and a bracket (not shown).

To rotate the feed cylinder 97 a gear 106 secured to the side of the gear 83 meshes with a gear 107 secured to the inner end of the cylinder 97. The ratio of the gears 106 and 107 is such that one counter-clockwise rotation of the gear 106 imparts two clockwise rotations to the gear 107 and to the feed cylinder 97 at each operation of the machine.

A feed flange or rail 108 carried on the cylinder 97 is adapted to press the check web 87 against the impression roller 98 twice at each operation of the machine to thereby feed the web forwardly the proper distance to receive the impression, the check being severed from the web following each impression.

The cylinder 97 carries the usual date type wheels (not shown) to print the date on the check. These type wheels are normally adjusted by knurled knobs 109 (Fig. 1) connected to the type by sleeves (not shown). An electrotype may be secured to the cylindrical face of the cylinder 97 in the proper position to print a suitable legend on the check, such a legend appearing in Figs. 4 and 5.

Special type element

The special type carrier 46 (Fig. 3), is automatically set between the first and second operations of the printing hammer, so that an impression may be made from a type 110 on the carrier 46 and the check printed at the second operation of the hammer, but not on the check first printed at each operation.

The type carrier 46 is rotatably mounted on the largest tube 50 and teeth 111 thereon mesh with a segment 112 secured to a short shaft 113 journaled in the frame 33 and in the printer bracket (not shown). An arm 114 secured to the other end of the shaft 113 is pivotally connected to a pitman 115 having its upper end bifurcated to straddle the drive shaft 34. An anti-friction roller 116 cooperates with a groove in a cam 117 secured to the drive shaft.

The type element 110 normally rests out of the printing position, but just after the first impression is made, and before the hammer is operated to take the second impression, the cam 117 thrusts the pitman 115 downwardly in the direction of its length, rocking the arm 114, shaft 113, and the segment 112 counter-clockwise to rock the type carrier 46 clockwise. This positions the type 110 on the printing line and the platen 47 at the second excursion of the printing hammer takes an impression therefrom on the check, in addition to the impression made from the ledger number, clerk's initial, amount and consecutive number types.

Just before the end of the operation, and after the second impression has been made, the cam 117 withdraws the type carrier 46 and carries the type elements 110 again out of the printing position.

Check severing device

Since two checks are to be printed at each operation of the machine, the severing device must operate twice to sever them from the check web.

This severing device includes the stationary knife blade 105 (Fig. 6) mounted on the knife block 99 and a movable knife blade 118 supported on a shouldered bar 119 pivoted at its end on a rod 120 carried between the free ends of a pair of yoke arms 121 and 122 journaled on the shaft 67. A spring 123 coiled about the rod 120 and having one of its ends secured to the rod presses the knife blade 118 against the stationary knife 105.

An anti-friction roller 124 on a projection 130 of the arm 121 cooperates with a cam 131 secured to the shaft 73. This shaft and the cam 131 make one counter-clockwise rotation at each operation of the machine. The cam 131 carries two tappets 132 and 133, adapted to successively strike the roller 124 to rock the yoke arms 121 and 122 clockwise thereby carrying the knife 118 upwardly to sever the printed checks from the web 87.

The weight of the bar 119, knife blade 118, rod 120 and the arms 121 and 122 assisted by the tension of the spring 123 restores the knife to normal position following each severing operation.

Check chute and receptacle

The check first printed at each operation of the machine, and which is severed immediately after it is printed, falls downwardly through a chute formed by a plate 134 secured to the rear of the hammer bar 43, a plate 135 extending upwardly from the top 136 of the check receptacle 137, side members 138, only one of which is shown herein, and a normally closed lid 139 for the receptacle. The lid 139 is secured to a shaft 140 journaled in the side members 138. This check comes to rest on a suitably supported platform, from where it may be removed by the operator.

As the knife operates to sever the second printed check, mechanism is operated to open the closure or lid 139 on the receptacle, whereupon this check falls into the receptacle.

It is to be understood, however, that the second check printed at each operation is not severed at that operation on which it is printed, but is severed at the beginning of the following operation. The means for opening and closing the lid 139 will now be described.

A roller 141 (Fig. 2) on a pitman 142 projects into a cam groove in a cam 143 secured to the drive shaft 34. The pitman 142 is bifurcated at one end to straddle a collar on the shaft 34, and its other end is pivotally connected to an arm 144 of a bell crank 145 mounted on a rod 146 suitably supported in the frames 30 and 33. A link comprising two members 147 and 148 adjustable for length to control the throw of the lid 139 by screws 149 and slots 150 connects the other arm 151 of the bell crank 145 with a bell crank 152 pivoted on a stud 153 projecting from a bracket 154 supported by the shaft 67 and by a rod 160 extending between the frames 30 and 33. A link 161 connects the bell crank 152 and an arm 162 fast on the shaft 140 supporting the lid 139.

It can be seen by inspection of Fig. 2, that at the beginning of the operation the groove in the cam 143 draws the pitman 142 toward the shaft 34 rocking the bell crank 145 clockwise to lower the adjustable links 147 and 148. This rocks the bell crank 152 clockwise, and by the link 161 and arm 162 rocks the shaft 140 counter-clockwise to open the lid 139. The lid 139, together with the plates 134 and 135, and side members 138, now form a chute through which the second check printed at the last operation falls into the receptacle 137.

Just before the first impression is made the cam 143 acts through the train of mechanism just described, to close the lid 139 so that the check printed at the first impression may fall to the platform where the operator has access to it.

Operation

A brief description of an operation of the printing mechanism will now be given.

The desired amount key and clerk's key having been depressed the machine is released for operation by operating the necessary manipulative devices which are not shown herein since they form no part of the present invention.

The check printed at the second operation of the printing hammer on the preceding operation of the machine is left protruding from the stationary knife blade 105. At the very beginning of the operation the tappet 132 (Fig. 6) on the cam 131 operates the severing device to sever the check, and, at the same time, the cam 143 (Fig. 2) opens the closure 139 so that this check is deposited in the receptacle 137.

At the beginning of the operation the cylinder 97 (Fig. 1) commences rotating in a clockwise direction. After the first severing movement of the knife, the feed rail 108 comes into contact with the impression roller 98 and feeds the check web forward the required distance to bring the proper spot thereon beneath the printing line. The cam 143 (Fig. 2) closes the lid 139 just before the first impression is made. The hammer is now operated to take the first impression and is then withdrawn. The tappet 133 of the cam 131 operates the knife to sever the check first printed, which falls onto the table or platform, the lid 139 having been closed just before the impression operation.

By this time the feed rail 108 on the cylinder 97, which it will be recalled makes two rotations at each operation of the machine, again feeds the check web to the proper printing position. At this time the cam 117 (Fig. 3) operates to swing the type segment 46 clockwise to bring the type 110 to the printing line, after which the hammer is operated to effect the impression on the second check. After this impression is made on the second check the hammer is withdrawn to normal position and the cam 117 restores the type segment 46 to its normal position wherein the type 110 is out of the printing position.

The knife 118, as above described, is not operated again at this operation and the check last printed remains in the position at which it was printed, to be severed at the beginning of the following operation.

Modified form

Fig. 7 illustrates a modified form of mechanism for operating the printing hammer to cause one of the checks to fall from the machine and the other to fall into the receptacle. In this structure the knife operates to sever both of the checks at the same operation at which they are printed. The date and check feed cylinder makes but one rotation at each operation instead of two, as in the above described embodiment of the invention. The modification of this invention disclosed in Fig. 7 of the drawings will now be described in detail.

The mechanism disclosed in this figure is driven from the shaft 34 by the same train of gears 79 and 80 (Fig. 1) and 82, 83, 85 and 86 (Fig. 7) which drives the mechanism of the preferred form of the invention.

The type wheels are the same, and are set in the same manner in this modified form as in the preferred embodiment disclosed in Fig. 1.

The printing hammer now to be described differs somewhat from the one described above. This hammer includes a platen 170 (Fig. 7) carried in a channel bar 171 having arms 172, only one being shown, extending downwardly from its ends. These arms 172 are pivotally supported on a pair of arms 173, only one being shown, fast on the shaft 67. A cam 174, similar to the cam 72 (Fig. 3) cooperates with a stud (not shown) on the rear arm 173, which arm does not appear in Fig. 7, but which lies directly in back of the front arm 173 and coincides therewith.

The hammer is guided on its vertical reciprocating movement by a stud 175 on the end of the channel bar 177 projecting into a vertical slot 176 in a hammer shifting slide 177 mounted on studs 178 projecting in the printer frame 33. The cam 174 receives one counter-clockwise rotation

at each operation of the machine, and rocks the hammer arms 173 first clockwise, raising the hammer in a substantially vertical path to take the impression and then counter-clockwise to lower the hammer to normal position twice at each operation of the machine.

A date printing and check feeding cylinder 180 (Fig. 7) is provided to feed the check web 87 before each operation of the hammer and to print the date and other data on the check. This cylinder is rotatably mounted on a stud (not shown) and carries two feed rails on flanges 181 and 182 instead of but one, as in the preferred form, to cooperate with an impression roller 183 rotatably mounted on the shaft 73. In this case the gears 106 and 107 are omitted and the cylinder 180 is fast directly to the gear 85, and since this gear makes but one clockwise rotation at each operation of the machine, so also the cylinder 180 makes but one rotation in the same direction. Hence the two feed rails 181 and 182 are necessary to feed the check web twice at each operation of the machine, the rails being properly located on the circumference of the cylinder and of proper length to feed the check web 87 shortly before each impression.

By using this form of feed cylinder it is possible to issue two checks at each operation, one of the checks being longer than the other. This may be regulated by making one of the feed rails 181 or 182 longer than the other.

The cylinder 180 carries date type wheels (not shown) which may be manually set by knurled knobs 184 projecting from the end thereof.

In this modified form the severing device is the same as the one described above in connection with the preferred form of the invention. The knife is operated twice at each operation to sever the checks from the web just after each impression is made. In its preferred form, however, the check first printed at an operation is severed immediately after the impression is made thereon. The second check, however, is not severed until the beginning of the following operation. In this modification both checks are severed immediately after they are printed and at the same operation on which the impressions are made thereon. For this reason a knife operating cam 185 (Fig. 7) somewhat different than cam 131 (Fig. 1) is provided. This cam has two tappets 186 and 187. The tappet 186 severs the first check and the tappet 187 severs the second check. Comparison of this cam with the cam 131 (Fig. 1) discloses that the chief difference between these cams is their size and the location of the tappets.

In this modified form of mechanism it is also desired to drop the first printed check out of the machine in a place accessible to the operator and deposit the second check in a locked receptacle provided for that purpose.

A normally opened chute is provided to guide the second printed and severed check to a receptacle 201. This chute includes a plate 189 secured to the rear side of the hammer and a plate 190 secured to the knife bar 119. Immediately after the hammer is thrust upwardly to print the first check, a tappet 186 operates the knife to sever this check, and, at the same time mechanism is operated to rock the hammer clockwise on its pivot on the arm 173 to tilt the plate 191 (Fig. 7) secured to the forward side of the hammer, at a suitable angle beneath the check, thus forming a platform upon which the check falls.

This mechanism includes the slide 177. A link 192 connects the slide 177 to an arm 193 of a lever 194 pivoted on a stud 195 projecting from the frame 33. A roller 196 on the upper end of the other arm 197 of the lever 194 cooperates with a cam 198 fast on the shaft 81 which, it will be remembered, makes one clockwise rotation at each operation of the machine.

Just after the impression is made on the first check, a tappet 199 on the cam 198 strikes the roller 196 rocking the lever 194 counter-clockwise. The lever 194, by the link 192, draws the slide 177 toward the right, rocking the hammer clockwise to tilt the plate 191 thereon, thereby forming a platform to receive the check which is severed at approximately the same time.

As soon as the tappet 199 has passed the roller 196, a spring 205 rocks the lever 194 clockwise to restore the slide 177 leftward, rocking the hammer to its upright position and discharging the severed check from the machine. The knife 118 is restored by its spring 123 at approximately the same time.

The slide 177 is not operated at the second impression, therefore, when the second check is severed it falls between the plates 189 and 190 through an aperture 200 into a check receptacle 201 provided for that purpose.

Second modified form

Fig. 8 discloses a second modified form of hammer operating and shifting mechanism. This structure may be readily substituted for that disclosed in the preferred form of the invention illustrated in Fig. 1.

In this modified embodiment of the hammer mechanism a platen 206 is mounted in the beveled end of a channel bar 207 having arms 208 on its ends pivoted on a rod 204 connecting the free ends of hammer arms 209, only one of which is shown, fast on the shaft 67. The platen 207 sets at an angle of about 45 degrees, with the center line of the arms 208, substantially as shown in Fig. 8.

When the hammer is operated it is rocked to printing position by a stud 210 in a projection 211 of the arm (not shown), but which lies directly behind the arm 208, traveling along an arcuate edge 212 of a cam plate 213 secured to the printer frame 33. The arcuate edge 212 is eccentric to the arc described by the rod 204 carried by the hammer arms 209. A stud 214 projecting from the rear arm (not shown) of the hammer normally rests in the left end of a recess 215 in the top of the plate 213.

To operate the hammer arm 209 a roller 216 carried by the rear one of the arms 209 cooperates with a cam groove 217 in a cam 218 fast on the shaft 73. The cam 218 makes one counter-clockwise rotation at each operation of the machine and twice rocks the hammer arms 209 clockwise and then counter-clockwise to normal.

Clockwise movement of the arms 209 carries the hammer upwardly, and since the arcuate edge 212 diverges in this direction from the path of the rod 204 upon which the hammer pivots, the hammer is rocked clockwise about the rod 204. At this movement the stud 214 travels toward the right along the bottom of the recess 215 until it comes into contact with the right-hand wall 219 of the recess. The wall 219, and likewise the arcuate edge 212 from this point upward is concentric with the shaft 67. At the instant the stud 214 arrives at the wall 219 a face 220 on the rear one

of the arms 209 picks up the stud 214 and carries the hammer bodily upward into contact with the types to take the impression therefrom on the previously fed check web 87.

The hammer is then restored and the knife operated to sever the check as described in connection with the preferred form of the invention. This check falls between a plate 221 secured on the rear of the hammer and the plate 135 extending upwardly from the receptacle 137. The first check is deflected by the closed lid 139 as in the mechanism disclosed in Fig. 1.

The second printed check is not severed at the operation of the machine at which it is printed, but the knife is operated at the beginning of the next operation to sever this check. At the same time the mechanism described above operates to open the closure 139 and the second check drops into receptacle 137.

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 as new, is:

1. In a machine of the class described; the combination with type elements; and a hammer to take impressions from the printing elements on an issuing check; of means to pivotally support the hammer; a cam to guide the hammer on its printing movement; and arms having slots therein surrounding the pivots of the hammer to operate the hammer.

2. In a machine of the class described having type elements, severing mechanism and a hammer to take impressions from the type elements on an issuing check; of means to pivotally support the hammer; a cam to guide the hammer; arms having slots therein surrounding the pivots of the hammer to operate the hammer; and means on the hammer to guide the severed check.

3. In a machine of the class described; the combination with type elements; and a hammer to take impressions from the type elements on issuing checks the hammer being normally out of printing position; of a pair of rigidly connected arms pivotally connected to the hammer; another pair of arms to operate the hammer carrying arms; and a cam to rock the hammer to printing position and then to guide the hammer to make the impressions.

4. In a machine of the class described; the combination with type elements; and a hammer to take impressions therefrom on a plurality of issuing receipts; of a pair of pivoted arms rigidly connected and spaced apart; studs projecting inwardly from the free ends of the arms to pivotally support the hammer; another pair of arms fast on a common shaft and having elongated slots therein embracing the pivot studs; a cam to operate said other arms; and means to guide the hammer.

5. In a machine of the class described; the combination with type elements; and a hammer to take impressions therefrom on a plurality of issuing receipts; of a pair of pivoted arms rigidly connected and spaced apart; studs on the arms to pivotally support the hammer; another pair of arms each being fast on a common shaft and having slots therein embracing the studs; means to operate said other arms to effect an impression; and a cam to guide the hammer to the printing position.

6. In a machine of the class described; the combination with type elements; and a hammer to take impressions therefrom the hammer being normally out of line with the types; of a pair of pivoted arms, said arms being rigidly connected and spaced apart; studs on said arms to pivotally support the hammer; another pair of arms having slots therein embracing the studs between the hammer and the first mentioned pair of arms; means to operate said other arms to rock the first mentioned arms; and means to rock the hammer into line with the type and to guide said hammer after said hammer is in line with the type.

7. In a machine of the class described; the combination with type elements; and a hammer to take impressions therefrom, the hammer being normally out of line with the type; of arms to support the hammer; pivot studs on the arms; other arms having slots embracing the pivot studs; means to operate said other arms to rock the first mentioned arms to carry the hammer into contact with the types; a projection on the hammer; and a cam having a slot therein embracing the projection, the slot being shaped to first rock the hammer into line with the type and then guide the hammer to take the impression.

8. In a machine having a printing device, and having means to sever two printed checks at a single operation of the machine, the combination of a receptacle, and means to cause one check to be deposited in the receptacle and the other check to be delivered out of the machine.

9. In a machine of the class described, having a printing device and means to sever a plurality of printed checks at one operation of the machine, the combination of a receptacle, means to close an opening therein, and means operated during an operation of the machine to move the closing means so that one check will fall into the receptacle and another check will be deflected therefrom.

10. In a machine of the class described having check printing and issuing mechanism, a hammer adapted to take an impression on the checks, and a plurality of check guides secured to the hammer to guide the hammer in different paths.

11. In a machine of the class described, having check printing and issuing mechanism, a hammer adapted to take an impression on the checks, and a plurality of check guides secured to the hammer, on opposite sides thereof, and adapted to guide checks in different directions.

12. In a machine of the class described, having printing mechanism, a hammer to take impressions, a guide adapted to direct the striking surface of the hammer to the proper printing and home positions, and means to shift the guide to vary the position of the hammer when out of printing position.

13. In a machine of the class described having printing mechanism, a pivoted hammer, arms attached to the hammer at its pivot point and adapted to move the hammer to and from printing position, a stationary cam, a stud cooperating with the cam to move the hammer in line to print, and an additional stud on the hammer adapted to rest against one of the arms when the hammer is so moved, and thus hold the hammer and arm in such a relative position until impression is taken.

ARTHUR S. LUPTON.
WILHELM KROPFF.