Dec. 23, 1941. H. F. B. HÖGFORS 2,267,655

CASH REGISTER

Original Filed May 3, 1937 5 Sheets-Sheet 1

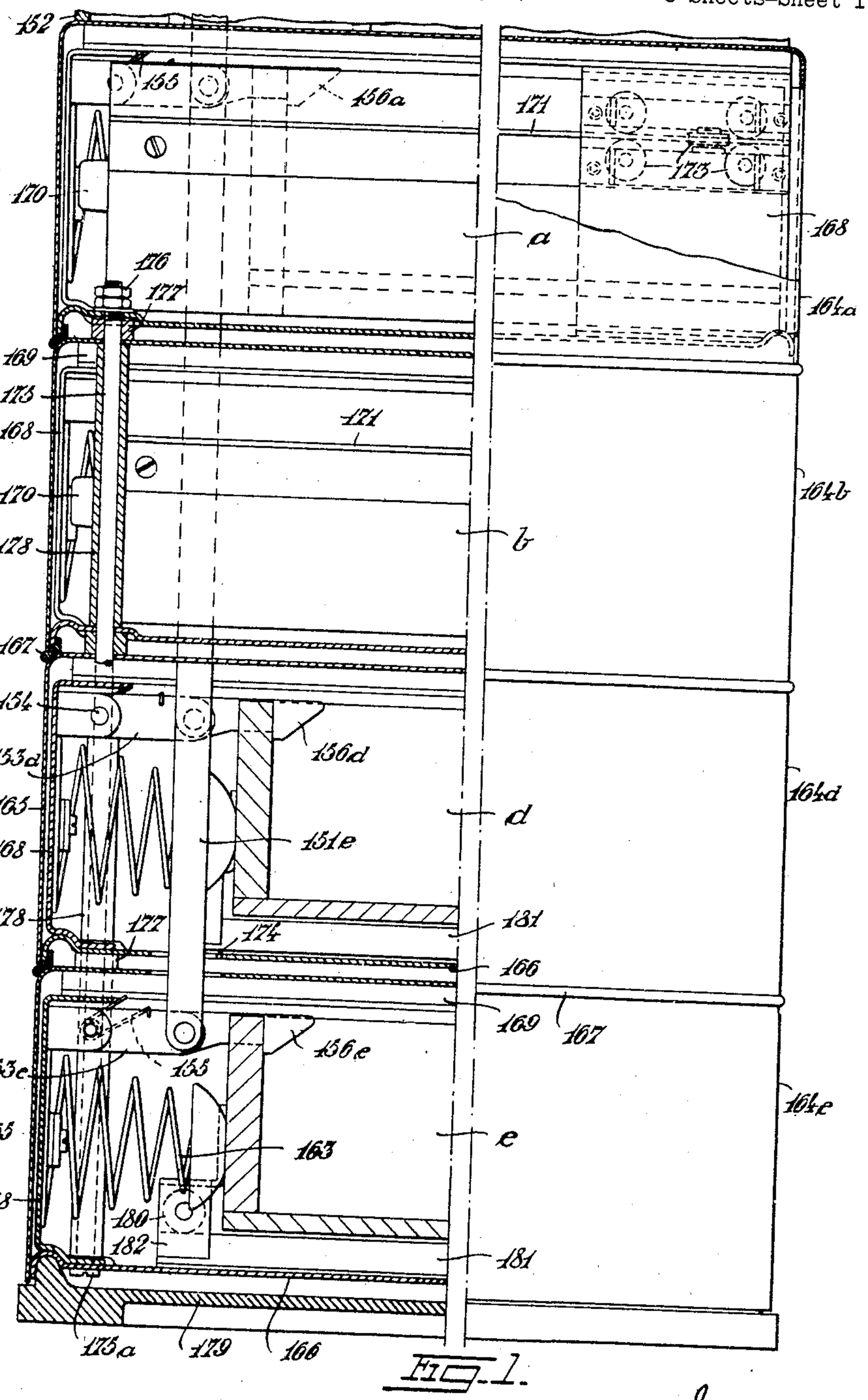

Fig. 1.

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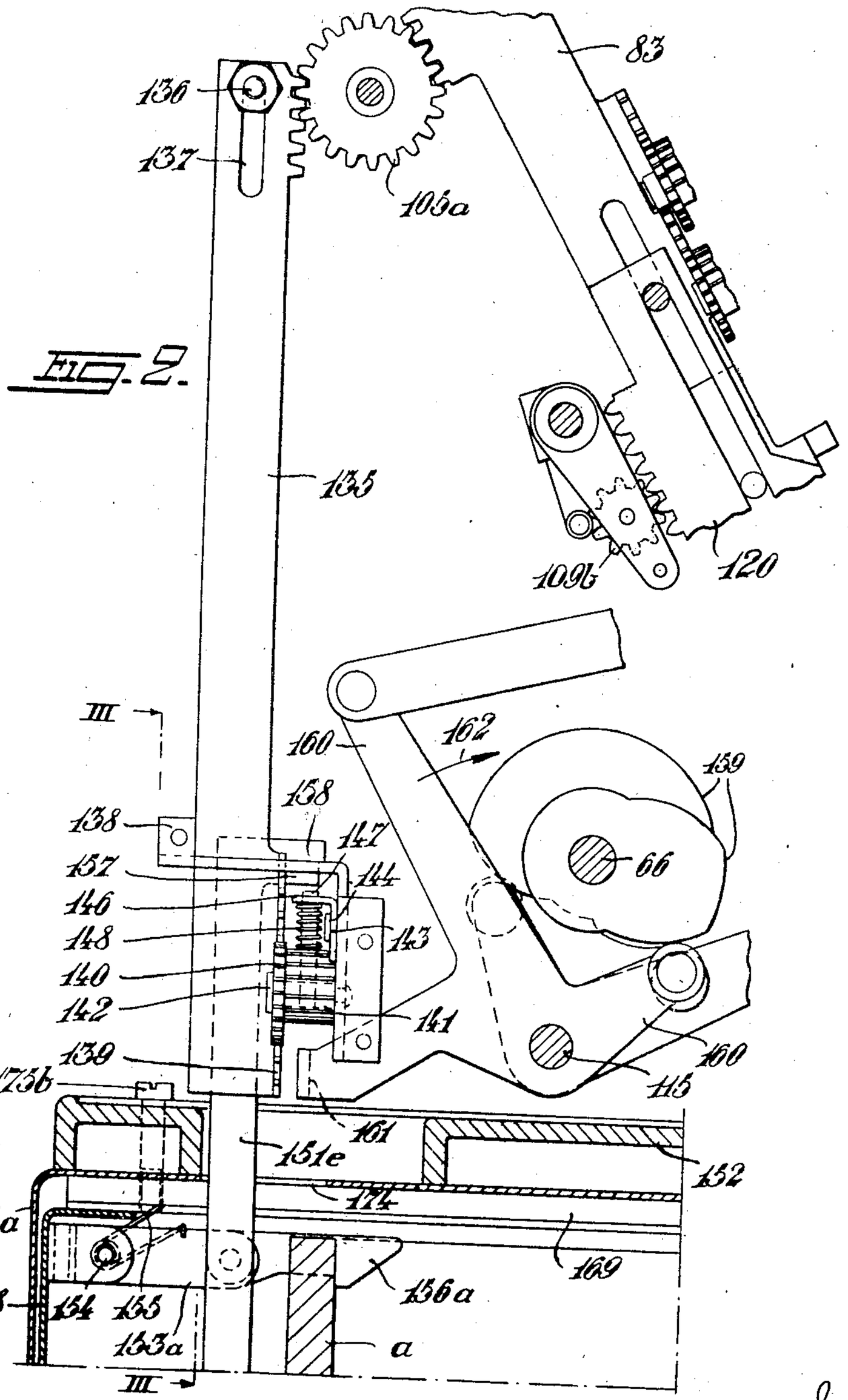
CASH REGISTER

Original Filed May 3, 1937 5 Sheets-Sheet 2

FIG. 2.



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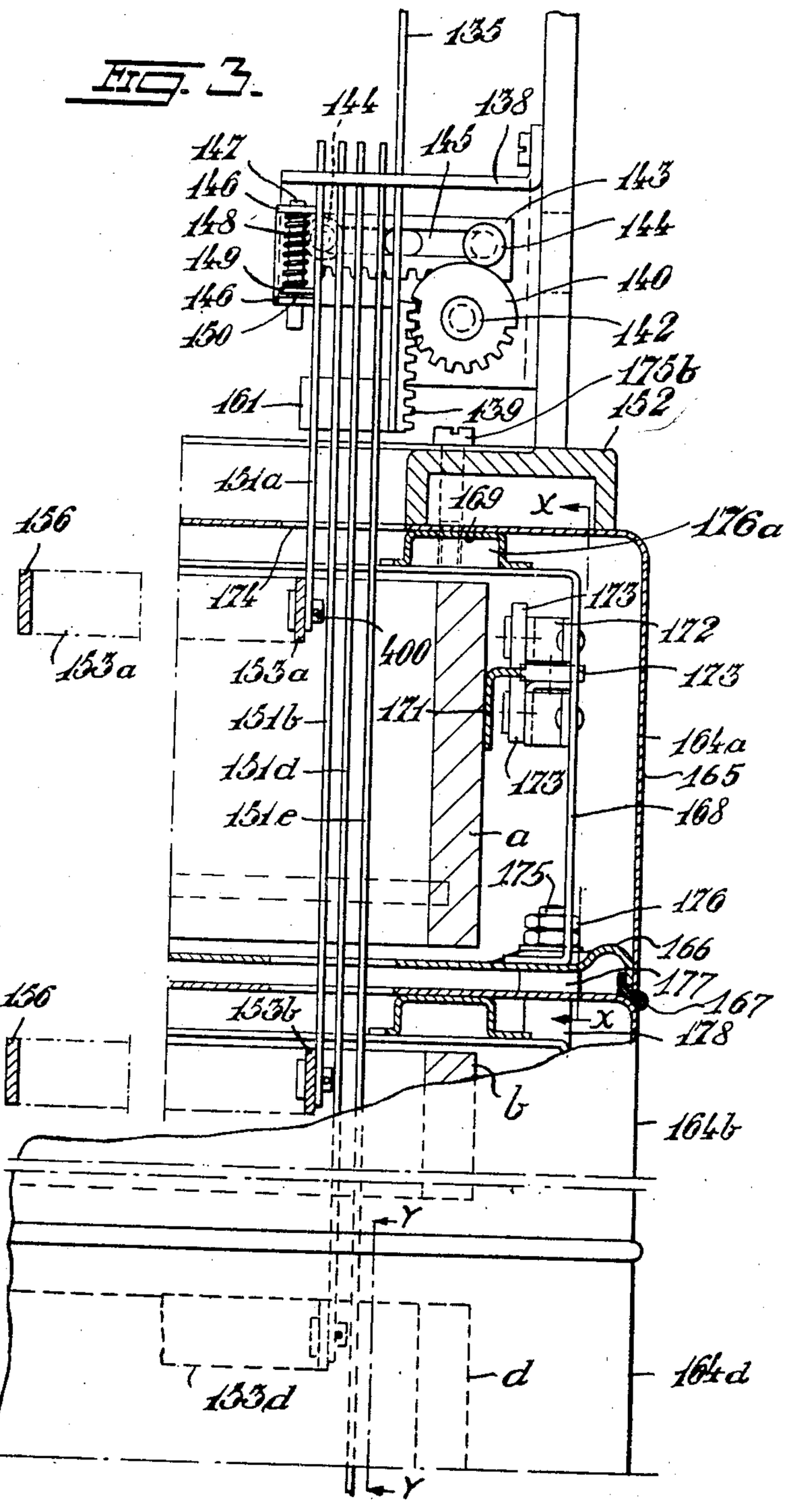
Original Filed May 3, 1937 5 Sheets-Sheet 3

FIG. 3.



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CASH REGISTER

Original Filed May 3, 1937 5 Sheets-Sheet 4

FIG. 4.

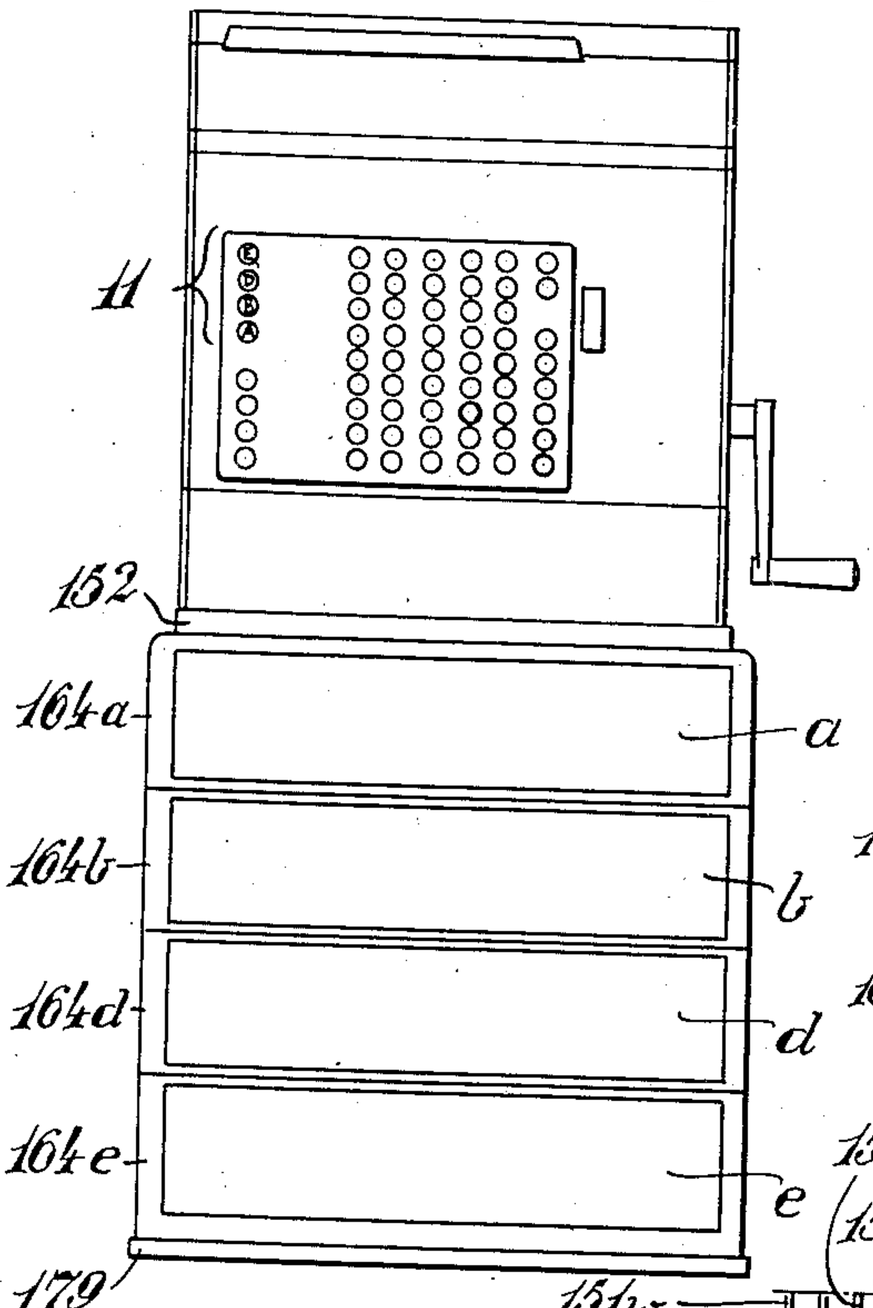


FIG. 5.

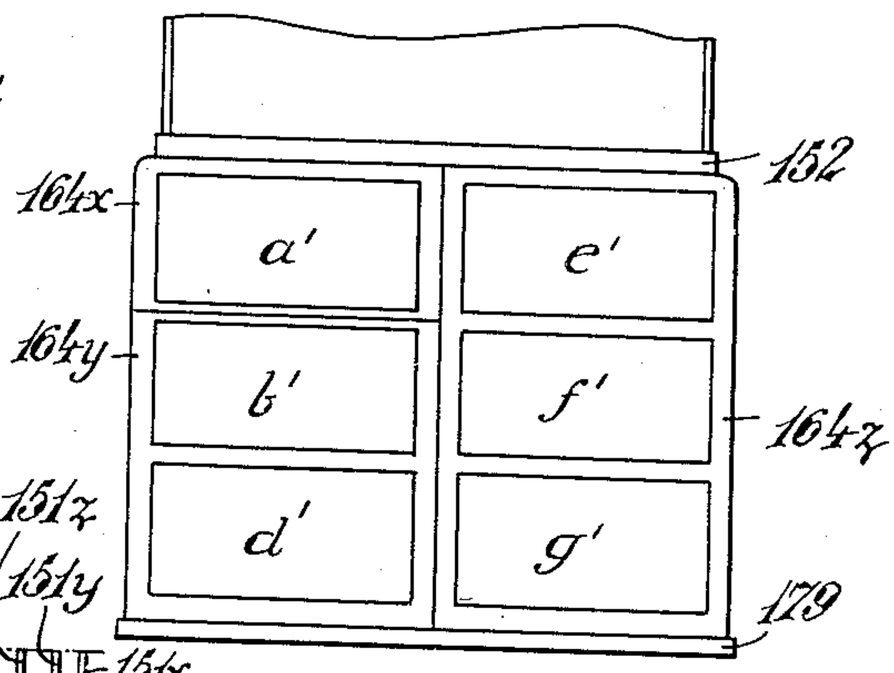
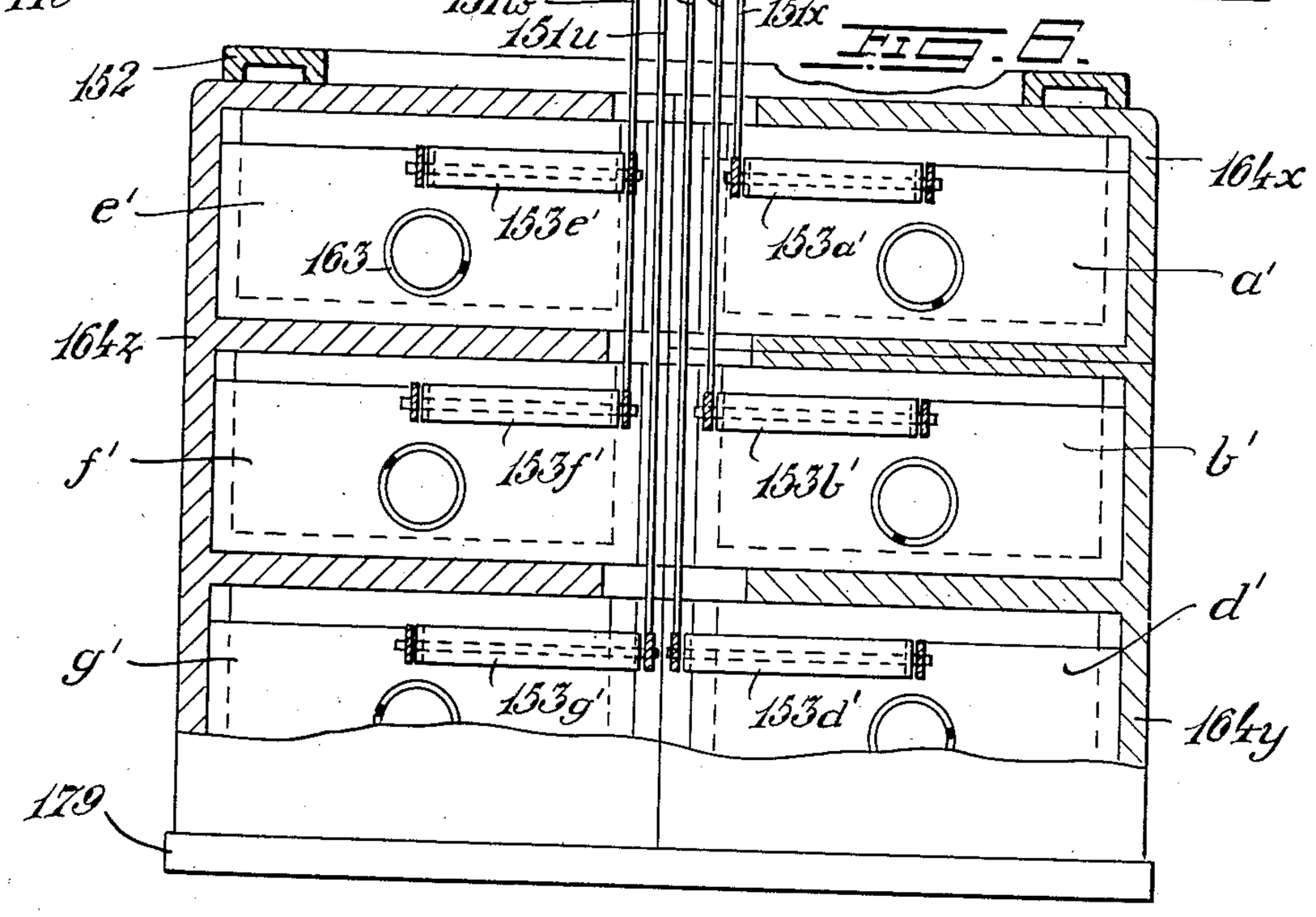


FIG. 6.



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CASH REGISTER

Original Filed May 3, 1937 5 Sheets-Sheet 5

FIG. 8.

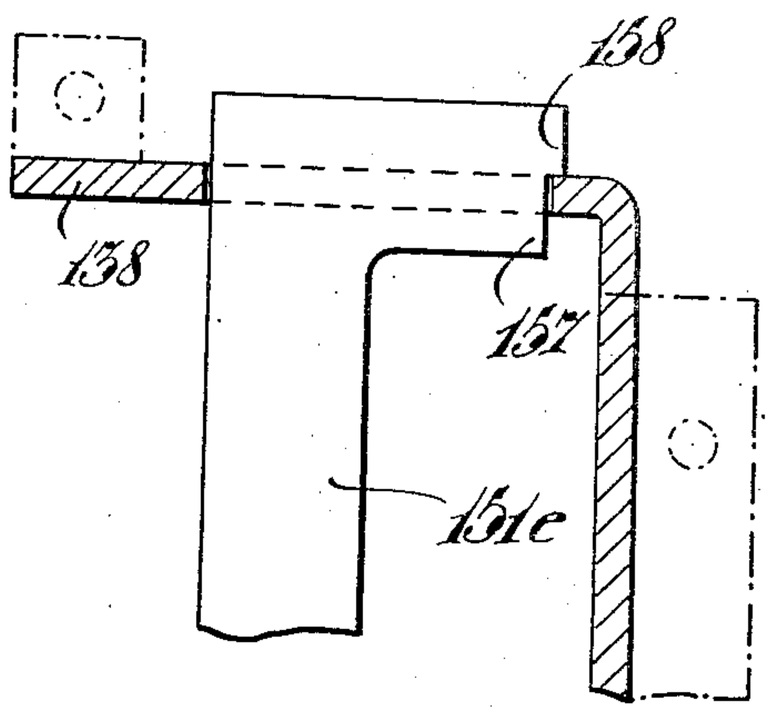
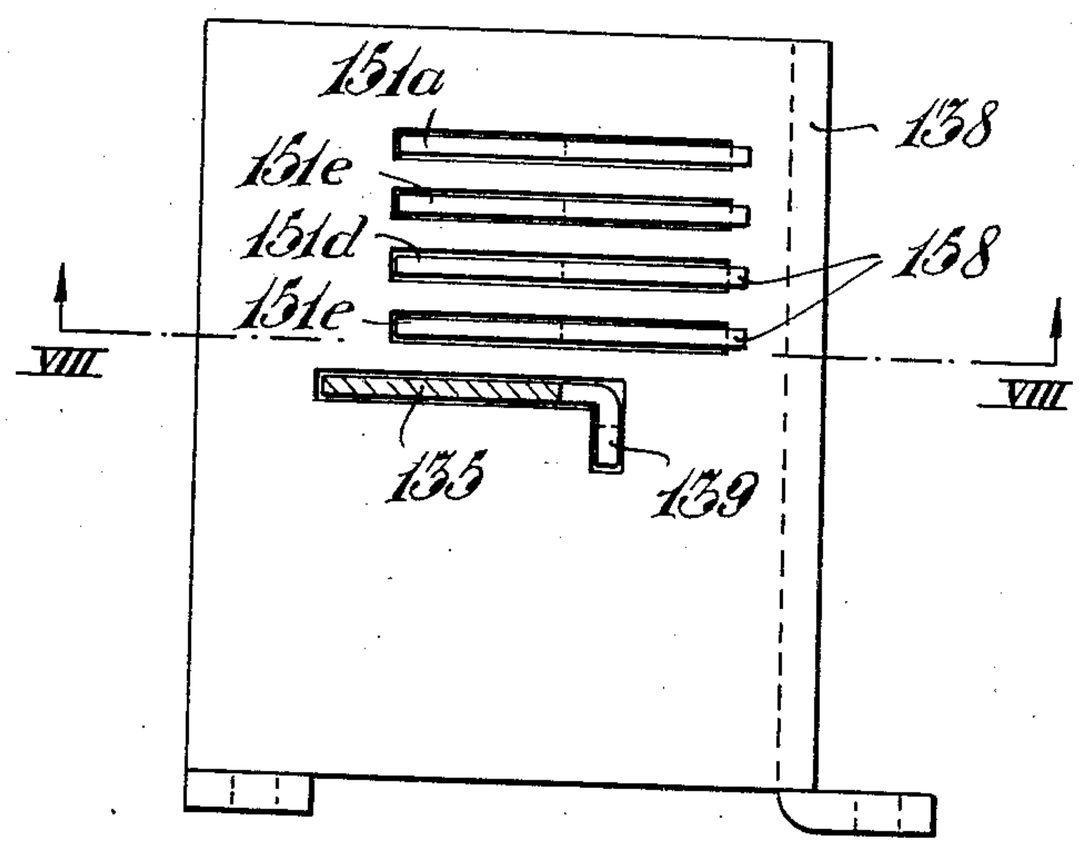


FIG. 7.



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Patented Dec. 23, 1941

2,267,655

UNITED STATES PATENT OFFICE

2,267,655

CASH REGISTER

Hans Fredrik Birger Högfors, Enskede, near Stockholm, Sweden, assignor to Svenska Kassaregisteraktiebolaget, Stockholm, Sweden, a joint-stock company of Sweden

Original application May 3, 1937, Serial No. 140,521. Divided and this application January 10, 1938, Serial No. 184,316. In Sweden May 7, 1936

1 Claim. (Cl. 235—22)

This invention relates to mechanism for selectively releasing cash drawers.

The principal object of this invention is to provide a better, more reliable, and more simple construction of the drawer selecting and controlling mechanism.

Another object of this invention is to render it possible to alter the number of such cash drawers without difficulty.

Another object of this invention is to simplify the drawer selector so as to render it possible to alter the number of drawers to be used.

Other objects will be evident from the following specification and claims.

Several embodiments of the invention are illustrated in the annexed drawings. For the purposes of illustration the invention is shown and described in association with a cash register, but it is to be understood that the invention is not necessarily restricted to use with cash registers.

Fig. 1 shows a side view of the drawer casings of a cash register in accordance with this invention, some parts being shown in section. Reference is made to the fact that in the left part of Fig. 1 for the two upper drawers the section is taken approximately on the line X—X in Fig. 3, that is between the cash drawer and that wall of the casing which is next to the observer, while in the same left part of Fig. 1 for the two lower drawers the section is taken approximately on the line Y—Y in Fig. 3, that is through the drawers proper and consequently farther off from the observer.

Fig. 2 is a cross-section through a part of the cash register mechanism and the top drawer.

Fig. 3 is a sectional view on the broken line III—III of Fig. 2.

Fig. 4 is a front view of the cash register, on a smaller scale.

Fig. 5 is a front view of the lower part of a cash register, in accordance with a modified embodiment.

Fig. 6 is a back side view on a larger scale (similar to Fig. 3) of the cash register shown in Fig. 5, the back wall of the casing being partially broken away.

Fig. 7 is a top view, on a larger scale, of the frame guiding the drawer latch release rods.

Fig. 8 is a sectional view on the line VIII—VIII of Fig. 7.

The cash register as shown is substantially of the construction disclosed in or referred to in my United States Patent No. 2,143,599 and also in my United States patent application Serial No. 140,520 for "Improvements in cash registers, adding and accounting machines and the like" filed May 3, 1937 (corresponding to British Patent No. 493,638). Reference is made to the fact that Fig. 2 of the annexed drawing is a part of Fig. 3 in said U. S. application Serial No. 140,520.

It is, however, evident that the cash register proper may be of any other well-known or suitable type.

The cash register as shown has four cash drawers *a, b, d, e* each for the exclusive use of one of four assistants or clerks A, B, D, E respectively.

A setting slide or rack **120** for the clerks' totalizers or registers may be coupled—by a wheel **109***b*—with an indicator rack **83** for wheels showing the letter of the clerk concerned. Both of said racks may be operated, for instance, by means of keys **11** of the clerks' key bank, as well-known in the art (see the patents and patent application referred to above).

The selector of the cash drawers

A toothed wheel **105***a*, Fig. 2, which meshes with the clerks' indicator rack **83** and may belong to the transmission to the printing mechanism for the check and the control ribbon or record strip, also meshes with a toothed rack **135**, Figs. 2 and 3. The rack **135** is guided in a vertical motion both by a stationary pin **136** entering a slot **137** of said rack and by a slot of a piece **138** of the stationary machine frame. At its lower end the rack **135** has teeth **139** at right angles to the upper teeth. The teeth **139** mesh with a toothed wheel **140** rigidly secured to a second toothed wheel **141**. The double wheel **140, 141** is journalled on the pin **142** secured to the frame **138**. The wheel **141** meshes with a movable toothed rack **143** slideable horizontally on the frame **138** on stationary pins **144** engaging slots **145**. The settable rack **143** has two horizontal projections **146** with holes, in which a pin **147** is slideably journalled. This pin is normally pressed downwards by a spring **148**, whose upper end engages the upper projection **146** and lower end engages a washer **149** fixed by a split pin **150**, which also limits the downward motion of the pin **147**.

In the zero or rest position, that is, upper position of the rack **83** the slidable pin **147** has the position shown in Fig. 3. Between it and the rod **135** there are four rods **151***a*, **151***b*, **151***d*, **151***e*, Figs. 1–3, extending downwards through the base plate **152** of the machine into the casings for the cash drawers *a, b, d, e*, which are placed

vertically above each other. The lower ends of the rods 151*a, b, d, e* are each articulately connected with one arm of bows 153*a, b, d, e*, respectively, one for each drawer, and are prevented from sliding off by means of split pins 400 or the like. Said bows are rockable on stationary journals 154 in the casings and are engaged by torsional springs 155, tending to press other hook-shaped arms 156*a, b, d, e* of said bows downwards for engaging and locking the corresponding drawer *a, b, d* or *e*. At their upper ends the rods 151*a, b, d, e* are provided with arms projecting laterally and having an upper step 158 and a lower step 157. The upper step 158 limits the downward motion of the rod by engaging the stationary frame 138 and is normally pressed into engagement with said frame 138 by the spring 155. The lower step 157 is at a level immediately above the upper end of the pin or slide 147 when the latter is in its position of rest. The slots of the frame 138 prevent the rods 151*a, b, d, e* from being unintentionally unhooked at 158.

Cams 159 on the main driving shaft 66 rock the arm 160 to and fro when the shaft 66 is rotated. The arm 160 is rotatably journalled on the shaft 115 and is provided with a bent portion 161, which extends inwards below the pin 147 in all positions, into which said pin may be displaced horizontally. When the arm 160 is rocked in the direction of the arrow 162, the pin 147 will thus be raised by the part 161.

The casings for the cash drawers

Each cash drawer has its push spring 163 and is slidable in its individual casing or housing 164 *a, b, d, e* respectively, Fig. 1.

Each of said casings comprises an upper portion 165 in the shape of an inverted trough and a bottom 166 inserted therein, both being preferably stamped and pressed of thin sheet metal. Between the casings packings 167 of rubber may be inserted. Bow-shaped carrying portions 168 are placed between the bottom and _┌¬_-shaped rails 169, which engage the top or ceiling of the part 165 from below. The parts 168, 169, 166 are rigidly inter-connected, for instance, by welding, to an inner body which is inserted into the upper portion 165. The uppermost casing is secured to the base plate 152 by means of bolts 175*b*, screwed into rails or blocks 176*a*, inserted into the rails 169 (Figs. 2 and 3).

At its rear end each drawer has buffers 170 and on each side an angle-shaped rail 171, passing between rollers 173, arranged in groups of three on fittings 172 secured to one of the carrying pieces 168. Thus, the cash drawer is well-guided and runs lightly.

The casings 164*a*—*e* have holes 174 through which the rods 151*a*—*e* pass.

Each casing with its cash drawer consequently forms a separate aggregate, independent of the other casings and their drawers.

The casings are kept together by bolts 175, one in each corner. Said bolts have heads 175*a* engaging the lowermost casing bottom 166 from below, and extend upwards through all the casings and are tightened against the upper side of the uppermost casing bottom 166 by means of double nuts 176. Thus, the bolts cannot be loosened from the outside. Between a bottom 166 and the top of the adjacent underlying part 165 short distance sleeves 177 are inserted. Longer distance sleeves 178 are also pushed on the bolts 175 and extend between the top of one part 165 and the underlying bottom 166 of the same casing. Even if the parts 165, 166 are made of relatively thin sheet metal, it is consequently possible to tighten the bolts 175 strongly without any risk of deforming the sheet metal.

Under the lowermost casing 164*e* a base plate 179, preferably made of rubber, is arranged.

At the rear end of each cash drawer a roller 180 is secured, rolling on a stationary guiding rail 181, which is engaged from both sides by a downwardly projecting part 182 of the fitting which carries the roller 180.

The device described operates as follows:

As well-known in the art (see for instance my U. S. patent application Serial No. 140,520 or British Patent No. 493,638), the setting rack 120 for the clerks' totalizers will move upwards a number of steps, corresponding to the denomination or value of the clerks' key just depressed, say B. After said rack then has been coupled with the corresponding clerks' indicator rack 83 which at this time is in its zero position, the rack 120 returns to its position of rest or zero position and then pulls the indicator rack 83 downwards a number of steps, also corresponding to the clerks' key B depressed.

Such motion of the rack 83 rotates the toothed wheel 105*a*, which consequently draws the rack 135 upwards. By means of gear 139, 140, 141 this motion is transmitted to the slidably settable rack 143, which is consequently moved, together with the pin 147, as many steps to the right in Fig. 3 as corresponds to the downward motion of the rack 83 from its zero position, that is to the value of the clerks' key B depressed. Thus the pin 147 will be displaced laterally, that is horizontally so that it stops just below the projection or step 157 of the rod 151*b* which corresponds to the cash drawer *b* of the clerks' key B depressed. When a registration in the cash register is finished, the arm 160 begins rotating in the direction of the arrow 162 so that the part 161 engages the lower side of the pin 147 and raises the pin. The pin then lifts the rod 151*b* below which it has been brought and thus the hook 156*b* is lifted from the corresponding cash drawer *b* which is pushed out by its spring 163. Thereafter, the arm 160 returns to its position of rest, Fig. 2. The opened cash drawer *b* may now be pushed in again and is retained in its closed position by the locking hook 156*b* snapping in under the action of the spring 155.

After the depressed keys have been returned to their position of rest in well-known mannner, the machine is ready for the next registration.

It is evident that a cash drawer may be set out of operation or put into operation by removing or re-introducing one of the rods 151*a*—*c*. As mentioned above, the rods are only loosely inserted into slots in the part 138, while their lower ends are easily detachable from the bows 153, after removing the pins 400. The removal or insertion of a rod is consequently a very simple operation. The drawer itself and its casing may easily be detached from the machine, after the nuts 176 have been unscrewed and the bolts 175 removed. By means of shorter bolts 175, the remaining casings of the machine may be secured again, the cash register having now a capacity of three clerks only. It is evident that—within the limit fixed by the maximum number of drawers—it is thus easy to increase or reduce the number of drawers in accordance with the need, and by use of simple, identical standard parts. The bottom drawer together with its casing is always first removed, then

the next one etc. upwards. Inversely, a new drawer together with its casing is always added below the bottom drawer etc. downwards. The cash register shown has a maximum of four drawers, but this number may be increased without any difficulty. The number of clerks' keys (or the number of operative positions of one or more clerks' levers) determines the number of operative positions of the rack **83** and consequently also the number of operative positions of the rack on settable slide **143**, that is the number of independent rods to the cash drawers. When a drawer together with its casing is removed, it is convenient to remove or lock the corresponding clerk's key, though this is not strictly necessary.

One and the same cash register may thus in a simple and inexpensive manner be provided with different numbers of drawers in accordance with the actual need and may easily be altered to another number. Without any difficulty standard cash registers of one single type may thus be adapted to any need occurring in the practice. The cash register of a shop may also easily be temporarily altered to a higher capacity during the rush season for a greater number of assistants than normal.

Certain modifications of the devices shown and described are possible within the scope of this invention. Thus, for instance, the drawers may be inserted by twos into a common casing. By combining single and double casings, any desired number of drawers may be attained. Also triplicate casings are possible, as illustrated in Figs. 5 and 6, showing a cash register for six drawers *a'*, *b'*, *d'*, *e'*, *f'*, *g'*. The drawer *a'* is accommodated in a singlce housing **164***x* and the drawers *b'*, *d'* in a double housing **164***y*, while the drawers *e'*, *f'*, *g'* are accommodated in a triple housing **164***z*. The housings **164***x*, **164***y*, **164***z* are detachably secured to the base plate **152** of the machine and rest upon a bottom plate **179**.

This cash register has five rods: **151***x*, **151***y*, **151***z*, **151***u*, **151***w*. The lower ends of the rods **151***x*, **151***y*, **151***z*, **151***u* are connected with one arm of bows **153***a'*, **153***b'*, **153***d'*, and **153***g'* respectively, while the rod **151***w* is connected with one arm of each of the bows **153***f'* and **153***e'*. The other arms of said rockably journalled bows are hook-shaped for engaging and locking the drawers, as described above in connection with Figs. 1 to 4.

The operation of the machine shown in Figs. 5 and 6 is quite analogous to that of the machine shown in Figs. 1 to 4. Evidently, in the machine shown in Figs. 5 and 6 the drawer selector must have five operative positions, for lifting the rods **151***x*, **151***y*, **151***z*, **151***u*, **151***w* separately. It is only essential that the drawers be accommodated in one or more detachable casings, so as to render it possible to vary the number of cash drawers. In other words: the casing comprising the greatest number of drawers shall always have a number of such drawers less than the maximum number for the cash register. That maximum number may be defined as the number of clerks' keys of the machine or as the number of setting positions of one or more clerks' levers.

The construction of the casings forms no part of this invention. Also the selector of the cash drawers may have another construction, but it must always be possible to disconnect or insert casings and cash drawers in accordance with the actual need. The casings may be arranged horizontally instead of vertically, or both horizontally and vertically. For the double toothed wheel **140**, **141** a conical toothed wheel or one single cylindrical wheel may be substituted.

Some features herein shown are shown and claimed in the copending United States patent application Serial No. 140,521 for "Improvements in cash registers" filed on May 3, 1937.

What I claim is:

In a mechanism for selectively releasing one or another of a plurality of drawers normally latched closed, such as individual clerk's cash drawers; individual means for normally latching each of said drawers closed; latch releasing rods, each connected with one of said individual latching means, each of said releasing rods having an actuating part, said parts being arranged in a row; a differentially settable member, means for differentially setting said member in accordance with the drawer desired to be released; a settable slide movable by said differentially movable member to different positions according to the movement of said differentially movable member, the path of setting movement of said slide being adjacent the row of actuating parts of said releasing rods; said slide having a pin mounted slidably therein, a spring yieldingly pressing said pin in one direction, and means for moving said pin in the other direction against the action of said spring and against the actuating part of one or another of said latch release rods according to the position of said slide and pin to release the drawer latch connected with the rod so actuated.

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