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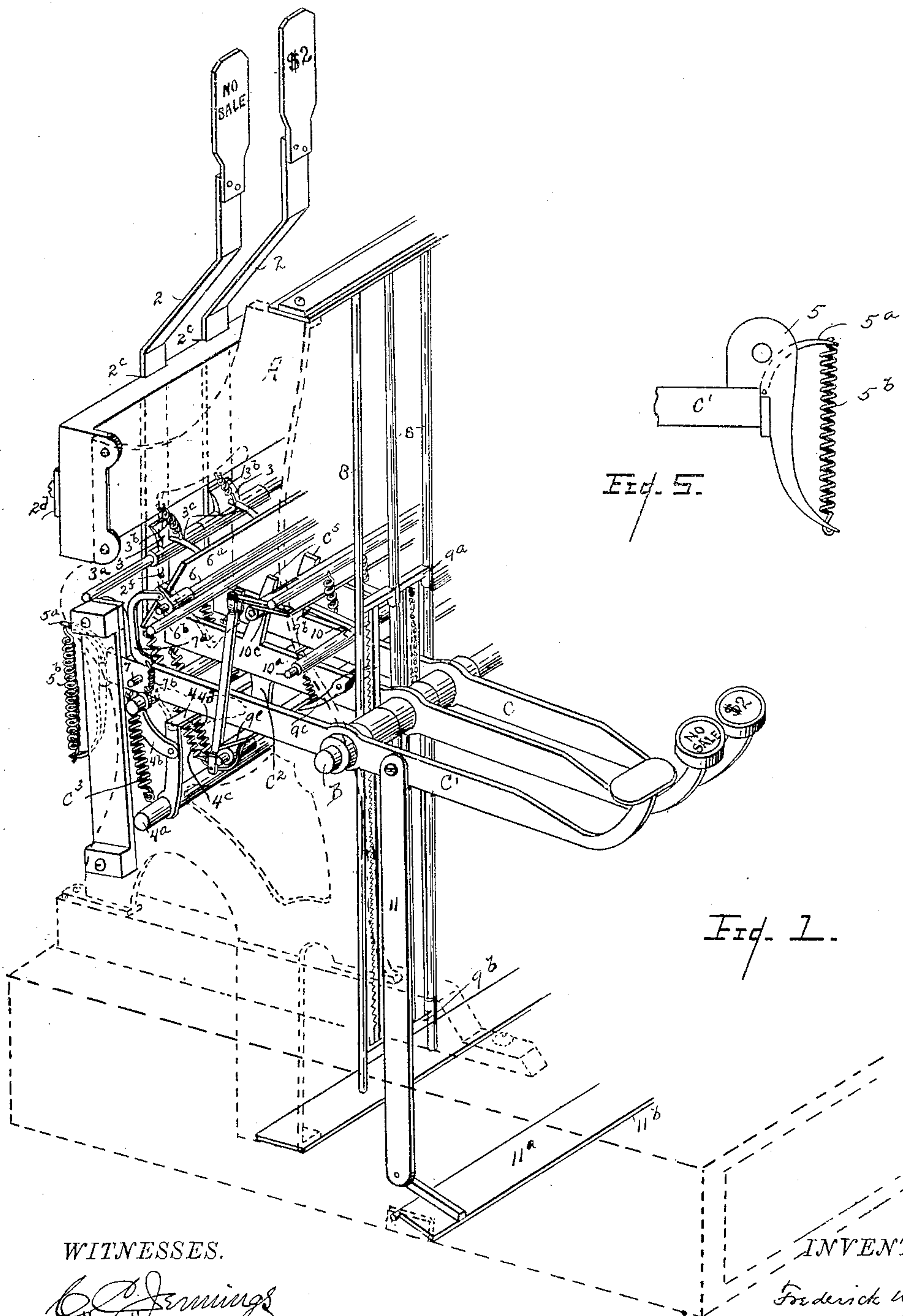
Patented Jan. 2, 1900.

F. W. & G. S. DECKER.
CASH REGISTER.

(Application filed Oct. 21, 1897.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES.

C. J. Jennings
V. M. Clough.

INVENTORS

Frederick W. Decker
George S. Decker

by Parker & Burton Attorneys.

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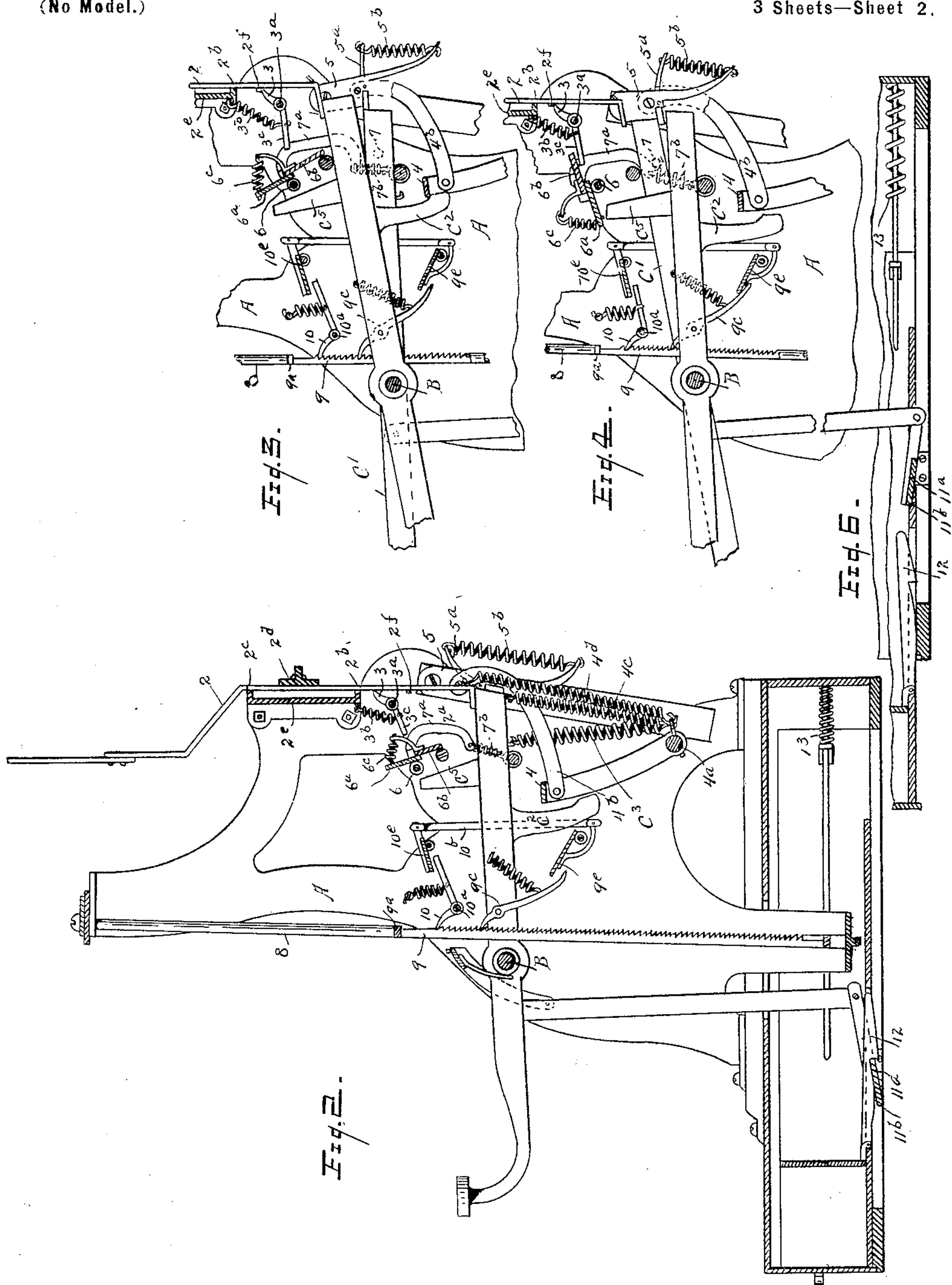
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3 Sheets—Sheet 2.



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W. C. Jennings
V. M. Clough.

INVENTORS

Frederick W. Decker
George S. Decker

by Parker & Barton Attorneys.

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3 Sheets—Sheet 3.

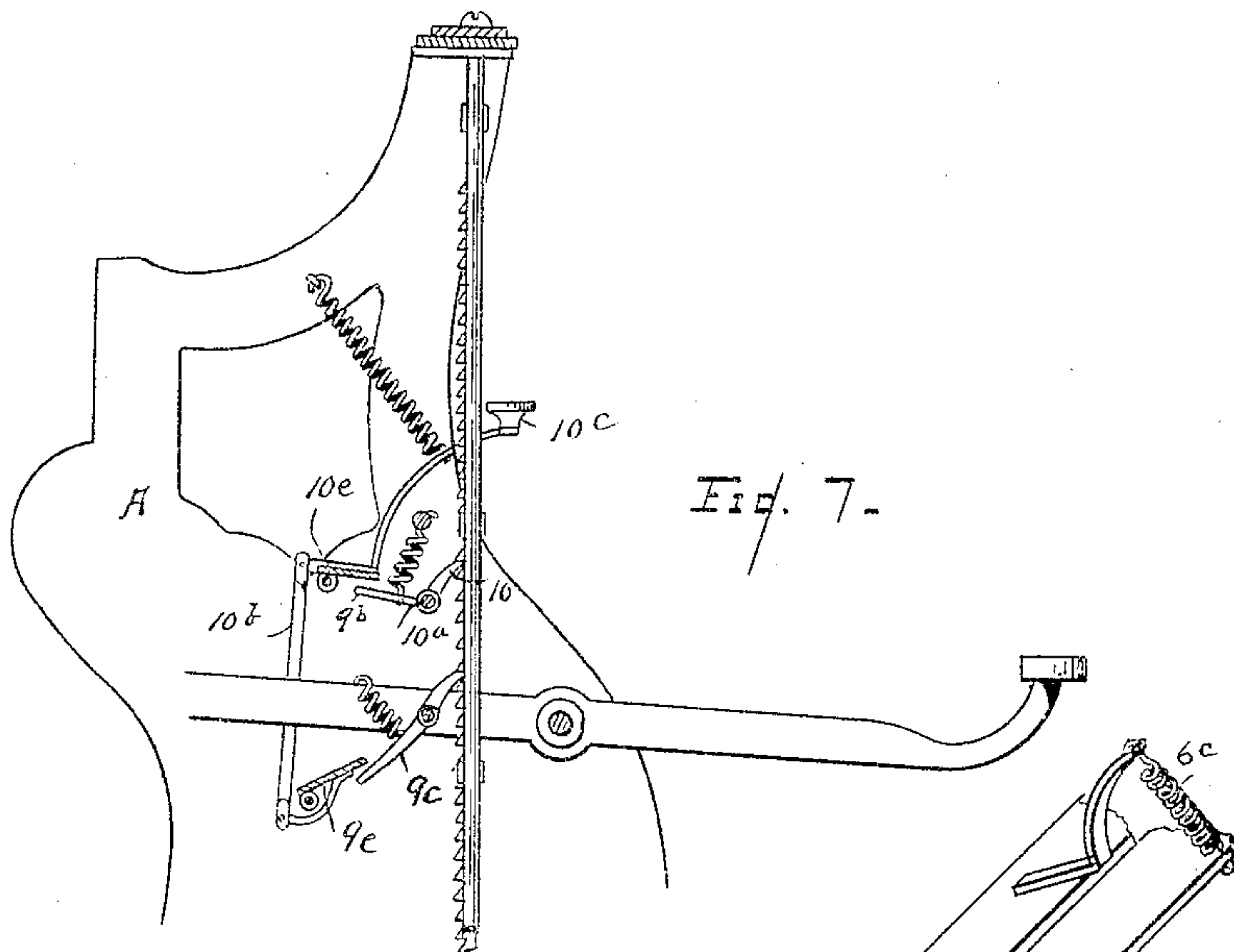


Fig. 7.

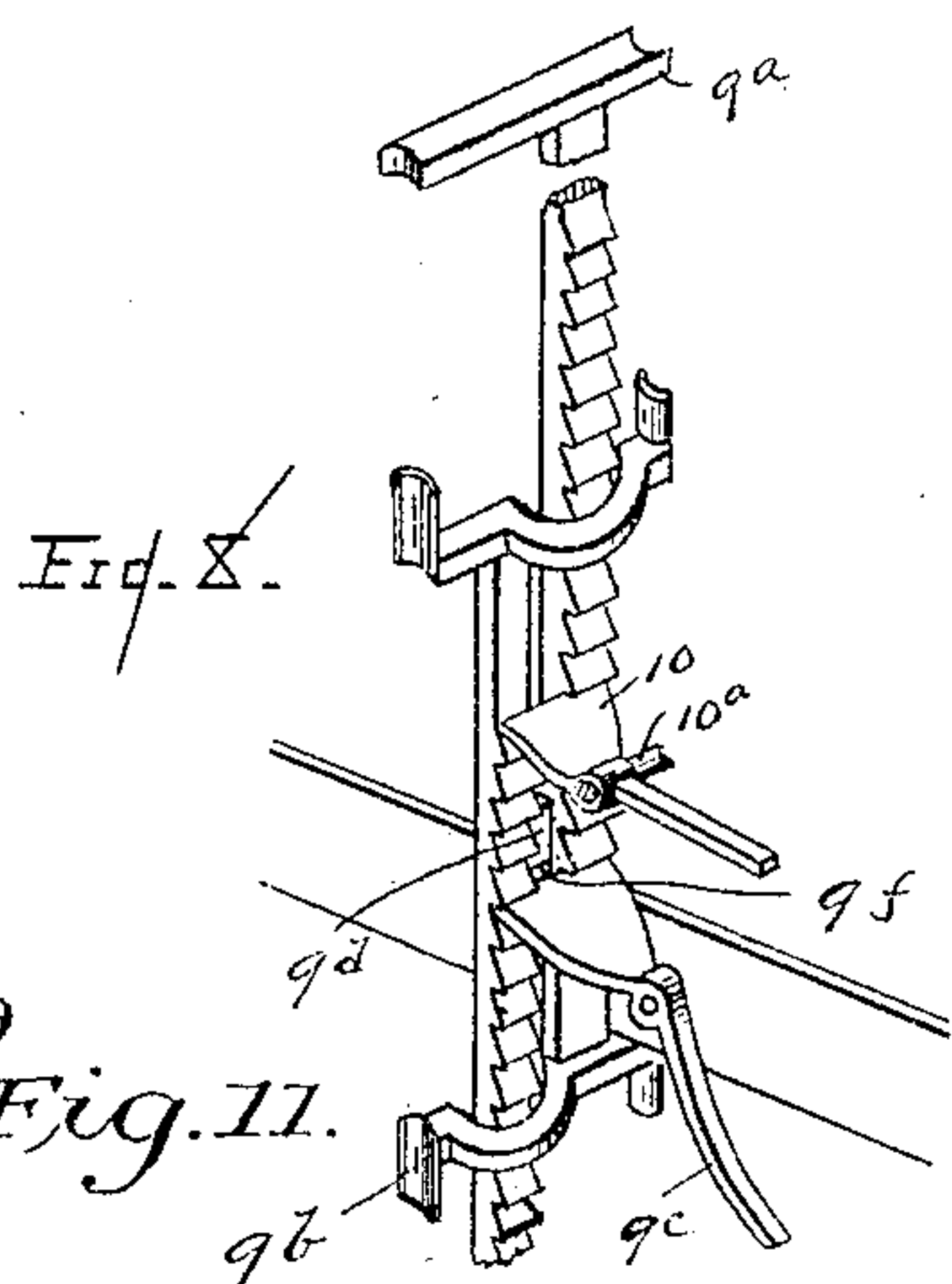


Fig. 8.

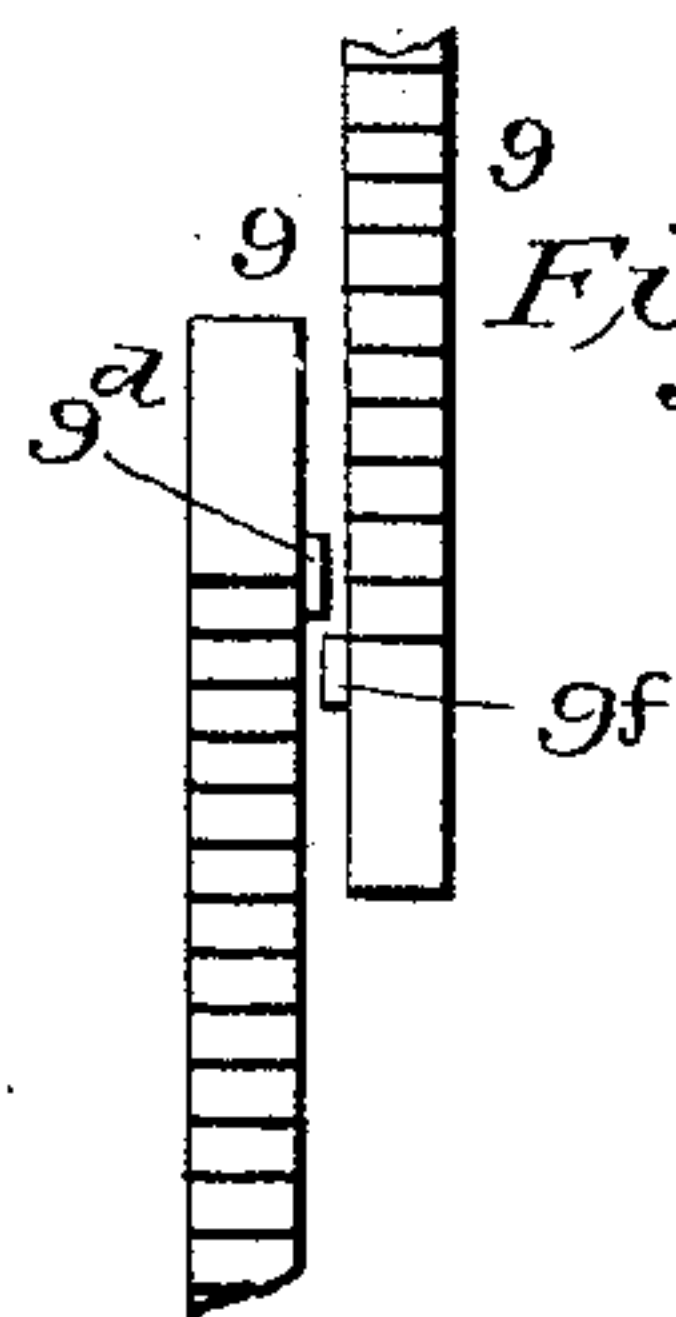


Fig. 11.

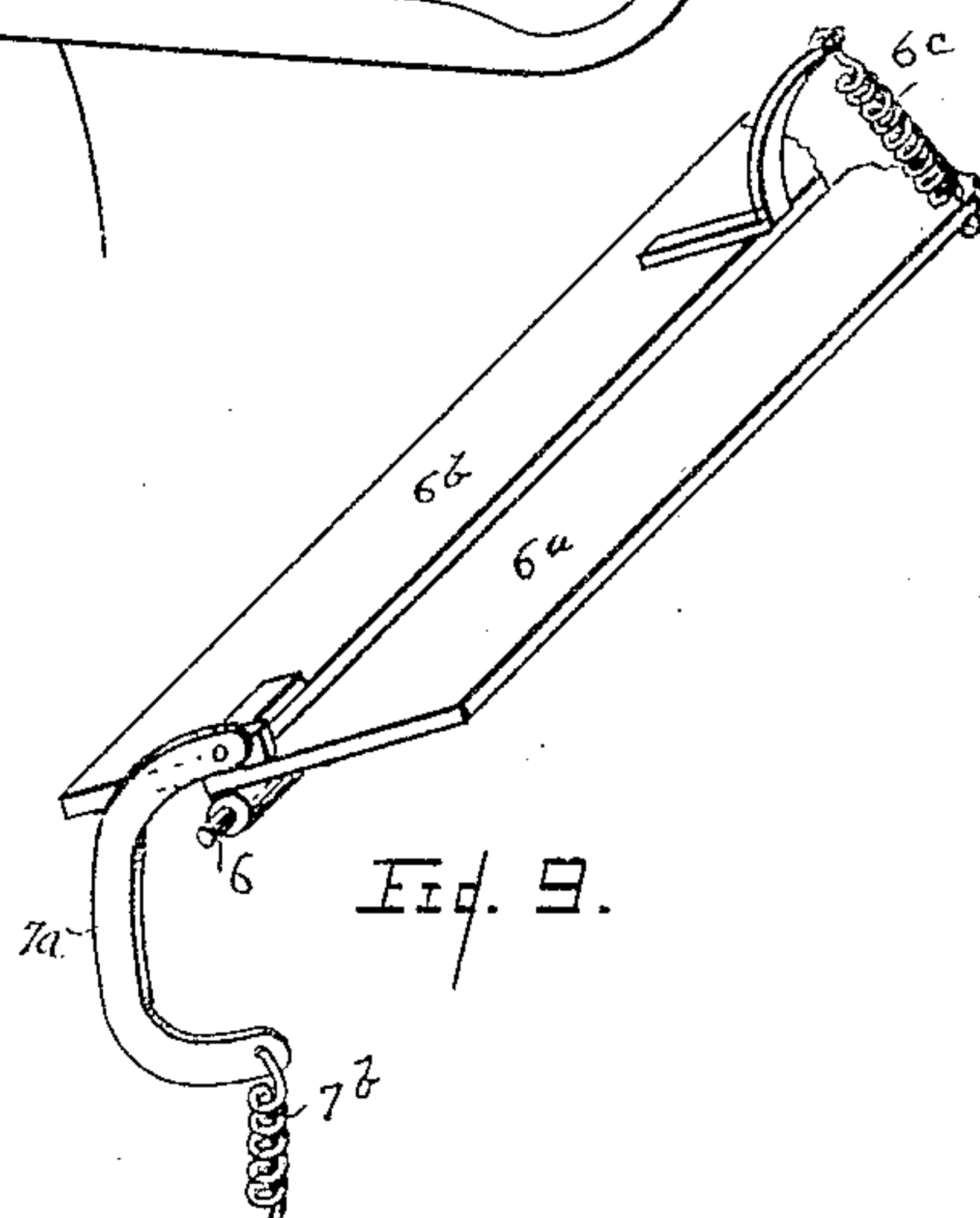


Fig. 9.

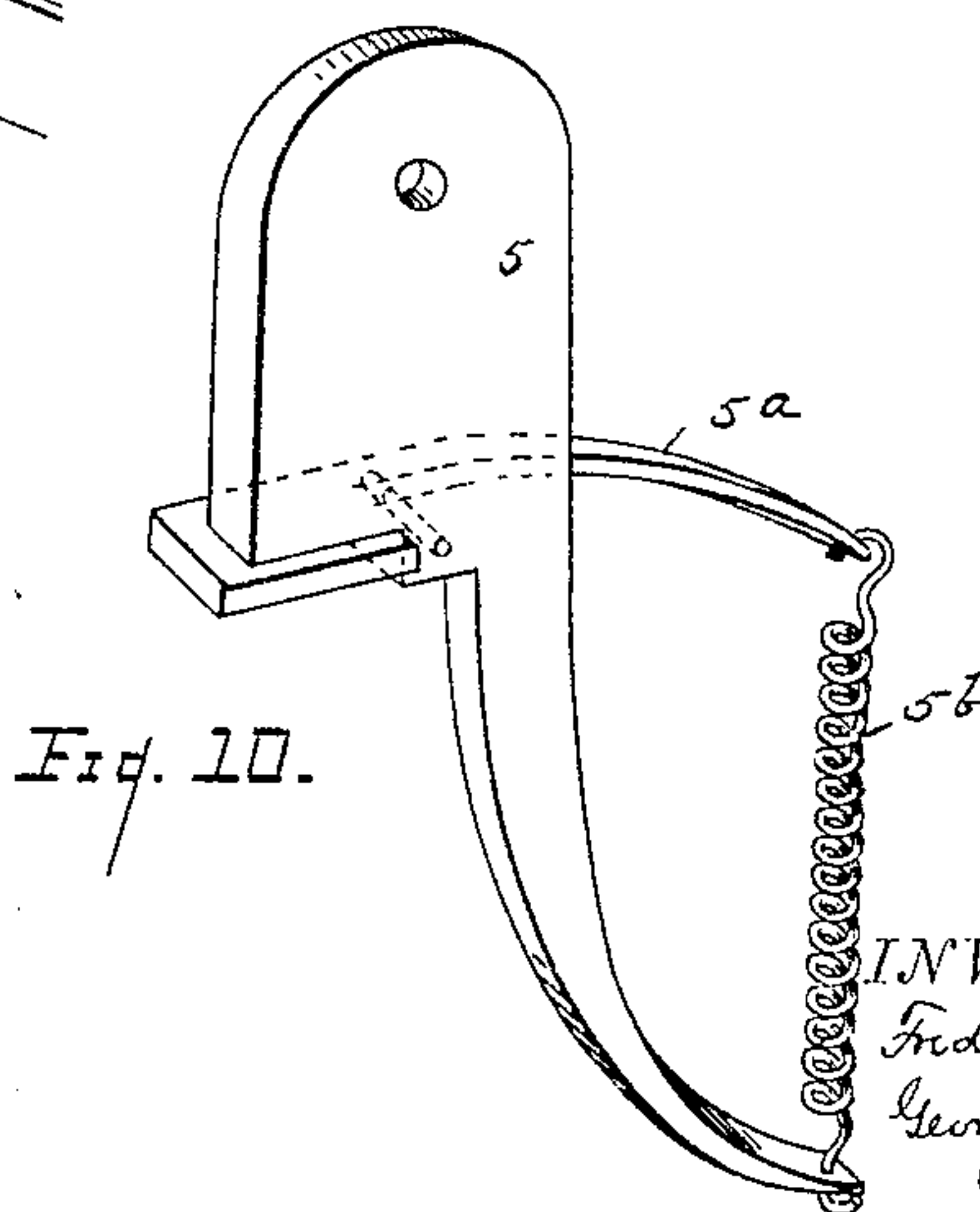


Fig. 10.

WITNESSES.

B. Jennings
V. M. Clough.

INVENTORS
Frederick W. Decker
George S. Decker

by Parker & Burton Attorneys.

UNITED STATES PATENT OFFICE.

FREDERICK W. DECKER AND GEORGE S. DECKER, OF DETROIT, MICHIGAN.

CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 640,181, dated January 2, 1900.

Application filed October 21, 1897. Serial No. 655,884. (No model.)

To all whom it may concern:

Be it known that we, FREDERICK W. DECKER and GEORGE S. DECKER, citizens of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Cash-Registers; and we declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to cash-registers, and has for its object improvements in that class of registers in which there are indicating-tablets used which are lifted to a place of exposure by means of keys and in which there is a partial adder or detail adder actuated by the keys.

In the cash - register in which these improvements are embodied there is at each operation a cycle of movements which must be completed in regular order, and this cycle of movements consists in, first, lifting the tablet-rod or several tablet-rods by means of the key or keys belonging to them; second, opening the drawer and gaining access to the money; third, closing the drawer and putting the machine in condition for another cycle of movements. Any number of tablet-rods may be exposed before the drawer is opened, but the drawer cannot be opened before at least one tablet is exposed. There are other details which relate to the resetting of the registering mechanism and to the locking and unlocking of the drawer and the peculiar lock employed for that purpose, which will be explained.

In the drawings, Figure 1 is a perspective showing two of the tablet-actuating levers and the drawer-unlocking lever and the parts immediately connected with them. Fig. 2 is a side elevation showing the tablet-actuating lever and the parts connected with it and also the parts connected with the drawer-unlocking lever, which is behind the tablet-actuating lever in this view. Fig. 3 is a detail of the tablet ends of the levers and relates more particularly to the locking mechanism employed with the drawer-opening lever. Fig. 4 is a detail showing the same parts as those

shown in Fig. 3, but in a somewhat different position. Fig. 5 is a detail showing the same parts as those shown in Fig. 3, but in a still different position. Fig. 6 is a detail of the drawer-locking mechanism. Fig. 7 is a side elevation showing a detail of the resetting mechanism. Fig. 8 is a detail of the registering mechanism. Fig. 9 is a detail of the tablet-dropping mechanism. Fig. 10 is a perspective showing in detail the hanger which locks the drawer-unlocking key. Fig. 11 is a detail of a portion of two of the rack-bars of the registering mechanism.

A indicates the framework, across which there reaches a fulcrum-rod arbor B, on which are strung a number of key-levers C. That one of those key-levers C' which is at the end of the fulcrum-rod is used as the drawer-opening lever, and the remainder of them are used as tablet-levers. Each tablet-lever is employed to actuate a registering-rack or system of registering-racks that register the number of times the levers have been actuated.

The display of the tablets is brought about by mechanism the operation of which will be best understood by reference to Figs. 1 and 2. The tablet-actuating levers C extend through the case of the register (which case is not shown in the drawings) and the protruding end is provided with a suitable finger terminal or tablet, upon which there is printed a number corresponding to the number on the tablet which is to be lifted by it. The rear or inner end of the lever C engages under the curved end of the tablet-rod 2, that is preferably a flat or square bar, and is provided with a foot 2^a, bent inward over and resting normally upon the upper side of the key-lever C. The flat stem of the tablet-rod 2 passes through guides 2^b 2^c, and all the tablet-rods are held in place in the guides by a bar or plate 2^d, the guide being composed of a notched flange-plate 2^e, that forms two parts of the bearing, and the bearing-plate 2^d, which forms the opposite bearing. Near the bottom of each tablet-rod is a pin or spur 2^f, that normally has position below a pawl 3, which is lifted when the tablet-rod is lifted to a position above the pawl 3, and rests upon the nose of the pawl and holds the tablet-rod elevated and the tablet exposed. There is for each tablet-rod an independent pawl 3,

and the several independent pawls are strung on a fulcrum bar or rod 3^a, that reaches across the frame of the register. Each pawl 3 is provided with a branch that extends toward the forward part of the register to a position to engage with the tablet-dropping plate. Each pawl thus constructed is in the form of a bent lever fulcrumed on the bar 3^a, and normally the forward-extending branch is held under upward tension by a spring 3^b, and the nose of the pawl is held with pressure against the stem of the tablet-rod. Any number of tablet-actuating levers may be actuated, any number of tablets lifted and exposed either simultaneously or consecutively, and no one of the tablet-rods that have been lifted will be dropped until after the drawer-unlocking lever has been reciprocated.

On the lower side of the lever C is a branch or arm C², extending downward and curved slightly, so that the curved lower terminal engages with the bar 4, that extends across the frame, and is attached to arms that are fulcrumed on a bar 4^a, which reaches from one side to the other of the register-frame. The bar 4 is capable of a rocking or swinging motion or movement on the fulcrum 4^a and is arranged to be actuated by the arm C², projecting downward from any one of the levers C. To the bar 4 or the arm on which it is attached is pinned one end of a link 4^b, that reaches backward and upward and connects with a hanger 5, that is pinned to the frame. The lower end of the hanger 5 is notched, as is best shown in Figs. 3 and 4, one part of the notch or one part of the walls of the notch being adapted to engage over the rear end of the lever C' (the drawer-opening lever) and the other part of the notch being adapted to engage behind the end of the lever C'. On that part of the hanger which reaches farthest down—that is, on that part which is arranged to engage behind the lever C'—is swung a lever 5^a, one end of which extends to the rear of the register and has attached to it a spring 5^b, the other end of which spring is attached to the extreme lower end of the hanger 5, which projects downward for this purpose. The lever 5^a is hinged to the side of the hanger 5; but that end which extends forward is provided with a wing that extends under the shorter portion of the hanger 5 and engages against the under face of the shorter portion when held by the spring in the position shown in Figs. 3 and 4. The winged end of the lever 5^a is long enough to reach forward beyond the front side of the hanger 5, under the end of the lever C', when the rear end of that lever is lifted, as shown in Fig. 4. Normally the notched part of the hanger 5 engages over the end of the lever C', with the short lever 5^a in the position shown in Fig. 2. When any one of the tablet-actuating levers C is reciprocated, the arm C², engaging against the plate 4, pushes it backward, and the plate 4, acting on the link 4^b, pushes that link backward and swings the hanger 5 on its

pin, and the lower end of the hanger 5 swings to the rear far enough to permit the lever 5^a to turn on its fulcrum from the position shown in Fig. 2 to the position shown in Fig. 3. When the lever 5^a takes the position shown in Fig. 3, it engages against the end of the lever C' and prevents the hanger from swinging back to its normal position, and the lever C' can now be reciprocated. Previous to this movement it was held from reciprocation by the engagement of its rear end under the hanger. When the lever C' is reciprocated, the rear end of it rises entirely above the end of the lever 5^a to the position shown in Fig. 4, and the lower end of the hanger 5 is drawn forward by the tension of the springs 4^c 4^d. Of these springs the one 4^c reaches from the shaft 4^a (which is a rock-shaft) to the end of the lever C, and the spring 4^d reaches from the same rock-shaft 4^a to the lower end of the tablet-rod, and the tension of the spring serves to throw the plate 4 forward and to draw down the rear end of the key-levers and the tablet-rods. After the rear end of the lever C' has been lifted and as soon as pressure is taken off from its projecting end it is drawn downward by its own spring C³, and the rear end of it engages the forward end of the lever 5^a, swings the forward end of the lever 5^a downward until the upper edge of the rear end of the lever C' is lower than the lower face of the short part of the hanger 5, and the hanger is then immediately drawn forward, engages over the rear end of the lever C', and the lever C' is locked against further reciprocation until the lock shall be again released by the reciprocation of one of the tablet-levers.

The tablet-dropping device consists of the mechanism arranged to actuate the lever-pawls 3, and this mechanism is shown in Figs. 1, 2, 3, and 4.

On a shaft 6 is hinged a rocking plate made in two parts 6^a 6^b, which are hinged together. One leaf of the double plate lies over a row of spurs or studs of which there is one in each tablet-actuating lever, and these studs C⁵ are made integral each with its own lever. They rise directly under the front leaf 6^a of the dropping-plate, and whenever the tablet-actuating lever is reciprocated the stud pertaining to it engaging under the leaf 6^a pushes it upward and rocks the opposite leaf 6^b downward. The leaf 6^b is capable of folding downward with respect to 6^a, but is not capable of folding up or backward, and consequently when the leaf 6^a is pushed upward the leaf 6^b is pushed forcibly downward and engages the branches 3^c of the pawls 3 and pushing them downward releases all the tablets that have been lifted and held exposed.

The return movement of the plates 6^a 6^b is effected when the drawer-opening mechanism is actuated. Near the rear end of the drawer-opening lever and on the side of it is a spur, (indicated in Figs. 3 and 4 by the dotted circle 7,) and onto a short spur that rises from

the lower side of the plate 6^a is pinned a bent link 7^a, the lower end of which has attached to it a draw-spring 7^b. The draw-spring tends at all times to pull the bent link downward, and inasmuch as when the plate 6^a is in its normal position it is slightly inclined, as shown in Fig. 4, the connection between it and the link 7^a is to one side of the perpendicular that passes through the bar 6 and the tension tends to hold it firmly in that position. When the plate 6^a is rocked, as previously described, the connection between it and the link 7^a passes to the other side of the perpendicular and the tension tends to hold it firmly in that position. The spur 7 engages under the lower end of the bent link 7^a when the lever C' is reciprocated and lifts the link forcibly upward; but inasmuch as the upper end of the link can only move in the circular arc described by the pin which connects it to the plate 6^a the upward movement of the lower end of the link is transformed to an arched movement at the other end of the link and the plate is rocked back to its normal position from the position to which it was forced when the key-levers C were reciprocated. The two levers are held normally in the position shown in Figs. 2, 3, and 4 with respect to each other by the tension of the spring 6^c, which extends from the plate 6^a to an arm that rises from the plate 6^b. They are normally held substantially parallel the one to the other, but may fold, as hereinbefore described, to permit the plate 6^b to pass up from under the forward-extending portions of the pawls 3, from below the end of the pawls to above them.

The registering mechanism consists of a vertically-movable rack or system of racks for each tablet-actuating key. At the front of the register and just at the rear of the fulcrum-rod B are a number of vertical guides or guide-rods 8, there being guide-rods alternated with the tablet-actuating levers, so that there is on each side of each lever a guide-rod. Each rack-bar moves between two of the guide-rods 8 and is guided by said rods. The rack-bar 9 travels vertically between guide-rods 8, and at each reciprocation of the lever to which the rack-bar belongs it is lifted a single notch by means of the pawl 9^c, that is pinned on the lever C immediately at the rear of the rack-bar and engages the teeth thereof. The rack-bar 9 is held to the track or vertical rods 8 by means of the cross-head 9^a at the top of the bar and a similar cross-head 9^b at the bottom of the bar. When more than a single rack-bar is used in connection with a single key-lever, the several rack-bars are used consecutively. That one which first comes into use is furnished with a straight cross-head at the top, which passes directly across from one guide to the other, and with a bent cross-head at the bottom, which lies above the cross-head of the second rack-bar. That one of the rack-bars which comes into use next is furnished with a bent cross-

head at the top and a straight cross-head at the bottom. The first rack of a series is lifted one notch at a time until it is lifted entirely up. A spur 9^f, that projects toward the second rack of the series, engages under a spur 9^d, that projects from the second rack toward the first rack, and the last few movements of the first rack are accompanied by the first few movements of the second rack, the two racks moving together at the same time that the lower part of the first rack and the upper part of the second rack are moving until the upper teeth of the second rack are caught by the holding-pawl 10. Each series of racks after they have been lifted by the lifting-pawl 9^c are held from dropping by the holding-pawl 10. The holding-pawl 10 is mounted on a common fulcrum-rod 10^a, that passes across the frame immediately at the rear of the racks and above the levers C. The lifting-pawls 9^c and the holding-pawls 10 are provided with lever extensions that engage under plates 9^e 10^e, both of which are rock-plates, and the two plates are linked together by a link 10^b, so that they are actuated contemporaneously by means of the setting lever or handle 10^c.

Whenever it is desired to reset the racks of the register, the lever 10^c is pushed downward, and this brings the plates 9^e and 10^e against the lever ends of the lifting and holding pawls 9^c and 10, and the pawls of all the racks are simultaneously disengaged from the racks and the racks drop by gravity, so that the "0" points are brought to the point of exposure.

Along the face of each rack-bar are indicating characters corresponding to the key by which the rack is actuated, and in front of the rack-bars in the completed machine there would be a covering or apron with a horizontal slot across it, through which the figures could be read and which would conceal all figures except a single horizontal line across the register. This covering, being a mere flat plate of metal, has not been shown in the drawings.

The drawer-opening device is shown in Figs. 1, 2, and 6. From the drawer-opening key C' there hangs a link 11, the bottom of which engages with the rock-plate 11^a, that extends across the frame underneath the drawer. The rock-plate is so arranged with reference to the lever C' that that edge which is toward the front of the drawer lifts when the projecting end of the lever C' is depressed. In the bottom of the drawer, properly located to engage over the rock-plate 11^a, is a hinged hook 12. The hook is so spaced from the front of the drawer that the catch of the hook just passes to the rear edge of the plate 11^a when the drawer is fully closed. The hook is hinged at its front end to the drawer-bottom and the shank of the hook bellies downward at that part of it which lies in immediate engagement with the plate 11^a, so that the rising edge 11^b of the plate 11^a contacts the curved lower part of the shank of the hook 12 and

lifts the catch of the hook out of engagement with the rear edge of the plate 11^a, while the bent lower face of the shank is still in engagement with the front edge.

5 At the rear of the drawer there is a spring 13, that has been compressed when the drawer was closed, and this spring acts to throw the drawer open as soon as the hook has been disengaged from the plate 11^a. The peculiar
10 shape of the hook, while it facilitates the unlocking of the catch in the way just described, does not at all interfere with the relocking of it when the rock-plate 11^a is in the position shown in Fig. 2.

15 What we claim is—

1. In a cash-register, the combination of a tablet-actuating lever, a drawer-actuating lever, a hanger arranged to lock the drawer-actuating lever, a lever 5^a, adapted to prevent
20 locking engagement between said hanger, and the drawer-actuating lever, and means whereby the movement of the tablet-actuating lever, causes interposition of the lever, 5^a, between said hanger and the drawer-actuating
25 lever, substantially as, and for the purpose described.

2. In a cash-register, in combination with a tablet-actuating lever, a drawer-actuating lever, a hanger adapted to pass over and lock
30 the drawer-actuating lever, a lever, 5^a, pivoted to said hanger, and adapted to turn into a position to prevent engagement between said hanger and said drawer-actuating lever a spring tending to turn the lever, 5^a, into
35 said position, the lever, 5^a, being adapted to be held out of said position by the drawer-actuating lever when said hanger is in engagement with the drawer-actuating lever, and means whereby said hanger is forced out
40 of engagement with the drawer-actuating lever, whereby the lever, 5^a, is permitted to turn into position to prevent reengagement, substantially as shown and described.

3. In a cash-register, in combination with a
45 tablet-actuating lever, a drawer-actuating lever, a hanger adapted to pass over and lock the drawer-actuating lever, a lever, 5^a, pivoted to said hanger, and adapted to turn into a position to prevent engagement between said
50 hanger, and said drawer-actuating lever, a spring tending to turn the lever, 5^a, into said position, the lever, 5^a, being adapted to be held out of said position by the drawer-actuating lever, when said hanger is in engagement
55 with the drawer-actuating lever, a movable bar, 4, adapted to be actuated by the tablet-actuating lever and a link, 4^b, connecting said hanger and bar, 4, substantially as and for the purpose described.

60 4. In a cash-register, in combination with a tablet-rod, a tablet-actuating lever, a pawl, adapted to hold the tablet-rod in its lifted position, a rocking plate made of two parts which are hinged together so that one of said
65 parts is adapted to turn in one direction only, with reference to the other of said parts, where-

by said plate is adapted to pass the pawl when moving in one direction, and to contact and release the pawl from the tablet-rod when moving in the other direction, and means
70 whereby the tablet-actuating lever operates said rocking plate, substantially as described.

5. In a cash-register, in combination with a tablet-rod and a pawl for holding the same in its lifted position, a rocking plate jointed to
75 enable it to pass the pawl without actuating it when moving in one direction, and to contact and release the pawl when moving in the opposite direction, and a spring secured to
80 said rocking plate so that the line of action of said spring shall pass by the pivot of said rocking plate, during the motion of the same, substantially as and for the purpose described.

6. In a cash-register, in combination with a plurality of tablet-rods, a plurality of pawls,
85 a plurality of tablet-actuating levers, and a drawer-actuating lever, a single, spring-actuated, jointed, releasing-lever, means whereby the releasing-lever may be moved in one direction by the drawer-actuating lever, and
90 moved in the other direction by any one of the several tablet-actuating levers, substantially as described.

7. In a cash-register provided with a drawer, a drawer-lock-actuating lever, a rock-plate, a
95 hook on said drawer, provided with a curved shank behind the catch of the hook adapted to coact with said rock-plate to disengage the hook from the rock-plate, substantially as described.
100

8. In a locking mechanism of a drawer, the combination of a hook having a curved shank behind the catch of the hook, a rock-plate adapted to engage against the curved shank and behind the catch of the hook, and means
105 for rocking the plate against the curved shank behind the catch of the hook, and thereby disengaging the lock, substantially as described.

9. In a cash-register, in combination with tablet-rods, means for holding said tablet-rods
110 in their lifted position, an independent lever, a tablet-dropper arranged to be set by the independent lever, and means whereby a tablet-lifting lever is adapted to actuate the dropper after it has been set by the independent
115 lever, substantially as described.

10. In a cash-register, in combination with tablet-rods and pawls for holding them in lifted position, a folding dropper adapted to pass the pawls in one direction without actu-
120 ating them but to engage the pawls and disengage them from the tablet-rods when actuated in the other direction, substantially as described.

In testimony whereof we sign this specification in the presence of two witnesses.
125

FREDERICK W. DECKER.
GEORGE S. DECKER.

Witnesses:

CHARLES F. BURTON,
VIRGINIA M. CLOUGH.