

No. 777,982.

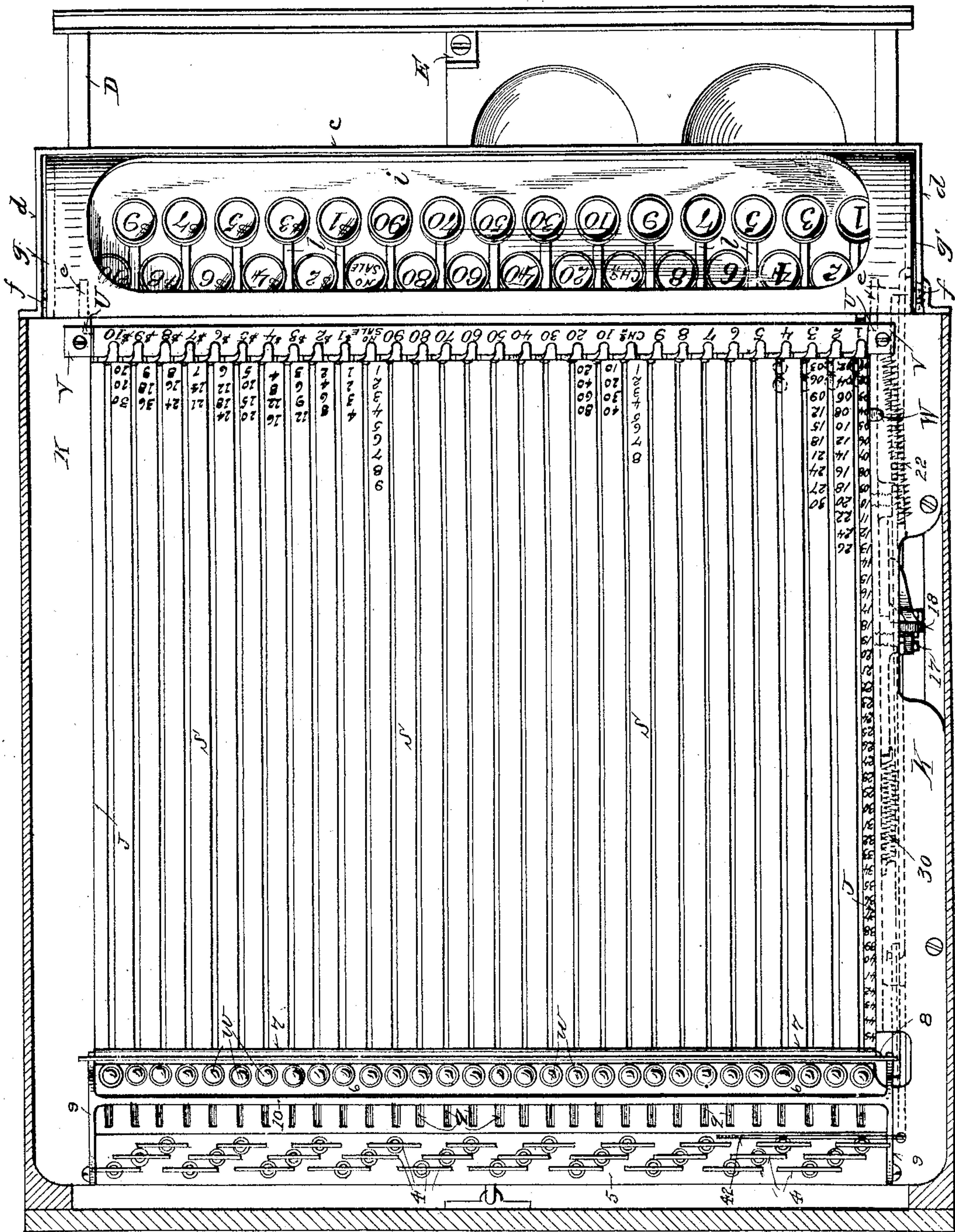
PATENTED DEC. 20, 1904.

R. P. THOMPSON.
CASH REGISTER.

APPLICATION FILED JUNE 26, 1896.

NO MODEL.

6 SHEETS—SHEET 1.



Witnesses
Jas. E. Dawley
W. M. McNamee
Fig. 1.

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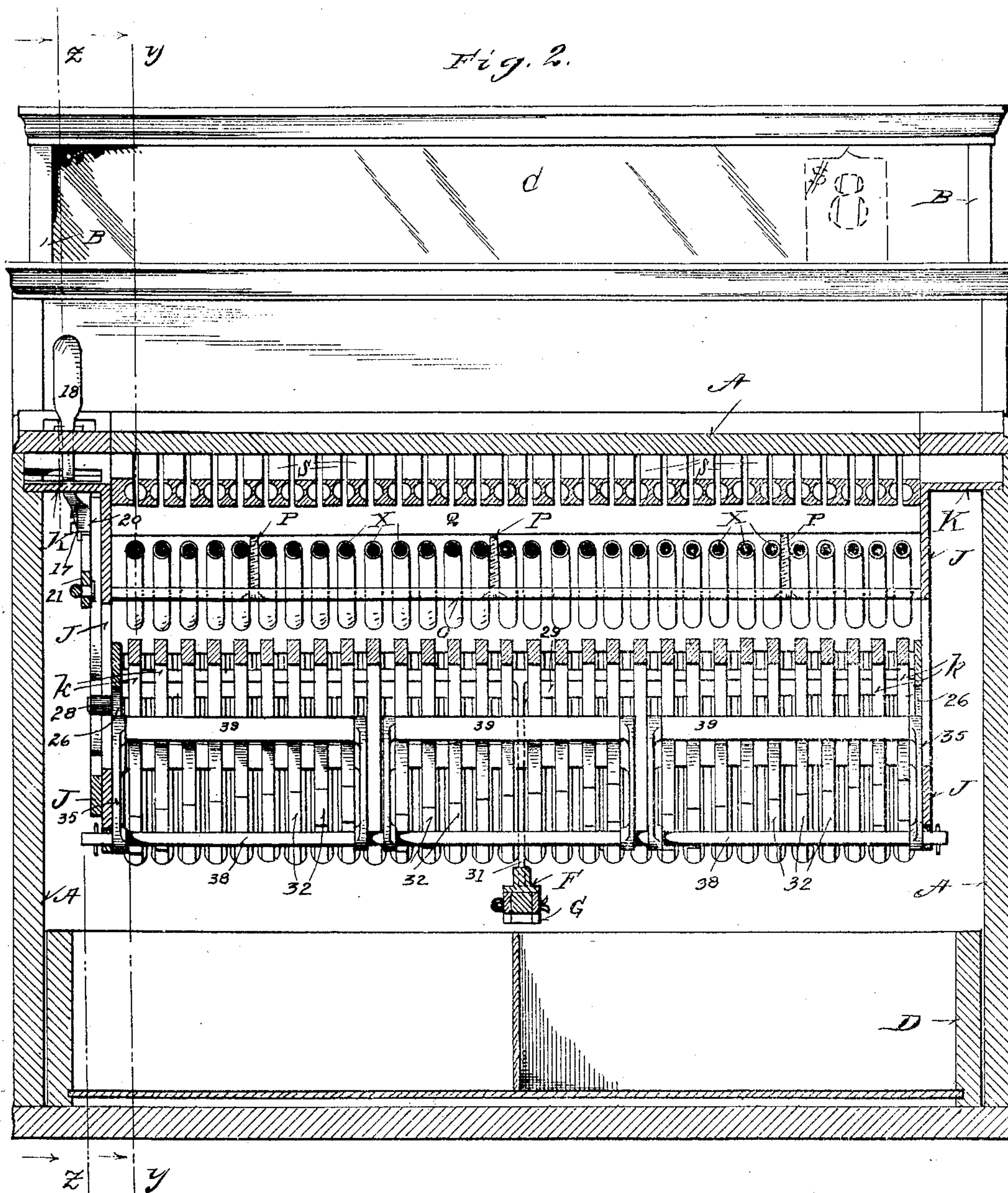
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6 SHEETS—SHEET 2.



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No. 777,982.

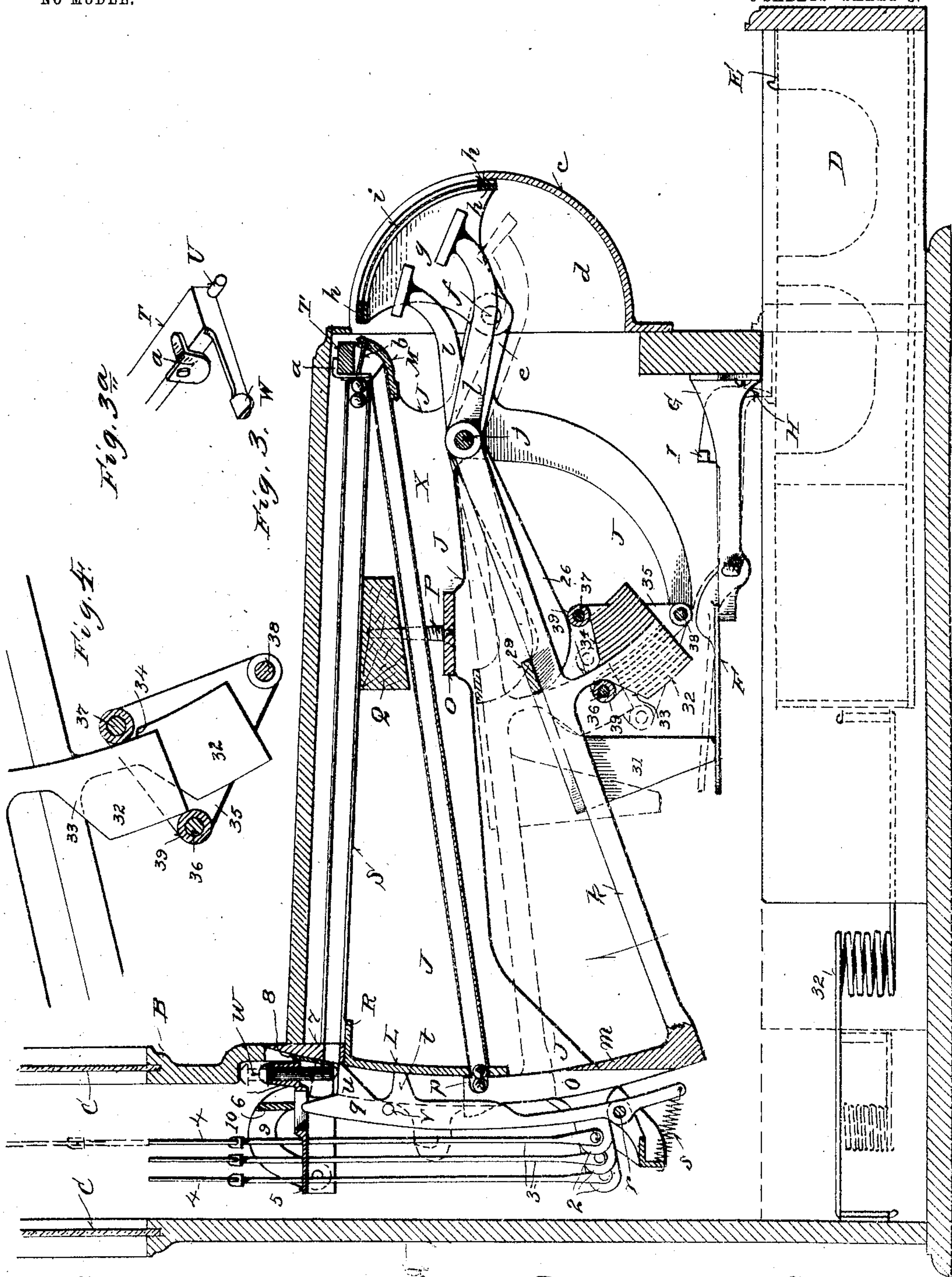
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6 SHEETS—SHEET 3.



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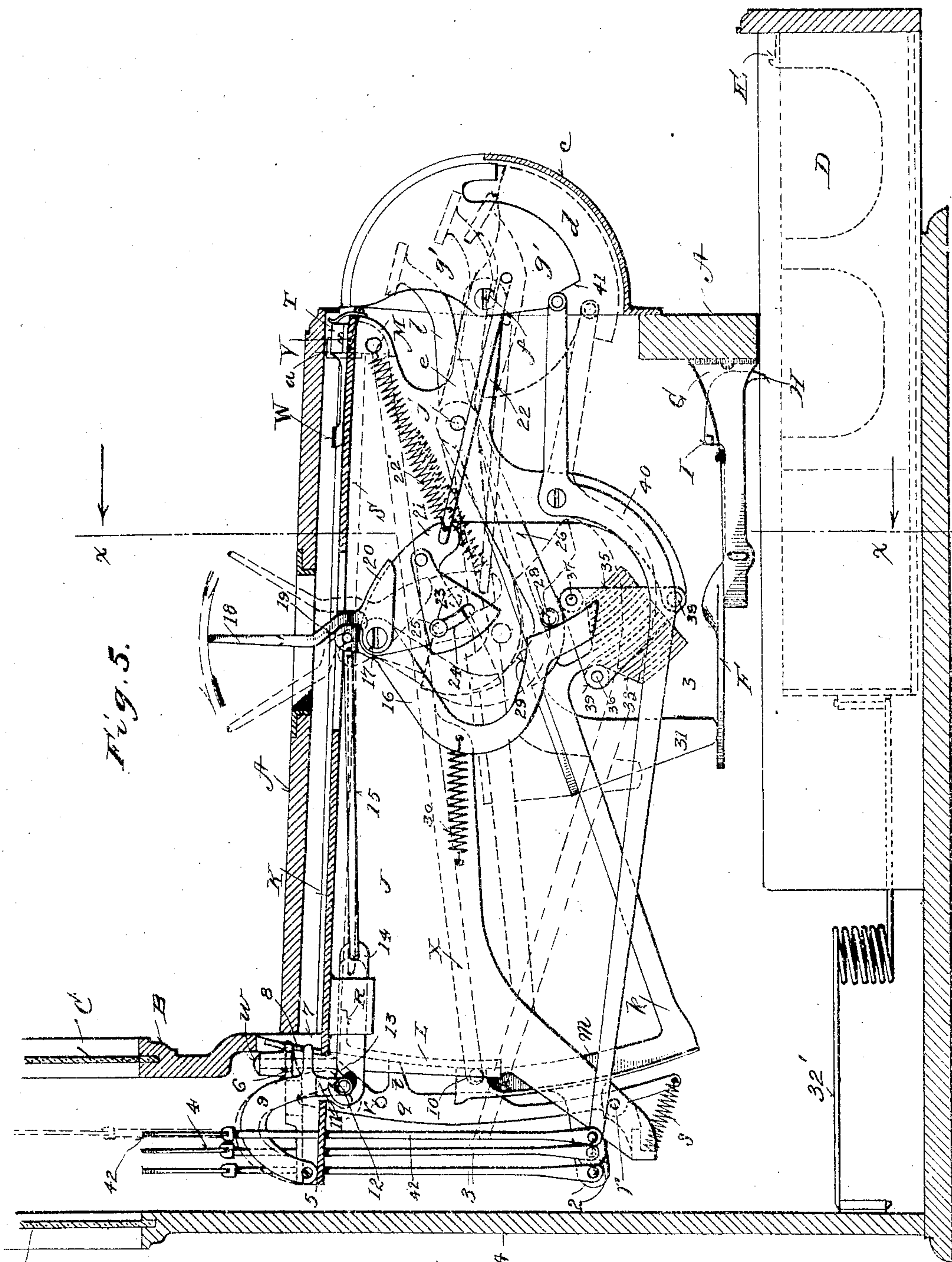
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6 SHEETS—SHEET 4.



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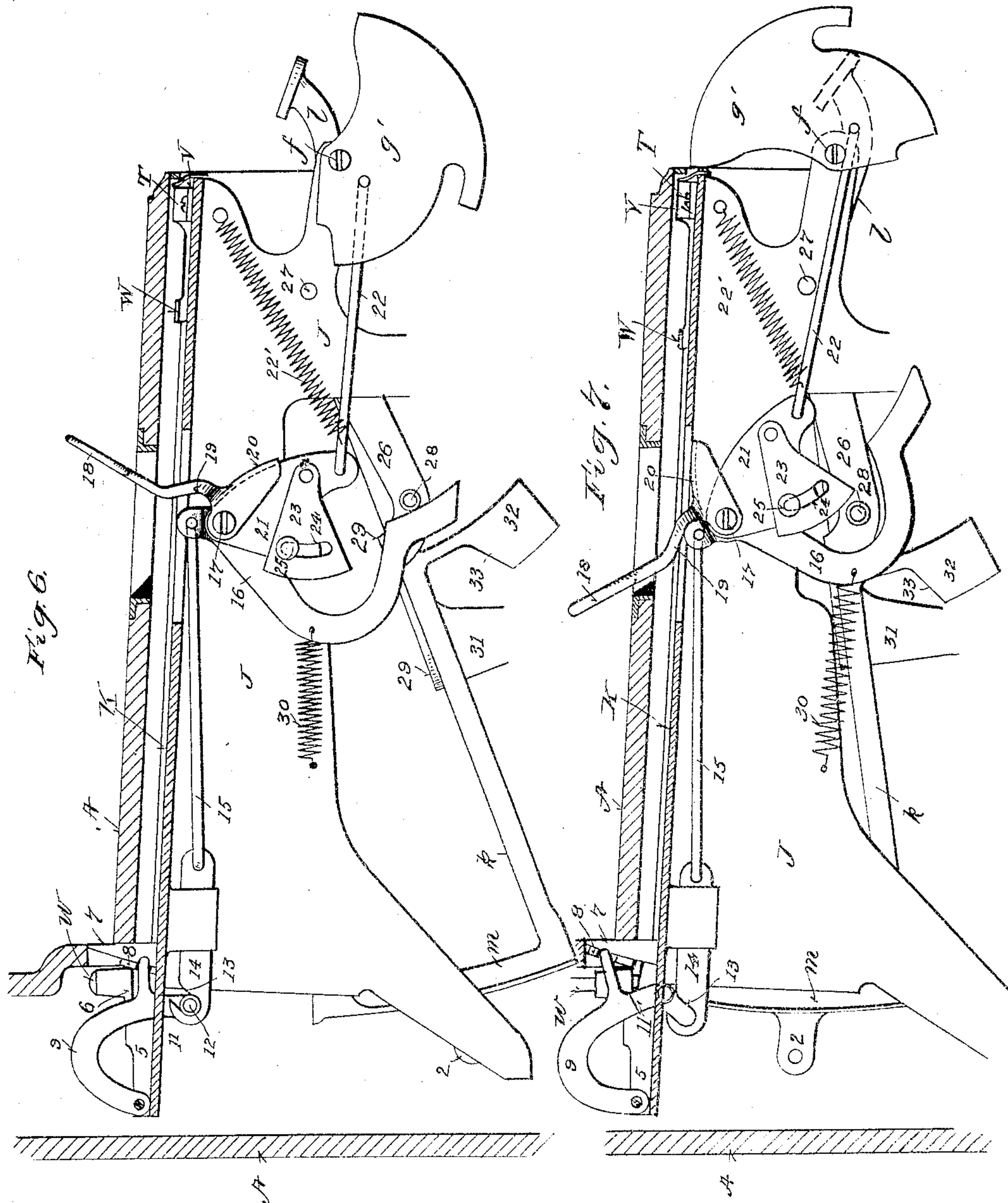
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NO MODEL.

6 SHEETS—SHEET 5.



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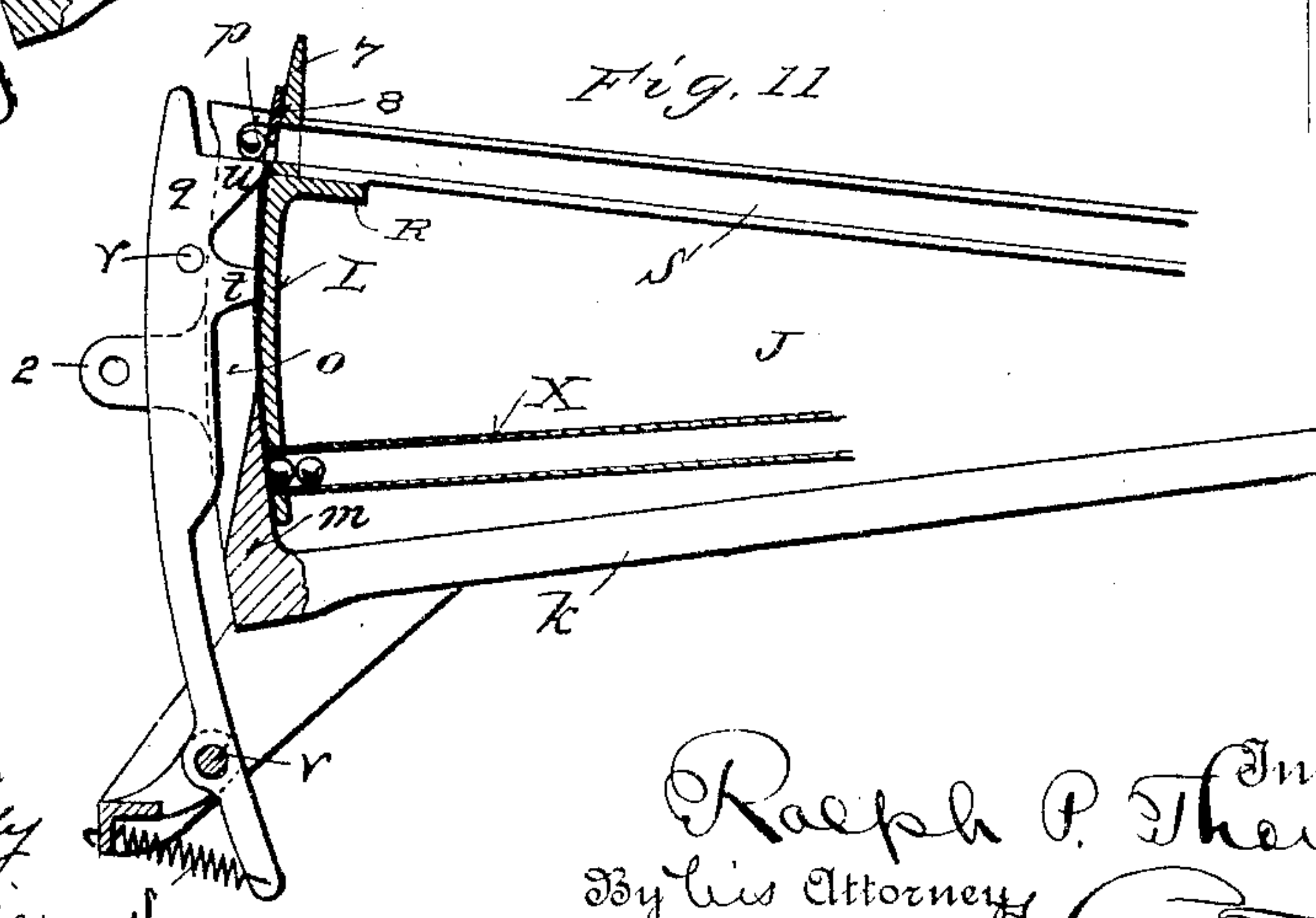
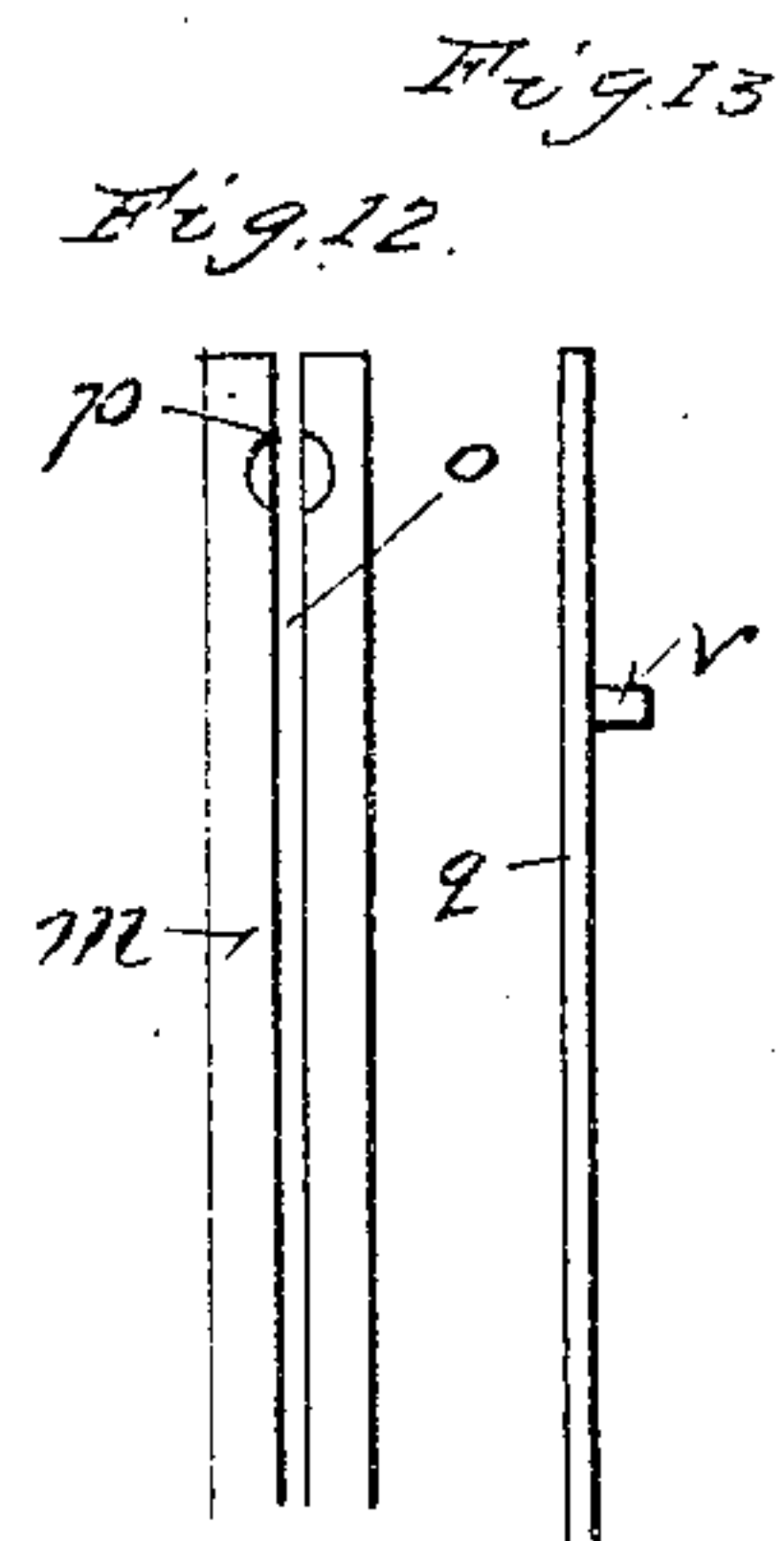
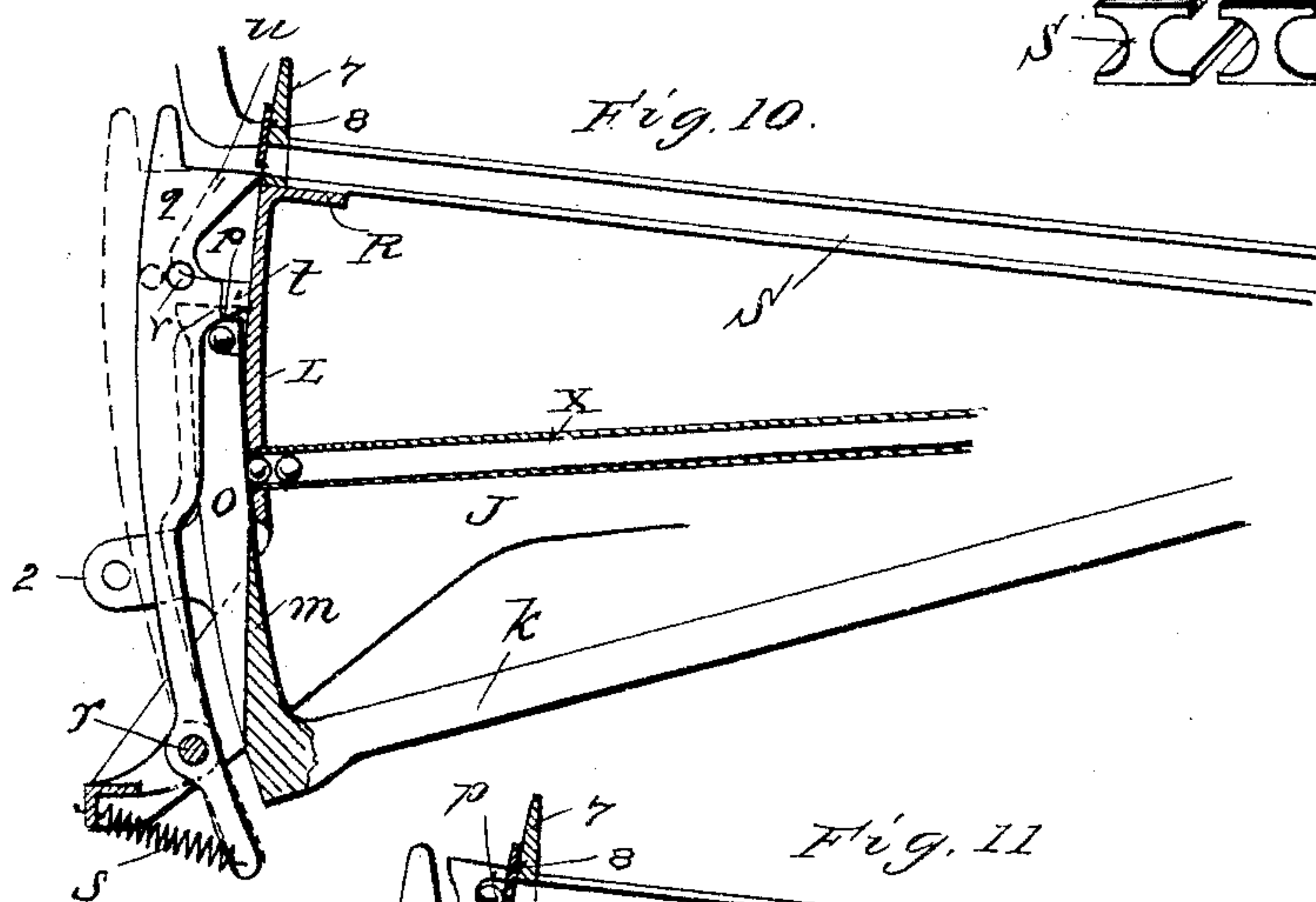
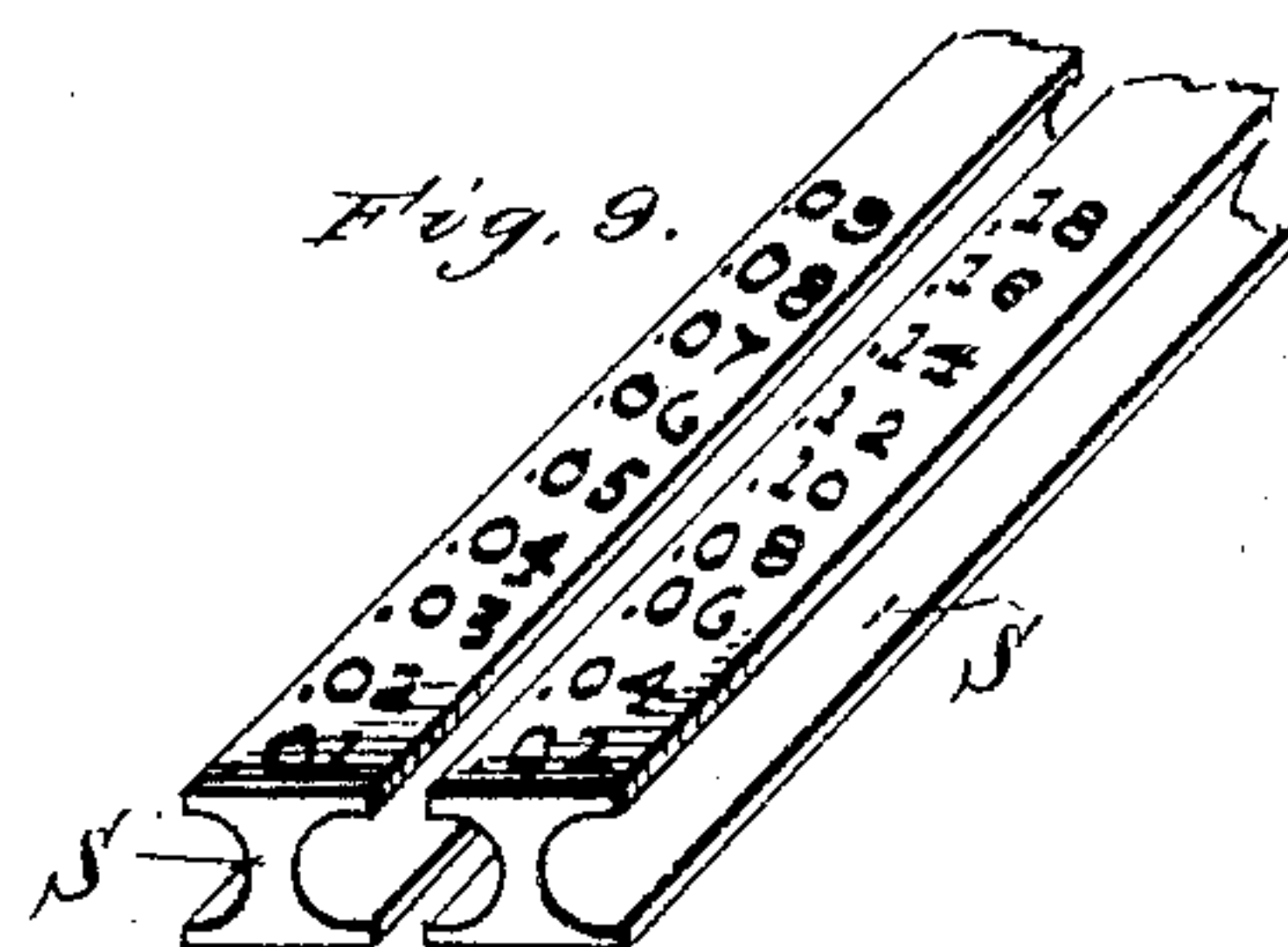
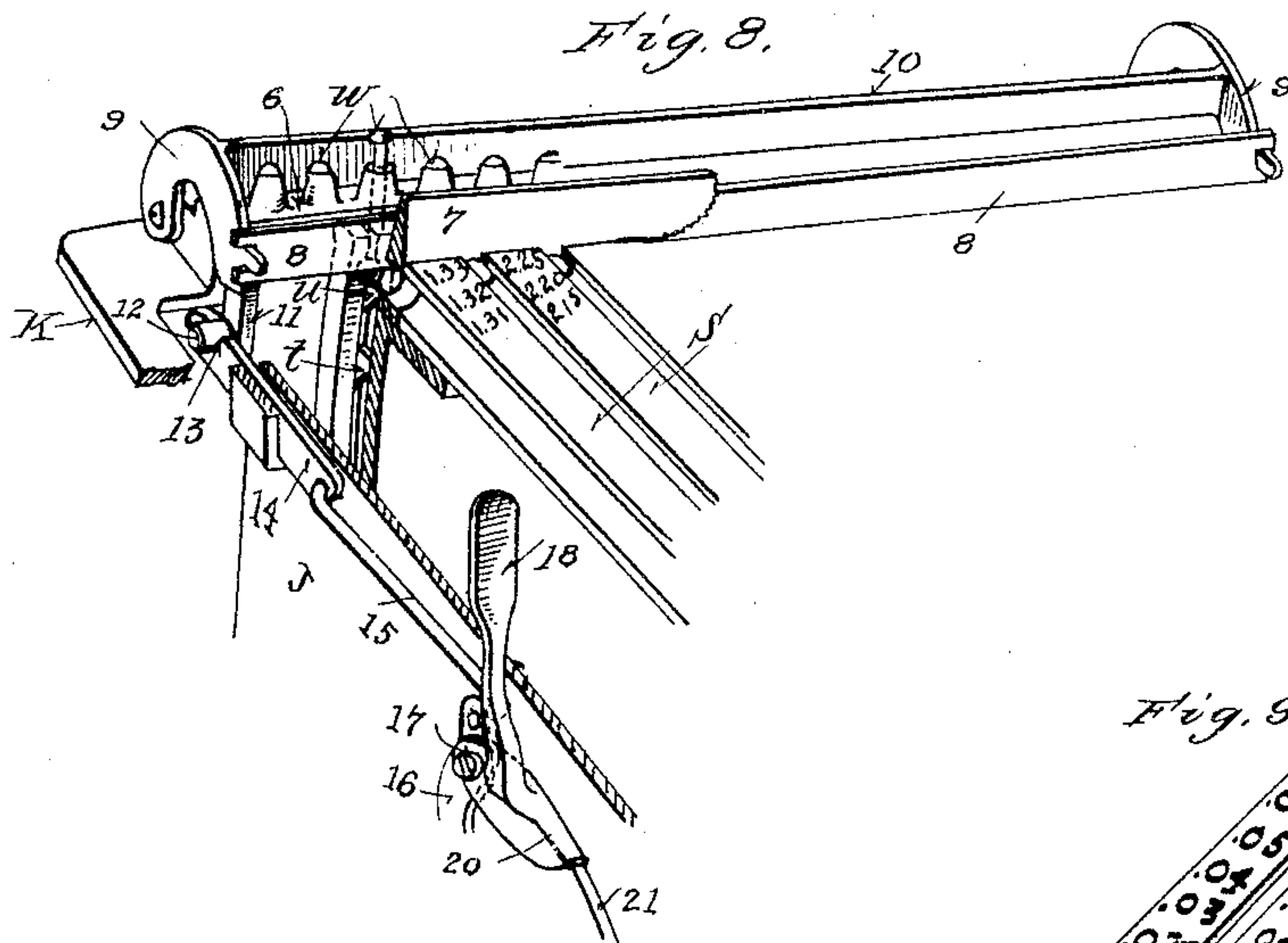
R. P. THOMPSON.

CASH REGISTER.

APPLICATION FILED JUNE 26, 1896.

NO MODEL.

6 SHEETS—SHEET 6.



Witnesses
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Inventor
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UNITED STATES PATENT OFFICE.

RALPH P. THOMPSON, OF SPRINGFIELD, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO NATIONAL CASH REGISTER COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 777,982, dated December 20, 1904.

Application filed June 26, 1896. Serial No. 597,033.

To all whom it may concern:

Be it known that I, RALPH P. THOMPSON, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Cash-Registers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in cash-registers of the class wherein the registration of the sales is performed by balls elevated from a lower to a higher plane through the instrumentality of keys or levers, as embraced in Letters Patent No. 485,240, granted to me the 1st day of November, 1892, for cash-registers.

This present invention also relates in part to certain features—namely, the key-cover—embraced in Letters Patent No. 532,924, granted to me January 22, 1895, for cash-registers.

The essential objects which I now have in view, both as to features in some wise related to said patents above mentioned and as to features in no wise related to said patent, are as follows:

First. To provide a lever with the necessary adjuncts which by one movement opens a ball-arresting gate to free a ball and let a key and an indicator-card drop and which by another movement opens the key-cover and allows access to the keys, so that a key may be actuated to display the indicator-card for such sale and to raise a ball for that sale. These are the movements of said lever and of the other parts mentioned for each sale the machine is used to indicate and register, with the exception of the first sale made after the machine has been set to zero, and as to which exception detailed explanation will appear hereinafter.

Second. To provide means to prevent said lever from being operated to open the cover for access to another key until such time as the key last operated is released by opening the ball-arresting gate and admitting the ball then waiting to enter the registering-channels for the purpose of preventing any manipula-

tion of any of the keys until the last sale made and indicated is canceled.

Third. To provide means for unlocking the drawer by the return of the key to normal position, which occurs when another sale is to be registered, so that the drawer will open to receive the cash for such sale then being registered.

Fourth. To divide the keys into groups and to provide means to prevent more than one key of each group from being operated at any one opening of the cover, so that keys of any one group whose indicator-cards are so close as to overlap and obscure one another cannot be operated.

I also have other incidental objects in view, which will appear hereinafter.

In the accompanying drawings, on which like reference characters indicate corresponding parts, Figure 1 is a plan view of a cash-register embodying my invention, the case, however, being in section to facilitate illustration; Fig. 2, a vertical transverse sectional view on the line *xx* of Fig. 5 looking in the direction of the arrows; Fig. 3, a longitudinal vertical sectional view on the line *yy* of Fig. 2; Fig. 3^a, a detail perspective view of the cut-off bar and one of the cut-offs; Fig. 4, an enlarged detail view of two keys of one group with the locking device for that group; Fig. 5, a longitudinal vertical sectional view on the line *zz* of Fig. 2, the operating-lever being shown in full lines in the normal position, in forward dotted lines in position to open the cover, and in rear dotted lines in position to open the gate; Fig. 6, a similar view to Fig. 5 with some of the parts omitted to facilitate illustration, but with the parts in position corresponding to the forward dotted-line position being open and the gate being closed; Fig. 7, a like view to Fig. 6 with the parts in position corresponding with the rear dotted-line position of the lever in Fig. 5, the cover being closed and the gate being opened; Fig. 8, a detail perspective view, partly in section, of the gate, its operating mechanism, a part of one of the keys, the gravity-detents and several of the regis-

tering-channels; Fig. 9, a detail perspective view of several of the registering-channels; Fig. 10, a detail side elevation, in vertical sectional view, of one of the keys, its cooperating detent, one of the magazine-tubes, and one of the registering-channels and the gate with the key down; Fig. 11, a similar view of the same parts with the key elevated; Fig. 12, a face view of one of the positions of the keys, and Fig. 13 an edge view of one of the detents.

The letter A designates a suitable case or housing constructed of wood or metal or both. On the top and at the rear end is constructed the usual elevated part B with glass panes C, into which part and through which panes the indicator-cards extend and can be seen when indicating sales. The cancel-card also extends into this elevated part. In the bottom of the case I mount a money-drawer D, divided into different divisions for different denominations. A catch-lug E engages with a locking-detent F, mounted in a bracket G, secured to the case, as shown in Figs. 3 and 5. This locking-detent drops by gravity, so that its hook H will engage with the lug E when the drawer is pushed in. A stop I prevents the detent F from dropping too far down at its forward end when its other end is released. The other or inner end is depressed by the means hereinafter stated when a key is dropped preparatory to registering a new sale, so that the drawer will open to receive the amount to be taken in and is released by the same mechanism when a key is elevated, so that when the drawer is pushed in the hook H will pass over and drop down in locking connection with the lug E.

Within the case A, I place and preferably suspend the mechanism of the machine. To this end I provide two side plates J, which form what may be termed the "frame" of the machine. These plates have flanges K, which rest upon the sides of the case, rabbeted for that purpose, as seen in Fig. 2. A transverse plate L, preferably in one piece with the side plates, forms the rear of the frame, and another transverse piece, M, also preferably in one piece with the side plates J, forms the front of the frame. A third transverse piece, O, is connected to or preferably in one piece with the side plates J. Screws P, supported by the bar O, sustain a cross-strip Q. On the strip Q and on the flange R of the plate L, I place and properly secure a number of bars S, preferably made of wood, whose sides are grooved out so that the grooves of two adjacent bars form what I term the "registering-channels," being passages into which the registering-balls pass on, being released by the opening of the ball-gate. The upper faces of these bars S are provided with figures, as shown in Figs. 1, 8, and 9. There is one column of such figures for each registering-channel, and as viewed in Fig. 1 the column of figures are

read in connection with the narrow space to the right of each column as one stands and reads the numerals on the keys. The first column of figures to the left indicates cents, increasing one cent at a time from front to rear, and this column is read in connection with the balls that show through the space to the right of this column, and this column indicates the amount in cents registered by the one-cent key, being the last key to the left, as shown in Fig. 1. The next column of figures is the two-cent column, and the figures increase two cents at a time and indicate the amount registered by the two-cent key. The same arrangement continues for all of the keys, and these keys are divided in the present instance into three groups, the first group running from key "1" to key "9," inclusive, and the second group from key "10" to key "90," inclusive, representing also cents, and the third group running from key "\$1.00" to key "\$10.00." It will be seen also that the register-figures in each column increase by the value of that of the associated key. For instance, the column for the ten-cent key runs "10¢, 20¢, 30¢, 40¢," and the column for the twenty-cent key runs "20¢, 40¢, 60¢, 80¢." The column for the one-dollar key runs "\$1.00, \$2.00, \$3.00, \$4.00," and so on through the dollar group. The bars S are slightly inclined from the rear to the front of the machine, so that the registering-balls run to the front of the registering-channels, as seen in Fig. 3, for instance. Near the front end of the channels I pivot a cut-off bar T, whose pivots U are under plates V, secured to the flanges K of the side plates. An arm W (see Fig. 5) is used to raise this bar, so that at the end of the day's business or other suitable time all of the registering-balls may be discharged from the channels into the magazine-tubes X, resting on the cross-bar M at one end and running to a cross-plate L at the other end, there being one tube X for each registering-channel. A series of cut-offs *a* are pivoted to the bar T, one for each channel, so that by turning these cut-offs on their pivots you may discharge the balls from any one channel into its magazine-tube X. A guard-strip *b* (see Fig. 3) prevents the balls from crowding too high up in passing out.

On the front of the machine I secure a guard *c*, preferably of metal and semicircular in form and closed at its ends by plates *d*. Within this guard is pivoted the key-cover. An extension *e* from the frame J supports the pivot *f* of the cover. The cover is made of end plates *g g'*, one at each side of the machine, and of cross-pieces *h*, and also of a transparent pane *i*. This cover is free to oscillate within the guard *c*. When in the upper part of the guard, the keys cannot be reached, though they can be seen through the pane. (See Fig. 3.) When in the lower part of the guard, the keys are accessible. (See

the dotted position of the cover in Fig. 5 and the full-line position of the cover in Fig. 6.) This cover is opened and closed in the manner presently to appear.

5 I will now refer to the keys by which the registering-balls are raised from the lower to the higher plane from the magazine-tubes to the registering-channels. (See Figs. 3, 8, and 11, particularly for the description now to be
10 side plates J. On this rod are strung the keys given.) A transverse rod *j* is fastened in the composed of portions *k* *l*, the rod being their pivot. At their front ends the keys have numerals, as shown in Fig. 1, and at their rear
15 ends they have posts *m*, curved to slide snugly past cross-plate L, to which they are properly fitted. These posts *m* are slotted vertically, as shown at *o* in Fig. 12, and are pocketed, as shown at *p*, to receive the registering-balls.
20 When the keys are in normal or down position, (and when I use the term "down" I refer to the rear ends only, and when I use the word "elevated" hereinafter I also mean the rear end,) the pockets are opposite the maga-
25 zine-tube X. When the keys are in elevated position, the pockets are opposite the ball-arresting gate to be presently referred to. To the rear of each key I pivot a detent *q*, the whole series of detents being hung on the
30 cross-rod *r*, fitted to the side plates *j*. To the lower end of each detent I attach a spring *s*. The spring throws the upper end of the detent toward and against the cross-plate L and keeps each detent in the slot *o* of the post *m*
35 of the corresponding key. Each detent has a cam-lug *t* and a tooth *u* and also a pin *v*, extending slightly to one side of the detent. Now let it be supposed that a sale has been made and is to be registered. The key is ele-
40 vated (the rear end) and carries one ball, as that is all pocket *p* will hold. When the ball strikes the under or cam side of the lug *t*, it throws the detent *q* back enough to move the pin *v* out of line with the post *m*. If there
45 were no ball in the post, it could not pass high enough up to indicate a sale by the indicator which it elevates, because the pin *v* would arrest it. This is important to prevent fraud; but we are now describing a case in
50 which there is a ball in the pocket *p*. This ball strikes the cam edge of the lug *t*, as before stated, and throwing the detent back the post passes on up until the ball strikes the inclined edge of the tooth *u*, when the detent
55 again moves back. When the ball passes just above the tooth *u*, the spring of the detent forces it forward under the balls. Thus the ball cannot drop downward, nor can the post with its key, because the ball is housed by the
60 socket *p*, so that the key is, in effect, suspended on the ball, while the ball rests on the tooth *u*. In going up, the ball raises the gravity-pin *w*, which is now resting on the top of the ball. The ball is now also behind the gate and would
65 roll down into the registering-channel if the

gate did not prevent it. This gravity-pin *w* is to prevent the balls from rolling rearward and dropping down should the machine be tipped when the gate is open. It is also true that
70 should a gravity-pin stick and not drop down at the time when the machine was so tipped and at a time when the post was on its way up and the detent *q* in the position shown in dotted lines in Fig. 10, so that the ball could pass the
75 teeth *u*, it would still catch on the lug *t* and later be brought up by the post. Going back now to where we were when the ball had been landed behind the gate, it will be seen that the key is suspended in elevated
80 position and that indicator of such key is also displayed, showing the amount of the sale represented by such key. What is here
85 stated applies to all the keys, all of the detents *q*, and all of the indicators. Each post *m* has a lug 2, to which is attached an indica-
tor-rod 3, carrying an indicator-card 4. These rods are guided by a plate 5 projecting from the frame-plates J.

I will now refer to the gate by which the balls are held from entering the registering-
90 channels and to the gravity-pins *w*. A cross-strip 6, projecting from the plate 5, is bored to receive each of the numerous gravity-pins *w*, which are free to rise and fall. In front
95 of this cross-strip 6 is a portion 7 of the case, and between such parts 6 and 7 I place a plate 8, preferably of metal, which constitutes the gate. It is adapted to rise and remove those
100 portions of it which are normally opposite to the registering-channels and allow the balls to pass. In the form of gate shown the plate 8 is hung upon pivoted arms 9, as seen more
105 clearly in Fig. 8, which arms are rigidly connected by a cross-piece 10, so that when either arm is operated the other arm moves with it. To one arm is fastened a projection 11, carry-
110 ing a stud 12, adapted to ride in and out of a cam-slot 13 of a bolt 14. This bolt is arranged in any suitable manner to be moved by the operating-lever, to be presently de-
115 scribed, in such wise that when the lever is moved in one direction—say rearwardly—the bolt is moved to cause the stud 12 to ride upward in the cam-slot 13 and raise the arms 9, and hence open the gate and let into a regis-
120 tering-channel the then elevated ball. As shown, (see Figs. 5, 6, and 7,) the bolt 14 is connected by a rod 15 with a lever 16, hung on pivots 17, carried by one of the side plates J. This brings me to the hand-operating le-
125 ver 18, which extends up through the case at one side in convenient position to be taken hold of. It is pivoted to the stud 17 and has a portion 19 adapted to press against the upper part of the lever 16 to operate the bolt
14. The lever 18 also has a flange 20, which bears against one edge of a cam-plate 21, also loosely pivoted on a stud 17. This cam-plate is
130 connected through a rod 22 with the end plate *g'* of the cover in such wise that when said plate

21 is pressed from the position shown in Fig. 7 to that shown in Fig. 6 by the hand-lever 18 it opens the cover. A spring 22', attached to the rod 22, and a side plate J is put under tension by opening the cover, and hence will close the cover and reset the parts at the proper time. This plate 21 carries a pivoted pawl 23, which tends to drop down until the upper end of its slot 24 engages with a pin 25, carried by the plate 21. This pawl is for the purpose of engaging with the device presently to be described to prevent the cover from being opened while any one of the keys is elevated at the rear end. On the other hand, the lever 16 engages at its lower end with the same stop device to prevent the bolt 14 from being operated to open the gate when any one of the keys is not elevated, so that the gate cannot be opened unless there is a ball in readiness to roll from an elevated key into one of the channels. I will now refer to this stop device. It consists of two side arms 26, pivoted at 27 to the side plates J and provided with a stop projection 28 and with a cross-piece 29, which lies upon the upper edges of all the keys, so that if all the keys are down this stop device is down, as shown in Fig. 6, and stands across the lower end of the lever 16, preventing its upper end from being thrown forward by the hand-lever 18; but if any one of the keys is elevated, as in Fig. 7, then this stop device is also elevated until its projection 28 is above that part of the lever 16, when said lever may swing back at its rear end and forward at its upper end, the latter being engaged by the hand-lever 18 and the gate elevated, as shown in Fig. 7. As this stop device was raised from the position shown in Fig. 6 to that shown in Fig. 7 its projection 28 passed under the pawl 23, which lifted enough to allow the projection to pass to the position shown in Fig. 7. Thus the plate 21 cannot be operated by the lever 18 to open the cover while a key is up until such time as the lever 18 is thrown far enough to the rear to open the gate, allow the ball to run out, and drop a key, so that the projection 28 will drop below the path of the pawl 23. Thus by keeping in mind the above and referring to Figs. 5, 6, and 7 what I am about to state will be understood. Normally the lever 18 stands vertically. When the machine is at zero, all the keys are down and the gate and cover are closed. To exhibit or indicate the first sale, in which the machine changes from zero position to an operated position, the lever 18 is pulled toward the operator, the parts being in the position shown in full lines in Fig. 5. This opens a cover, when the proper key is operated and a ball elevated. This presented the parts to the position shown in Fig. 11, passing through the intermediate position shown in Fig. 10. Then the lever 18 is released, and the spring 22' closes the cover.

Now let a subsequent sale be made. The lever 18 is this time first pressed rearwardly to open the gate and admit the ball last raised and to drop the key and indicator. This done the lever is pulled toward the operator, by which movement the cover is opened and the key manipulated for the sale just made, bringing up another ball and exposing the proper indicator, and the lever 18 is then instantly returned to normal or vertical position and the cover closed by the action of the spring 22'. The function of the spring 30, connected to the side plate J and the lever 16, is to throw the upper end of said lever forward and shift the bolt 14, so that the gate may close, and this is done just as the key is dropping down and the hand-lever 18 is returning from the rearward toward a forward position. This brings the lower part of the lever 16 to the position shown in Fig. 6, so that as the key dropped the projection 28 could pass on down.

Referring again to the swinging stop device 26, it will be seen that it has a downward projection 31. This is to disengage the latch F from the notch E of the money-drawer as the key drops, so that the drawer under the influence of the spring 32' will be pushed out ready to receive the amount taken in on the sale then about to be registered.

I will now refer to the means for preventing more than one key of each group being elevated at the same time. This means consists in providing each key with a wing 32, each wing having a cam-surface 33, and all the wings of each group save the first wing having a shoulder 34. The cam-surfaces 33 and the shoulders 34 of the several wings are of different lengths to accomplish the above-mentioned result of preventing more than one wing in the same bank or group being operated at the same time. These wings are so placed relatively that each slightly laps back of the other—that is to say, the wing of the first key of a group, the left-hand key, stands in one vertical plane, the wing of the next key in a slightly-different vertical plane, and the wing of the third key in a slightly-different plane from the second, and so on through the series. This lapping arrangement is shown in Figs. 3, 4, and 5. In Fig. 4 only the first and second wings are shown to prevent confusion. Now in connection with these wings I provide what I term an "arrester." It arrests all of the keys of a group except one—that is, if all the keys in one group are down, only one, yet any one of them in said group may be raised. Having raised this one, none of the others of that group can be raised until the elevated one has been dropped. This arrester consists of a swinging frame composed of end plates 35, fastened to rods 36 and 37 and trunnioning on a rod 38. Rods 36 and 37 each have an antifriction-sleeve 39. The rod 38 runs crosswise the machine entirely

from one plate J to the other and is mounted in such plates. The rods 36 and 37 merely connect together a pair of plates 35.

Each group of keys has its separate arrester.

5 The arrester swings to different positions on the rod 38. If the first key is elevated from the position in Fig. 3 to that in Fig. 4, its cam-surface 33 will draw the bars 36 and 37 from the position in Fig. 3 to that in Fig. 4.
 10 In this position the bar 37, with its sleeve 39, stands over the shoulders 34 of all the other wings, and their keys cannot be elevated. If the second key instead of the first were elevated, the bars 37 would still stand over all
 15 the remaining shoulders of the keys, while the bar 36 would stand over a part of the cam-surface 33 of the first wing. Thus no matter which key is elevated all the other keys are arrested by my arrester. Therefore no two
 20 indicators in any one group which are so near together as to overlap or partly obscure one another can both be elevated at the same time.

Referring to the keyboard again, it will be seen that I provide a key marked "Chg.,"
 25 meaning charge, and another key marked "No sale." These are for convenience merely.

In Fig. 5 it will be seen that there is a pivoted lever 40, operated by a cam-surface 41 on one end *g'* of the cover and actuating at
 30 the other end a cancel-card 42. This forms no part of the present invention.

Referring again to the improved lever 18, I wish to say that I regard myself as the first to make an organization in which by one
 35 movement of a lever a gate or equivalent is operated to release a ball or equivalent and which by another movement a key-cover is removed, so that access may be had to the keys in order to manipulate one or more of
 40 them to place one or more balls or their equivalent again in position behind said gate. I speak of a lever in the singular; but it is obvious that if the lever were divided in any manner or made in what could be regarded as
 45 two levers the spirit of my invention would not have been departed from.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

50 1. In a cash-register, the combination with a suitable case, registering-channels and a magazine, of keys mounted in the case and adapted to transfer registering-balls from the magazine to the channels, a gate to control
 55 said balls in entering the channels, a key-cover for the keys, a lever, devices between the gate and lever and devices between the cover and lever, by which through one movement of the lever, the gate is opened and through another
 60 movement thereof the cover is opened, said devices preventing the cover from being opened after the depression of a key until the gate has been opened.

2. In a cash-register, the combination with
 65 a suitable case, registering-channels and a

magazine, of keys mounted in the case and adapted to transfer registering-balls from the magazine to the channels, indicators for said keys, a gate to control said balls in entering the channels, a key-cover for the keys, a lever,
 70 devices between the gate and lever, and devices between the cover and lever, by which, through one movement of the lever, the gate is opened and through another movement thereof the cover is opened, said devices pre-
 75 venting the cover from being opened after the depression of a key until the gate has been opened, and devices to hold the keys elevated until the balls are released by the gate and indicators lowered by the descent of the keys.
 80

3. In a cash-register, the combination with a case, registering-channels and a magazine, of keys mounted in the case and adapted to transfer balls from the magazine to the chan-
 85 nels, a gate to control the entrance of the balls from the keys to the channels, and a cover to cover the keys, a lever and devices between it and the gate by which, through one movement of the lever the gate is opened, and devices between said lever and cover by
 90 which through another movement of the lever the cover is opened, a stop device controlled by the keys and adapted when a key is elevated, to stop the devices between the lever and cover from opening the cover, and
 95 adapted when the keys are down to prevent the devices between the lever and the gate from opening the gate, whereby when a key is up the gate may open but the cover may not, and whereby when the keys are down the
 100 cover may open but the gate may not.

4. In a cash-register, the combination with a case, registering-channels, and a magazine, of keys mounted in the case and adapted to transfer registering-balls from the magazine
 105 to the channels, devices to maintain the keys and balls elevated, a gate to admit the balls from the keys to the channels, a lever and intermediate devices to open said gate, a key-cover and intermediate devices between it and
 110 the lever, a stop device controlled by the keys and adapted when a key or keys are elevated to prevent the lever from operating the cover-opening devices, and when the keys are down to prevent the lever from operating the gate-
 115 opening devices.

5. In a cash-register, the combination with a case, registering-channels and a magazine, of keys mounted in the case and adapted to transfer balls from the magazine to the chan-
 120 nels, devices to maintain the keys and balls elevated, a gate between the elevated balls and the channels, a lever and a cam-bolt operated by the lever to open the gate, a key-cover, a swinging plate and link operated by the lever
 125 to open the cover, a swinging stop device controlled by the keys, a detent pivoted to the plate and opposed by the stop device when one or more of the keys are up, to prevent the cover from being opened, and a lever op-
 130

posed by the stop device when the keys are down to prevent the hand-lever from then opening the gate.

6. In a cash-register, the combination with
5 a case having graduated registering sight-channels and a magazine, of pivoted levers mounted in the case and adapted to receive and carry registering-balls from the magazine to the channels, a gate to control the admis-
10 sion of the balls to the channels, a lever and means between it and the gate to open the gate.

7. In a cash-register, the combination with a case, registering-channels and a magazine, of keys adapted to transfer registering-balls
15 from the magazine to the channels, a gate to control the admission of the balls to the channels, pivoted arms on which the gate is hung, cam-bolts adapted to operate said arms, a lever connected to the said bolt, a hand-lever adapt-
20 ed to operate the other lever, and a stop device adapted to arrest the other lever from movement in the direction to open the gate when the keys are down.

8. In a cash-register, the combination with
25 the case, and keys mounted therein, of a stop device controlled by the keys, a hand-lever, a cover for the keys, and devices between the cover and hand-lever adapted to open the cover but opposed by the stop device when one or
30 more keys are depressed.

9. In a cash-register, the combination with a case and keys mounted therein, of a hand-lever, a plate pivoted independently of it but adapted to be moved in one direction by the
35 lever, a key-cover, a connection between said cover and said plate, a detent pivoted to said plate, and a swinging stop device to control the keys.

10. In a cash-register, the combination with
40 a key-cover, a gate and a hand-lever, of a pivoted plate connected to the cover and another lever and a cam-bolt connected together, and devices between the cam-bolt and gate to open and close the gate, a detent carried by said
45 plate, and a stop device adapted in one position to oppose said detent and free said other lever, and in another position to free said detent and oppose said other lever.

11. In a cash-register, the combination with
50 the gate adapted to be opened and closed, a series of registering-channels on one side of the gate, a series of stop-pins on the other side of the gate, and keys adapted to present registering-balls under said pins and in said chan-
55 nels when the gate is opened, said pins acting to prevent the return of the balls from the channels when the gate is opened.

12. In a cash-register, the combination with a series of registering-channels, of a pivoted
60 stop-bar standing across the discharge ends of the channels, and a series of independent cut-offs pivoted to said bar, whereby all of the channels may be opened or closed by the bar or one or more of the channels separately
65 opened or closed by the cut-offs respectively.

13. In a cash-register, the combination with a series of registering-channels, of a gate at the admission end, a lever, and intermediate devices between the lever and the gate to open
70 the gate, and a stop-bar at the discharge ends of the channels, and a series of independent cut-offs one for each channel, whereby the balls are admitted to the channel at one end and are properly discharged therefrom at the
75 other.

14. In a cash-register, the combination with a containing-casing, of a magazine for con-
taining movable balls or units, mechanism for registering according to the number of such
80 balls or units fed from said magazine, a series of keys for feeding the balls, a gate controlling the discharge of the balls by the keys, an operating device for opening said gate, a key guard or cover and means intermediate said
85 cover and gate-operating device, the construction being such that when a key or keys are elevated the operating device cannot operate the cover or guard device, and when the keys are down to prevent said operating devices
90 from operating the gate.

15. In a cash-register, the combination with a case having graduated registering-channels and a magazine, of pivoted levers mounted in the case and adapted to receive and carry the
95 registering-balls from the magazine to the channels, an independent device controlling the admission of the balls to the channels, and means for operating the said independent device at will.

16. In a cash-register, the combination with
100 a casing having a series of registering-channels, a series of keys for moving the balls or units to discharge them into the channels, a gate controlling the admission of the balls to the channels and means for preventing the re-
105 turn of the balls from the channels when the gate is open.

17. In a cash-register, the combination with a casing having a series of registering-channels, of a series of keys for moving balls or
110 units to discharge them into said channels, the ball-carrying portion of said keys being formed with an elongated slot, and a detent cooperating with each of said keys and formed with two cam projections arranged to enter
115 the aforesaid slot, and also formed with a locking-pin arranged to engage said key, whereby when one of said cam projections is engaged by the moving ball to rock the detent and move said pin out of locking position, the
120 other cam projection engages said ball at the end of its carrying movement and holds the key in operated position.

In testimony whereof I affix my signature in presence of two witnesses.

RALPH P. THOMPSON.

Witnesses:

HORACE W. STAFFORD,
W. M. MCNAIR.