

No. 847,672.

PATENTED MAR. 19, 1907.

R. H. LITTLE.
ACCOUNTING MECHANISM.
APPLICATION FILED APR. 14, 1905.

3 SHEETS—SHEET 1.

Fig. 1.

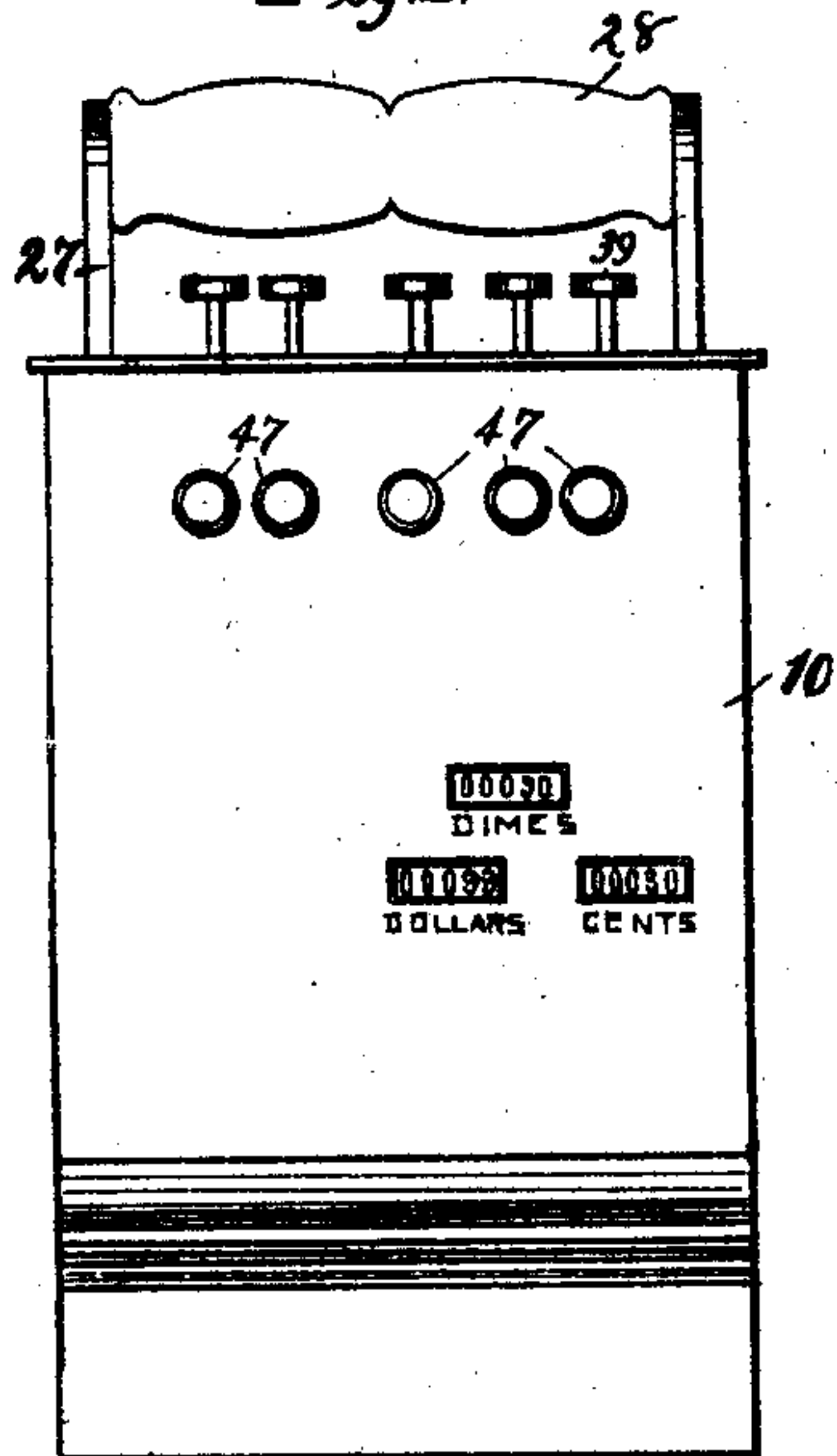


Fig. 2.

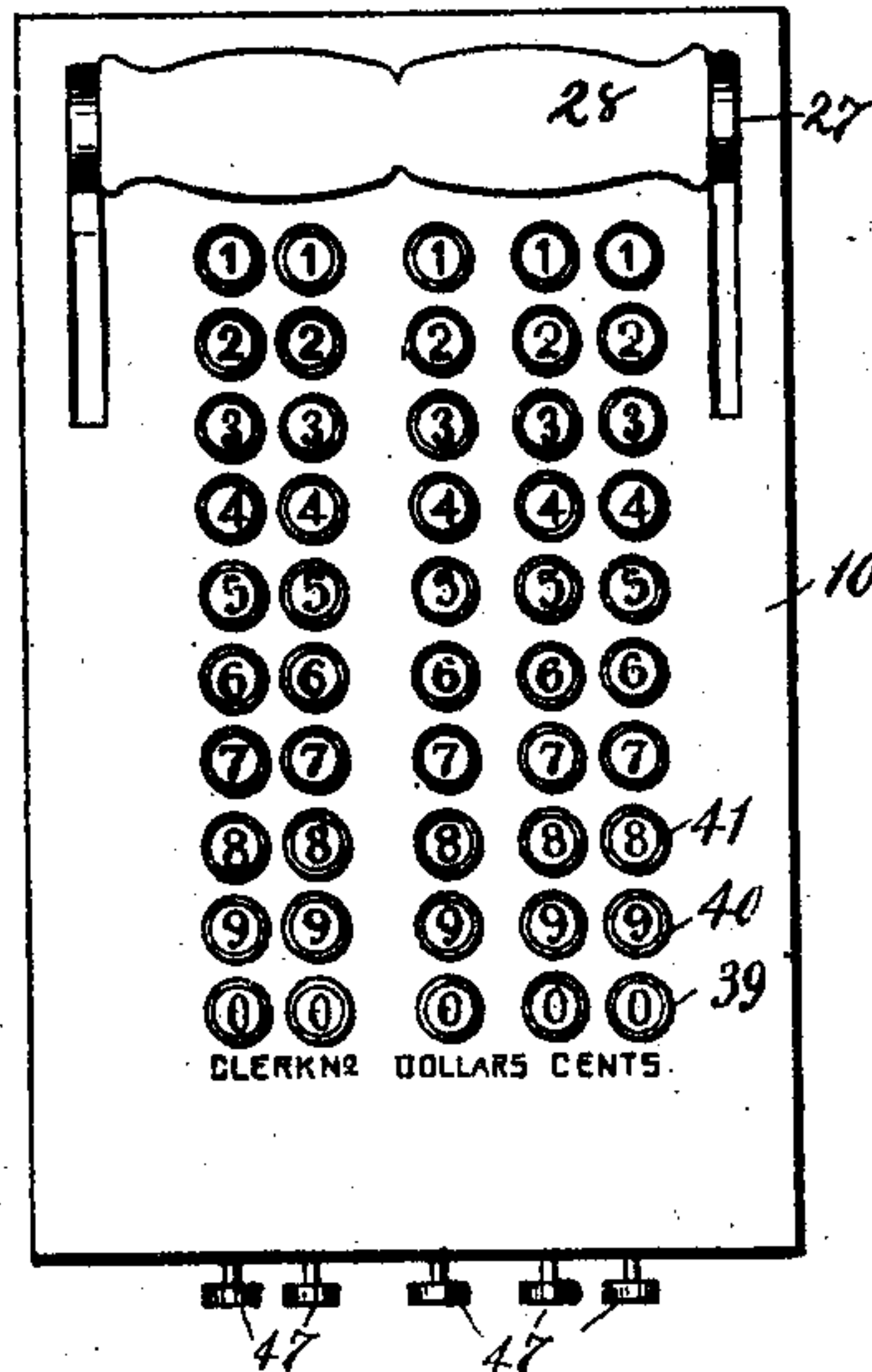


Fig. 3.

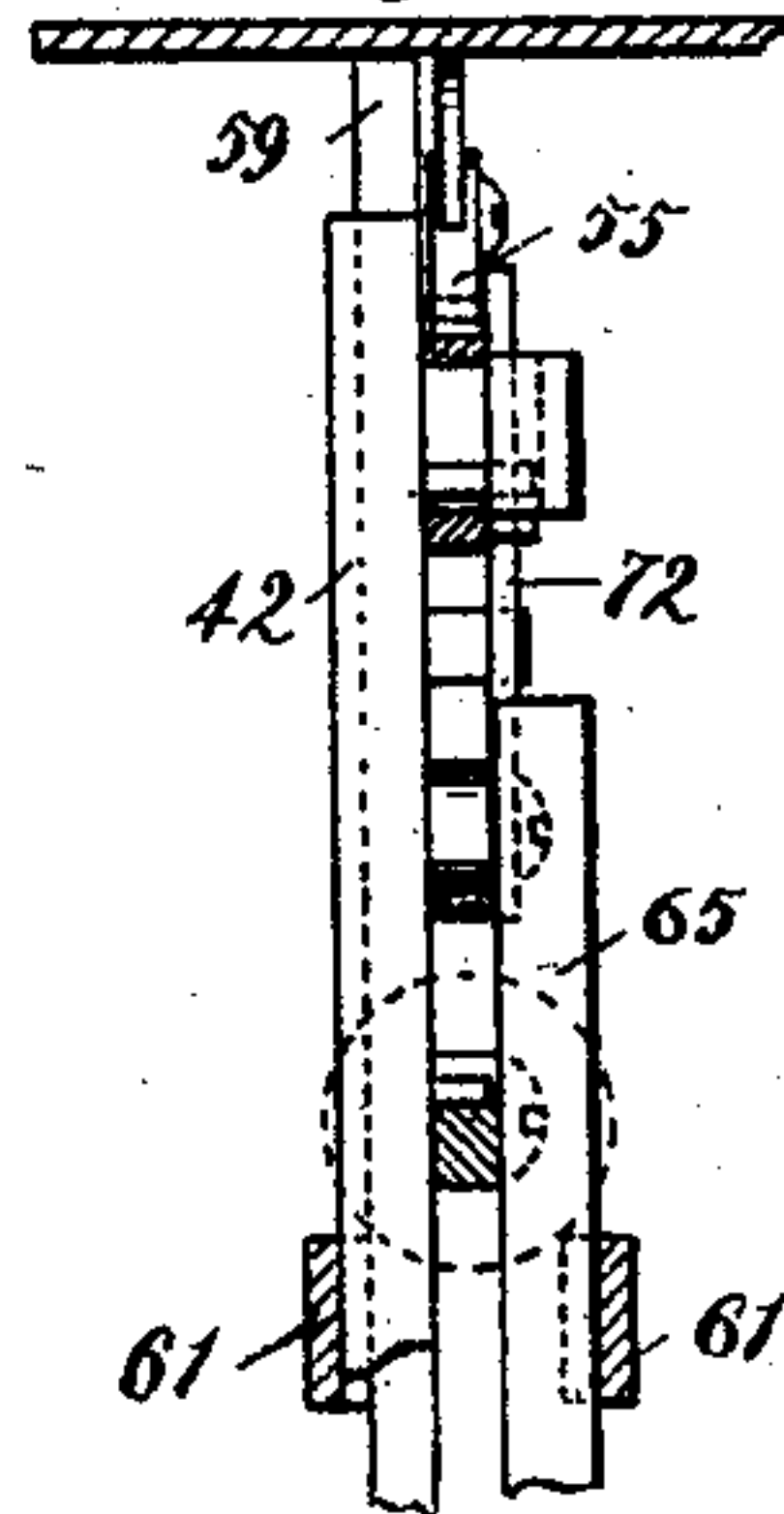


Fig. 4.

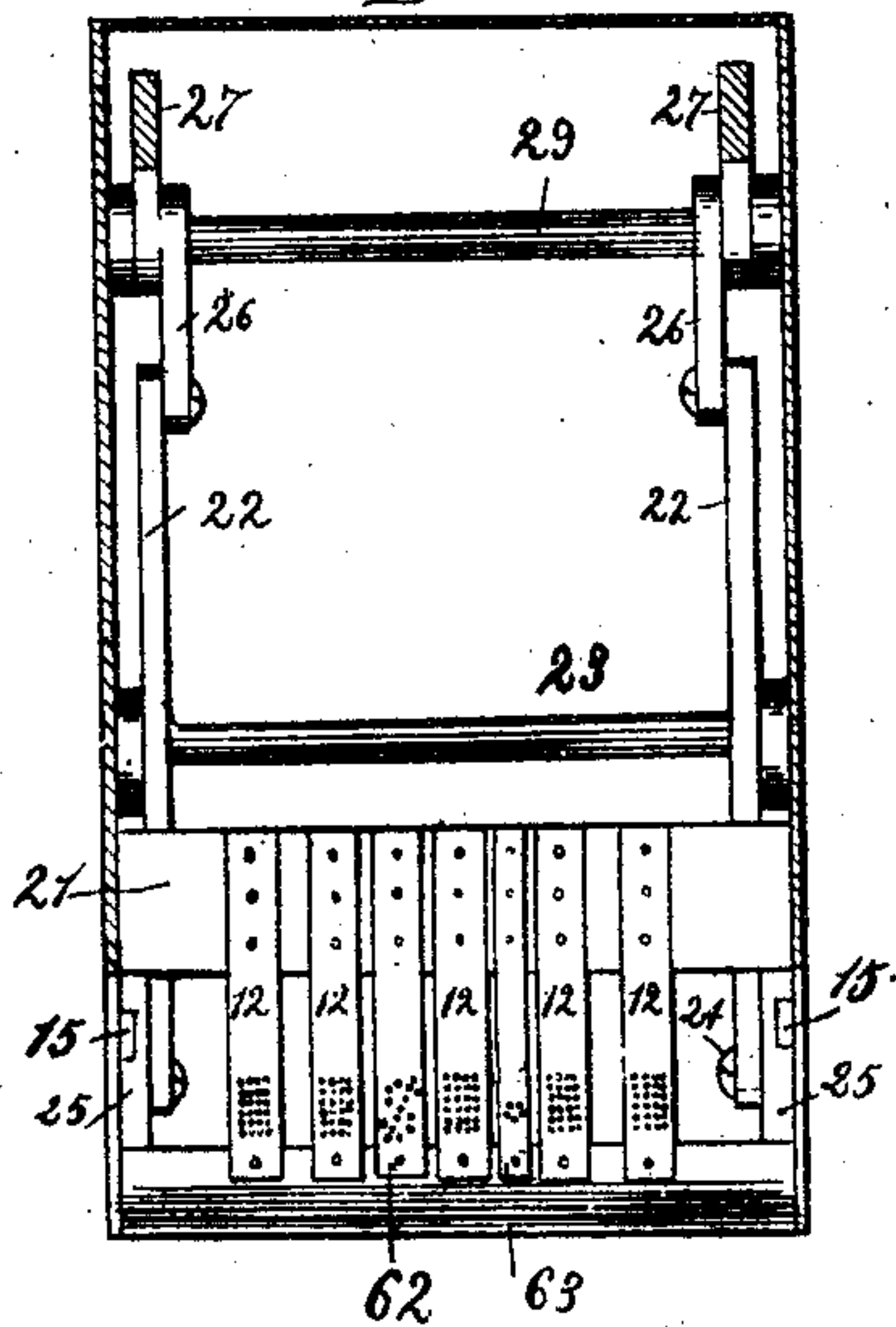


Fig. 5.

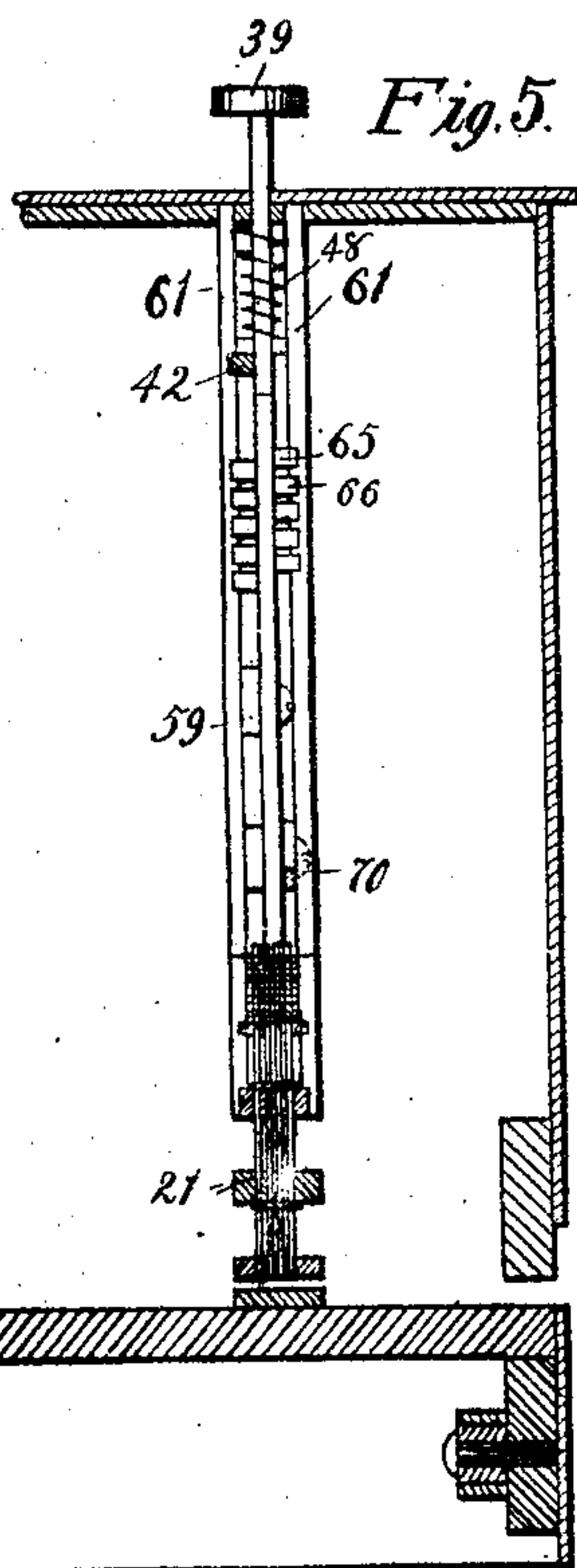
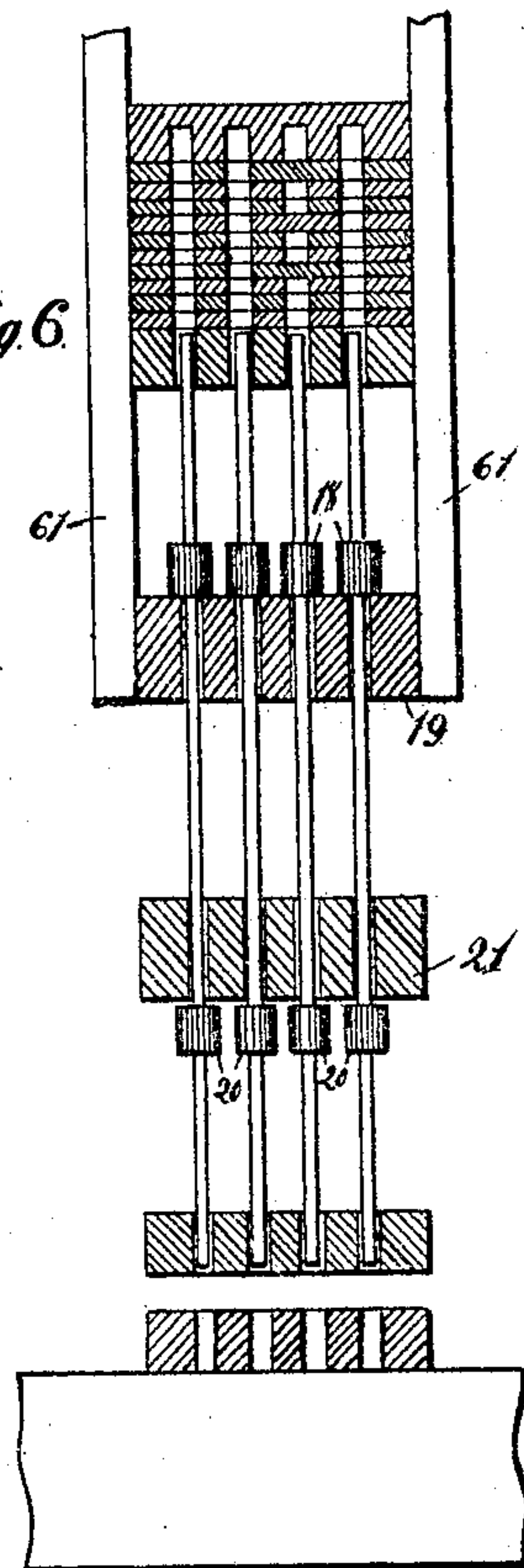


Fig. 6.



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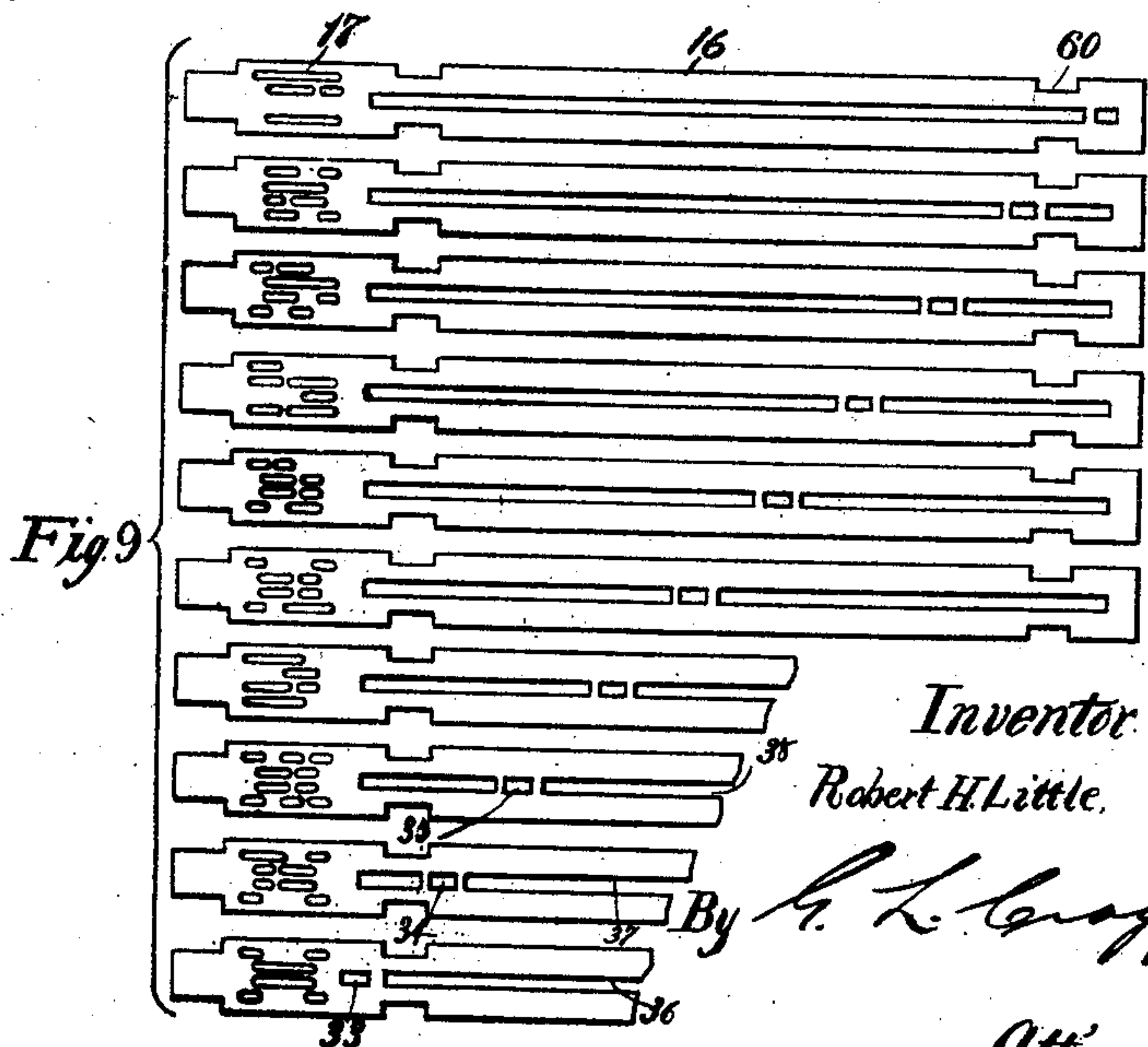
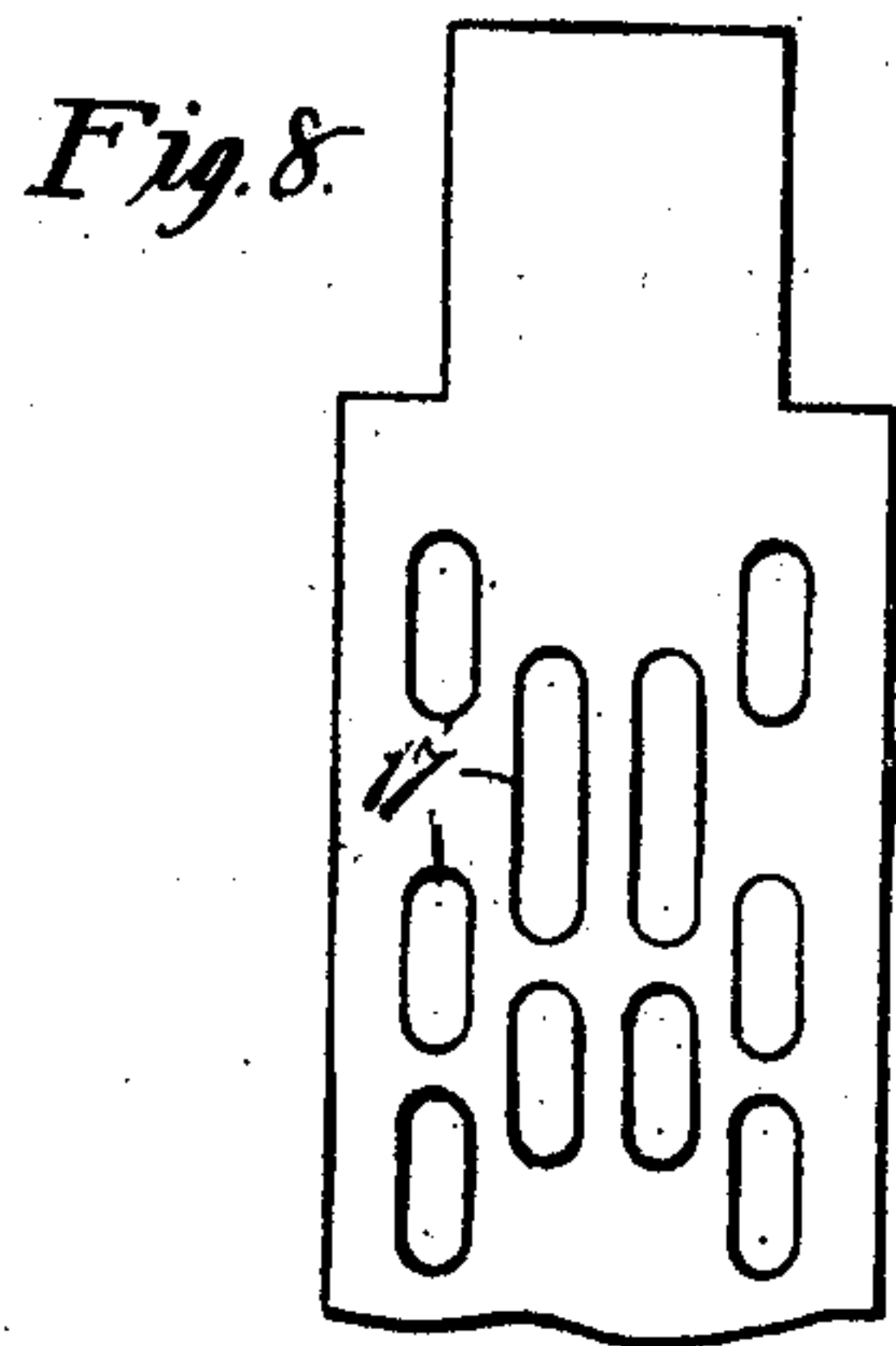
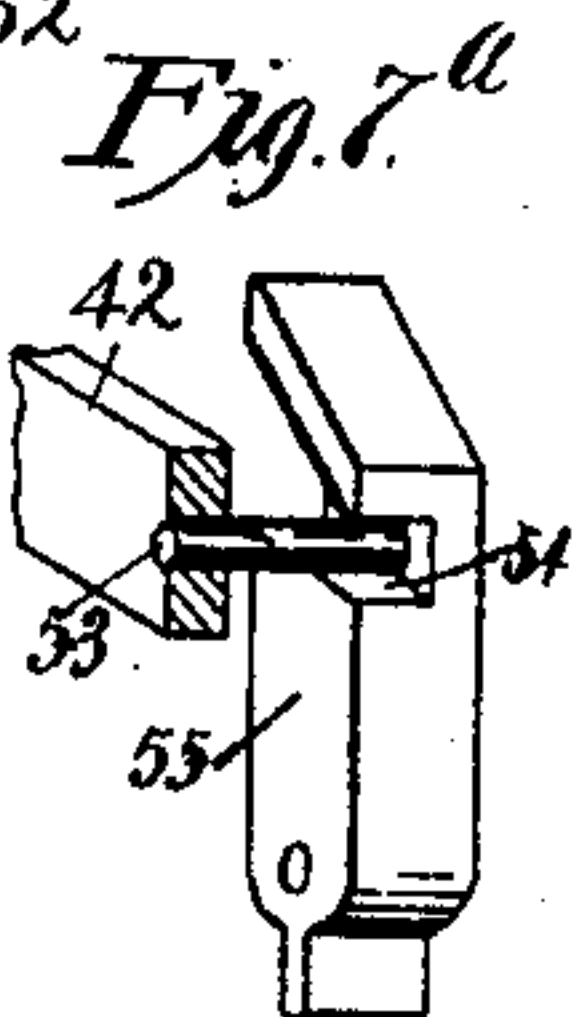
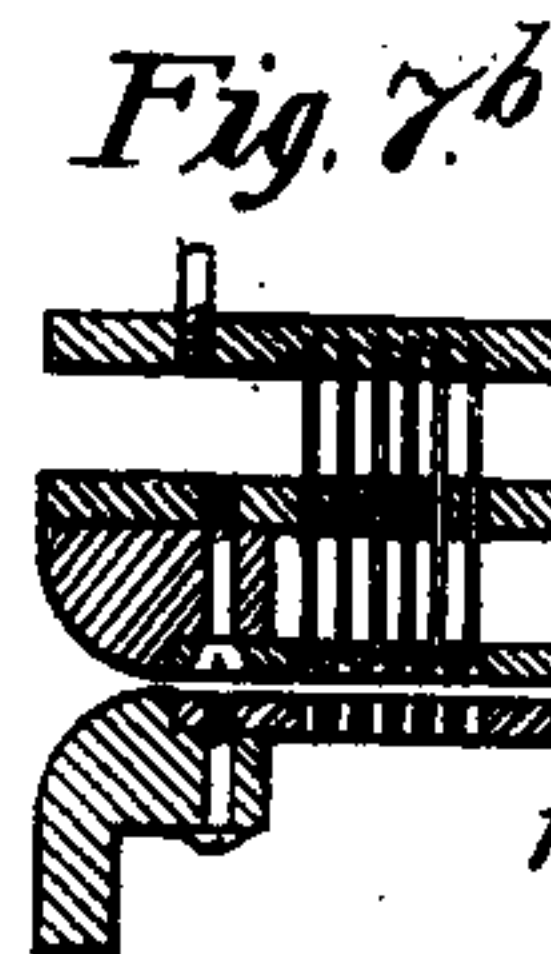
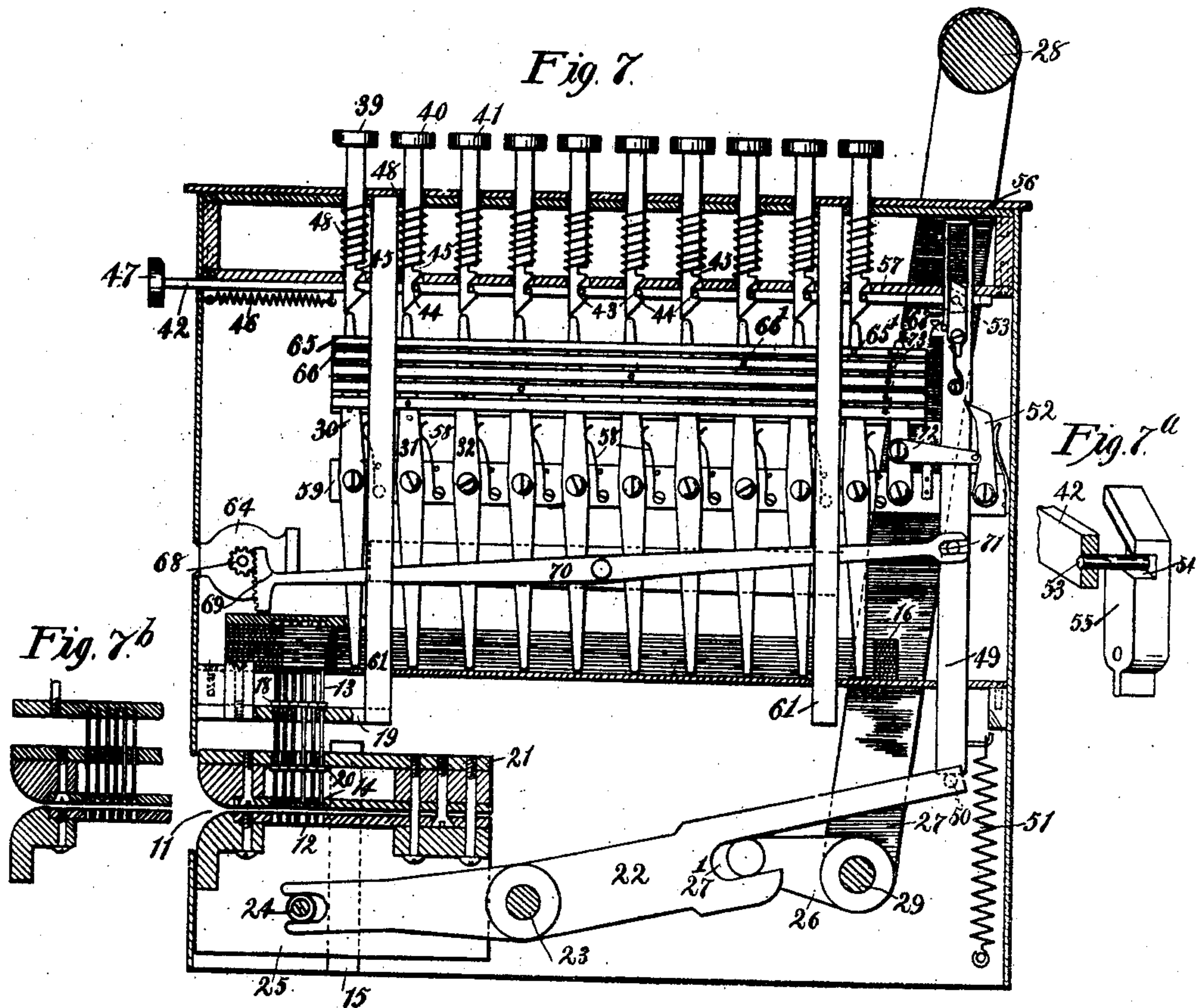
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 10.

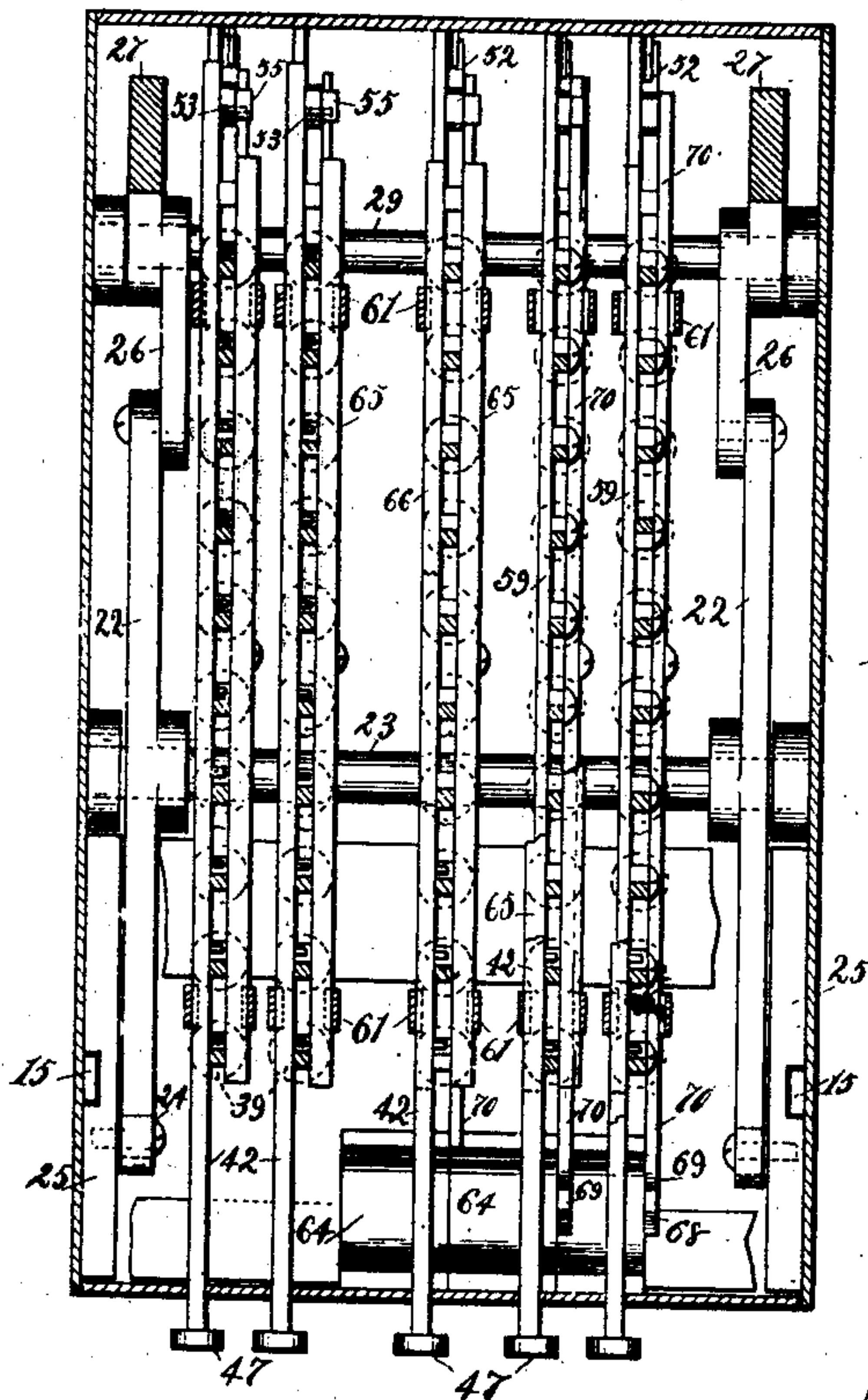


Fig. 11.

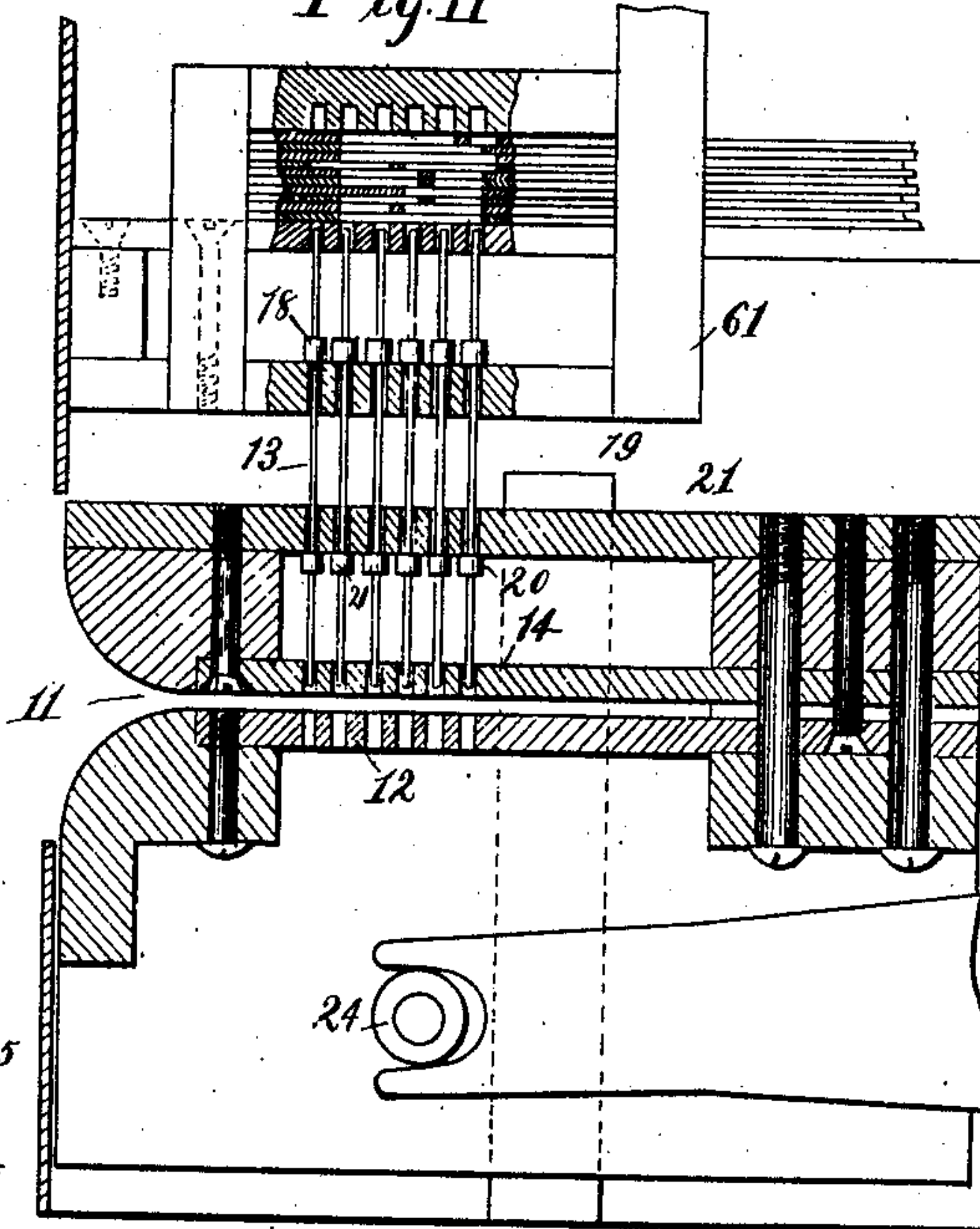
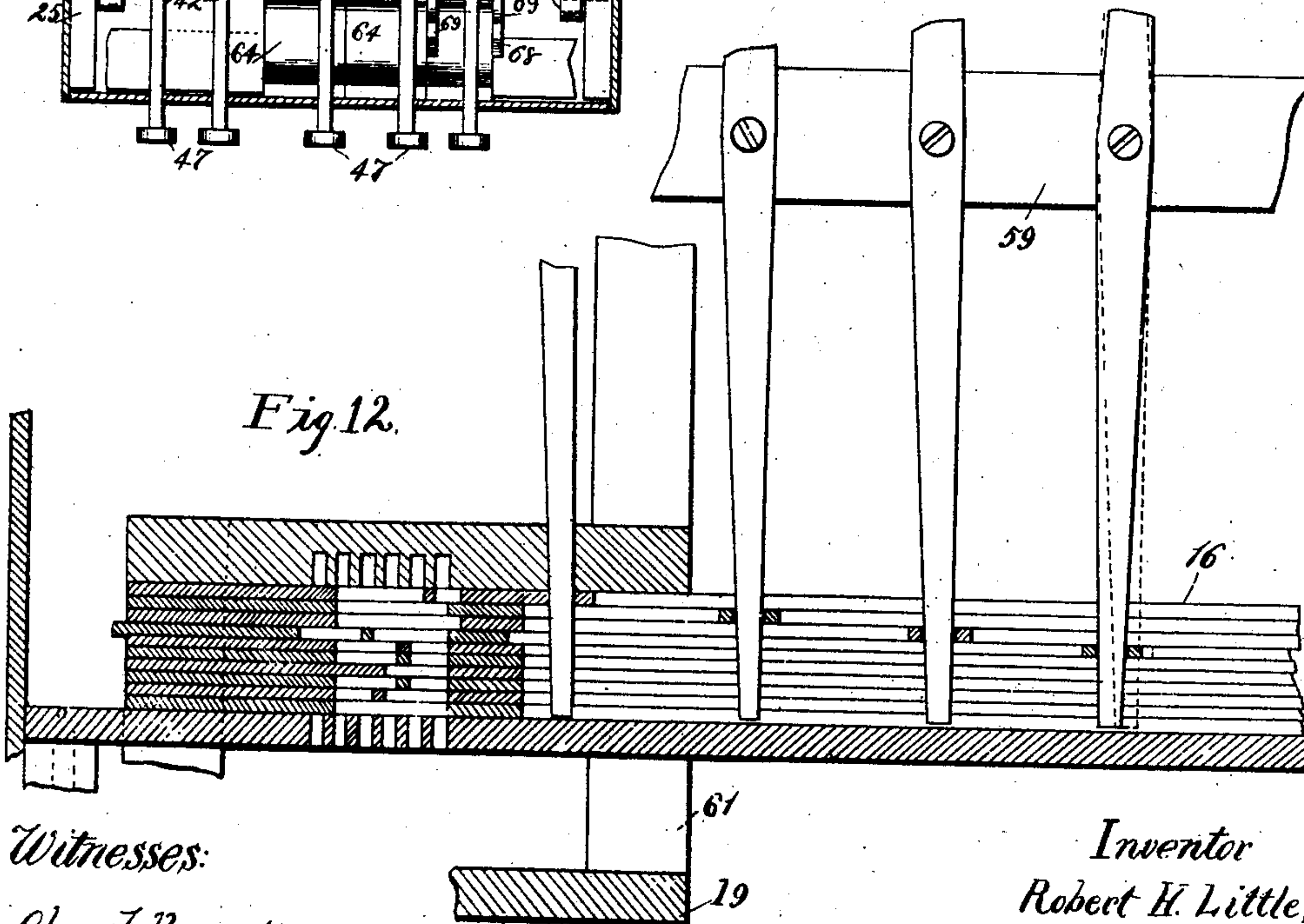


Fig. 12.



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UNITED STATES PATENT OFFICE.

ROBERT H. LITTLE, OF CHICAGO, ILLINOIS.

ACCOUNTING MECHANISM.

No. 847,672.

Specification of Letters Patent.

Patented March 19, 1907.

Application filed April 14, 1905. Serial No. 255,625.

To all whom it may concern:

Be it known that I, ROBERT H. LITTLE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Accounting Mechanism, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to perforating mechanisms—such, for example, as are adapted to perforate sales-checks or other paper record to form figures and characters indicating financial transactions such as occur in retail stores, restaurants, &c.

It has for one of its objects the provision of improved selecting mechanism governing the operativeness of punches.

The invention has for another object the provision of totalizing mechanism and mechanism between the same and the punch-operating mechanism whereby said totalizing mechanism may be operated in correspondence with the integer or digit that it perforated. In order to accomplish this result, I provide an interrelation between the selecting mechanism and the mechanism of the common counter corresponding to the selecting mechanism, whereby the common counter is permitted to operate and does operate to cause the addition to its record of the digit perforated. By the provision of this apparatus the business may readily be totalized.

The device of my invention preferably includes one row of keys or levers or their equivalents corresponding to the transactions in cents or units, another row of keys corresponding to dimes or tens, and another row of keys corresponding to dollars or hundreds, there being ten keys numbered "1," "2," "3," "4," "5," "6," "7," "8," "9," and "0" in each row. There are preferably also two rows of keys similarly numbered, so that the number of the clerk taking part in the financial transaction may be perforated in the same sales-check. Each row of keys corresponding to the dollars, dimes, and cents has a totalizing device or adding device associated therewith, the adding device or common counter of each row being preferably mechanically distinct from the adding devices of the adjacent rows. It is not necessary to provide any adding device for those rows of keys that are employed to des-

ignate the clerks. The keys may operate in any suitable way, but are preferably confined to rectilinear vertical travel, being manually moved in one direction to set the punch-actuating mechanism, whereafter a lever mechanism common to all the keys of the apparatus is moved to effect the reciprocation of the punches to secure the desired perforation of the paper. The punches are preferably all assembled over perforated dies, the selecting mechanism serving to engage the operating mechanism with certain of the punches to the exclusion of others, whereby the desired characters are perforated in the paper. The punch-operating mechanism preferably resides in a plurality of superposed plates, that may be made very thin and which are provided with slots or openings placed over the punches and which normally so register as to permit the punches to pass all the way through the plates when relative motion is afforded between the plates and punches. By selecting mechanism interposed between these plates and the keys these plates may be longitudinally shifted, so that the clear passage for some of the punches of the group corresponding to a row of keys is obstructed, whereby these punches whose passage is thus obstructed are forced to perforate the paper, the slots in the different plates being of different sizes suited to the characters to be formed. Each selecting device coacts with the common counter-actuating mechanism in a way to vary the degree or extent of operation of said mechanism, so that the common counter is forced to record and have added to its record a sum equal to the digit corresponding to the actuated key.

I will explain my invention more fully by reference to the accompanying drawings, showing the preferred embodiment thereof, in which—

Figure 1 is a front elevation of an accounting device. Fig. 2 is a top view thereof. Fig. 3 is an enlarged view of a part of Fig. 10. Fig. 4 is a sectional plan view of part of the mechanism. Fig. 5 is a view in sectional elevation showing part of the mechanism. Fig. 6 is an enlarged view of a portion of the apparatus as it appears in Fig. 5. Fig. 7 is a side view of some of the mechanism, the framework and certain parts of the mechanism being shown in sectional elevation. Fig. 7^a is a perspective view of the resetting device entering into my construction. Fig. 7^b indicates a rigidly-supported stationary

group of punches for forming the dollar-sign. Fig. 8 is a detail view showing the slots in one of the punch-operating plates. Fig. 9 shows a number of plates which complete the set of one row of digits "1," "2," "3," "4," "5," "6," "7," "8," "9," and "0." Fig. 10 is an irregular plan view of the apparatus, certain parts being shown in section and certain parts being broken away more clearly to reveal details of construction. Fig. 11 shows the punch and die arrangement and certain associate parts. Fig. 12 is a detail view, partially in section and partially in full elevation, showing the punch-operating plates of one set and some of the selecting-levers coöperating with said plates to place the same in position to operate the punches that are to be selected for perforating the paper.

Like parts are indicated by similar characters of reference throughout the different figures.

The entire apparatus, excepting the projecting operating-keys and the main operating-lever, may be contained in a case 10, slotted at 11, for the insertion of the check or other slip of paper into the interior of the machine, so as to be interposed between the die 12 and the punches 13. Said die is preferably vertically movable, the shelf carrying the same and the guide-plate 14 being together preferably vertically movable, guides 15 directing this vertical movement. There are as many nests or groups of punches 13 as there are rows or sets of keys. Certain punches of each set may be driven to perforate the inserted paper with the desired character. As there are in this instance ten keys to a set, provision should be made for effecting ten combinations of punches to produce ten characters. In Fig. 9 ten plates, (preferably superposed,) designated as 16, are illustrated, each of which is adapted to engage punches to form the corresponding characters, the uppermost plate (illustrated in Fig. 9) engaging the punches that form figure "1," the next plate engaging the punches that form figure "2," the next those that form figure "3," the next those that form figure "4," the next those that form figure "5," the next those that form figure "6," the next those that form figure "7," the next those that form figure "8," the next those that form figure "9," and the next those that form the character "0." Each of these plates 16 is provided with slots or perforations 17, the slots in each plate differing in extent and position from those in the other, some of these slots being so alined when the plates are in their normal or inoperative positions as to present clear channels to the needles or punches 13, as indicated in Fig. 6. If, however, it should be desired to perforate any character, the plate 16 is selected that has its slots or perforations 17 so constructed and arranged as to permit the punches that are not re-

quired to form the desired character to pass therethrough, the metal of the selected plate surrounding these slots engaging those punches that are necessary to form the desired character, such engagement occurring when the die 12 is bodily moved upwardly, though I do not wish to be limited to the particular movement of the die. In Fig. 8 is shown the slotted end of the plate that is adapted to engage the punches to form the figure "8." It will be seen that the punches each carry collars 18, that rest upon the upper surface of the bracket 19, to limit the downward movement of the punches, this bracket 19 being perforated for the passage of the punches. Said punches also have collars 20 thereon, engaging the under side of the plate 21 and disposed in the space between said plate and the guide 14. When said guide and the die 12 are restored to their lower and normal positions, the plate 21 engages the collars 20 to withdraw the punches from the recesses 17 and to place said punches in their normal positions, so that the plates 16 may be restored to their normal positions ready for the adjustment of the apparatus to perforate a new character. By providing the vertically-movable die 12 and the associate mechanism herein specified, the operation of the punches is positive in perforating and in being withdrawn, whereby all springs may be eliminated.

Before describing the selecting mechanism by which the plates 16 are adjusted to operate a group of selected punches I will describe the lever mechanism by which the die 12 is moved to carry the paper against the punches and to force those punches whose movement is impeded by the selected plate to pass through the paper. This lever mechanism in the form shown comprises an intermediately-pivoted arm 22, mounted upon a shaft 23 and engaging a roller 24, mounted upon the guide-plate 25, that carries the die 12, this structure being found on each side of the machine, as indicated in Fig. 10. The operating-lever is in the construction shown a duplicate bell-crank lever, each bell-crank lever having a shorter arm 26 in engagement with a slotted portion 27 of the lever 22, while the longer arm 27 extends from the interior of the machine to the exterior, where it is connected with the operating-handle 28, the bell-crank levers being journaled at their elbows upon a shaft 29. When a plate 16 has been selected and operated, the handle 28 is moved forward.

I will now describe the selecting mechanism by which one or another of the plates 16 is operated, according to the character that is to be perforated.

Each plate has an operating selecting lever—such as 30 31 32, &c.—the plates being provided with restricted openings 33 34 35, 130

&c., engaging the lower ends of said levers, said plates also having slots 36 37 38, &c., permitting the passage of said levers there-through, so that the levers may work only the plates in connection therewith at 33 34 35, &c. In the form of the apparatus indicated said levers are centrally pivoted, though I do not wish to be limited to this construction in all embodiments of the invention. The upper ends of the levers are normally opposed to the sloping ends of the keys 39 40 41, &c. The downward movement of any key forces the movement of the engaged lever in a clockwise direction, where- by the plate connected with said lever is moved to the left, whereafter a movement of the handle 28 forward will effect an elevation of the die 12 and cause the punches engaged by the actuated plate to perforate the paper or check. In Fig. 12 that plate has been shifted which will select and operate a group of punches to cause the perforation of the figure "7" in the paper.

In order that the user of the apparatus may remove his finger from the key immediately after operating the same, I provide detaining mechanism for holding the key in its depressed position during the punching operation. This detaining mechanism may reside in a reciprocating bar or rod 42, carrying pins 43, normally engaging notches 44 in the keys, but which are placed in engagement with notches 45 when the keys are depressed, said pins riding upon inclined surfaces in being transferred from one notch to another, the bar or rod 42 thereupon being moved longitudinally against the force of a spring 46, that is provided to yieldingly hold said pins in the bottoms of the notches. If a mistake has been made in selecting a key, the rod 42 may be provided with a button 47 upon the exterior of the machine, which button may be engaged to move said rod against the force of the spring 46, whereafter the spring 48 of the actuated key effects the upward and restoring movement of the key. Assuming that the correct key has been depressed, whereby the correct plate 16 is longitudinally moved toward the left with respect to its companions, the handle 28 thereof is moved forwardly to effect the perforation, as hitherto specified, whereafter the actuated key should automatically be restored, to which end I employ a vertical movable reciprocating bar 49, that separably engages a pin 50, carried upon an elongation of the lever 22, the engagement of said bar 49 with said pin 50 being normally maintained by a spring 51. The spring 51 upon the elevation of the die 12 causes the bar 49 to move downwardly, the dog 52 having previously been disengaged, as will hereinafter be set forth, whereupon the pin 53, carried by the rod 42 and normally disposed within the recess 54 of a trip 55, rides of out said recess 54 onto the

sloping top surface of said trip 55. When the handle 28 is restored to its normal position, the said sloping top surface of the trip 55 engages said pin and shifts the rod 42 to the right to disengage any pin 44 engaging a notch 45 from said notch to permit the spring 48 corresponding to the key having said notch to restore said key. The upper end of the bar 49 is provided with a slot 56, through which the pin 53 may work, this bar 49 being preferably continued upwardly, so that it may pass through a close-fitting opening in partition 57 to act as a guide. Provision should be made not only for the automatic restoration of the keys, but also for the automatic restoration of the selecting-levers, to which end each selecting-lever has provided therefor a leaf-spring 58, anchored at one end to a stationary bar 59, that carries the pivots for said levers. When a key is actuated, it operates a corresponding selecting-lever in opposition to the spring 58. When said key is restored, the influence thereof upon the selected lever is removed, whereupon said spring 58 may reverse the movement of the selected lever, and thereby restore the selected plate 16 to its initial position. The extent to which the springs 58 may move the plates 16 to the right in restoring the same is limited by the left-hand edges of the recesses 60, which engage the stationary stops 61. The mechanism I have hitherto specifically described is employed in connection with each set or row of keys 39 40 41.

As indicated in Fig. 4, each set of keys has a group of punches. Each set of keys and each group of punches has a set of plates 16, a set of selecting-levers 30 31 32, a restoring-rod 42, a restoring-button 47, a bar 49, and parts in immediate association therewith. There is a die-plate 12 for each row of punches as they appear in Fig. 7. The handle 28 and the lever mechanism 22 27, &c., are common to all of the sets of keys and the mechanism associated therewith. The die 12, as indicated in Fig. 4, is provided with a series of perforations 62 and a perforation 63 to enable the formation of a dollar-sign and decimal-point in the paper, the shelf 19 rigidly carrying punches cooperating with said perforations 62 63, Fig. 7^b, for the purpose stated.

I will now describe my improved adding or counting mechanism.

Each of the three right-hand sets of keys as appearing in Figs. 1 and 2 has a counting device, these counting devices being preferably mechanically distinguished. I am able to use any suitable counting device found upon the market, such a counting device being indicated at 64 in Fig. 7. The well-known Veeder counter will answer well the purpose. A series of reciprocating bars 65 66 slide within grooves cut in the guides 61,

Figs. 5 and 7. Each selecting-lever has such a bar linked or articulated therewith at 65' 66', &c., so that when a lever is rocked the accompanying bar 65 or 66, &c., is longitudinally moved. These bars are moved to the right when a selecting-lever is operated by an actuated key, and the corresponding bar is thrust within the path of a stop 67, provided upon or operated by the bar 49, whereby the extent to which the bar 49 may be moved downwardly by the spring 51 is determined. The counting device 64 has a pinion 68 in engagement with an operating segmental rack 69, that is carried upon an end of a centrally-pivoted lever 70, that engages at its forked end a pin 71, carried upon the bar 49. Obviously the said pinion 68 is rotated a distance corresponding to the downward movement permitted to the bar 49, which movement in turn is regulated by the actuated key 39 or 40, &c., for the actuated key places one or the other of the bars 65 66, &c., in the path of the stop 67, and as these bars 65 66 are located one above the other in groups of five on each side of the selecting-levers the downward travel of the stop 67 and the bar 49 varies, according to the key that is actuated, whereby the operation of the counting mechanism 64 also varies, according to the key operated, whereby an exact summation is had of the transactions. The selecting-levers of each of the three sets of keys on the right are thus associated with ten bars 65 66.

I provide mechanism whereby the operation of the handle 28 will not cause an operation of the counter 64 unless a key has been operated. To this end a detent 52 is normally in engagement with the bar 49, so that if the handle 28 is operated when a key has not been operated the lever 22 will separate from the bar 49, whereby a wrong operation of the counter will not ensue. To release the detent 52 from the bar 49 when the counter is to be operated, I interposed between the detent 52 and the bars 65 66 lever mechanism 72, which is engaged by one of the pins 73 upon said bars 65 66 to move said detent out of engagement with the bar 49, so that the latter bar may be pulled downwardly by the spring 51 until it strikes the actuated bar 65 or 66, &c.

As the Veeder counter is a well-known instrument, I have not deemed a detailed description thereof to be essential. As is well known, it contains within its casing a ratchet and pawl or its equivalent in order that a one-way movement of the pinion 68 may only be had.

The zero-key is not operatively associated with any counter, so that when the zero-key is operated the counter will not be operated.

In operating the machine only one key in each column at a time is depressed.

While I have shown the invention as par-

ticularly adapted to accounting mechanisms, I do not wish to be limited to this utility.

I have explained that the zero-key is not operatively associated with any counter, and inasmuch as the counter does not form a part of the invention herein claimed details of its association with any of the keys are not necessary.

It is obvious that changes may readily be made in the apparatus of my invention without departing from the spirit thereof, and I do not, therefore, wish to be limited to the precise construction shown; but,

Having thus described my invention, I claim as new, and desire to secure by Letters Patent, the following:

1. A device of the class described, including a plurality of punches, a plurality of superposed plates, each adapted to select a different group of said punches, to effect operation thereof to form different characters, and mechanism for moving any of said plates longitudinally of the others into co-operative relation with its group of punches, said plates having non-corresponding slots, whereby each plate is adapted to engage some of the punches and to permit other punches to pass through said slots, whereby the desired selection of punches may be secured.

2. A device of the class described, including a plurality of punches, a plurality of plates, each adapted to select a different group of said punches, to effect the operation thereof to form different characters, and mechanism for placing any of said plates in co-operative relation with its group of punches, said plates having non-corresponding slots, whereby each plate is adapted to engage some of the punches and to permit other punches to pass through said slots, whereby the desired selection of punches may be secured, the plate-operating mechanism including character keys and levers connecting the keys with the plates, each plate being provided with such a key and lever.

3. A device of the class described, including a plurality of punches, a plurality of superposed plates, each adapted to select a different group of said punches, to effect operation thereof to form different characters, and mechanism for moving any of said plates longitudinally of the others into co-operative relation with its group of punches, said plates having non-corresponding slots, whereby each plate is adapted to engage some of the punches and to permit other punches to pass through said slots, whereby the desired selection of punches may be secured, the plate-operating mechanism including character keys and levers connecting the keys with the plates, each plate being provided with such a key and lever.

4. A device of the class described includ-

ing a plurality of punches, a plurality of superposed plates each adapted to select a different group of said punches to effect operation thereof to form different characters, and mechanism for moving any of said plates in substantially parallel planes into coöperative relation with its group of punches.

5. A device of the class described including a plurality of punches, a plurality of superposed plates each adapted to select a different group of said punches to effect operation thereof to form different characters, and mechanism for moving any of said plates

in substantially parallel planes into coöperative relation with its group of punches, said plates having non-corresponding slots or cut-away portions whereby each plate is adapted to engage some of the punches and to permit other punches to pass by other plates, whereby the desired selection of punches may be secured.

In witness whereof I hereunto subscribe my name this 11th day of April, A. D. 1905.

ROBERT H. LITTLE.

Witnesses:

G. L. CRAGG,
B. H. LITTLE.