

No. 693,499.

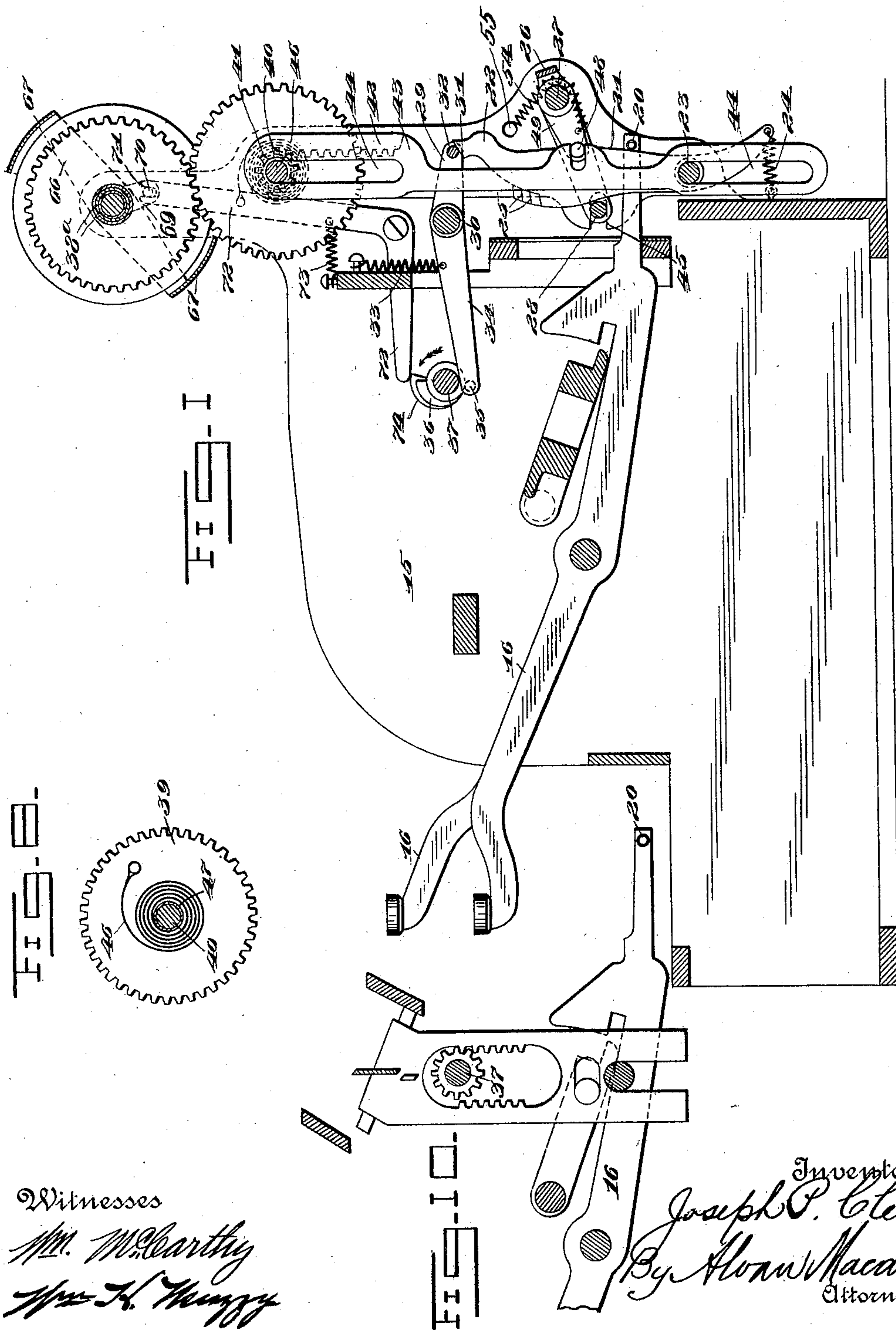
Patented Feb. 18, 1902.

J. P. CLEAL.
CASH REGISTER.

(Application filed May 25, 1900.)

(No Model.)

5 Sheets—Sheet 1.



Witnesses
M. McCarthy
W. H. Murphy

Inventor
Joseph P. Cleal
By *Alonzo Macaulay*
Attorney

No. 693,499.

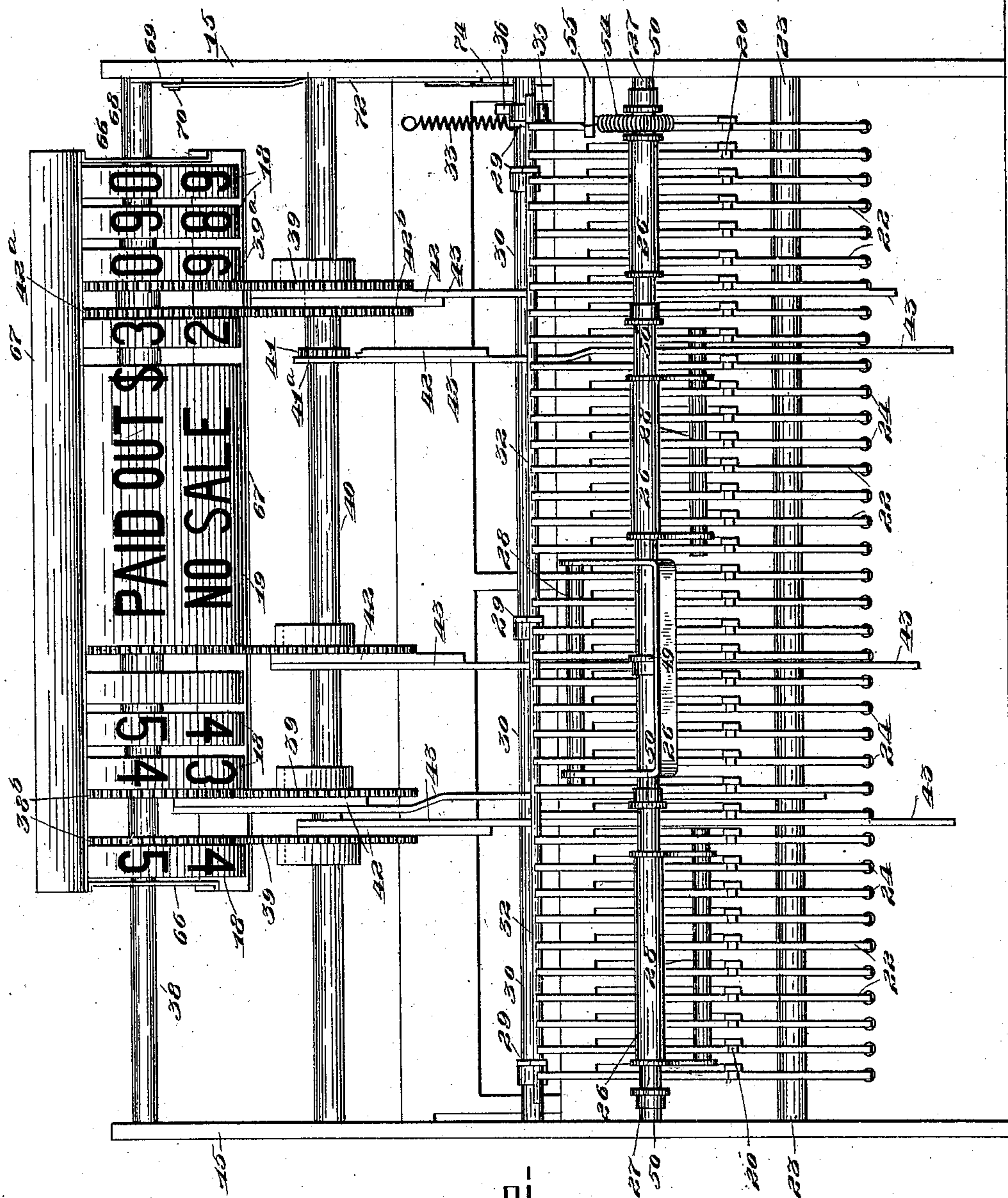
Patented Feb. 18, 1902.

J. P. CLEAL.
CASH REGISTER.

(Application filed May 25, 1900.)

(No Model.)

5 Sheets—Sheet 2.



Witnesses

Mrs. M. C. Carthy
Mrs. J. H. Muzzey

Inventor

Joseph F. Cleat
By Alvan Macaulay
Attorney

No. 693,499.

Patented Feb. 18, 1902.

J. P. CLEAL.
CASH REGISTER.

(Application filed May 25, 1900.)

(No Model.)

5 Sheets—Sheet 3.

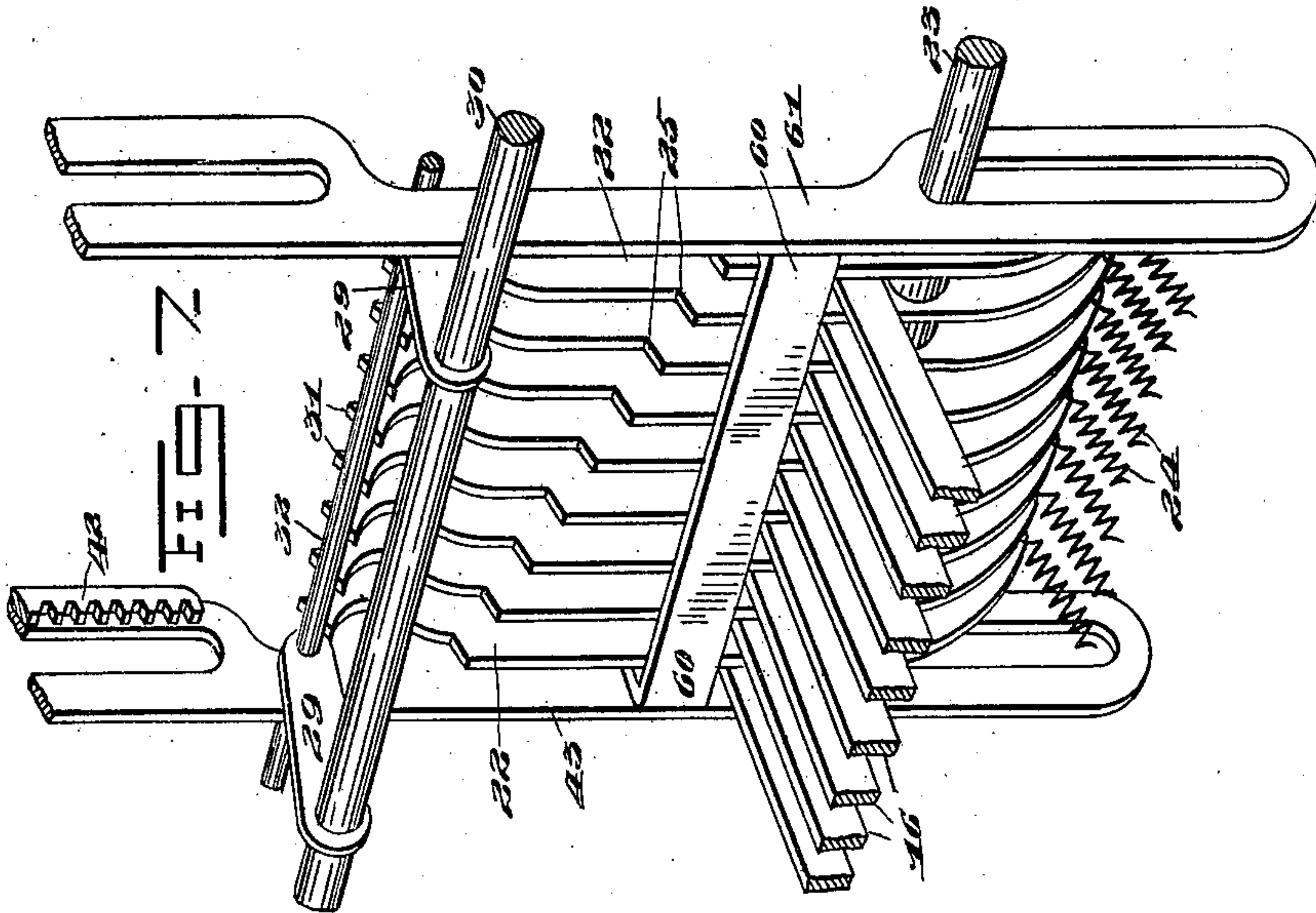
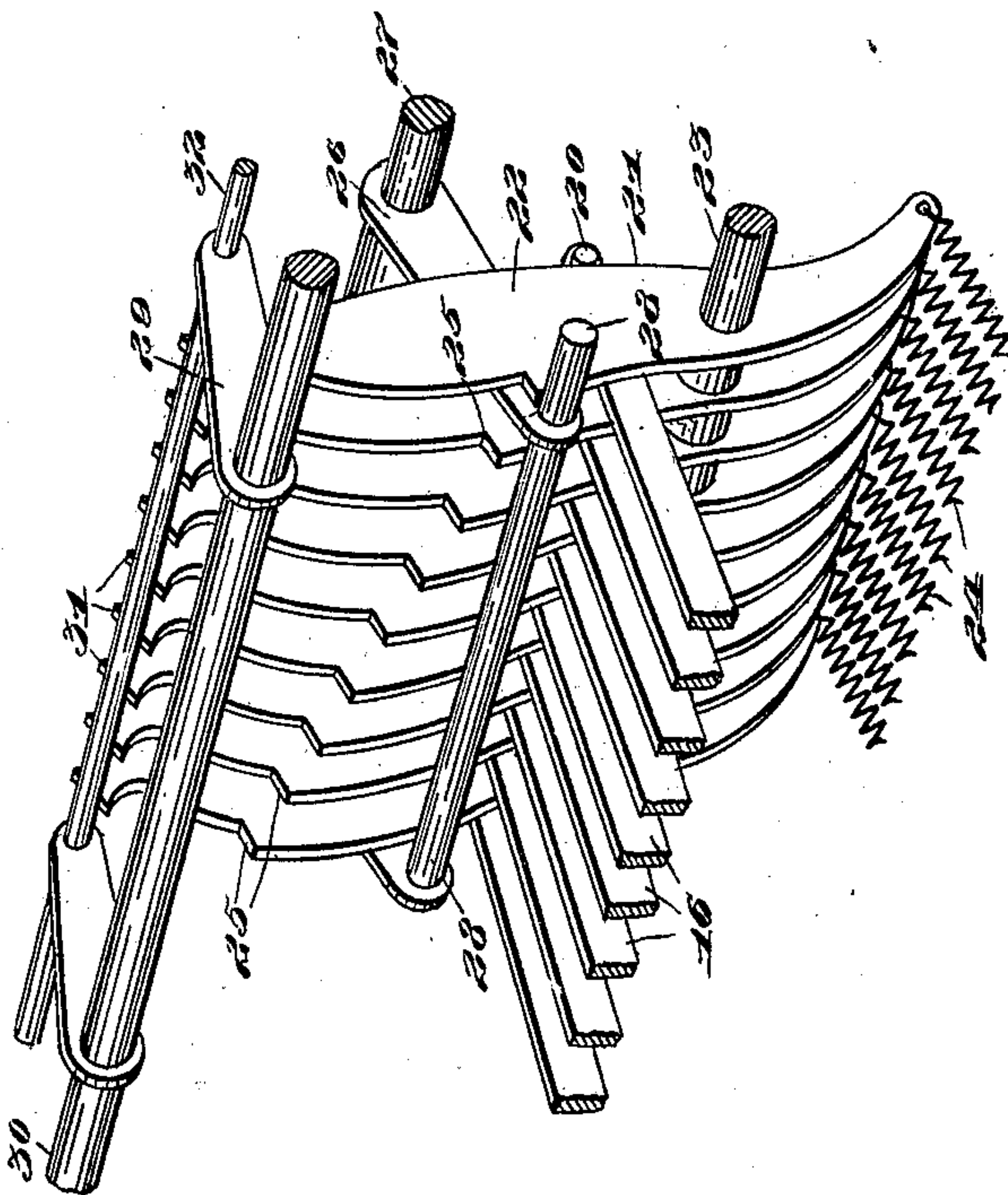


FIG. 8.



Witnesses

Wm. McLearty
Wm. H. Muffy

Inventor
By *Joseph P. Cleal*
Alvan Macaulay
Attorney

No. 693,499.

Patented Feb. 18, 1902.

J. P. CLEAL.
CASH REGISTER.

(Application filed May 25, 1900.)

(No Model.)

5 Sheets—Sheet 4.

FIG. 4-

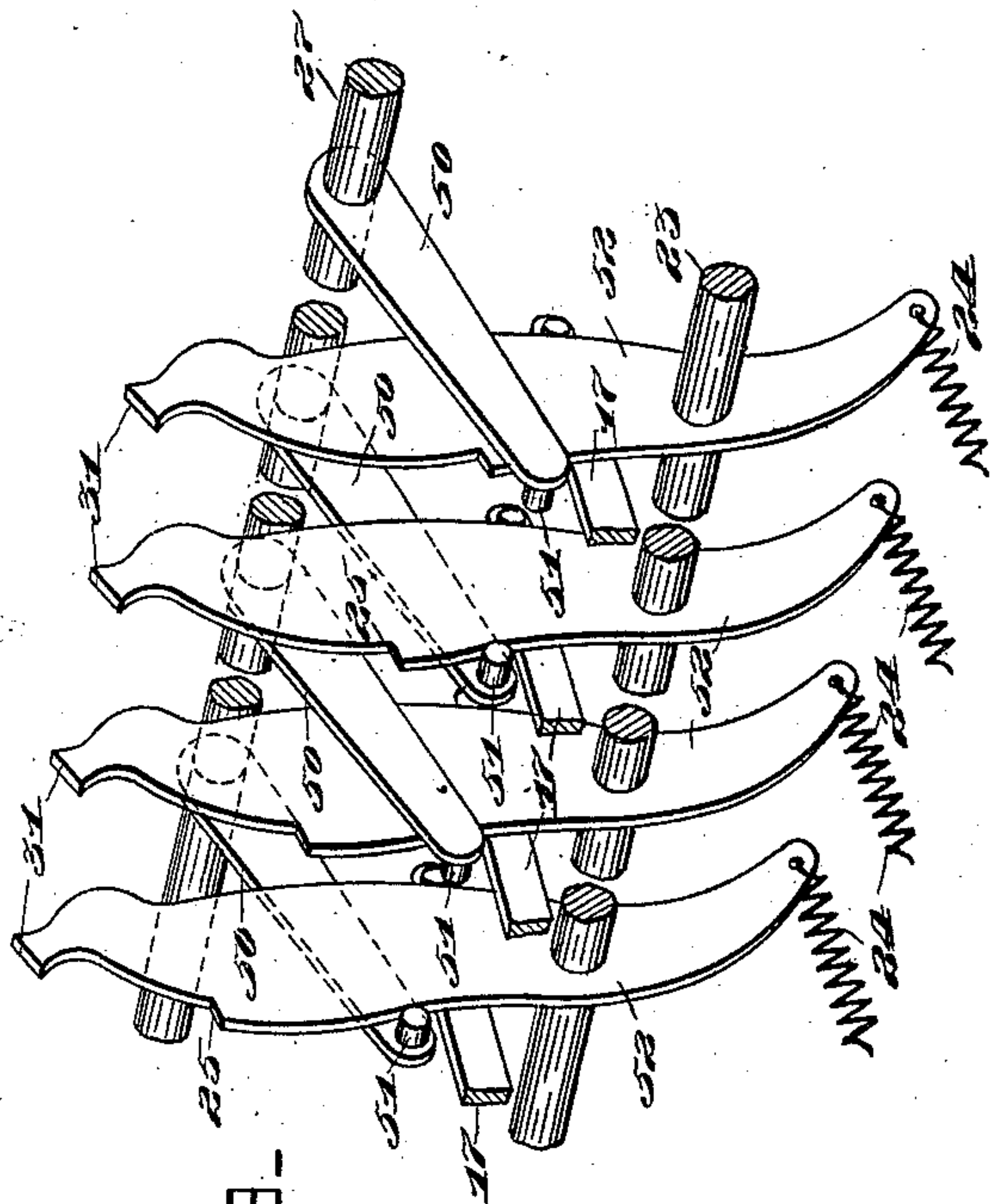
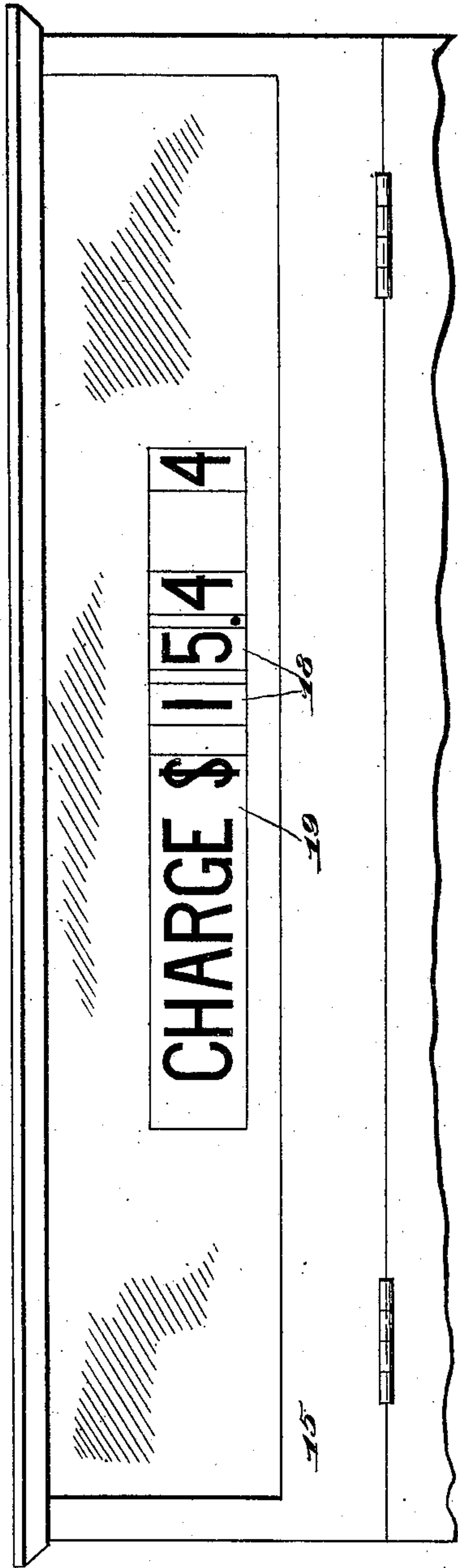


FIG. 5-

Witnesses
Wm. McCarthy
Wm. H. Muzzy

Inventor
Joseph P. Cleal
By *Alvan Macaulay*
Attorney

No. 693,499.

Patented Feb. 18, 1902.

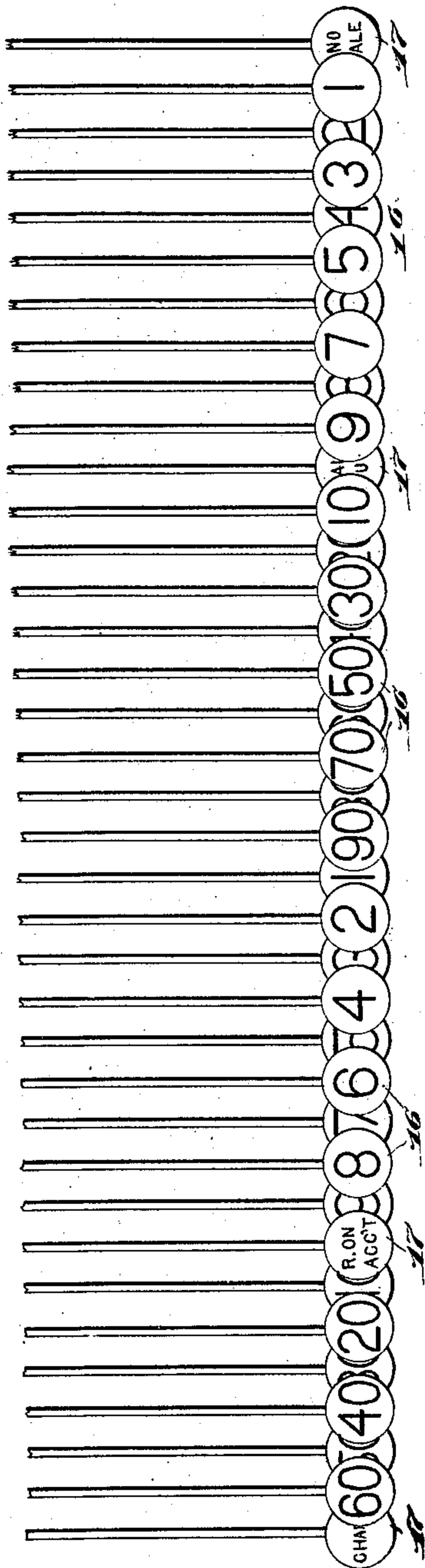
J. P. CLEAL.
CASH REGISTER.

(Application filed May 25, 1900.)

(No Model.)

5 Sheets—Sheet 5.

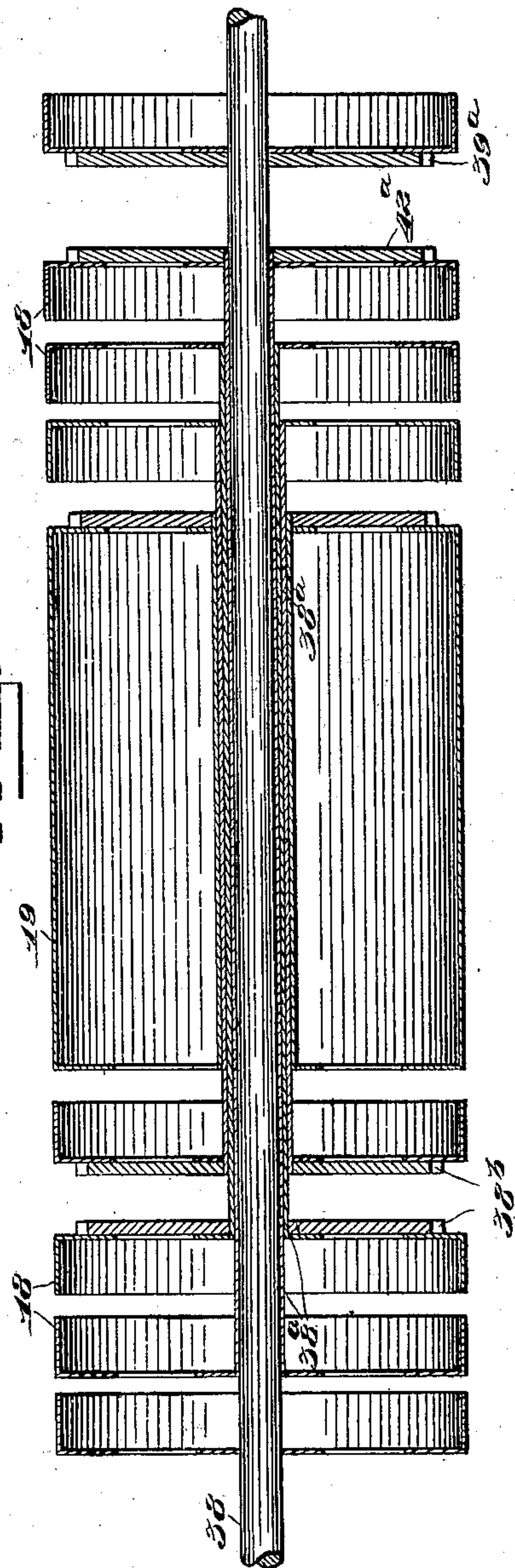
FIG. 5-



Witnesses

Wm. W. McCarthy
Wm. H. Muzzey

FIG. 6-



Joseph P. Cleal Inventor
By Abner Macaulay Attorney

UNITED STATES PATENT OFFICE.

JOSEPH P. CLEAL, OF DAYTON, OHIO, ASSIGNOR TO THE NATIONAL CASH REGISTER COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 693,499, dated February 18, 1902.

Application filed May 25, 1900. Serial No. 17,977. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH P. CLEAL, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Cash-Registers, of which I declare the following to be a full, clear, and exact description.

This invention relates to improvements in cash-registers, and has more particular relation to improvements in registers of the type patented to Thomas Carney, No. 497,860, granted May 23, 1893.

One of the several objects of the invention is to provide an improved indicator for a machine of the class mentioned.

In the appended drawings, forming part of this specification, Figure 1 represents a vertical transverse section through a machine of the class mentioned with my invention applied thereto, the cabinet of the same and the cash-drawer being omitted. Fig. 2 represents a rear elevation of the same with two of the registering-frames elevated. Fig. 3 represents a detail perspective view of one of the banks of graduated levers, the ends of the keys cooperating therewith, and the rock-frames which coact with said levers. Fig. 4 represents a detail front elevation of the upper portion of the machine with the cabinet in position. Fig. 5 represents a top plan view of the forward ends of the operating-keys, showing the keyboard arrangement. Fig. 6 represents a detail vertical longitudinal section through the indicators. Fig. 7 represents a detail perspective view of one of the banks of stop-levers with a modified form of registering-frame cooperating therewith. Fig. 8 represents a detail side elevation, partly in section, of one of the indicator-actuating gears and its spring. Fig. 9 represents a detail perspective view of the bank of special stop-levers for the special keys and cooperating parts; and Fig. 10 represents a broken vertical section through a machine of the type mentioned, showing the connection between the keys and the rotation-shaft.

Heretofore it has been the practice in the class of machines similar to the aforesaid patent to have the indications mounted on

separate flags or tablets, with the result that the units of cents and dollars and the tens of cents and dollars must be mentally added together in order to properly read the indication. Thus the indication for eight dollars and ninety-five cents would appear upon the indicators as "\$8.90" and ".05." With my present invention, however, these indications are changed and brought into correct relation to each other, so as to read "\$8.95."

In general terms the machine may be described as being substantially of the same construction as that disclosed in the aforesaid patent, with the exception that the usual flag or tablet indicators are omitted.

In the drawings, 15 represents the frame of the machine; 16, the pivoted amount-keys; 17, the special keys; 18, the amount-indicators, and 19 the special indicator.

The amount-keys, as shown in Fig. 5, are arranged in four banks or groups, representing, respectively, units of cents, tens of cents, units of dollars, and tens of dollars. As all of the banks are substantially of the same construction, I will describe one only, as this description will suffice for all.

As before stated, the keys 16 are of the same construction as those described in said patent, with the slight difference that they are extended at their rear ends and are provided, respectively, with antifriction-rollers 20. These rollers cooperate, respectively, with the rear cam edges 21 of a series of levers 22, pivoted upon a transverse shaft 23 and normally drawn against said rollers by a series of coil-springs 24, which connect their lower ends to the main frame. (See Figs. 1 and 3.) When a key-lever is operated and its rear end elevated, the roller 20 necessarily moves slightly forward, and this result, combined with the rearwardly-inclined cam edge of the respective lever 22 against which the roller operates, effects the proper movement of said lever. The levers 22 of each bank are, as shown in Fig. 3, formed upon their forward edges with horizontal shoulders 25, each of which lies in a different horizontal plane, whereby the desired graduation of stops for a pivoted yoke-frame 26 is secured. The yoke-frame 26, which is journaled upon a transverse rock-

shaft 27, is provided with a cross-bar 28, which is arranged to be elevated by the operated key and makes a full upward stroke with said key, but is arrested upon the return movement of the key by the shoulder 25 of the respective lever 22 which has meanwhile been forced forward and set by the roller 20. In order to hold the operated levers 22 in their forward set positions when the keys return to normal position, I provide a yoke-frame 29, extending across all the banks of levers and fast upon a rock-shaft 30, and so positioned that when one of the levers 22 is forced forward its upper beveled edge 31 will engage the cross-bar 32 of said frame 29 and force the same upward, so as to pass under said bar and become locked in its set position thereby. The frame 29 is held in its normal position by a coil-spring 33, (see Fig. 1,) which is connected to the main frame and to an arm 34, fast to the shaft 30. This arm is provided at its inner end with an antifriction-roller 35, which engages the periphery of a cam 36, mounted upon the usual rotation-shaft 37 of the machine, which receives motion from the keys, as shown in Fig. 10 and as shown and described in said patent. The position of the cam 36 is such that the frame 29 is rocked upon the initial movement of the keys, and any levers 22 set by the previous operation are thus released and allow their frames 26 to drop and the indicators 18 to be thereby returned to zero ready for the next operation. These indicators, as clearly shown in Figs. 2 and 6 of the drawings, are arranged in duplicate series, one for indicating at the back of the machine and the other for indicating at the front of the machine. The two series, as plainly shown in Fig. 6, are connected so as to move together by a rock-shaft 38 and nested sleeves 38^a, the units-of-cents indicators being mounted near the opposite ends of the rock-shaft, the tens-of-cents indicators on the innermost sleeve, which lies over the said shaft, and so on through the entire series. One indicator of each of the first two sets is provided with a gear-wheel 38^b, and these gears mesh, respectively, with gears 39, journaled upon a transverse stationary shaft 40. (See Fig. 2.) Each of the gears 39 is provided with a pinion 41, which is in mesh with one of a series of rack-bars 42, similar to that of the special indicator hereinafter described, and shown in Fig. 1. The pinion 41 of the units-of-dollars bank is mounted upon a sleeve 41^a, connected to its gear-wheel 39, which in turn meshes with the gear 39^a of its respective indicator. One of the indicators of the fourth or tens-of-dollars set is provided with a gear-wheel 42^a, similar to the gears 38^b and meshing with a gear 42^b, which carries a pinion similar to those of the gears 39 and which its respective rack-bar 42 engages. The rack-bars 42 are carried by vertically-movable slides 43, which are slotted, as at 44, and are guided by the shafts 23 and 40, which pass through said slots. Each of the slides 43 is

formed with a slot or notch 45, through which the shaft 28 of its respective frame 26 projects, so that as said frame is raised the slide and its rack-bar will be also raised. After an indicator has been set and upon the initial movement of the succeeding operation of the machine the frames 26 are released, as above described, and the slides 43 thus left free to descend. This return movement is effected in each case, excepting the tens-of-dollars indicators, by coil band-springs 46, secured to the respective gears 39, and sleeves 47, fast to the shaft 40, as shown in detail in Fig. 8. The arrangement of these springs is such that they are put under tension when the indicators are set and are thus in condition to rotate the wheels 39 when the latter are left free.

In the case of the tens-of-dollars indicator as the gear 42^b is journaled on the sleeve 41^a there is no means for the attachment of a coil band-spring, and I therefore provide means for drawing the frame 26 of this particular bank downward when released. This means comprises a coil-spring 54, (see Fig. 1,) connected to said frame and secured to a pin 55, mounted on the frame, after passing partly about the shaft 27. If so desired, the return of the indicators may be effected in each case in a similar manner or by any suitable devices for drawing the frames 26 down after they have been elevated.

The special indicator 19, located between the two groups of amount-indicators, is also of the rotary type and is journaled upon the outermost sleeve 38^a. The indications upon this cylinder are duplicated upon diametrically opposite sides, so that similar characters will be exposed at both the back and the front of the machine. This indicator is operated in substantially the same manner as the amount-indicators, with the exception that its slide 43 is engaged in lieu of a cross-bar 28 by an antifriction-roller 48, mounted on an arm 49, which latter is fast to the shaft 27. (See Figs. 1 and 2.) This shaft further carries a series of rigid arms 50, having pins 51, which coöperate with levers 52, which are similar to the levers 22 and are arranged to be operated by the respective special keys 17, which are for such transactions as "Paid Out," "Charge," "Received on account," and "No sale" in the same manner that the amount-keys operate said levers 22. (See Fig. 9.) The shoulders on the levers 52 are of course graduated in the same manner as the shoulders of the levers 22 of the other banks, so that when the respective special keys are operated the shaft 27 will upon its return movement be arrested, according to the lever operated, and the special indicator correspondingly brought to rest to expose the proper indication.

In the modified form of my device shown in Fig. 7 the frame 26 is omitted and a cross-bar 60 inserted in lieu thereof. This bar is supported at one end by its slide 43 and at its

opposite end by a slide 61 similar to the slide 43, excepting that it carries no rack. The construction and operation, with the above exception, are the same as before described in connection with the construction shown in Fig. 3.

In order to further guard against any fraudulent operation of the machine, such as a partial and incomplete movement of the indicators, I provide a flash or guard comprised of two arms 66, journaled upon the indicator-shaft 38 and connected at their ends by guard-plates 67, which are so arranged as to obscure the indications at the opposite sides of the machines. One of said arms 66 is provided with a sleeve 68, to one end of which is attached an arm 69, carrying a stud 70, which projects into a slot 71, formed in a pivoted bell-crank lever 72. (See Fig. 1.) This lever is connected to the main frame by a coil-spring 73.

When the machine is in normal position, a cam 74, mounted upon the aforesaid rotation-shaft 37, is in engagement with the bell-crank 72 and holds the same in the proper position to leave the indicators exposed. Upon the initial movement of a key and the consequent movement of the shaft 37 the flashes are released and allowed to move to hide the indicators and are not again set to disclose the same until the final return movement of the key and the complete rotation of the shaft.

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

1. In a cash-register, the combination with a series of operating-keys, of indicators, slidable rack-bars for operating said indicators, movable frames operated by the keys and connected to said rack-bars and having positive and return movements and means arranged to be operated by the keys for arresting the frames on their return movements.

2. In a cash-register, the combination with a series of operating-keys, of indicators, rack-bars for operating said indicators, a series of movable frames connected to said rack-bars, a series of pivoted levers having graduated stop-shoulders for supporting the movable frames and means mounted on the keys for operating said levers.

3. In a cash-register, the combination with a series of operating-keys, of indicators, rack-bars for operating said indicators, a series of movable frames connected to the rack-bars and having a positive and return movement arranged to be operated by the keys and a series of pivoted stop-levers arranged to be moved by the keys to arrest the movable frames on their return movements.

4. In a cash-register, the combination with a series of operating-keys, of indicators, rack-bars for operating said indicators, a series of movable frames arranged to be operated by the keys so as to have positive and return movements and to operate the rack-bars and a series of independent graduated stops ar-

ranged to be moved by the respective keys into coöperative relation with the movable frames to arrest the latter upon their return movements.

5. In a cash-register, the combination with a series of operating-keys, of indicators, rack-bars for operating said indicators, a series of movable frames connected to said rack-bars, a series of movable independent stops arranged to be actuated by the keys and coöperating with said frames, and means for temporarily holding the stops in their set positions independently of the keys.

6. In a cash-register, the combination with a series of operating-keys, of rotary indicators, rack-bars for operating said indicators, pivoted frames connected to said rack-bars and arranged to be operated by the keys and given positive and return movements, and means set by the keys for arresting said frames upon their return movements.

7. In a cash-register, the combination with a series of operating-keys, of indicators, rack-bars for operating said indicators, movable frames connected to said rack-bars and arranged to have positive and return movements, a series of pivoted levers having graduated shoulders adapted to arrest said frames upon their return movements, and projections mounted on the keys and arranged to rock said levers on their pivots.

8. In a cash-register, the combination with a series of operating-keys, of indicators, rack-bars for operating said indicators, movable frames connected to said rack-bars, a series of pivoted levers having graduated shoulders adapted to arrest said frames, means for operating said levers from the keys, and devices for holding the levers in their set positions independently of the keys.

9. In a cash-register, the combination with a series of operating-keys, of indicators, gears for setting said indicators, springs connected to said gears and arranged to be put under tension when the same are operated, rack-bars for operating said gears, movable frames connected to said bars and arranged to be operated by the keys, and graduated devices normally in inoperative position and adapted to be operated by the keys and moved into positions to engage said frames.

10. In a cash-register, the combination with a series of operating-keys, of a series of rotary indicators, racks and gearing for operating said indicators, a series of pivoted frames connected to said racks and arranged to have positive and return movements, a series of pivoted levers having graduated projections arranged to arrest said frames upon their return movements, and projections mounted on the keys for operating said levers.

11. In a cash-register, the combination with a series of indicators, of a series of operating rack-bars, a series of pivoted frames connected to said rack-bars, and arranged to be operated by the keys, a series of graduated levers arranged to be set by the keys to ar-

rest the frames, a pivoted frame for retaining the levers in their set positions and means connected to the movable parts of the machine for rocking said arresting-frame.

5 12. In a cash-register, the combination with a series of operating-keys, of a series of indicators, a series of gears for operating said indicators, a series of springs for returning said gears, a series of rack-bars meshing with said
10 gears, a series of movable frames connected to said rack-bars and arranged to be operated by the keys, a series of pivoted levers having graduated shoulders for arresting said frames and a latching-frame for said levers.

15 13. In a cash-register, the combination with a series of pivoted key-levers, of a rotary indicator, a movable frame arranged to be elevated by said keys, means connecting said frame to the indicator, and a series of inde-
20 pendently-movable stops arranged to be operated by the keys to arrest the frame in its descending movement.

14. In a cash-register, the combination with a series of operating-keys, of a rotary indi-
25 cator, a movable frame common to all of said keys and arranged to be moved forward thereby a uniform distance upon each operation, means connecting the frame to the indicator and graduated devices arranged to be set by
30 the keys for arresting the frame at the proper point in its return movement.

15. In a cash-register, the combination with a series of operating-keys, of indicators, slid-
35 able rack-bars for operating said indicators, movable frames connected to said rack-bars, pivoted levers having graduated stop-shoulders, and arranged to be operated by the keys, and a pivoted latch-frame coöperating with said levers.

40 16. In a cash-register, the combination with a series of operating-keys, of indicators, movable frames having positive and return movements, means positively connecting said frames and indicators, and a series of pivoted
45 levers arranged to be operated by the keys and having graduated stop-shoulders adapted to arrest said frames at the desired points in their return movements.

17. In a cash-register, the combination with

a series of operating-keys, of indicators, a se- 50
ries of movable frames connected to said indicators, a series of graduated stop-levers operated by the keys, and arranged to arrest the movable frames, a pivoted spring-drawn
55 frame for temporarily holding the levers in their set positions, and means connected to the movable parts of the machine for tripping said frame.

18. In a cash-register, the combination with a series of operating-keys, of indicators, a se- 60
ries of movable frames connected to said indicators, a series of graduated stop-levers operated by the keys and arranged to arrest the movable frames, and a pivoted frame for tem-
65 porarily holding the levers in their set positions independently of the keys.

19. In a cash-register, the combination with a series of operating-keys, of indicators, a se- 70
ries of movable frames having positive and return movements, means connecting said frames and indicators and a series of graduated stop-levers operated by the keys and arranged to arrest the movable frames during
their return movements.

20. In a cash-register, the combination with 75
a series of operating-keys, of indicators, a series of movable frames, means connecting said frames and indicators, a series of graduated stop-levers operated by the keys and arranged to arrest the movable frames and
80 means for temporarily holding the levers in their set positions independently of the keys.

21. In a cash-register, the combination with a series of operating-keys, of indicators, mov- 85
able frames having positive and return movements and arranged to be elevated by the keys, means connecting said frames and indicators, a series of pivoted levers having graduated stop-shoulders for arresting said
90 frames during their return movements and projections on the keys arranged to operate said levers.

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

JOSEPH P. CLEAL.

Witnesses:

IRA BERKSTRESSER,
WM. MCCARTHY.