

No. 744,478.

PATENTED NOV. 17, 1903.

J. M. BUTCHER & A. E. PARNALL.
CHANGE MAKER.

APPLICATION FILED FEB. 9, 1903.

NO MODEL.

7 SHEETS—SHEET 1.

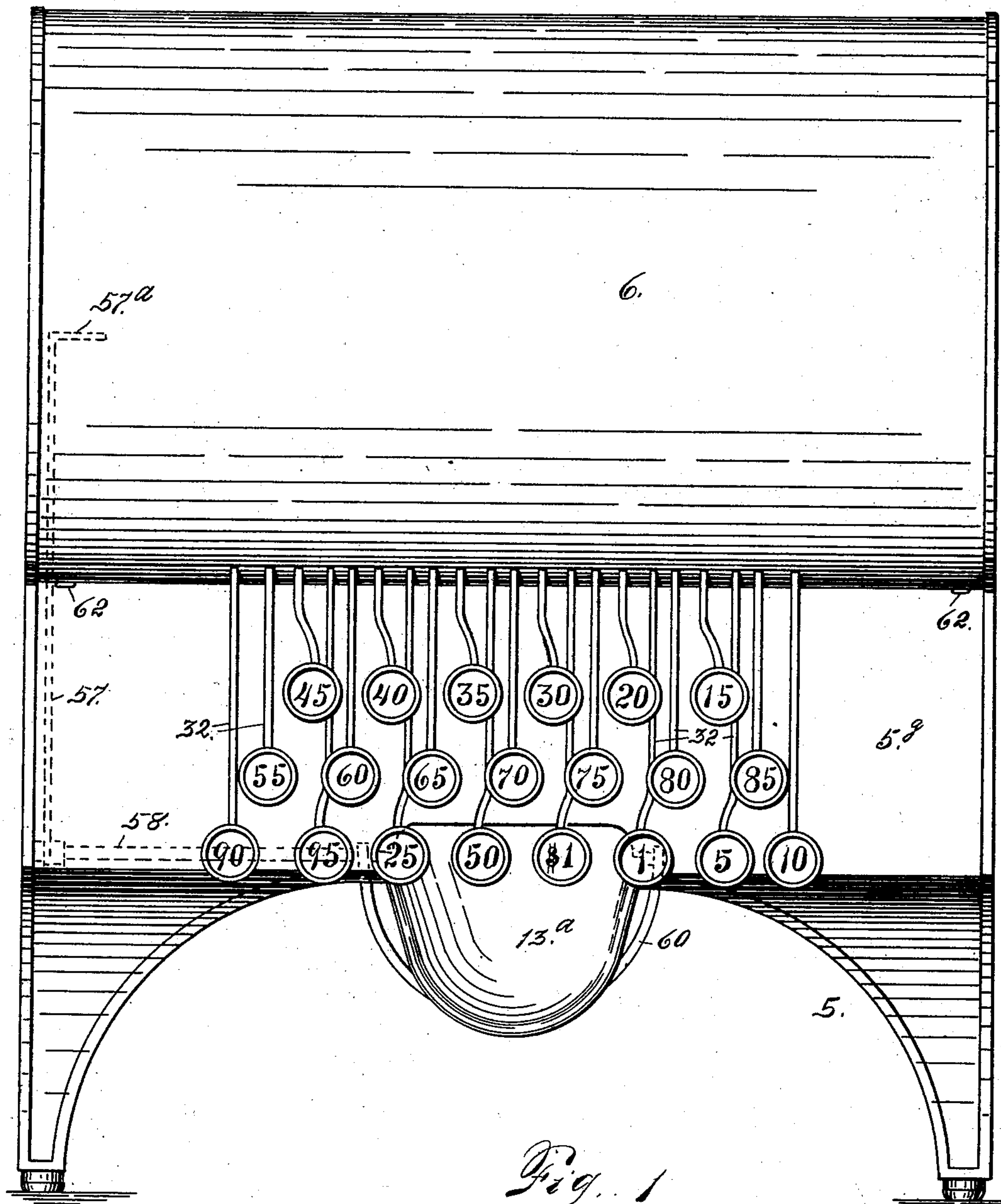


Fig. 1

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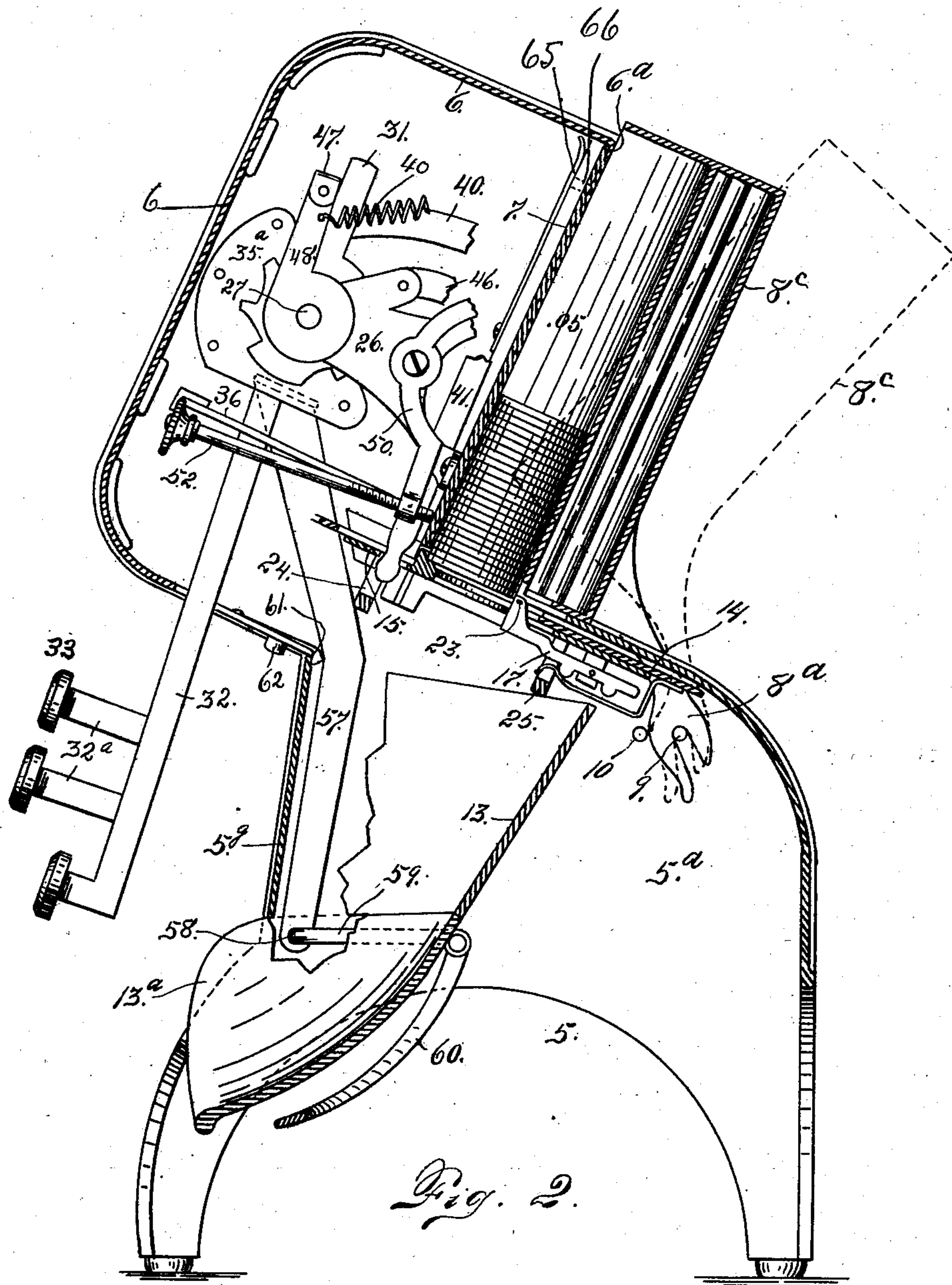


Fig. 2.

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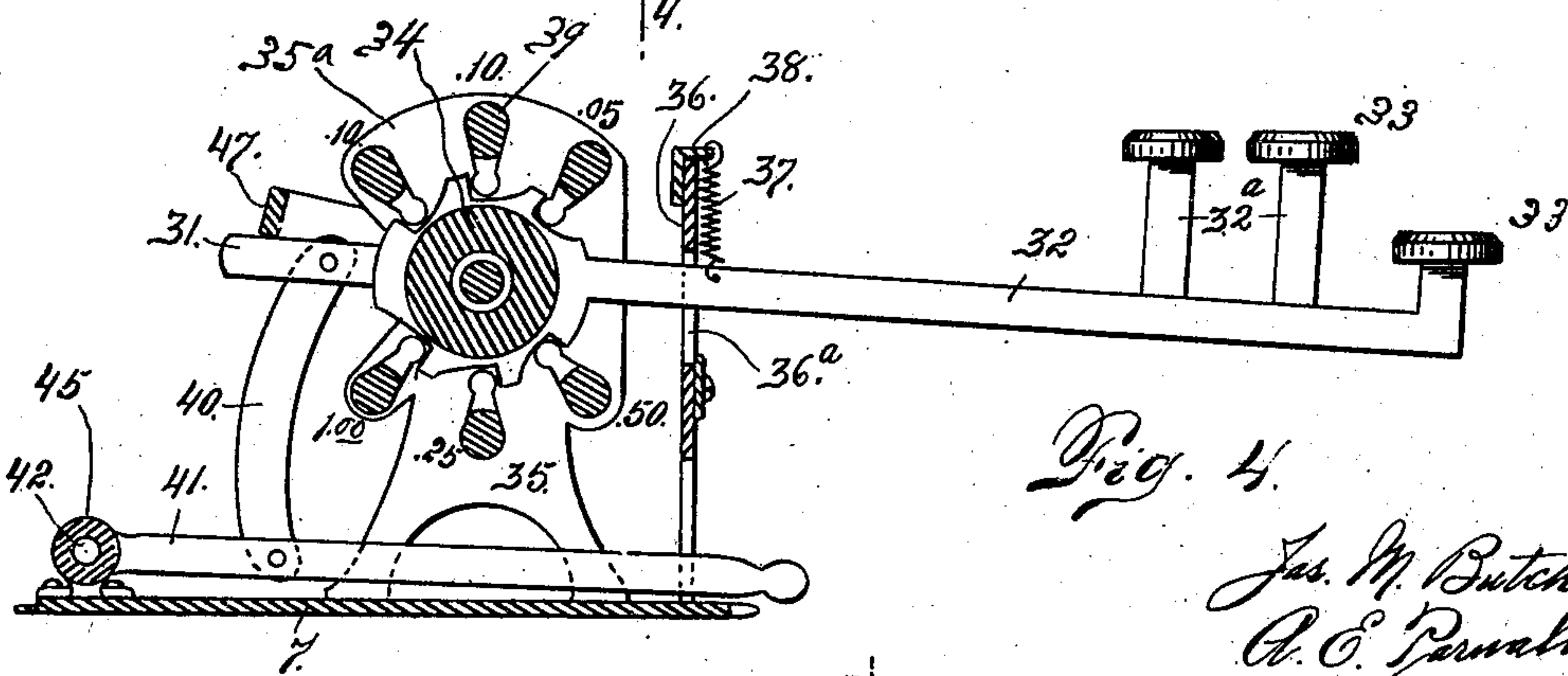
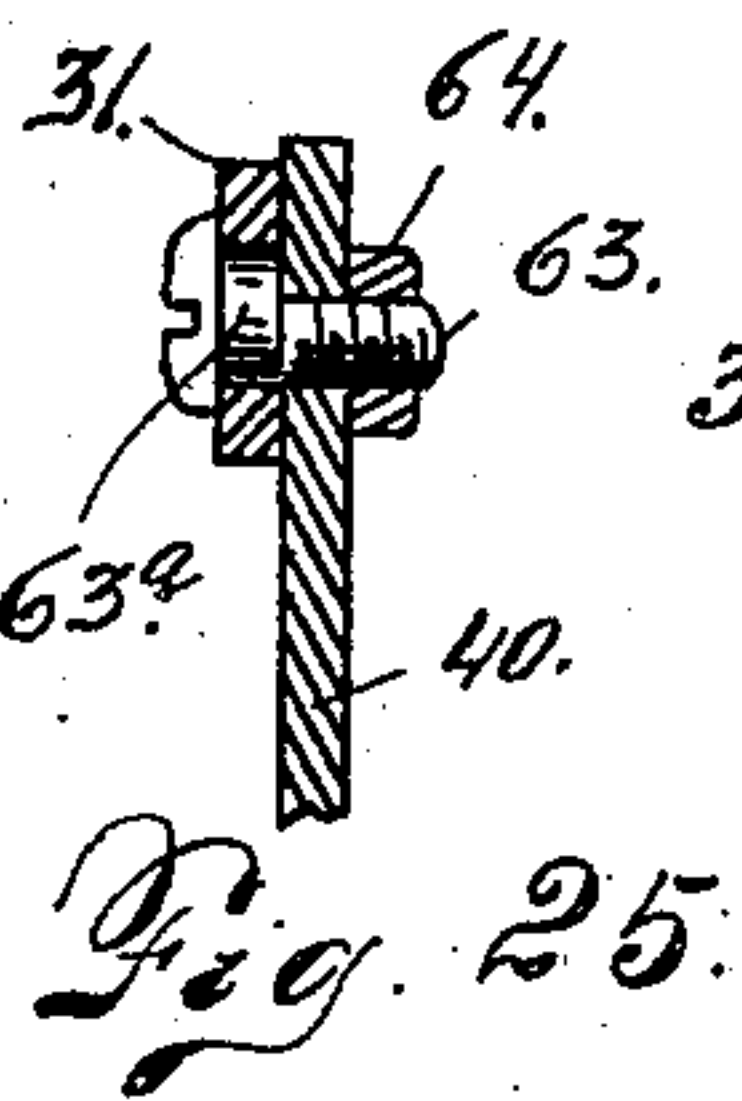
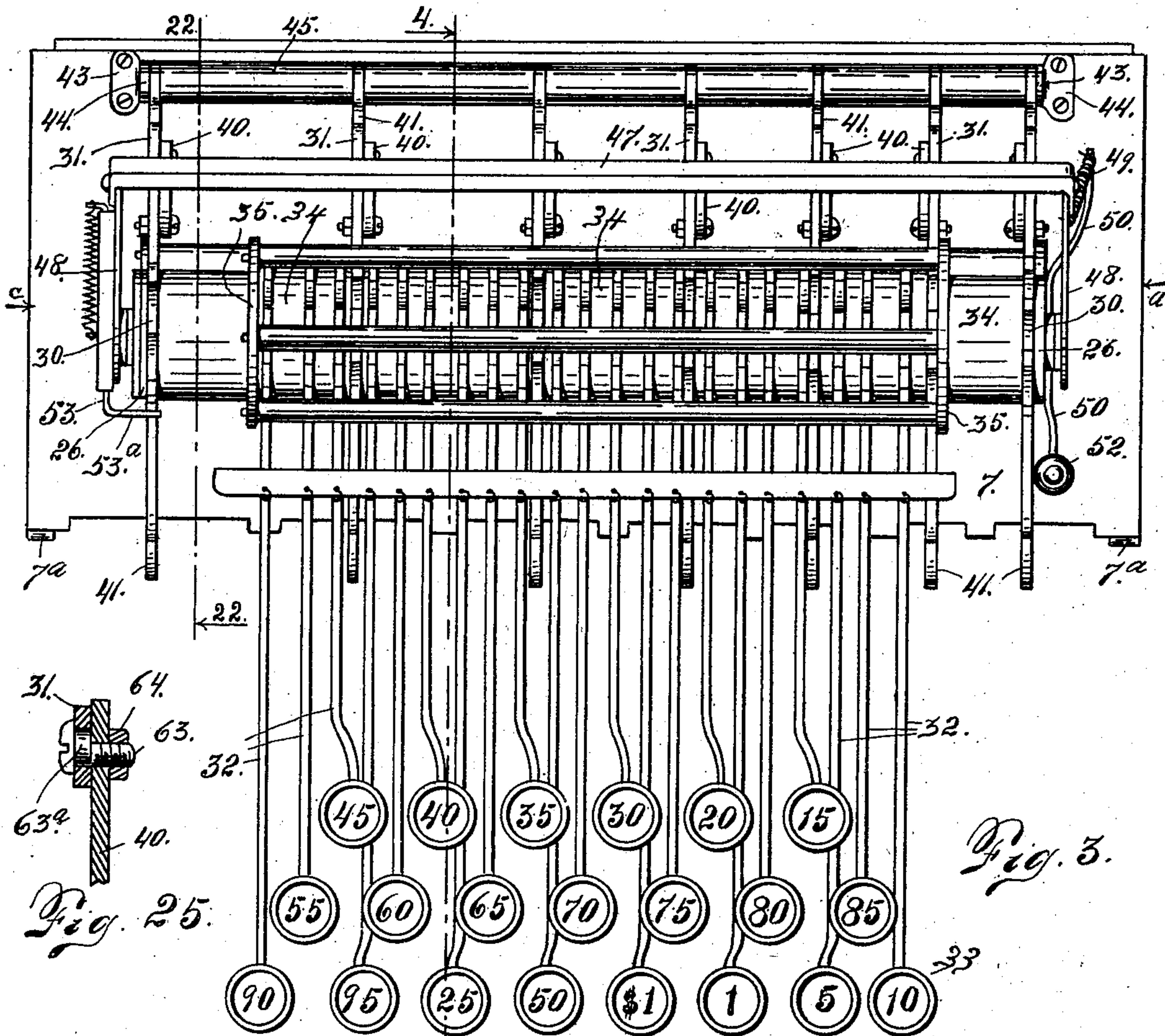
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7 SHEETS—SHEET 3.



Witnesses
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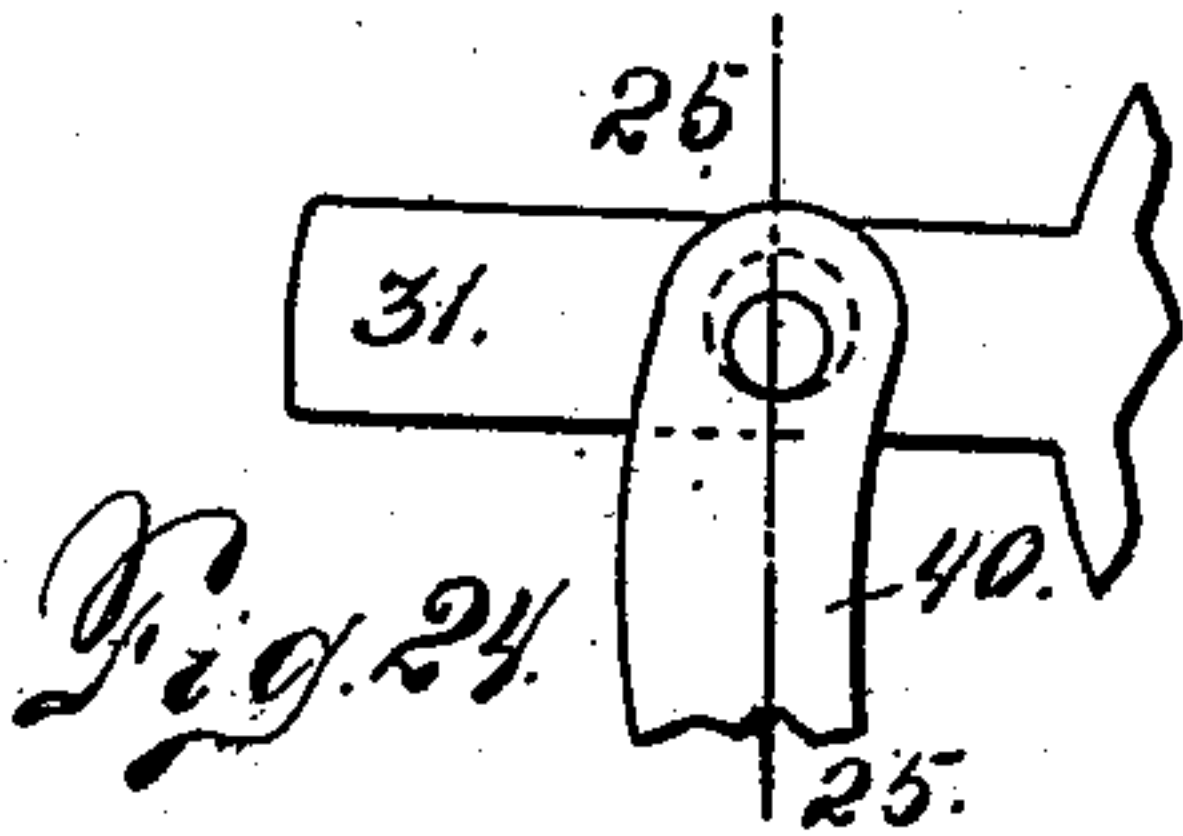


Fig. 4.

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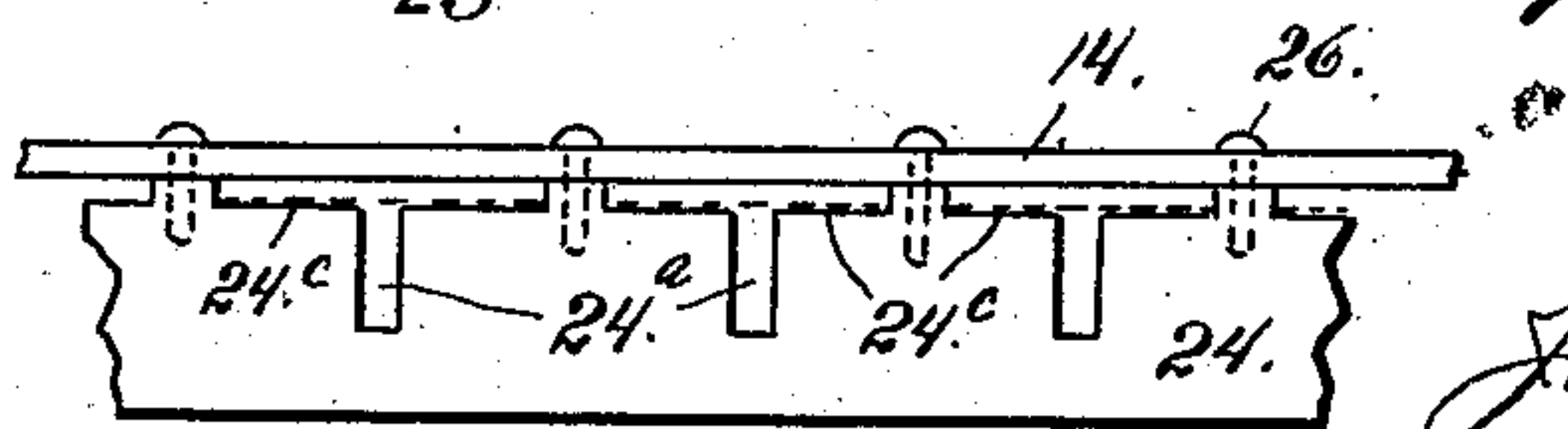
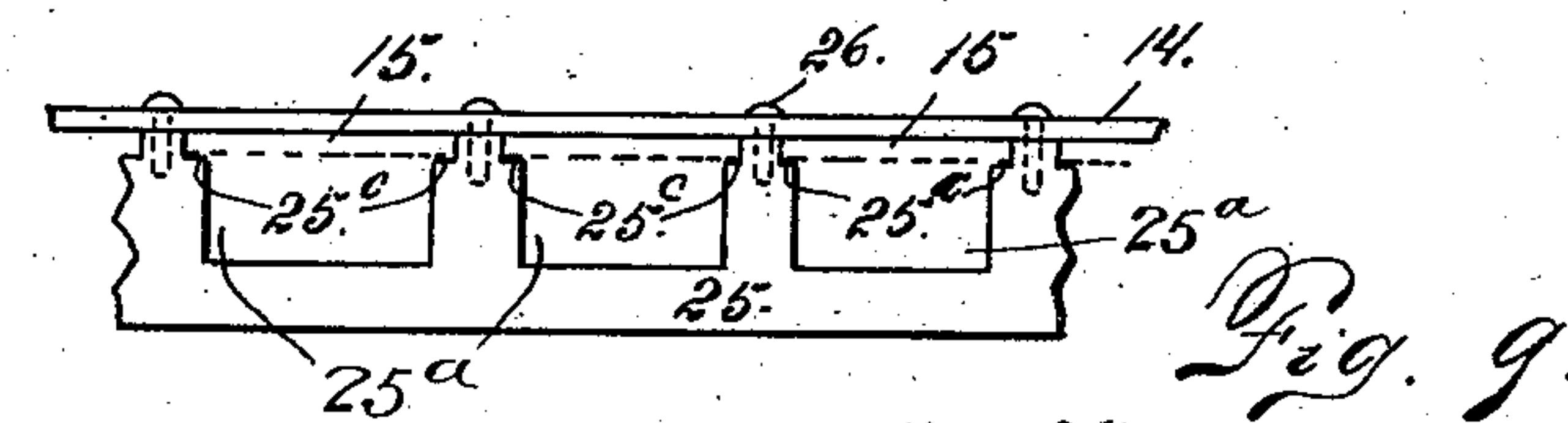
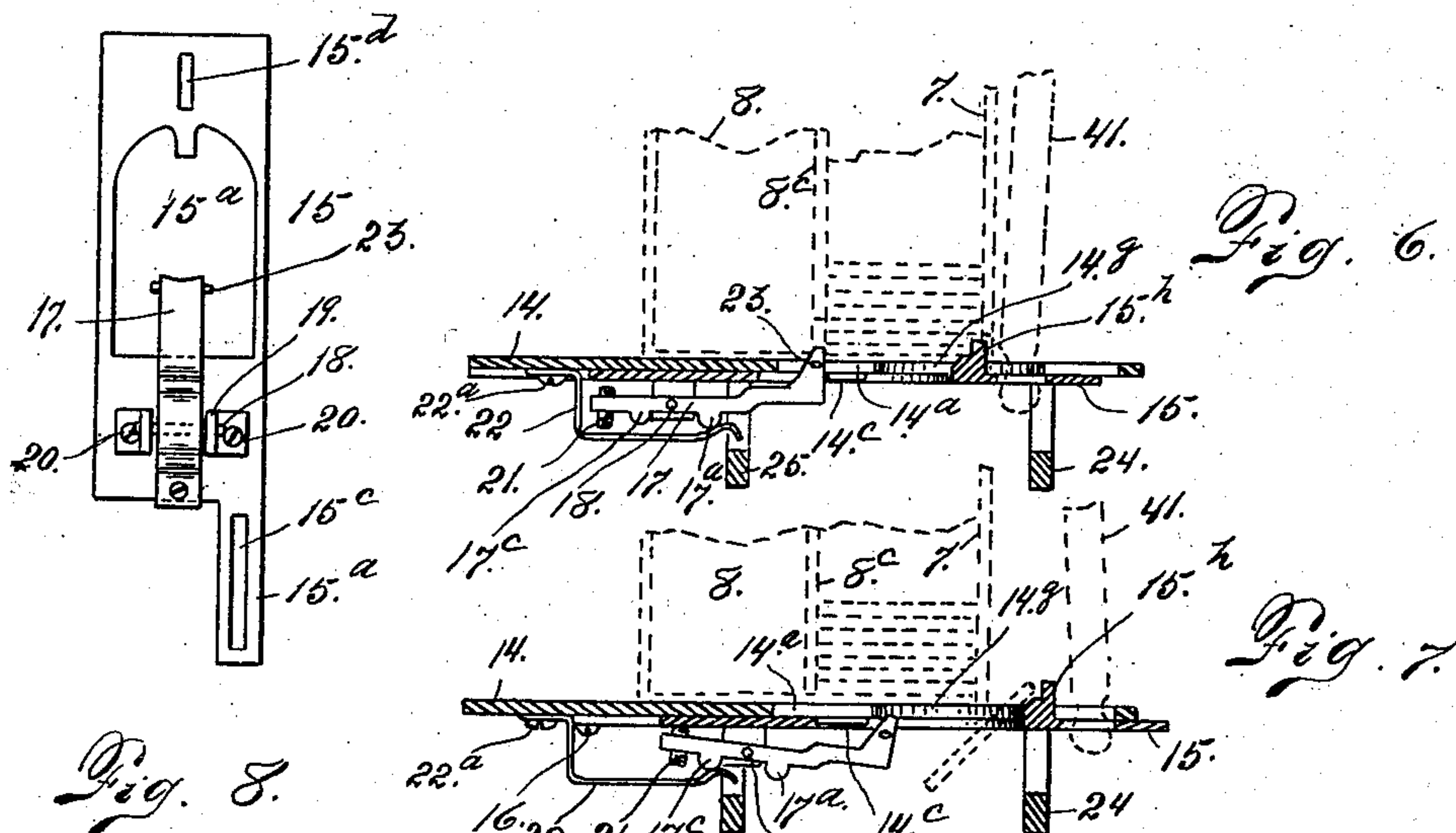
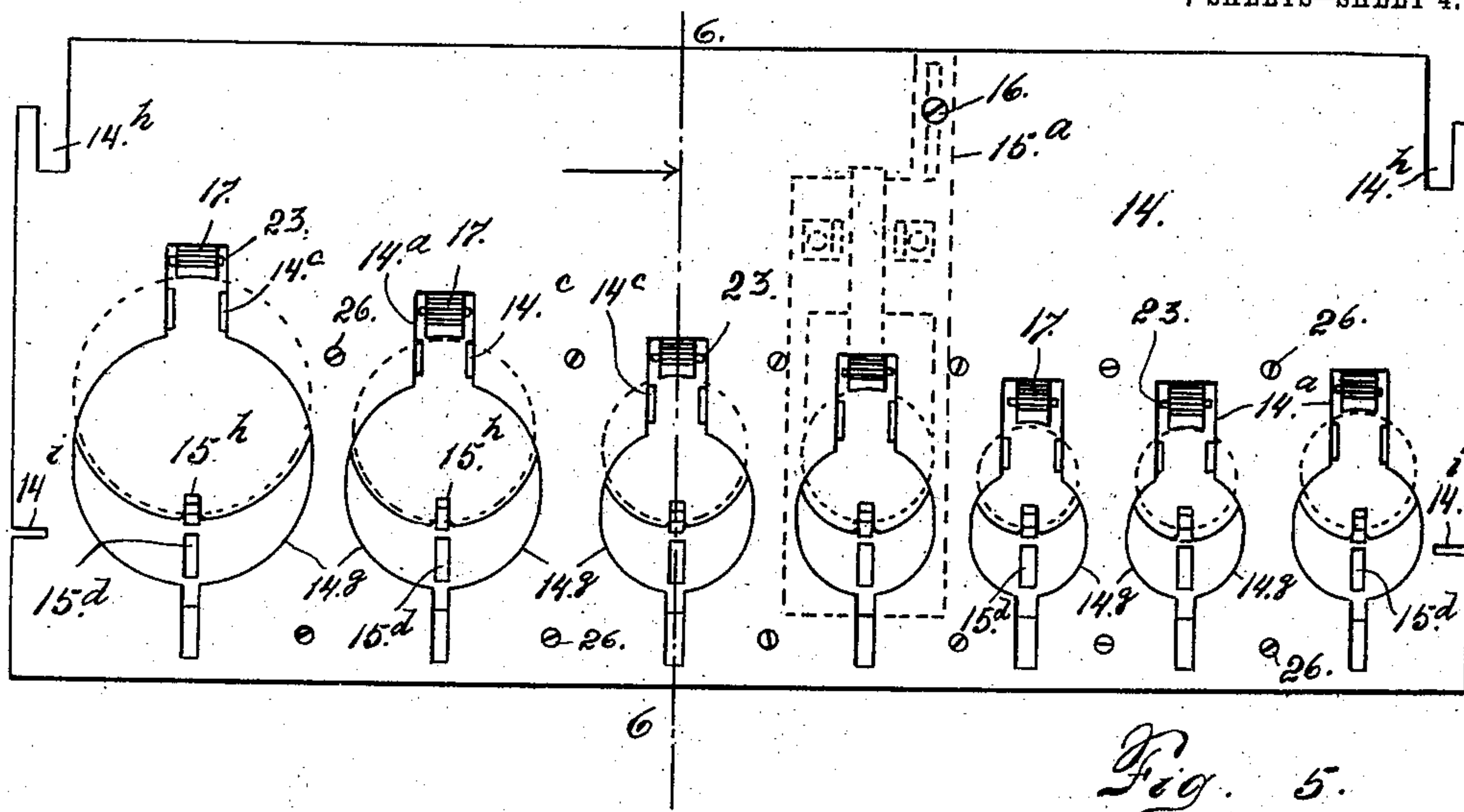
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APPLICATION FILED FEB. 9, 1903.

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7 SHEETS—SHEET 4.



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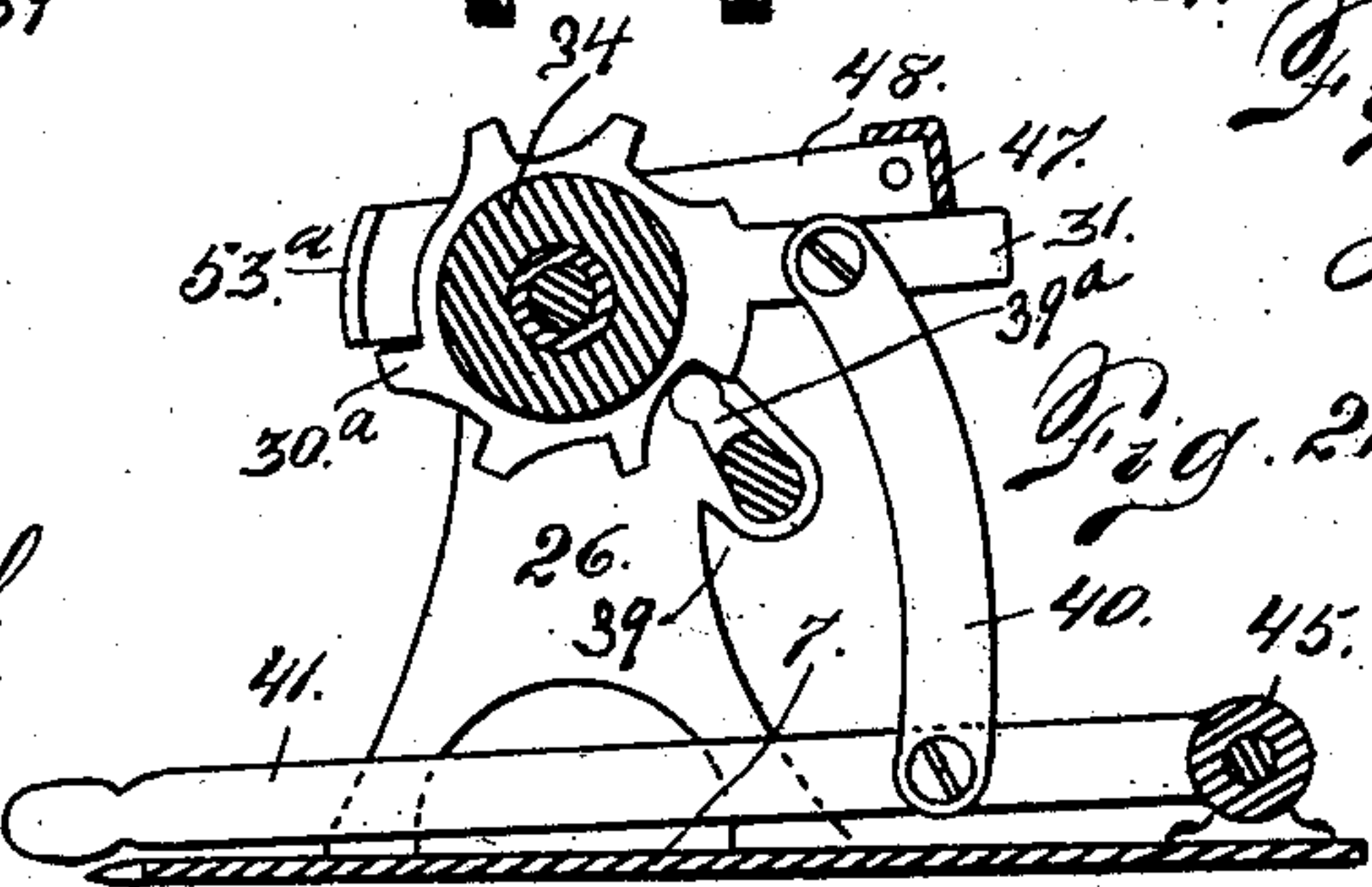
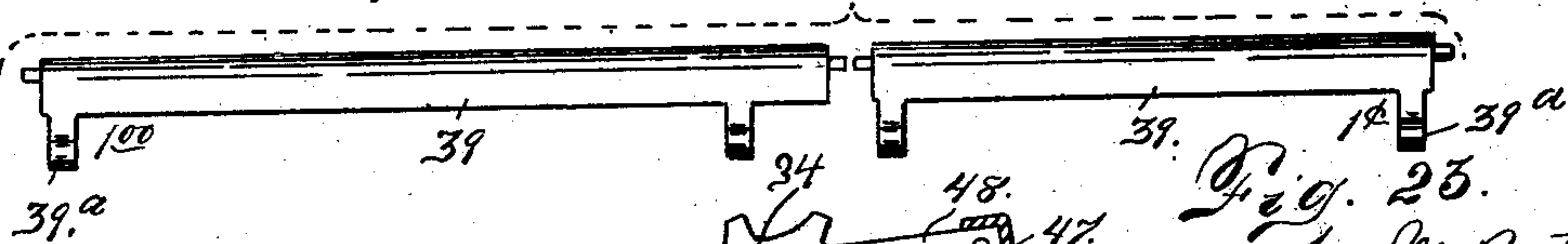
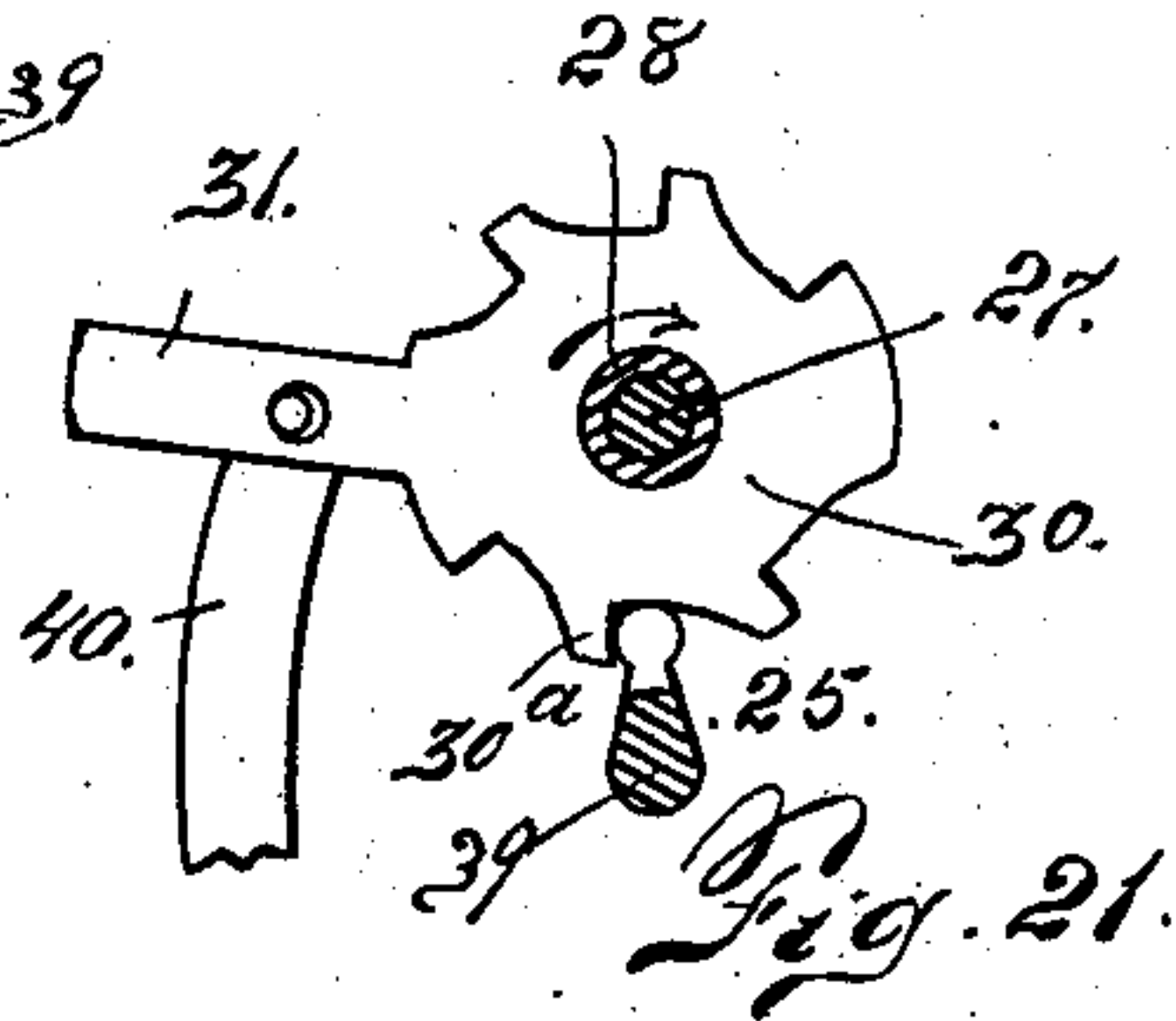
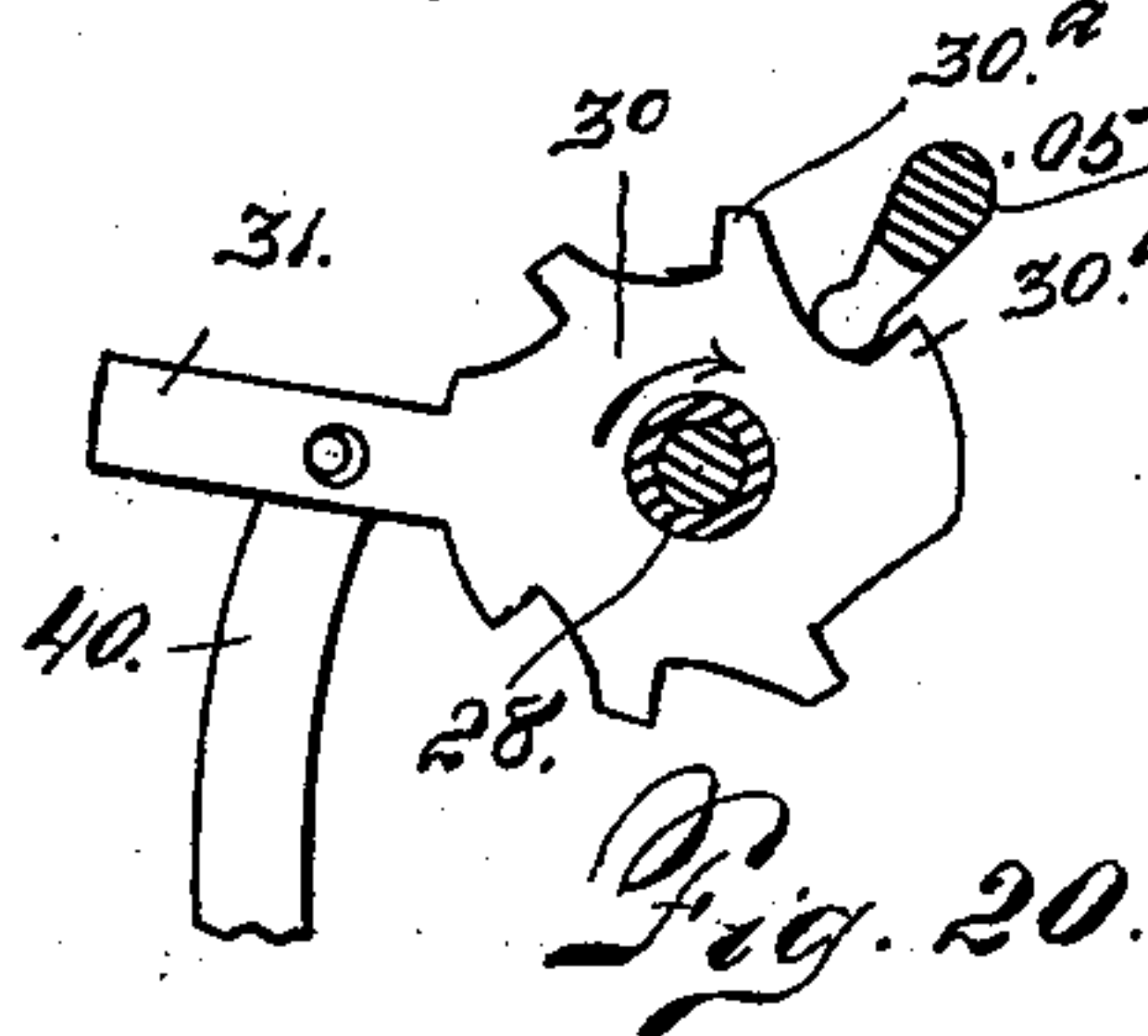
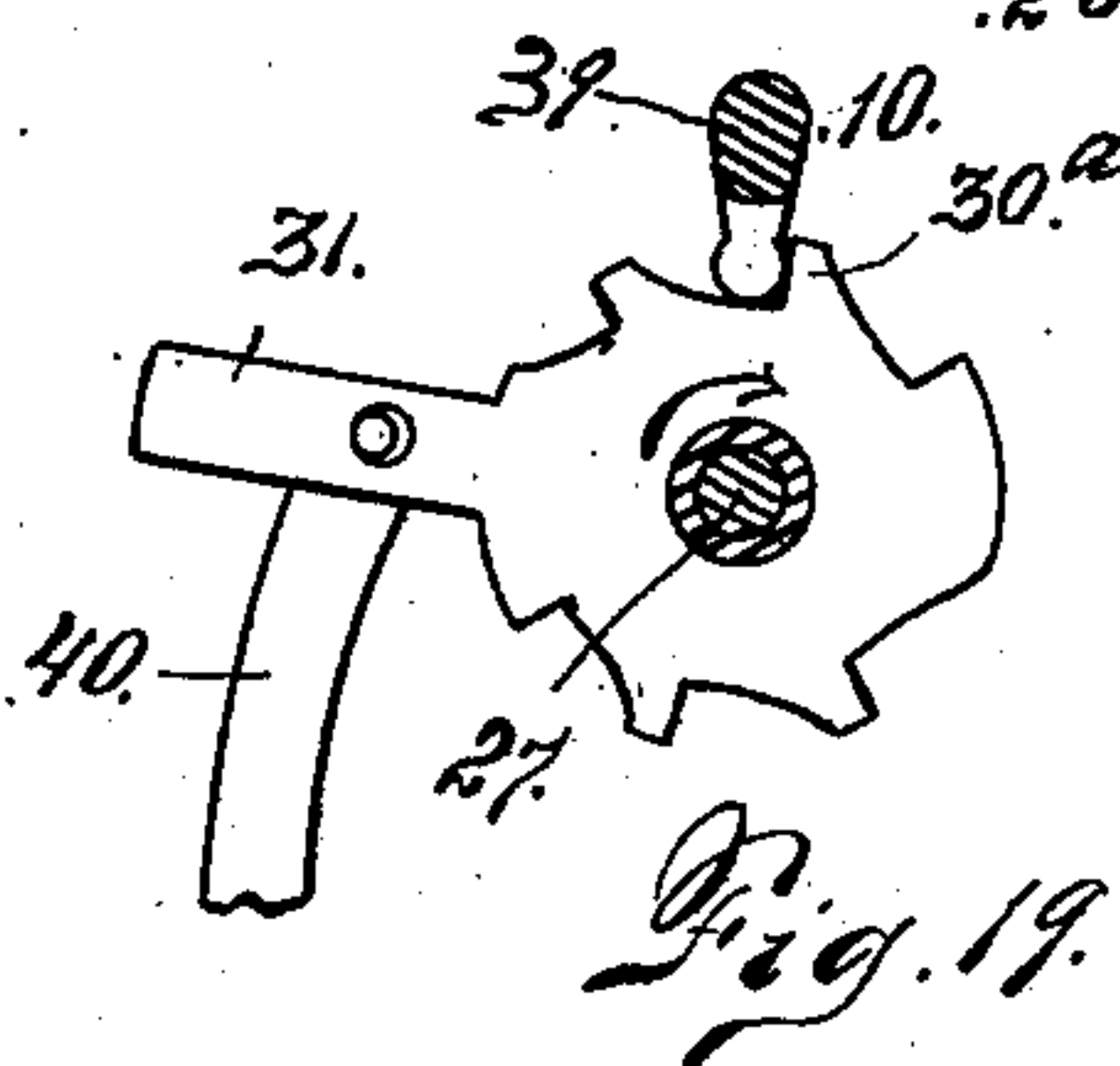
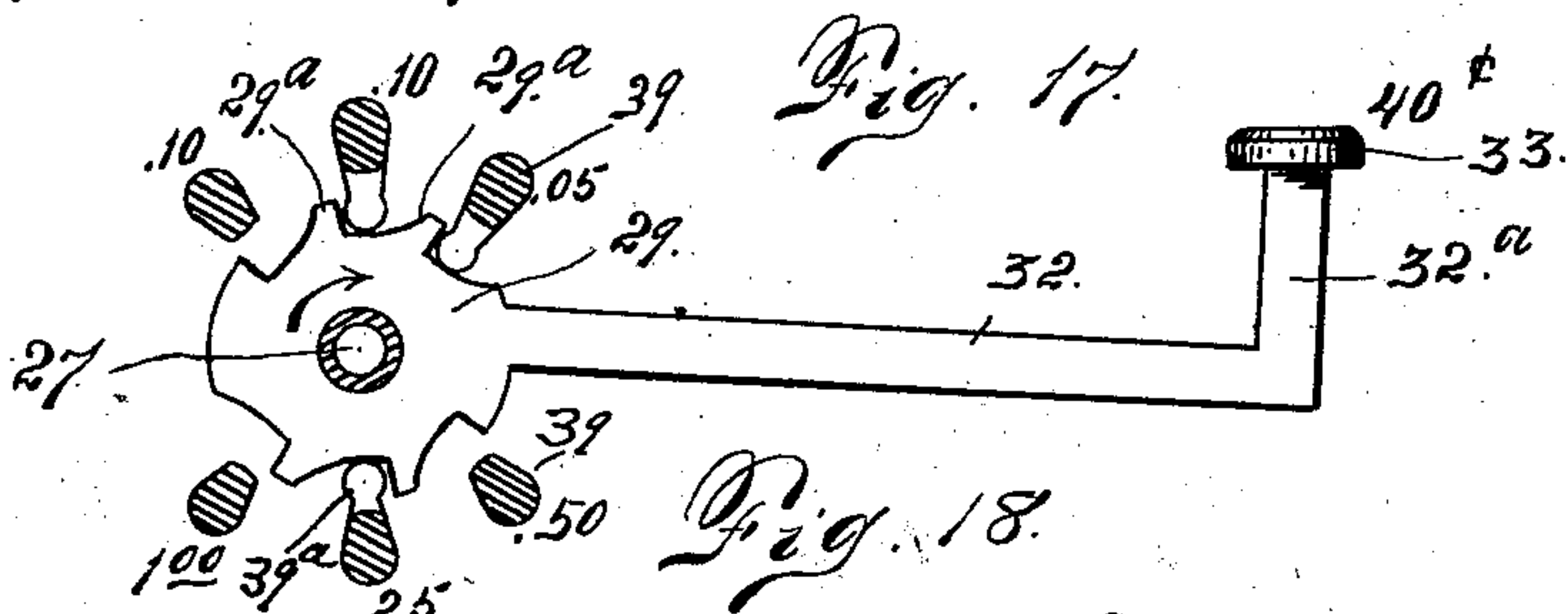
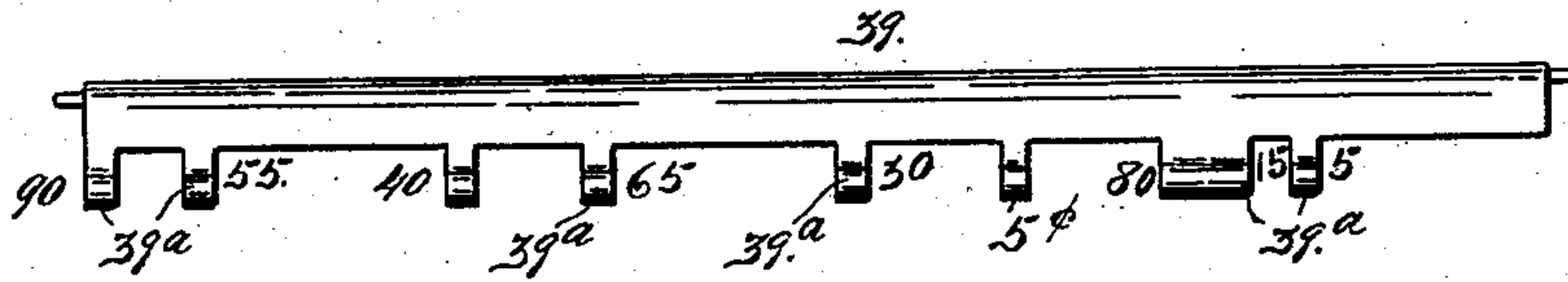
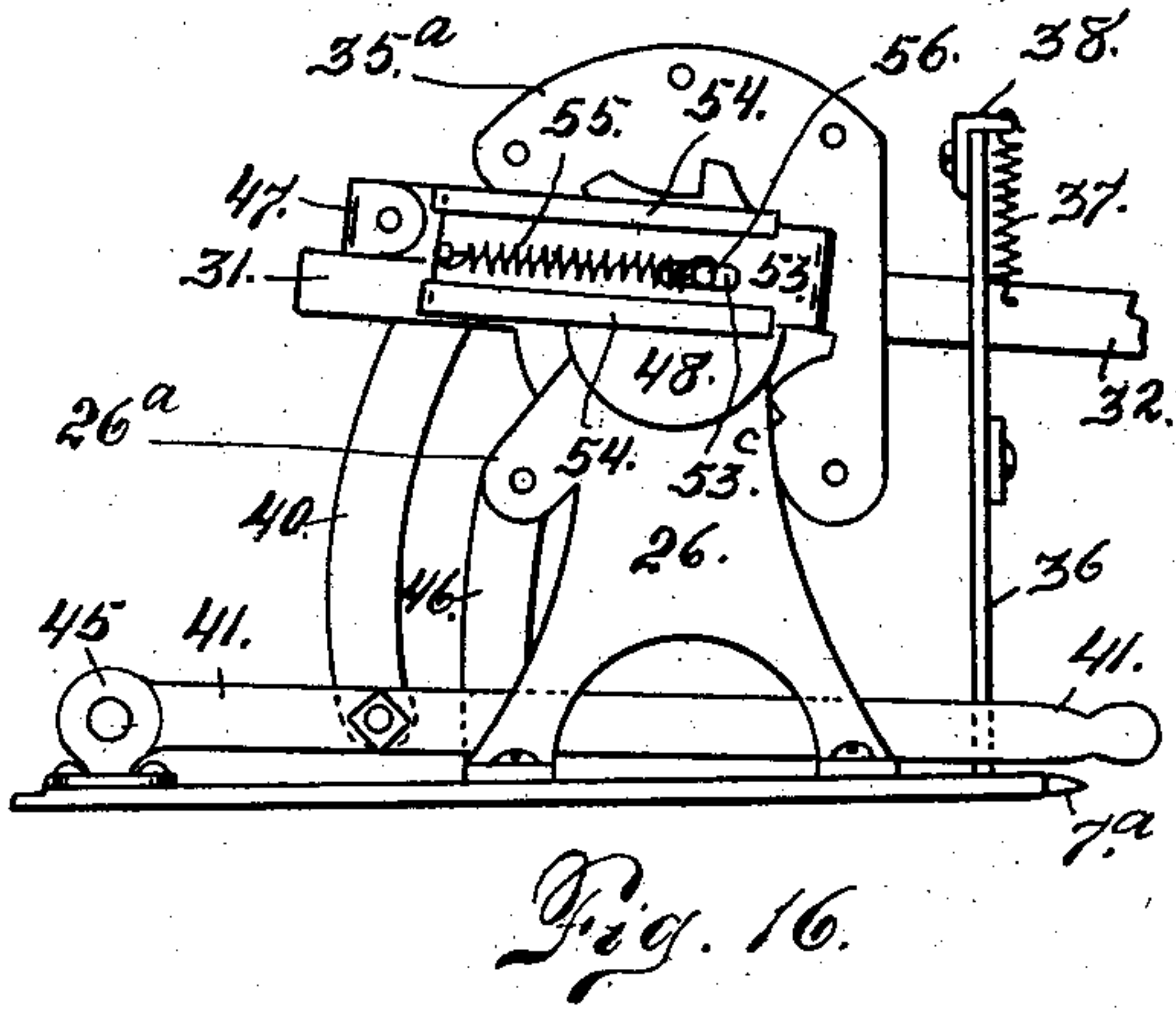
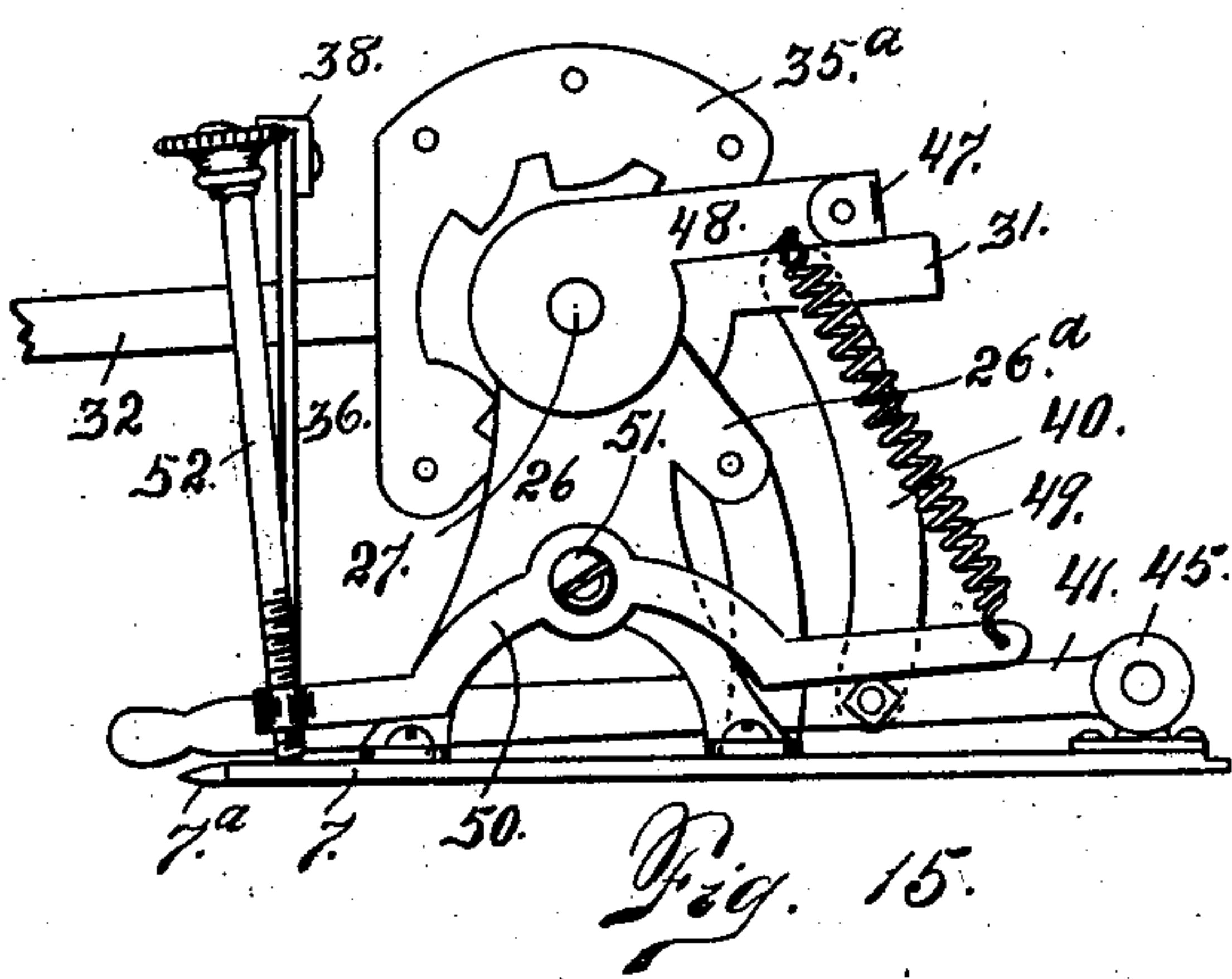
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CHANGE MAKER.

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NO MODEL.

7 SHEETS—SHEET 6.



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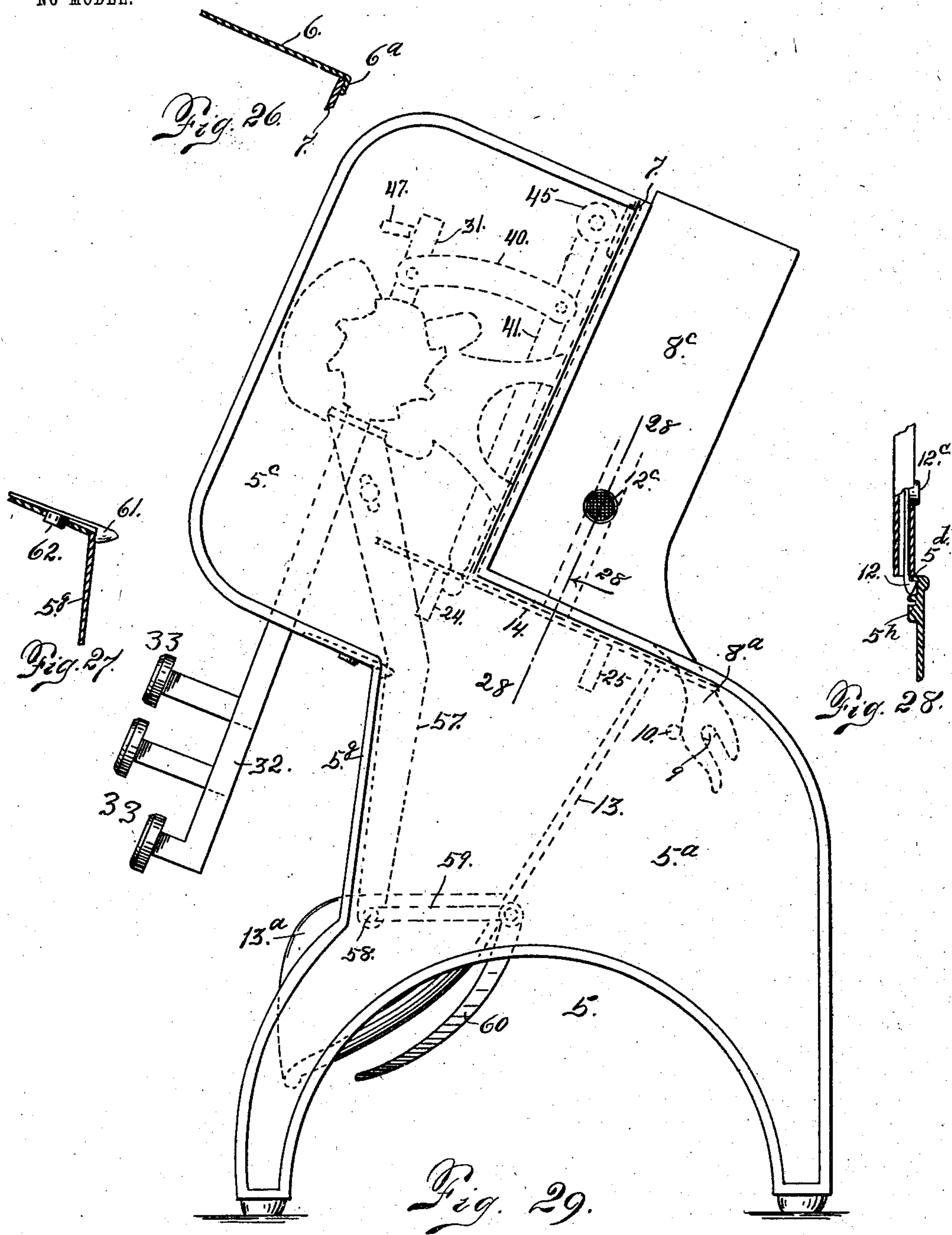
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NO MODEL.

7 SHEETS—SHEET 7.



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UNITED STATES PATENT OFFICE.

JAMES M. BUTCHER AND ARCHIE E. PARNALL, OF ST. LOUIS, MISSOURI,
ASSIGNORS TO THE AMERICAN AUTOMATIC CHANGE MAKER COMPANY,
OF CHICAGO, ILLINOIS.

CHANGE-MAKER.

SPECIFICATION forming part of Letters Patent No. 744,478, dated November 17, 1903.

Application filed February 9, 1903. Serial No. 142,681. (No model.)

To all whom it may concern:

Be it known that we, JAMES M. BUTCHER and ARCHIE E. PARNALL, citizens of the United States of America, residing at the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Change-Makers; and we do 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 appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in means for delivering coins of the various denominations employed in commercial transactions either singly or combined, according to the wish of the operator and according to the amount of change required by the transaction. Hence the invention may be properly termed a "change-maker." The coin delivery, displacing, or ejecting acts are accomplished by pressing keys which are connected with a series of toothed disks or rings revolubly mounted and arranged to act on rock-bars, which in turn act on another series of toothed disks mounted on the same axis and connected with the coin displacing, ejecting, or delivery mechanism.

This invention may be considered an improvement on the construction set forth in the Letters Patent of the United States No. 707,065 and dated August 12, 1902.

Having briefly outlined the construction and the function it is intended to perform, it will now be described in detail, reference being made to the accompanying drawings, in which is illustrated an embodiment thereof.

In the drawings, Figure 1 is a front elevation of the machine. Fig. 2 is a side elevation of the same, partly in section and partly broken away. Fig. 3 is a plan view of the major portion of the operating mechanism shown detached from the body of the machine or from the casing. If it be assumed that this mechanism occupies the same position as when assembled in the machine, this could be called a "front" view. Fig. 4 is a section taken on the line 4 4, Fig. 3. Fig. 5 is

a top or plan view of the plate which when the parts are assembled extends below the coin-holding rack. This plate carries the devices which act directly on the lowermost coins of the coin-rack during the coin-ejecting or coin-displacing acts. Fig. 6 is a section taken on the line 6 6, Fig. 5, a portion of the coin-tray and the lever which actuates the coin-ejecting slide being indicated by dotted lines. In this view the parts are shown in the normal position previous to the coin ejecting or displacing movement of the slide. Fig. 7 is the same as Fig. 6, showing the slide and its coin-displacing dog in the forward position, the displaced coin being in the act of falling. Fig. 8 is an underneath view of the slide carrying a coin-displacing dog. Figs. 9 and 10 illustrate two parallel bars attached to the under surface of the plate shown in Fig. 5. Fig. 11 is a front view of the coin-rack detached from the casing and shown partly in section to illustrate the locking-spring. Fig. 12 is an underneath view of the same. Fig. 13 is a sectional view of the coin-rack. Fig. 14 is a side elevation of the same. Fig. 15 is an end elevation of the mechanism illustrated in Fig. 3 viewed from the right or in the direction indicated by the arrow *a*. Fig. 16 is an elevation of the opposite end of the same viewed in the direction of the arrow *c*. Fig. 17 is a detail view illustrating a rocking bar forming the connecting or operating medium between the toothed key-lever disks and the toothed disks for actuating the coin-displacing mechanism. Fig. 18 is a side elevation of a key-lever with its toothed disk, the rocking bars and the hollow shaft being shown in section. Figs. 19, 20, and 21 illustrate the three coin-displacing disks actuated by the movement of the key-lever shown in Fig. 18. Fig. 22 is a section taken on the line 22 22, Fig. 3, viewed in the direction of the arrow. Fig. 23 is a detail view illustrating a double rock-bar or two rock-bars having their axes in line. One of these bars actuates the one-cent-coin-displacing mechanism and the other bar the dollar-coin-displacing mechanism. Fig. 24 is a side elevation illustrating the eccentric connection between a coin-displacing disk and the

link which leads to the coin-displacing lever, the parts being shown on a larger scale than in the other views. Fig. 25 is a section taken on the line 25 25, Fig. 24. Fig. 26 is a fragmentary section taken through the front housing, showing its connection with the end part of the frame. Fig. 27 is a similar section illustrating the connection between the lower part of the said housing and the frame or casing. Fig. 28 is a section taken on the line 28 28, Fig. 10, illustrating the locking connection between the coin-rack and the casing. Fig. 29 is a side elevation of the machine.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate the casing as a whole, composed of the lower part 5^a and the upper part 5^c. This upper part 5^c consists of two parallel end parts. The opening between these end parts is closed in front when all the mechanism is assembled by a detachable housing 6 and in the rear by a removable plate 7, carrying most of the operating mechanism of the machine. In the rear of the plate 7 is located a coin-rack 8, tilted slightly rearwardly from the vertical and occupying a position parallel with the plate 7. This rack is removable at will, whereby it may be placed in a safe or locked up when desired. The rack is provided with two arms 8^a, which extend downwardly and rearwardly, their free extremities being bifurcated or slotted to straddle pins 9, fast in the casing. Only one of these pins is shown, and that by dotted lines in Fig. 2. The rear part of the casing is open to receive the arms 8^a of the coin-rack and allow the latter to be tipped rearwardly on the pins 9 as pivots a limited distance, the casing being provided with pins 10, (only one being shown by dotted lines in Fig. 2,) which engage the arms 8^a and limit the rearward movement of the rack. This rack is locked in the upright position by two spring dogs or catches 12, located forward of the arms 8^a and adapted to catch under the upper edge 5^d of the rear part of the casing when the rack is in the position for use. The dogs 12 are connected with leaf-springs 12^a, controlled by buttons 12^c, which protrude through openings formed in the end plates of the rack. Hence by pressing these buttons the rack may be unlocked and tilted rearwardly to expose the coin-receptacles. These receptacles, as shown in the drawings, are seven in number and adapted to hold dollars, half-dollars, quarter-dollars, nickels, dimes, and pennies, there being two dime-receptacles.

In Figs. 11 and 12 of the drawings the coin-receptacles are designated according to the denomination of the coins which they hold. The bottoms of the coin-receptacles are provided with ledges 8^e, upon which the coins rest. These ledges are formed by cutting recesses of suitable shape in the bottom 8^d, and they are indicated by dotted lines in Fig. 12. The bottom of the rack is slotted,

as shown at 8^e, to receive the coin-displacing dogs. The rear wall of each coin-receptacle is also provided with a vertical slot 8^h for the same purpose. The openings in the coin-rack bottom forward of the ledges allow the coins to drop through when displaced into the coin-hopper 13 of the casing, said hopper being provided with a discharge-mouth 13^a. The coin-rack is closed at the top by a plate 8ⁱ. The coins are inserted from the front when the rack is tilted rearwardly on its hinge-pin, as heretofore explained.

Slidably and movably mounted in the casing underneath the coin-rack is a plate 14, to the under surface of which is slidably connected a number of small plates 15, one for each coin receptacle or holder of the coin-rack above. The plates 15 are all of the same construction, varying only in size. Hence a description of one, together with the parts carried by it, will be sufficient. One of these slides is shown in detail in Fig. 8, which is an underneath view, the same slide being indicated by dotted lines in Fig. 5. Each slide 15 is attached to the under surface of the plate 14 by a set-screw 16, which passes through a slot 15^c, formed in a rearward projection 15^a, the screw being threaded in the plate 14. Upon the under surface of each slide 15 is pivotally mounted a dog 17, by means of a pin 18, passing through two ears 19, secured to the slide by screws 20. This dog is provided with a set-screw 21 in its rear extremity, and its forward extremity projects upwardly through a slot 14^a, formed in the plate 14, the slide having an opening 15^a to allow the dog extremity to pass upwardly; also to make room for the displaced coin to pass downwardly when the slide is at its forward limit of movement. The dog 17 is provided with two downwardly-projecting lugs 17^a and 17^c, located on opposite sides of its pivot or fulcrum 18. When the dog is at its rearward limit of movement, a leaf-spring 22, attached to the plate 14 at 22^a, engages the forward lug 17^a and supports the dog in the position shown in Fig. 6, with its nose immediately in the rear and resting against the rear edge of the lowermost coin in the coin-receptacle above. As the slide is moved forwardly, the coin is displaced and falls downwardly, and as soon as the dog reaches its forward limit of movement and is ready to return the spring 17 engages the rear lug 17^c of the dog and forces the nose of the latter downwardly below the lowermost coin of the coin-stack above, so that the return movement of the slide may be accomplished without hindrance or being retarded by the downward pressure of the stack of coins. The set-screw 21 limits the downward movement of the nose of the dog. To prevent the nose of the dog from moving downwardly until it has performed the coin-displacing act or function, the dog is provided with a small pin 23, which projects on opposite sides, and these pin extremities ride on narrow ledges 14^c of the plate 14. As soon

as the dog has completed the coin-displacing act the pin 23 leaves the ledges 14^c and its nose drops downwardly to the position shown in Fig. 7. The slide 15 has an upwardly-projecting lug 15^b on its forward portion, said lug being provided with a shoulder in the plane of the under surface of the coin resting on the coin-ledge 8^c. This shouldered lug aids in supporting the coin until the rear edge of the latter is displaced from the supporting-ledge of the coin rack or tray.

The plate 14 is provided with openings 14^e, through which the displaced coins fall. The dotted circles in Fig. 5 indicate the position of the coins when the parts are assembled.

The forward extremity of each slide 15 is slotted, as shown at 15^d, to receive the lower extremity of the slide-actuating lever hereinafter explained. The plate 14 slides in ways 5^h, formed in opposite sides of the casing. (See Fig. 28, where one of these ways is shown.) The plate 14 is provided with reinforcing-bars 24 and 25, which extend lengthwise of the plate and are secured in place by screws 26. These bars are slotted, as shown at 24^a and 25^a, respectively, to allow the operating parts to move freely. These bars are also provided with shoulders 24^c and 25^c, respectively, upon which the slides 15 rest. The plate 14 is provided with slots 14^h to make room for the arms 8^a of the coin-rack. This plate is also provided with slots 14ⁱ, which are engaged by projections 7^a, formed on the lower edge of the plate 7 when the parts are assembled, whereby the plate 14 is locked against removal until the plate 7 is detached.

The mechanism mounted on and supported by the plate 7 will now be described, and special reference will be made to Figs. 3, 4, and 15 to 25. Mounted on the plate 7 near its extremities are two brackets 26, which project forwardly from the plate at right angles to its plane. In these brackets is journaled a shaft or spindle 27, which extends parallel with the plate and is surrounded by a tube or hollow shaft 28, upon which are loosely or revolubly mounted two sets of toothed disks 29 and 30. The disks of the two sets are exactly alike, but their position is reversed, so that the straight side of the teeth of the two sets of disks project in opposite directions. Each disk of each set of disks has six teeth designated 29^a and 30^a, respectively. As shown in the drawings, there are seven disks 30, one for each coin-receptacle, and they may be called "coin-displacing disks," as they are connected with and operate the coin-displacing mechanism. Each disk 30 has a short upwardly-projecting arm 31. Each disk 29 has a comparatively long downwardly-projecting arm 32, provided with a forward projection 32^a at its lower extremity. These long arms 32 may be called "key-levers," as each is provided with a key 33, applied to the extremity of the part 32^a. Upon these keys are indicated the various amounts to be

displaced by the mechanism or when the keys are pressed. The one-cent key is designated "1," the one-dollar key by "\$1," and the other keys by numerals from "5" to "95," increasing by a common difference of five between these extremes. There are, as shown in the drawings, twenty-one keys, therefore twenty-one key-levers and the same number of disks 29. The housing-plate 6 is slotted to allow the key-levers to pass through and move in the performance of their function. The various disks 29 and 30 are spaced or separated by washers 34, mounted on the hollow shaft 28. A short distance from each bracket 26 is located another similar bracket, 35. These two brackets 35 are secured to the plate 7 and are open to receive the hollow shaft or tube 8, which forms a spacing device separating the two end brackets 26 and preventing them from crowding the intermediate parts. Two sets of washers 34 are located outside of the brackets 35 and between said brackets and the outermost disks 30, the latter being located adjacent the end brackets 26.

The key-levers 32 extend downwardly in front of the casing when the parts are assembled, as shown in Figs. 1 and 2, whereby the thumb of the operator may press any key, while the same hand is held at the mouth 13^a of the coin-hopper to receive the coins displaced or ejected from the coin-rack by pressing any key. Inside of the housing 6 the key-levers 32 pass through guide-slots 36^a, formed in a forwardly-projecting plate 36, which is secured to the plate 7. Each lever 32 is returned to its normal position after each coin ejecting or displacing movement by a weak coil-spring 37, having one extremity connected with the lever, while the other extremity is connected with the upper edge of the plate. As shown in the drawings, an angle-piece 38 is applied to the outer edge of the plate 36, forming a direct support for the springs 37. The brackets 35 are provided with plates 35^a, which project beyond the toothed disks 29 and 30 and form the support for five rocking bars 39, whose extremities are journaled in the said plates. These bars are arranged parallel with the shaft 27 and are provided with inwardly-projecting teeth or lugs 39^a, the latter being engaged by the teeth of the disks 29 and 30 from opposite sides. There are seven of these rocking bars, one for each coin-stack. Each bar 39 has one tooth which engages a tooth of a disk 30 and may have a number of teeth engaged by teeth of disks 29.

The arm 31 of each disk 30 is connected by a link 40 with a lever 41, one extremity of which is fulcrumed on a shaft or spindle 42, mounted in bearings 43, made fast to the plate 7, as shown at 44. The extremities of the levers 41 are spaced by tubes or sleeves 45, through which the spindle 42 passes. The extremity of each lever 41 remote from its fulcrum enters the slot 15^d in the forward ex-

5 extremity of the slide 15 and operates the said
 slide as the lever is actuated. When any
 key-lever is pressed, one or more bars 39 are
 actuated by the disk 29, connected with the
 10 key-lever, and the said bars so actuated act in
 turn on the disks 30, which operate levers 41
 through the medium of disk-arms 31 and the
 links 40. The bar 39 (shown in detail in Fig.
 17) is provided with eight teeth 39^a, which are
 15 so arranged that seven of these teeth are en-
 gaged by disks 29 when the parts are assem-
 bled. These eight disks 29 are those whose
 levers 32 carry the ninety-cent, fifty-five-cent,
 forty-cent, sixty-five-cent, thirty-cent, eighty-
 20 cent, fifteen-cent, and five-cent keys. Two
 of the disks 29 engage one tooth 39^a, which is
 wide enough for the purpose, the two disks
 being side by side. In this view the teeth
 39^a, engaged by the various key-lever disks,
 25 are indicated by placing the key designations
 "90," "55," "40," "65," "30," "80," "15,"
 and "5" adjacent the teeth of the bar. Ad-
 jacent the remaining tooth of the bar which
 engages and actuates a coin-displacing disk
 30 is placed the designation "5¢" to indicate
 30 that the movement of the disk 30 by this tooth
 of this particular bar displaces or removes the
 five-cent coin.

The coin-displacing operation will now be
 35 explained by special reference to Figs. 17 to
 20 of the drawings. Assuming that forty
 cents in change is required, the forty-cent
 key is pressed and the disk 29 actuated,
 whereby three rocking-bars 39 are operated
 40 by as many teeth 29^a of the actuated disk 29,
 the latter turning in the direction indicated
 by the arrow in Fig. 18. A tooth 39^a of each
 actuated bar acts on a tooth 30^a of a disk 30
 with the result that three disks 30 are actu-
 45 ated in the direction indicated by the arrows
 in Figs. 19, 20, and 21. The movement of
 these disks operates a set of coin-displacing
 devices or actuates the slides 15 through the
 instrumentality of the parts 31, 40, and 41,
 50 the arrangement being such that in this par-
 ticular case these coins are the ten-cent, five-
 cent, and twenty-five-cent coins, respectively.
 If ninety-five cents in change be required,
 the pressure of the ninety-five-cent key actu-
 55 ates a disk 29, four of whose teeth 29^a act
 on a tooth 39^a of four rocking bars 39, and
 each one of these bars acts on a disk 30 with
 the result that four coins are displaced from
 the coin-rack through the instrumentality of
 60 four sets of coin-displacing devices, these dis-
 placed coins being the fifty-cent, twenty-five-
 cent, and two ten-cent pieces. From this it
 will be understood that each bar 39 is con-
 nected with one set of coin-displacing de-
 65 vices and the different amounts of change
 are obtained by operating different combina-
 tions of these bars.

There are five long bars 39 and two short
 ones, the latter being illustrated in Fig. 23
 70 of the drawings. The long bars 39 are jour-
 naled in the two bracket-plates 35^a, while
 the short bars are journaled at their outer

75 extremities in projections 26^a of the brackets
 26, their inner extremities being journaled
 in a centrally-located bracket 46, secured to
 the plate 7. Each of these short bars 39 has
 two teeth or projections 39^a. One of these
 teeth of one bar is engaged by the disk 29,
 connected with the dollar key-lever, while
 the other tooth of the same bar engages the
 80 disk 30 that actuates the dollar-displacing
 mechanism. One tooth of the other short
 bar is engaged by the disk 29, connected with
 the one-cent key-lever, while the other tooth
 of the same bar engages the disk 30 which
 85 actuates the one-cent set of coin-displacing
 devices.

All of the arms 31 of the disks 30 engage a
 spring-held bar 47, which is located immedi-
 90 ately in front of these arms. The extremities
 of the bar 47 are rigidly connected with two
 arms 48, mounted on the extremities of the
 shaft 27, whereby the bar is permitted a swing-
 ing movement on or with the said shaft as an
 axis. The bar 47 is held normally in en-
 95 gagement with all the arms 31 by a spring 49,
 connected at one extremity with the arm 48
 and at the opposite extremity with one end
 of a lever 50, fulcrumed on one of the brack-
 ets 26, as shown at 51. (See Fig. 15.) The
 100 extremity of the lever 15 remote from its con-
 nection with the spring 49 is provided with a
 threaded opening engaged by a tension-screw
 52, which passes through the opening in the
 lever and engages the plate 7. It is evident
 that by turning this screw the lever may be
 105 rocked on its fulcrum and the tension of the
 spring 49 increased or diminished, as may be
 desired. Hence as any disk 30 is actuated
 the bar 47 is moved in opposition to its hold-
 ing-spring, and as soon as the force acting on
 the disk ceases the bar returns the disk to its
 normal position.

Mounted on the arm 48 adjacent the disk
 30, connected with the dollar-displacing de-
 110 vices, is a slide 53, mounted in ways 54 of the
 arm. This slide 53 is bent at one end at right
 angles to the body of the slide, forming a
 hook or flange 53^a, lying in the plane of the
 dollar-disk 30, but normally held out of en-
 115 gagement with the disk by a spring 55, con-
 nected with the slide at one end and with the
 pin 56 at the opposite end, the said pin being
 fast in the arm 48 and passing through a slot
 53^c, formed in the slide. Whenever the slide
 120 is moved a short distance in opposition to its
 spring, the hook 53^a is brought into engage-
 ment with a tooth 30^a of the dollar-disk 30,
 whereby as any key-lever is pressed the dol-
 lar-disk is actuated through the medium of
 125 the bar 47 of the slide 53. This slide is moved
 to the operative position by an arm 57. (See
 Fig. 29 and dotted lines in Figs. 1 and 2.)
 This arm is slidably mounted at one end of
 the casing, and its upper extremity is pro-
 130 vided with a bent end 57^a, adapted to engage
 the bent end 53^a of the slide 53 when the arm
 57 is actuated. The lower extremity of the
 last-named arm is pivotally connected with

one extremity of a rod 58, the other extremity of said rod being connected with one extremity of a lever-arm 59, whose opposite extremity is made fast to a U-shaped part 60, extending underneath the mouth of the coin-hopper and having its extremities pivoted at opposite sides of the said mouth. By placing the hand underneath the mouth of the hopper the part 60 may be actuated to move the slide 53 to the operative position through the medium of the parts 59, 58, 57, and 57^a every time any key is pressed, whereby an additional dollar may be added to any of the amounts delivered by the coin-displacing mechanism actuated by the several key-lever disks, as will be readily understood.

Attention is called to the fact that all of the disks 29 and 30 are exactly alike and may be cut out by the same die. The arms of the disks 29 are longer than those of the disks 30, and the arms of the two sets of disks project in opposite directions. In other words, the two sets of disks occupy reverse positions; but they are exactly alike and will coincide in every particular when placed side by side with their arms projecting in the same direction. This is an important feature from the standpoint of manufacture. All of the disks 30, with their arms 31, are exactly alike. This is an important advantage in assembling the parts.

The front housing 6 is provided at its rear upper edge with a depending lip 6^a, which passes in the rear of the plate 7 when the parts are assembled. The lower rear edge of the housing is provided with two spring catches or dogs 61, adapted to engage the front part 5^c of the casing when the parts are assembled, whereby the housing is locked in position. The dogs 61 are provided with buttons 62, which protrude through openings formed in the housing. By pressing these buttons upwardly the dogs or catches may be released from the casing and the front housing removed.

There is an adjustable connection between each disk-arm 31 and its link 40, whereby the position of the lever 41 may be regulated and its stroke controlled at will. The stroke or movement of each lever 41 must correspond with the necessary movement of the coin-displacing slide 15. As shown in the drawings, (see Figs. 24 and 25,) this adjustment is effected by means of a screw 63, journaled in the parts 31 and 40. This screw where it engages the arm 31 is provided with an eccentric 63^a. Hence by turning this screw the position of the lever 41 may be changed at will. After adjustment the parts are locked in place by a nut 64, applied to the protruding extremity of the screw.

The facility with which all of the operating parts may be removed from or placed in the casing of the device also constitutes an important feature. This is accomplished by removing three parts—namely, the coin-rack, the plate 7, and the plate 14.

From the foregoing description the use and operation of the improved change-maker will be readily understood. As any key is pressed the key-lever acting on the disk 29 causes the latter in turn to move one or more bars 39, which acting on disks 30 cause the latter to operate the coin-displacing mechanism, whereby a number of coins is removed from the coin-stacks of the rack 8, corresponding with the number of bars 39 actuated, the said coins in the aggregate making the amount of change indicated by the number on the key pressed. The displaced coins fall through the plate 14 into the coin-hopper below and pass thence through the mouth of the hopper into the hand of the operator beneath. If an additional dollar is required in making any amount of change, the device 60 is moved by the hand beneath the hopper-mouth, causing the sliding arm 57 to act on the slide 53, whereby the said slide is made to engage the disk 30, which actuates the dollar-displacing mechanism.

When the parts are assembled, the plate 7 is locked in position by two springs 65, each of which carries a stud 66. These studs engage recesses formed in the plate 7. (See Fig. 2.) Only one spring, with its stud, is illustrated in the drawings. The plate 7 may be unlocked for removal from the casing by pushing the upper extremities of the springs 65 forwardly sufficiently to release the studs 66 from the shallow recesses in the plate.

Having thus described our invention, what we claim is—

1. In a coin-delivery device or change-maker, the combination with a suitable casing and coin-displacing devices, of a coin-rack mounted independently of the said devices and arranged to tilt rearwardly on an axis while the coin-displacing devices remain undisturbed.

2. In a coin-delivery device or change-maker, the combination with a suitable casing and coin-displacing devices, of a coin rack or tray mounted independently of the said devices and arranged to tilt rearwardly on an axis without disturbing said devices, and means for limiting the said tilting movement.

3. The combination with a casing and coin-displacing devices, of a coin-rack detachably mounted to tilt rearwardly on an axis to disclose the coins in the receptacle, the rack being mounted independently of the coin-displacing devices, whereby the said devices remain in their normal position during the tilting movement of the tray.

4. The combination with a casing, of a coin-rack in which the coins are normally concealed, the said rack having rearwardly and downwardly extending slotted arms, pins on the casing which said arms engage and on which the rack may turn as an axis, and means for locking the coin-rack in the closed position.

5. In a change-maker or coin-delivery device, the combination with a casing and coin-

displacing devices, of a movable coin-rack provided with locking dogs or catches controlled from the outside to release the rack, the latter being mounted independently of the coin-displacing devices whereby it may be removed without disturbing said devices.

6. The combination with a casing, of a coin-rack mounted thereon and detachable bodily therefrom, spring-catches mounted on the rack and engaging the casing to lock the rack against movement, said catches having buttons protruding through openings formed in the wall of the rack.

7. The combination with a casing and a coin-rack occupying an upright position, of a detachable plate slidable in the casing beneath the coin-rack, and coin-displacing devices mounted on said plate and arranged when actuated to displace coins from the receptacles of the rack, the coin-rack being mounted independently of the coin-displacing devices and readily detachable from the casing.

8. The combination with a casing having a coin-rack, of a detachable plate located in the casing in suitable proximity to the coin-rack, and coin-displacing slides mounted on the plate, each slide being provided with a forwardly-located, upwardly-projecting lug which coöperates with the rack to hold the lowermost coin in place.

9. The combination with a casing having an upwardly-projecting coin-rack, of a plate located in the casing beneath said rack and having openings to allow the displaced coins to pass through, devices mounted on the under surface of the plate and corresponding in number with the coin-stacks of the rack, coin-displacing dogs mounted on said devices, the noses of the dogs normally projecting upwardly through openings in the device and plate to engage the lowermost coins of the stacks, and means for actuating the devices whereby the coins are ejected.

10. The combination with a casing and a coin-rack, of a plate located beneath the coin-rack, depending bars attached to the plate, and coin-ejecting devices mounted on the plate, the said bars being slotted to allow the said devices to operate.

11. The combination with a casing and a coin-rack, of a plate located beneath the rack, coin-displacing slides mounted on the under surface of the plate, and bars extending lengthwise of the plate underneath and forming a support for the slides, the said slides being slotted, and suitable fastening devices passing through said slots into the plate.

12. The combination with a casing, a coin-rack and a plate having coin-ejecting slides, of a second plate slidable in the casing in front of the coin-rack and at right angles to the plate carrying the coin-ejecting devices, and means mounted on the second plate for operating the ejecting devices of the first plate.

13. The combination of a casing having a

coin-rack and a plate carrying coin-displacing devices, of a second plate slidably mounted on the casing whereby it is detachable at will, and means mounted in the second plate and arranged in operative relation with the coin-ejecting devices for actuating the latter.

14. The combination with a casing, of a coin rack or tray, a plate carrying coin-ejecting devices, and a second plate carrying devices for actuating the coin-ejecting devices, the two plates being slidably mounted in the casing whereby they are readily detachable.

15. The combination with a casing, of a coin-rack mounted on the upper part of the casing, a plate located below the coin-rack and carrying coin-ejecting devices, and a second plate located in front of the coin-rack and at right angles to the first plate, the second plate carrying means for actuating the coin-ejecting devices, the two plates being slidably mounted in the casing whereby they are readily detachable and replaceable from the casing and arranged in operative relation with the other parts.

16. The combination with a coin-holding rack, and coin-ejecting devices arranged in operative relation with the rack, of a plate mounted on the casing, levers fulcrumed on the plate and connected in operative relation with the coin-ejecting devices, a shaft mounted on a suitable support attached to the plate, two sets of toothed disks loose on the shaft, key-levers connected with one set of disks and protruding from the casing, the other set of disks being provided with arms, links connecting the said arms with the levers fulcrumed on the plate, and rocking bars arranged around the disks and forming an operative connection between the two sets of disks whereby as the key-levers are operated the coin-ejecting levers are actuated.

17. The combination with a casing and a coin-rack, of coin-ejecting slides mounted in the casing below the coin-rack and in operative proximity thereto, levers located in front of the casing and engaging openings formed in the coin-ejecting slides, links connected with the levers, toothed disks suitably mounted and having arms connected with the said links, rocking bars journaled in a suitable support and arranged to operate the said disks, another set of disks arranged to operate the said bars, and key-levers connected with the last-named set of disks.

18. The combination with a casing, coin-receptacles and coin-ejecting slides corresponding in number with the coin-receptacles, of levers mounted on the casing and connected with the slides in operative relation, a shaft suitably mounted in the casing, two sets of toothed disks mounted on the shaft, one set of disks having arms, links connecting said arms with the slide-actuating levers, rocking bars connected in operative relation with the two sets of disks, and key-levers connected with the other set of disks.

19. The combination with a casing, coin-

holders and coin-displacing mechanism, of a suitable support mounted in the casing, disks mounted to turn on said support and provided with key-levers passing through openings in the casing, two sets of toothed disks also mounted to turn on said support, toothed rocking bars mounted outside of all the disks and arranged to be actuated by the key-lever disks whereby the rocking bars are made to actuate the second set of disks, and a link connection between said rocking bars and the coin-displacing mechanism.

20. The combination with a casing, coin-holders and coin-displacing mechanism, of two sets of toothed disks mounted to turn on a common axis, push-keys connected with one set of disks, the other set of disks having short arms connected with the coin-displacing devices, and a spring-held frame mounted to swing on the axis of the disks and engaging the said disk-arms to hold the disks in operative relation, and adjustable means for controlling the tension of the frame, comprising a lever suitably fulcrumed and having one arm connected with the tension-spring of the frame, and an adjusting-screw connected with the other arm.

21. The combination with a casing, coin-holders and coin-ejecting devices, of a shaft mounted in the casing, two sets of disks mounted on the shaft, one set of disks being connected with operating-keys, the other set of disks having short arms connected with the coin-displacing devices, a U-shaped frame mounted to swing on the axis of the disks, a lever suitably fulcrumed, a spring connecting said frame with the lever, and a screw connected with the lever for regulating the tension of the spring.

22. The combination with a casing, coin-holders and coin-displacing devices, of two sets of toothed disks movably mounted in the casing and connected to operate the coin-displacing devices, the said disks being all alike and interchangeable, and the teeth of the two sets of disks being oppositely disposed when arranged in operative relation.

23. The combination with a casing, coin-holders and coin-displacing devices, of two sets of toothed disks mounted to turn in the casing and connected to operate the coin-displacing devices, whereby each disk of one set is instrumental in displacing one or more coins, operating-keys connected with the respective disks of the other set, the number of coins

displaced by the individual disks varying to permit the obtaining of different amounts by pressing different keys, the teeth of the two sets of disks being oppositely disposed and all of the disks being formed alike whereby they are interchangeable.

24. The combination with coin-holders and coin-ejecting devices, of toothed disks connected in operative relation with the coin-ejecting devices, a spring-held frame actuated by the movement of any disk, and a device mounted on said frame adjacent a disk and arranged when actuated to engage a tooth of the disk whereby this additional coin-displacing disk is actuated by the operation of any other disk.

25. The combination with coin-holders and coin-ejecting devices, of disks for actuating the coin-ejecting devices, a spring-held swinging frame connected with all the disks for returning them to their normal position after each coin-ejecting act, and a device slidably mounted on the frame adjacent a disk, a spring for normally holding said device away from the disk, and means conveniently located and under the control of the operator for moving the said device to engagement with the disk whereby an additional coin may be displaced every time any other disk is actuated.

26. The combination with a casing, coin-holders and coin-displacing devices, of means for operating the coin-displacing devices, a plate upon which said operating means are mounted, said plate being slidably connected with the casing whereby it is readily detachable and replaceable, and spring-actuated means mounted on the casing for locking the plate in place.

27. The combination with a casing, coin-holders and coin-displacing devices, of a plate detachably connected with the casing, means connected in operative relation for actuating the coin-displacing devices, said means mounted on the said plate, and a spring-held stud mounted on the casing and engaging a recess formed in the plate for locking the latter in place when the parts are assembled.

In testimony whereof we affix our signatures in presence of two witnesses.

JAMES M. BUTCHER.

ARCHIE E. PARNALL.

Witnesses:

GARRETT BROWN,

P. M. OSBORNE.