

No. 817,530.

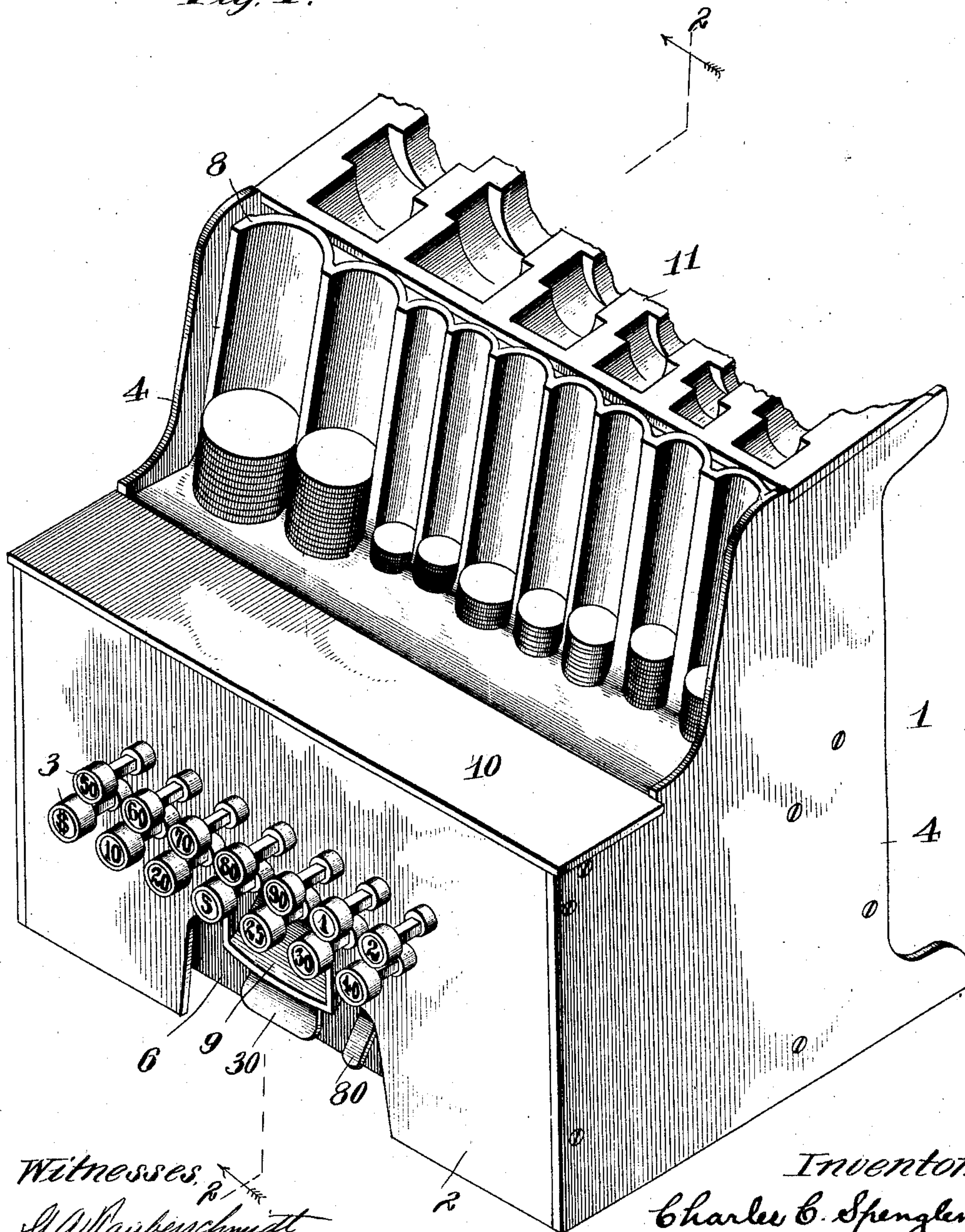
PATENTED APR. 10, 1906.

C. C. SPENGLER.
CHANGE MAKER.

APPLICATION FILED JULY 15, 1905.

7 SHEETS—SHEET 1.

Fig. 1.



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Att'y

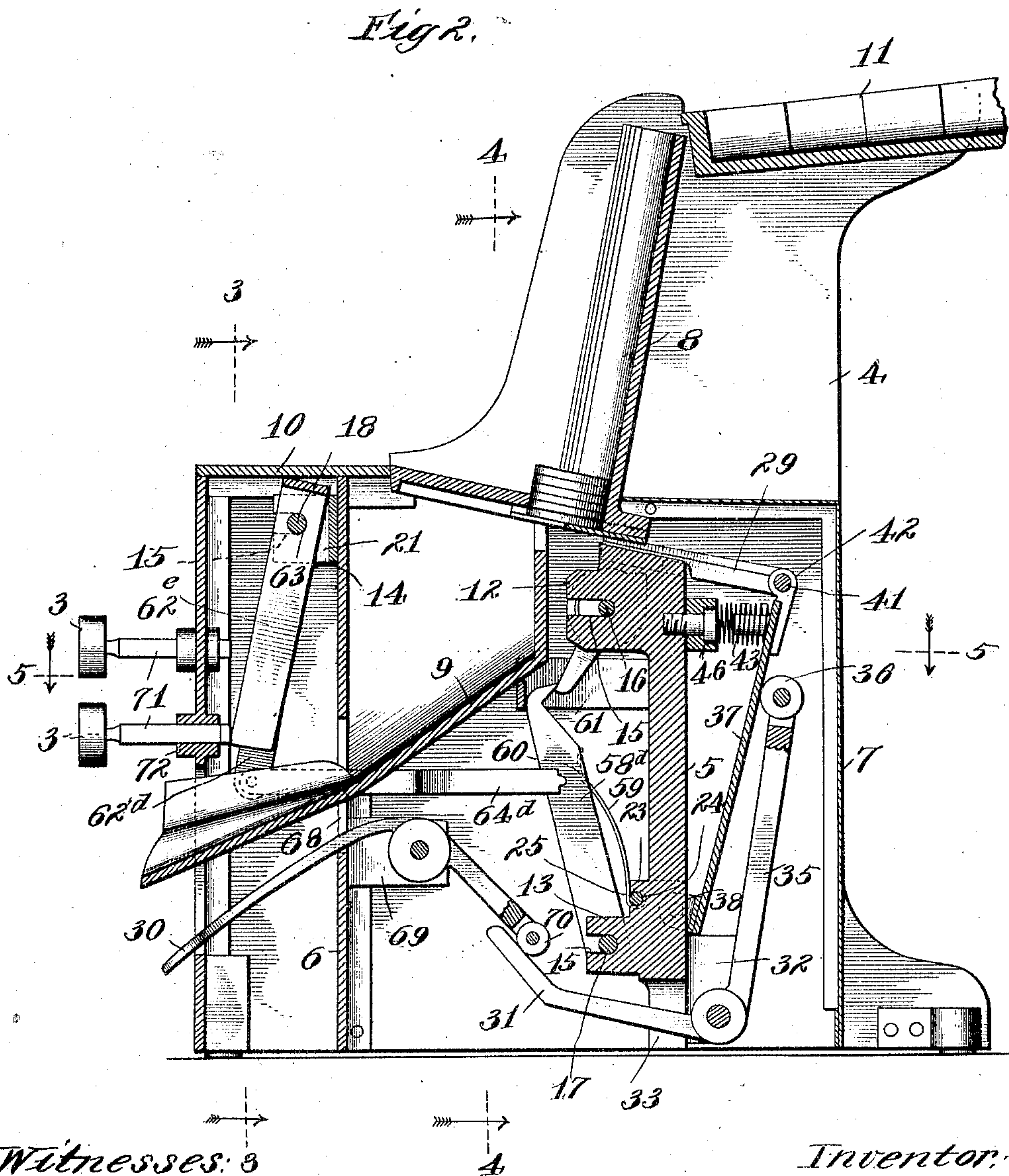
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7 SHEETS—SHEET 2.



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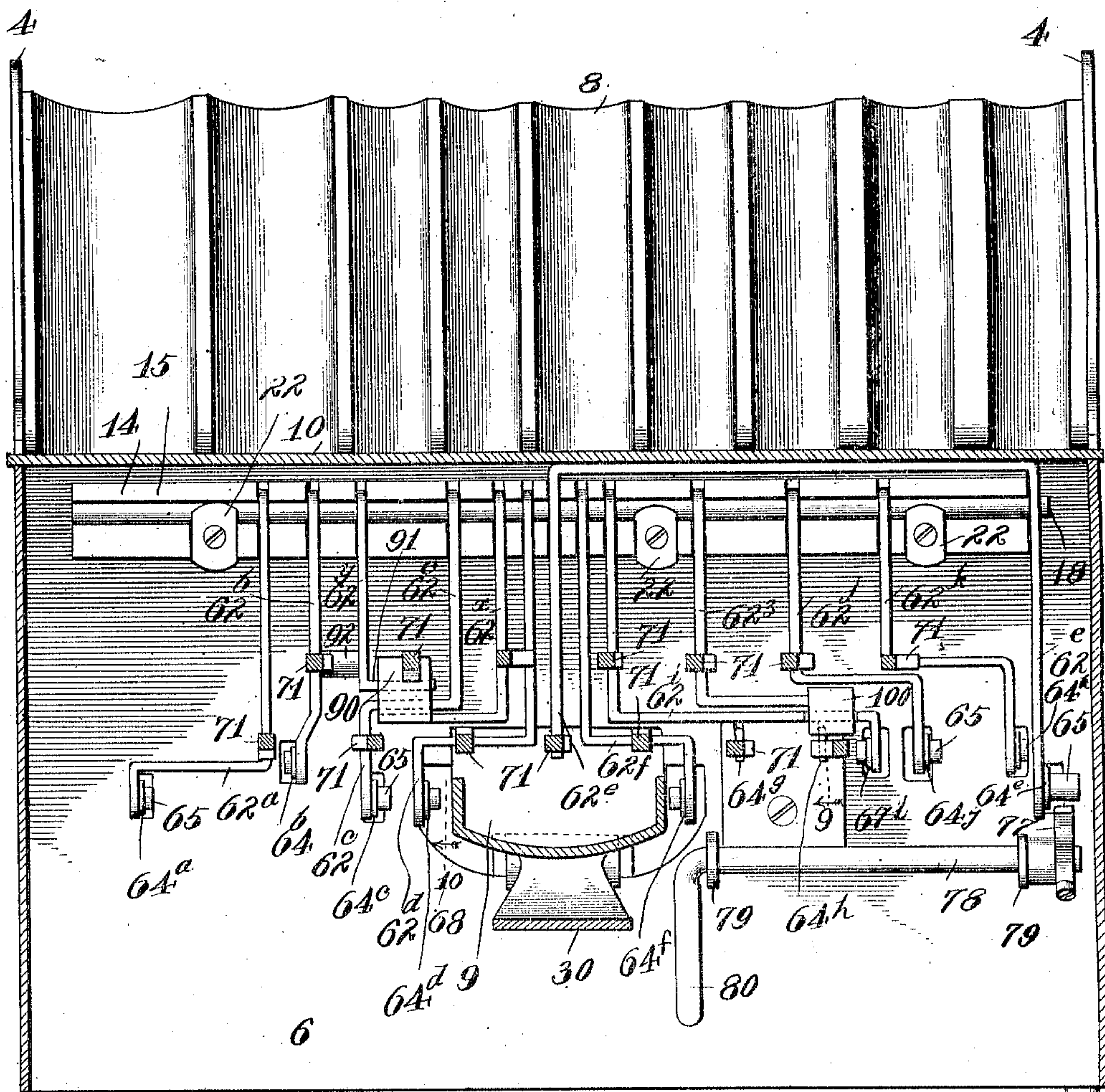
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7 SHEETS—SHEET 3.

Fig. 3.



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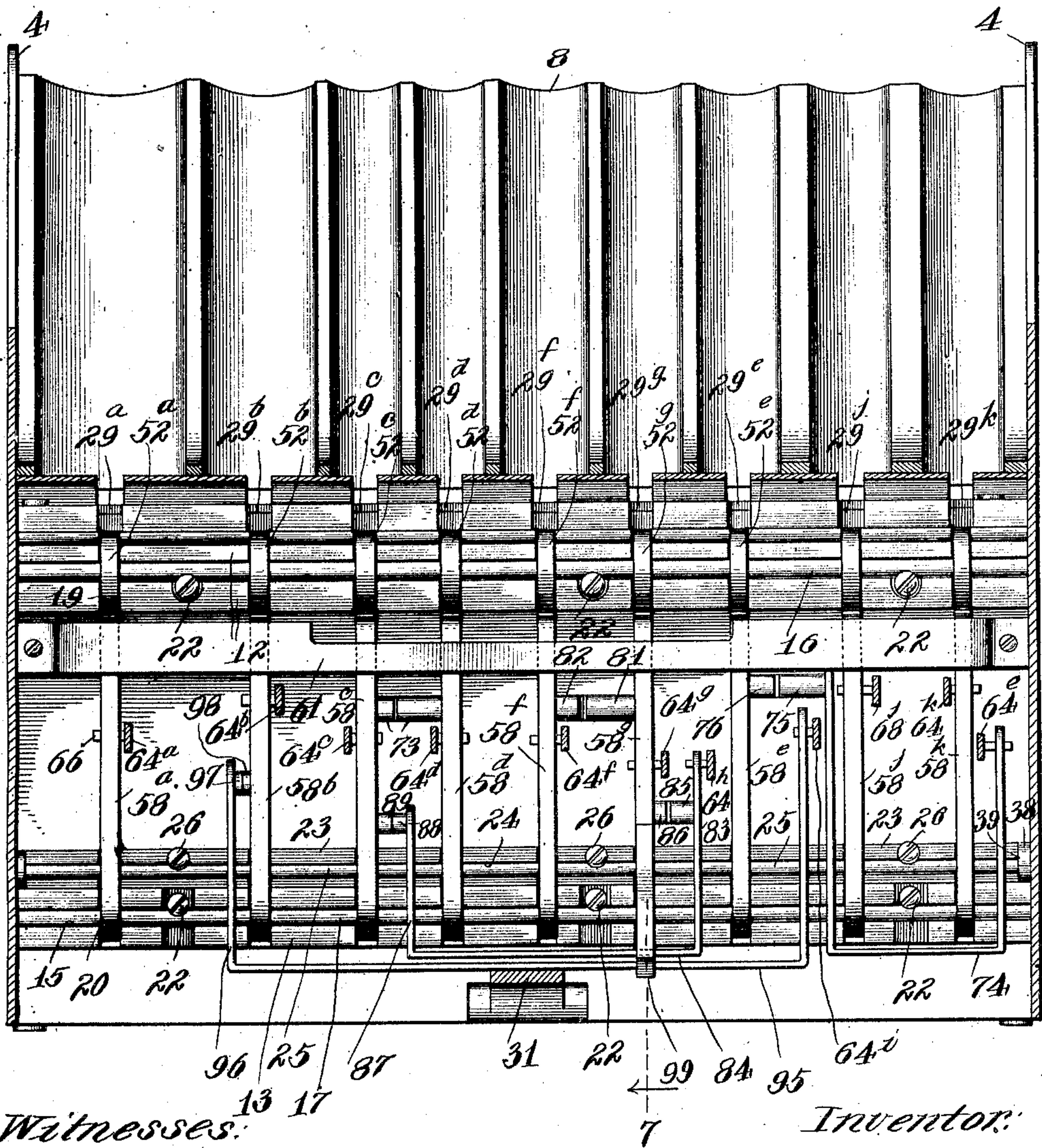
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7 SHEETS—SHEET 4.

Fig. 4.



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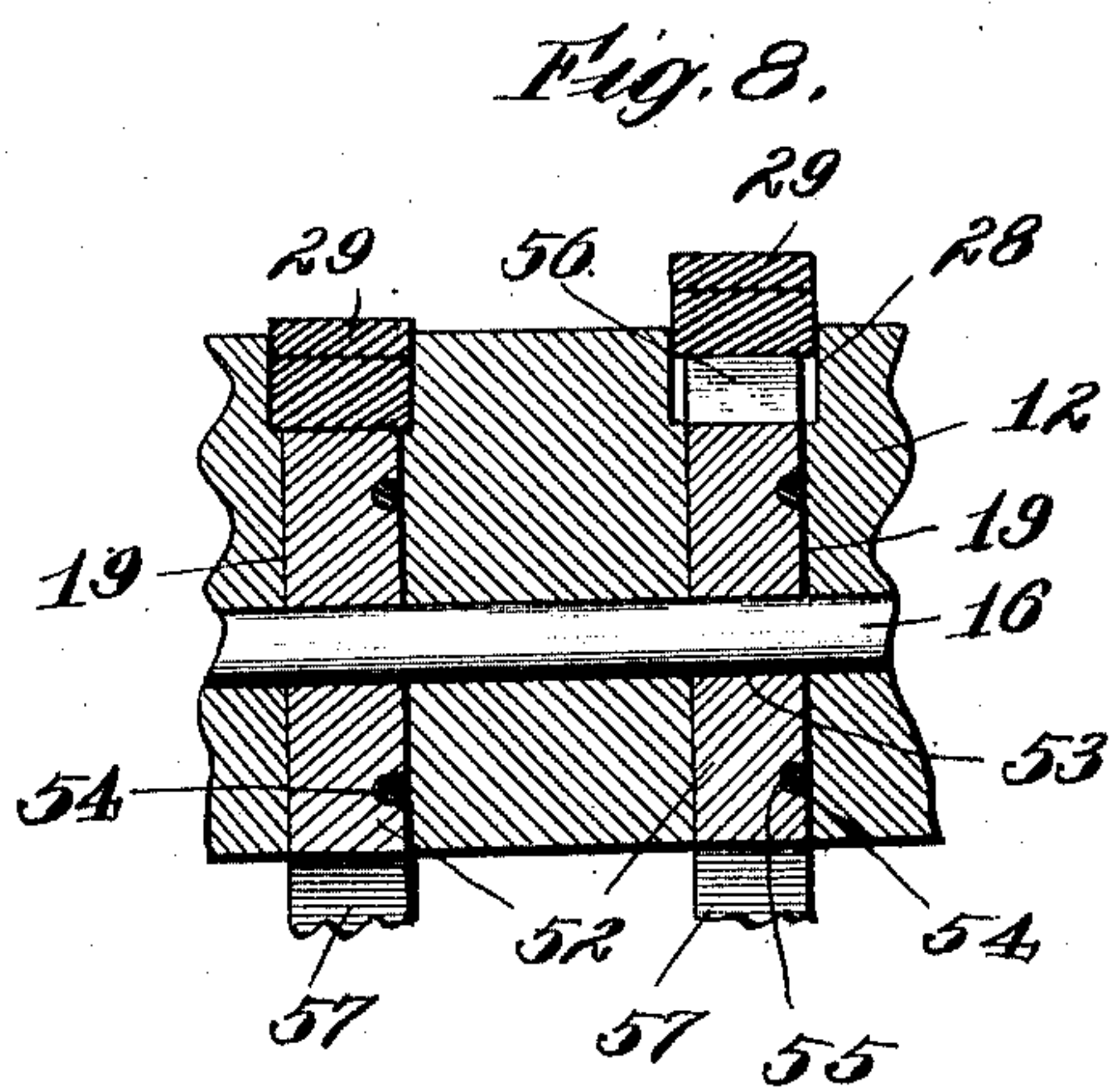
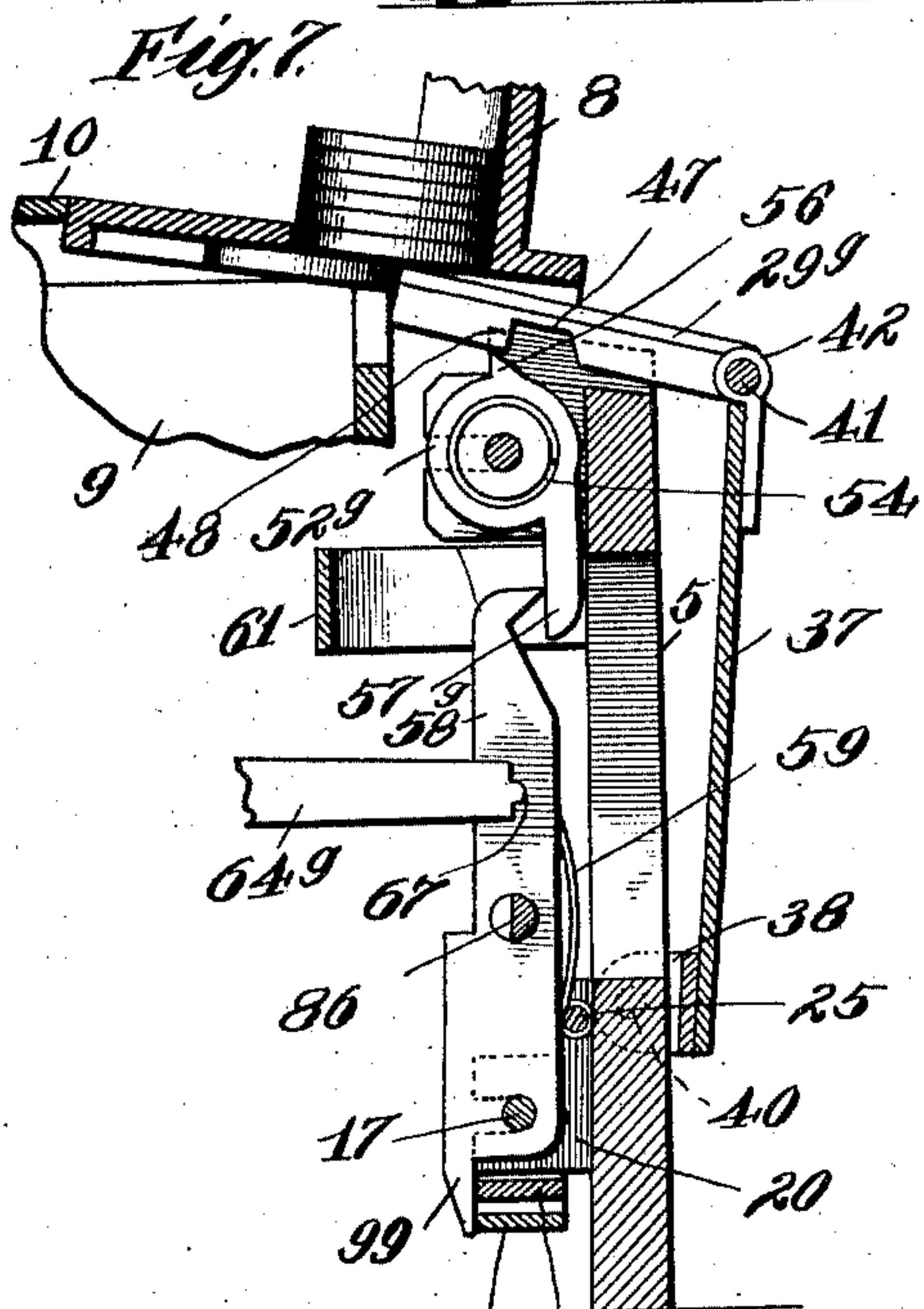
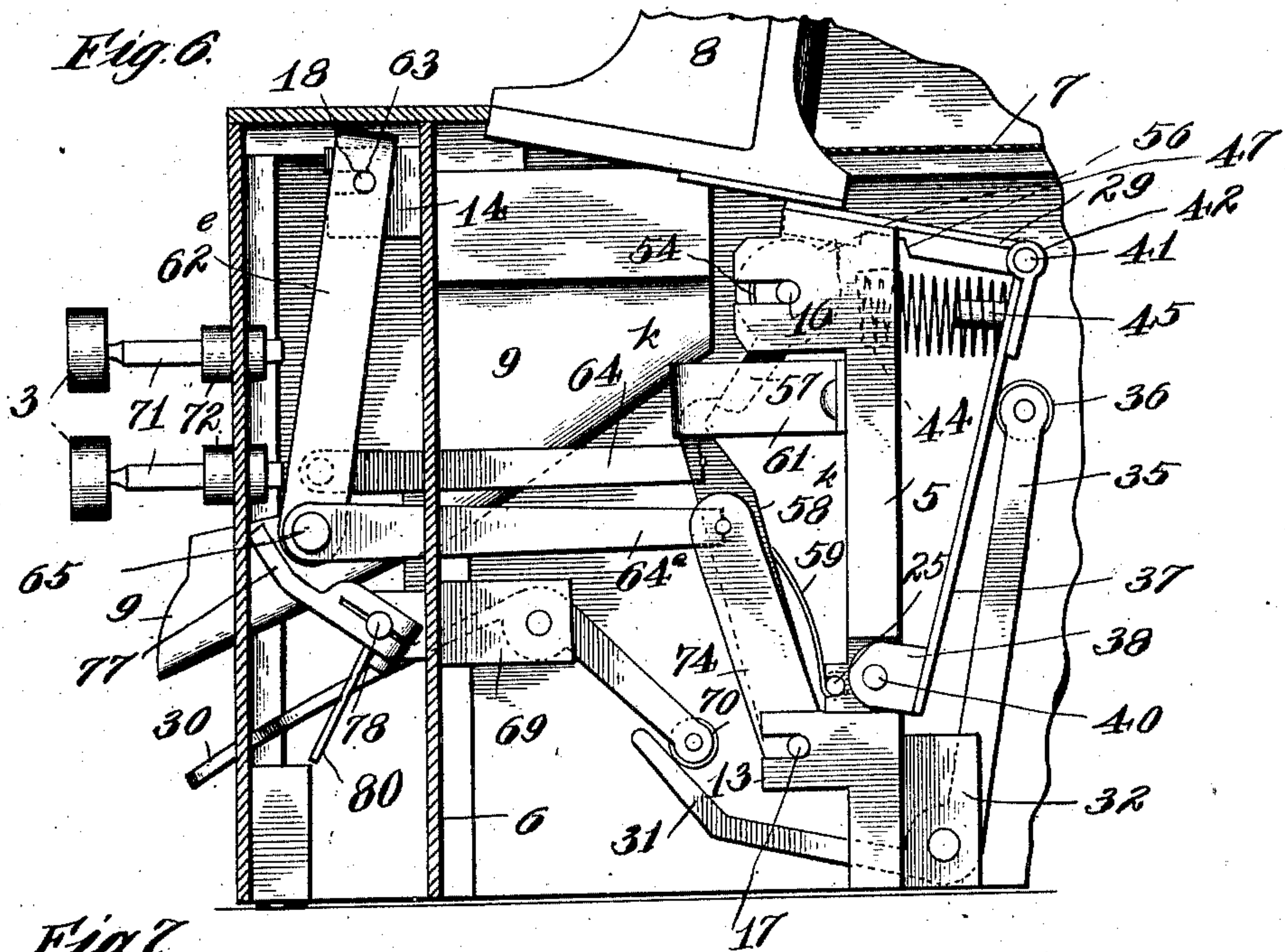
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7 SHEETS—SHEET 6.



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7 SHEETS—SHEET 7.

Fig. 9.

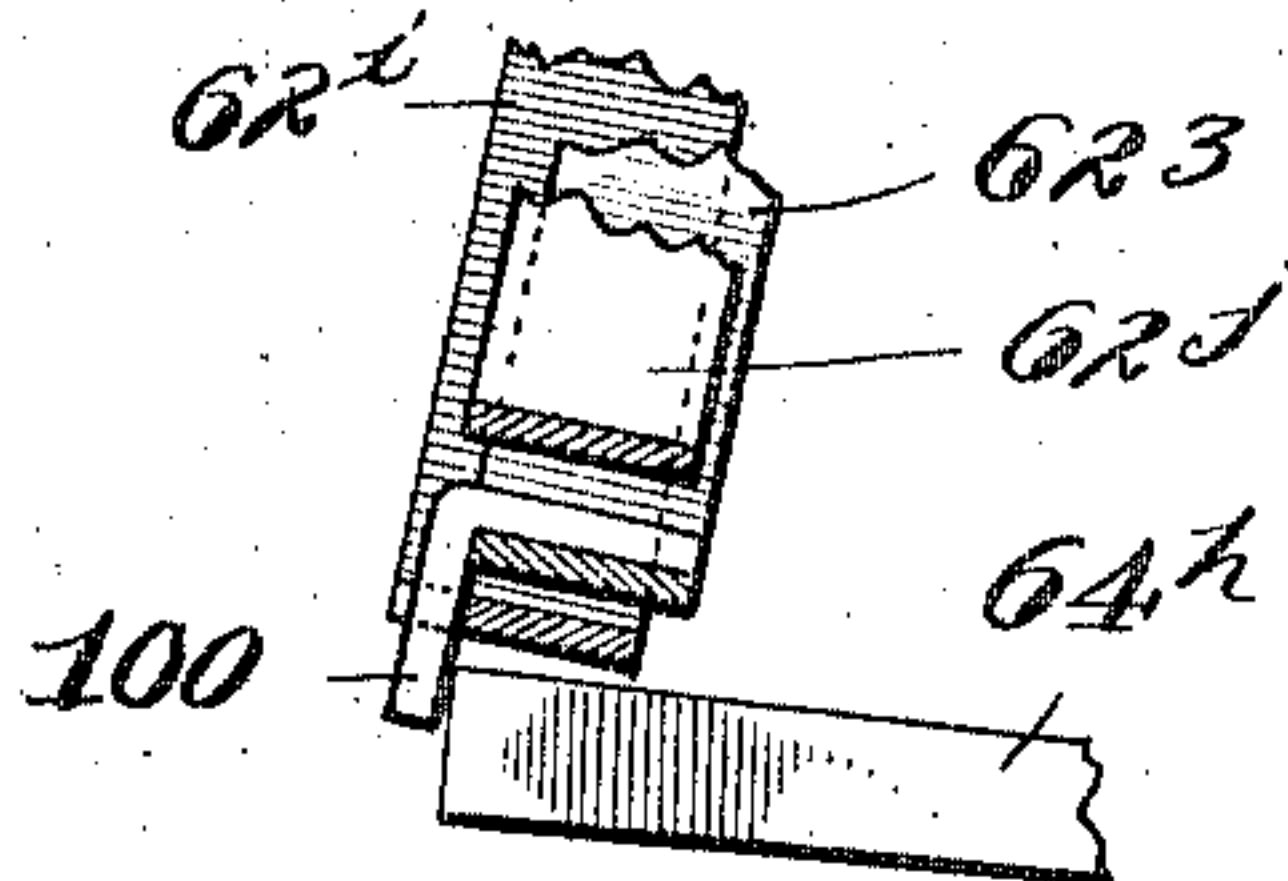


Fig. 10.

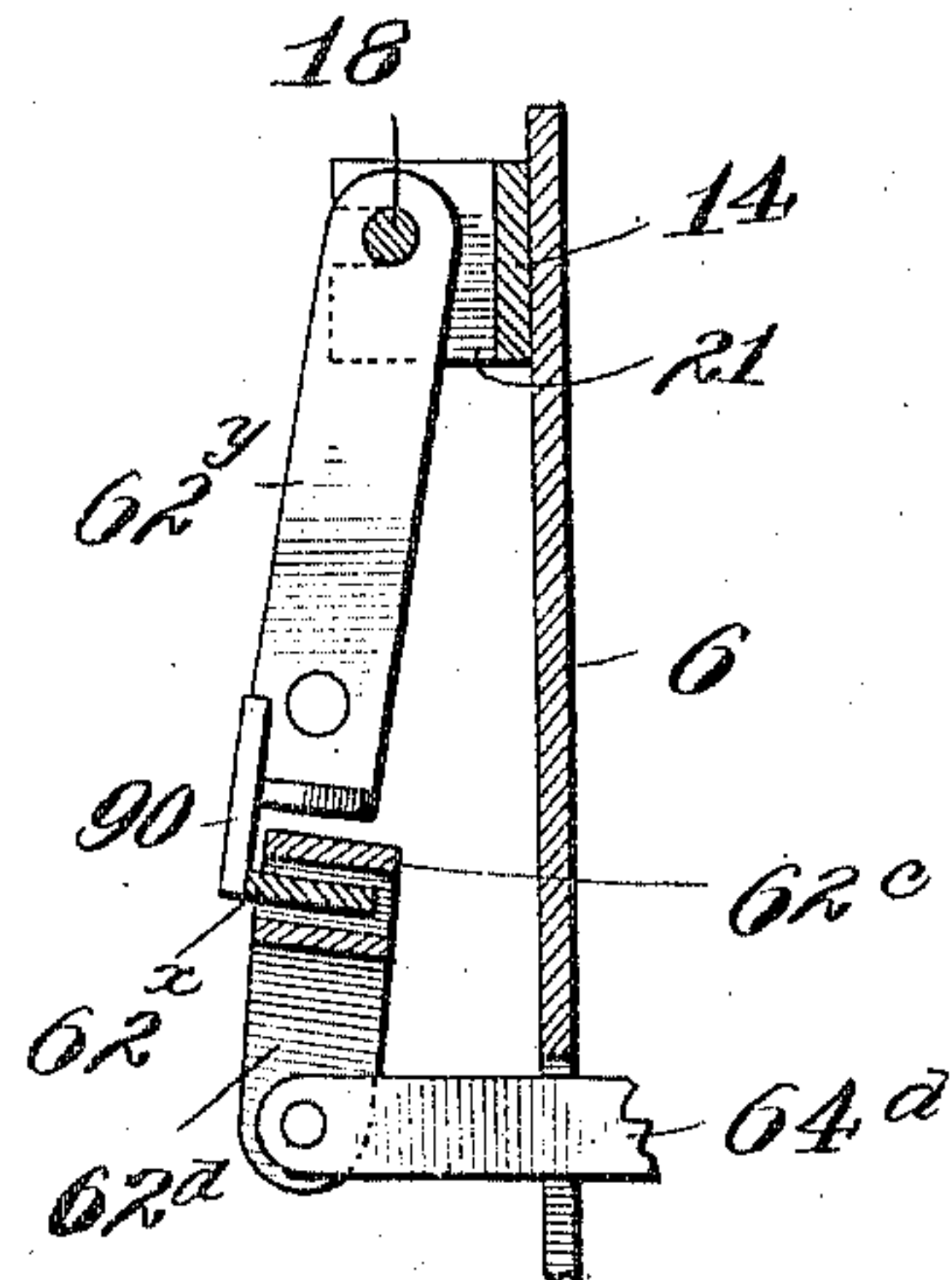


Fig. 11.

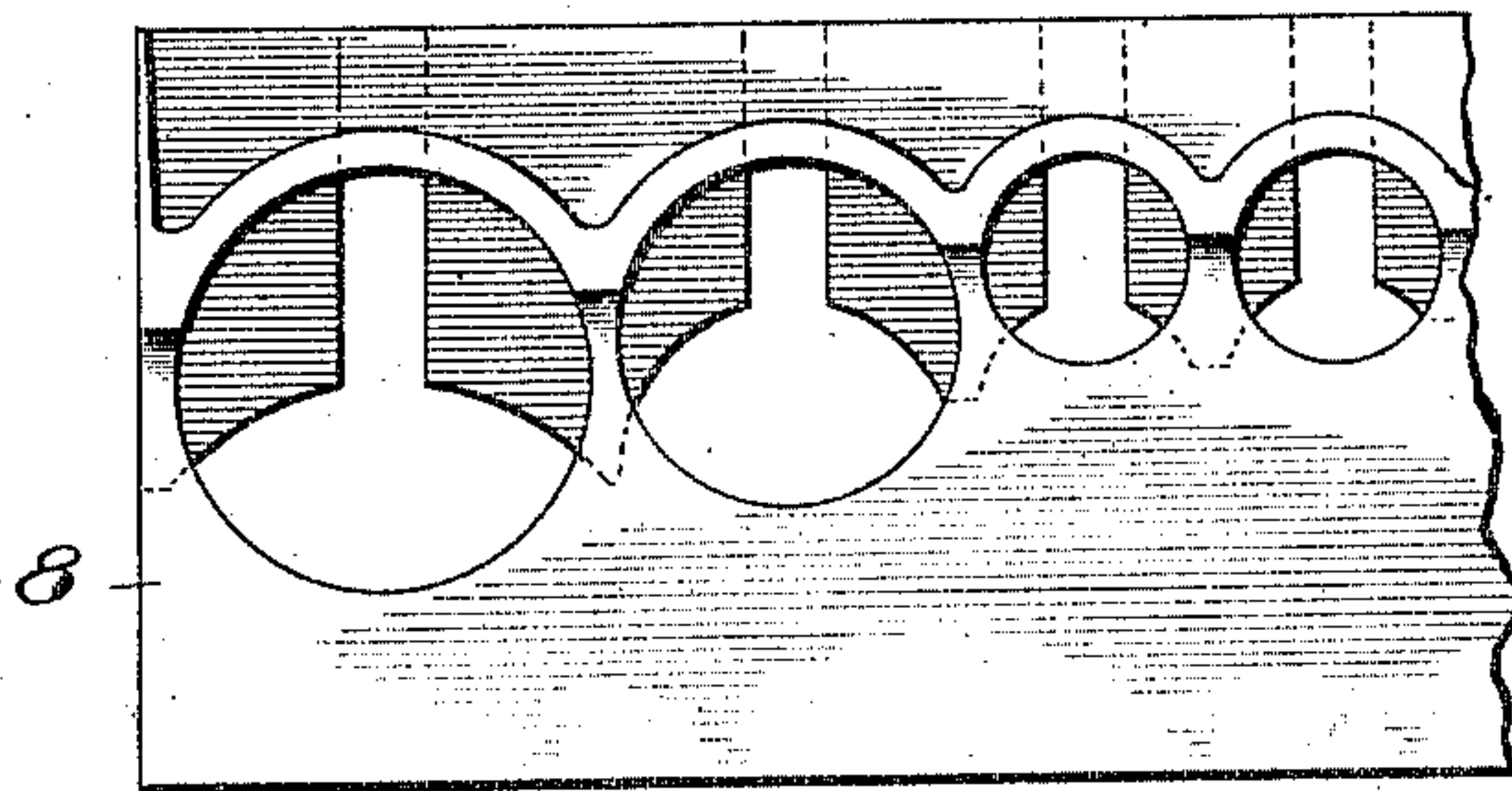


Fig. 12.

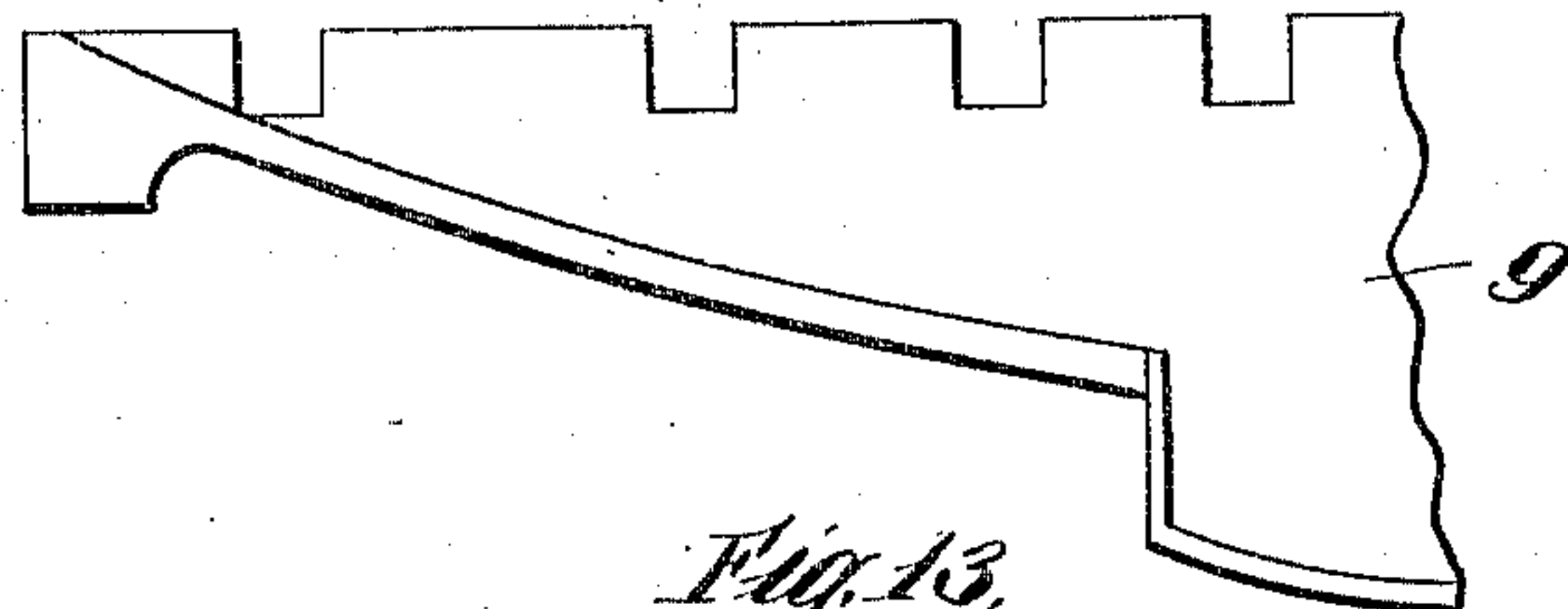
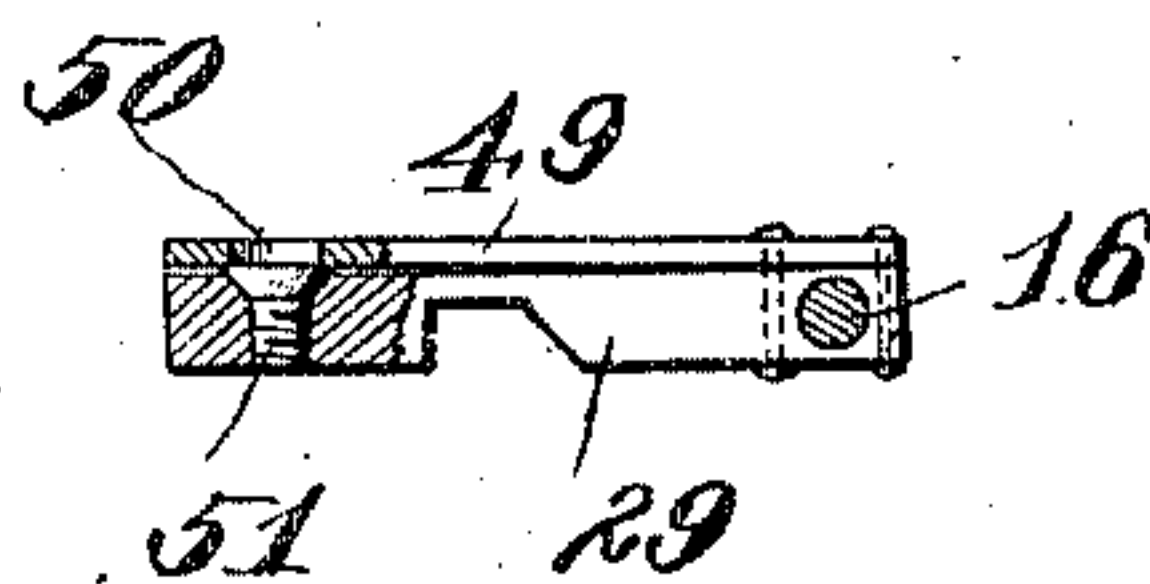


Fig. 13.



Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES C. SPENGLER, OF ROCKFORD, ILLINOIS.

CHANGE-MAKER.

No. 817,530.

Specification of Letters Patent.

Patented April 10, 1906.

Application filed July 15, 1905. Serial No. 269,858.

To all whom it may concern:

Be it known that I, CHARLES C. SPENGLER, a citizen of the United States, residing at Rockford, in the county of Winnebago and State of Illinois, have invented certain new and useful Improvements in Change-Makers, of which the following is a specification.

This invention relates to change-makers, and refers particularly to a means for obtaining automatically from the coin-receptacles in the change-maker the various coins necessary to produce any desired amount in change.

The invention further refers to certain features of novelty and to details in construction whereby the mechanism of a change-maker is simplified and made more durable and its operation rendered more certain and reliable.

In the accompanying drawings, Figure 1 is a perspective view of a change-maker embodying the features of my invention. Fig. 2 is a vertical central section through the change-maker on dotted line 2 2 of Fig. 1. Fig. 3 is a vertical section taken on dotted line 3 3 of Fig. 2. Fig. 4 is a sectional view on dotted line 4 of Fig. 2. Fig. 5 is a view on dotted line 5 5 of Fig. 2. Fig. 6 is a section taken on dotted line 6 6 of Fig. 5. Fig. 7 is a sectional view on dotted line 7 7 of Fig. 4. Fig. 8 is a detail sectional view of the coin-slides and the setting-cams. Fig. 9 is a fragmental sectional view on dotted line 9 of Fig. 3. Fig. 10 is a similar view on dotted line 10 of Fig. 3. Fig. 11 is a fragmental top plan view of the coin-holder. Fig. 12 is a similar view of the coin-chute. Fig. 13 is a detail view of one of the coin-slides, illustrating the means for altering the thickness of said slide to compensate for variations in the thickness of the coins being delivered.

In the embodiment of this invention herein shown and described the mechanism is supported and protected by an inclosing casing 1, comprising a face-plate 2, having operating-keys 3 thereon, side pieces 4, having rigidly secured between them the main casting 5, and the front plate 6, upon which main casting and front plate the operating mechanism is mounted. The casing further comprises a rear protecting-shield 7.

The coins are supported in the change-maker in the usual manner in stacks upon the rearwardly-inclined holder 8, the lower end of which holder is cut away beneath each stack of coins to permit the withdrawal of the lowermost coin in the stack when said coin is

engaged by its pusher-slide, all to be hereinafter more clearly set forth. Coins pushed from the coin-holder 8 fall into a coin-chute 9, that delivers them at the forward side of the machine at a point to be conveniently received in the hand of the operator. The front cover-plate 10 closes the upper side of the forward portion of the casing 1. A coin-tray 11, of usual construction, supported in any convenient manner between the upper ends of the side pieces 4, is adapted to hold a quantity of reserve coins.

The main casting 5 is provided with two integral forwardly-extending pivot-rail portions 12 and 13, Fig. 2, the former being the upper pivot-rail and the latter the lower pivot-rail. These pivot-rails are adapted to form the pivotal seat for many of the moving parts of the mechanism, and for convenience in description I will now also mention a similar pivot-rail 14, fixed upon the forward side of the front plate 6 near the upper edge of said plate. Each of the pivot-rails 12, 13, and 14 is longitudinally channeled, as at 15, which channel is adapted to receive the pivot-rods 16, 17, and 18. In order to permit the various members of the mechanism to be placed upon said pivot-rods, I have formed in said rails transverse grooves 19, 20, and 21 for said members, Figs. 2 and 4. The pivot-rods 16, 17, and 18 are held in their respective channels 15 by means of screws 22, Fig. 4, the heads of said screws (or washers under said heads) bearing against the outer sides of said rods and holding them from displacement. The main casting upon its forward face and at a point slightly above the pivot-rail 13 is provided with another similar rail 23, having a channel 24 for receiving the spring-supporting rod 25, said rod being held in place by screws 26. The rail 23 has transverse grooves 27, Fig. 5, therein for receiving wire springs to be hereinafter described.

The upper edge of the main casting 5 is provided with transverse grooves 28, Fig. 8, slightly greater in width but coinciding in position with the grooves 19 in said upper pivot-rail 12, which grooves 28 are adapted to receive the coin-slides 29. These slides 29 are adapted to have a forward and back reciprocatory movement within the grooves 28, and this reciprocatory movement is imparted to them by the operator of the machine through a delivery-lever 30 to be hereinafter described. The delivery-lever 30 actuates an elbow-lever 31, pivotally mounted be-

tween two ears 32, secured to and extending rearwardly from the lower rear face of the main casting 5. The forward end of the elbow-lever 31 extends through a notch 33, formed in the lower edge of the main casting 5 and at its forward extremity is upturned to underlie the rear end of said delivery-lever. The rear arm 35 of said elbow-lever 31 extends upwardly and at its upper end is provided with an antifriction-roller 36 for bearing against and relieving the frictional engagement between said rear arm 35 and a tilting plate 37. Near its lower edge and at its ends the tilting plate 37 is provided with ears 38, which ears extend forwardly from said plate, enter notches 39, Fig. 4, formed in the opposite ends of the main casting 5, and are supported upon said main casting by means of pivot-screws 40, Fig. 7. The upper edge of the tilting plate 37 carries a rod 41, which rod forms the pivotal support for the coin-slides 29, whereby the slides are reciprocated in the grooves 28 by a tilting or rocking movement of said tilting plate. The pivot-rod 41 is secured to the tilting plate 37 by means of the upwardly-extending ears 42, secured to said plate. The tilting plate 37 is held normally in a rearward position by means of coil-springs 43, Fig. 2, lying within counterbored openings 44 in the rear side of the main casting 5 and held in position between said casting and said tilting plate by guide-pins 45, fixed upon said tilting plate, which pins are adapted to enter the openings 44 when said plate is moved into its forward position. A stud 46, Fig. 2, upon the main casting 5 limits the forward movement of the tilting plate 37. Each of the coin-slides 29 has in its under face a notch 47, Fig. 7, the wall at the forward end of which notch forms a square shoulder 48 for a purpose to be hereinafter mentioned. In the construction of the mechanism there are as many coin-slides as there are stacks of coins or coin-pockets in the coin-holder 8.

As certain of the coins (particularly dimes) vary considerably in thickness, it is necessary that an adjustment of the thickness (height) of certain of the coin-slides 29 be provided. This adjustment is obtained by means of a hardened spring-steel plate 49, secured to said slides at their rear ends by means of rivets. At their forward ends the plates 49 are provided with openings 50, beneath which a small screw 51 is placed, said screw being set in a screw-threaded opening in the forward end of said slide beneath said adjusting-plate. The head of the screw 51 is adapted to lie flush with the face of the coin-slide beneath the adjusting-plate and is somewhat larger in diameter than the opening 50. When it is desirable to slightly raise the forward end of the adjusting-plate 49, the screw 51 is unscrewed slightly from its screw-threaded opening, raising its head a little, and con-

sequently slightly raising the adjusting-plate 49. The screw-threads upon the adjusting-screw 51 are very slightly inclined, (slow,) and said screw is made to fit its opening tightly.

Raising-cams 52, Figs. 7 and 8, having a central perforation 53, are loosely mounted upon the pivot-rod 16, said cams lying within the grooves 19, their free oscillation upon said pivot-rod being frictionally retarded by a coiled spring 54, lying in an annular groove 55, formed in the sides of said cam. Each of the lifting-cams 52 is provided upon its periphery with a cam-tooth 56 and upon its diametrically opposite side with an actuating-lug 57. The cam-teeth 56 are adapted to engage the coin-slides 29 upon the under sides of said slides and forward of the notches 47, Fig. 6, the inclined sides of said teeth being adapted to raise said coin-slides into the plane of the lowermost coins in their respective coin-pockets and the angular side of the teeth to be engaged by the shoulders 48 of said slides, whereby the slides upon their rearward movement restore the lifting-cams to their normal position. The actuating-lugs 57 of the raising-cams 52 are arranged to be engaged by the fingers 58, the lower ends of which fingers lie within the transverse grooves 20 in the lower pivot-rail 13 and are pivotally mounted upon the pivot-rod 17 in said rail. The fingers 58 are held normally forward by wire springs 59, the upper ends of which springs are seated in notches 60 in the rear edges of said fingers, while their lower ends are coiled around the spring-supporting rod 25, the lower ends of said springs lying in contact with the main casting 5 in the lower part of the grooves 20. A stationary bail 61, secured at its opposite ends to the main casting 5, limits the forward movement of the fingers 58.

Operating-levers 62, Fig. 3, have in their upper ends openings 63 for receiving their pivot-rod 18, upon which rod said levers are loosely mounted, the lower ends of said operating-levers being connected with the fingers 58 by means of links 64 and the forward ends of the links being connected with the lower ends of the levers 62 by means of screws 65. The rear ends of these links are provided with transversely-extending bearing-hooks 66, adapted to enter openings 67 in said fingers 58.

From left to right, Fig. 1, the pockets in the coin-holder 8 are adapted to receive coins of the following denominations: one dollar, fifty cents, ten cents, ten cents, twenty-five cents, five cents, five cents, one cent, and one cent. Each of these pockets respectively overlies and its lower portion is in position to be traversed by one of the coin-slides 29. Coins are withdrawn from the pockets in the coin-holder upon the forward movement of the coin-slides 29 only by those slides that previously have been raised

by the lifting-cams 52 into position to engage the coins. The lifting-cams 52 are operated by the fingers 58, and said fingers 58 are moved by the operating-levers 62, the movement of the operating-levers being communicated to the fingers by means of the connecting-links 64. The operating-levers 62 are oscillated by the operating-keys 3 upon the keyboard. All of the coin-slides are moved forward upon each forward movement of the delivery-lever 30, the elevated slides pushing the lowermost coins in the corresponding pockets out of said pockets into the coin-chute 9. In the forward movement of the slides the notches 47 therein come into coincidence with the teeth 56 of the cams 52, whereupon the slides drop down over said teeth. When the delivery-lever 30 is released by the operator, the springs 43 throw the tilting plate 37 into its rearward position, withdrawing all of the coin-slides. Upon their rearward movement the shoulders 48 of the slides that had been raised engage the angular faces of the lifting-teeth 56 of their cams 52 and rotate said cams, thus restoring the cams to their normal position.

The front plate 6 is provided with suitable openings for the passage of the links 64 and near its middle portion has a larger opening 68 for receiving the delivery-lever 30, which lever is pivotally mounted in the bracket 69, secured to and extending rearwardly from the front plate 6 near the lower margin of the opening 68. The delivery-lever 30 in transverse section is somewhat of arch form, both ends inclining downwardly from its pivot. The rear end of this lever carries an antifric-tion-roll 70 for engaging the forward up-turned end of the elbow-lever 31. The forward end of the lever 30 lies in suitable position to be engaged by the fingers of the operator. The delivery-chute 9 opens a little distance above the forward end of the delivery-lever, so that the fingers and hand of the operator when raising said lever are in position to catch the coins that fall from the coin-chute upon each operation of the mechanism.

The general construction and operation of the mechanism having been hereinbefore set forth, it now is necessary to show the detail construction whereby the operation of the keys 3 by suitable connections will be caused to lift the proper coin-slides, and thereby produce the necessary combinations to make up a desired amount of change. The keyboard in this instance is made up of the following keys: one-dollar, ninety-cent, eighty-cent, seventy-cent, sixty-cent, fifty-cent, forty-cent, thirty-cent, twenty-five cent, twenty-cent, ten-cent, five-cent, one-cent, and two-cent. These keys 3 are fixed at the outer ends of stems 71, which stems are slidably mounted in guide-bosses 72, the rear ends of said stems being bent in certain instances

to secure an engagement with the proper operating-levers 62. The one-dollar key engages the forward side of the operating-lever 62^a, which lever at its lower end is bent at a right angle and at the end of said extension is turned downwardly and there perforated to receive the screw 65 for connecting the link 64^a to said operating-lever 62^a. The hook 66 at the rear end of the link 64^c enters an opening 67 in the finger 58^a, which finger lies in the arc of movement of the lug 57 of the lifting-cam 52^a. A movement of the one-dollar key therefore moves the lifting-cam 52^a and raises the coin-slide 29^a into position to engage the lowermost dollar-coin in its pocket in the coin-holder 8. In like manner the fifty-cent key, the stem of which engages the operating-lever 62^b, is connected by the link 64^b with the finger 58^b, which said finger lies in the arc of movement of the lug 57 of the lifting-cam 52^b. A movement of the fifty-cent key moves the lever 62^b, oscillates the lifting-cam 52^b upon its pivot-rod 16, and raises the coin-slide 29^b into position to engage the lowermost fifty-cent coin in its coin-pocket in the coin-holder 8. The next key from left to right upon the keyboard is the primary ten-cent key, the rear end of the stem of which lies in contact with the operating-lever 62^c. This operating-lever is connected, by means of the link 64^c, with the finger 58^c, which finger is in position to oscillate the lifting-cam 52^c when said ten-cent key is pushed inward.

The stem of the twenty-cent key, which lies adjacent to the ten-cent key, has in its line of movement the operating-lever 62^d, which lever is connected, by means of the link 64^d, with the finger 58^d, which finger is in the path of movement of the lug 57 of the lifting-cam 52^d. This cam upon its oscillation is adapted to lift the coin-slide 29^d into position to engage the lowermost ten-cent coin in the secondary ten-cent pocket of the coin-holder and withdraw said coin upon the inward movement of said coin-slide; but inasmuch as it is necessary to operate both of the slides 29^c and 29^d and discharge two ten-cent coins in order to obtain twenty cents in change it is necessary to interconnect the two fingers 58^c and 58^d, so that a movement of the twenty-cent key will produce a movement of both of said fingers. This interconnection I have arranged by placing upon the adjacent sides of said fingers 58^c and 58^d two interengaging pins 73, placing an overlying pin upon the finger 58^c and an underlying pin upon the finger 58^d. This arrangement permits the primary ten-cent key to be operated independently of the other ten-cent mechanism, while the operation of the twenty-cent key will operate both the primary and the secondary ten-cent mechanisms.

I have provided two five-cent mechanisms—a primary mechanism operated either

by the five-cent key or by a separate finger-lever and a secondary mechanism operated only automatically and in combinations for producing certain amounts in change. I will first describe the primary five-cent key-actuated mechanism, next the finger-lever mechanism, and later, in connection with the description of the thirty-cent mechanism, will describe the secondary five-cent mechanism.

The stem of the primary five-cent key is adapted to engage at its rear end the double or arch operating-lever 62^e, which lever extends to the right-hand side of the machine and whose link 64^e connects it with an inverted-arch lever 74, the free end of which lever carries an underlying stud 75, adapted to engage a corresponding overlying stud 76 on the finger 58^e. The finger 58^e is adapted to operate the cam 52^e to raise the point of the slide 29^e into engagement with the lowermost coin in one of the (the primary) five-cent pockets. The screw 65, pivotally connecting the link 64^e with the operating-lever 62^e, is provided with a projecting head lying in the oscillatory path of a crank-arm 77, the hub of which crank-arm has a pinch fit with an oscillatory shaft 78, mounted in ears 79, fixed upon the forward side of the front plate 6. The opposite end of the oscillatory shaft 78 is turned outward in a finger-operating lever or crank 80, which finger-lever lies in position to be engaged by the fingers of the operator when lifting the delivery-lever, whereby the five-cent-coin slide 29^e may be raised whenever it is desirable to add five cents to any amount that will be produced by the previously-operated key—that is to say, if thirty-five cents, forty-five cents, fifty-five cents, sixty-five cents, seventy-five cents, eighty-five cents, or ninety-five cents in change be desired the finger-lever 80 is lifted with the delivery-lever after one of the keys (thirty-cent, forty-cent, fifty-cent, sixty-cent, &c.) has been pushed. The result is the delivery of the desired extra five-cent coin.

The twenty-five-cent key operates directly upon the operating-lever 62^f, the lower end of which lever near the point contacted by the rear end of the stem of the twenty-five-cent key is connected, by means of the bent link 64^f, with the finger 58^f, and this finger is adapted to engage and oscillate the lifting-cam 52^f to raise the coin-slide 29^f into position to engage the lowermost twenty-five-cent coin in the twenty-five-cent-coin pocket.

The rear end of the stem of the thirty-cent key abuts directly against the forward end of the link (or pusher-rod) 64^g. The member 64^g is not, strictly speaking, a link; but for uniformity I have denominated it as such. The rear end of the link 64^g is in pivotal engagement with the finger 58^g, which

finger is in a position to engage the lifting-cam 52^g and raise the coin-slide 29^g into the plane of the lowermost five-cent coin of the secondary five-cent-coin pocket. The finger 58^g is provided with an underlying stud 81, adapted to engage the overlying stud 82 on the finger 58^f, (which is the finger that operates the twenty-five-cent-coin slide,) the result of which engagement is that the finger 58^f is always carried forward with the forward movement of the finger 58^g.

The rear end of the stem of the forty-cent key is in engagement with the forward end of the link (or pusher-rod) 64^h, the rear end of which link engages one arm 83 of a yoke 84. Said arm 83 is provided with an underlying stud 85, adapted to engage an overlying stud 86, fixed upon the finger 58^g. It will be remembered that this finger coöperates with the finger 58^f (the twenty-five-cent finger) to produce thirty cents in change. The other arm 87 of the yoke 84 has an underlying stud 88 adapted to engage an overlying stud 89, fixed upon the adjacent side of the finger 58^e. It will thus be observed that by pressing the forty-cent key the combination that produces thirty cents is operated, as also is the finger, link, and operating-lever of the primary ten-cent key.

The rear end of the stem of the sixty-cent key contacts a plate 90 on the idler-lever 62^x, which plate overlies a portion of the operating-lever 62^e. It also overlies a projection 91, extending from an idler-lever 62^y, which latter idler-lever carries an underlying projecting stud 92, coinciding with an overlying stud 93, fixed upon the side of the lever 62^b. As will be seen, the lever 62^b connects with the fifty-cent mechanism, while the lever 62^e connects with the primary ten-cent mechanism. Therefore when the sixty-cent key is pressed the coin-slides 29^b and 29^e are raised to engage a fifty-cent coin and a ten-cent coin, respectively, and upon the forward movement of said coin-slides push said coins from their pockets into the coin-chute 9.

The rear end of the stem of the seventy-cent key is turned at right angles with the length of said stem to contact the operating-levers 62^d and 62^x. As hereinbefore stated in the description of the operation of the sixty-cent key, the idler-lever 62^x carries the plate 90, and therefore the operation of the lever 62^x operates the sixty-cent mechanism. The operation of the lever 62^d operates the twenty-cent mechanism; but inasmuch as the sixty-cent mechanism includes the primary ten-cent lever 62^e the net result of the operation of the key mentioned is seventy cents.

The rear end of the eighty-cent key contacts the operating-lever 62ⁱ, which lever by means of the link 64ⁱ is pivotally connected with the arm 94 of the yoke 95, the other arm 96 of which yoke carries an underlying stud 97, adapted to engage a corresponding over-

lying stud 98, projecting from the side of the finger 58^b for operating the fifty-cent mechanism. The horizontal bar of the yoke 95 is adapted to engage a projecting heel portion 5 99, extending downward from the secondary five-cent finger 58^c. As hereinbefore stated, the operation of the last-mentioned finger always includes the operation of the twenty-five cent finger. Therefore the depression of the 10 eighty-cent key operates the thirty-cent combination and the fifty-cent finger.

The rear end of the stem of the ninety-cent key is adapted to contact a plate 100, carried by an idler-operating lever 62^z. This plate 15 100 overlies the operating-lever 62ⁱ, also the end of the forty-cent link (pusher-rod) 64^h. The movement of the operating-lever 62ⁱ moves the yoke 95, and therefore operates the eighty-cent combination, and a movement of 20 the link 64^h operates the forty-cent combination. The movement of both the eighty-cent combination and the forty-cent combination at the same time oscillates both the inverted yokes 84 and 95, the net result of which is to 25 move the thirty-cent combination, the fifty-cent finger, and the primary ten-cent finger.

The operating-levers 62^j and 62^k when moved by contact with the rear ends of the one-cent and two-cent keys, respectively, 30 produce a corresponding movement in the fingers 58^j and 58^k by means of the connecting-links 64^j and 64^k. The coin-slide 29^k is made thicker vertically than the coin-slide 29^j, said extra thickness being necessary to 35 cause said slide to engage two one-cent coins when it is lifted instead of only one one-cent coin, as does the slide 29^j.

The operating-keys one-cent and two-cent might be made five dollars and ten dollars 40 gold without any change in the mechanism save enlarging the coin-pockets for said coins. The coin-holder casting is made with its walls sufficiently thick at the one-cent and 45 two-cent coin-pockets to permit of this enlargement, if it is desirable to fit the machine for the gold coins mentioned.

After a key is depressed to raise the proper coin-slide into position to deliver a certain amount in change the coin-slides are moved 50 forward by raising the delivery-lever 30, which movement is imparted to said lever most conveniently by the fingers of one hand of the operator, the palm of said hand being held in proper position to receive the delivered 55 coins which fall from the coin-chute 9. When it is desirable to add five cents to any of the amounts produced by the keys, one of the fingers of the hand that engages the delivery-lever 30 is permitted to engage the finger-lever 80 of the oscillatory shaft 78. Said finger-lever should be raised slightly in advance 60 of the delivery-lever 30, so that the cam 52^e of the primary five-cent key shall have an opportunity to raise the coin-slide into position 65 before its forward end comes into contact

with the lowermost coin in the primary five-cent pocket. By lifting the supplemental five-cent finger-lever an additional five-cent coin is delivered. The same result would be attained by pushing the five-cent key in addition to pushing the key for the larger amount. 70

In use coins are placed in stacks in the coin-holder 8 and a reserve supply laid in the coin-tray 11. In the operation of the machine the operator mentally determines the amount 75 of change desired and with the fingers of one hand pushes the key 3 upon the keyboard representing the amount of change desired. If fifteen cents, thirty-five cents, forty-five cents, fifty-five cents, sixty-five cents, 80 seventy-five cents, eighty-five cents, or ninety-five cents be desired, the operator pushes the ten-cent, thirty-cent, forty-cent fifty-cent, sixty-cent, seventy-cent, eighty-cent, or ninety-cent key, as the case may be, 85 and in raising the delivery-lever 30 permits one finger of the hand grasping said lever to engage the finger-lever 80 of the five-cent mechanism or after pushing the key representing the larger sum also pushes the five-cent key. As hereinbefore explained, the 90 five-cent key and the finger-lever 80 are both connected with the same five-cent mechanism. In raising the delivery-lever the operator naturally holds his hand palm upward 95 and somewhat hollow, in which position the coins falling from the coin-chute slide into the palm of the operating-hand.

In the machine as illustrated certain combinations less than one dollar cannot be obtained in a single operation of the machine— 100 for instance, nine cents, nineteen cents, twenty-nine cents, &c.; but, as is evident, another two-cent mechanism might be added and the machine then be capable of delivering by a single operation every amount 105 from one cent to one dollar, inclusive.

I claim as my invention—

1. In a change-maker, in combination, a plurality of coin-receptacles; a plurality of 110 coin-engaging members; a member to which said coin-engaging members are pivotally connected; a cam for each of said coin-engaging members for moving it into operative position with relation to one of said coin-receptacles; means for actuating said cams; 115 and means for moving the member to which the coin-engaging members are connected.

2. In a change-maker, in combination, a plurality of coin-engaging members adapted 120 to be lifted into operative position; and means for lifting said coin-engaging members comprising a setting-lever, a setting-key for each of said setting-levers for operating them, and another setting-key for operating a plurality of said setting-levers. 125

3. In a change-maker, in combination, a plurality of coin-engaging members; a plurality of mechanisms for setting said coin-engaging members, each of said mechanisms 130

comprising a pivoted lever, said levers being arranged side by side; a projection on one of said levers adapted to engage and move an adjacent one of said levers; and a setting-key for each of said levers.

4. In a change-maker, in combination, a coin-engaging member; means for placing said member in operative position; and means for causing said member to engage a coin, said member being adapted to restore said placing means to its initial position.

5. In a change-maker, in combination, a coin-engaging member; a rotatable cam for placing said member in operative position; and means for causing said member to engage a coin, said member being adapted to engage and restore said cam.

6. In a change-maker, in combination, a coin-engaging member; means for reciprocating said member; and means for placing said member in operative position, comprising a rotatable cam, said member being adapted to engage and restore said cam upon the movement of said member in one direction.

7. In a change-maker, in combination, a coin-engaging member; means for reciprocating said member; and means for placing said member in operative position, comprising a rotatable cam having a lifting-tooth, said member having a notch therein in which said tooth is adapted to engage upon the movement of said member in one direction.

8. In a change-maker, in combination, a reciprocable coin-engaging member; means for moving said member in one direction; a spring for moving said member in the opposite direction; a rotatable cam for placing said member in operative position; and a lever for rotating said cam in one direction, said coin-engaging member being adapted to engage and move said cam in the opposite direction.

9. In a change-maker, in combination, a coin-engaging member; a rotatable cam for setting said coin-engaging member; a member having a recess therein in which said cam is rotatably mounted, said cam having a groove in one of its sides; and a spring lying in said groove and bearing against said cam and the side wall of said recess.

10. In a change-maker, in combination, a coin-receptacle; a coin-engaging member; a cam for moving said member into operative position with relation to said coin-receptacle; a pivoted finger for moving said cam; a lever having a link connection with said finger; and a setting-key for moving said lever.

11. In a change-maker, in combination, a coin-engaging member; a cam for setting said member; a lug on said cam; a finger adapted to engage said lug; a pivoted lever; a link connecting said lever and said finger; and a setting-key for pivotally moving said lever.

12. In a change-maker, in combination, a

coin-holder adapted to support a row of coin-stacks; a series of coin-engaging members slidably supported beneath said holder; means located beneath said series of coin-engaging members for setting said members; a series of setting-keys arranged in front of and operatively connected with said setting means; a coin-chute arranged to discharge the coins substantially directly beneath said setting-keys; and a single delivery-lever for operating all of said coin-engaging members, the operating end of said lever extending to a point substantially directly beneath the discharge end of said coin-chute.

13. In a change-maker, in combination, a plurality of coin-engaging members; a tilting member to which said coin-engaging members are attached; means for moving said tilting member in one direction; a bell-crank lever for moving said tilting member in the opposite direction; and a hand-lever adapted to move said bell-crank lever.

14. In a change-maker, in combination, a plurality of coin-engaging members; a tilting member to which said coin-engaging members are pivotally connected; a spring for moving said tilting member in one direction; a bell-crank lever one arm of which is arranged to bear against said tilting member; and a hand-lever adapted to bear against the other arm of said bell-crank lever.

15. In a change-maker, in combination, a plurality of coin-engaging members; a tilting member to which said coin-engaging members are attached; means for moving said tilting member in one direction; and a pivoted delivery-lever operatively connected with said tilting member for moving said member in the opposite direction.

16. In a change-maker, in combination, a coin-engaging member; a rotatable cam for placing said member in operative position; a lug fixed to said cam; a pivoted finger adapted to engage said lug; a lever for moving said finger; a key for moving said lever; and means for actuating said coin-engaging member.

17. In a change-maker, in combination, a tilting member; a plurality of coin-engaging members pivotally connected with said tilting member; means for tilting said tilting member; and means for setting said coin-engaging members.

18. In a change-maker, in combination, a plurality of coin-delivery mechanisms; a plurality of keys for setting said mechanisms; a single delivery-lever for operating said coin-delivery mechanisms; and a lever arranged in position to be grasped together with said delivery-lever, which said lever is adapted to set one of said coin-delivery mechanisms.

19. In a change-maker, in combination, a plurality of coin-delivery mechanisms; a supporting member having a longitudinal groove and a plurality of transverse grooves therein;

a pivot-rod supported in said longitudinal groove; and setting means for said coin-delivery mechanisms, said means comprising members mounted on said pivot-rod and
5 lying in said transverse grooves.

20. The combination, with a coin-engaging member, of an adjusting-plate connected thereto at one end of said plate, and a screw having a screw-thread engagement with said
10 coin-engaging member and adapted to support the other end of said adjusting-plate.

21. The combination, with a coin-engag-

ing member, of an adjusting-plate secured thereto at one end of said plate, and a screw lying in said coin-engaging member, the head 15 of said screw being arranged to support the free end of said plate, said plate having an opening therethrough registering with the head of said screw.

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Witnesses:

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