

No. 673,800.

Patented May 7, 1901.

J. G. W. ROMANS & A. D. GROVER.

COIN OPERATED MACHINE.

(Application filed Aug. 20, 1900.)

(No. Model.)

4 Sheets—Sheet 1.

Fig. 1.

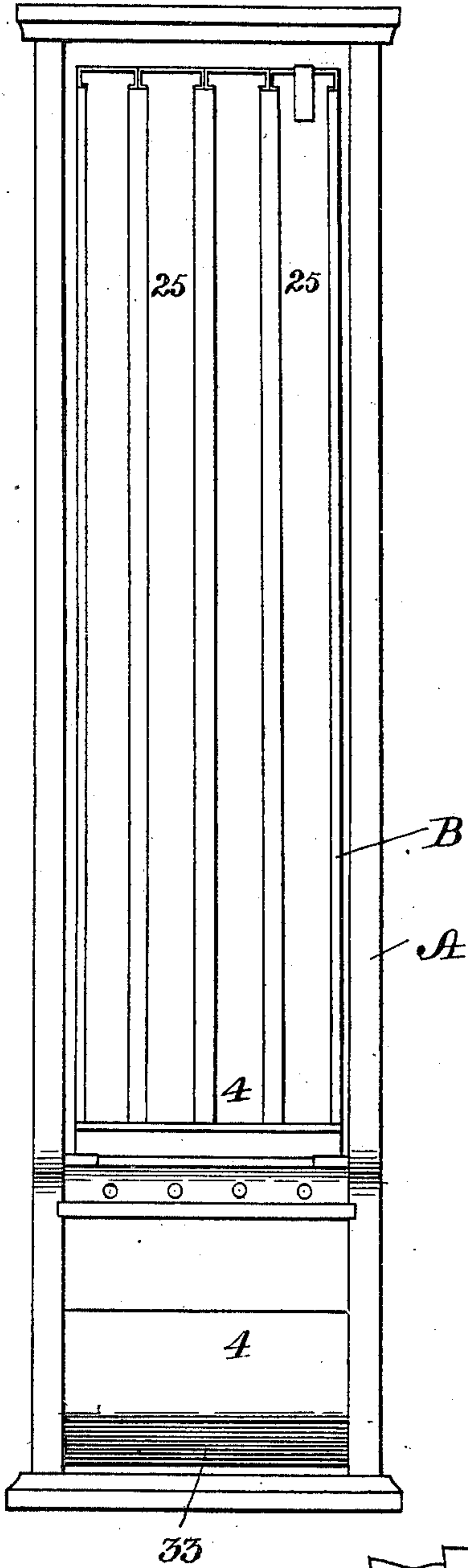
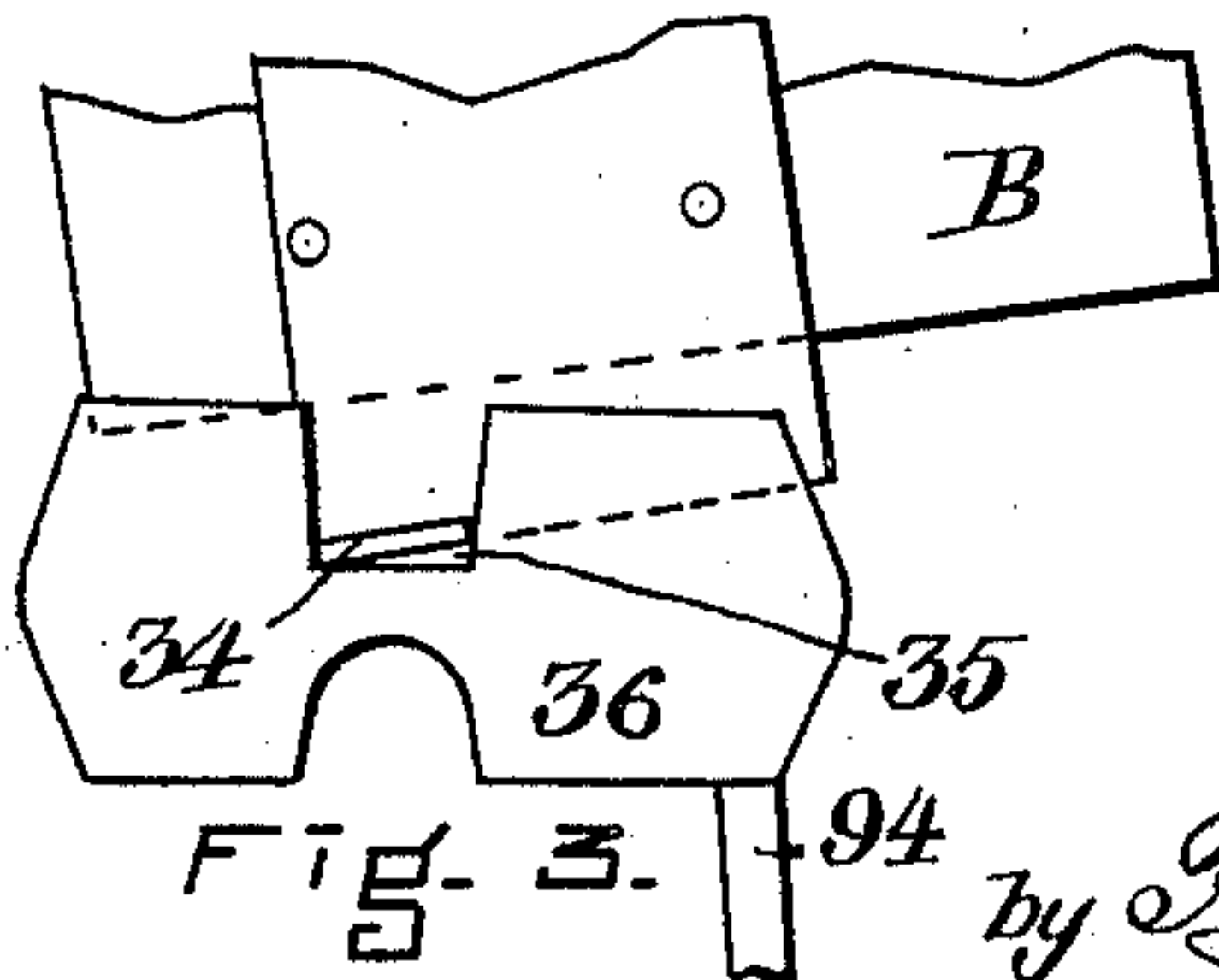
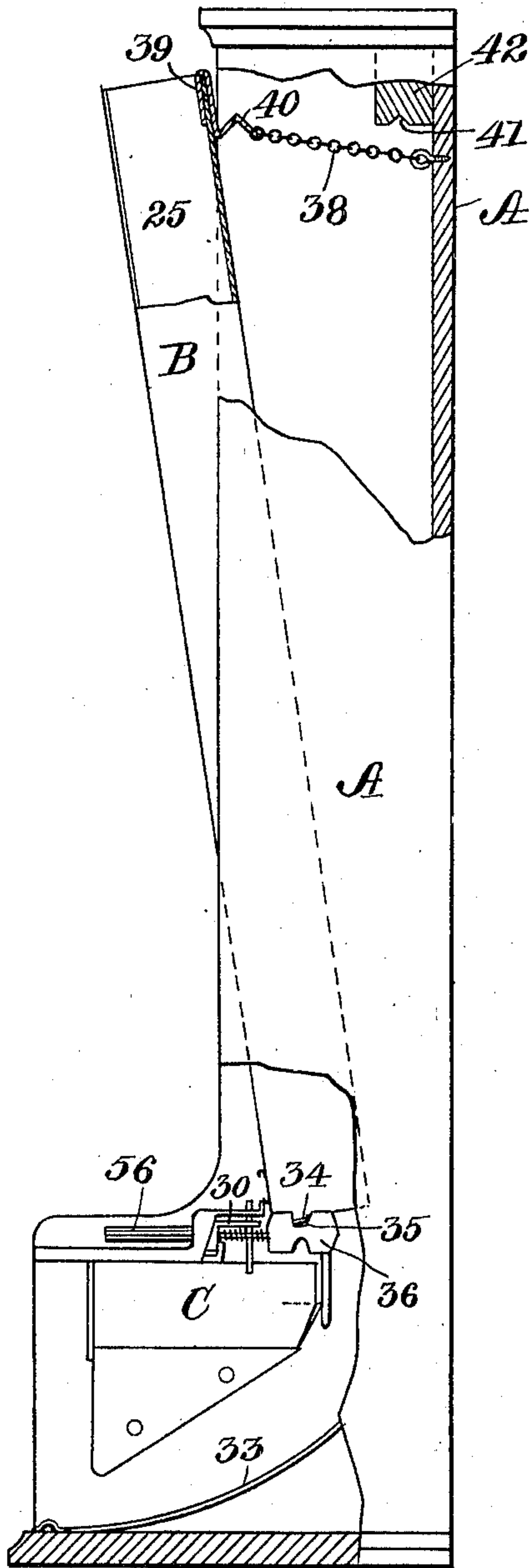


Fig. 2.



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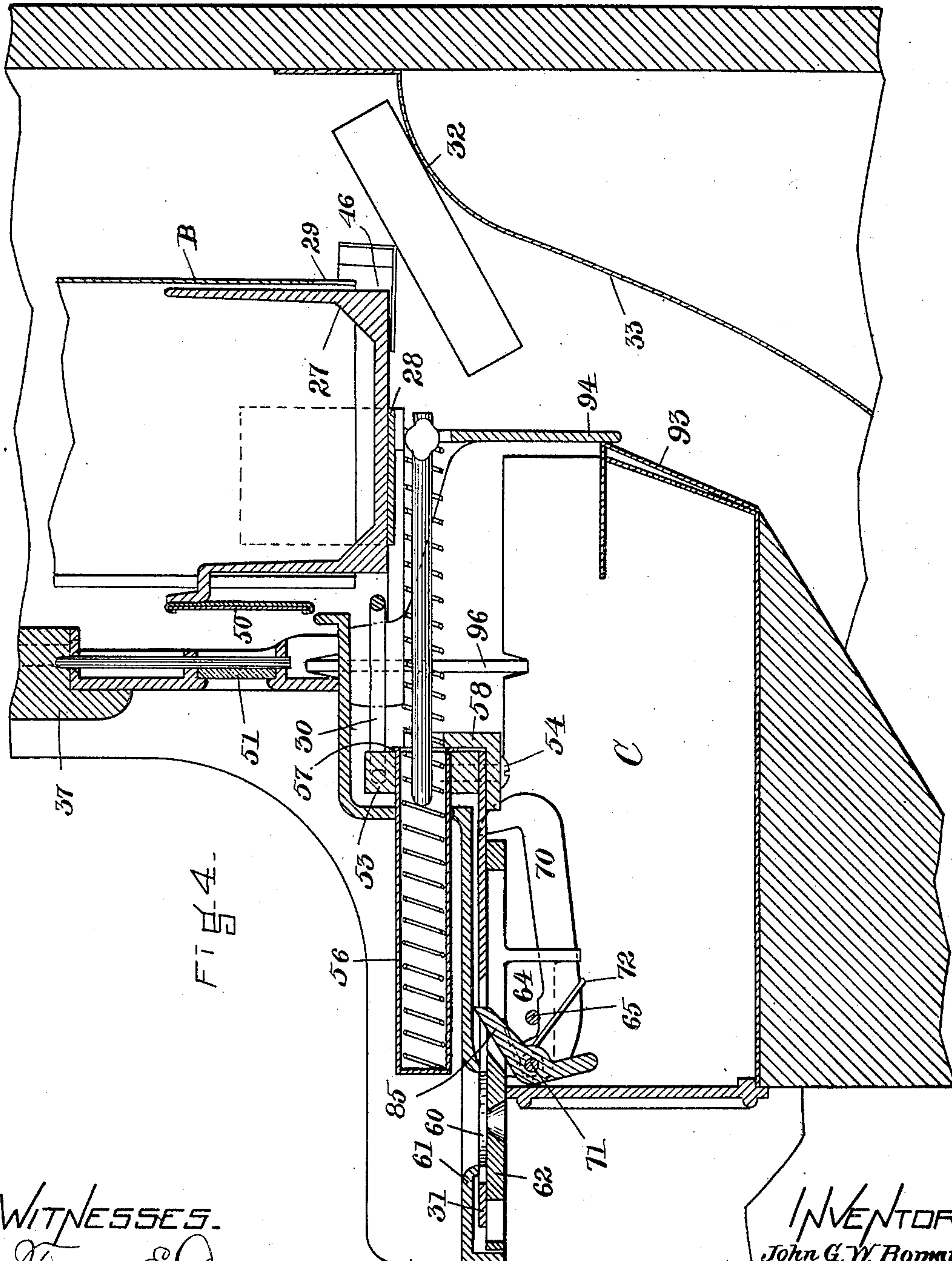
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4 Sheets—Sheet 2.



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Fig. 5.

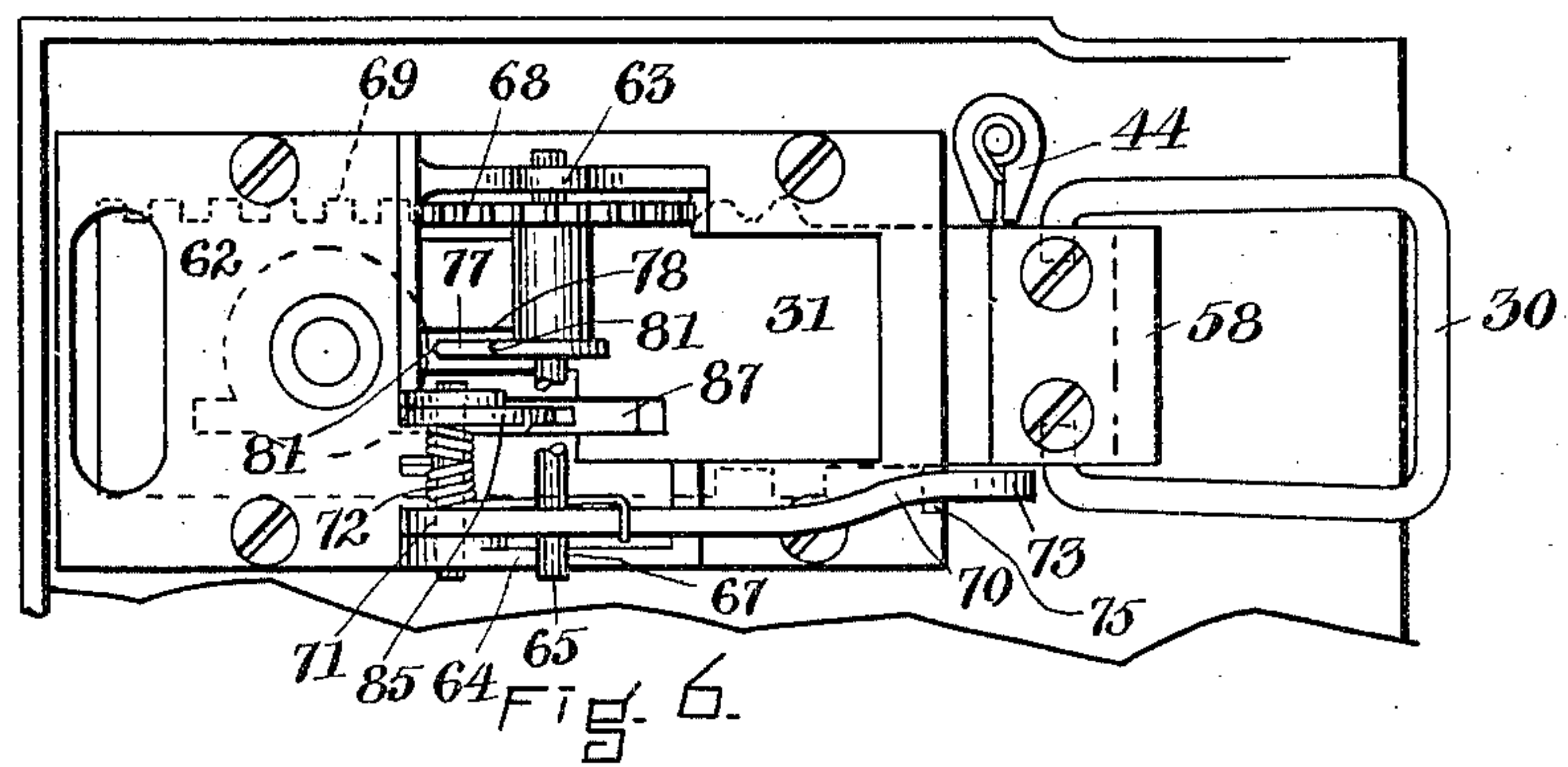


Fig. 6.

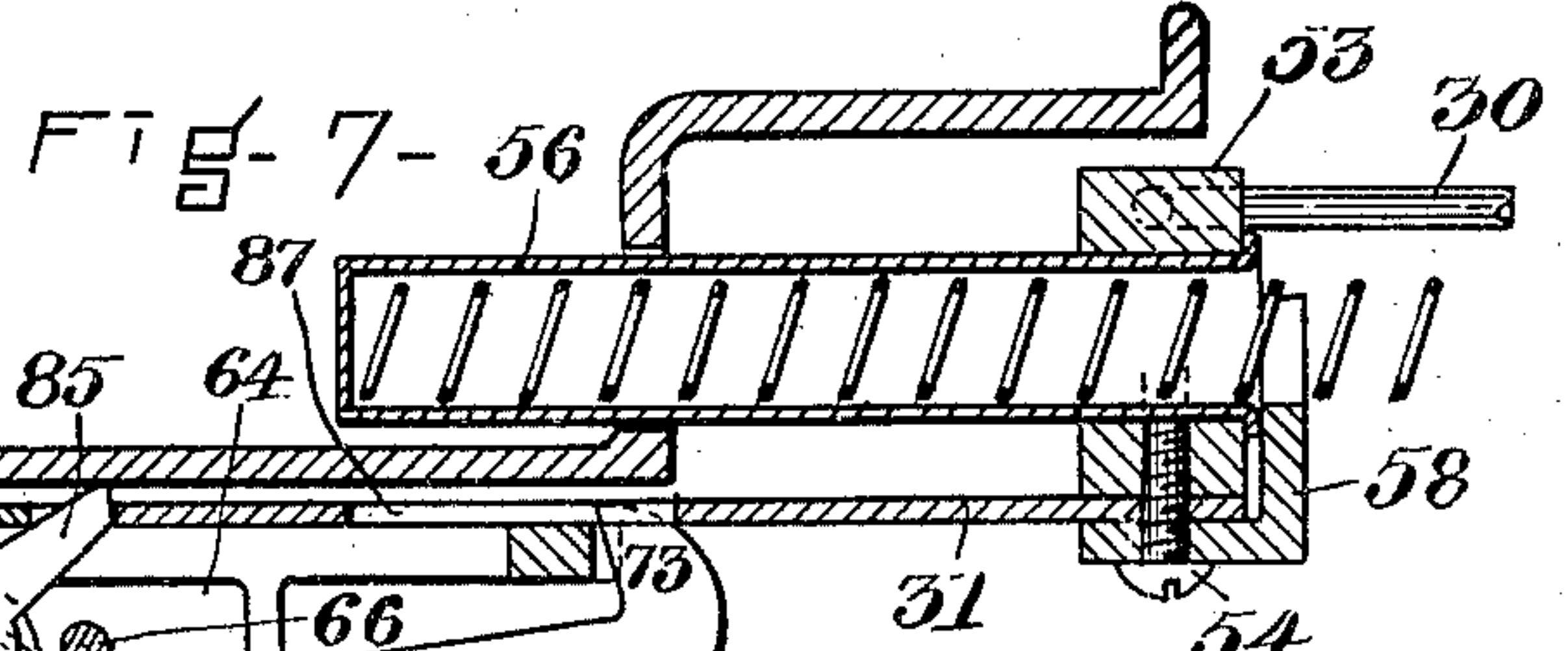
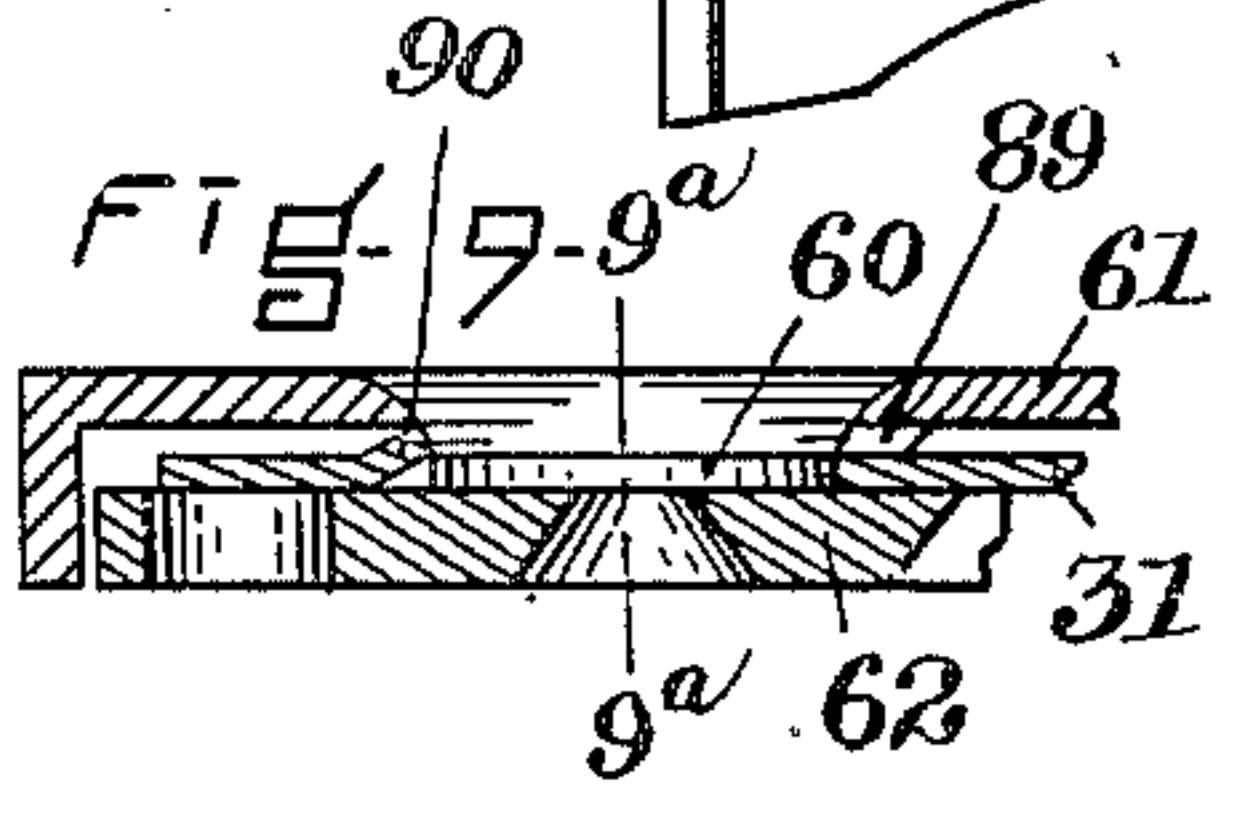
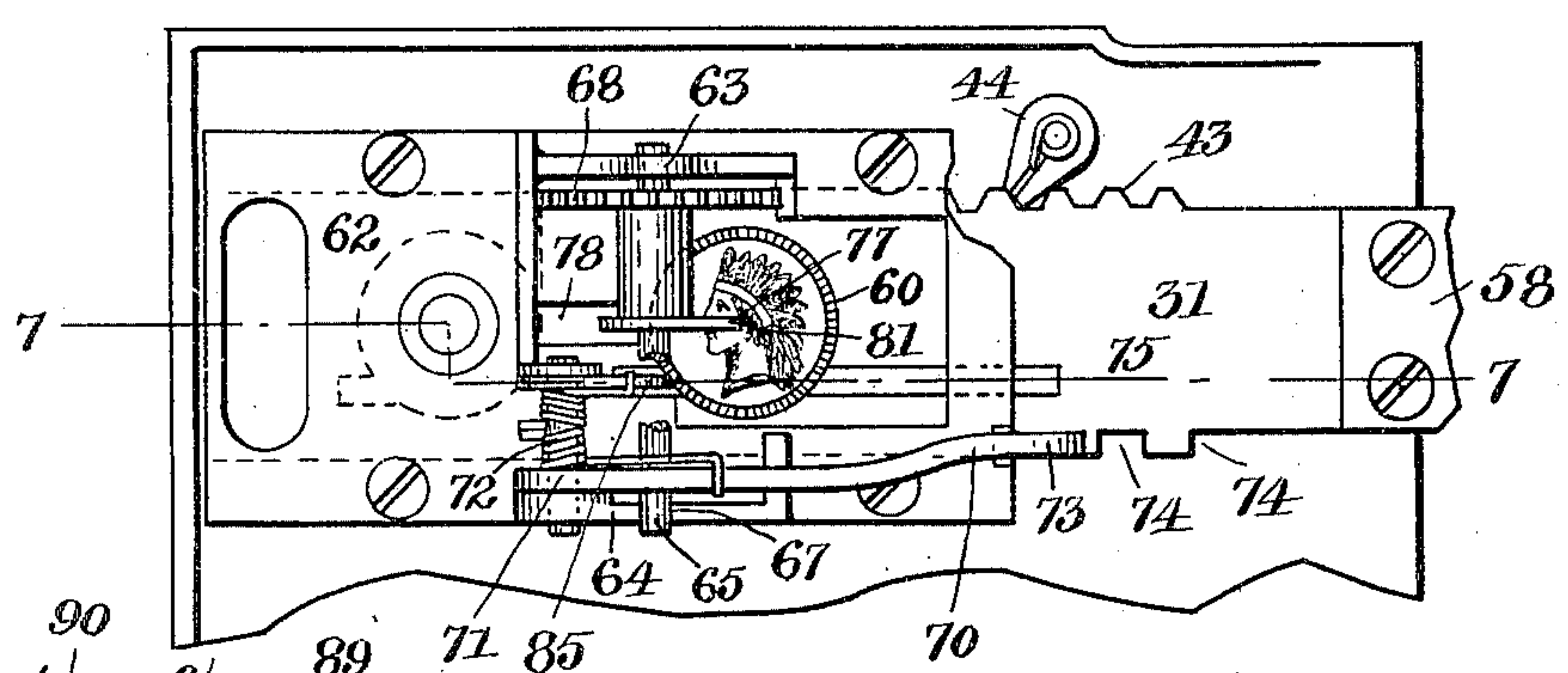
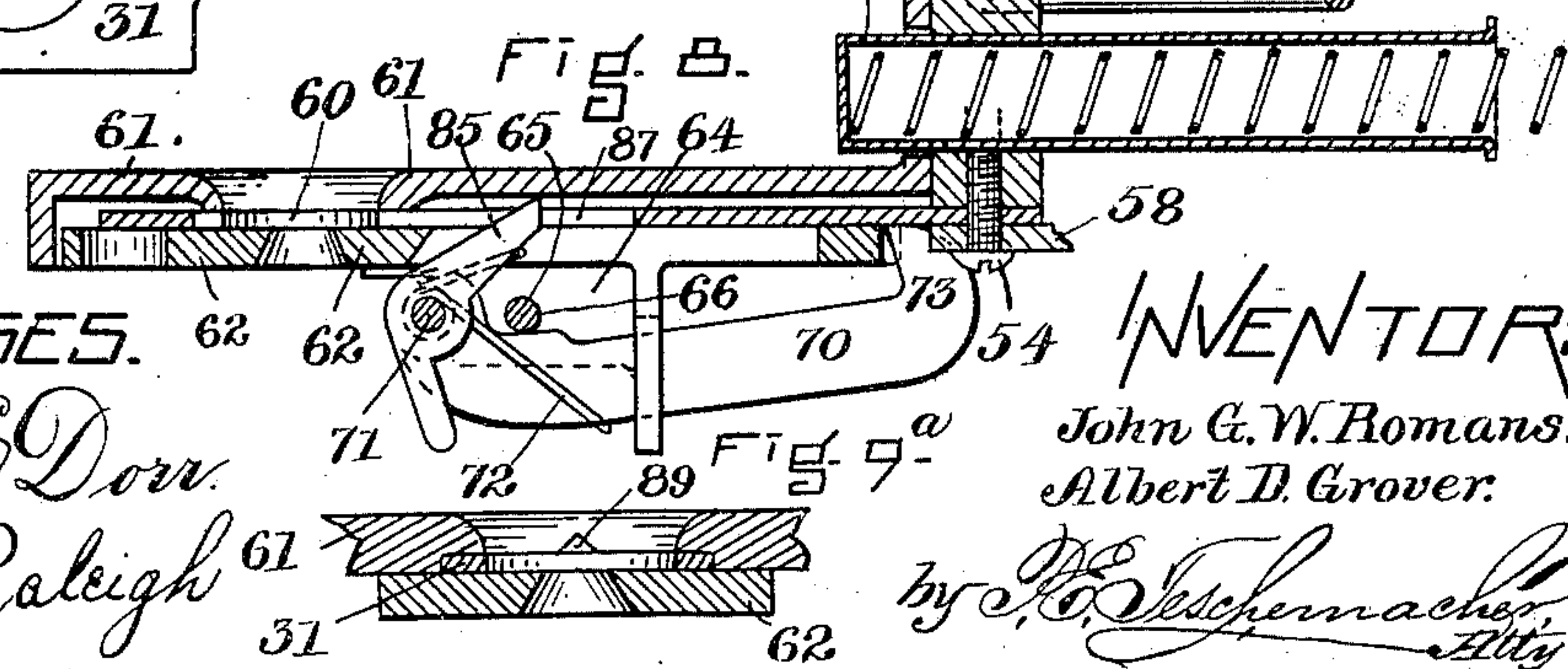
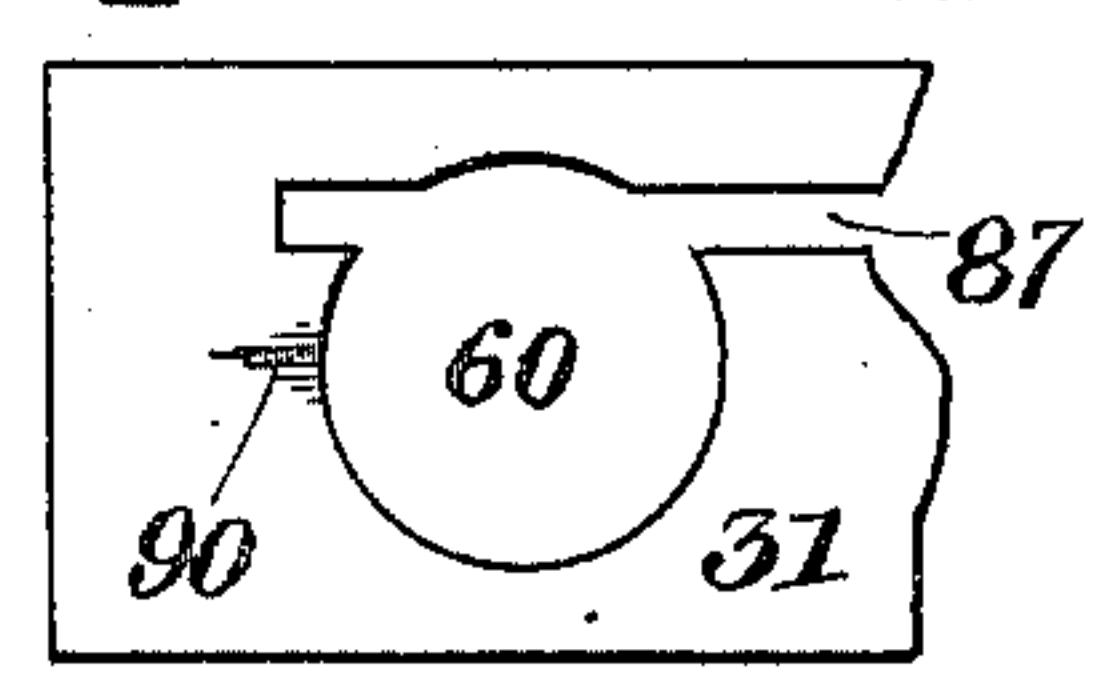


Fig. 10.



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FIG. 11.

FIG. 12.

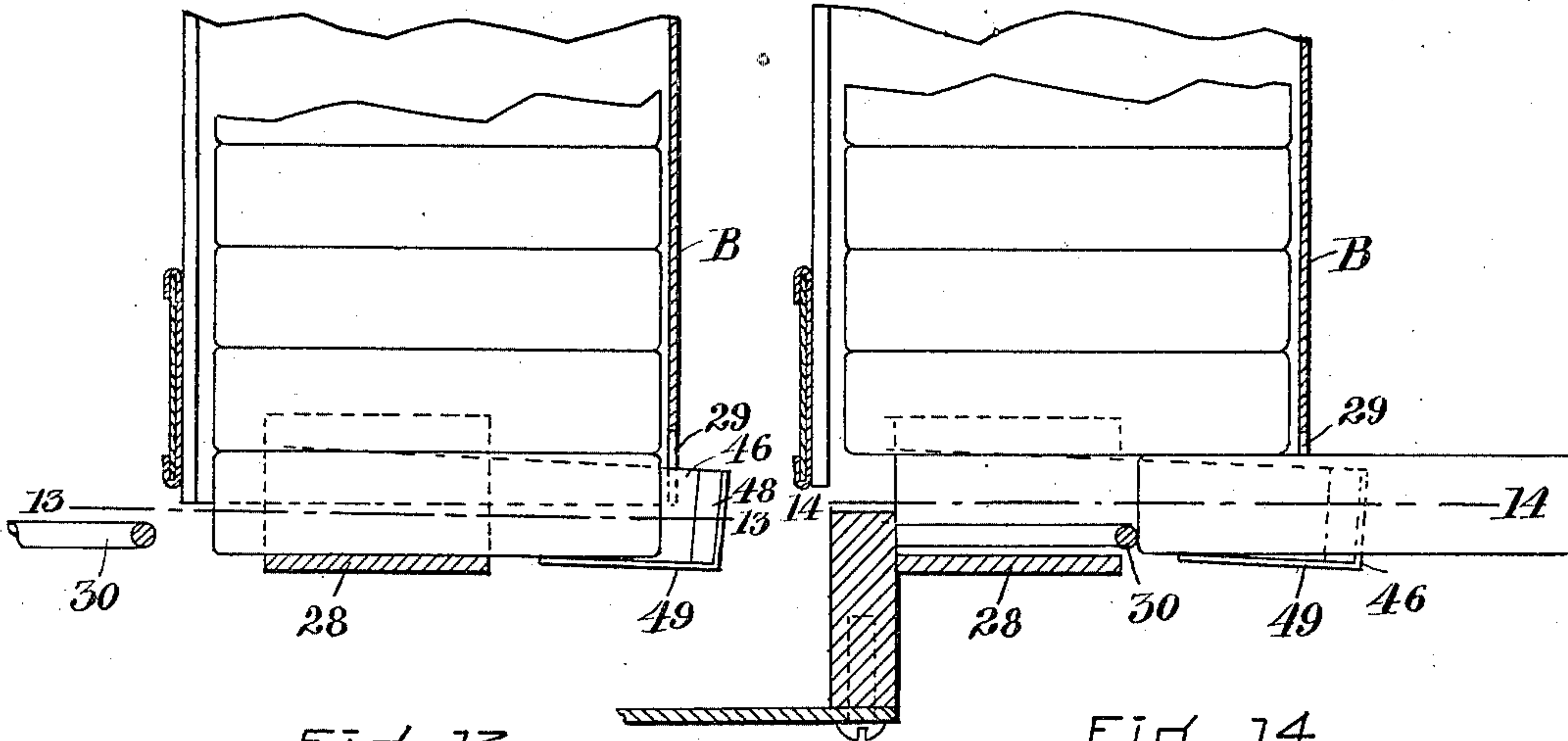


FIG. 13.

FIG. 14.

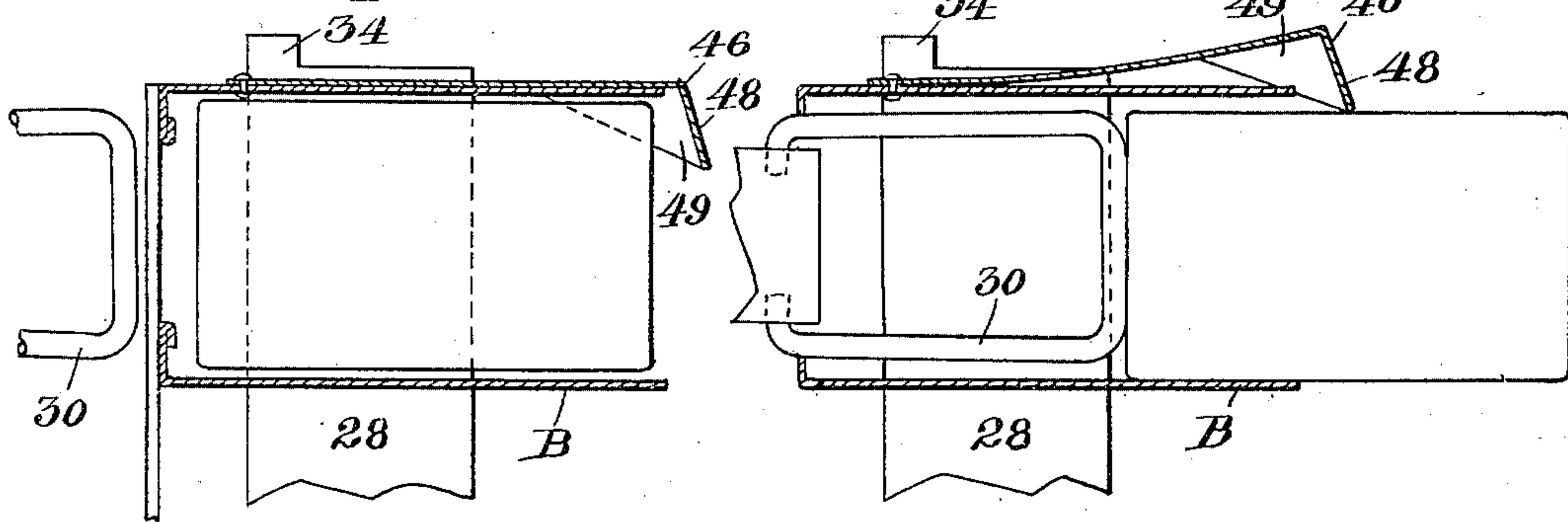
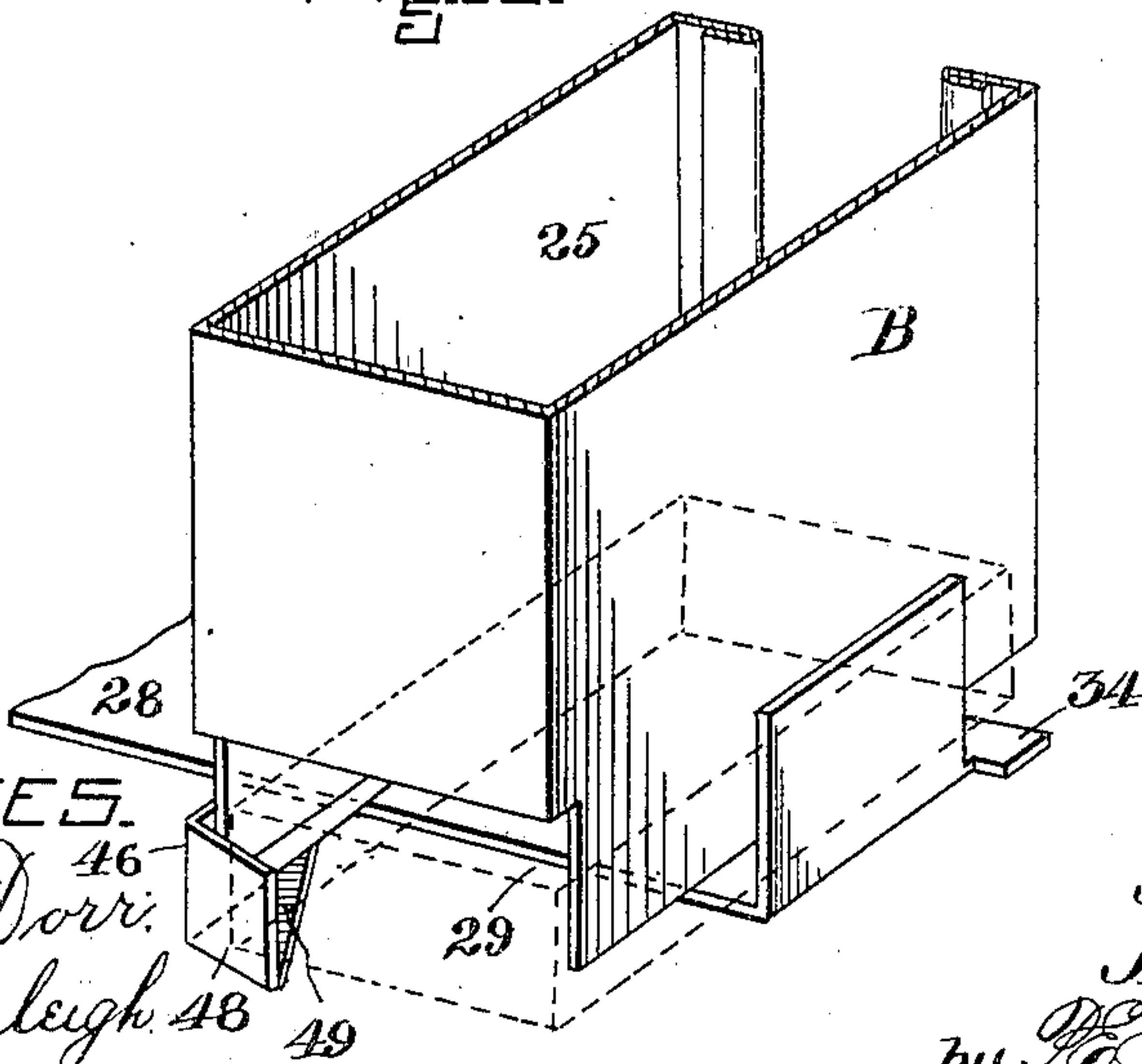


FIG. 15.



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# UNITED STATES PATENT OFFICE.

JOHN G. W. ROMANS, OF WEYMOUTH, AND ALBERT D. GROVER, OF MALDEN, MASSACHUSETTS, ASSIGNORS TO THE CHAMPION VENDING MACHINE COMPANY, OF BOSTON, MASSACHUSETTS.

## COIN-OPERATED MACHINE.

SPECIFICATION forming part of Letters Patent No. 673,800, dated May 7, 1901.

Application filed August 20, 1900. Serial No. 27,482. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN G. W. ROMANS, residing at Weymouth, in the county of Norfolk, and ALBERT D. GROVER, residing at Malden, in the county of Middlesex, in the State of Massachusetts, citizens of the United States, have invented certain new and useful Improvements in Coin-Operated Machines or Apparatus, of which the following is a specification.

Our invention relates to certain improvements in the coin-operated machine for which Letters Patent of the United States No. 625,123 were granted to us on the 16th day of May, 1899; and it consists in certain novel devices and improvements in the construction of the machine, as will be hereinafter fully described, and specifically pointed out in the claims.

In the accompanying drawings, Figure 1 is a front elevation of a coin-operated vending machine or apparatus constructed in accordance with our invention, the front panel or door being removed. Fig. 2 is a side elevation of the same, parts being broken away to show the interior construction. Fig. 3 is a detail of the bottom of the magazine and the support upon which it is pivoted. Fig. 4 is an enlarged central vertical section of the machine on the line 4 4 of Fig. 1. Fig. 5 is an inverted plan of the fraud-preventive coin-receiving device. Fig. 6 is a similar plan with the parts in a different position. Fig. 7 is a vertical section on the line 7 7 of Fig. 6. Fig. 8 is a section similar to that shown in Fig. 7, but with the parts in a different position. Fig. 9 is a sectional detail of the front portion of the coin-slide and parts adjacent thereto, illustrating the devices which we employ for preventing the clogging and injuring of the machine by the malicious introduction of a thin strip of metal between the coin-slide and the plate thereunder. Fig. 9<sup>a</sup> is a vertical section on the line 9<sup>a</sup> 9<sup>a</sup> of Fig. 9. Fig. 10 is a plan of one end of the coin-slide. Fig. 11 is an enlarged sectional elevation of the bottom of the magazine and the merchandise-ejector. Fig. 12 is a similar section, showing a piece of merchandise being pushed out by the ejector. Fig. 13 is a horizontal section

on the line 13 13 of Fig. 11. Fig. 14 is a horizontal section on the line 14 14 of Fig. 12. Fig. 15 is a perspective view of the lower portion of the magazine and parts connected therewith.

In the said drawings, A represents the exterior casing of a vending machine or apparatus within which is placed a removable magazine B, divided by suitable partitions into a series of vertical chambers 25 for containing the articles or packages 26 to be vended—for instance, tablets of chocolate or gum or boxes of confectionery—said chambers being of the proper shape in cross-section to receive said articles or packages which are superposed one upon the other, each chamber being provided with a weight 27, resting upon the upper one of the stack of articles or packages, whereby their free downward movement is insured. Across the lower end of each chamber 25 extends a strip 28, which forms a shelf for the lowermost package or article to rest upon, as shown in Fig. 11, the rear wall of the magazine terminating at a sufficient distance above this shelf to leave a space 29 of sufficient size to permit of the passage of a single tablet or article when pushed out by the ejector 30, connected with the coin-slide 31, said ejector passing through a space between the lower edge of the front wall of the magazine and the shelf 28. The shelf 28 is of such width and is so placed as to leave the rear portion of the bottom of the magazine open, and projecting from the rear wall of the casing A is a rest 32, which serves to support the rear edge of the article or package when pushed out by the ejector sufficiently far to nearly clear the shelf 28. A further inward movement of the ejector pushes the article clear of the shelf 28, when the end which has just cleared the shelf will drop, as shown in Fig. 4, the article falling onto a curved chute 33, down which it slides into a position where it can be conveniently reached by the person entitled to receive it. The rest 32 is preferably provided with an upward incline to guide the end of the article or package up onto it; but by placing the rest at the proper level the incline may be dispensed with. By thus providing a rest for the rear end of the



article as it is pushed out by the ejector it is caused to be delivered without turning over in its descent, thereby enabling the chute to be made of less width than heretofore and rendering the delivery of the article certain and reliable.

The magazine B is provided at its bottom, near its front, with projections or pivots 34, which fit into and rock on suitable sockets 35, formed in supports 36 on each side of the machine. When the front portion or panel 37 is removed, the magazine B can be tilted forward on the pivots 34 into the position shown in Figs. 1 and 2, its outward swing being limited by a chain 38, one end of which is fastened to the back of the casing A, while the other end is detachably connected with the magazine B, the connection of the chain with the magazine being preferably made by attaching the end of the chain to a removable spring-clasp 39, composed of a piece of sheet metal doubled and sprung over the rear edge of the magazine, so that it can easily be detached therefrom when it is desired to remove the magazine from the casing. The clasp 39 is provided at its bottom with a V-shaped projection 40, forming a spring friction-catch which when the magazine is tilted back into place snaps into a V-shaped groove 41 in a block 42, fastened to the back of the casing, thus holding the magazine securely in place while the downward pressure of the spring-catch serves to hold down the magazine and prevent its pivots 34 from slipping out of their sockets in any position in which the machine may be placed, whether on its side or upside down. When the magazine is to be tilted forward, a slight pull upon it will detach the spring-catch from its groove in the block 42, the chain limiting the forward movement of the magazine, as before described. When tilted forward, the magazine can be easily filled by introducing the articles into the open ends of the chambers. Heretofore when the magazine has been permanently secured within the casing the front walls of its chambers have not extended to the top, thereby leaving spaces for the introduction of the goods; but where the magazine is constructed to tilt forward, as described, the front walls of the chambers can be continued to the extreme upper end of the magazine, thereby increasing its holding capacity.

The coin-slide 31 is provided on one edge with notches 43, with which engage a two-way spring-pressed pawl 44, so arranged that while the coin-slide is being pushed in it cannot be drawn back until it has arrived at the end of its inward movement and when returning it cannot be pushed forward until it has arrived at the end of its movement in that direction. After the slide has been pushed in and the pawl 44 has cleared the last notch 43 it is, however, capable of a slight forward and backward movement, whereby the ejector 30, upon which then rests

the lowermost package in the magazine, could be caused by its frictional contact with the package to gradually work it forward until finally ejected, thus defrauding the machine. To avoid this possibility of tampering with the machine, we provide a spring 46, Figs. 11, 12, 13, 14, and 15, the free end of which bears against the side of the package and exerts a sufficient pressure thereon to prevent any possibility of its being ejected or worked out by the frictional contact of the ejector with its bottom. We preferably bend the end of the spring 46 inward at an angle, as shown at 48, forming a yielding stop, which is easily forced outward by the package itself when properly actuated by the ejector. This yielding stop 46 also prevents the goods from dropping out of the magazine in case the machine should be placed on its back. The spring-stop 46 is also provided at its rear end beneath the bent portion with a plate 49, which forms a support for the rear end of the package, and thus prevents any possibility of its tilting downward, as might occur, in which case the ejector would be liable to pass beneath it, causing it to be wedged and the machine thus obstructed. A further advantage in providing a support for the end of the package in addition to the shelf 28 is that it adapts the machine for packages or articles of different lengths or sizes, as it would be impossible to increase the width of the shelf beyond the range of movement of the coin-slide, and if it were not for the support for the end of the package it would if too long tilt downward and, as before stated, allow the ejector to pass beneath it. When the last piece of goods has been delivered from the bottom of a chamber, the weight 27 will be in a position, as shown in Fig. 4, to intercept the ejector 30, thus locking the coin-slide connected therewith and preventing it from being again pushed in and avoiding the losing of a coin by a customer when the magazine is empty. The weight 27 is provided on its front side with a plate or tablet 50 bearing the word "Empty," which is disclosed through a suitable aperture 51 at the bottom of the front panel or door of the casing at the same time that the coin-slide is locked by said weight. The stock or front vertical portion 53 of the ejector 30 is connected with the coin-slide by means of a screw 54, and to this portion 53 is secured, by means of a yielding or breakable connection, to be presently described, a tubular push-pin or plunger 56, which projects out through an opening in the casing into an accessible position and forms a means whereby the coin-slide 31 after receiving the proper coin can be pushed in by the customer and the ejector 30 brought into contact with the lowermost article or package in the magazine to force the same out from beneath the stack or pile of merchandise and deliver the same into the chute 33.

The plunger 56 is slidably fitted within an opening in the portion 53 of the ejector and



is provided with a lip or flange 57, against which rests an angular connecting-piece 58, secured by the screw 54 to the end of the coin-slide 31. This angle-piece 58 is composed of brittle iron or other suitable material which will break at the angle if a sharp blow is struck with a hammer or stone on the outer end of the plunger, which will then be free to slide through the portion 53 without moving the coin-slide or ejector, as shown in Fig. 8, thereby preventing the fraudulent emptying of the magazine by breaking the pawl or other mechanism which controls the coin-slide by a blow on the end of the plunger, which would leave the ejector free to be moved back and forth until the magazine had been emptied. The breakable connection is, however, of such strength as to successfully resist any force used to legitimately operate the machine.

The coin-slide 31, which is provided with an opening 60 for the reception of the proper coin, moves in a slideway consisting of two plates 61 62, fitting closely against its upper and lower surfaces, said plates projecting beyond the front of the money-drawer C, which forms the front of the lower portion of the casing. Arranged transversely beneath the lower plate 62, between a pair of lugs 63 64, projecting from the under side of said plate, is a rotary shaft 65, one end of which rests loosely in a hole 66 in the lug 63, which forms a pivotal bearing or center in which the shaft 65 may swing or tilt toward or away from the plate 62, the opposite end of the shaft being guided in an open slot 67 in the lug 64. To the shaft 65, near its pivotal point, is secured a gear 68, which meshes with rack-teeth 69, formed in the front edge of the coin-slide 31, whereby as said slide is pushed in or drawn out a rotary motion will be imparted to the shaft. 70 is a locking lever or pawl which is fulcrumed at 71 to the lug 64 of the plate 62 and is acted upon by a stiff spring 72 to normally keep its free hook-shaped end 73 in contact with the top plate 61 and in a position to engage the edge of the first opening 74 in the coin-slide to lock the same and prevent its further inward movement, the end 73 of the lever 70 passing through an aperture 75 in the plate 62. The lever 70 bears near its fulcrum on the free end of the tilting shaft 65 with a strong yielding pressure, due to the action of the spring 72, and to the shaft 65 is secured a hardened-steel segment 77, which projects into a slot or opening 78 in the lower plate 62, located at the center of its width, so that the coin-opening 60 will pass centrally over it as the coin-slide 31 is pushed in. The segment 77 is provided with a series of sharp projections 81, which are adapted to roll against the under surface of the coin passing over them as the shaft 65 is turned by the inward movement of the coin-slide, the spring-pressed locking lever or pawl 70, which acts on the end of the shaft 65, causing the segment 77 to bear with considerable force

against the under side of the coin as the latter passes over it. As each projection of the segment 77 comes into rolling contact with the coin the free end of the shaft 65 is forced downward or away from the slide 31 and, acting on the lever 70 near its fulcrum, produces a sufficient movement of the outer end of said lever to clear it from the opening 74 of the slide, with which it is engaged, the succeeding projections 81 of the segment 77 producing similar movements of the lever 70, which thus permits the slide 31 to be freely pushed in to the extreme limit of its inward movement, the coin dropping out through an opening in the plate 62 into the money drawer or receptacle C when the slide 31 is at or near the limit of its inward movement.

It will be seen that as the fulcrum of the lever 70 is close to the point where it bears on the shaft 65 a very slight tilting of the latter, due to the radial projections of the segment 77 coming into contact with the coin, will produce sufficient movement of the free end of locking-lever 70 to cause it to clear the openings 74 of the coin-slide, the ratio of movement between the shaft 65 and the outer end of the lever 70 being such that when a coin of less than the proper thickness is placed within the coin-opening it will on coming into contact with the projections 81 fail to move the tilting shaft 65 sufficiently to raise the hooked end of the lever 70 out of the opening 74 in the coin-slide, which will thus remain locked, thus preventing the machine from being operated until a coin of the proper size and thickness is placed within the coin-opening 78. If the slide 31 is pushed in with the coin-opening empty, the segment will enter said opening and leave the lever 70 free to enter the first opening 74 which it encounters, a similar action taking place if a washer or disk with a small hole in the center is used, as one of the teeth of the segment will enter the central opening as the slide is pushed in and cause the lever 70 to engage one of the openings 74. If a blank or token of the proper size and thickness composed of lead, pasteboard, or other soft material is placed in the coin-opening 60, it will on its arrival over the segment 77 be cut into or indented by the sharp spurs or projections 81 of the same as they roll in contact therewith, the spring 72 being of sufficient strength to cause the spurs or projections to sink into the soft substance, when the slight upward movement of the tilting shaft 65 thus produced will leave the lever 70 free to engage the first opening 74 of the coin-slide and prevent it from being pushed in.

The above-described coin-slide-controlling mechanism is substantially the same as that shown and described in our aforesaid Letters Patent No. 625,123 and forms no part of our present invention.

To prevent the machine from being defrauded by a coin continuously held within the coin-opening by means of a wire or otherwise



fastened in place, so that it will not drop out when the coin-slide is pushed in, thus enabling the slide to be worked an indefinite number of times with the same coin, we employ a spring-pressed pawl or dog 85, pivoted at 71 beneath the coin-slide, said pawl lying in the path of the coin, up against which it bears with a spring-pressure as the coin-slide is pushed in. As soon, however, as the coin has passed beyond the pawl 85 its point or upper end rises up in front of the coin into a slot or groove 87 in the coin-slide, extending longitudinally in both directions from the coin-opening 60, as shown in Figs. 7 and 10, so that if the coin still remains in the coin-opening when the slide is being withdrawn the point of the pawl will catch against the edge of the coin and prevent the further return of the coin-slide, while the two-way pawl will prevent the slide from being again pushed in, and consequently the slide will be securely locked, so that it cannot be operated in either direction until the coin-operative mechanism is removed from the case, when the parts can be released by disengaging the two-way pawl from its notch 43 in the edge of the coin-slide.

To prevent the possibility of the coin-slide being clogged or obstructed by the malicious introduction of a thin strip of metal between the lower plate 62 and the coin-slide, the upper plate 61 is provided on its bottom with a V-shaped groove 89, Figs. 9 and 9<sup>a</sup>, and the coin-slide 31 is provided on its upper side, immediately in front of the coin-opening, with a correspondingly-shaped projection 90, which will enter said groove 89 as the coin-slide is pushed in, so that if the attempt is made to introduce a thin strip of metal at this point it will be caught and pinched between the said projection and groove, thus preventing the further movement of the coin-slide and the possibility of clogging the machine in this manner.

The inclined back 93 of the money-drawer C, which is made of tin or other spring sheet metal, is connected with the body of said drawer at its lower edge only, as shown in Fig. 4, whereby it will yield on coming into contact with the plate or apron 94, a tight-spring fit of the back 93 against said apron being thus insured, which prevents the possibility of the money being shaken out of the drawer if the machine should be inverted or laid on its side. Furthermore, the pressure of the spring back against the apron 94 will cause the drawer C to be slightly pushed outward when released by its locking device 96, thereby enabling it to be easily removed by the money-collector.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In a coin-operated machine or apparatus, the combination with a merchandise-

magazine having a shelf thereunder for supporting the pile or stack of merchandise therein, and a coin-controlled merchandise-ejector, of a spring located at the bottom of the magazine and forming a yielding stop for the lowermost package or piece of merchandise resting on the shelf, said spring-stop acting to prevent the accidental falling out of the merchandise and the fraudulent delivery of the same by the frictional contact of the ejector with its under surface when the said ejector is at or near the limit of its inward movement, substantially as described.

2. In a coin-operated machine or apparatus, the combination with a merchandise-magazine having a shelf thereunder for supporting the pile or stack of merchandise therein, and a coin-controlled merchandise-ejector, of a spring located at the bottom of the magazine and forming a yielding stop for the lowermost piece of merchandise resting on the shelf, said spring having a rest for supporting the rear end of said lowermost piece of merchandise, whereby it is prevented from tipping up at its front end while resting on the shelf or support, substantially as described.

3. In a coin-operated machine or apparatus, the combination with the coin-slide, of a plunger connected therewith by a piece of brittle material easily breakable by a blow on the end of the plunger, substantially as and for the purpose described.

4. In a coin-operated machine or apparatus, the combination with the coin-slide consisting of a flat plate having an opening in a horizontal plane for the reception of a coin lying flatwise therein and having a longitudinal slot or groove extending in both directions from the edge of the coin-opening, of a spring-actuated dog or pawl, the upper end of which is adapted to enter said slot or groove and rise into a position to engage the edge of a coin held in the said coin-opening, and thereby prevent the coin-slide from being drawn back, substantially as described.

5. In a coin-operated machine or apparatus, a slideway for the coin-slide having its upper plate provided on its under side with a longitudinal groove, in combination with a coin-slide having on its upper side, immediately in front of its coin-opening, a projection adapted to fit and enter the groove in said upper plate as the coin-slide is pushed in, substantially as and for the purpose described.

Witness our hands this 15th day of August, A. D. 1900.

JOHN G. W. ROMANS.  
ALBERT D. GROVER.

In presence of—

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R. HENRY MARSH.