

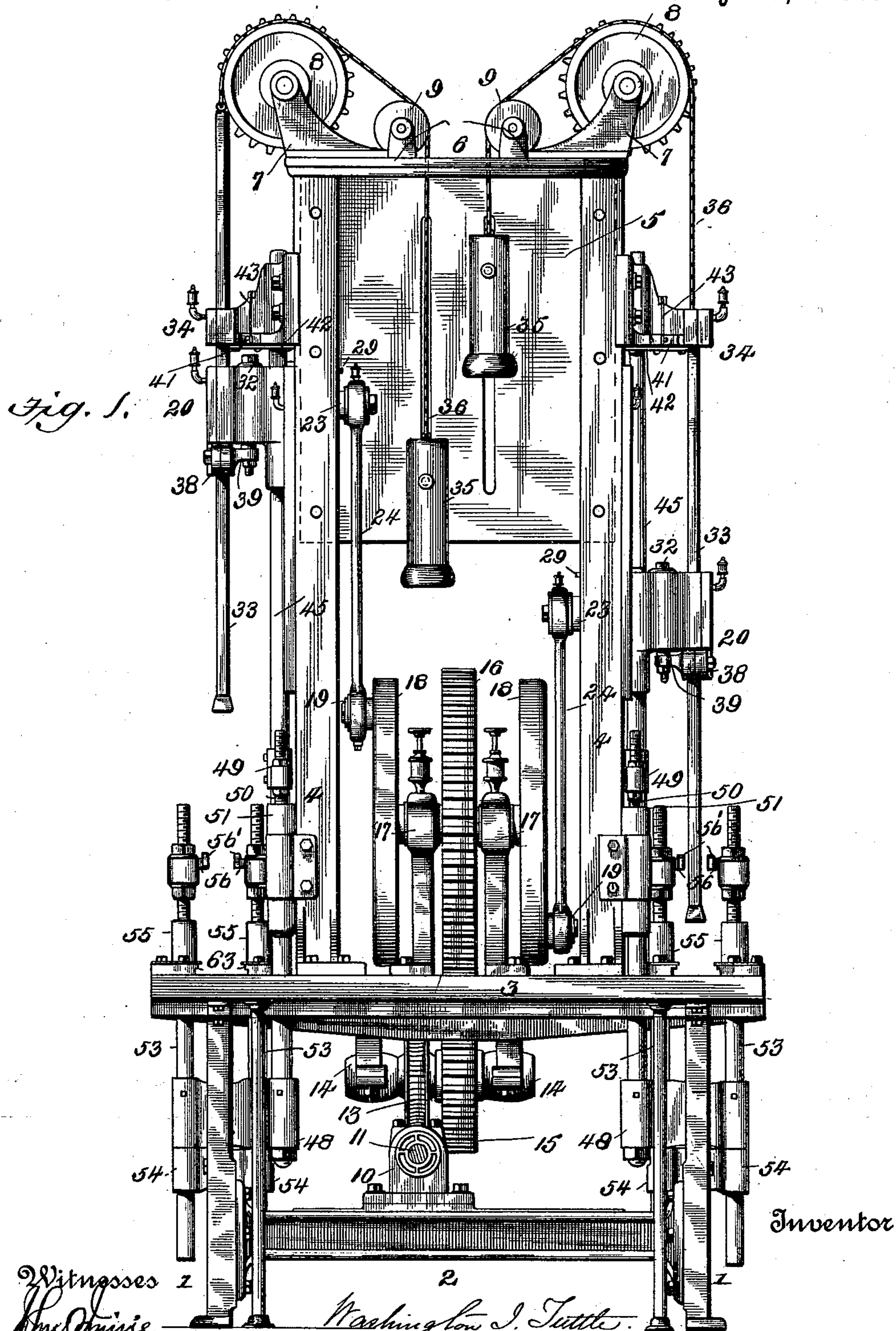
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7 Sheets—Sheet 1.

W. I. TUTTLE.
BAG PACKING MACHINE.

No. 543,114.

Patented July 23, 1895.



Inventor

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H. Mac Carthy

Washington I. Tuttle.
by Wm. Stewart

Attorney

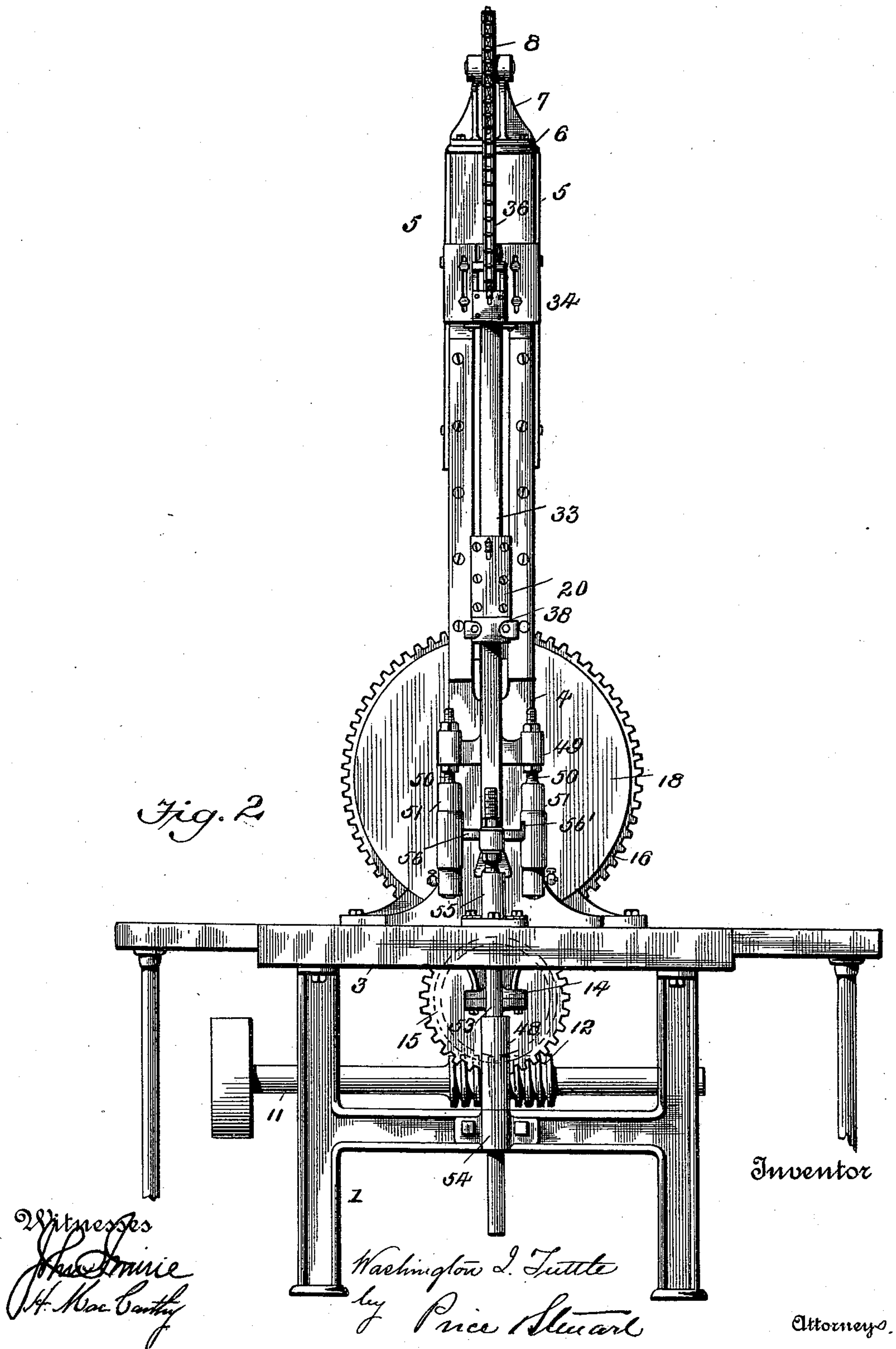
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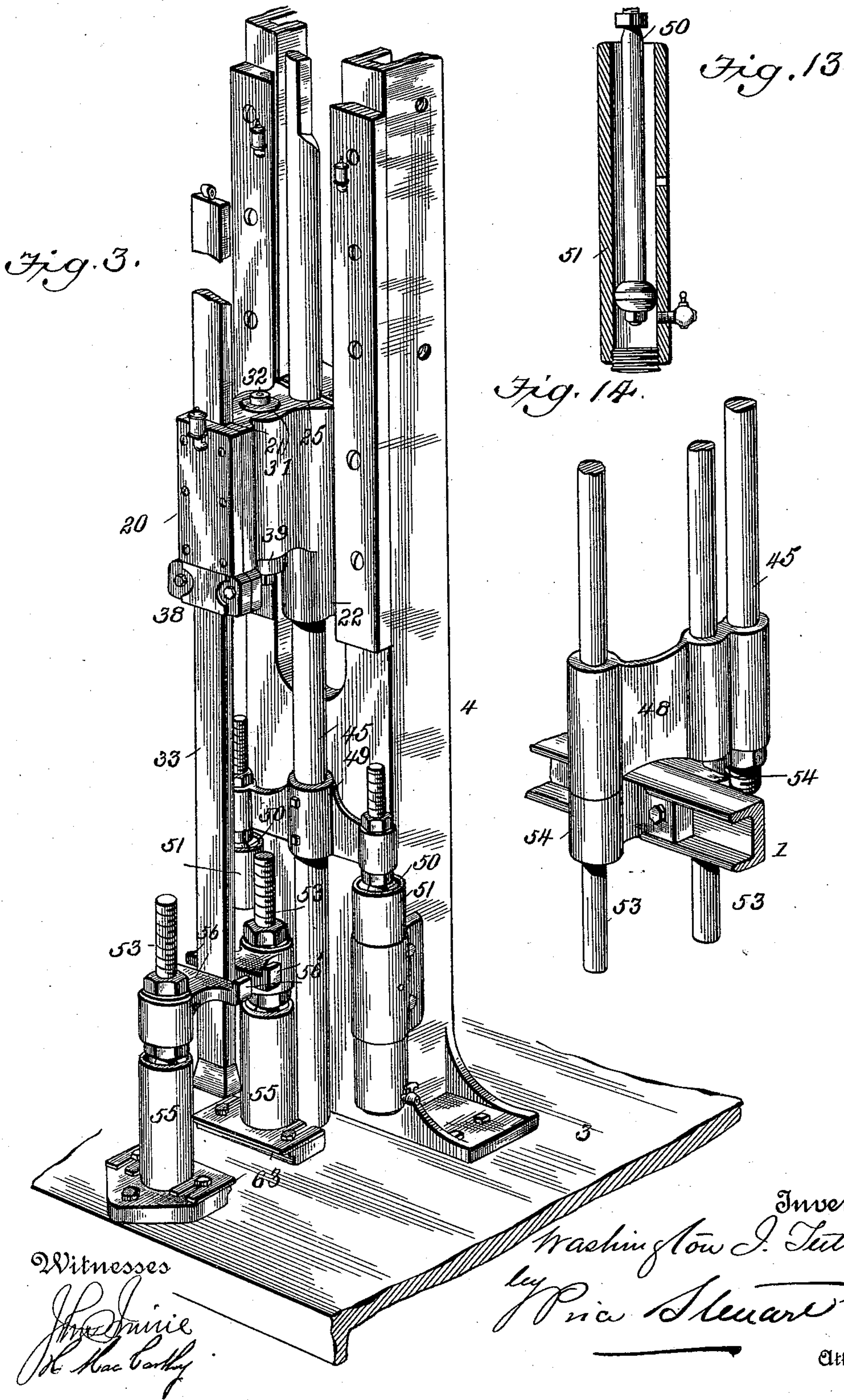
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7 Sheets—Sheet 3.

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Patented July 23, 1895.



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Fig. 4.

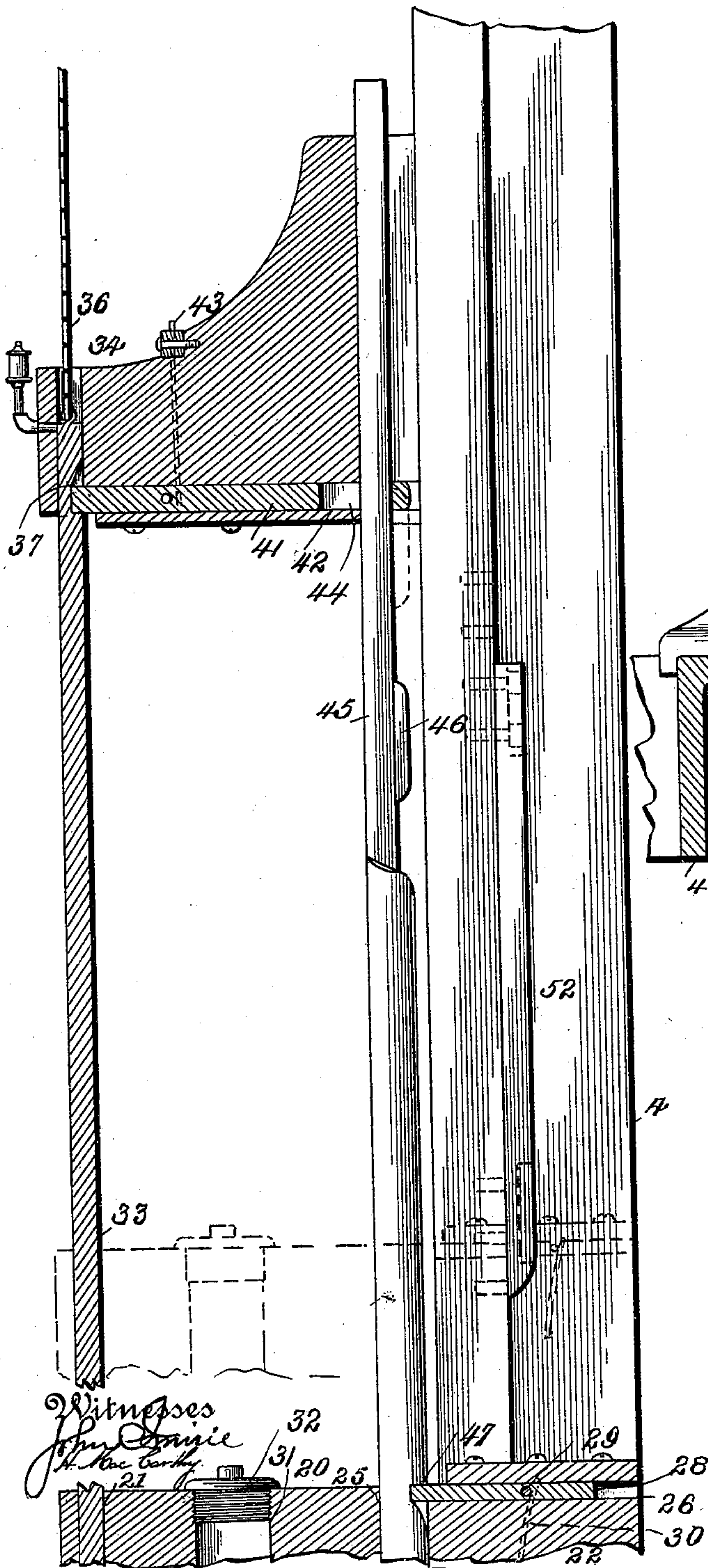


Fig. 5.

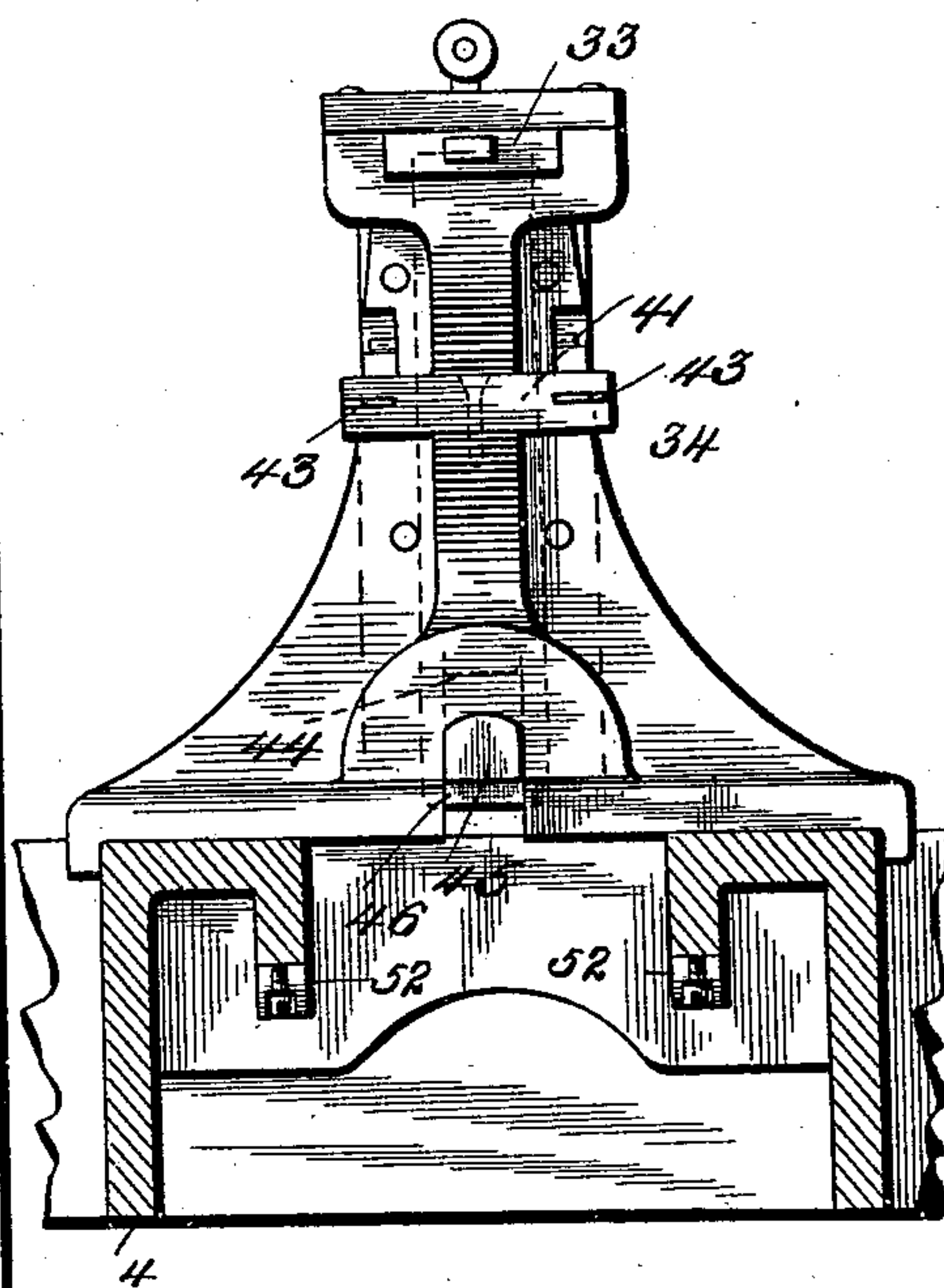
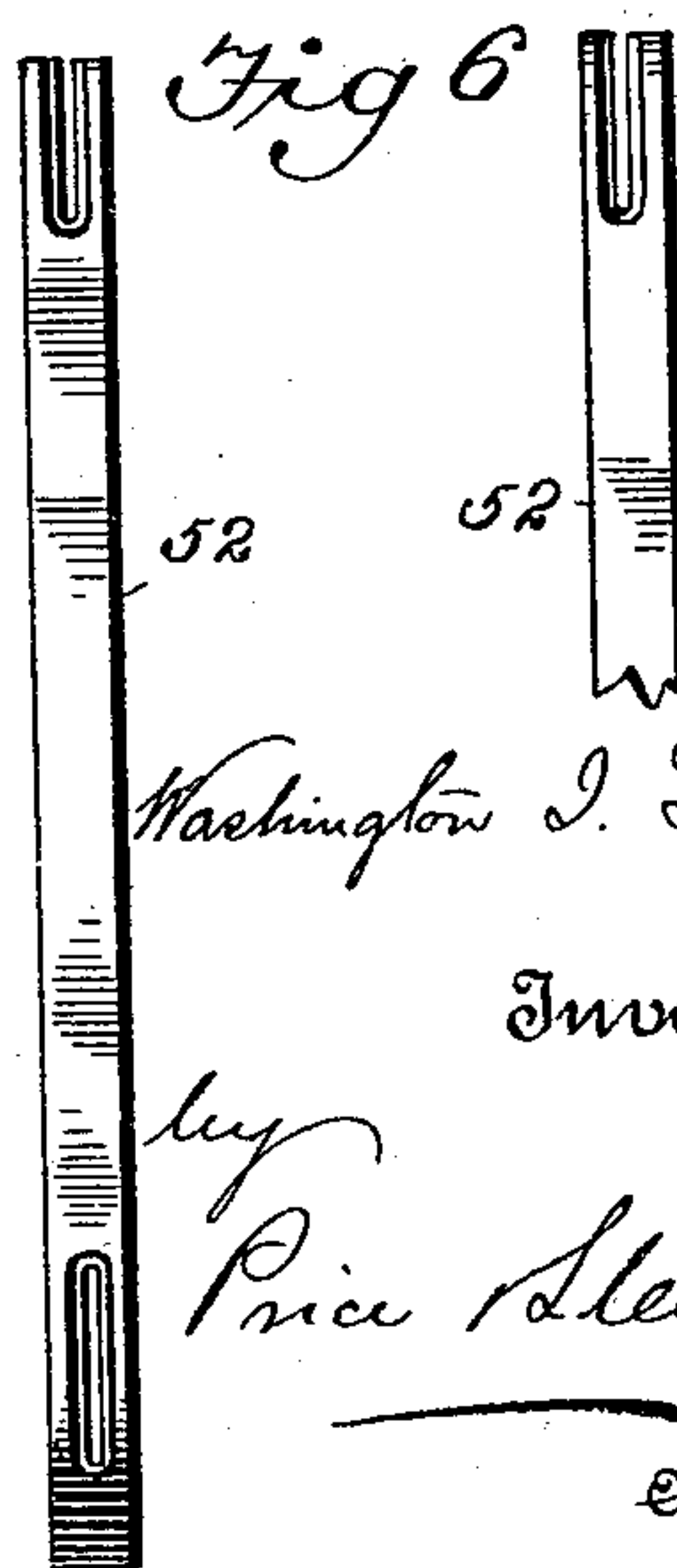


Fig. 6.



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(No Model.)

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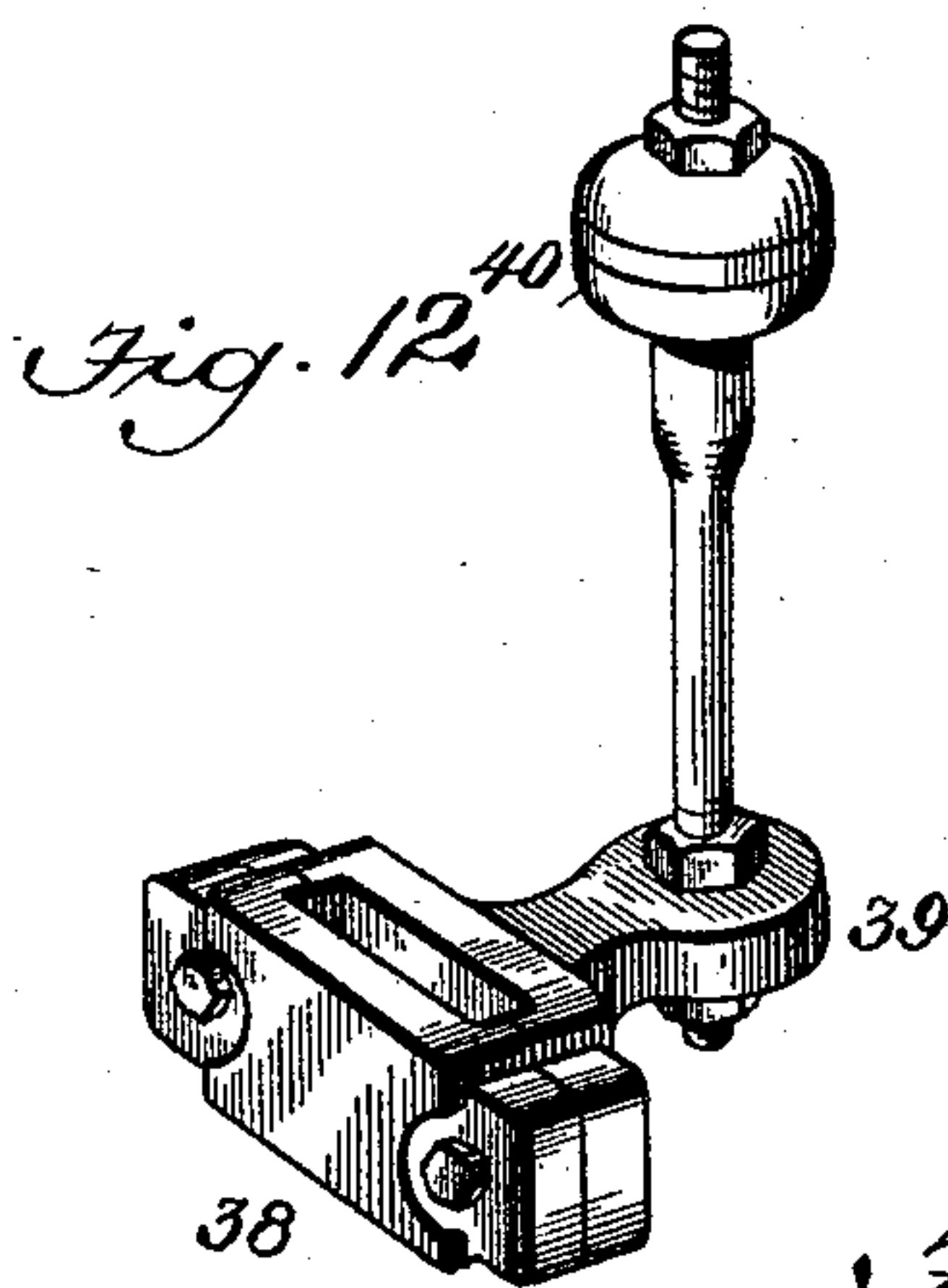
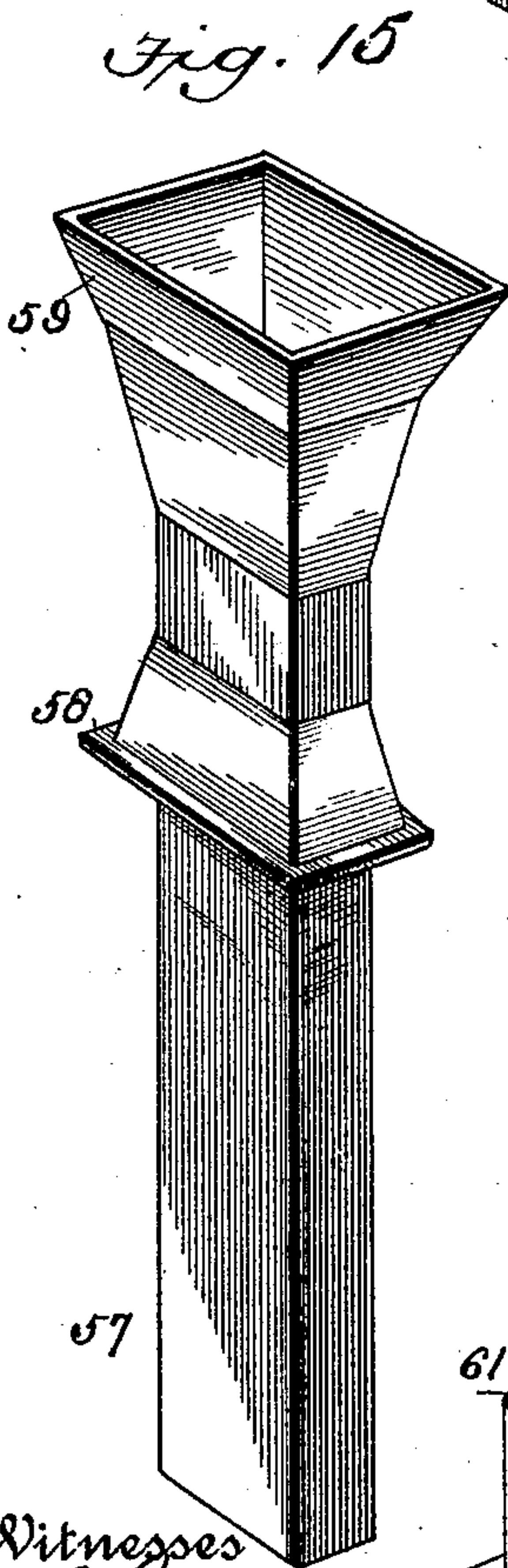
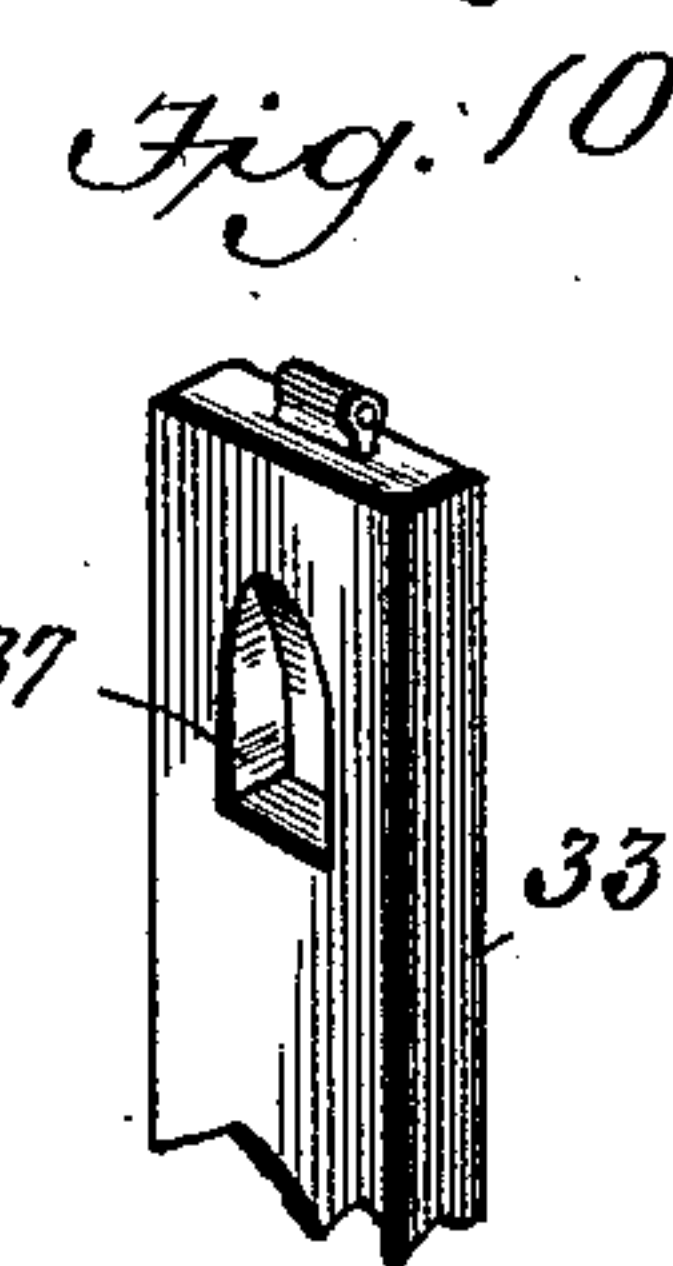
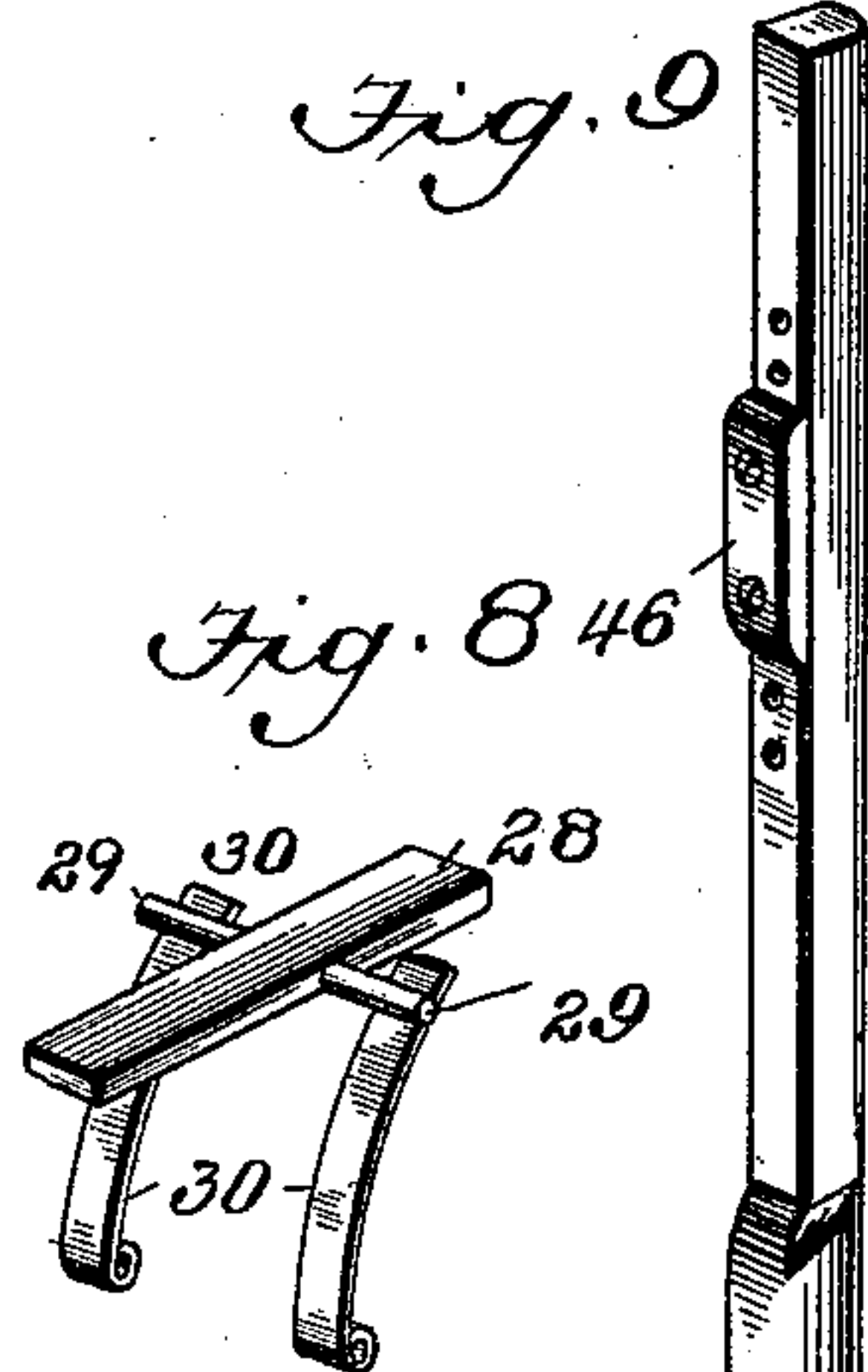
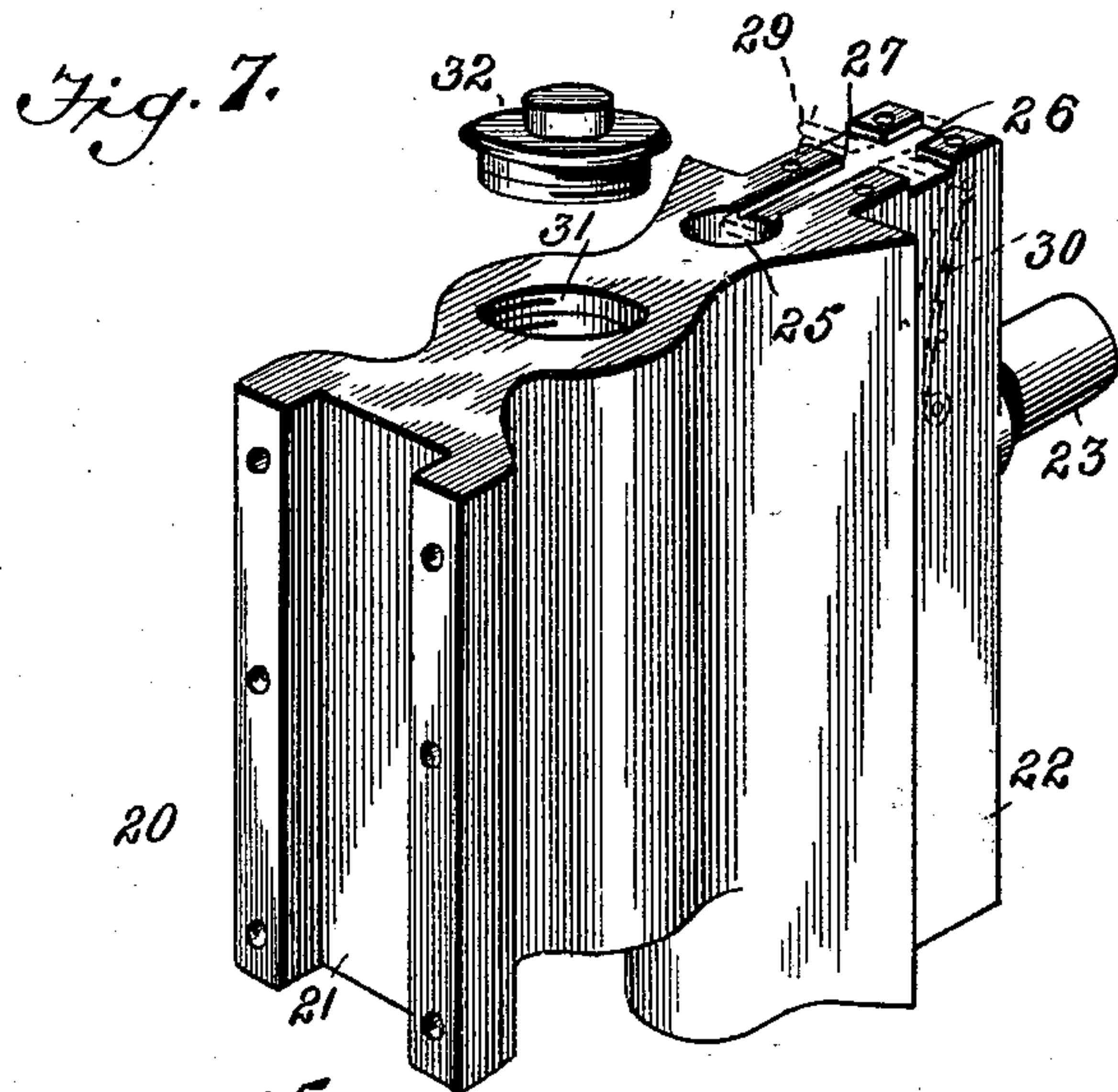
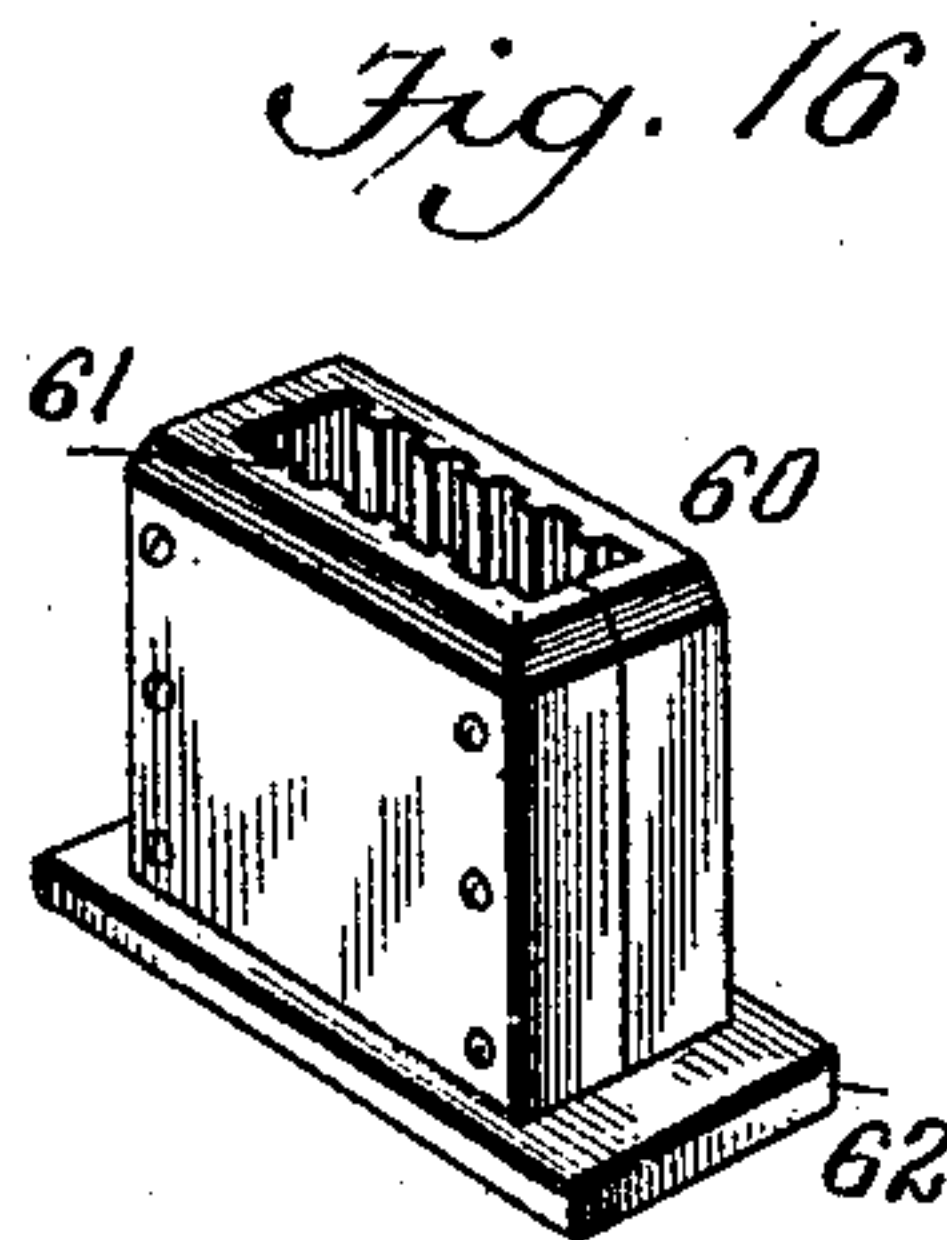
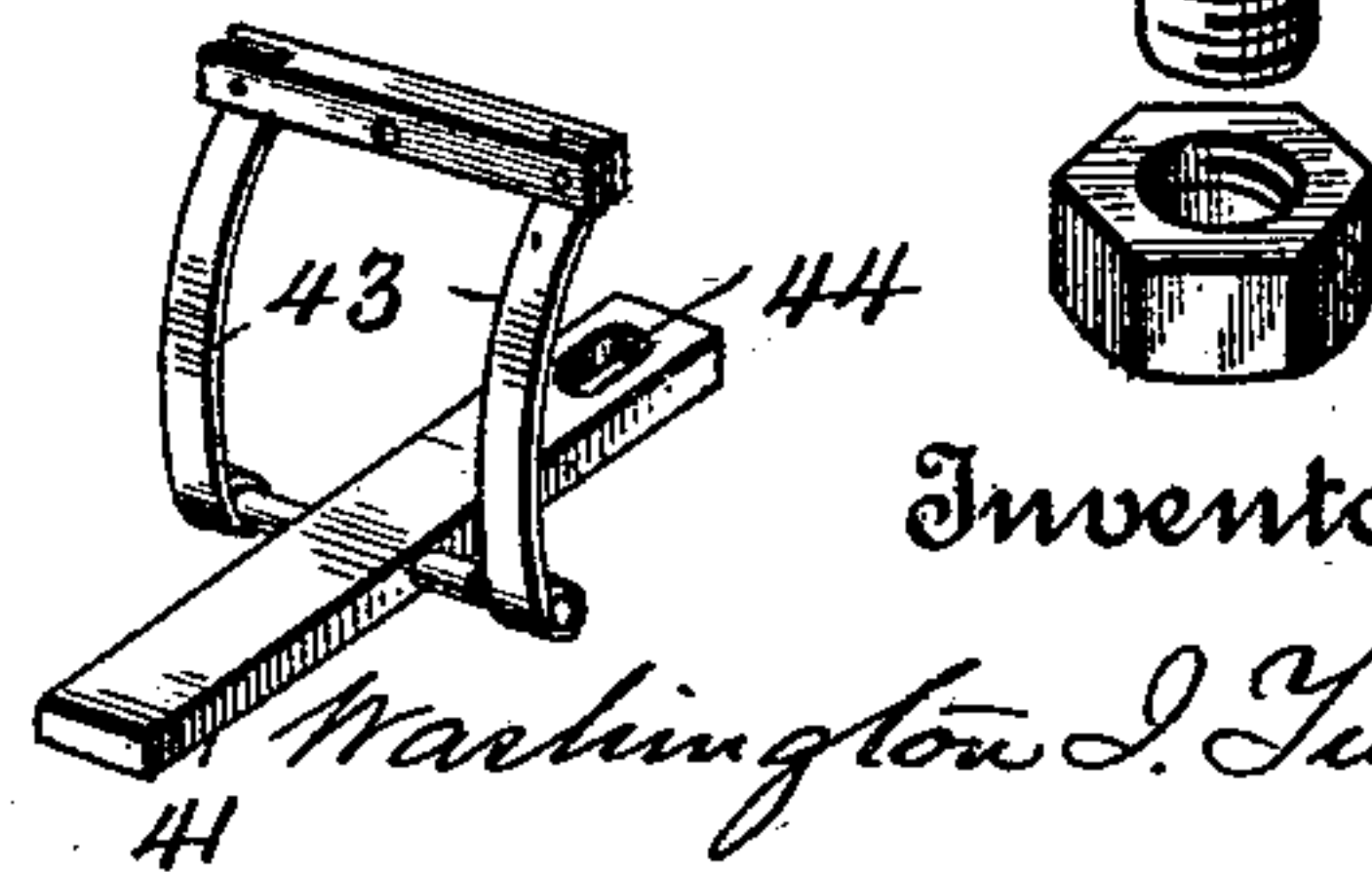


Fig. 11.



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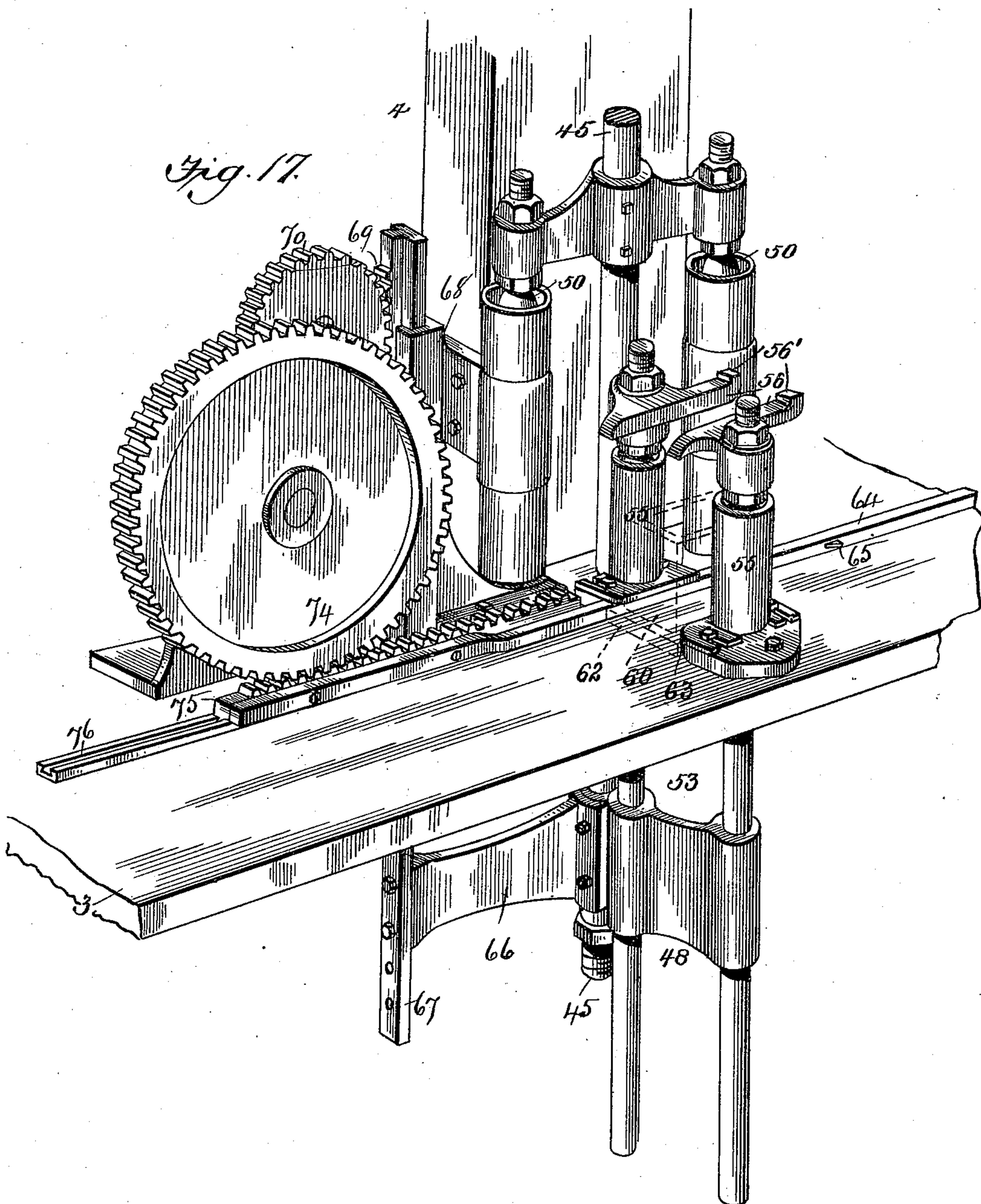
(No Model.)

7 Sheets—Sheet 6.

W. I. TUTTLE.
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(No Model.)

7 Sheets—Sheet 7.

W. I. TUTTLE.
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Patented July 23, 1895.

Fig. 18.

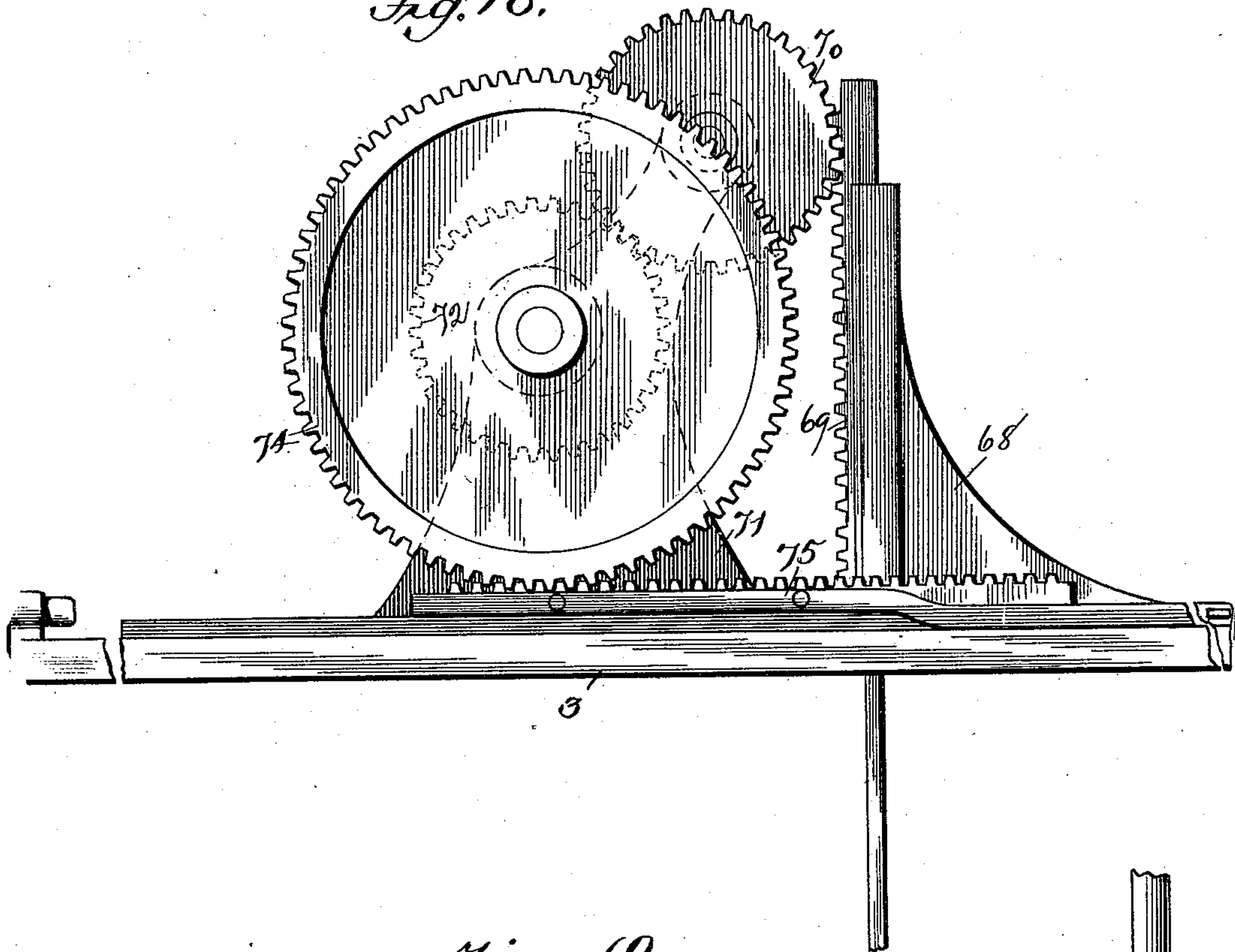


Fig. 19.

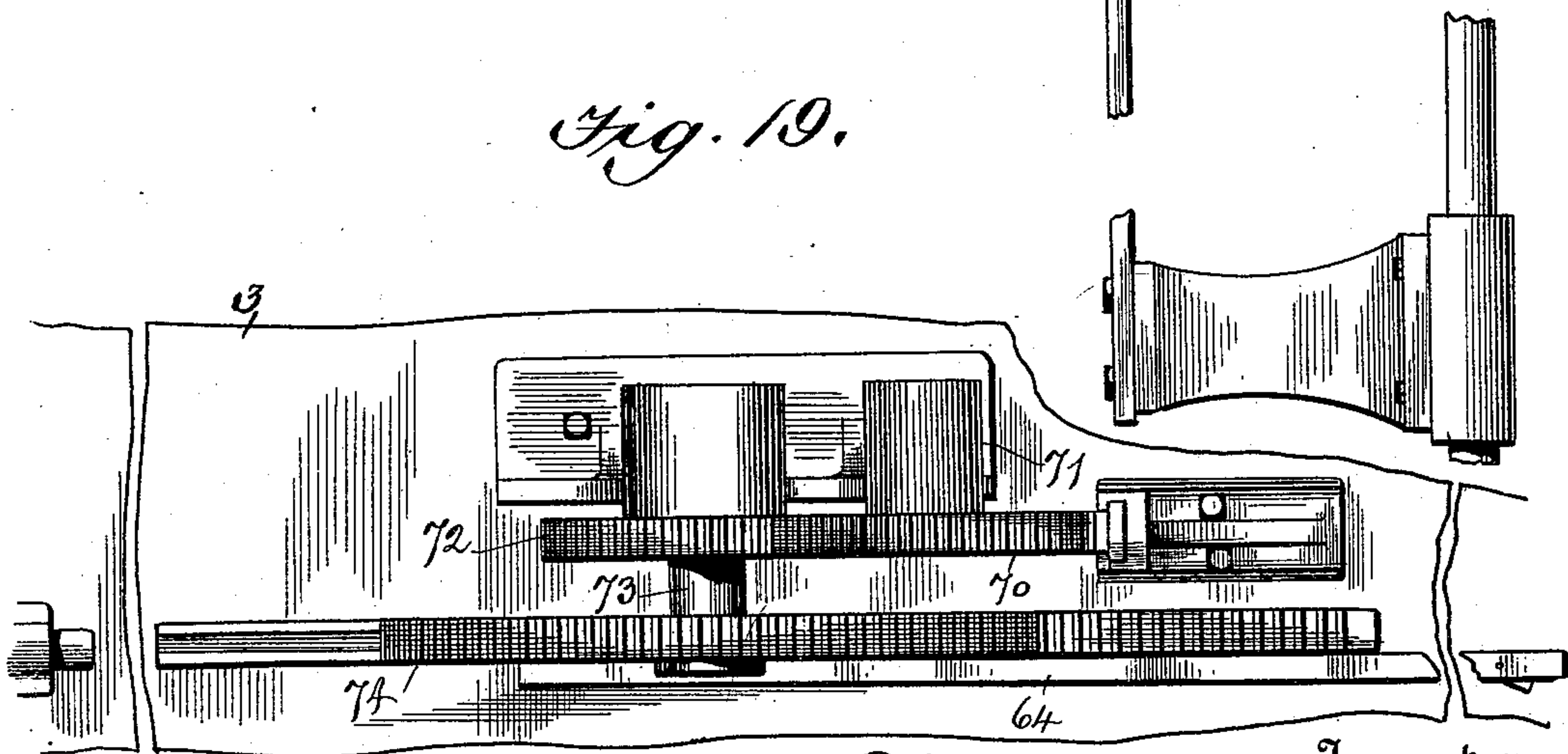
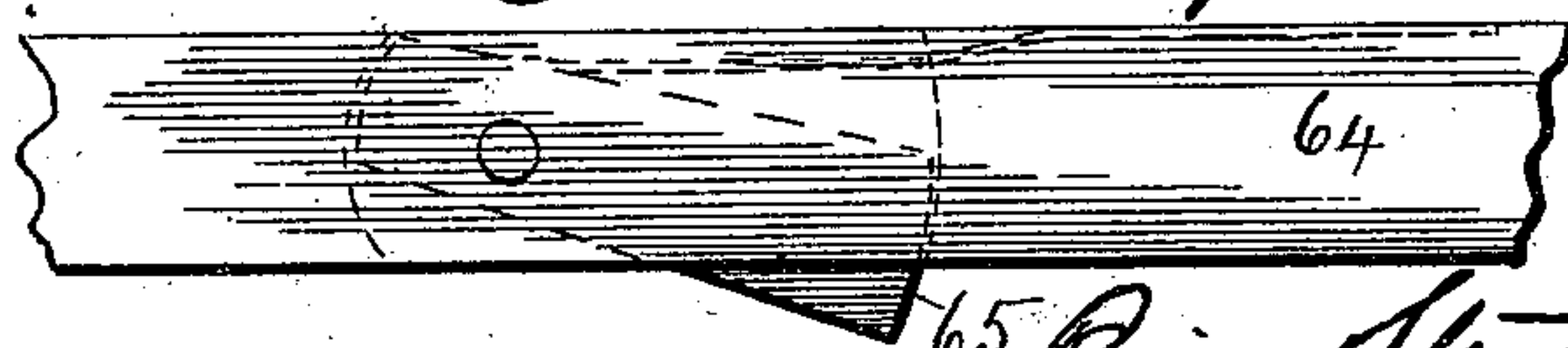


Fig. 20.



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UNITED STATES PATENT OFFICE.

WASHINGTON I. TUTTLE, OF BALTIMORE, MARYLAND.

BAG-PACKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 543,114, dated July 23, 1895.

Application filed April 25, 1895. Serial No. 547,074. (No model.)

To all whom it may concern:

Be it known that I, WASHINGTON I. TUTTLE, a citizen of the United States, and a resident of the city of Baltimore and State of Maryland, have invented certain new and useful Bag-Packing Machines, of which the following is a specification.

My invention relates to a machine for packing bags with any loose material so as to consolidate the contents in a bag of flimsy material without breaking the bag, but packing the contents therein so hard as to get the largest quantity of material into a given-size package.

The particular use to which I apply my invention is the packing of granulated tobacco in bags of a thin fabric. The solidifying of the tobacco in the bag into a hard block has the additional advantage of preventing the evaporation of the oils and other volatile matter contained in the tobacco, and maintains it in a desirable condition for smoking through a long period.

In the drawings, Figure 1 is a side elevation of my machine. Fig. 2 is a front elevation of the same. Fig. 3 is a perspective view of a portion of the packing device, being that part above the table, and showing the presser-rod and cross-head. Fig. 4 is a vertical section of the same part of the machine, showing a vertical section of a part of the cross-head, the presser-rod in section, and the presser-rod holding-yoke in section, but showing the mold-lifting rod in full and the interior of the cross-head guide in full. Fig. 5 is a plan view of Fig. 3, showing the portion of the main frame in that figure in section. Fig. 6 is a rear view of the bolt-releasing strips, which are on the interior of the cross-head guides and serve to release the bolt which carries the funnel-lifting rod. Fig. 7 is a perspective view of the cross-head. Fig. 8 is a detached perspective of the bolt and springs which control the same, by which the funnel-lifting rod is raised. Fig. 9 is a perspective of the funnel-lifting rod, showing the notch therein and lug thereon. Fig. 10 is a perspective view of the upper end of the presser-rod, showing the locking-notch therein. Fig. 11 is a perspective view of the bolt co-operating with the notch in the upper end of the presser-rod (shown in Fig. 9) to lock the same. Fig. 12 is the

presser-rod collar and dash-pot piston connected thereto. Fig. 13 is a vertical section of the dash-pot and piston which controls the drop of the funnel-carrier. Fig. 14 is a perspective view of the funnel-carrying rods and their connections. Fig. 15 is a perspective view of the packing-funnel. Fig. 16 is a perspective view of the packing-mold. Fig. 17 is a perspective view of an attachment used for ejecting the mold after the bag has been filled. Fig. 18 is a side elevation of the same. Fig. 19 is a plan. Fig. 20 is an enlarged detail of the latch by which the mold is moved.

Referring to Fig. 1, 1 1 are the legs of the machine; 2, the cross-brace between them; 3, the table or bed; 4 4, two standards mounted upon the bed rising vertically above it, secured together at their upper ends by two plates 5 5, bolted on their outsides. The vertical standards 4 4 are connected together at the top by a cross-brace 6, on which are mounted the bracket 7 7, carrying sprocket-wheels 8 8 and sprocket-chain guides 9 9.

On the cross-braces 2 2 are mounted bearings 10 10, in which is journaled driving-shaft 11, by which power is communicated to the machine. On the driving-shaft is keyed a worm 12, meshing with a worm-wheel 13 keyed upon a counter-shaft, which is journaled in bearings 14 14, which are hung from the under side of the bed 3. On this counter-shaft is keyed a pinion 15, which meshes with a gear-wheel 16, mounted upon a counter-shaft which is journaled in bearings 17 17, which are bolted to the upper side of the bed 3 and between the vertical standards 4 4. On the extremities of this shaft are keyed two driving-wheels 18 18, each of which is provided with a crank-pin 19 19, located at opposite positions from one another, so as to counterbalance one another.

20 20 are reciprocating cross-heads, one on each side of the machine, mounted in guides on the vertical standards 4 4.

The machine as illustrated in Fig. 1 is completely double, the whole operation being performed by each individual packing device on each side, the two being duplicates of one another. The use of two devices, however, has great advantages in enabling me to balance one against the other while driving both from the same source of power. I thus double

the speed and prevent shock or jar to the mechanism.

Referring now to Fig. 7, which is a perspective view of the cross-head, it consists of a casting having a grooved guide 21 in the front and a flanged projection 22 at the back which fits and slides in the vertical guides 4. In the rear side is inserted a driving-pin 23, which is connected by means of the connecting-rod 24 with the crank-pin 19. The cross-head is perforated with a vertical hole 25, and on its upper surface is slotted with longitudinal and transverse slots 26 and 27, suitable to accommodate a bolt 28. (Shown in Fig. 8.) The bolt 28 has a transverse pin 29 passed through it, and two springs 30 30 are secured to the sides of the cross-head and bear upon the extending end of the pin 29.

31 is a second hole passing longitudinally through the cross-head in front of the hole 25. Into the top of this is screwed a cap 32. This hole when closed with the cap 32 forms a dash-pot for checking the motion of a presser-rod when ascending.

33 is a presser-rod which reciprocates in the guide-slot 21 in the end of the cross-head. It is shown in Figs. 1, 2, 3, and 4, and consists of a straight bar of iron or steel, vertical in position on the outside of the machine, reciprocating in the guide 21 on the cross-head and through a guide 34, which is rigidly bolted to the guides 4 4 above the cross-head.

The weight of the presser-rod 33 is counter-balanced by weight 35, connected to the presser-rod by sprocket-chain 36, which passes over the sprocket-wheels 8 and 9. On the interior surface of the presser-rod near its top is cut a notch 37, as shown in Fig. 10, which is an inside view of the top of the presser-rod.

Fig. 12 shows the clamp by means of which the presser-rod is engaged by the cross-head and pressed downward to its work. It consists of the clamp 38, which surrounds and is bolted rigidly to the presser-rod. To the rear of this clamp is secured a lug 39, to which is bolted a vertical stud, the upper end of which is provided with a piston 40. When the clamp 38 is secured to the presser-rod the piston 40 will register with and enter the hole 31, which will serve as a cylinder for it and act as a dash-pot to check the sudden rise of the presser-rod when released.

Referring to Fig. 4, this figure shows a vertical section of the upper guide and presser-rod and its locking-bolt. 34 is the guide, and 33 the presser-rod, having its locking-notch 37 on the inside.

41 is a locking-bolt arranged to reciprocate in a guide 42 on the under side of the guide 34, and held forward by springs 43. Fig. 11 is a detail view of this bolt. In the rear of the bolt is a slot 44, through which passes a vertical rod 45. On the rear side of the rod 45 is a lug 46, which as the rod 45 rises will engage the back part of the slot 44 and withdraw the bolt 41.

The rod 44 is shown in perspective in Fig.

9. It is a long straight rod, round through a greater portion of its length and squared at its upper end to a size smaller than the round bar. On its rear side it is provided with a notch 47 and a lug 46. It is mounted in front of the guides 4, passes through the bed 3, and has secured to its lower end a yoke 48, as shown in Figs. 3 and 14. It passes through the hole 25 in the cross-head, and between the bed and the lowest position of the cross-head it carries a yoke 49, to either end of which is secured a piston-rod and piston 50 50, which co-operate with the dash-pots 51 51. (Shown in section, Fig. 13.) These dash-pots serve to check the fall of the rod 45 when it is released by the cross-head.

Referring to Fig. 4, the bolt 28, which is mounted on the rear of the top surface of the cross-head, reciprocates in line with the notch 47, and when the cross-head descends as far as the notch 47 the bolt 28 falls into it and on the rising of the cross-head the rod 45 will be carried up with it by the bolt 28.

52 52 are two strips bolted to the rear of the guides 4, and are beveled at their lower ends. They are located in the path of the extending ends of the pin 29. As the cross-head rises the pin 29 will make contact with the beveled lower ends of the strips 52, withdrawing the bolt 28 and releasing the rod 45.

53 53 are two rods mounted parallel to the rod 45, and held rigidly in engagement with the rod 45 by a yoke 48.

54 54 are guides through which the rods 53 53 pass below the yoke 48. The rods 53 53 are also guided in their passage through the bed 3. Above the bed they pass through a pair of sleeves 55 55, which are secured to the bed and rise a short distance above it. These sleeves or cylinders also serve the function of dash-pots, the rods 53 53 being provided with pistons which fit the cylinders and serve to check the fall of the rods by cushioning the pistons in the cylinder. On the upper ends of the rods 53 53 are secured collars having internally-projecting lugs 56 56, which serve as funnel-holders and support and lift the funnel during the operation of packing. On one side these lugs are provided with vertical projecting lugs 56' 56', which stand above the surface and form stops to center the funnel.

Fig. 15 is a perspective view of the form of funnel used. It has a straight pan 57, flanged collar 58, and a funnel 59 at its upper end.

Fig. 16 is a perspective view of the mold 60 used for packing. It consists of a cast-iron or otherwise made block of iron and is preferably provided on its interior with a series of vertical flutes.

62 is a horizontal flange projecting from the bottom of the mold 60. This flange forms a guide for the mold when entering the machine.

63 are a pair of overhanging guides, located on the bed between the dash-pots 55 55 and are laterally adjustable. These guides

63 63 serve the double purpose of guiding the mold to its work and at the same time holding the mold down to the bed against the upward pull of the funnel when it rises.

5 Figs. 17, 18, 19, and 20 show the device by which the filled mold is ejected from the guides 63 after the presser-rod and funnel have been lifted out of it. This ejection consists of a horizontally-reciprocating bar 64, 10 which travels under the inner one of the guides 62. It is provided with a latch 65, which is pressed in as the bar travels back past the mold, but stands out and engages the mold when moving forward. The mechanism 15 whereby the bar 64 is given the desired motion is as follows:

66 is an arm bolted to and extending horizontally from the reciprocating rod 45. To the extremity of this arm is bolted a vertical 20 rod 67, which passes up through the table 3 and travels in a guide 68, bolted to the table 3. On the face of this bar is a rack 69, which meshes with a pinion 70, journaled in a bracket 71, and meshing with a second pinion 25 72, journaled in the same bracket 71 and upon a counter-shaft 73. Upon the same shaft 73 is journaled a gear 74, which meshes with a rack 75 which lies upon the table 3 and travels in a guide 76. To the side of the rack 30 75 is bolted the bar 64.

The operation of the machine is as follows: A bag which is to be filled with tobacco or other material is placed over the small end 57 of the funnel and then funnel and bag are inserted 35 in the mold 60. The mold and funnel are then passed from the left side toward the right between the guides 63 and the lugs 56, the flange 58 of the funnel resting upon the surface of the lugs 56 56 and the funnel being 40 checked in its motion and centered under the presser-rod by the vertical stop-lugs 56' 56'. The cross-head now descends until it strikes upon the collar 38 of the presser-rod, by which it carries the presser-rod down into the funnel 45 and presses the contents of the funnel solidly into the mold 60. When the rod reaches the lowest point, as shown in Fig. 4, the bolt 41 slips into the notch 37 and locks the rod down. Meanwhile the bolt 28 on the upper side of the 50 cross-head has fallen into the notch 47 in the rod 45. The cross-head now rises, leaving the presser-rod down, but carries with it the rod 45. The rod 45 carries up the rods 53 53, the lugs 56 56, and the funnel 57 59 by means of the collar 58. The mold 60 is meanwhile held 55 down by its guides 63 and flange 62 and the tobacco and bag are held down in the mold by the presser-rod 33. The rod 45 continues to rise until the funnel has cleared the mold. 60 The lug 46 then comes in contact with the rear end of the bolt 41, withdraws that bolt, releases the rod 33, which, being overbalanced by the weight 35, is at once drawn up by the weight. The shock of the collar 38 against 65 the under side of the cross-head is prevented by the dash-pot 31 and the piston 40. Imme-

diately following this action the cross-pin 29 of the bolt 28 makes contact on the beveled ends of the stops 52 52, the bolt 28 is withdrawn, and the rod 45 and the rods 53 53 and 70 the funnel-carrier drop back to their lowest position, their motion being checked by the dash-pots 51 51 and 55 55. The upward motion of the rod 45 carries with it the rack 69 and through the medium of the gears 70, 72, 75 and 74 imparting horizontal motion to the rack 75 and the bar 64 throwing the bar 64 into its extreme position to the left of the mold. The drop of the rod 45 reverses this motion and causes the rod 64 to travel rapidly to the 80 right. This motion is so timed that as soon as the funnel has been withdrawn from the mold the rod 64 will begin to push the mold from beneath the funnel, the funnel being 85 meanwhile caught by the operator and removed with his right hand, while with his left he pushes into place between the guide 63 another mold having a funnel and bag in it and charged with tobacco.

I have found some advantage to result by 90 making the mold shown in Fig. 16 fluted or corrugated on its interior. When the pressure is applied to the tobacco contained in the funnel, it bulges the funnel somewhat and presses the bag between the outside wall of 95 the funnel and the inside wall of the mold. The bag lies between these two, and if the interior surface of the mold is smooth the friction is often great enough to tear the bag when the funnel is withdrawn. This friction is 100 greatly reduced by fluting the interior of the mold. The funnel may be withdrawn from a fluted mold with much less danger of tearing the bag than from a smooth mold.

Having described my invention, what I desire to secure by Letters Patent is— 105

1. In a packing machine the combination of a reciprocating cross-head and a rod reciprocating therethrough, means for pressing the rod down by the cross-head, means for locking 110 the presser-rod when down, and means for unlocking the presser-rod, operated by the cross-head and means to withdraw the presser-rod substantially as described.

2. In a packing or pressing machine the 115 combination of a reciprocating cross-head with a reciprocating presser-rod passing therethrough, a collar or lug on the presser-rod engaged by the cross-head for pressing the rod downward, means for locking the presser-rod 120 when down, and means for unlocking the presser-rod and counter-balancing devices for raising the presser-rod when unlocked.

3. In a pressing or packing machine the 125 combination of a reciprocating cross-head, two rods reciprocating therethrough, one pressed downward by the cross-head and the other lifted by it, means for locking the presser rod when down means for unlocking and lifting 130 the presser-rod, and means for releasing the lifted rod from the cross-head when it has reached a desired elevation.

4. In a packing or pressing machine the combination of a reciprocating cross-head with two rods passing therethrough, one pressed down by the cross-head and the other
 5 lifted by it, means for locking the presser-rod down and means for unlocking it, actuated by the cross-head when the lifted rod has reached a desired elevation, and means for releasing the lifting rod when it has reached a desired
 10 elevation.

5. In a packing or pressing machine the combination of a reciprocating cross-head having the presser-rod passing therethrough and adapted to be pressed down by the cross-head,
 15 and provided with counterbalancing devices for raising it, and a dash pot and piston for checking its upward motion.

6. In a packing or pressing machine, a reciprocating cross-head, two rods passing
 20 therethrough, one adapted to be pressed down by the cross-head, and the other lifted thereby, means for disengaging the latter from the cross-head, and one or more dash pots adapted to check the downward motion of the lifted
 25 rod when dropped.

7. In a packing or pressing machine the combination of a reciprocating cross-head, two rods reciprocating therethrough, one adapted to be pressed down by the cross-head,
 30 the other to be lifted thereby, and means connected to the lower end of the lifted rod for

carrying a packing funnel or form substantially as described.

8. In a packing or pressing machine the combination of a mold containing a bag carrying funnel inserted therein, with a presser-rod reciprocating within the funnel to press
 35 the contents of the funnel into the bag, means for withdrawing the funnel while its contents are held firmly down by the presser-rod, 40 means for withdrawing the presser-rod, and means for throwing the mold out of the path of the presser-rod, substantially as described.

9. In a packing or pressing machine the combination of a mold containing a bag carrying funnel inserted therein, with a presser-rod reciprocating through the funnel to press
 45 the contents of the funnel into the bag, means for withdrawing the funnel while its contents are held firmly down by the presser-rod, means 50 for withdrawing the presser-rod and a horizontally reciprocating rod means for moving the same to push the mold out of the path of the presser-rod when it and the funnel have been withdrawn, substantially as described. 55

Signed at Baltimore city and State of Maryland this 13th day of March, A. D. 1895.

WASHINGTON I. TUTTLE.

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