

No. 638,453.

Patented Dec. 5, 1899.

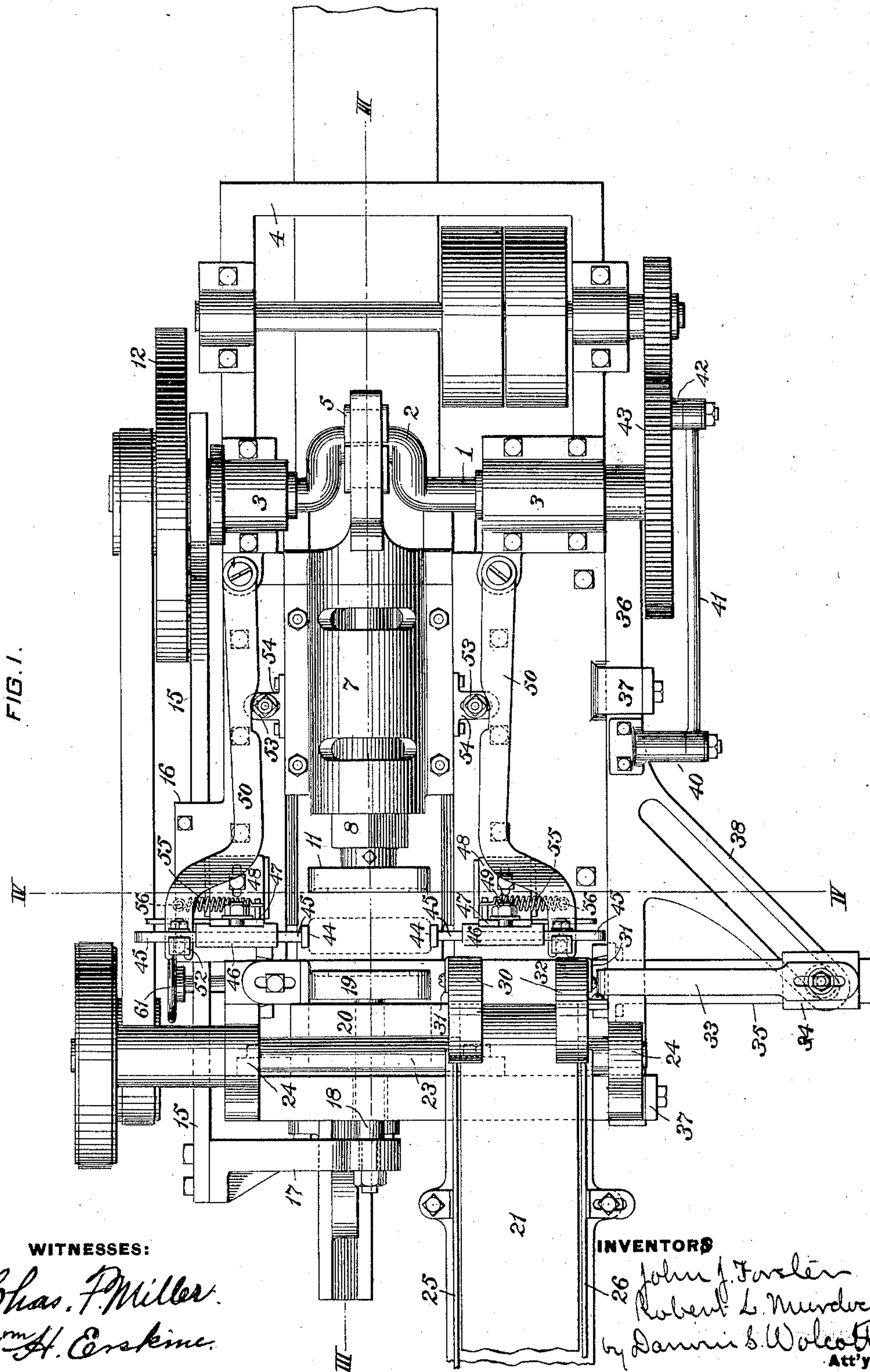
J. J. FORSTER & R. L. MURDOCK.

SOAP PRESS.

(Application filed Aug. 16, 1898. Renewed Sept. 7, 1899.)

(No Model.)

6 Sheets—Sheet 1.



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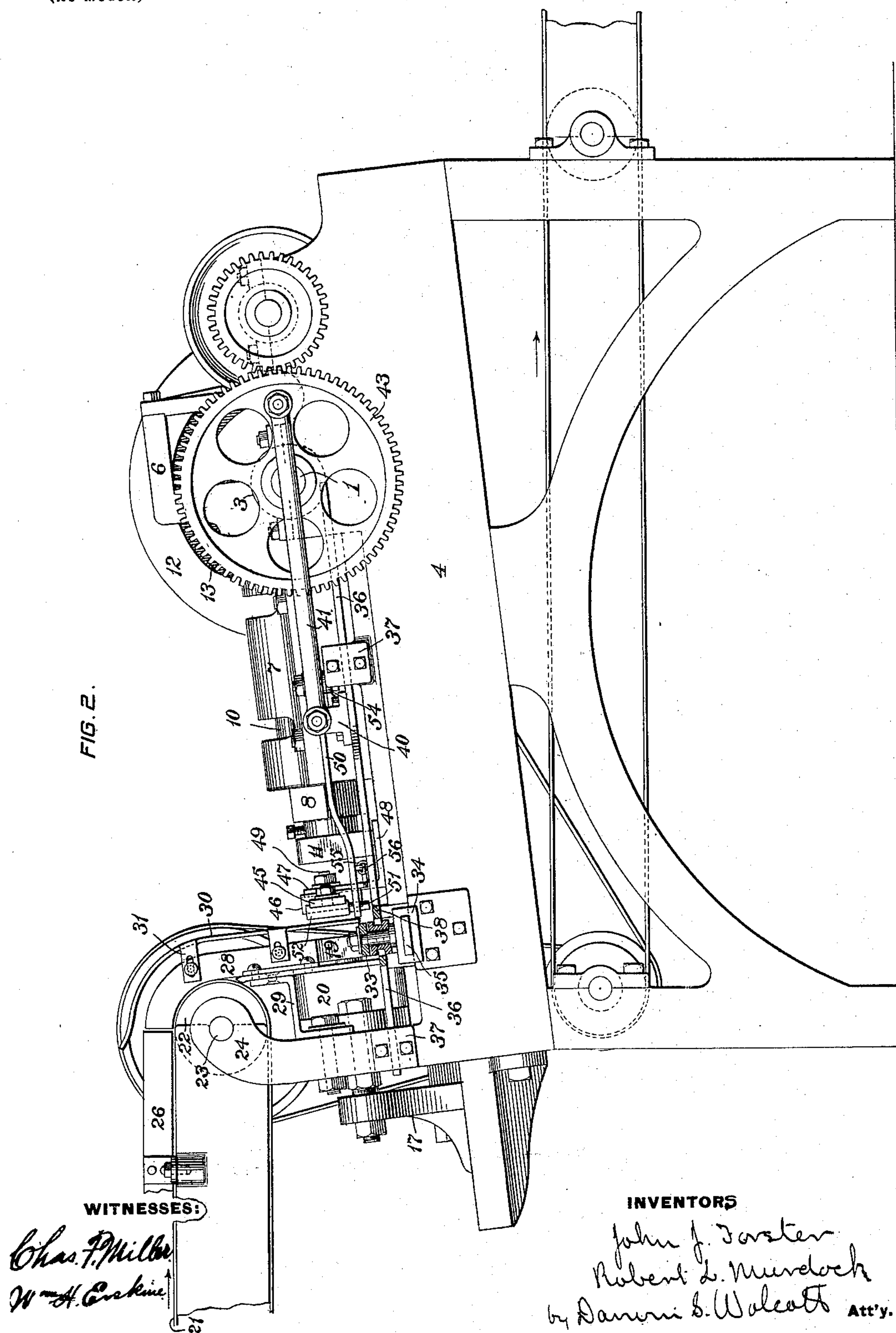
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FIG. 2.



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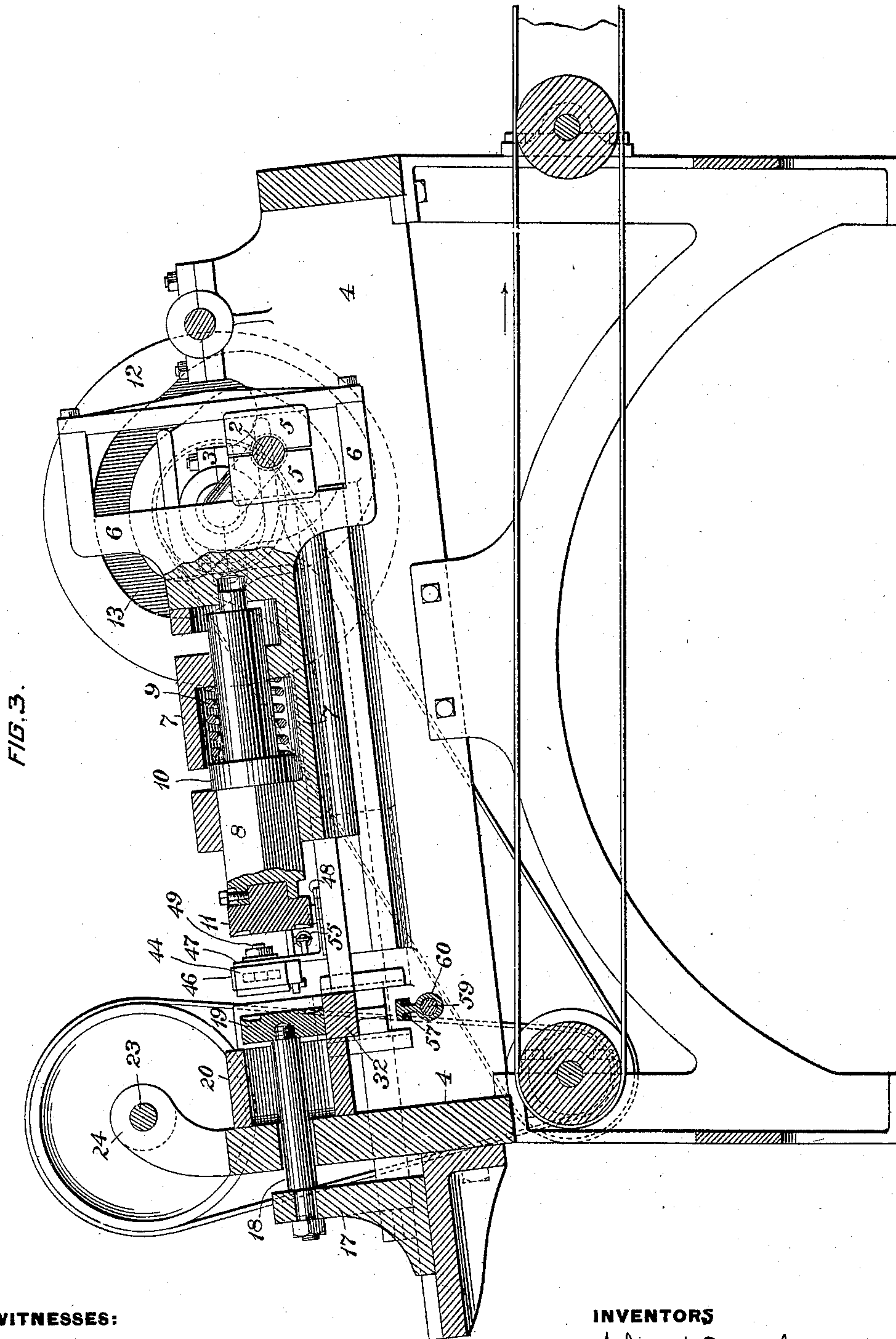
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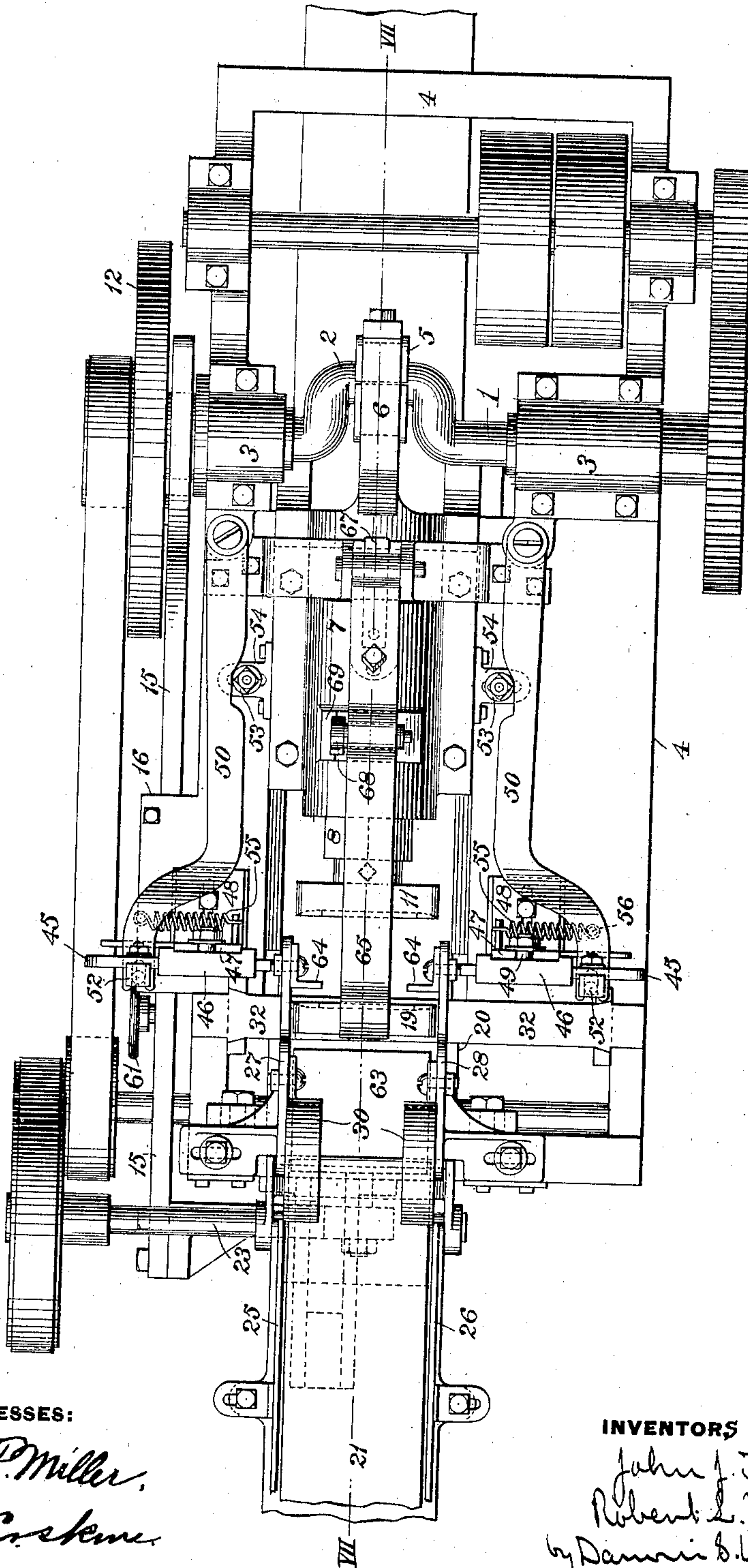
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FIG. 6.



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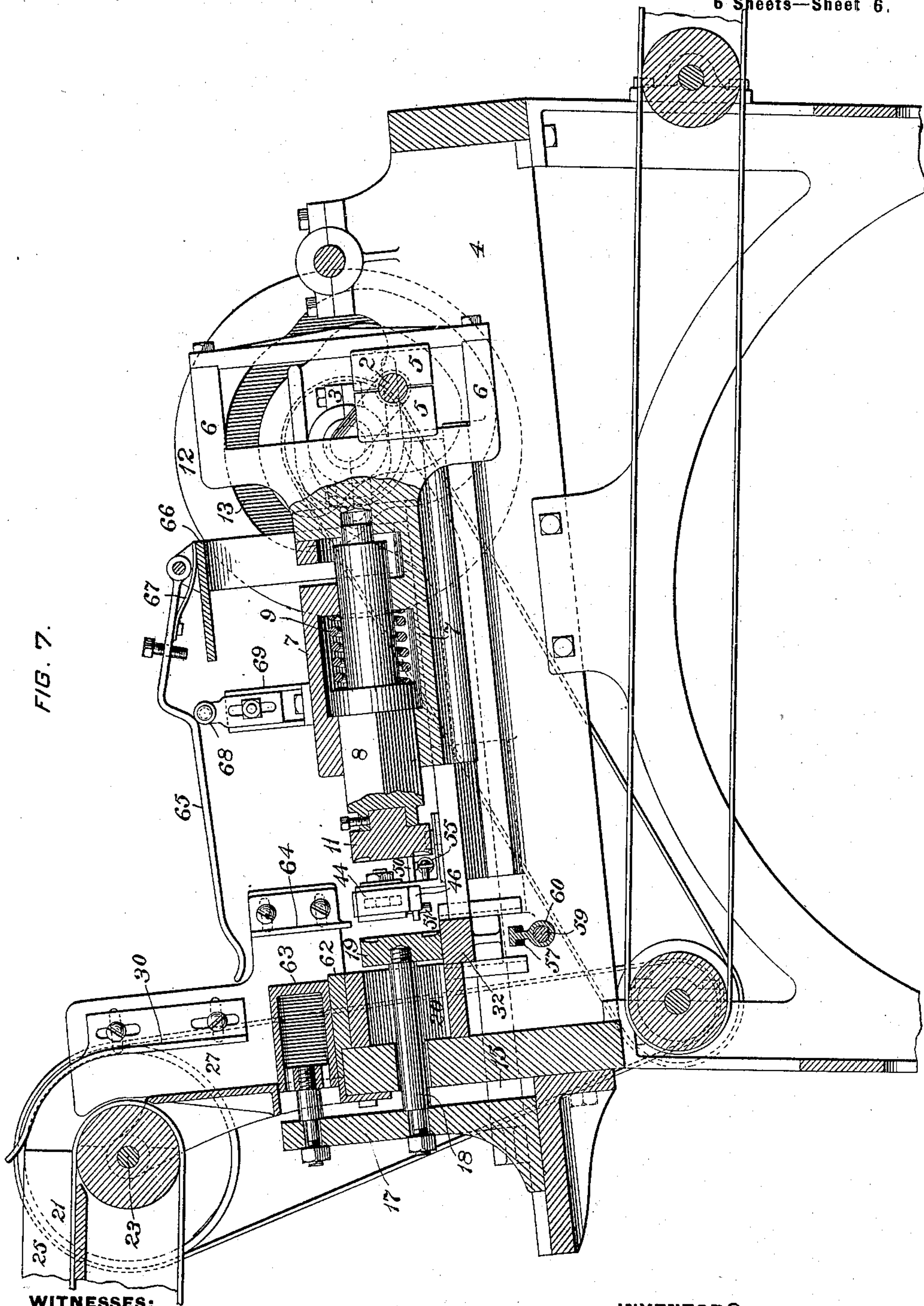


FIG. 7.

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UNITED STATES PATENT OFFICE.

JOHN J. FORSTER AND ROBERT L. MURDOCK, OF AVALON, PENNSYLVANIA.

SOAP-PRESS.

SPECIFICATION forming part of Letters Patent No. 638,453, dated December 5, 1899.

Application filed August 16, 1898. Renewed September 7, 1899. Serial No. 729,780. (No model.)

To all whom it may concern:

Be it known that we, JOHN J. FORSTER and ROBERT L. MURDOCK, citizens of the United States, residing at Avalon, in the county of Allegheny and State of Pennsylvania, have invented or discovered certain new and useful Improvements in Soap-Presses, of which improvements the following is a specification.

The invention described herein relates to certain improvements in the construction and operation of soap-presses, such improvements being more especially applicable to the form or construction of press described and claimed in an application, Serial No. 649,903, filed by us August 30, 1897.

In general terms the invention consists in the construction and combination substantially as hereinafter more fully described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a top plan view of our improved press. Fig. 2 is a side elevation of the same. Fig. 3 is a sectional elevation, the plane of section being indicated by the line III III, Fig. 1. Fig. 4 is a transverse sectional elevation, the plane of section being indicated by the line IV IV, Fig. 1. Fig. 5 is a perspective view of a portion of the feed mechanism. Fig. 6 is a top plan view illustrating certain modifications in the construction of the machine; and Fig. 7 is a sectional elevation, the plane of section being indicated by the line VII VII, Fig. 6.

In the practice of our invention the power-shaft 1, having a crank 2, is mounted in suitable bearings 3 on the frame 4 of the machine. Around the crank 2 are secured bearing-blocks 5, adapted to move up and down during the rotation of the crank in the yoke 6, which is secured to or formed integral with the reciprocating cross-head 7. In this cross-head is mounted the plunger 8, which is normally held in a forward position by a spring 9, arranged within a suitable recess in the cross-head and bears at one end against a collar 10 and at its opposite end against the rear wall of the recess. In the front end of the plunger 8 is detachably secured a compressing and shaping head 11.

On the power-shaft 1 is secured a disk 12, having a cam-groove 13 formed therein. A pin or roller projecting into the cam-groove is

secured upon a pitman 15, which has its rear end forked, so as to straddle the power-shaft, while its forward portion is supported and guided by a lug 16, formed on the frame 4 and having an opening therethrough for the passage of the pitman. The arm 17 is secured to the forward end of the pitman 15, and to this arm is attached a rod 18, having the compressing-head 19 secured to its inner end. By the operation of the grooved disk 12 through the described connections the auxiliary compressing-head 19 is moved back and forth through the mold-box 20, which is detachably secured in any suitable manner known in the art to the front end of the frame 4.

In the construction shown in Figs. 1 to 5, inclusive, the cakes of soap are placed on or fed to a feed-belt 21, which passes around a driving-roller 22, secured on the shaft 23, mounted in suitable bearings 24, projecting up from the frame of the machine. The belt also passes around a roller (not shown) mounted in any suitable manner a short distance in front of the machine. The cakes of soap are retained as against movement laterally off of the belt by means of side pieces 25 and 26, arranged along opposite edges of the belt, as clearly shown in Figs. 1, 4, and 5. In order to permit of the compressing of different sizes of cakes, one of the side pieces, as 26, is adjustably mounted, as clearly shown in Figs. 1 and 5, upon its supports. The shaft 23 may be driven in any suitable manner—such, for example, as that shown by belts and pulleys from the power-shaft 1. By the action of the belt 21 the cakes to be compressed are delivered into and forced partially down between the vertical guides. These guides consist, as clearly shown in Figs. 2, 4, 5, and 6, of side pieces 27 and 28, the former being arranged in line with stationary side plate 25, and the latter being adjustably mounted, so as to be capable of being shifted in accordance with the adjustment of the side plate 26 upon brackets 29, suitably secured to the frame of the machine. The cakes of soap are prevented from dropping out from between the side plates forming the vertical guides by means of retaining-strips 30, which project inwardly toward each other and are provided with lugs 31. These lugs are slotted, as shown in Figs.

2 and 5, so as to permit of their adjustment upon the side plates in accordance with the thickness of the cakes to be compressed.

In the construction shown in Figs. 1 to 5 the cake-feed mechanism is arranged at one side of the machine, so that the cakes will be deposited upon an adjustable ledge or shelf 32 at one side of the mold-box 20. The cakes are shifted along this mold-box to a position in front of the latter by means of a pusher 33, which, as shown in Figs. 1 and 4, is adjustably attached at its outer end to a reciprocating block 34, movably mounted upon a guide-arm 35, attached to the side of the frame of the machine. The back-and-forth movement of the block 34 is effected by a slide 36, which is mounted in guides 37, secured to the frame of the machine. This slide 36 is provided with an angularly-arranged arm 38, slotted as shown, and through the slot in the arm projects a pin 39, preferably provided with an antifriction-roller and secured upon the block 34, as shown in Fig. 4. It will be readily understood that by the back-and-forth movement of the slide 36 the block 34 and the pusher 33 will be moved back and forth to shift a cake of soap into position in front of the mold-box. The slide 36 is provided with an arm 40, connected to one end of a pitman 41, which has its opposite end connected to a crank-pin 42, eccentrically secured to the disk 43, keyed to the power-shaft 1. The movement of the slide 36 is so timed that a cake of soap will be forced into position in front of the mold-box 20 immediately after the retreat of the auxiliary presser-head 19 into the mold-box. During the movement of the presser-arm to shift a cake of soap into position the plunger 8 is moved forward and will force a cake into the mold-box against the auxiliary head 19 and subject it to the necessary pressure, which is determined by the tension of the spring 9. After the soap has been compressed the plunger 8 is withdrawn, and during this return movement of the plunger the auxiliary head is caused to move forward with a speed equal to that of the plunger until the compressed cake has been pushed entirely outside of the mold-box and is held by the heads 11 and 19 between the grippers, whose operation and construction will be hereinafter described. As the presser-arm is moved inwardly a new cake of soap will be delivered by the feed mechanism on top of the presser-arm, and as the latter is withdrawn during the return movement of the plunger the presser-arm will be withdrawn from under the cake, which will then drop onto the shelf 32, so as to be in position to be fed into the machine by the inward movement of the pusher.

As the cakes of soap are likely to adhere to the presser-heads, provision is made for gripping the cakes at their exposed ends until the heads have been detached therefrom. This gripping mechanism consists of plates 44 on the inner ends of slides 45, which are mounted in guide-blocks 46. As clearly shown in Figs.

1 and 4, these blocks have one side grooved for the reception of the vertical arms 47, said arms being secured to or formed integral with plates 48, which are mounted between guide-ribs on the frame of the machine and are slotted to permit of their adjustment back and forth between such ribs. The blocks 46 are provided on their sides with threaded stems 49, which project through slots into the vertical arms 47, and the blocks are held in their adjusted positions by means of nuts screwed on the threaded stems. The outward movements of the slides 45 are effected by means of levers 50, pivoted at their rear ends to the frame of the machine, while their forward ends are slotted for the reception of pins 51 on the lower ends of blocks 52, adjustably mounted on the slides, as shown in Fig. 4. The levers are shifted to move the slides outwardly by means of pins or rollers 53, adjustably mounted upon brackets 54, secured to the cross-head 7. These rollers bear against the edges of the levers, the portions of the edges against which they bear being made of such a contour that the rollers will shift the levers outwardly and hold them in such position during the back-and-forth movements of the cross-head and auxiliary compressing-head 19, except during the independent backward movement of the plunger 8, at which time the compressing-heads are separated from the compressed cake. The inward movements of the slides 45 are effected by springs 55, having one end connected by pins 56 on the under side of the levers and the opposite ends to a stationary portion of the machine. These springs will insure a quick inward movement of the grippers just prior to the separation of the presser-heads and the return movement of the auxiliary head, so that the cakes will be yieldingly held by the grippers at the time when it is desired to separate the presser-heads from the sides of the cake. The release of the cake is effected by the action of the pins or rollers 53 on the levers 50 as soon as the compressing-heads have moved away from the cake.

As shown in Fig. 4, the adjustment of the shelf 32 is effected by a wedge-block 57 engaging a correspondingly-shaped lug 58, depending from the shelf, the back-and-forth movement of the wedge 57 being effected by a threaded rod 59, passing through an internally-threaded sleeve 60 on the wedge 57. The rod 59 is mounted in suitable bearings in the frame 4 and is rotated to effect the adjustment of the shelf 32 by hand-wheel 61.

In some forms or constructions of machines it is desired to arrange the feed mechanism of the cakes to be pressed centrally or immediately above or in line with the pressing mechanism, as clearly shown in Figs. 6 and 7 and in the machine described in the application hereinabove referred to. When the feed mechanism is so arranged, the cakes are deposited upon the mold-box 20 or upon a ledge or shelf 62 immediately above the mold-

box. In order to shift the cakes from the mold-box or shelf, a pusher 63 is connected to the arm 17, so as to move in unison with the auxiliary plunger 19, so as to push a cake off of the shelf or mold-box while the auxiliary plunger is at the forward limit of its movement, as shown in Fig. 7. A too great movement of the cakes is prevented by a stop 64, adjustably secured to the sides 27 and 28 of the vertical guides. It sometimes happens that the cake will adhere to the end of the pusher or to the stop and will not drop onto the auxiliary plunger, thereby clogging the machine. In order to dislodge the cakes in case of such adherence, an arm 65 is pivotally mounted upon a bracket 66, so that its front end will move up and down between the stops 64 and will strike any cake adhering either to the pusher or stops. A spring 67 is so connected to the striker 65 as to tend to normally hold the front end of the striker down. In order to raise the striker and place the spring 67 under a striking tension, a roller 68 is adjustably mounted on a standard 69, secured to the cross-head 7. As the cross-head moves forward, the striker is raised so that on the return movement of the cross-head and the pusher a new cake can be pushed forward by the latter. As the cross-head reaches or approaches the rear limit of its movement, the rollers 68 will permit the spring to operate so that the forward end of the striker will hit a cake a sharp blow and force it down into position in front of the mold-box. When the grippers are withdrawn, the compressed cakes drop onto a carrier-belt 70, passing around suitably-driven rollers, the shafts of which are mounted in suitable bearings secured to the frame of the machine.

40 We claim herein as our invention—

1. In a soap-press, the combination of a trough having one of its sides adjustable, a feeding-belt traveling between the sides of the trough and inwardly-projecting retaining-

plates adjustably mounted on the sides of the 45 trough, substantially as set forth.

2. In a soap-press, the combination of a removable mold-box, movable heads for compressing a cake of soap within the box, a supporting ledge or shaft arranged in front of the 50 mold-box, means for adjusting such ledge or shelf, and a pusher for shifting a cake of soap along the ledge to position in front of the mold-box, substantially as set forth.

3. In a soap-press, the combination of a 55 mold-box, movable heads for compressing a cake of soap within the box, a supporting ledge or shelf arranged in front of the mold-box, a pusher adjustably connected to a movable block, a reciprocating slide provided with a 60 slotted arm arranged at an angle to the direction of movement of the slide, and engaging a pin on the movable block, substantially as set forth.

4. In a soap-press, the combination of movable 65 compressing-heads, vertically and horizontally adjustable grippers, levers pivotally mounted on the frame of the machine, and having their free ends connected to the grippers, springs for shifting the levers inwardly, 70 and adjustably-mounted pins movable with the main compressing-head and adapted to move the levers outwardly, substantially as set forth.

5. In a soap-press, the combination of cake- 75 feeding mechanism, a mold-box, compressing-heads operative within the box to compress a cake of soap, and a spring-actuated striking-arm to insure the movement of a cake to position in front of the mold-box, substantially 80 as set forth.

In testimony whereof we have hereunto set our hands.

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Witnesses:

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