

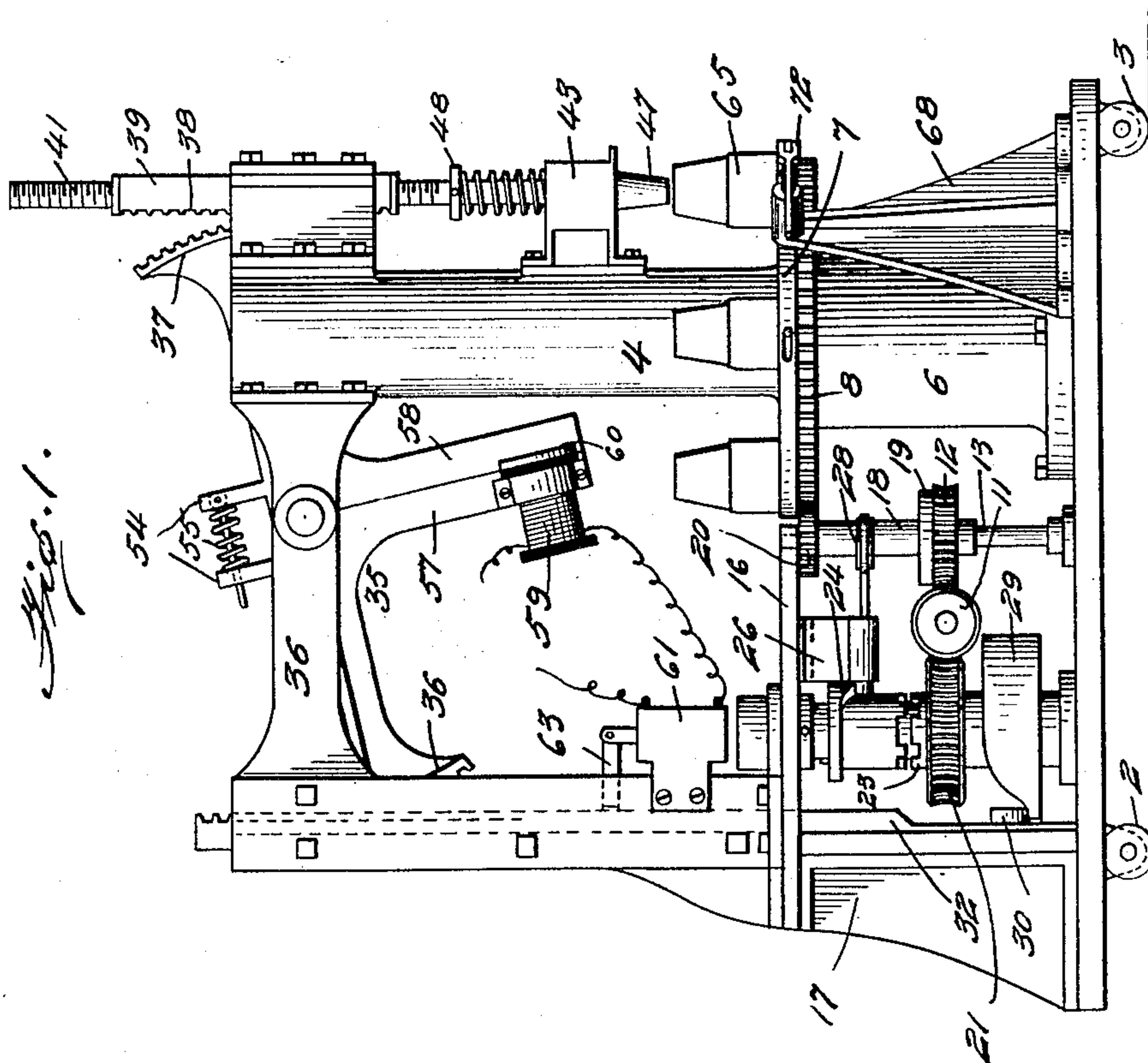
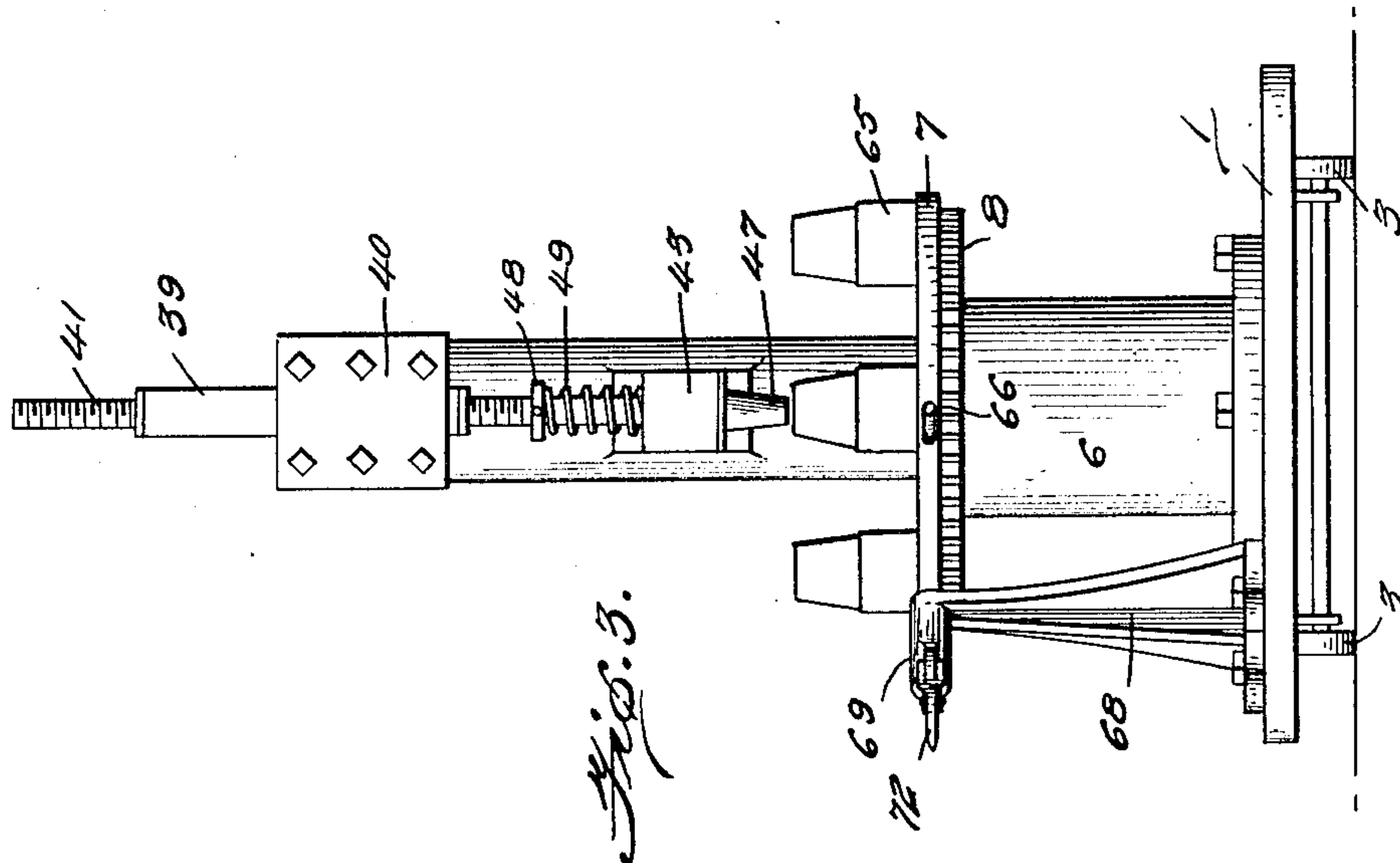
PRESS.

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943,858.

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4 SHEETS—SHEET 1.



Witnesses

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4 SHEETS—SHEET 2.

Fig. 2.

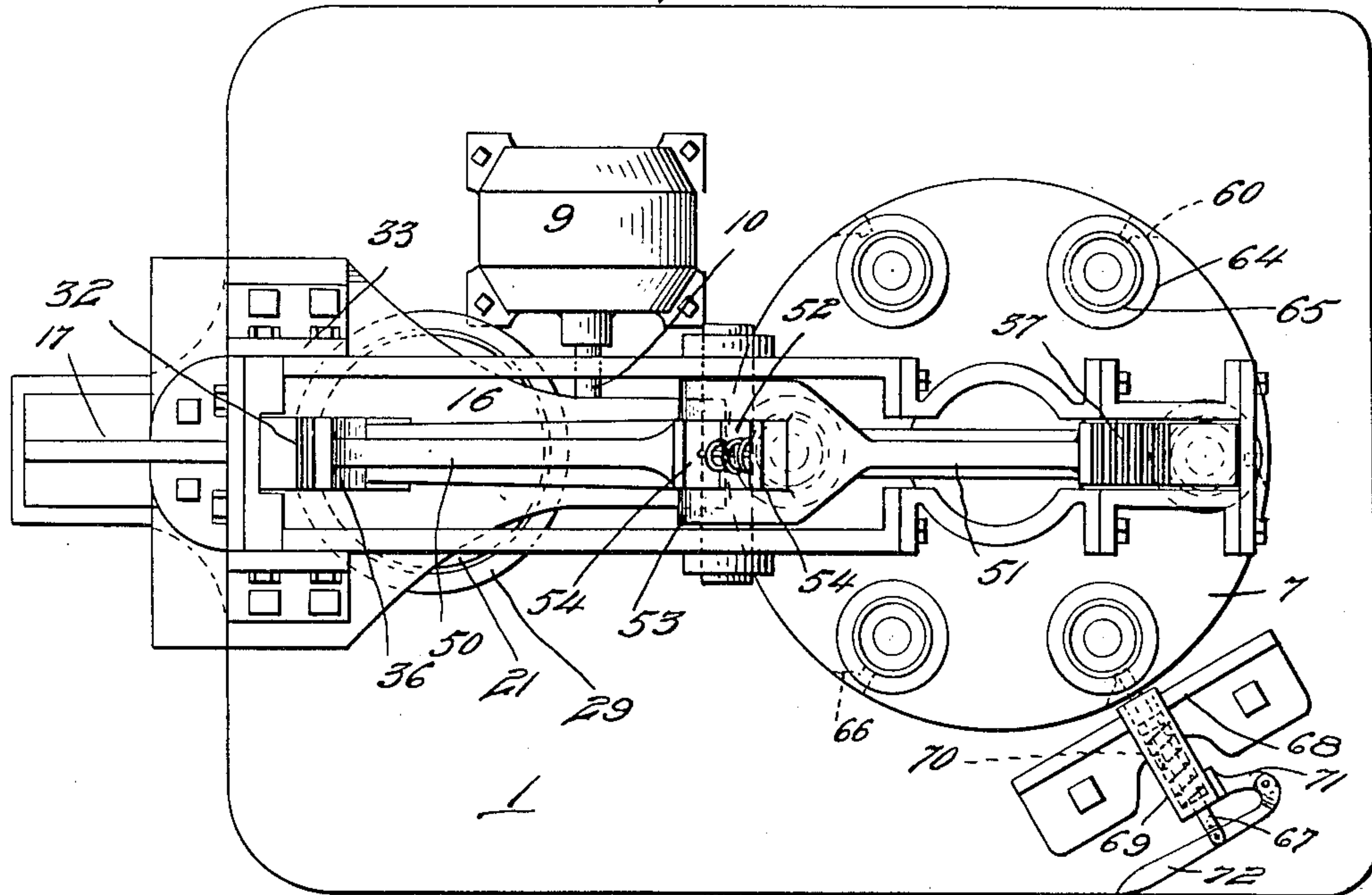
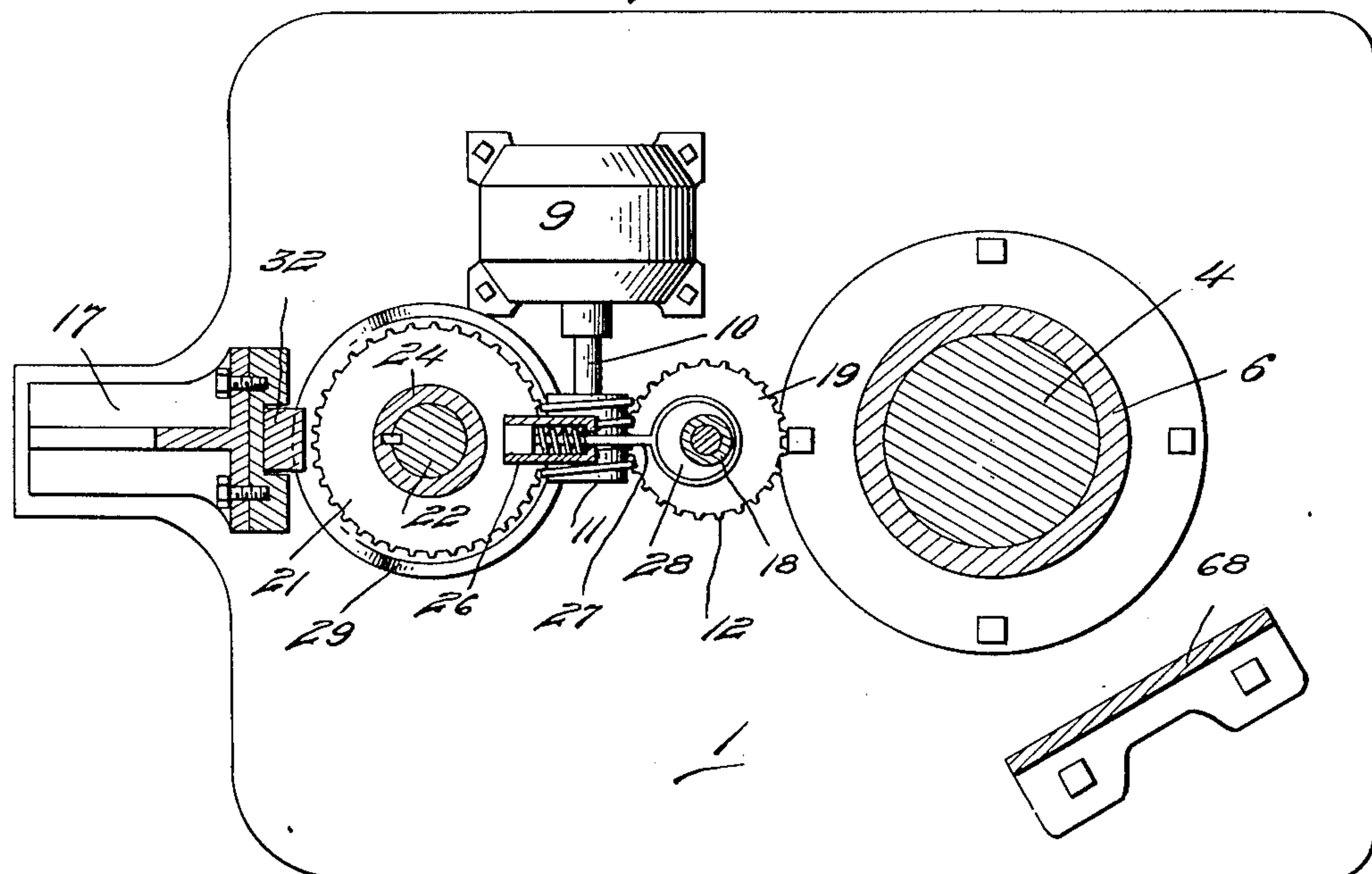


Fig. 6.



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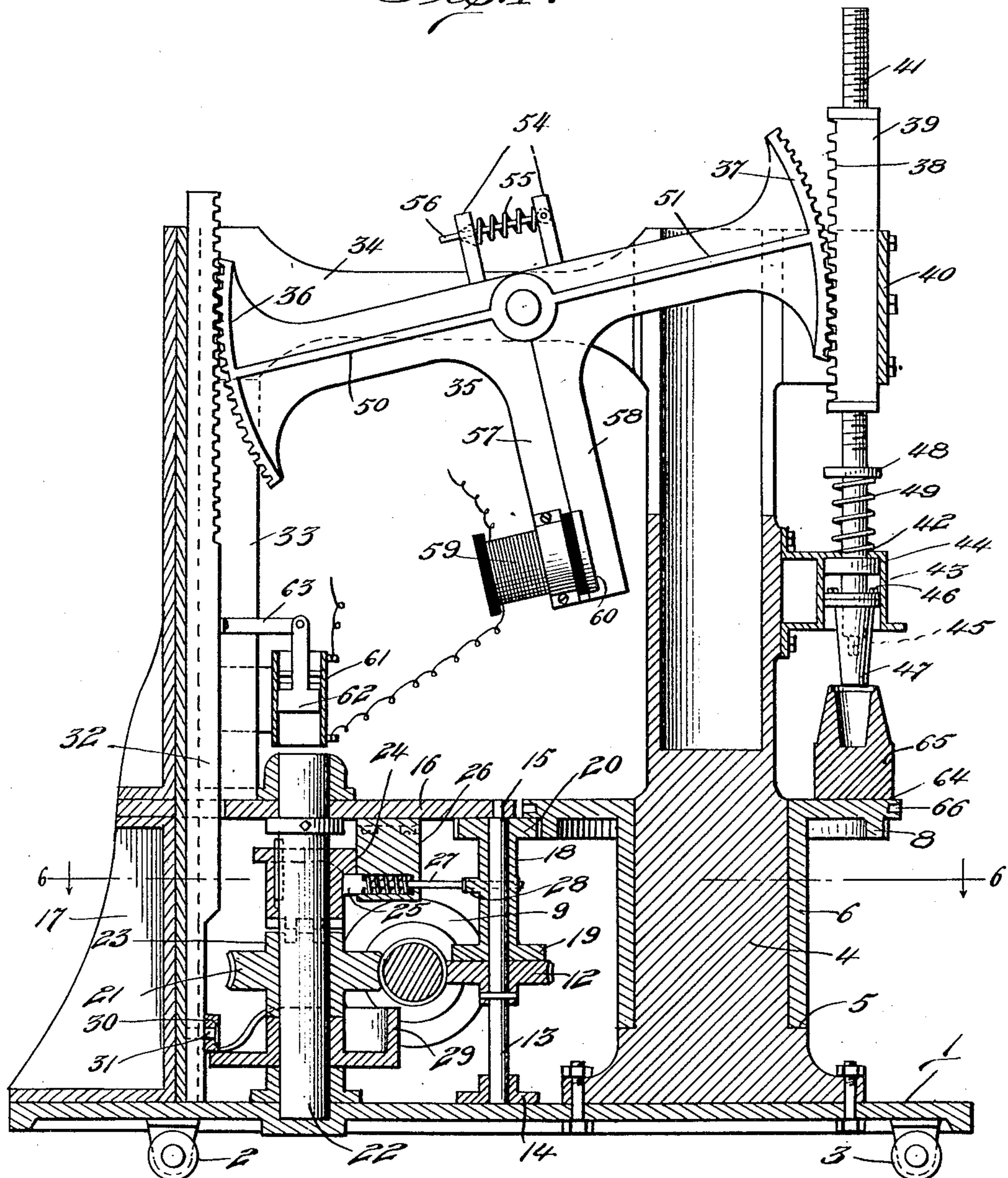
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4 SHEETS—SHEET 3.

Fig. 4.



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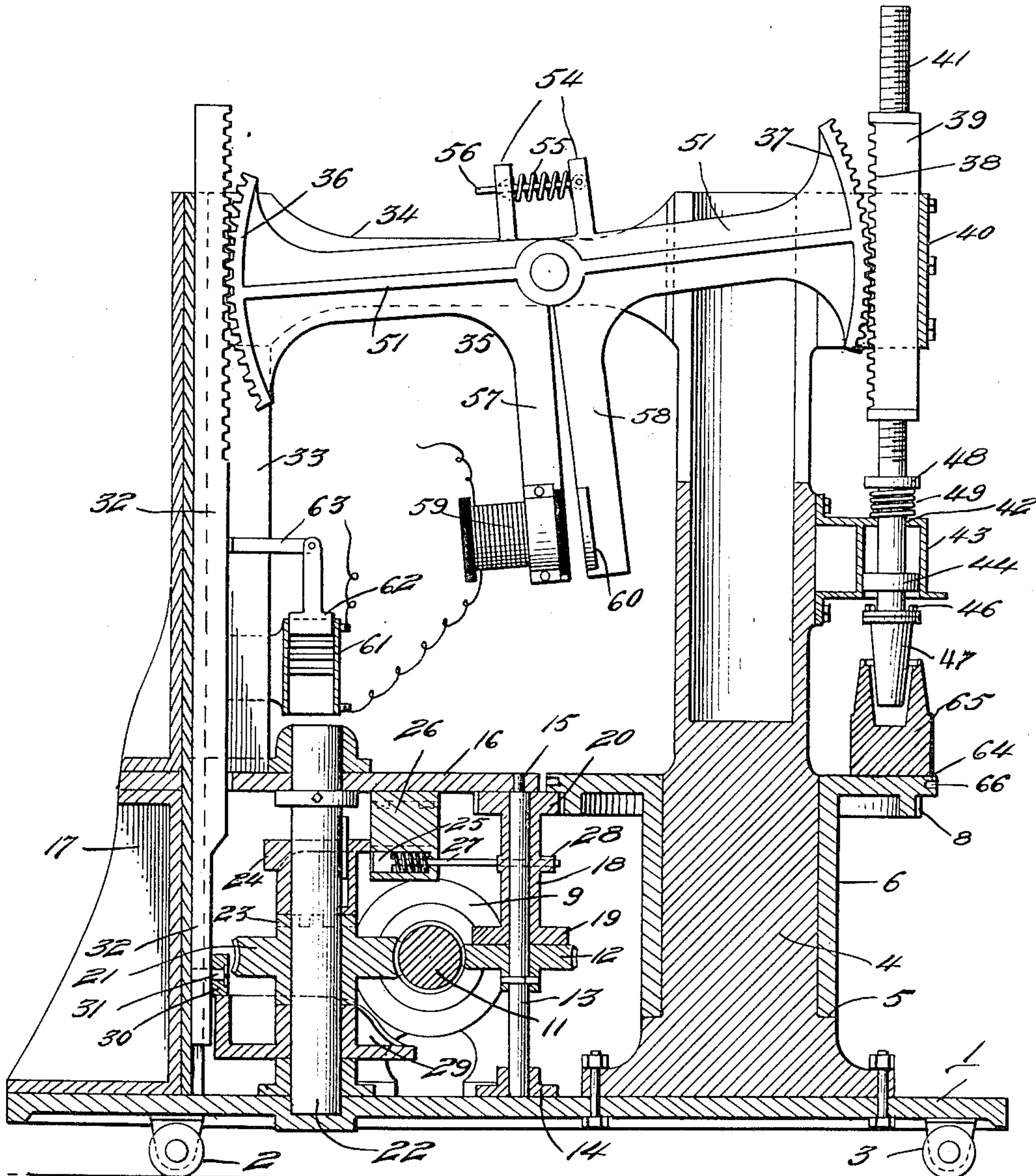
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4 SHEETS—SHEET 4.

Fig. 5.



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UNITED STATES PATENT OFFICE.

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PRESS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, CHARLES L. BETZ and WALTER E. WALLACE, citizens of the United States, residing at Rochester, in the county of Beaver and State of Pennsylvania, have invented certain new and useful Improvements in Presses; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to presses, particularly to glass presses, and more particularly that type which are used for pressing small articles into form, such as goblets, glasses and the like.

Heretofore it has been difficult to obtain the proper pressure for forming the article and for maintaining such pressure, or any reduced fraction thereof during the cooling or setting period. Frequently the pressure was too great or too little during the setting or cooling period. This results in defective articles which generally have their skin under such tension that they break readily when exposed to quickly varying temperatures, such as being immersed in hot or cold water, or being removed from hot water to a cooler atmosphere.

It is the object of this invention to avoid the above named difficulties and to maintain an even pressure upon the plunger during the forming of the article, and to automatically release the pressure at a predetermined time so that during the cooling and setting period the article is held under a much reduced but uniform pressure for a predetermined time.

With these and other objects in view, the invention consists of certain novel features of construction, combination and arrangement of parts, as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a side elevation, Fig. 2 is a top plan view, Fig. 3 is an end view, Fig. 4 is a central vertical longitudinal section showing the plunger in raised position, Fig. 5 is a similar view showing the plunger in depressed position, and Fig. 6 is a horizontal sectional view taken on the line 6—6 of Fig. 1.

The press herein illustrated is a portable one and is preferably supported upon a base 1, having suitable carrying wheels 2 and 3,

which may be constructed to run on tracks or otherwise.

Extending vertically from one end of the platform or base 1 is a standard 4, which is formed with a shoulder 5, against which the neck 6, of the mold table 7 rests. This mold table is journaled upon the standard and is provided with a gear 8, upon its under face and is driven as will be hereinafter described. The motor for the press is numbered 9 and is shown to be mounted upon the base 1 with its driving shaft 10 extending transversely thereof and having intermediate its length the worm screw 11, which engages on one side the worm gear 12, keyed upon the vertical shaft 13, which is supported in bearings 14 and 15, the latter being carried upon the supporting plate 16, arranged parallel with the platform or base 1 and supported by a frame 17. Above the gear 12 is loosely mounted upon the shaft 13 a sleeve 18, which is provided with the friction disk 19, held in engagement with the gear 12, in any suitable manner so as to be frictionally driven therefrom. The upper end of the sleeve is provided with a pinion 20, adapted to mesh with the gear 8 on the under side of the mold table 7. The opposite side of the worm screw 11 is engaged by a worm gear 21, loosely carried upon a shaft 22, arranged parallel with the shaft 13 between the base plate 1 and the supporting plate 16. This gear 21 is provided with one-half of a clutch 23, whose other half is mounted for reciprocation on the shaft, but keyed thereto for rotation therewith. The upper half of the clutch 23 is provided with a cam 24, which rides upon a pin 25, slidably mounted in a bracket 26, carried upon the plate 16, and spring pressed into engagement with the outer face of the upper half of the clutch. A stem 27 is connected to the pin 25, and a suitable strap connected thereto surrounds a cam 28, carried by the sleeve 18.

While the operation will not now be described it will be seen that as the sleeve 18 revolves the pin 25 is intermittently withdrawn by action of the cam 28 so as to release the upper half of the clutch and allow it to engage its lower half so as to be driven by the gear 21, and thus drive the shaft 22.

Keyed to the bottom of the shaft 22 is a horizontally arranged cam 29, which engages the friction roller 30, carried by a pin 31, upon the rack bar 32, which is slidably

mounted in the frame 17, and a bracing standard 33. The upper end of this bracing standard has bridged between it and the standard 4 a horizontal bridge piece 34, upon which is journaled a two-part walking beam 35, which will be hereinafter described. Each half of the walking beam is provided with an arc-shaped toothed segment 36 and 37, the former of which engages the rack bar and is operated thereby, and the latter of which engages the toothed face 38 of the plunger rod 39. This plunger rod is preferably mounted to slide in a frame 40, parallel with the standard 4, and is provided with a threaded rod 41, which passes therethrough and is made adjustable therein. The lower end of the rod 41 passes through an aperture 42, in the spring box 43, and has secured thereto an attaching head 44, to which the plunger tip 45, is secured as by means of cap screws 46. To the plunger tip is secured the usual plunger 47. The head 44 and the plunger tip 45 are preferably made hollow so as to permit water or other cooling fluid to pass into the same so as to cool the plunger. Between the spring box 43, and a collar 48 formed upon the rod 41 is interposed a spring 49 for normally raising the plunger rod after each operation.

In order to obtain an automatic release of the plunger we divide the walking beam 35 into two separate halves, 50 and 51, the latter being heavier than the former and having an apertured lug 52, which is straddled by the apertured ears 53 of the half 51. Each half is provided with upwardly extending lugs 54, between which is located a spiral compression spring 55, mounted upon a rod 56, which is secured to one of the lugs and slidably mounted in a slot formed in the other. Each half of the walking beam has extending in an opposite direction from the lugs 54 the holding arms 57 and 58, and to the former is secured a suitable electro magnet 59, adapted to have its pole piece arranged adjacent the armature 60, carried by the arm 58. This magnet derives current from any suitable source and may be wound for any suitable voltage, so as to automatically brake down upon a given strain exerted upon the walking beam. It is, however, deemed best to use a resistance box, such as is shown at 61, attached to the standard 33 and have a wiper arm 62, traveling over the contacts of the box so as to cut off all current to the magnet at a predetermined time whereby the arms 57 and 58 are released and the pressure upon the plunger cut off to an appreciable extent. The wiper arm 62 is preferably carried upon a projecting finger 63, adjustably secured to the rack bar 32.

The mold table 7 is preferably provided with suitable sockets 64, for the molds 65, and opposite each socket in the edge thereof are provided suitable notches 66, which are

adapted to be engaged by a spring pressed pin 67, slidably mounted in a standard 68, bolted to the frame 1 and extending vertically to a point approximately level with the table 7. A suitable sleeve 69 extends rearwardly from the upper part of the standard 68, and in the sleeve we mount the spiral spring 70, which surrounds the pin 68 to normally force it into engagement with the table. An ear 71 projects outwardly from the sleeve and pivoted thereto is a lever 72, which is connected to the pin 67 and may be used to retract the same when it is desired to start the machine.

The operation of the device is as follows: The motor which is preferably allowed to run continuously drives the shaft 13 and the gear 21. As the gear 21 is idly mounted upon the shaft 22 the cam 29 and the sleeve 18 upon the shaft 13 are not driven until the operator releases the pin from one of the notches 66. When this is done the table 7 starts to revolve under the influence of the pinion 20, which is now driven by the gear 12 until another notch in the table is reached, at which time a second or a succeeding mold will be in position to be engaged by the plunger 47. At this time the cam 28 has withdrawn the pin 25 from its engagement with the cam 24 and the upper half of the clutch 23, which is keyed to the shaft 22, is allowed to drop. While the shaft 13 continues to revolve the table is held stationary, and the pin 25 has gone back against the face of the upper half of the clutch. It will be understood that the pin 25 is drawn at the time the cam 24 has its highest portion or apex in engagement therewith and is allowed to go back again by action of the cam 28 when the lower portion thereof is reached. After the shaft 22 has started the cam 29 operating upon the roller 30 raises the rack bar 32 and operates upon the segment 36 to raise the heavy end 50 of the walking beam. This lowers the opposite end and with it the plunger rod forces the plunger into the mold and forms the glass therein into an article of the required shape. During this movement the wiper finger 62 has been traveling over the contacts in the resistance box 61 and constantly reducing the current fed to the magnet 50 until at a predetermined time the current is entirely cut off, it being reduced to such an extent that the magnet has not sufficient strength to hold the arms 57 and 58 of the walking beam together. When they are released the pressure ceases upon the plunger and only the action of the spring 55 holds the plunger in the mold until the roller 30 starts downwardly on the incline of the cam 29. At this time the cam 24 will ride upon the pin 25 and raise the upper half of the clutch out of engagement with the lower half so that the wheel 21 can revolve idly upon the shaft

22 until the table is subsequently released for another operation.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention as defined in the appended claims.

Having thus described our invention, what we claim and desire to secure by Letters Patent is:—

1. A glass press comprising a two-part walking beam, means for connecting the parts of the beam together, means for automatically releasing said holding means, a plunger carried by one end of the beam, and means for operating the beam.

2. A glass press or forming machine comprising a plunger, a two-part walking beam for operating the same, and a magnet for holding the parts of the beam together.

3. A glass press or forming machine comprising a plunger, a two-part walking beam for operating the same, means for holding the parts of the beam together, and automatic means for releasing said holding means.

4. A glass press or forming machine comprising a plunger, a two part walking beam for operating the same, a magnet for hold-

ing the parts of the beam in alinement, means for automatically deenergizing said magnet and means for holding the parts of the beam together.

5. A glass press comprising a plunger, a walking beam for operating the plunger, means controlled by the operator for operating the walking beam, and a magnetically acting releasing device operating in conjunction with the walking beam.

6. In a press of the character described, a plunger, means for operating the same to maintain a given pressure in the mold, means for automatically releasing said plunger, and means for maintaining a reduced pressure after the plunger has been released.

7. In a press of the character described, a mold, a plunger adapted to work therein, means for operating the plunger to maintain a normal pressure within the mold, means for releasing the pressure of said plunger at a predetermined time, means for maintaining a reduced pressure after said main pressure has been released, and means for returning the plunger to normal.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

CHARLES L. BETZ.
WALTER E. WALLACE.

Witnesses:

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ROBERT C. BATTO.