

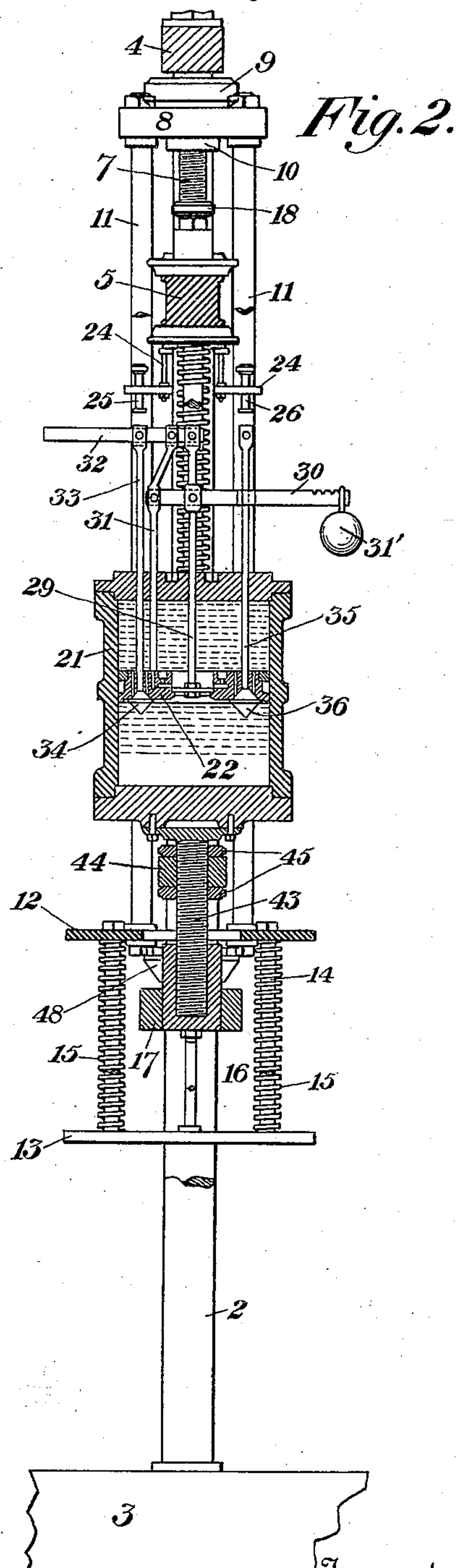
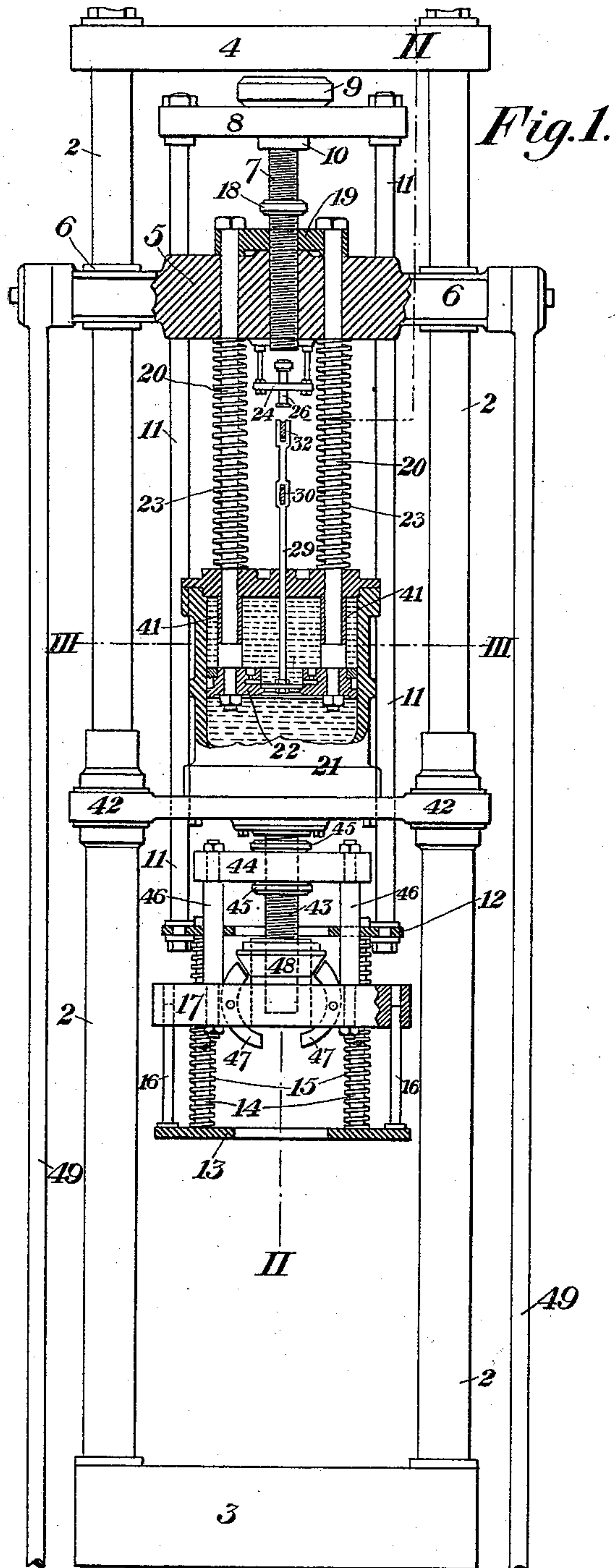
(No Model.)

2 Sheets—Sheet 1.

C. KUHLEWIND.
GLASS PRESS.

No. 543,154.

Patented July 23, 1895.



Witnesses

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H. M. Corwin

Inventor

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his Attorneys

(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

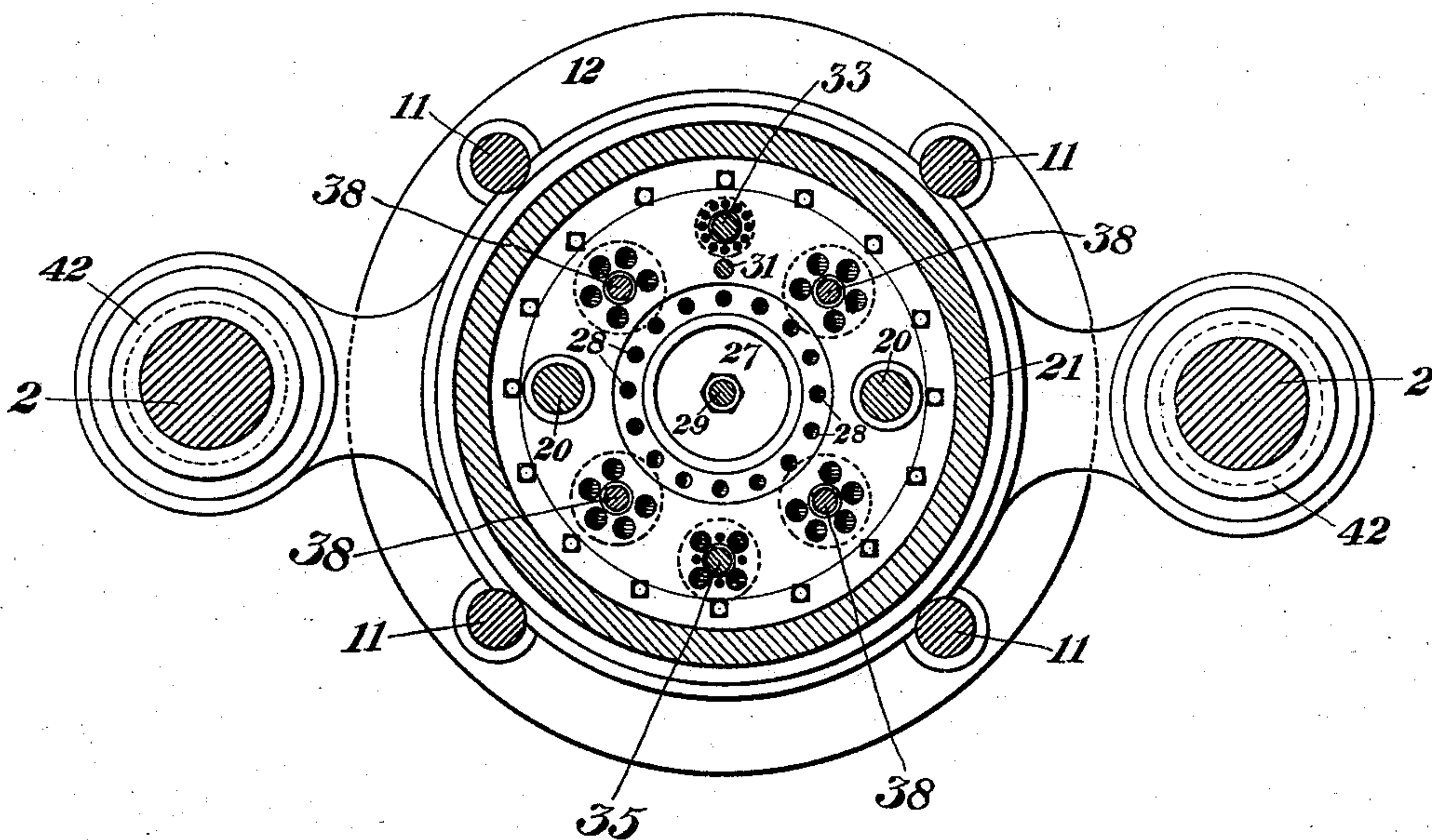


Fig. 4.

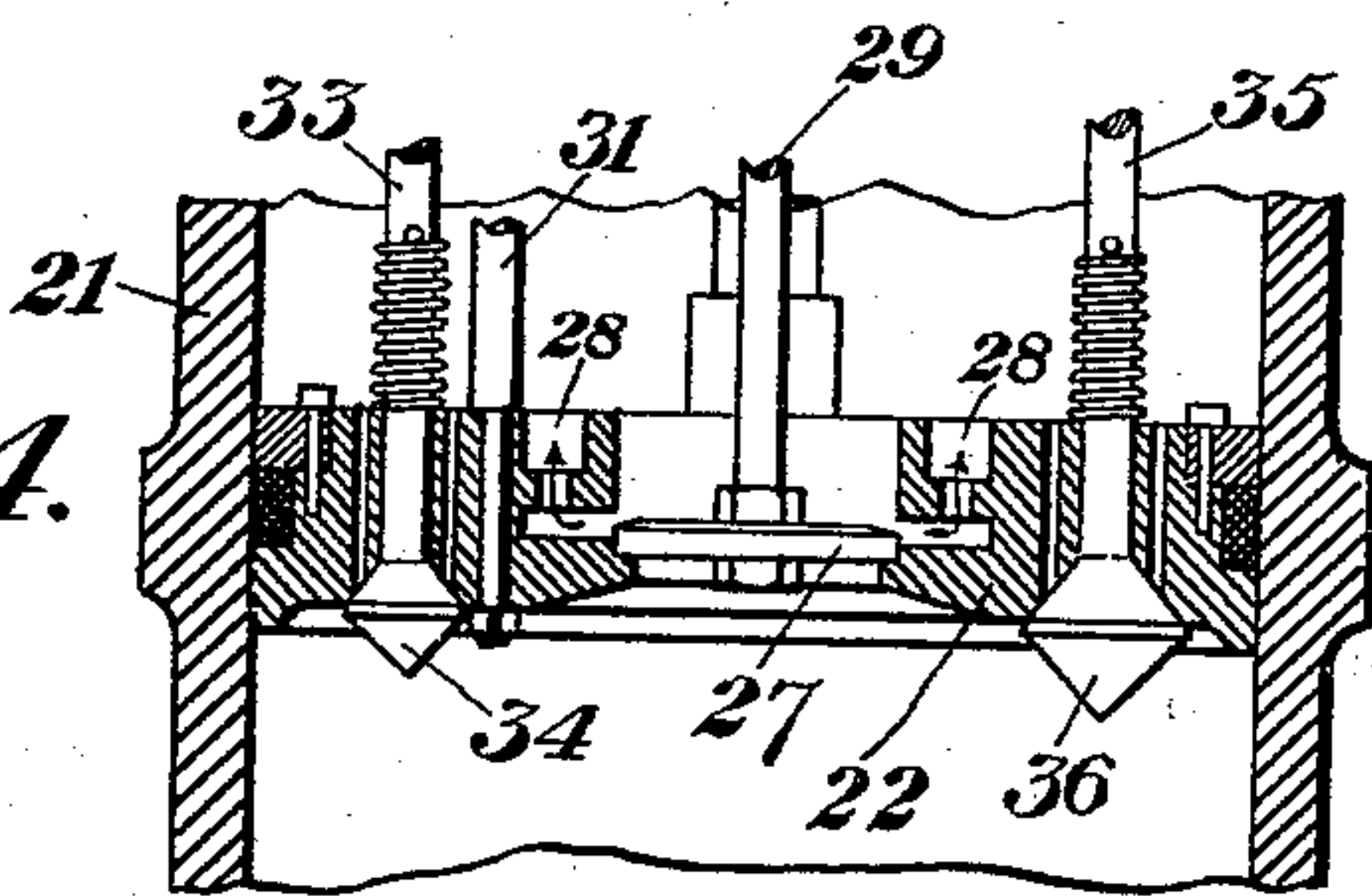
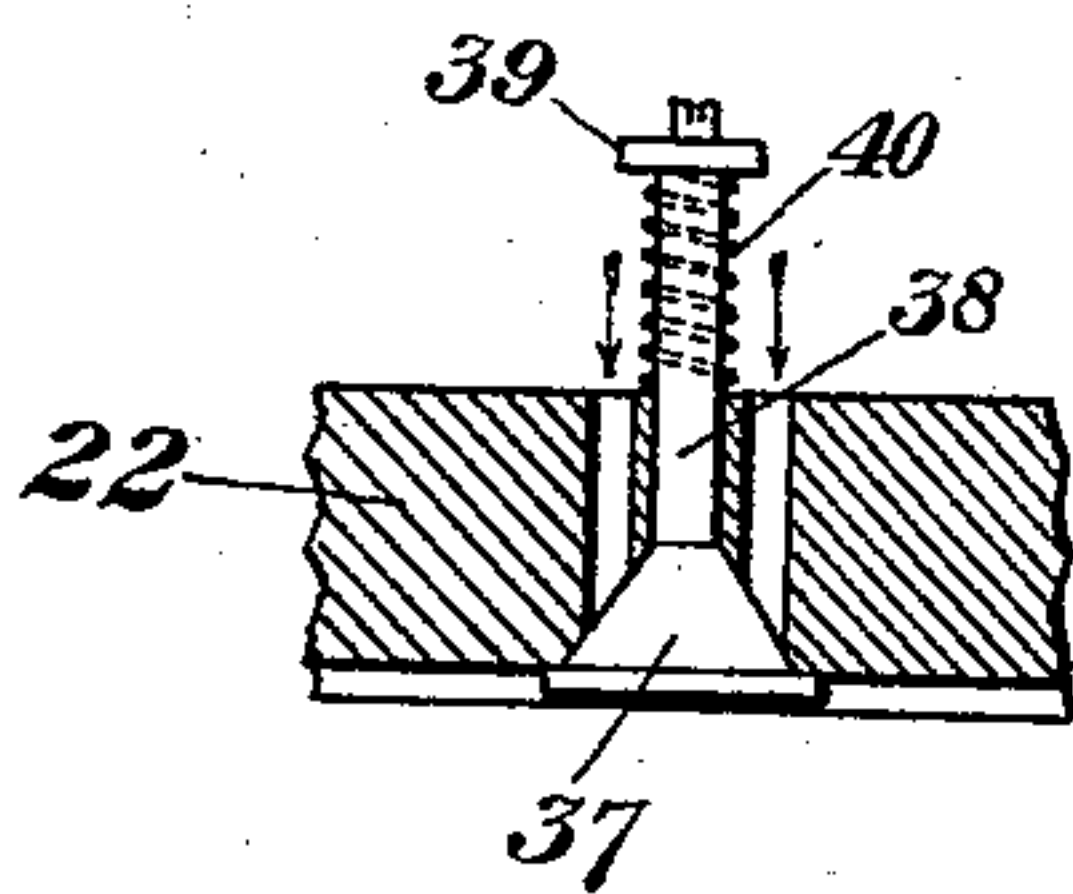


Fig. 5.



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UNITED STATES PATENT OFFICE.

CORNELIUS KUHLEWIND, OF ROCHESTER, PENNSYLVANIA.

GLASS-PRESS.

SPECIFICATION forming part of Letters Patent No. 543,154, dated July 23, 1895.

Application filed August 15, 1894. Serial No. 520,363. (No model.)

To all whom it may concern:

Be it known that I, CORNELIUS KUHLEWIND, of Rochester, in the county of Beaver and State of Pennsylvania, have invented a new and useful Improvement in Glass-Presses, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

10 Figure 1 is a front elevation, partly in section, of my improved glass-press. Fig. 2 is a vertical section on the line II II of Fig. 1. Fig. 3 is an enlarged cross-section on the line III III of Fig. 1. Fig. 4 is an enlarged detail view of the valve mechanism in the hydraulic cylinder, and Fig. 5 is a detail view of another valve employed in the cylinder.

Like symbols of reference indicate like parts in each figure.

20 My invention relates to the class of glass-presses and is designed to provide a press which may be operated by mechanical power rather than by hand, as has been formerly necessary. Heretofore, when power was employed, as the plunger must descend to exactly the same point at each stroke, if the operator inserted too much glass in the mold the plunger descending would break the mold, as no means was provided for graduating the stroke, as in hand-power. My invention overcomes these difficulties; and it consists, broadly, in a glass-press provided with means whereby, when the amount of resistance rises above a certain point, the plunger will stop in its downward motion, thus preventing breakage of the mold.

40 It consists, secondly, in means for applying first a spring or yielding pressure to the mold, and thereafter a positive pressure, the full pressure being exerted only after the glass has begun to flow, as a too-sudden application of the full pressure acts in the nature of a blow and would tend to break the mold before the viscous glass could begin to flow; and it consists, thirdly, in the construction and arrangement of parts, as hereinafter more fully described, and set forth in the claims.

50 In the drawings, 2 2 are the upright posts of the press, secured to the base 3 and joined at their upper ends by cross-piece 4. Between these uprights moves the upper cross-head 5, guided by collars 6, which encircle the posts,

and having centrally secured therein the vertical screw-threaded rod 7, adjustably fastened at its upper end to the plate 8 by nuts 9 and 10. To the plate 8 are secured the depending rods 11, which are four in number, and at their lower ends carry a plate 12, from which the presser-plate 13 is hung by rods 14 passing through the plate 12 and secured in the presser-plate. Spiral springs 15 encircle the rods 14 and hold the presser-plate normally in its lowermost position, this plate having guide-rods 16 passing up through holes in the plunger-head 17. The screw-threaded rod 7 is provided with an adjustable nut or tappet 18, adapted in the downward motion of the cross-head 5 to contact with a cross-bar 19, through a hole in which the rod 7 loosely passes. Secured in the cross-bar 19 are rods 20, which pass through the cross-head 5 and the head of a hydraulic cylinder 21, and are secured in a piston-head 22 therein. Spiral springs 23 encircle the rods 20 and bear against the lower face of the cross-head 5 and the upper cylinder-head, respectively, and from the lower face of the cross-head depend two frames or braces 24, carrying adjustable screw-threaded tappets 25 and 26, respectively.

80 The piston-head 22 of the hydraulic cylinder is provided with a central aperture closed by an upwardly-opening valve 27, having side ports 28 and a stem 29, which extends up through the piston-head and is pivotally connected with a lever 30, pivoted to a standard 31, also secured in the piston-head. The lever 30 is provided with a series of notches, and a weight 31' is hung thereon, this weight being adjusted to bring any desired pressure upon the valve. A spring may be used in place of the weight. Pivoted to the upper end of the stem 29 is a second lever 32, fulcrumed in the standard 31, and pivotally connected with the stem 33 of a downwardly-opening valve 34. The valve 34 is given the longer leverage, and the valves are so proportioned that the upward pressure upon the central valve is ordinarily insufficient to force down the valve 34; but when the pressure rises above a certain amount the valves 27 and 34 are unseated and the piston-head moves down in the cylinder. Either lever may be used without the other, each operating automati-

cally whenever too much glass is cut off in the mold. The lever 32 is positively operated by the tappet 25 when the cross-head 5 reaches a certain point.

5 The lever 30 is provided with a vertical hole, through which passes the stem 35 of a downwardly-opening valve 36, which is operated by the tappet 26 after the cross-head 5 has moved down a determined distance. The
10 piston-head is also provided with four downwardly-opening valves 37, one of which is shown in Fig. 5, these valves having short stems 38, provided with collars 39, against which press spiral springs 40, surrounding the
15 stem and holding the valves to their seats. When an upward pressure is applied to the piston in the cylinder, these valves open and allow the fluid above the piston to flow through it as the piston rises. To stop the upward
20 movement of the piston-head beyond a certain point I provide collars 41, surrounding the rods 20, and butting against the upper cylinder-head. The lower cylinder-head is extended to form collars 42, surrounding the
25 standards 2 and guiding the cylinder in its movements, and centrally secured to this head is the screw-spindle 43, to which is adjustably fastened a cross-bar 44 by means of the adjustable nuts 45. Secured in the cross-bar 44
30 are rods 46, which at their lower ends are fastened in the bar 17, within which are pivoted the usual clamp-levers 47, which take under a collar upon the upper end of the plunger and support the same, and are secured by the
35 conical nut 48 working upon the screw spindle 43.

49 are the depending links, pivoted to the cross-head 5, and connected at their lower ends to a crank, eccentric, or other actuating
40 element.

In operation the cylinder 21 is filled with oil or other suitable liquid, so that pressure exerted upon the piston-head will move down the plunger unless the valves in the piston-head are opened to allow it to move down-
45 wardly in the cylinder.

The operation is as follows: A suitable amount of glass being cut off in the mold located on the base 3 beneath the plunger, the
50 links 49 move down the cross-head 5, and this pressing upon the springs 23 forces down the plunger with an easy yielding pressure in starting the flow of glass within the mold. As soon, however, as the nut 18 strikes the bar
55 19 the rods 20 are moved down positively and through the cylinder, which acts as a solid piece, forces the plunger downwardly, and presses the glass into shape. If, however, too much glass has been cut off, the weight 31' is
60 set to hold the valves in place until a certain resistance is met. When the resistance in the mold rises above this amount the lever 30 is lifted by the pressure upon the central valve 27, and the valves 27 and 34 are opened, al-
65 lowing the liquid below the piston to flow upwardly, upon which the piston-head moves

downwardly in the cylinder through the remainder of the stroke, the cylinder and plunger remaining stationary. Breakage of the parts is thus avoided, as would inevitably occur if the plunger moved downwardly through
70 the whole stroke when too much glass is contained within the mold. If desired, instead of using the weighted lever 30 the lever 32 may be used, this being operated to prevent
75 downward movement of the plunger if too much glass is cut off. At a certain point in the downward movement the tappets 25 and 26 positively open the valves 34 and 36 and allow the oil to flow upwardly in the cylinder.
80 On the return movement of the cross-head the oil flows downwardly through the valves 34, 36, and 37, the piston-head resuming its normal position in the cylinder.

It is evident that the device for stopping
85 downward movement of the plunger, when a certain resistance is met, may be used to advantage in many other connections—such as in hammers, die-presses, &c.—and I do not therefore wish to restrict myself to its use in
90 glass-presses alone, the word "former" being used broadly to designate a moving forming element.

The advantages of my invention will be apparent to those skilled in the art, since the
95 difficulty of using power-glass presses is entirely removed, while the initial pressure is of a light yielding character similar to hand-presses, the full power being exerted only after the glass has begun to flow.
100

Many variations in the form, construction, and relative arrangement of the parts of my invention may be made by the skilled mechanic without departure therefrom; since,
105

What I claim is—

1. In a press, a reciprocating two-part former, one part being secured to a cylinder having closed ends, and the other to a valved piston within the cylinder; the positively actuated part being arranged to move the other
110 part in both directions, substantially as described.

2. In a press, a reciprocating two-part former, one part being secured to a cylinder having closed ends, and the other to a piston
115 therein, and a valve in said piston having a weighted stem; the positively actuated part being arranged to move the other part in both directions, substantially as described.

3. In a press, a two-part former, one part
120 being secured to a cylinder, and the other to a piston within the cylinder, and a valve in the piston having a weighted stem and independent of the former; substantially as described.
125

4. A power press having a yielding connection with the plunger, and a separate positive connection which actuates the plunger after it has moved a certain distance; substantially
130 as described.

5. A press having a moving cross-head, springs between the cross-head and the plun-

ger, and a projection upon the cross head arranged to engage the plunger and move it positively after the cross-head has moved a certain distance; substantially as described.

- 5 6. A press having a two-part former, one part being secured to a cylinder and the other to a piston or plunger within the cylinder, a downwardly opening valve in the piston-head having a stem provided with a lever, and an

upwardly opening valve also connected to the lever; substantially as described.

In testimony whereof I have hereunto set my hand.

CORNELIUS KUHLEWIND.

Witnesses:

H. M. CORWIN,
F. E. GAITHER.