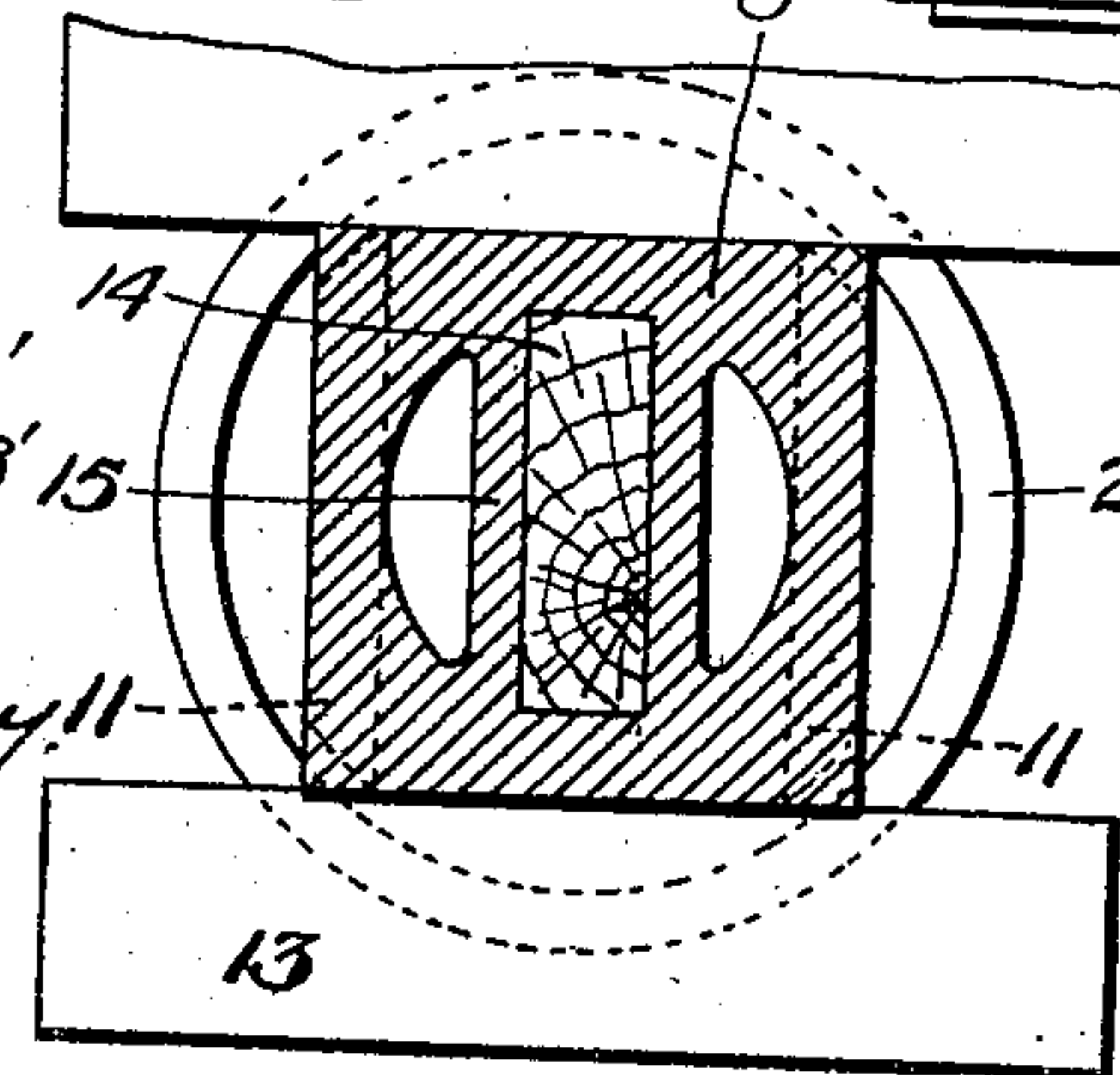
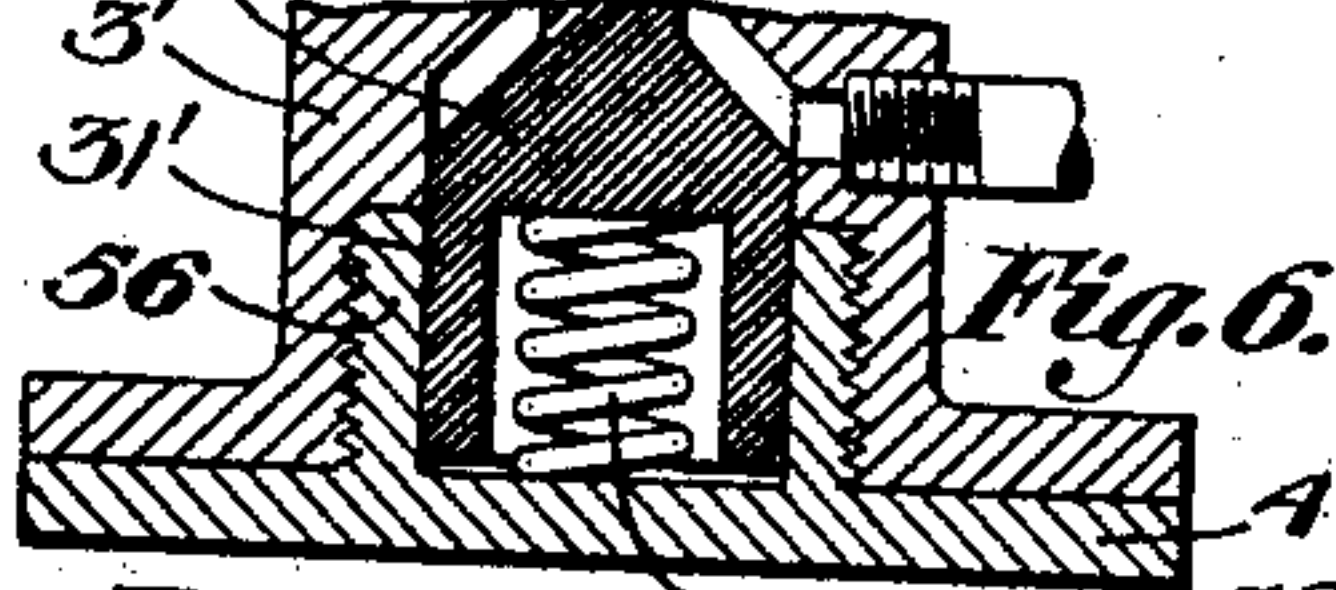
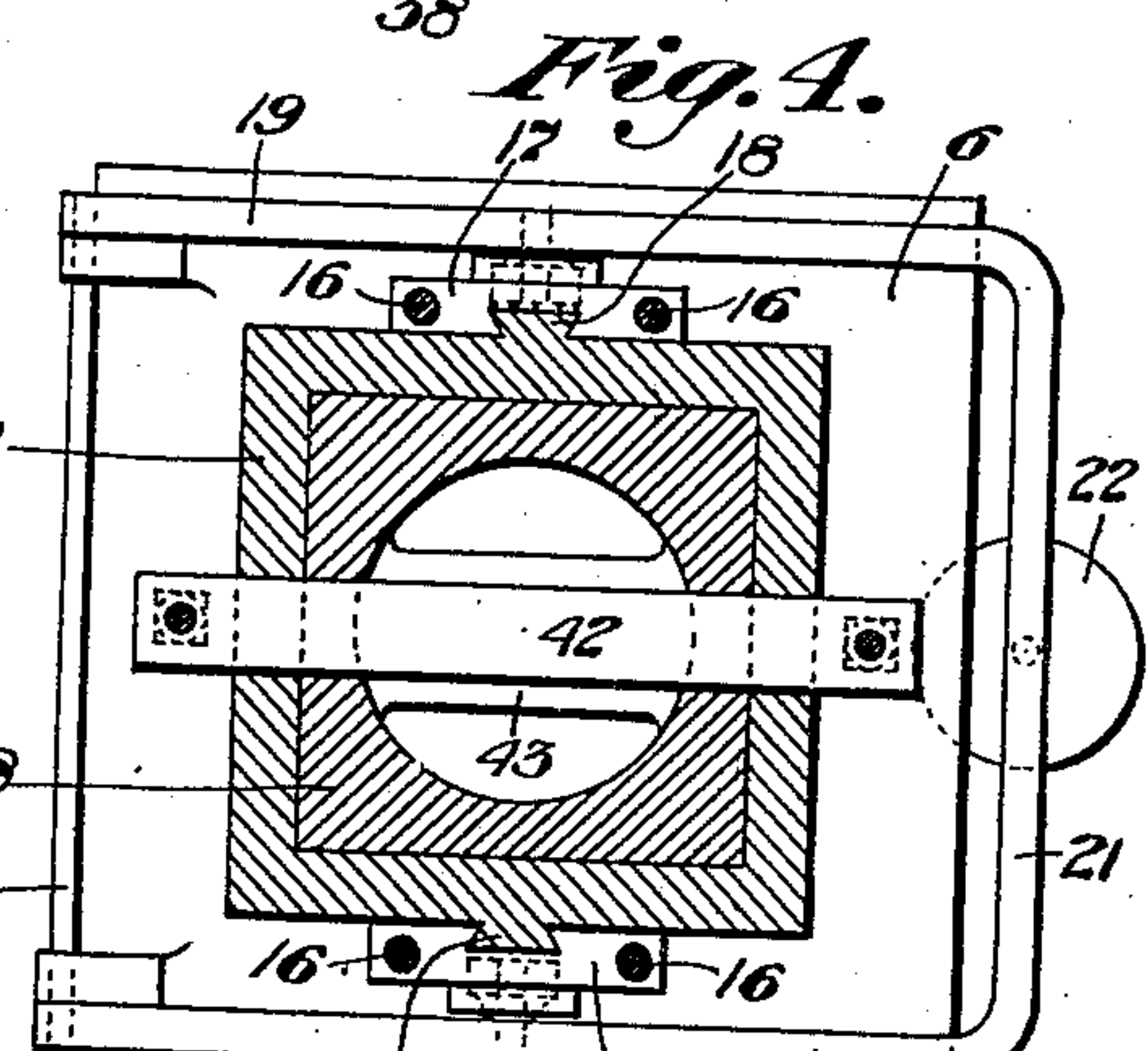
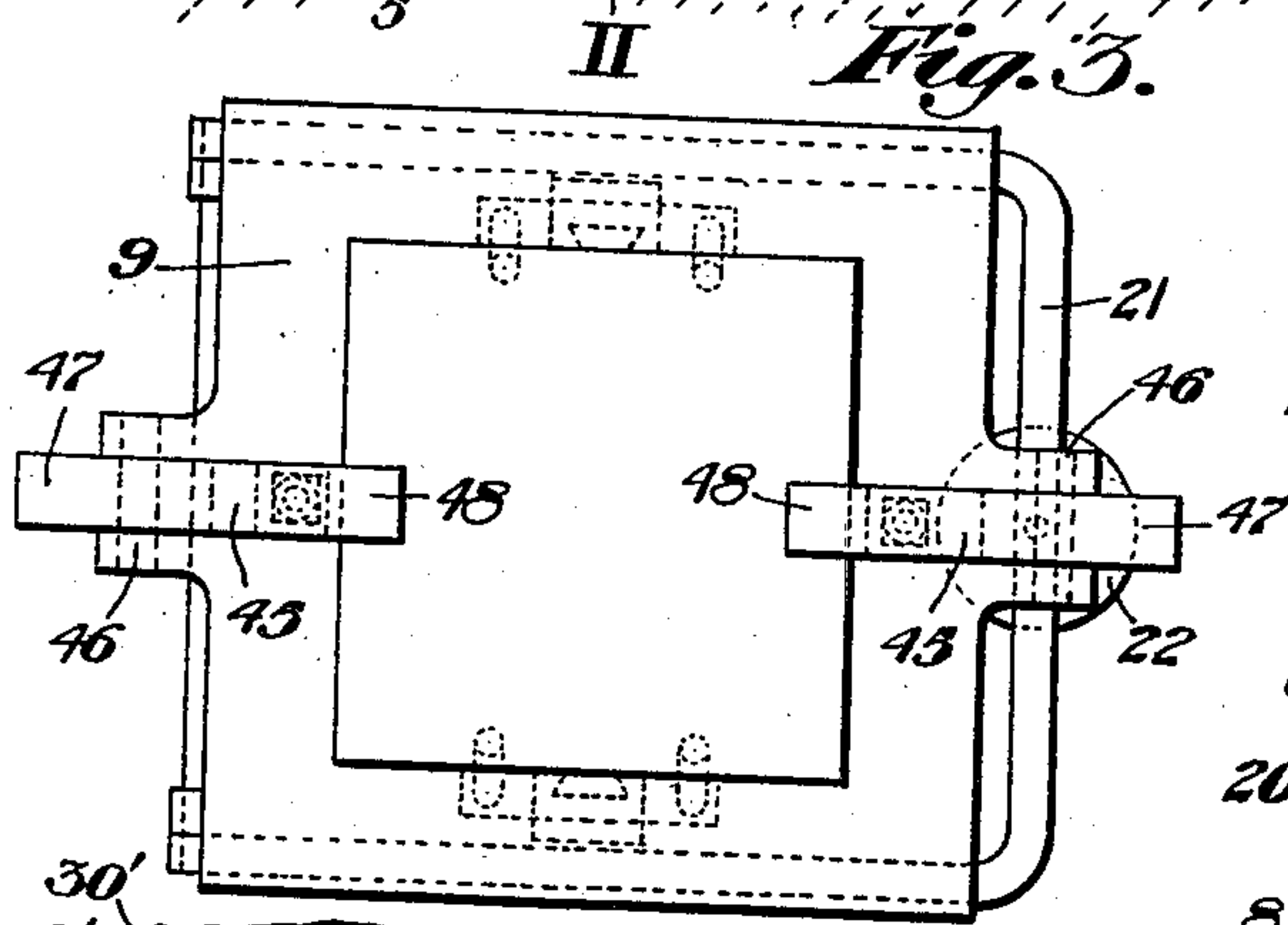
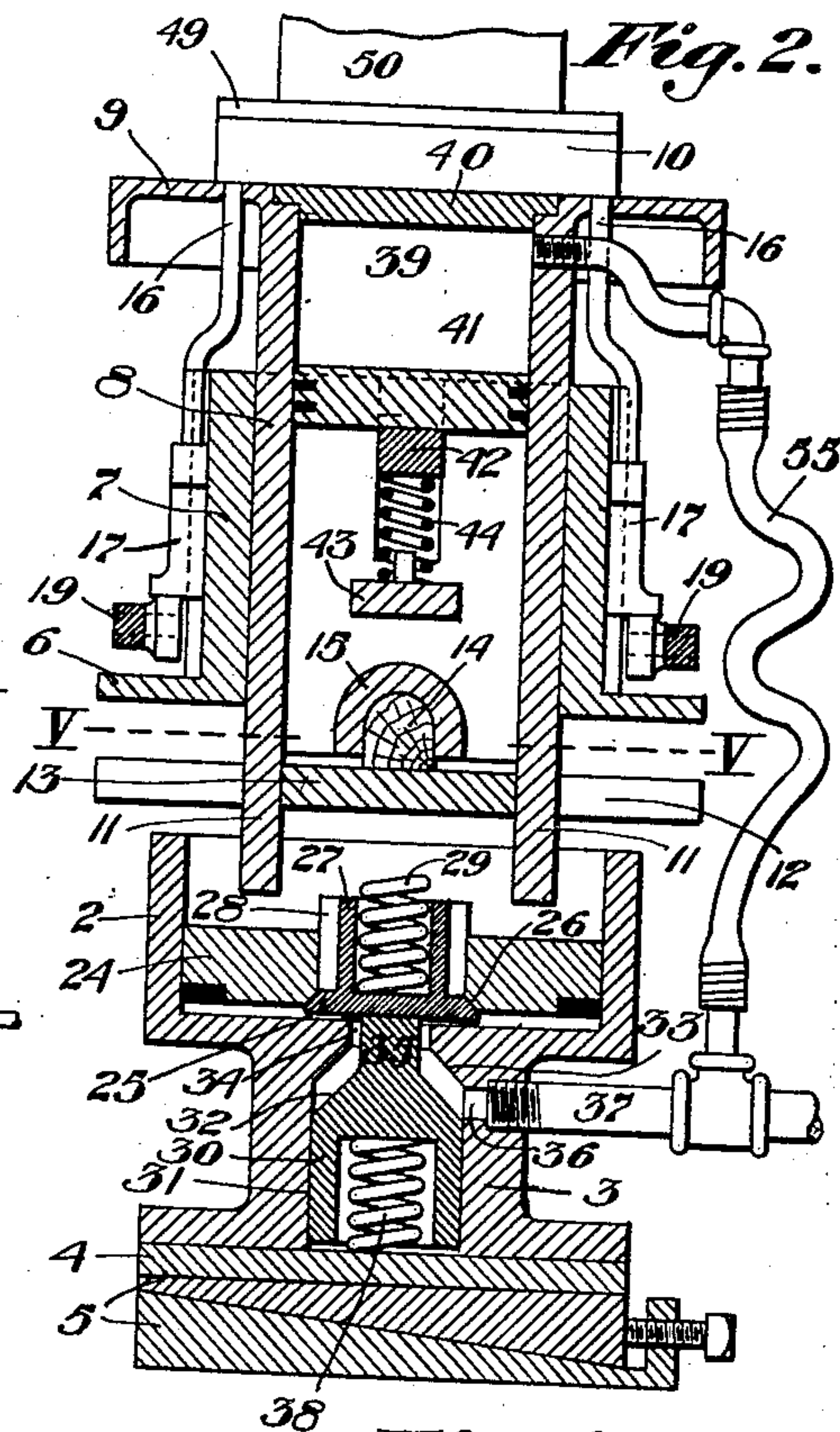
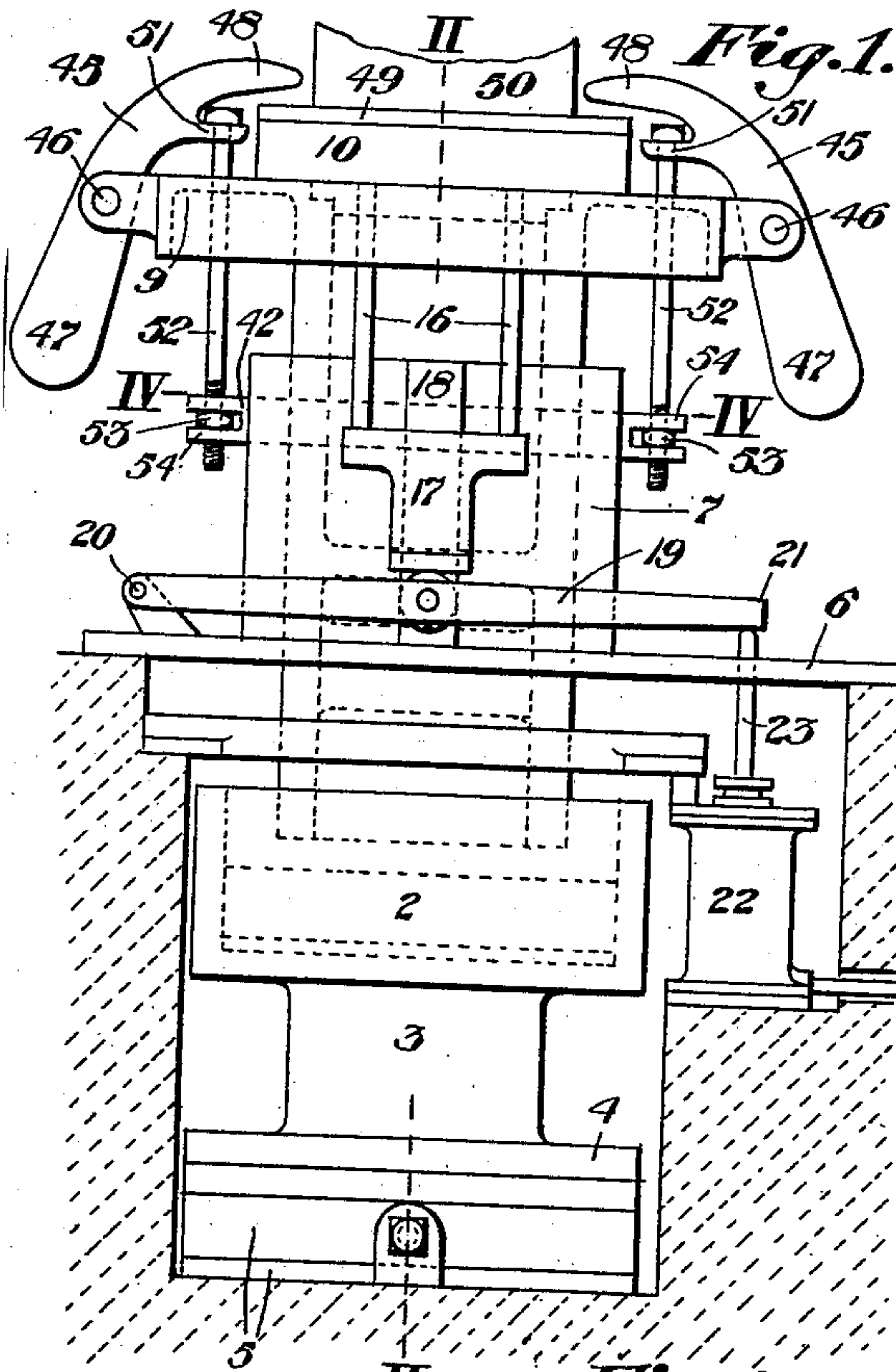


H. L. DEMMLER.  
MOLDING APPARATUS.  
APPLICATION FILED AUG. 1, 1907.

910,651.

Patented Jan. 26, 1909.



Witnesses:  
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by C. M. Clarke  
his attorney



# UNITED STATES PATENT OFFICE.

HENRY L. DEMMLER, OF WEATHERSFIELD, ILLINOIS.

## MOLDING APPARATUS.

No. 910,651.

Specification of Letters Patent.

Patented Jan. 26, 1909.

Application filed August 1, 1907. Serial No. 386,570.

*To all whom it may concern:*

Be it known that I, HENRY L. DEMMLER, a citizen of the United States; residing at Weathersfield, in the county of Henry and State of Illinois, have invented certain new and useful Improvements in Molding Apparatus, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention refers to improvements in molding apparatus of the class wherein mechanism is provided for vibrating the flask to pack the sand around the pattern, and refers particularly to the means for automatically holding the pattern on the stripping plate during the vibration and for releasing it at the termination thereof, together with other features of invention as shall be more fully hereinafter described.

The present invention constitutes an improvement on the construction shown and described in my co-pending application filed March 21, 1907, bearing the Serial No. 363,653.

Referring to the drawings: Figure 1 is a view of the apparatus in side elevation. Fig. 2 is a detail vertical sectional view on the line II. II. of Fig. 1. Fig. 3 is a plan view of Fig. 1. Fig. 4 is a horizontal sectional view on the line IV. IV. of Fig. 1. Fig. 5 is a similar sectional view on the line V. V. of Fig. 2. Fig. 6 is a sectional detail view showing a modified construction.

Generally stated, the apparatus comprises a cylinder provided with a piston and an automatically controlled inlet and outlet valve, a superimposed base plate or frame, a vertically reciprocating platen mounted therein, an upper stripping plate, means for upwardly supporting the plate in position to be operated upon underneath by the reciprocating platen due to the vertical lifting movement of the piston, and an automatically-controlled piston and mechanism connected therewith for clamping the pattern in place.

In the drawings, 2 represents the cylinder, in the lower portion of which is provided a valve casing 3, said cylinder and valve casing being preferably integral and mounted upon any suitable supporting base 4, with an intervening adjusting wedge or wedges 5.

6 is a base plate rigidly mounted slightly above the top of the cylinder 2 on any suitable supporting structure so as to form a per-

manent stationary portion of the apparatus, said base plate being provided with a centrally arranged upwardly projecting case 7 in which is mounted the hollow reciprocating platen 8. Said platen 8 is provided at its upper portion with a flat table extension 9 or is otherwise suitably designed for the purpose of supporting and carrying the stripping plate 10, and is also provided with downwardly extending legs 11, 11, of any suitable construction, which legs project downwardly from the central body portion 8 through guiding apertures 12 in an intervening base plate 13. Said base plate may however, be formed integral with the case 7 if desired, or constructed in any other suitable manner whereby to provide a guiding support for the said legs.

14 is a block of wood or other suitable cushioning material designed to absorb the shock of impact, set within a suitable receiving cavity in the under portion of the transverse bridge 15 integral with platen 8 as shown in Fig. 2, adapted to normally rest upon the plate 13.

The stripping plate 10 is designed to be lifted by the upper surface of the platen table 9, and to be held independent thereof by means of lifting pins or studs 16, extending upwardly from vertically sliding yokes 17 mounted in vertical guide-ways 18 in the sides of the shell or frame 7, or by other suitable means projecting upwardly from said casing, and preferably at each opposite side thereof. For the purpose of lifting the front plate 10 by said means I provide a double lever 19 extending along each opposite side of the frame 7 mounted upon pivotal bearing 20 and having the connected ends 21.

22 is a cylinder containing a piston provided with a piston rod 23 projecting up underneath cross-arm 21, by which, through levers 19, the yokes 17 and studs 16 are raised to lift the stripping plate. By such construction it will be seen that fluid pressure being exerted against the back of the said piston in cylinder 22, levers 19 will be raised, lifting yoke 17 and pins 16, thus raising the plate 10 to its desired inoperative position which may be slightly above the upper surface of platen table 9, and at its lowermost position as shown in Fig. 1.

24 is a vertically reciprocating piston



mounted in cylinder 2 by which impact is imparted to the platen 8 through legs 11, and thence to plate 10 and flask thereon upon piston 24 coming into contact with the lower terminals of the platen legs. The said piston is provided with a suitable ring around its exterior periphery for the purpose of making a fluid tight joint within the cylinder. In the piston 24 is an exhaust valve 25 seated upwardly against the under side of the piston which is provided with a corresponding valve seat 26 and an inner opening through which opening projects the upper middle body portion 27 of the exhaust valve 25. Said upwardly projecting portion 27 of the exhaust valve is preferably provided with a series of annularly arranged guiding ribs 28 bearing within against the walls of the piston apertures, and between said ribs 28 are a corresponding series of vertically arranged annular recesses for the purpose of permitting the exhaust of the lifting fluid from beneath the piston, upon exhaust valve being unseated in coming into contact with the under side of the base plate 13. For the purpose of cushioning the exhaust valve it is preferably provided with a cushion spring 29 set within the exhaust valve in a suitable receiving cavity, as clearly shown.

30 is the automatically-controlled inlet valve mounted within a suitable chamber 31 of valve casing 3 provided at its upper portion with a tapered seat 32 adapted to make closing contact with a corresponding seat 33 at the upper portion of the valve chamber and an inlet opening 34 leading from said chamber upwardly into the interior of cylinder 2, through which projects an upper reduced terminal stem 35 of valve 30.

36 is an inlet port leading from any suitable source of pressure supply as by pipe 37, which may be controlled by any convenient valve mechanism, to supply the energizing pressure. Port 36 is so located that it will be uncovered by piston 30 when in its lowermost position as shown in Fig. 2, but will be covered, shutting off the supply of said valve 30, when it is raised. For the purpose of lifting valve 30 I provide a spring 38 which may be conveniently made in the form of a coiled spring set within a central cavity in valve 30 bearing downwardly against base plate 4, tending to normally raise the valve 30 to cut off the supply of actuating fluid.

The interior central upper portion of platen 8 is hollow as shown at 39, constituting a cylinder closed at the top by any suitable head 40. Within said cylinder is mounted a piston 41 bearing downwardly upon a transversely arranged bar 42 extending through the platen from side to side and outwardly beyond the casing 7 through suitable slots therein. 43 is a transversely arranged

bearing abutment preferably formed integral with platen 8 or made separate therefrom if desired, between which and bar 42 is located a cushion spring 44 adapted to normally press bar 42 upwardly.

45, 45, are pattern-holding arms pivotally mounted at 46 at opposite sides of the table extension 9, and preferably provided with counter-weighted extremities 47 at their lower outer portions. The inner ends of said lever 45 are in the form of grasping fingers or extensions 48 adapted to bear upon the flange 49 of flask 50 and to clamp it to stripping plate 10 when said levers are drawn downwardly. For the purpose of so drawing said levers down and clamping the pattern to the stripping plate, the levers are provided with flange abutments 51, or any other suitable connected means adapted to be engaged by the upper terminals of the bolts or rods 52 extending downwardly through table 9, and connected as by nuts 53 on their threaded extremities, with the terminals 54 of said bar 42.

The upper interior of cylinder 39 is provided with a pipe 55, which is preferably in the form of a flexible hose or other suitable connection with the main supply 37, whereby cylinder 39 is supplied with fluid pressure simultaneously with the supply to the valve chamber underneath piston 24. The resulting effect of such pressure upon piston 41 is that it depresses bar 42 downwardly, drawing the clamping extremities 48 upon the flange of the flask, thereby rigidly maintaining the flask in position upon the stripping plate as the vibration of the platen continues. Upon cutting off the pressure to cylinder 2, pressure is likewise cut off from cylinder 39, thereby effecting the releasing of the pattern by the opening of the clamps 28, whereupon it may be removed. So long as pressure is supplied to both pipes a series of quick, intermittent reciprocations will be imparted to the platen and the flask supported by the plate 10.

In Fig. 6 I show a modified construction of the valve casing and its supporting base in which the base 4' is provided with an extension 56 screwed upwardly into the base 3' of the valve casing. The interior 31' of extension 56 may be finished of the same diameter as the upper interior 3 of the valve casing, or the valve may be mounted to fit and move in the extension 56 only, providing a recess for the valve 30' and its spring 33.' By this construction and arrangement the valve is mounted in and removable with the cylindrical extension of the base, and either construction may be used with good results. By this construction the base 4' is rigidly connected with the lower portion of the piston cylinder and its valve-receiving portion, while the parts may be readily taken apart,



the operation being the same as already described.

The operation of the invention will be readily understood from the foregoing description. The apparatus is exceedingly simple in construction, the working parts are few and not liable to get out of order; it provides for all the contingencies arising in the use of mechanism of this class, and for automatically clamping and releasing of the pattern flask at times corresponding with the operation and succession of the vibration.

The particular features or elements of the invention whereby the platen is connected may be employed in combination with other or different vibrating means and the machine may be changed or varied by the skilled mechanic in different details, design or other features, and I do not desire to be limited to the exact construction shown and described.

What I claim is:

1. In a molding apparatus, the combination with a reciprocating platen embodying a cylinder, of a fluid-controlled piston therein, and means operatively connected with the piston for clamping a superimposed member, to the platen, substantially as set forth.

2. In a molding apparatus, the combination with a reciprocating platen embodying a cylinder, of a fluid-controlled piston therein, and means operatively connected with the piston for clamping a flask on the platen, substantially as set forth.

3. In a molding apparatus, the combination with a reciprocating platen embodying a cylinder, of a fluid controlled piston therein, means operatively connected with the piston for clamping a flask on the platen, and means for retracting the piston to loosen the flask upon releasing the fluid pressure on the piston, substantially as set forth.

4. In a molding apparatus, the combination with the vibrating platen and an actuating cylinder and piston provided with a fluid supply, of means incorporated with the platen for clamping a flask thereon arranged to tighten or loosen it simultaneously with the operation of the vibrating mechanism.

5. In a molding apparatus, the combination with a fluid-actuated vibrating element, of a vibrated platen, means incorporated therewith for clamping the pattern thereto, and actuating means therefor arranged for operation simultaneously with the vibrating mechanism, substantially as set forth.

6. The combination with a fluid controlled cylinder and a piston therein, of a vertical platen provided with an interior piston chamber and piston, clamping mechanism adapted to be operated by said latter piston and a fluid supply connection for said piston

chamber vibrating cylinder, substantially as set forth.

7. The combination with a fluid controlled cylinder and a piston therein of a vertical platen provided with an interior piston chamber and piston, clamping mechanism adapted to be operated by said latter piston and a fluid supply connection for said piston chamber vibrating cylinder, said connections being flexible.

8. The combination with a vibrating platen embodying a cylinder, a piston, and pivotally mounted clamping jaws; of actuating means connected with said piston and with the clamping jaws, and means for supplying fluid pressure to the cylinder, substantially as set forth.

9. The combination of a superimposed reciprocating platen, a cylinder having a spring-controlled inlet valve, a piston in the cylinder adapted to make abutting contact upwardly against the platen and provided with a check valve adapted to co-act with the valve of the cylinder, and adjusting devices located beneath the cylinder whereby it and its piston may be vertically adjusted with relation to the platen, substantially as set forth.

10. The combination of a casing and a reciprocable platen mounted therein, of lifting rods mounted at each side of the casing and extending upwardly through the top of the platen, similarly arranged yokes engaging underneath the rods, a double-sided pivoted lever, and a cylinder provided with a piston arranged to actuate said lever, substantially as set forth.

11. In molding apparatus, the combination with a vibrating platen, and a main cylinder and actuating piston therein, of fluid-controlled means adapted to hold a flask during the period of vibration and to release it when vibration ceases, and means for adjusting said main cylinder with relation to the platen, substantially as set forth.

12. In a molding apparatus, the combination with a vibrating platen, a cylinder and a piston; of fluid-controlled means adapted to hold and release a flask, means for adjusting said cylinder vertically, a stripping plate, adjustable lifting rods for the stripping plate, yokes connected with said rods, the double-sided pivoted lever, and the lifting cylinder, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY L. DEMMLER.

Witnesses:

C. M. CLARKE,  
CHAS. S. LEPLEY.