

(No Model.)

2 Sheets—Sheet 1.

J. G. PAVYER.
TYPE CASTING MACHINE.

No. 495,704.

Patented Apr. 18, 1893.

Fig. I.

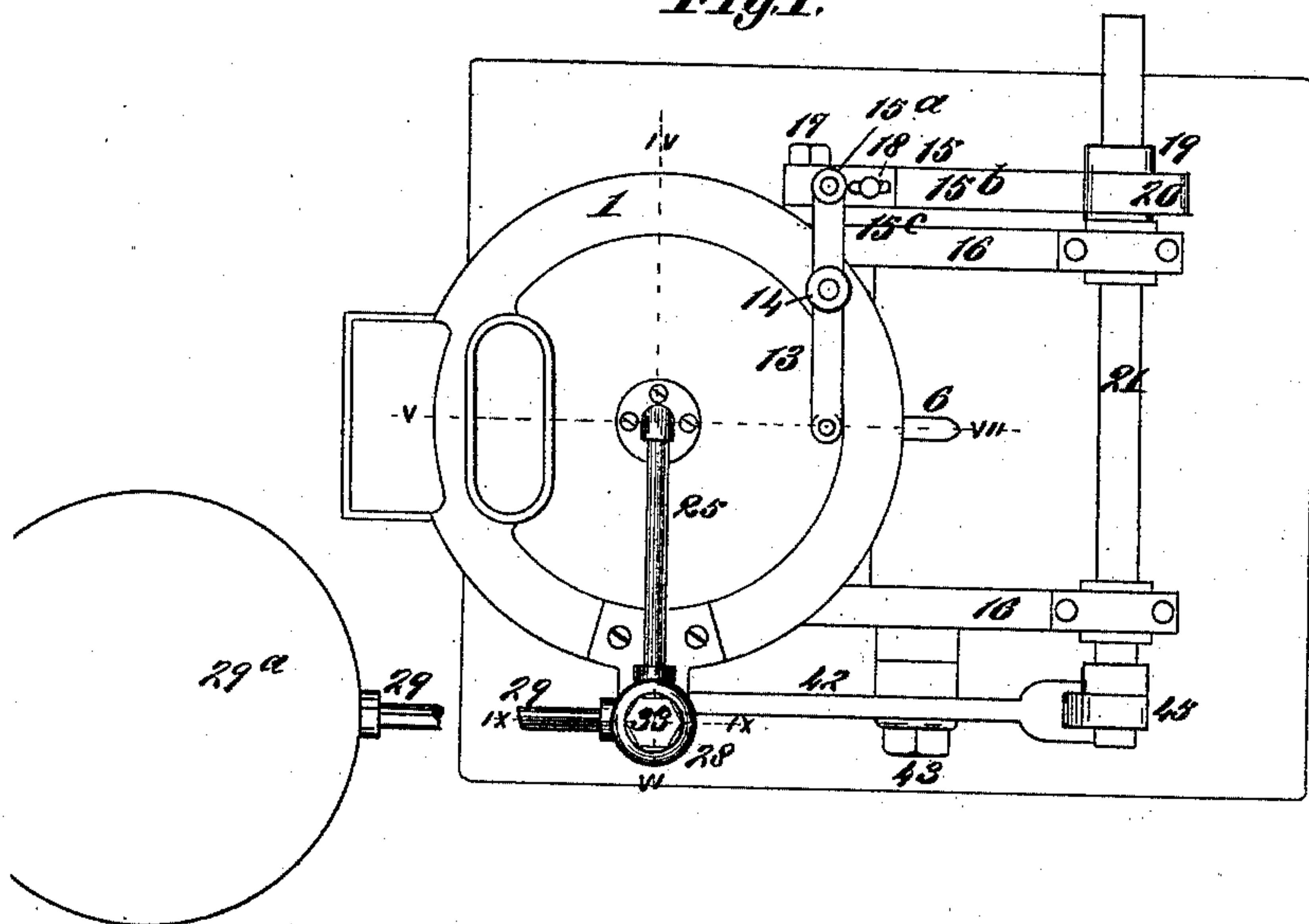


Fig. II.

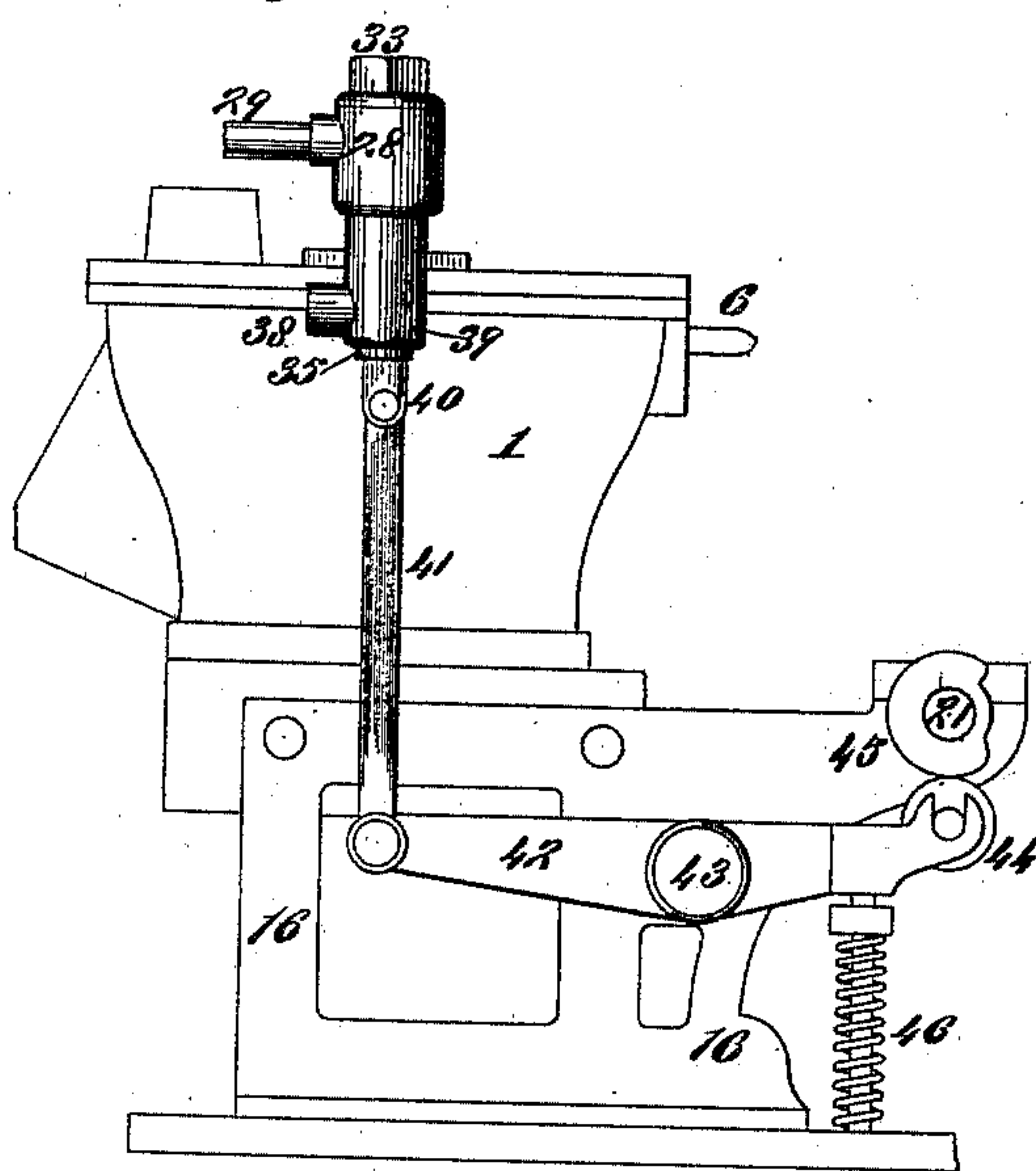
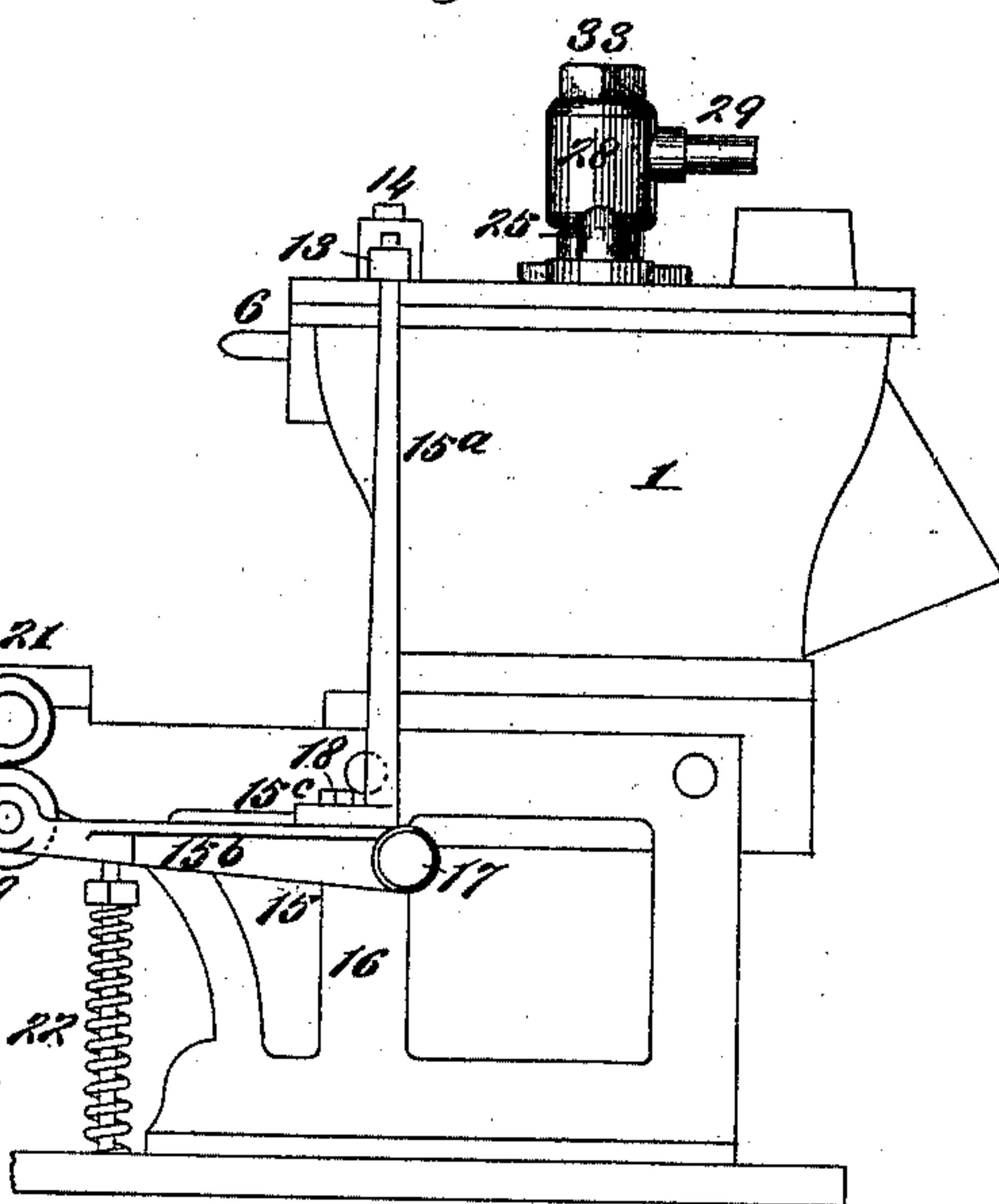


Fig. III.



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2 Sheets—Sheet 2.

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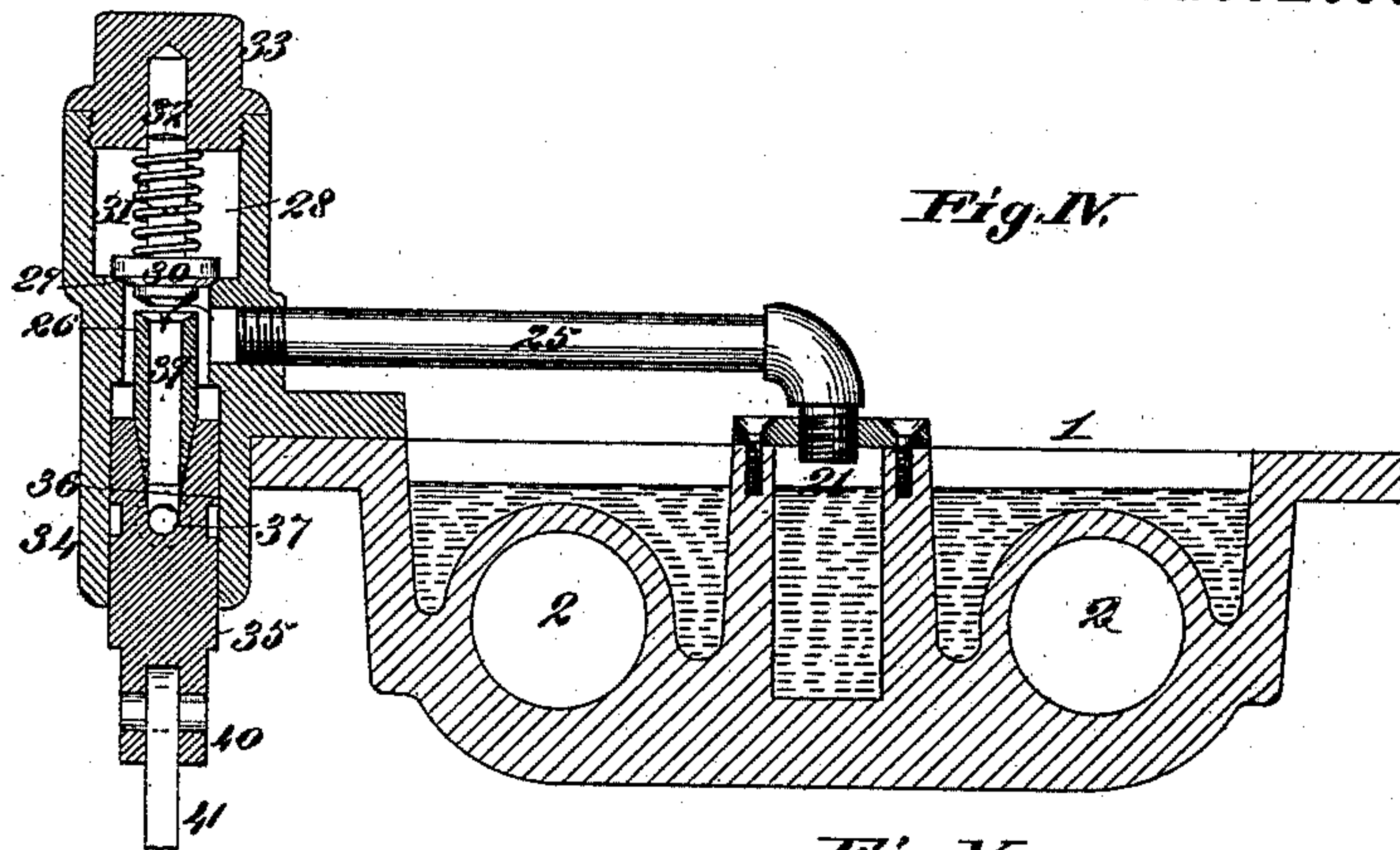


Fig. IV.

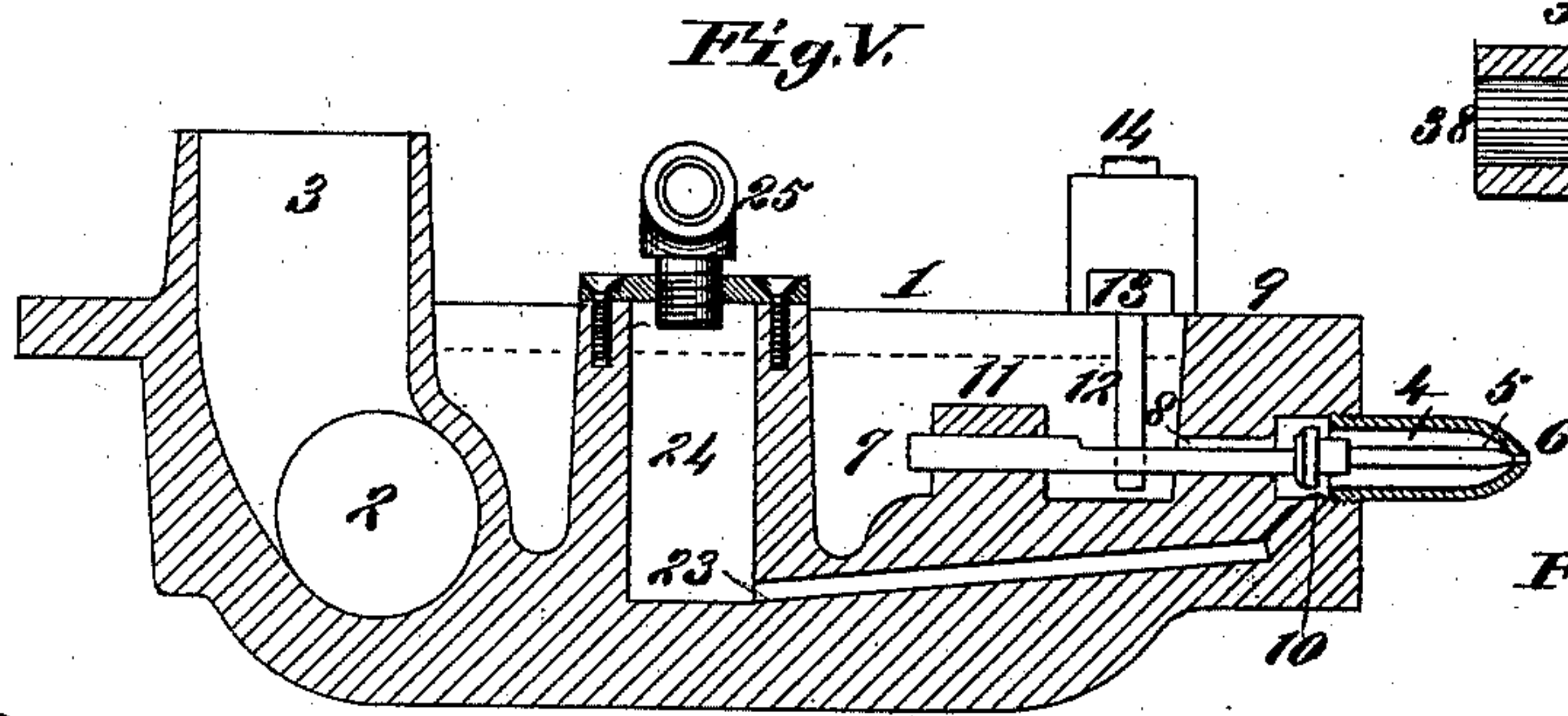


Fig. V.

Fig. VIII.

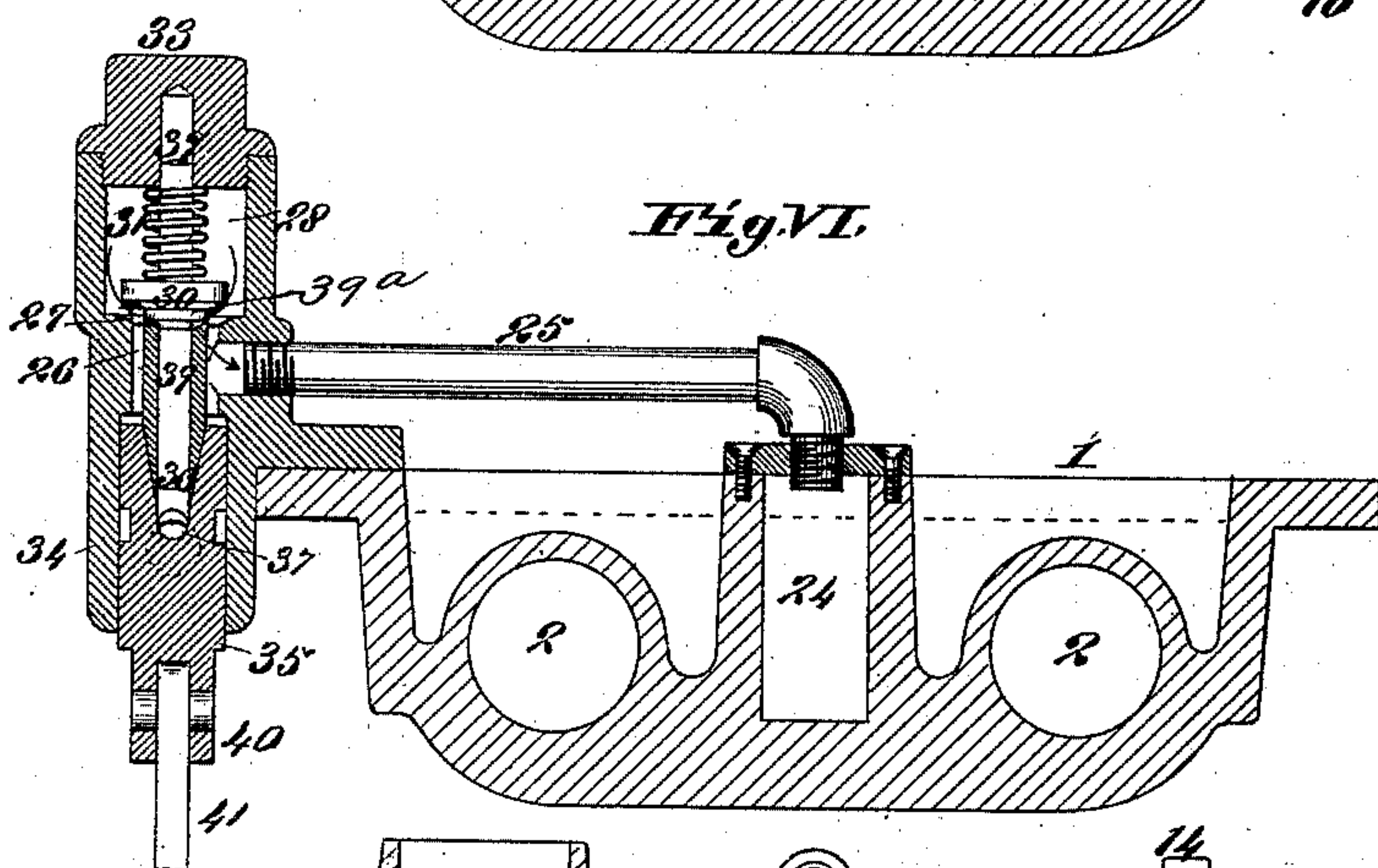
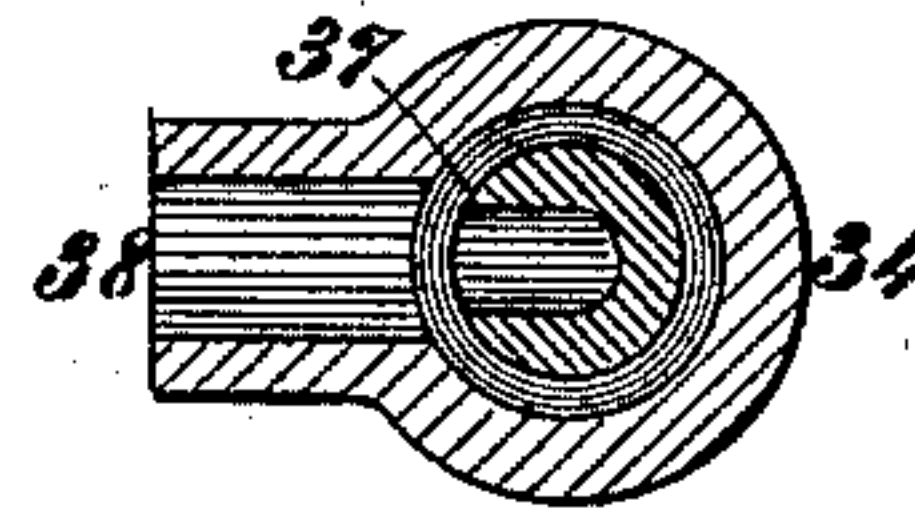


Fig. VI.

Fig. VII.

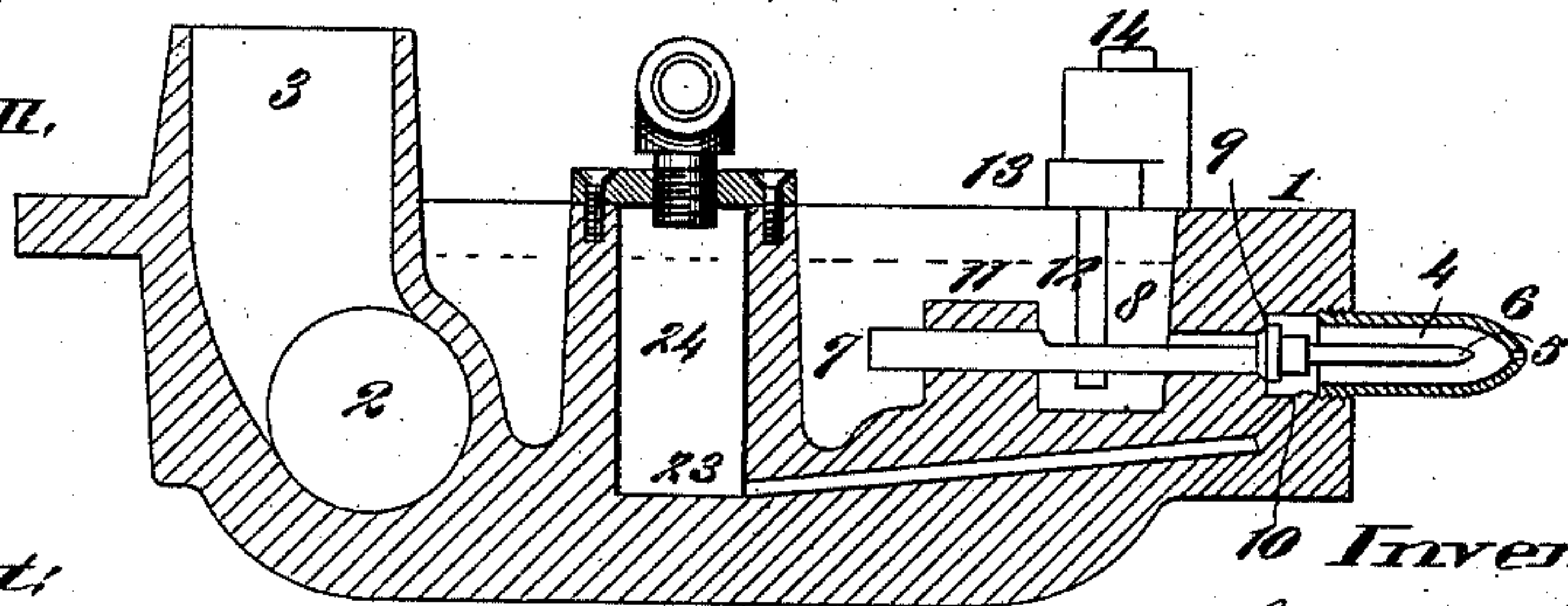
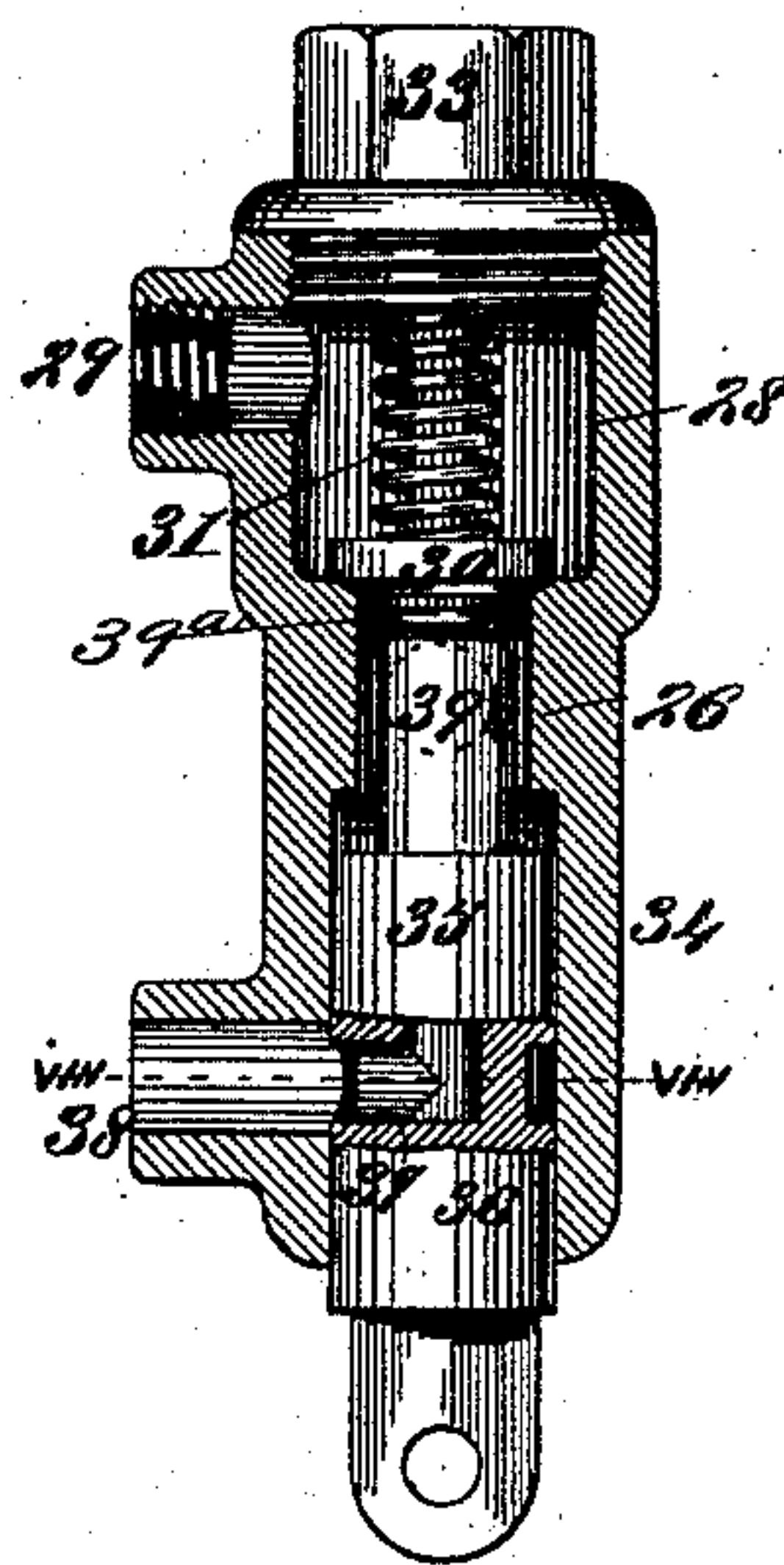


Fig. IX.



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UNITED STATES PATENT OFFICE.

JAMES G. PAVYER, OF ST. LOUIS, MISSOURI.

TYPE-CASTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 495,704, dated April 18, 1893.

Application filed February 29, 1892. Serial No. 423,279. (No model.)

To all whom it may concern:

Be it known that I, JAMES G. PAVYER, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Type-Casting Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

The principal part of this invention consists in connecting the chamber of the "choker" valve with a closed type-metal chamber, that is thrown into communication with a closed vessel or chamber supplying air or other fluid under sufficient pressure to cause the ejection of the metal from the nipple into the mold with the required force.

The invention also consists in the means hereinafter described and claimed for carrying out the process.

Figure I is a top view illustrating the invention. Figs. II and III are elevations of opposite sides. Figs. IV and VI are enlarged, vertical sections taken at IV—VI, Fig. I, showing moving parts in different positions. Figs. V and VII are vertical sections, taken at V—VII, showing the compound choker valve in different positions. Fig. VIII is a horizontal section, taken at VIII—VIII, Fig. IX. Fig. IX is an enlarged, vertical section, taken at IX—IX, Fig. I.

1 is the melting pot for the type metal having flues 2 and a chimney 3 for the products of combustion.

4 is the chamber of the choker valve 5 that closes the jet orifice of the nipple 6. The stem 7 of the choker-valve passes through the duct or passage 8 leading from the melting pot to the chamber 4. The passage 8 has a valve seat 9 at the end communicating with the chamber 4 against which closes a valve 10 upon the stem 7. It will be seen that when the valve 5 is closed the valve 10 is open and vice versa, see Figs. V and VII. The end of the valve stem 7 within the melting pot passes freely through a post 11 and is guided thereby.

12 is a downwardly extending arm on a lever 13, fulcrumed at 14 to the pot 1. The arm 12 passes through an orifice in the valve stem 7, so that as the lever is moved on its fulcrum, the valves 5 and 10 are opened and closed alternately.

15 is a bell-crank which is fulcrumed to the

frame 16 at 17. The upright arm 15^a of the bell-crank is adjustably connected to the horizontal arm 15^b by a bolt or bolts 18 passing through a slotted lug 15^c. The free end of the arm 15^b carries an anti-friction wheel 19 against which works a cam 20 on a cam-shaft 21.

22 is a spring beneath the arm 15^b which forces the arm upward into its normal position, seen in Fig. III, the choker-valve being then closed as seen in Fig. V. As the arm 15^b is forced down by the cam 20 the choker-valve 5 is opened and the valve 10 closed.

23 is a duct leading from the valve or nipple chamber 4 to the closed chamber 24 containing type-metal.

25 is a pipe leading from the top of the chamber 24 to a valve chamber 26. The chamber 26 communicates by a valve port 27, at top, with a chamber 28 that communicates by a pipe or passage 29 with a reservoir, 29^a, containing air or other fluid under pressure.

The port 27 is closed by a valve 30 that is normally forced down upon its seat by a spring 31 surrounding its guide stem 32 and with ends bearing respectively upon the valve and top 33 of the chamber 26. When the valve 30 is open, the chamber 24 is in communication with the pressure chamber and the type metal is forced from the chamber 24 into the nipple chamber and the valve 10 being closed and valve 5 open, the metal is ejected from the nipple into the type mold.

The annular valve chamber 26 is closed at bottom by a piston 35 that works in the cylinder 34 forming the lower part of the casing. The upper portion of the piston is tubular and the axial bore or duct 36 extends from the top to a radial passage or duct 37, that registers with port 38 extending through the side of the cylinder 34 for the exit of air or other fluid from the chamber 26 at the proper time, or when the piston 35 is in its lower position.

39 is a tubular piece that forms the upward continuation or extension of the piston 35 but of a smaller diameter and forming the inner wall of the annular chamber 26. The duct 36 also extends through the piece 39. At the upper end of the piece 39 is a valve seat 39^a upon which the valve 30 is seated at certain times to close the duct 36 and thus prevent

the escape of air or other working fluid through the duct 36, 37, 38. This position is shown in Fig. VI, the piston 35 having been raised until the seat 39^a of the tubular piece 39 is brought against the bottom of valve 30 for closing the exhaust duct 36 and raising the said valve 30 from its seat and opening the duct 27 and admitting the compressed fluid from the chamber 28 to the chamber 26. As the exhaust duct 36 is closed the compressed air can only escape from the chamber 26 through the duct 25 and into the chamber 24 as before set forth.

In order to lift the piston 35 its lower end is provided with a lug 40 connected by a rod or link 41 to one end of a lever 42 fulcrumed at 43 to the fixed frame 16. The front end of the lever carries an anti-friction roller 44 acted upon by a cam 45 on the shaft 21.

46 is a spring adapted to lift the front end of the lever 42 and draw down the piston 35 for seating the valve 30 and closing the port 27 and thus closing communication between the chambers 28 and 26. The continued descent of the piston 35 to its lowest position draws the tubular piece 39 from under the valve 30 and allows the fluid to escape from the chamber 26 through the exhaust duct 37, 38.

The operation may be briefly described as follows: The parts are shown in normal position in Figs. IV, V and IX, the valves 5 and 30 closing respectively the jet hole of the nipple 6 and the communication between the chambers 28 and 26. At this time the metal is flowing from the kettle into the chamber 24. The cam 45 now depresses the forward end of the lever 42 which pushes up the piston 35, seats the piece 39 against the valve 30 and lifts the valve from its main seat; at the same time the valve 10 is closed and the valve 5 opened. There is now continued communication from the compressed fluid vessel 29^a, chambers 28 and 26, duct 25, chamber 24 and duct 23 to the nipple chamber, and the metal is forced from the latter by the pressure of the compressed fluid.

I claim as of my invention—

1. The combination, in a type casting machine, of the melting kettle, 1, compressed fluid reservoir 29^a, chamber 28 in constant communication with the reservoir, chamber 26 having an exhaust valve and communicating with chamber 28 through duct 27, valve 30 adapted to close the duct 27, a chamber 24 in constant communication with the chamber 26, and a nipple chamber in constant communication with chamber 24 and having communication with the kettle by a duct governed by a valve 10, all substantially as set forth.

2. The combination, in a type casting machine, of a melting kettle, a reservoir for fluid under pressure, chambers 28 and 24 communi-

cating respectively with the fluid reservoir and nipple chamber, a nipple chamber communicating with the melting kettle and the outer air, and the chamber 26 communicating with the chambers 24 and 28, and the outer air; valves for closing and opening communication between the chambers 28 and 26, chamber 26 and the outer air, the melting kettle and nipple chamber, and the nipple chamber and the outer air; and means for alternately effecting the simultaneous closing and simultaneous opening of said valves, the valves between the chambers 28 and 26 and the nipple chamber and outer air, being closed when the remaining valves are open, and vice versa; substantially as and for the purpose herein set forth.

3. The described combination, in a type casting machine, of a melting kettle, a nipple 4 having a jet valve 5 and a valve 10, the latter adapted to close communication with the melting kettle, a closed vessel in communication with the nipple chamber and with a chamber 26, a chamber 26 having an exhaust valve, a piston 35 working in the chamber and actuating the exhaust valve, a reservoir for fluid under pressure, a chamber 28 in communication with the reservoir, a duct leading from the chamber 28 to chamber 26, and a valve 30 governing said duct and governed by the piston 35, substantially as set forth.

4. In a type casting machine, the combination of a melting kettle, a chamber communicating with a reservoir of compressed fluid, a closed metal chamber within the melting kettle and communicating therewith and the compressed fluid chamber, a discharge nozzle communicating with the closed metal chamber, valves controlling the communications between the closed metal chamber and compressed fluid chamber, and the closed metal chamber and the melting kettle, and means for opening and closing said valves alternately, substantially as set forth.

5. In a type casting machine, the combination of a melting kettle, a chamber communicating with a reservoir of compressed fluid, a closed metal chamber within the melting kettle and communicating therewith and with the compressed fluid chamber, a discharge nozzle communicating with the closed metal chamber, valves controlling the communications between the closed metal chamber and compressed fluid chamber and the closed metal chamber and the melting kettle, levers connected to said valves, and cams mounted on a suitable cam shaft and engaging said levers, whereby the valves will be alternately opened and closed, for the purpose herein set forth.

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Witnesses:

SAML. KNIGHT,
A. M. EBERSOLE.