

No. 607,579.

Patented July 19, 1898.

C. F. WIELAND.

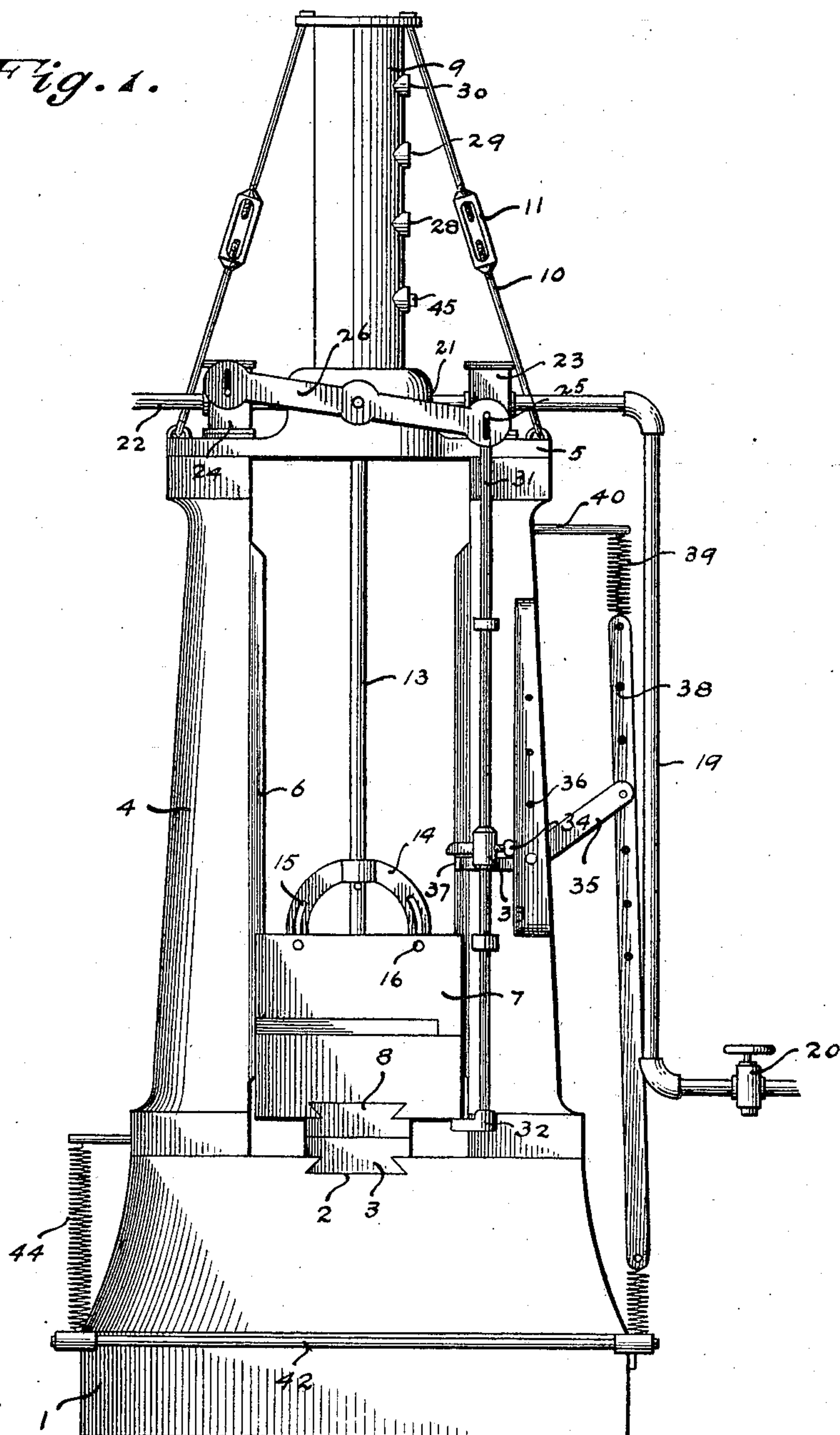
DROP PRESS.

(Application filed May 21, 1897.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



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2 Sheets—Sheet 2.

Fig. 2.

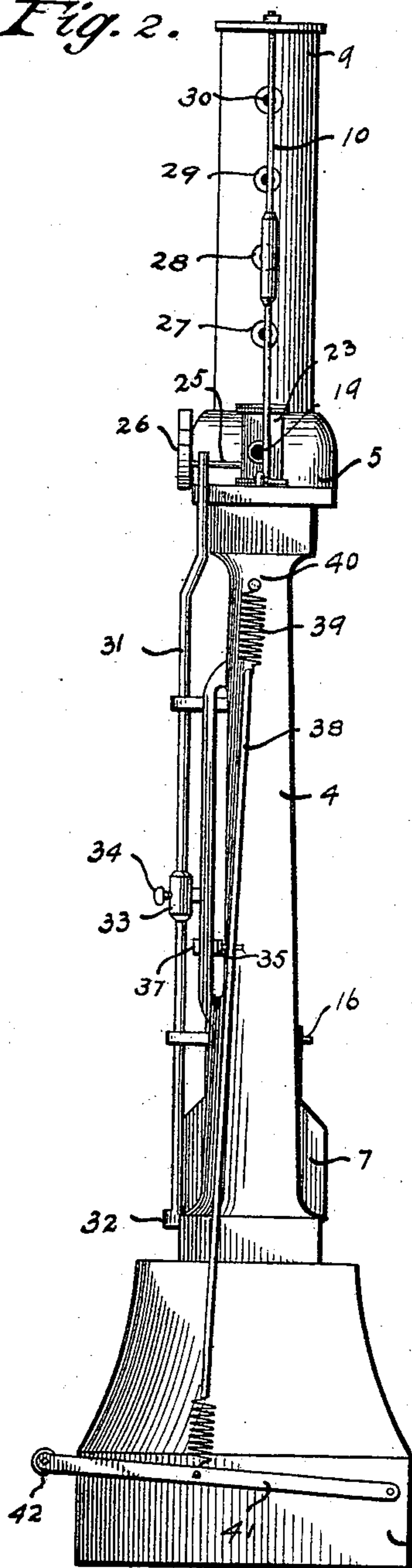
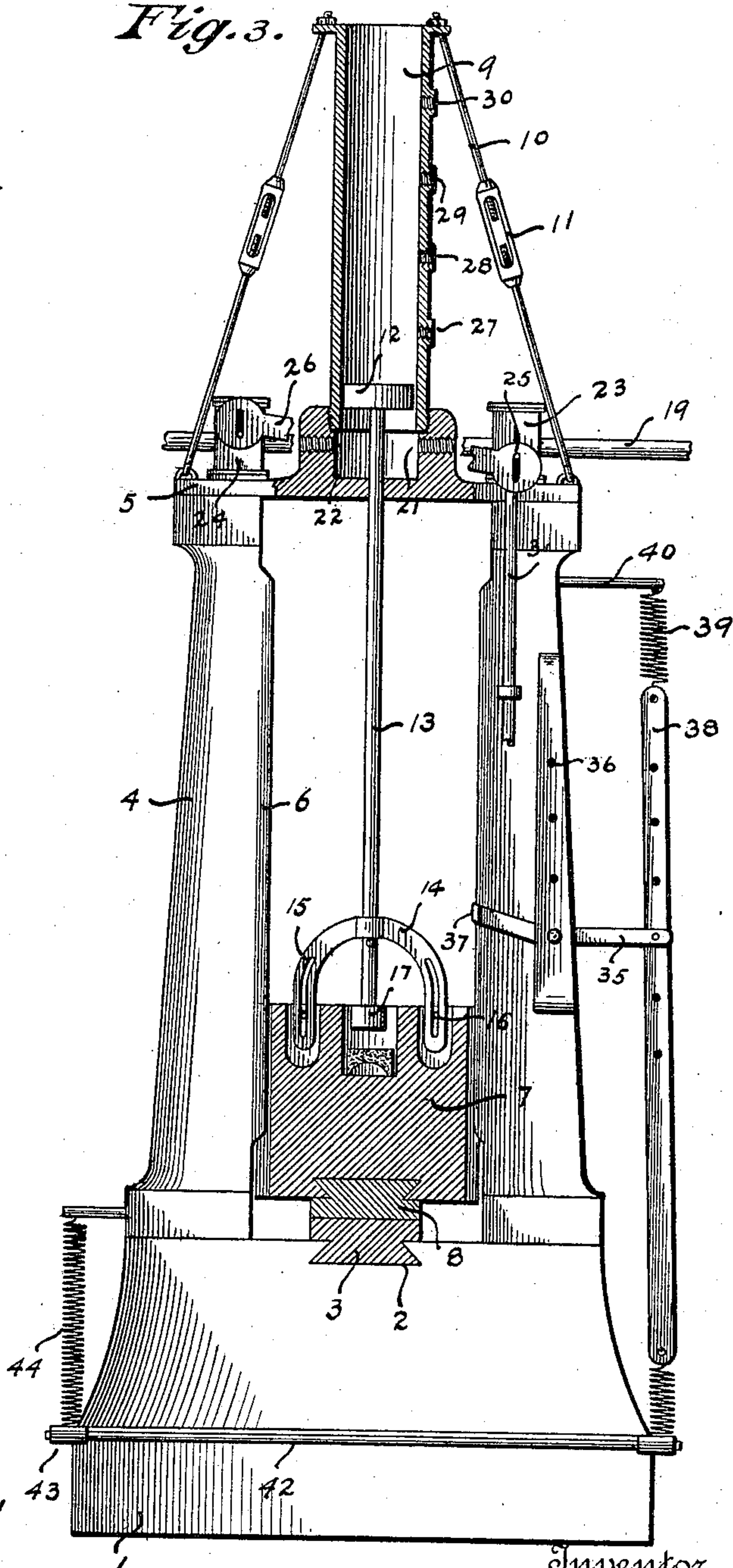


Fig. 3.



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UNITED STATES PATENT OFFICE.

CHARLES F. WIELAND, OF REEDSVILLE, PENNSYLVANIA, ASSIGNOR OF
ONE-HALF TO SVEN G. SWANSON, OF SAME PLACE.

DROP-PRESS.

SPECIFICATION forming part of Letters Patent No. 607,579, dated July 19, 1898.

Application filed May 21, 1897. Serial No. 637,553. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. WIELAND, of Reedsville, in the county of Mifflin and State of Pennsylvania, have invented certain new and useful Improvements in Drop-Presses; and I do hereby 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.

The invention relates to a drop-press in which the desired impression is obtained by means of a single descent or blow from the drop-platen or die, but in which the blow can be repeated, if required, and as often as may be needed for giving the desired impression.

It consists in the combination of means for actuating the movable or drop platen or die and for regulating the force of the blow thereof, in a means for relieving the rod of the platen-actuating piston from injurious jar incident to the sudden stopping of the drop-platen or die, means for regulating the throw and consequently the force of the blow of the drop-platen, and in certain details of construction and arrangements of parts of the press, as hereinafter described and claimed.

In the accompanying drawings, Figure 1 represents the improved drop-press in front elevation. Fig. 2 is a side elevation, and Fig. 3 a vertical transverse section through the same.

1 indicates the base of the press, made of any suitable form and provided on its upper face, intermediate its ends, with a longitudinal groove 2 for receiving the lower die or platen 3.

4 4 indicate side standards secured to the sides of the base-plate and having their upper ends expanded laterally, and secured thereto is the cross-head 5, perforated centrally and provided with an internal-screw-threaded socket on its upper face to receive a steam-cylinder 9, rigidly secured therein and provided with suitable stay-rods 10, connecting its upper open end with the ends of the cross-head 5.

7 indicates the movable head, grooved on its lower face to receive the removable platen 8, provided on its upper face with the dove-tail-shaped tongue to engage the groove in

the lower face of the block or head 7. The base and the uprights described, with the cross-head at the upper end of said uprights, may be of any suitable size, and the head or weight 7, moving on suitable guideways 6, formed on the inner adjacent edges of said uprights, may be of any suitable weight, according to the work required of it. The stay-rods or braces 10 are shown provided intermediate their ends with suitable turnbuckles 11, by means of which they may be tightened or adjusted for holding the cylinder 9 firmly in proper relation to the cross-head 5.

12 indicates a piston moving in the cylinder 9 and provided with a downwardly-extending piston-rod 13, which at its lower end is connected with the upper end of the head or weight 7, the piston and rod being packed in any suitable manner adapting them to move snugly and smoothly, one in the cylinder 9 and the other through a perforation in the cross-head, on which the cylinder rests, for preventing the escape of steam through said cross-head.

The lower end of the rod 13 is shown provided with a yoke 14, made in inverted-U shape, the loop portion thereof being perforated or provided with a vertical eye through which the rod 13 passes, a pin passing through the rod underneath said loop portion of the yoke serving to hold the yoke in engagement with said rod 13. The ends of the yoke are slotted, as indicated at 15, and enter vertical slots in the upper end of the weight or head 7, being secured therein by pins 16, which allow movement of the yoke relative to said head, for a purpose which will appear. The lower end of the rod below the yoke is provided with an enlarged head or collar 17, and within the head or weight 7, in a suitable slot underneath the enlarged end 17 of the piston-rod, is arranged a cushion of rubber or other suitable material, which receives the blow of the piston-rod when the head or platen-block 7 is allowed to drop upon the lower platen 3, thereby relieving the said piston-rod from the injurious jar which would be incident to the sudden stopping were it rigidly connected with the platen block or head 7.

19 indicates a steam-pipe to which steam is admitted through any suitable source of sup-

ply by means of a valve (indicated at 20) controlled by the attendant. This pipe enters the cylinder 9 at a point (indicated at 21) below the piston 12, and opposite said inlet or steam pipe is arranged an outlet-pipe 22, also arranged below the piston 12.

23 and 24 indicate valves controlling the inlet and outlet pipes, each provided with a handle or stem 25, said handles or stems being connected with a lever 26, pivoted centrally of its length to the cross-head 5 or other suitable point of support. The ends of this lever are perforated or provided with eyes slightly elongated vertically, through which the stems 25 pass, the arrangement being such that when one valve is opened the other will be simultaneously closed. The cylinder is provided at suitable intervals in its length with exhaust-ports (indicated at 27, 28, 29, and 30) which serve to limit or regulate the upward throw of the piston-rod and the movable head connected therewith. To one end of the lever 26 is connected an upright valve-actuating rod 31, provided near its lower end with a stop or projection 32 and above the movable head or platen-block 7 with a second stop 33, made adjustable on the rod for regulating the point at which said platen-block shall come in contact with the stop for raising it and the valve-actuating rod 31. This rod 31 is made preferably cylindrical in form, and the stop or projection 33 is connected therewith through an eye formed on its inner end and provided with a set-screw 34, permitting its adjustment on said rod. The valve-actuating rod 31 moves in suitable guides on the upright frame, and the stops connected with said rod are acted upon by the block or head 7 in its upward and downward movements.

35 indicates a lever pivoted to the face of one of the standards 4, which is provided with a series of perforations, (indicated at 36,) permitting the adjustment in height of the lever 35, said lever projecting inwardly and provided with an arm 37, extending under the stop or projection 33 on the valve-actuating rod. The opposite end of this lever is adjustably connected with a rod or chain 38, upon which the lever 35 may be adjusted to conform to its adjustment upon the standard 4. The upper end of this rod is connected by a spiral spring 39 with an arm or spur 40, fast on the standard 4, as shown, the spring 39 serving to hold the outer arm of the lever 35 normally up, with the arm 37 out of engagement with or removed from the path of the stop 33. The lower end of the link or chain 38 is connected with one arm 41 of the angular treadle 42, the opposite arm 43 of which is upheld by means of a spring 44, the tension of which is overcome by the pressure of the foot of the attendant upon the treadle 42 when it is desired to operate the lever 35 to act upon the stop 33 for lifting the valve-rod 31 and so closing the valve 23 and shutting off the supply of steam from the cylinder.

The exhaust-ports 27, 28, 29, and 30 are closed when desired by means of a screw-threaded plug or plugs 45, only one of which is shown in the present instance, and that applied to the exhaust-port 27, which is internally screw-threaded to receive said plug. By this arrangement it will be seen that when the piston acted upon by the steam admitted through the valve 23 is raised to a point above the port 28 the steam is allowed to escape through said port and so prevent further movement of the piston and of the movable platen-head connected therewith. The stop 33 will be arranged upon the valve-rod to be acted upon at this point—that is, immediately after the piston 11 passes the open port 28—and, acting upon the lever 26, closes the steam-inlet valve 23 and opens the exhaust-pipe valve 24, the effect of which is to allow the piston, and with it the platen-head, to instantly drop upon the fixed platen 3. Just before the movable platen 8 reaches the stationary platen 3 the platen block or head 7 comes in contact with the stop 33 and, depressing the valve-rod 31, opens the steam-supply valve 23, simultaneously closing the exhaust-valve 24, thereby admitting steam again to the cylinder and causing the piston, and with it the movable platen, to be lifted as before. Where it is desired to give greater force to the blow, in addition to the exhaust-port 27 the ports 28 and 29 may be closed, either or both of them, according to the height to which it is desired to lift the movable platen and according to the force of the blow it is desired to give to the platen when released. Additional exhaust-ports may be provided, as desired, for regulating the degree of elevation of the movable platen-head or die. By the adjustment of the tripping-lever 35 relative to the stop 33 under any adjustment of the lever the valve-rod 31 may be thrown up by the pressure of the foot of the attendant upon the treadle 42, thereby cutting off the supply of steam and opening the exhaust-valve 24 at any desired point in the elevation of the weighted platen or die, thereby putting the latter under the control of the attendant.

By the construction described it will be seen that the movable platen or die is acted upon by the steam only for lifting the said platen and that the latter is dropped by its own gravity, the force of the blow thereof being regulated by the height to which the platen or die is lifted. In the ordinary construction of press actuated by steam the steam is employed for moving the movable platen in both directions, whereas in the construction herein described the steam is employed only for lifting the platen, the force of the blow of the latter being dependent entirely upon the weight of the platen-block or carrier and the extent of the elevation of the same, such elevation being controlled as described.

By the construction described a simple and effective device is obtained for actuating the

movable platen, and one obviating the necessity for the complicated and expensive frictional attachment ordinarily employed in such presses for the lifting of the movable platen.

5 The manner of connecting the piston-rod with the drop-platen by means of the slotted yoke and the interposed cushion is deemed important, as it relieves said rod of the jar
10 of the blow and the hammering action thereon consequent upon the attachment of said parts as usually made, and the yoke-and-cushion construction, it will be obvious, may be applied to the various constructions of drop-
15 press in use.

Having thus described the invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a drop-press, the combination of the
20 frame, the steam-cylinder mounted thereon and having inlet and exhaust ports at its base, and also a series of exhaust-ports throughout its length, with means for temporarily closing the said exhaust-ports, the valves for
25 controlling the inlet and the main exhaust-port, said valves being so arranged that when one is opened, the other is always closed, the oscillating lever engaging the stem of the said valves, the vertically-movable valve-actuating rod connected to one arm of the said
30 lever, and having stops thereon, the piston,

the platen connected to said piston, and adapted to engage respectively the said stops at the limits of its movement, and thereby to operate the said valves, and a treadle device arranged to act upon the said valve-actuating rod to operate the said valves independently of the platen, substantially as specified.

2. In a drop-press of the character described, the combination with the vertically-movable valve-actuating rod having an adjustable stop thereon, the lever adjustably pivoted to the frame and having one arm in position to engage the said stop, a spring-suspended rod or chain to which the opposite
45 arm of said lever is connected, and a treadle to which said rod or chain is connected at its lower end, substantially as specified.

3. In a drop-press, the piston-rod for operating the drop-platen in combination with the slotted yoke connecting said rod and platen, and the cushion interposed between the piston-rod and the platen connected therewith, substantially as described.

55 In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

CHARLES F. WIELAND.

Witnesses:

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JOSEPH MACHAMRE.