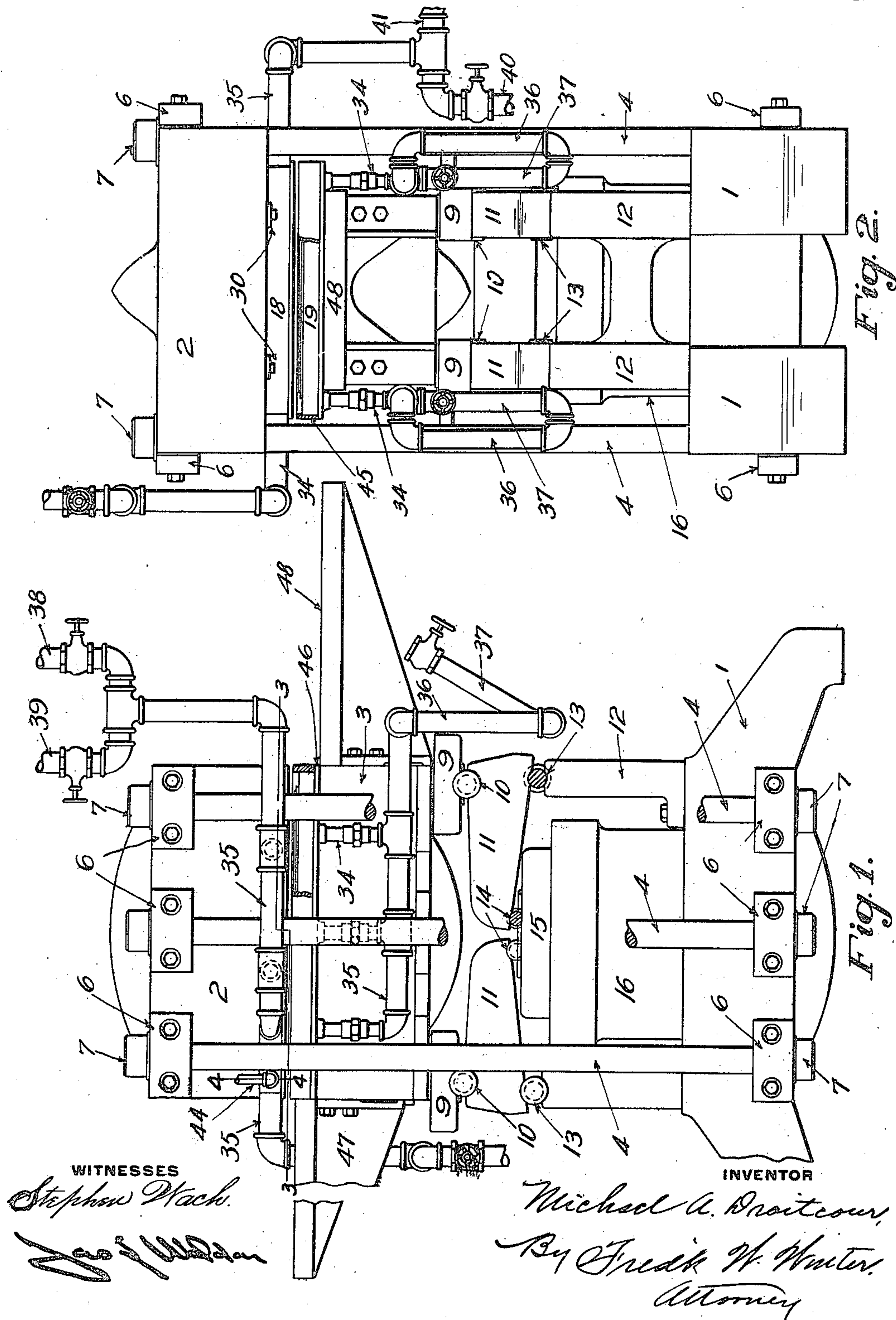


M. A. DROITCOUR.
 APPARATUS FOR MAKING PRINTING PLATES.
 APPLICATION FILED MAY 26, 1910.

993,970.

Patented May 30, 1911.

2 SHEETS—SHEET 1.

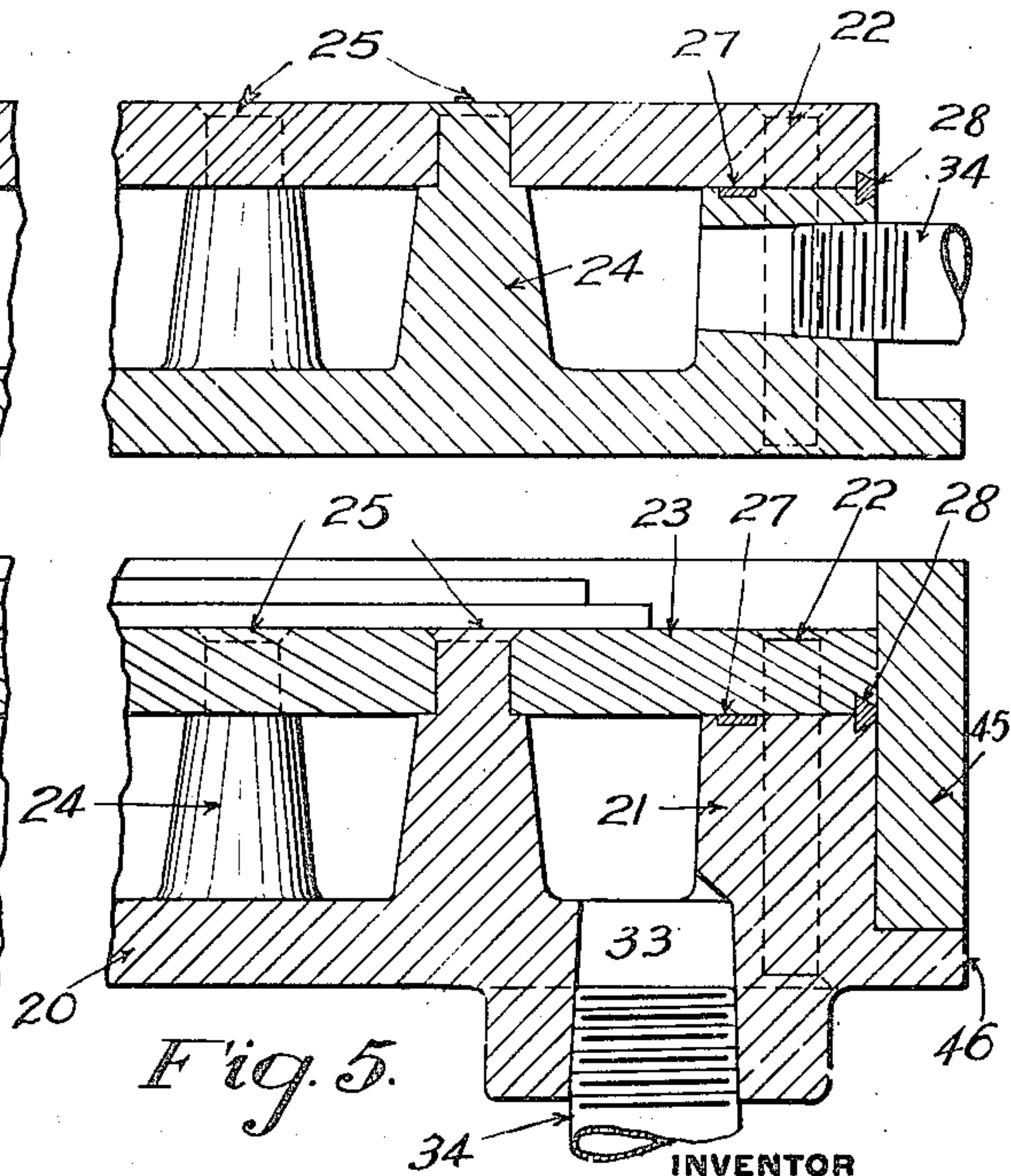
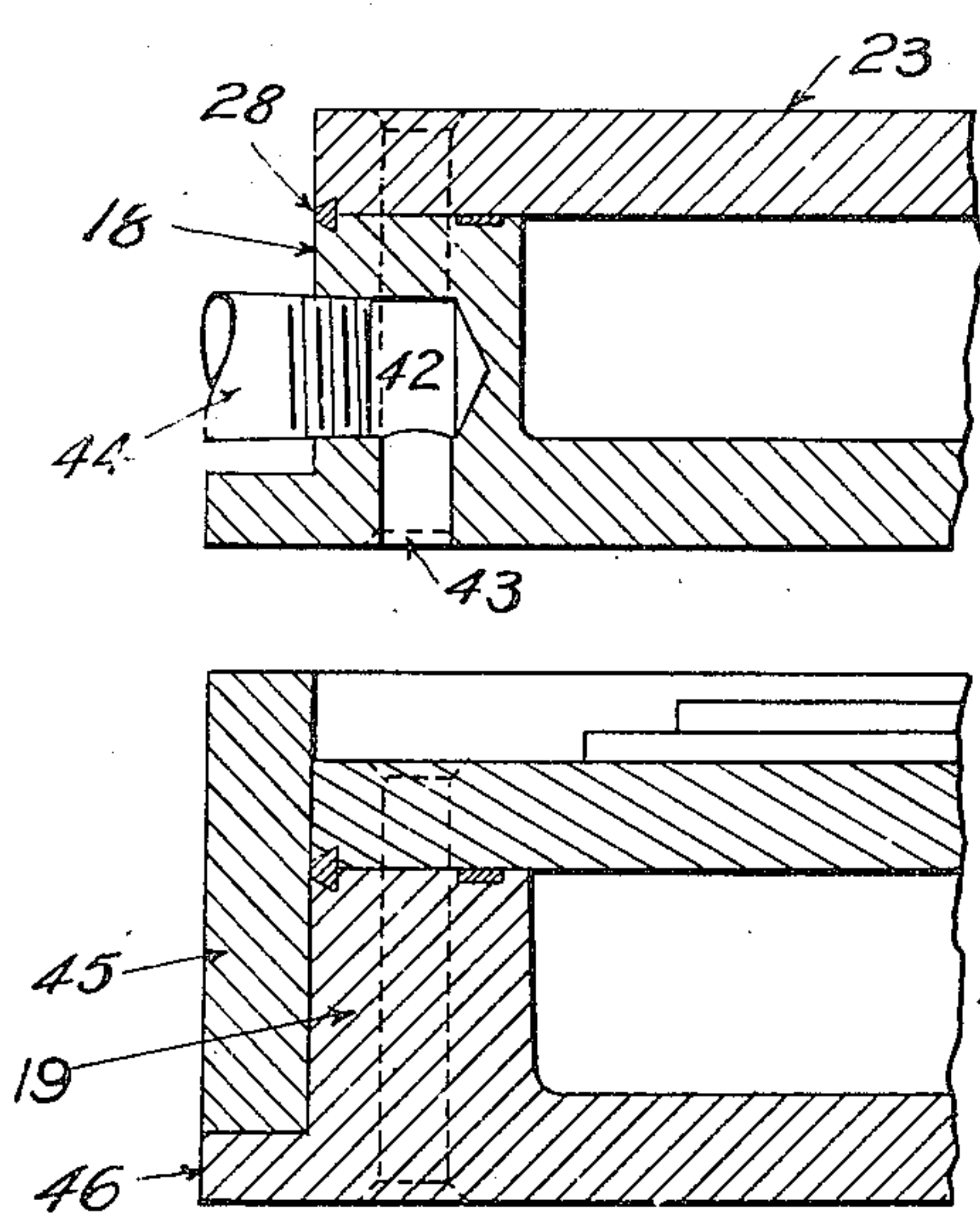
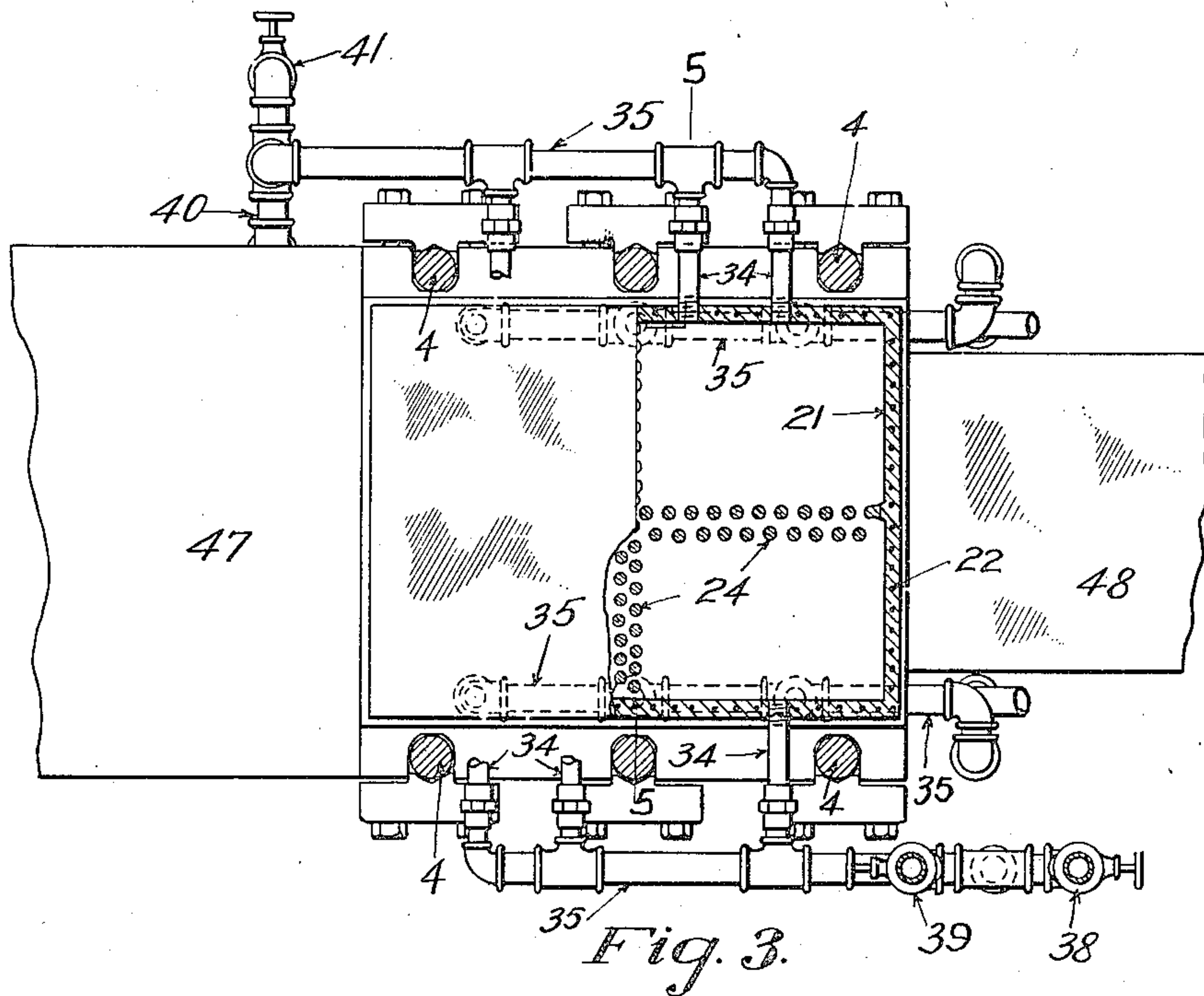


M. A. DROITCOUR.
 APPARATUS FOR MAKING PRINTING PLATES.
 APPLICATION FILED MAY 26, 1910.

993,970.

Patented May 30, 1911.

2 SHEETS—SHEET 2.



WITNESSES
Stephen Mack
W. P. W. W. W.

INVENTOR
Michael A. Droitcour
 By *Fredk H. Winter*
 Attorney.

UNITED STATES PATENT OFFICE.

MICHAEL A. DROITCOUR, OF OAK PARK, ILLINOIS, ASSIGNOR TO MIEHLE PRINTING PRESS AND MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

APPARATUS FOR MAKING PRINTING-PLATES.

993,970.

Specification of Letters Patent. Patented May 30, 1911.

Application filed May 26, 1910. Serial No. 563,618.

To all whom it may concern:

Be it known that I, MICHAEL A. DROITCOUR, a resident of Oak Park, in the county of Cook and State of Illinois, have invented
5 a new and useful Improvement in Apparatus for Making Printing-Plates, of which the following is a specification.

This invention relates to a press for making either printing plates from celluloid or
10 similar plastic material, or matrices from which printing plates can be made.

The object of the invention is to provide a press for this purpose which is of simple construction, positive in its action and convenient to use.
15

The invention comprises the construction and arrangement of parts hereinafter described and claimed.

In the accompanying drawings Figure 1 is
20 a side elevation partly broken away of a press embodying my invention; Fig. 2 is an end view of the same; Fig. 3 is a horizontal section on the line 3—3, Fig. 1; Fig. 4 is an enlarged detail vertical section through the
25 hollow press-plates or platens on the line 4—4 Fig. 1; and Fig. 5 is a similar section on the line 5—5, Fig. 3.

The press illustrated in the drawings comprises a suitable base 1, a head or upper
30 pressure member 2, a table or lower pressure member 3, and suitable connections and actuating mechanism. The pressure members 2 and 3 are perfectly rigid and are arranged for relative approximation and separation in
35 exact parallelism to each other. It is obvious that either or both of said members may be movable. As shown, the lower member is movable and the upper member stationary. To this end the upper member or
40 head 2 and base 1 are connected by the tie rods or columns 4, which fit in notches in the edges of said head and base, are held therein by means of removable caps 6, and are provided on their ends with heads or
45 nuts 7, all as will be readily understood without detailed description.

The lower pressure member 3 may be reciprocated vertically by any suitable mechanism. As shown, bearing against the lower
50 face of said member are shoes 9 provided with concave seats for receiving circular pins 10 which rest in similar seats in the arms of levers 11, which are fulcrumed on suitable standards 12 by means of the circular pins
55 13 fitting concave seats in said levers and

standards respectively. The inner ends of the levers are provided with concave seats resting upon the pins 14 which in turn rest upon the piston 15 of a suitable power cylinder 16 secured to or formed in the base 1 and
60 provided with suitable valve controlled inlets and outlets for the pressure medium, which may be either compressed air or water, preferably the former. The arrangement shown gives a very powerful uplift to
65 the lower pressure member 3, and in exact parallelism to the press head, but gives only a limited stroke or travel.

Coöperating with the upper and lower pressure members are suitable hollow plates
70 marked 18 and 19 respectively, which are substantially duplicates of each other, and which constitute the platens or pressure faces of the press between which the matrix and the plastic sheet are pressed to
75 form the printing plate. These platens are hollow in order to have admitted thereto steam for heating and rendering plastic the celluloid sheet, and also to have admitted
80 thereto water for the purpose of cooling the same when the pressing is finished.

In order to render the operation of the press rapid, the hollow platens 18 and 19 are of light construction so that they quickly heat and cool when the steam and
85 water respectively are admitted thereto. It is not necessary that they have any great strength, since they are backed by the heavy unyielding upper and lower pressure members which prevent the light hollow
90 platens from becoming strained or getting out of true. Any form of light hollow platens will answer the purpose. They may be formed of castings suitably cored out. Those shown are of special built up construction, and are substantially duplicates
95 of each other. Each comprises the main or body member 20 which forms one face of the platen, and which is provided with peripheral walls 21 forming the perimeter of
100 the hollow chamber in the platen. Secured to the peripheral wall, such as by means of rivets 22, is the cover plate 23, which is supported or stiffened between its edges by means of posts 24 projecting up
105 from the bottom of the plate and formed at their ends as rivets 25 which project through and are riveted into holes in the cover plate 23. In order to form an absolutely tight joint the peripheral walls are
110

provided inside of the row of rivets with a groove 27 for receiving a strip of wire solder or other soft metal which is firmly squeezed down into said groove when the cover plate is riveted on. Outside of the rivets the peripheral walls and cover plate are provided with registering annular grooves, which together form a dovetailed or undercut groove 28 into which solder is poured after the riveting is complete. This forms a perfectly steam and water tight joint between the cover plate and the body of the platen. Both the body of the platen and the cover plate are preferably formed of brass or similar metal, and after they are united the cover or face plate is finished to a perfectly smooth flat face.

The platens are placed between the upper and lower pressure members with the cover plates of the platens bearing against the pressure members. The lower platen rests loosely on the lower pressure member so that it can be readily taken out and put in. The upper platen, however, must be secured to the upper pressure member. This may be effected in any suitable way. As shown, said platen is provided with lugs 30 which are bolted or otherwise suitably secured to the head of the press.

For the admission of steam and water to the hollow platens the bodies or main portions thereof are provided with a plurality of threaded holes 33 to which are connected pipe members 34 leading to trunks or headers 35, which in turn have connected thereto the supply and exhaust pipes. The connections to the lower or movable platen include pipe members 36 and 37 so arranged and connected by pivotal joints as to permit vertical and lateral movement of the platen without breaking the connections, in order to permit said platen to be moved into and out of the press, as will be readily understood. The pipe connections on one side are provided with two supply branches, to wit, a branch 38 for steam and a branch 39 for water, while the pipe connections on the other side of the press are provided with two exhaust branches, to wit, a branch 40 leading to the sewer and a branch 41 leading to a steam trap. One of the presser plates or platens, such as the upper presser plate or platen 18, is also provided with a horizontal tapped hole 42 communicating with a vertical hole 43 which leads through said plate to the space between the two presser plates. To the hole 43 there is connected a pipe or hose member 44 which leads to a suitable source of vacuum, such as a suction pump, or a reservoir or tank in which pressure less than atmospheric pressure is maintained.

During the pressing operation the matrix and plastic sheet are entirely inclosed in an air tight chamber from which the air is

exhausted through the connection 44. This is effected by providing a seal, such as rubber or similar ring or wall 45 between the pressure members, said sealing member being shown as supported on a flange 46 on the lower platen and surrounding the presser faces of the platens and outside the celluloid sheets and matrix. It is of sufficient height so that when the platens are brought together this rubber ring is compressed to form an absolutely air tight work inclosing chamber. As a consequence, the pressing is effected while exhausting air from the chamber, thereby preventing the accumulation of air between the matrix and celluloid sheet or between the celluloid sheet and presser plates or platens and preventing the trapping of air and formation of bubbles and unevenness of the celluloid sheet or plate.

The platens of the press have only a very limited stroke, and therefore it is impossible to adjust or fix the work after it is placed in the press, but this must be done before placing it in and after taking it out of the press. To facilitate this the press is provided on opposite sides with tables. On one side is the table 47 whose top is on a level with the lower presser plate or platen 19 when the latter is in its lowermost position. On the opposite side of the press is another table 48 whose top is on a level with the top face of the lower pressure member 3 when the latter is in its lowermost position. These tables may be secured to the press frame but as shown are secured to the lower pressure member or table 3 and are movable therewith. The table 47 is used with making matrices. The form of type or cuts is placed on said table, the matrix blank placed thereon with blankets, and the whole is then shoved onto the lower brass platen 19, the rubber seal 45 having been previously removed.

The table 48 is used when making plates from celluloid or similar plastic material, and in this case the operation of the press is as follows; The matrix, with the make-ready, if any, a celluloid sheet to form the plate, and the overlay, if any, are assembled on the lower platen while it is out of the press on the table 48, the rubber ring or wall 45 being placed around the platen. When assembled the whole is slid bodily onto the lower pressure element or table 3. The cylinder 16 is then actuated to elevate the lower pressure member 3, and as soon as the rubber ring is compressed sufficiently to seal the space inclosed thereby the suction or vacuum connection 44 is opened to exhaust the space between the presser plates or platens, so that the air between the matrix, the celluloid sheet, the make-ready and the platens is exhausted, preventing the accumulation of any air bubbles between these parts. The steam connections to the hollow plates

or platens are then opened, thereby heating the same to render the celluloid sheet plastic. After a short time, about 90 seconds, the press is closed further by admitting more fluid to the cylinder 16, thereby pressing the celluloid plate into the matrix, and forming the plate by the matrix. The steam connections are then closed and the water connections to the presser plates or platens are opened to cool the same and set the celluloid. When sufficiently hardened the water connections are closed and the cylinder 16 is released, after which the bottom presser plate or platen 19 with the matrix and work thereon is pulled out upon the table 48, so as to be convenient for removing the work and putting new material and matrix on the same.

The press described is easy and convenient to operate, gives a very powerful pressure, and provides for pressing the sheets between absolutely flat surfaces which have a positive movement from and toward each other in exact parallelism so that the resulting celluloid plate will be of uniform thickness throughout and without danger of having air bubbles distort the same.

The method described in this application is set forth and claimed in my copending application, Serial No. 563,617, filed May 26, 1910.

What I claim is:

1. A combined matrix and plate press comprising upper and lower pressure members, mechanism for producing relative approximation and separation therebetween, hollow presser plates or platens carried by said pressure members, and pipe connections to said presser plates or platens, the lower hollow presser plate or platen being readily movable into and out of the press.

2. A combined matrix and plate press comprising upper and lower pressure members, mechanism for producing relative approximation and separation therebetween, hollow presser plates or platens between said pressure members, the upper hollow plate being detachably secured to the upper pressure member and the lower hollow plate being readily movable onto and off the lower pressure member, and pipe connections to said hollow plates or platens.

3. A combined matrix and plate press comprising upper and lower pressure members, mechanism for producing relative approximation and separation therebetween, and tables on opposite sides of the press secured to the lower pressure member and movable therewith, one of said tables being on a level with the surface of said lower pressure member, and the other being at a higher level.

4. A press comprising upper and lower pressure members, mechanism for producing relative approximation and separation

therebetween, hollow presser plates or platens carried by said pressure members, pipe connections to said hollow presser plates or platens, and tables on opposite sides of said press, said tables being so arranged that when the lower pressure member and lower presser plate or platen are in their lowermost positions, one of said tables is on a level with the lower pressure member and the other of said tables is on a level with the lower presser plate or platen.

5. A press comprising upper and lower pressure members adapted by direct contact to press the material into the matrix or form, mechanism for producing relative approximation and separation therebetween, an annular compressible ring or wall adapted to be compressed between said members, and a suction connection from the space inside of said ring or wall and between said pressure members.

6. A press comprising pressure members, mechanism for producing relative approximation and separation therebetween, hollow presser plates or platens carried by said pressure members, pipe connections to said hollow presser plates or platens, one of said presser plates or platens being slidable into and out of the press, and a table at one side in position to receive said platen.

7. A press comprising rigid pressure members, mechanism for producing relative approximation and separation therebetween, light hollow presser plates or platens carried by said pressure members and backed thereby, one of said pressure plates or platens being slidable into and out of the press, and pipe connections to said hollow presser plates or platens.

8. A press comprising upper and lower pressure members, mechanism for producing relative approximation and separation therebetween, flat-faced presser plates or platens carried by said pressure members and adapted by direct contact to press the material into the matrix or form, a removable sealing member on one of said platens and adapted to be compressed between the platens, and an exhaust pipe connection to the space inside of said seal.

9. A press comprising upper and lower pressure members, mechanism for producing relative approximation and separation therebetween, flat-faced presser plates or platens carried by said pressure members and adapted by direct contact to press the material into the matrix or form, a compressible seal carried by one of said platens and adapted to contact with the other platen, and an exhaust pipe connection to the space inclosed by said seal.

10. A press comprising upper and lower pressure members, mechanism for producing relative approximation and separation therebetween, hollow platens cooperating

with said pressure members, the lower platen being movable into and out of the press, pipe connections to said hollow platens, a compressible seal carried by the lower platen, and an exhaust pipe connection to the space inclosed by said seal.

11. A press comprising rigid upper and lower pressure members, mechanism for producing relative approximation and separation therebetween with their faces in exact parallelism, light hollow platens carried by

said pressure members, pipe connections to said hollow platens, and a compressible seal arranged when the press is closed to inclose the space between said platens.

In testimony whereof, I have hereunto set my hand.

MICHAEL A. DROITCOUR.

Witnesses:

E. HASSMANN,

F. W. WINTER.