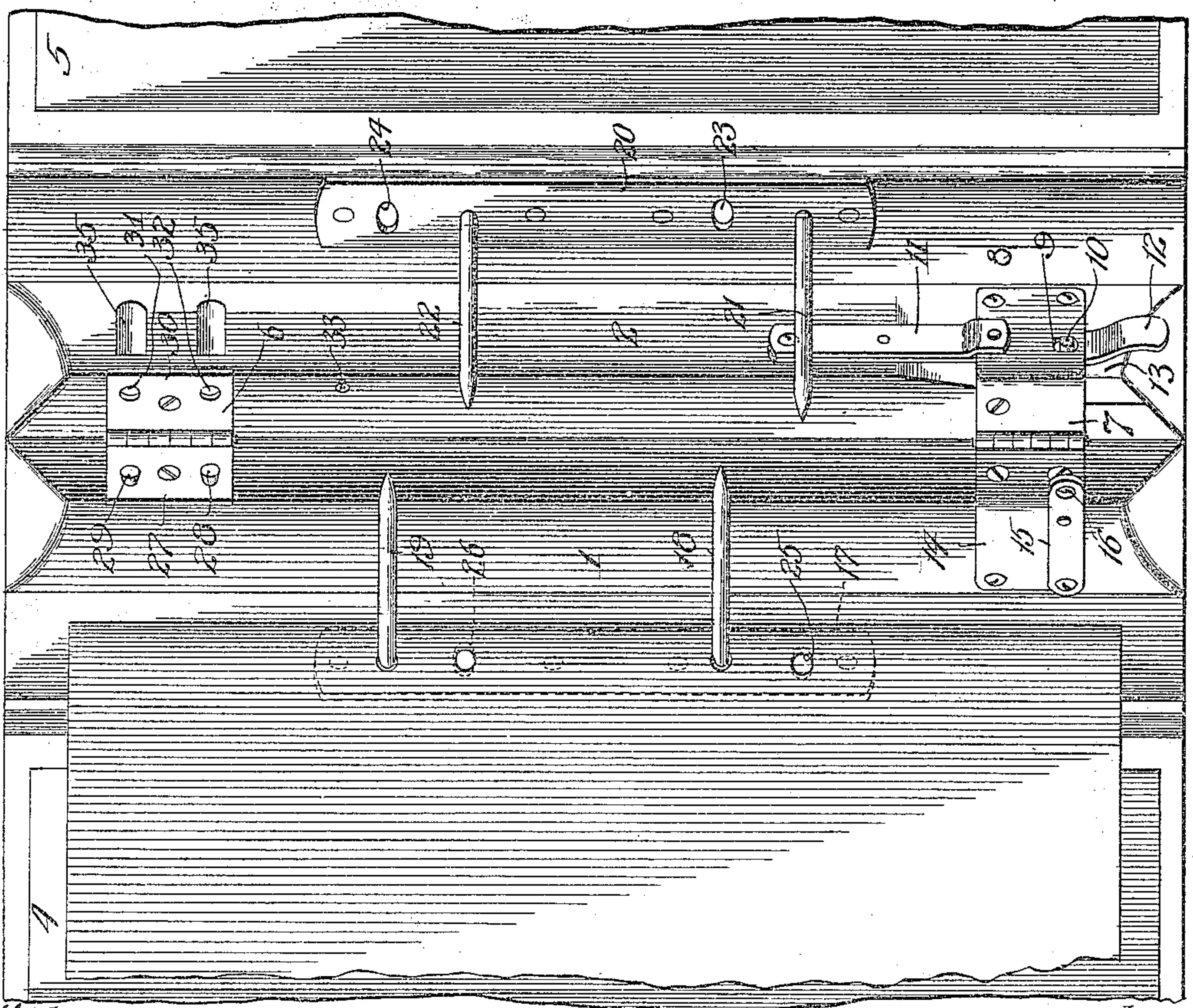
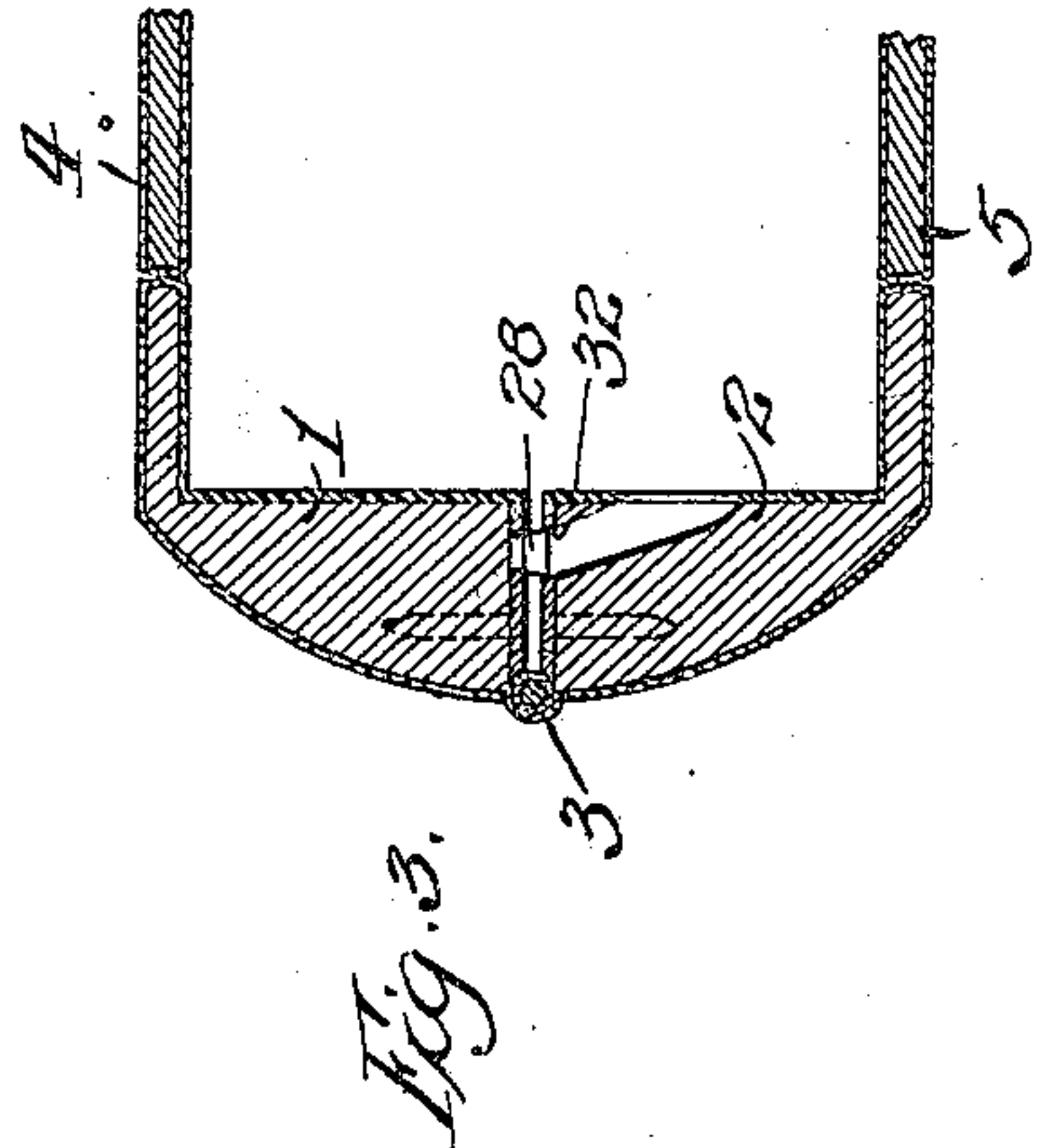
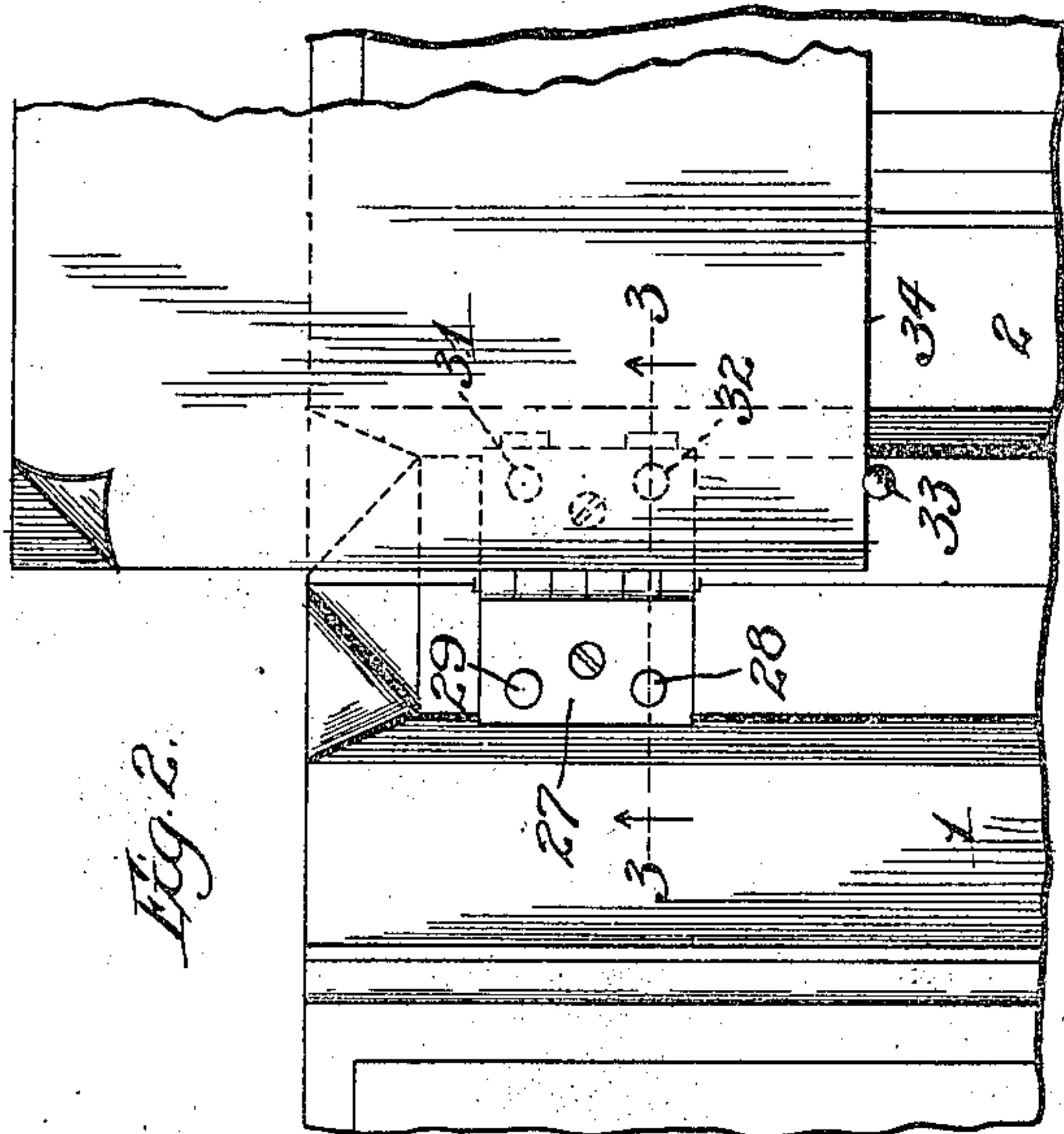


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 PERFORATING ATTACHMENT FOR LOOSE LEAF BINDERS.
 APPLICATION FILED SEPT. 17, 1909.

962,421.

Patented June 28, 1910.



Witnesses
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Fig. 1

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UNITED STATES PATENT OFFICE.

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Application filed September 17, 1909. Serial No. 518,143.

To all whom it may concern:

Be it known that I, JOHN J. DIEHL, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Perforating Attachments for Loose-Leaf Binders, of which the following is a complete, clear, full, and precise specification.

My invention relates to loose leaf binders, particularly to such binders which have cover parts carrying pins or rods for receiving perforated sheets which are brought together upon closure of the cover parts to secure the sheets in place. In binders of this class unperforated sheets must first be perforated and with prior binders separate perforating mechanism is necessary for perforating the sheets, and the sheets must be measured and marked before being perforated so that they will accurately fit the pins or other receiving members.

The broad salient object of my invention is to make perforating mechanism a part of the binder and this without the addition of a great amount of mechanism.

The particular salient object of my invention is to adapt hinges or other pivot members of the binder for perforating purposes, and further to provide means whereby sheets can be perforated accurately without the necessity of measuring or marking. Binders of the class referred to usually have members pivoted or hinged together so the binder may be opened flat to receive the sheets and in accordance with my invention one member is provided with perforating pins and the other member with openings for receiving the pins, the sheets to be perforated being inserted between the members, the act of closing the members causing the sheets to be perforated. Where hinges are used to pivot together the members one hinge part is provided with cutting pins and the opposite hinge members are provided with openings for receiving the pins. One or more stops are also provided against which the sheets are held so that the perforations will always come in the same place and so that the perforated sheets will accurately and uniformly fit the pins or other receiving members.

In the accompanying drawings I have shown my invention applied to a well known Tengwall binder, although the invention could be applied to any other binder having a hinged-together member or members

which can be moved apart and brought together.

In these drawings: Figure 1 is a plan view of the back of the binder, the outer ends of the covers being broken away and the back parts being open ready to receive the perforated sheets. Fig. 2 is a plan view of one end of the back part, showing a sheet interposed between the open hinge which is provided with the perforating mechanism; and Fig. 3 is a section view taken of plane 3—3 Fig. 2, showing the pivoted hinge members closed to bring the perforating members into engagement.

The back of the binder shown comprises two angle pieces 1 and 2, whose inner parts are pivoted together along their inner edge at 3, while the outer parts of the members have pivoted thereto the covers 4 and 5. The members 1 and 2 are shown held together in pivotal association by hinge members 6 and 7. The plate 8 of the hinge member 7 has an opening 9 through which extends a locking pin 10 carried by a spring arm 11 secured at its rear end to the member 2, the front end 12 lying over a depression 13 in the member 2 so that this end can be pressed downwardly to carry the pin 10 below the opening 9. The plate 14 of the hinge member 7 carries a spring arm 15 having at its inner end an opening 16 for receiving the pin 10 when the members 1 and 2 are brought together to the position shown in Fig. 3, the top of pin 10 being beveled so that the front edge of spring arm 15 can pass thereover to cause the pin to be guided into opening 16. By depressing the end 12 of the locking arm 11 the pin will be withdrawn from opening 16 and members 1 and 2 are free to be opened. Secured to the outer wall of member 1 is a plate 17 from which extend receiving pins 18 and 19 which are curved to a radius centered in the pivot line 3. A similar plate 20 is secured to the outer wall of the member 2 and carries pins 21 and 22 which have the same curvature as the pins 18 and 19. The pins of the two plates are offset a distance, pins 19 and 22 being in adjacent planes and pins 18 and 21 being in adjacent planes. In plate 20 are openings 23 and 24 for receiving the pointed ends of the pins 18 and 19 when the members 1 and 2 are closed, and likewise plate 17 has openings 25 and 26 for receiving the pointed ends of pins 21 and 22 when the members 1 and 2 are closed. When the members are

open the ends of opposite pins are separated sufficiently to allow the application of perforated sheets to one set of pins whereby when the members 1 and 2 are brought together
 5 the other pins will enter perforations in the sheets and the sheets then locked to the pins, although they are free to be swung from one cover to the other.

The plate 27 of hinge 6 is provided with
 10 two perforating pins 28 and 29 whose distance apart is equal to the distance between the pins 19, 22 and 18, 21. The plate 30 of hinge 6 has openings 31 and 32 through which pins 29 and 28 pass when the mem-
 15 bers 1 and 2 are closed. Secured to the member 2 is an abutment 33 whose distance from the inner opening 32 is equal to the distance from the receiving rod 22 to a point midway between the planes of the rods 22
 20 and 18. Therefore if the perforations in a sheet are to appear midway between its outer edges, the sheet is folded over along a center line to form edge 34 as shown in Fig. 2 and the inner edges to be perforated are
 25 inserted over the hinge plate 30 with the edge 34 resting against the abutment 33 and the members 1 and 2 are closed to carry the perforating pins 28 and 29 through the in-
 30 serted sheet and through openings 31 and 32 to thus cause perforations in the sheet which when the sheet is again unfolded will appear in the proper position to accurately fit the receiving rods. With this arrange-
 35 ment, therefore, no separate perforating means are required and measuring or marking of the sheets prior to perforation is unnecessary and the sheets will always accu-
 40 rately and uniformly fit the receiving rods. One or more perforating hinges could be provided depending upon the nature of the perforation desired or any number of per-
 45 forating pins could be provided for each hinge. The perforating pins could also be applied directly to either of members 1 and
 50 2 and the other member provided directly with perforated openings. The additional mechanism required to adapt the hinges for perforating purposes is practically negligi-
 55 ble as to cost and no additional weight is added as the increased weight used for the perforating pins is compensated for by the openings for receiving the pins. The disks
 punched from the sheets are received in pockets 35 cut in the member 2 below the
 openings 31 and 32 from which pockets the disks can be readily discharged.

Having thus described the nature of my invention I desire to secure the following claims by Letters Patent.

60 1. In a loose leaf binder, the combination of cover members pivoted to be opened and closed, cooperating receiving mechanisms on said members for receiving perforated sheet,
 65 said members for receiving perforated sheets, and perforating mechanism between

the members and forming part thereof for perforating sheets to fit the receiving mechanisms.

2. In a loose leaf binder, the combination of cover members pivoted together to be
 70 opened and closed, receiving mechanism carried by the members for receiving perforated sheets and for securing the sheets between the members, and perforating mechanism at the inside of the members adapt-
 75 ed when the members are swung open to receive sheets and to perforate the sheets when the members are swung to a closed position.

3. In a loose leaf binder, the combination of back members, hinge mechanism
 80 serving to pivot the members together, receiving members carried by the back members and cooperating to receive and to lock perforated sheets to the back members, per-
 85 forating pins carried by the hinge mechanism, and openings for receiving the perforating pins whereby sheets inserted in said hinge mechanism may be perforated upon closure of the back members.

4. In a loose leaf binder, the combination
 90 of back members, hinge mechanism for pivoting said back members together to enable the back members to be opened and closed, receiving members for receiving perforated
 95 sheets and for locking the sheets to the back members, and perforating pins extending from one part of the hinge mechanism, the other hinge part being provided with open-
 100 ings for receiving the hinge pins upon closure of the back members whereby sheets inserted between the hinge mechanism parts will be perforated upon closure of the back members and hinge mechanism parts, the
 105 spacing between said pins being equal to the spacing between the receiving members for receiving the perforated sheets.

5. In a loose leaf binder, the combination of supporting members, a hinge pivoting
 110 said supporting members together whereby said supporting members may be brought together and opened, receiving members for engaging in the perforations of perforated
 115 sheets to be held to the supporting members, and perforating pins on one hinge part, the other hinge part being provided with openings for receiving the perforating pins
 120 when the supporting members are brought together whereby sheets interposed between the hinge parts will be perforated when the supporting parts and the hinge parts are
 125 brought together, the spacing between the pins being equal to the distance between receiving members whereby the sheets will be perforated to accurately fit the receiving members.

6. In a loose leaf binder, the combination of two supporting members hinged together
 130 along an edge, receiving members associated with the supporting members for engaging the perforations of perforated sheets to lock

the sheets to the supporting members, perforating pins carried by one supporting member, the other supporting member being provided with openings for receiving the perforating pins whereby sheets interposed between the supporting members will be perforated upon closure of said supporting members, the spacing of the perforating pins being equal to the spacing of the receiving members, and an abutment on one supporting member for alining the sheets to be perforated.

7. In a loose leaf binder, the combination of two supporting members, a hinge pivoting said members together at one edge, receiving members associated with the supporting members for engaging in perforations of perforated sheets to lock the sheets

to the supporting members, perforating pins extending from one hinge part, the other hinge part being provided with openings for receiving the perforating pins upon closure of the supporting members, and an abutment pin extending from one supporting member for receiving an edge on the sheets to be perforated and for alining said sheets with reference to the perforating pins, the spacing of the perforating pins being equal to the spacing of the receiving members.

In witness whereof, I hereunto subscribe my name this 14th day of September, 1909.

JOHN J. DIEHL.

Witnesses:

C. J. SCHMIDT,
EMILIE ROSE.