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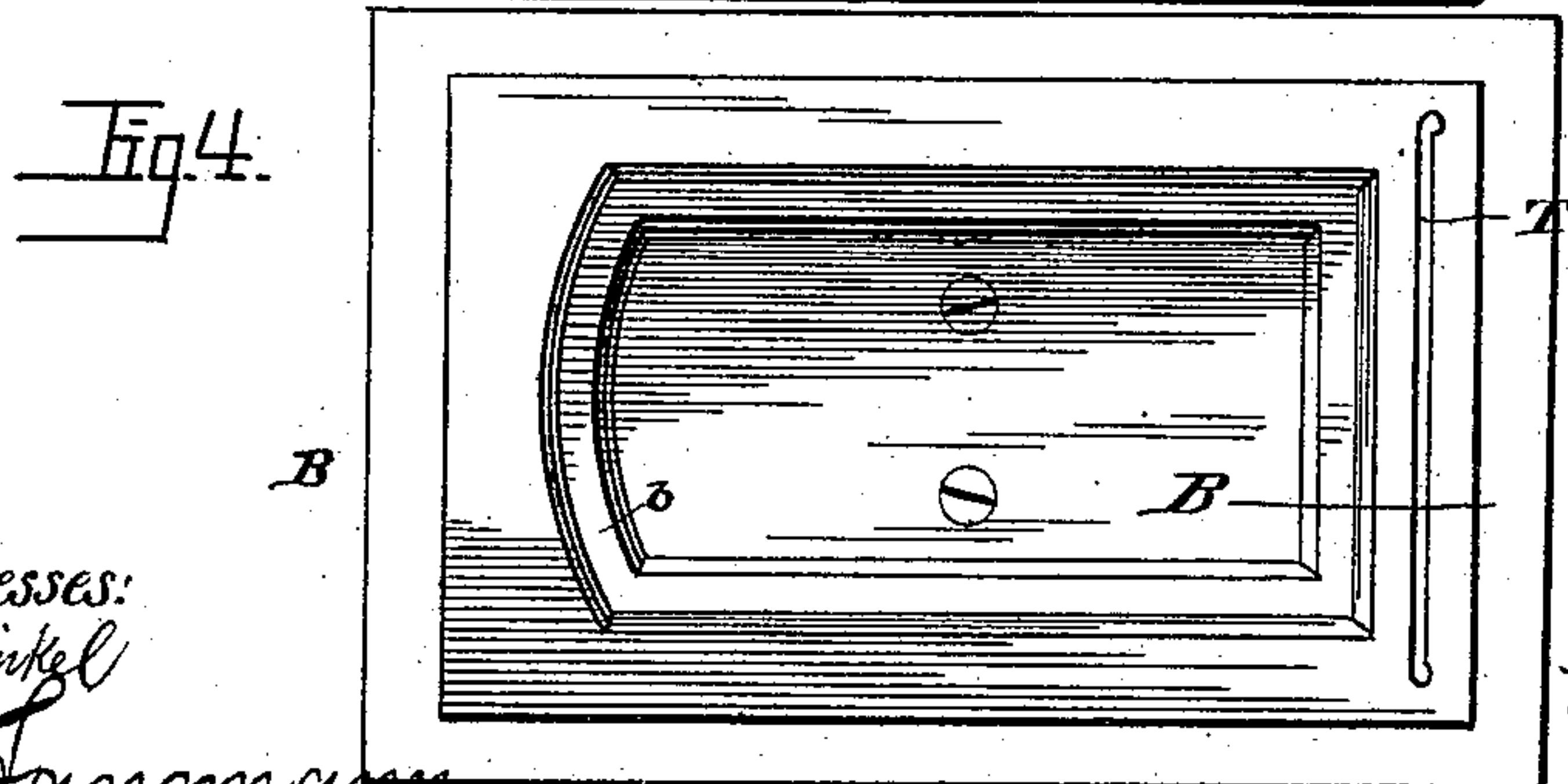
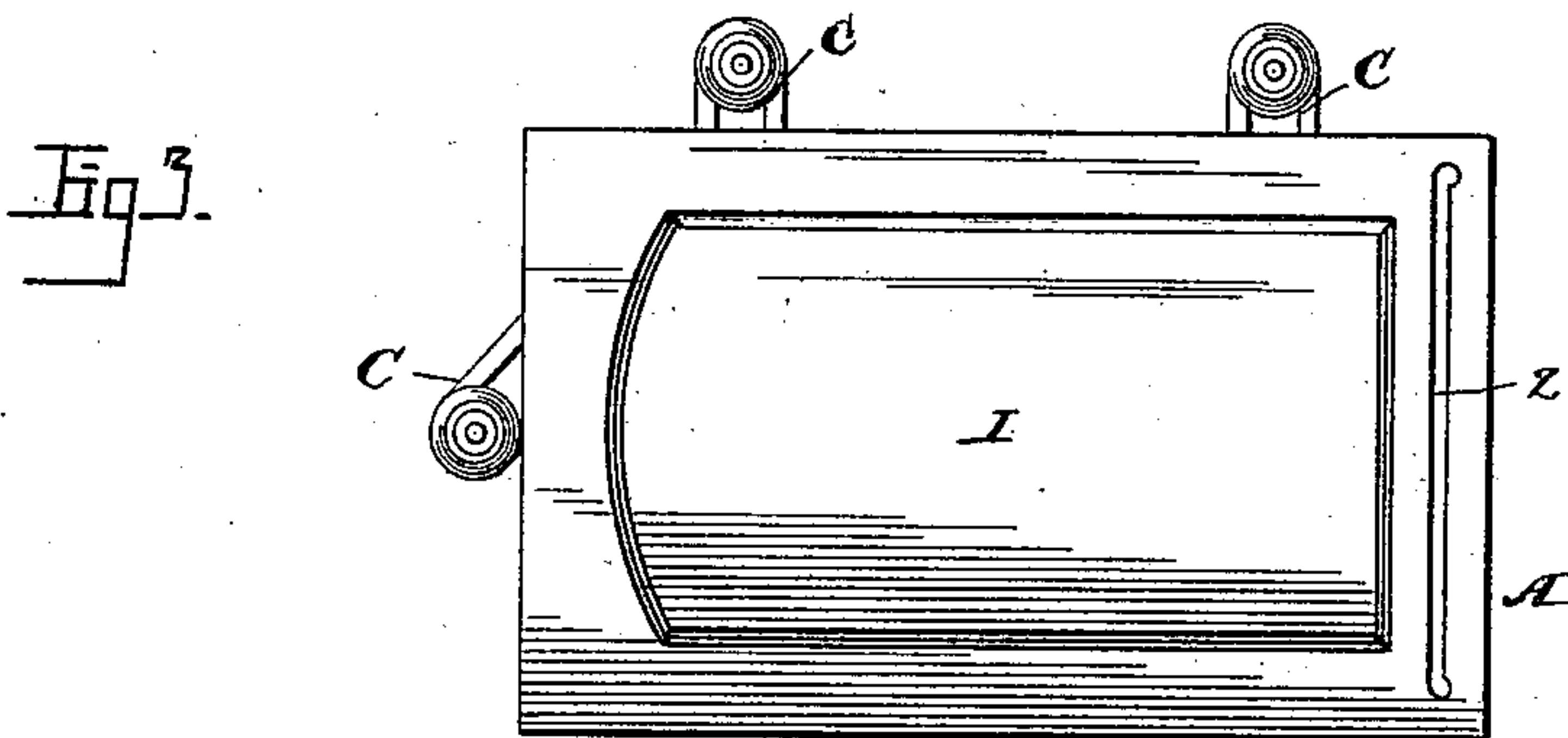
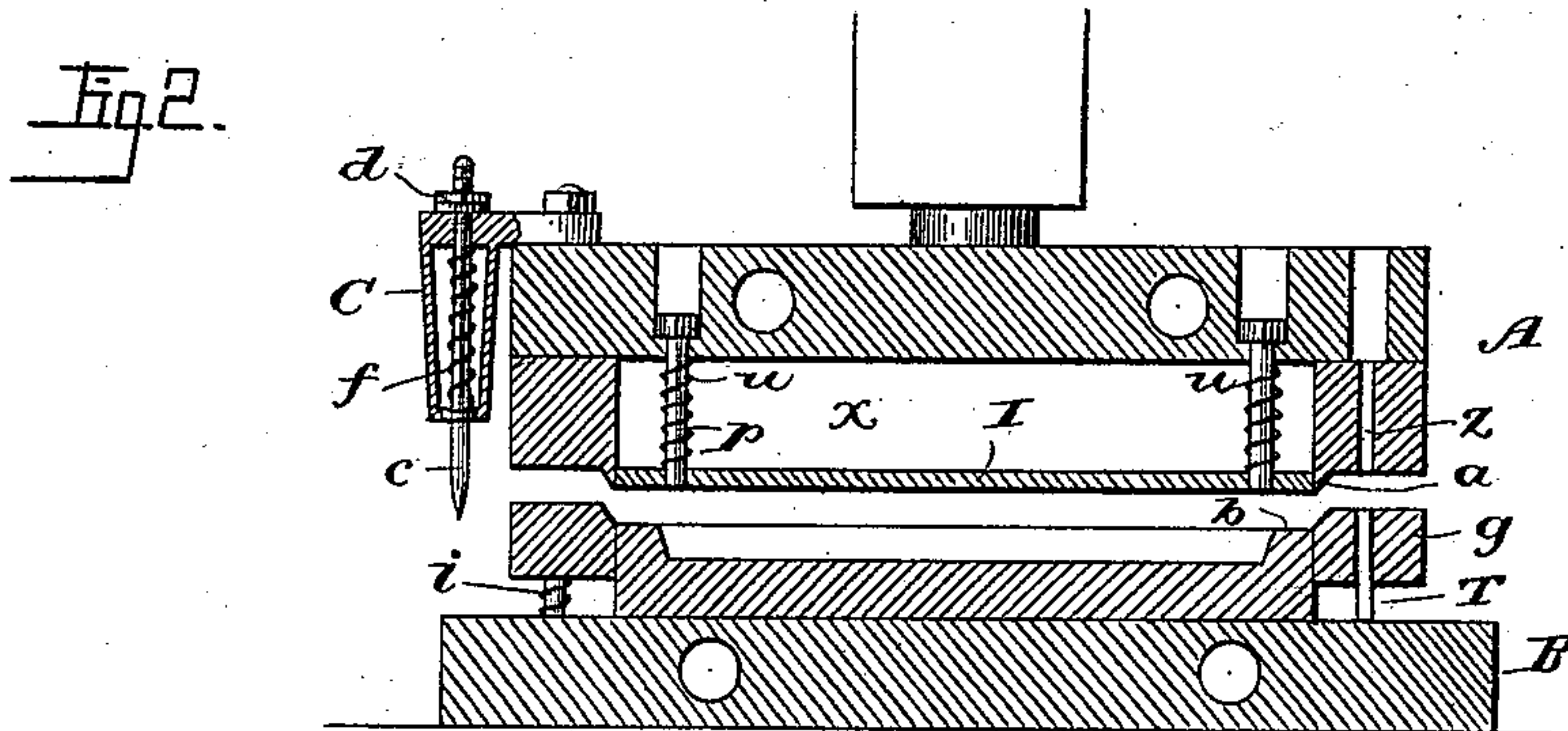
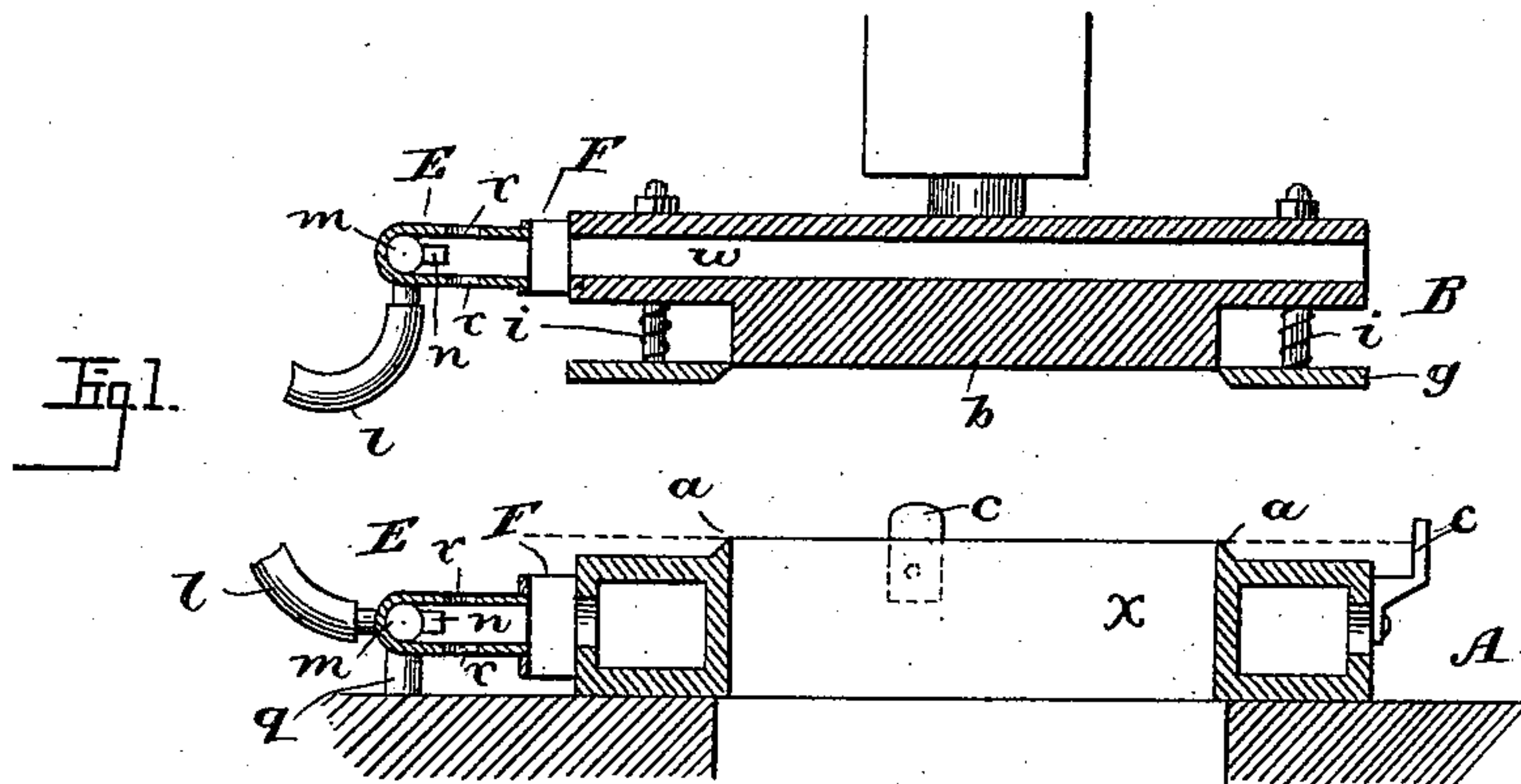
2 Sheets—Sheet 1.

J. CALDWELL & W. M. SMITH.

MECHANISM FOR THE MANUFACTURE OF PICTURE MATS, &c.

No. 337,129.

Patented Mar. 2, 1886.



Witnesses:
John Hinkel
H. E. Farnham.

Wm. M. Smith,
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Attorneys.

(No Model.)

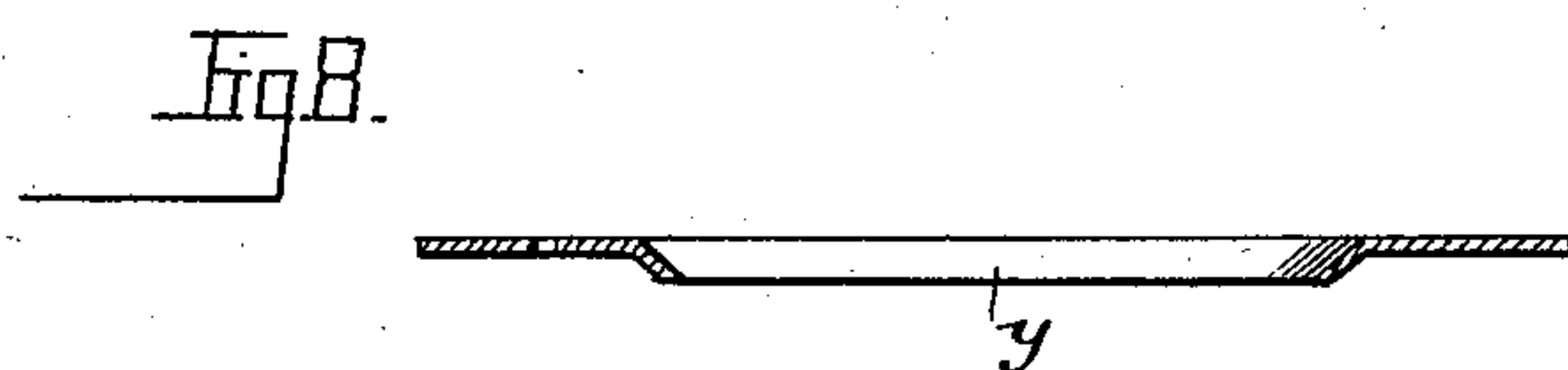
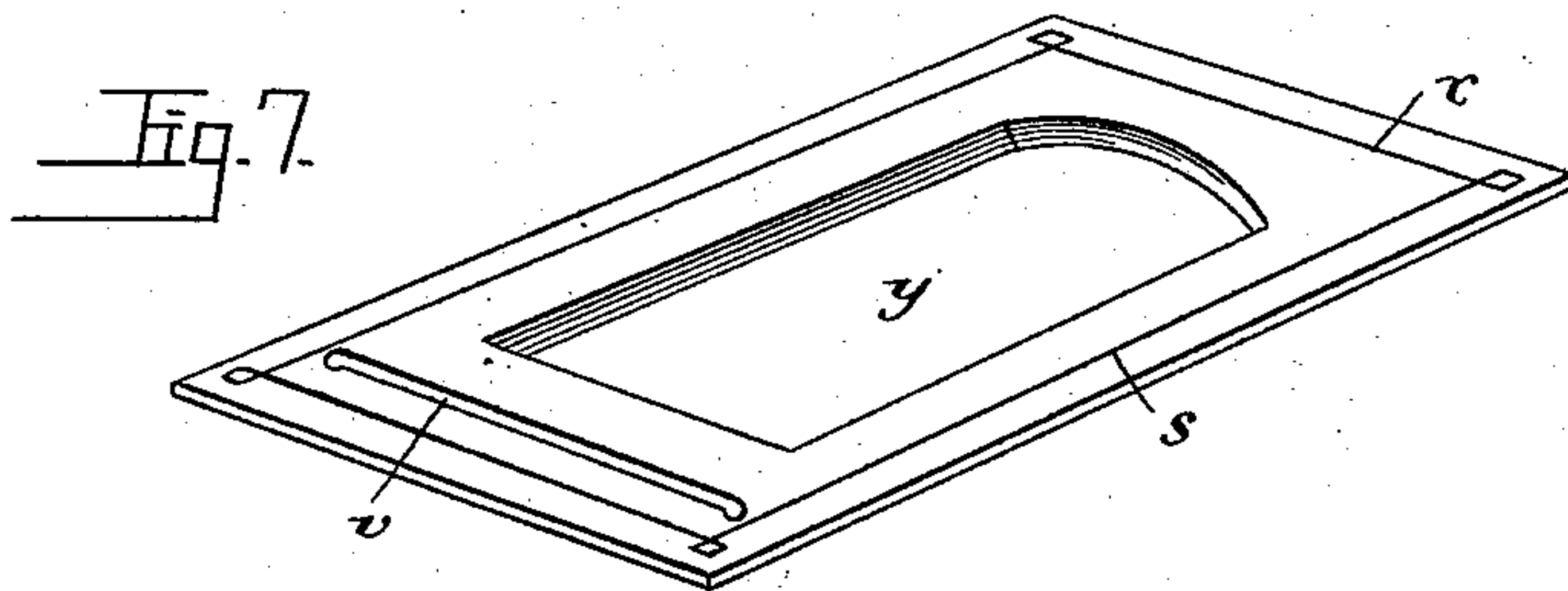
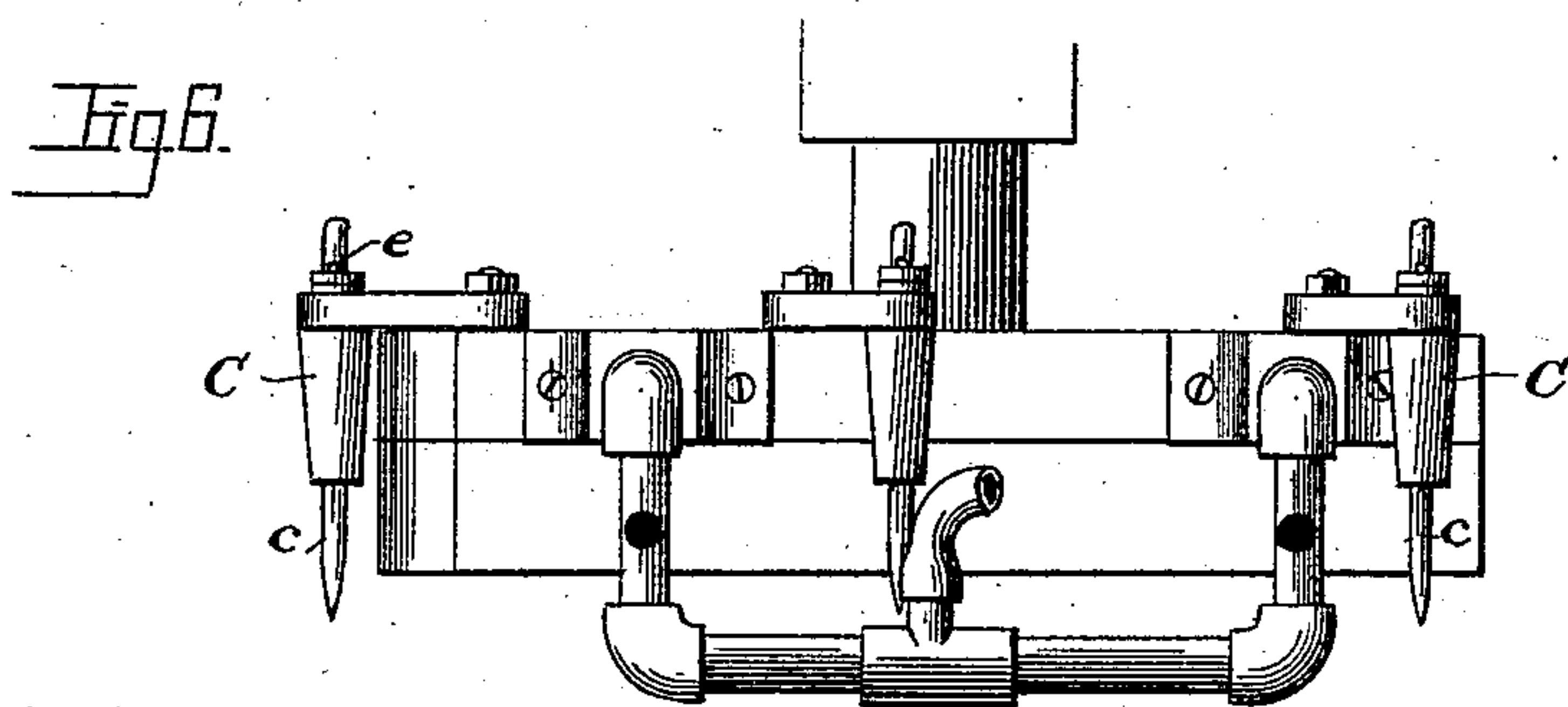
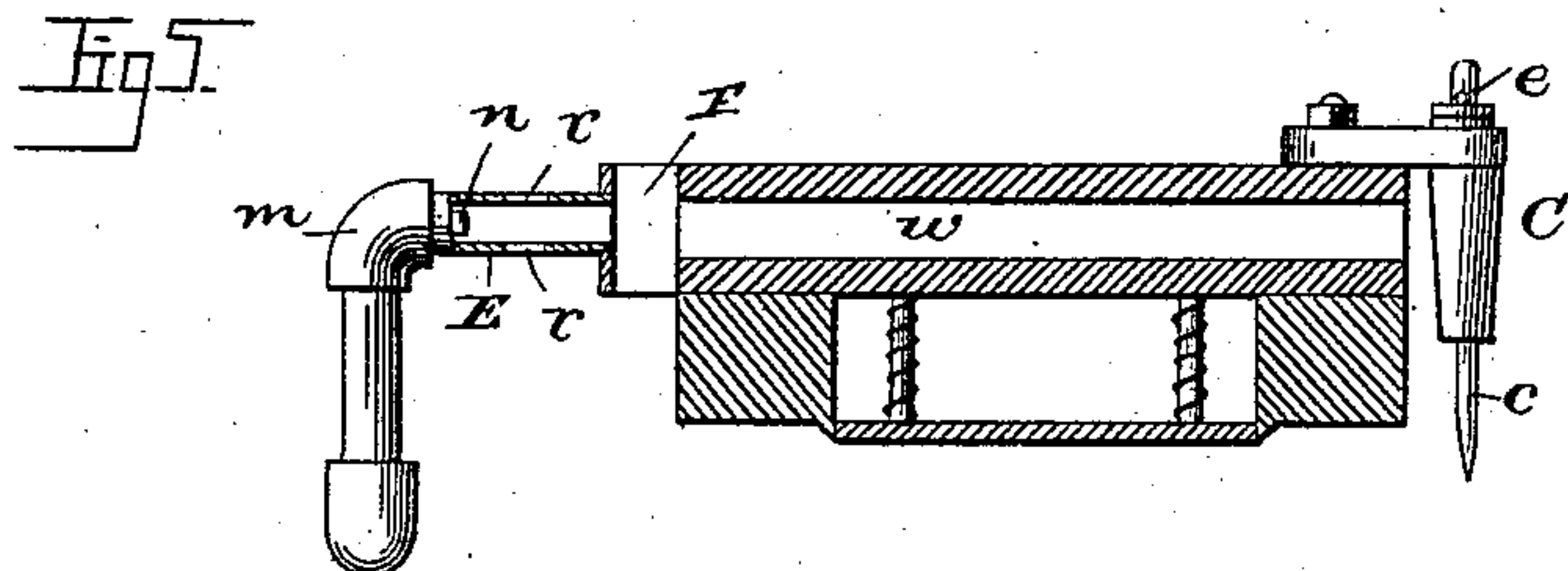
2 Sheets—Sheet 2.

J. CALDWELL & W. M. SMITH.

MECHANISM FOR THE MANUFACTURE OF PICTURE MATS, &c.

No. 337,129.

Patented Mar. 2, 1886.



Witnesses:
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UNITED STATES PATENT OFFICE.

JAMES CALDWELL AND WM. M. SMITH, OF PHILADELPHIA, PA.

MECHANISM FOR THE MANUFACTURE OF PICTURE-MATS, &c.

SPECIFICATION forming part of Letters Patent No. 337,129, dated March 2, 1886.

Application filed April 28, 1884. Serial No. 129,677. (No model.)

To all whom it may concern:

Be it known that we, JAMES CALDWELL and WM. M. SMITH, citizens of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new Improvements in Mechanism for the Manufacture of Picture-Mats, &c., of which the following is a specification.

Our invention relates to the manufacture of that class of picture-mats, album-leaves, and card-holders in which a sheet of paper or stiff paper-board has a central opening with a beveled edge; and our invention consists in the means, hereinafter fully set forth, for imparting the bevel to the edge of the opening and for cutting the latter.

In the drawings, Figure 1 is a sectional elevation of a press for cutting and beveling album-leaves and card-holders, and illustrating one mode of carrying out our invention. Fig. 2 is a sectional elevation of a machine of a slightly different construction. Fig. 3 is an inverted plan of the upper die-plate, Fig. 2. Fig. 4 is a plan of a lower die-plate. Fig. 5 is a transverse section of the upper plate. Fig. 6 is a side view of the upper plate. Fig. 7 is a perspective view of an album-leaf having a beveled edge at the opening. Fig. 8 is a longitudinal section of the leaf shown in Fig. 7.

In the better class of picture-mats, album-leaves, and card-holders it is common to bevel the edge of the paper around the opening. Our invention has for its object to impart rapidly and with precision the requisite bevel and to insure the cutting of the opening at the precise point required, in order to secure its proper relation to the printed portion of the sheet. Such sheets are printed prior to the cutting of the openings therein and the beveling of the edges, and it has heretofore proved difficult to properly gage or set the sheets upon the press so as to secure the cutting of the opening at the proper point, the result being that the opening would be out of center with the printed portion of the sheet. To overcome these difficulties we provide the press with gages, whereby the sheet may be held in proper relation to the cutter, and we so construct the cutter and dies that the edges will be beveled simultaneously with or immediately after the cutting operation, while the

separation of the dies will result in the discharge of the blanks therefrom.

One form of apparatus which we have devised is illustrated in Fig. 1, in which A is the lower and B the upper die, a vertical movement being imparted to the latter by means of any of the usual appliances. In the lower die is an opening, x , surrounded by a flange, a , having an upper inclined face, the angle of which coincides with that of the desired bevel to be imparted to the edge of the sheet, and the upper die is provided with a projection, b , adapted to the opening x , so that the introduction of the projection into the opening as the die B descends will result in shearing the central portion from the sheet, forming the requisite opening y therein.

In order that the sheet may occupy the precise position required to insure the cutting of the opening at the proper point with respect to the printed matter upon the sheet, we provide gages c , secured to the sides and end of one of the dies in such position that the sheet when in contact therewith will occupy the proper place in respect to the cutter.

In Fig. 1 the guides c are secured fixedly to the lower die. This necessitates the cutting of the edges of the sheets, so that every sheet will have a margin of the same dimensions as those of the other sheets. As this is difficult and requires considerable labor, we have found it preferable to put the guides upon the upper die, as shown in Figs. 2, 3, 5, and 6, and to make them adjustable thereon, and also to put the flange a upon the upper die, so that the sheet may be laid upon the lower die with its printed face uppermost, when the lines $s r$ can be seen and brought into such position as to coincide with the points of the guides, and thus determine the position of the sheet. By this means the sheet is gaged by the printed lines, instead of by the edges, so that the openings are always cut in precisely the proper positions, even when the printed matter does not properly coincide with the edges of the sheet.

To prevent injury to the sheets by the contact of the guide-pins therewith, we prefer to insert the latter movably in brackets C, with light springs bearing upon and tending to throw down the pins, but permitting them to yield when they strike the sheet, and the down-

ward motion of each pin may be limited by a nut, *d*, screwing upon the upper end of the same, or by means of washers placed between the top of the bracket and a cross-pin, *e*. In
5 either case the vertical position of the pin may be adjusted without interfering with the action of the spring *f*.

The guide-pins may be adjustably connected to the die by securing the brackets *C* thereto
10 by screw-bolts passing through slots in the brackets, as shown.

The cutter portion *b* of the die *B* is inclosed by a movable die-plate, *g*, having its edge beveled to correspond to the bevel of the flange
15 *a*, and this die-plate bears against springs *i*, and is suitably guided and limited in its movements to operate as described hereinafter. When the dies are brought together, the cutters first detach the center portion of the sheet
20 forming the opening *y*, and the edge of the opening is then beveled between the flange *a* and the movable die-plate *g*, which yields as the die *A* descends, but finally takes its bearing, so that the sheet is subjected to a considerable pressure.
25

In order that the bevel imparted by the dies may be permanent, we provide means for heating the dies, so that the sheet is subjected to both heat and pressure, the result being that
30 the beveled portion is set in its position and will not readily lose the set thus imparted.

Different modes of heating the plates may be employed. We prefer, however, to use gas-burners arranged to secure one or more
35 blasts or jets which are carried through openings or chambers in the dies. For instance, each burner may consist of a tube, *E*, supported by a bracket, *F*, with its inner end at a short distance from the mouth of an opening or chamber, *w*, in the die, and into the
40 opposite end projects the nipple *n* of a gas-tube, *m*, and air-holes *r* are formed in the sides of the tube *E* adjacent to the end of said nipple.

The jet of gas issuing from the nipple, drawing the air through the openings *r*, constitutes a blast, which, playing in the channel *w*, rapidly imparts the desired heat to the die, and maintains the latter in its heated condition.
45 The gas is supplied to the pipe *m* of the lower die through a supply-pipe, *q*, and a flexible pipe, *l*, serves to conduct the gas to the upper movable die.
50

When the die *A* is lowermost, as shown in Fig. 1, the opening *x* may be formed completely through the same, so as to permit the detached blanks to fall through the said opening and be discharged. This is not possible, however, when the said die is uppermost, as
55 shown in Fig. 2, and we therefore in such case insert a follower, *I*, in the opening *x*, with guide-pins *p* to limit the downward movement of the follower, and springs *u* to afford a yielding backing, so that the section
65 cut from the sheet will enter the opening and

press up the follower as the sheet is cut, but will be discharged as the upper die rises and the springs throw the follower downward. The upward movement of the upper die also
70 permits the die-plate *g* to rise under the action of its springs and discharge the sheet wholly from the cutter-projection *b*.

Where the card or sheet is intended for the insertion of pictures from the front, it is provided with a slit, *v*, near one end, which is
75 formed by means of a cutter-blade, *T*, upon one of the dies, and a corresponding opening, *z*, in the other.

We are aware that dies have been made to simultaneously cut out the sight of a card and
80 emboss the face; but this does not effect the result attained by us, as such cards, to be beveled at the sight-edges, must be subjected to a subsequent operation, as usual, which results in more or less imperfect work and the loss of
85 much material.

Without limiting ourselves to the precise construction and arrangement of parts shown, we claim—

1. The combination of the die having a cutter adapted to remove the sight of the card, the counter-die having a corresponding recess to receive the cutter, a beveled edge round the cutter, and a corresponding beveled face on the counter-die, and means, substantially as
90 described, for heating both dies.

2. The combination, in a machine for forming picture-mats, of a die, *A*, having an opening with a surrounding beveled-faced flange, a die, *B*, with a cutter projection, *b*, and a
100 yielding die-plate, *g*, with an edge beveled to correspond to the face of the flange, substantially as set forth.

3. The combination of the die *A*, having an opening, *x*, flange *a*, and yielding follower *I*,
105 and the die *B*, having a cutter projection, *b*, and yielding beveled-edged die-plate *g*, substantially as described.

4. The combination, with the dies having chambers or recesses, of tubes arranged opposite said recesses and perforated, and gas-nipples within the tube communicating with gas-pipes, for the purpose set forth.
110

5. The combination, with the upper die having a beveled-edged flange and opening *x*,
115 and with a corresponding lower die, of guide-pins carried by the upper die, for the purpose set forth.

6. The combination, with the upper die, of yielding and adjustable guide-pins, for the
120 purpose specified.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JAMES CALDWELL.
WM. M. SMITH.

Witnesses:

JNO. TAYLOR,
LOUIS M. WAGNER.