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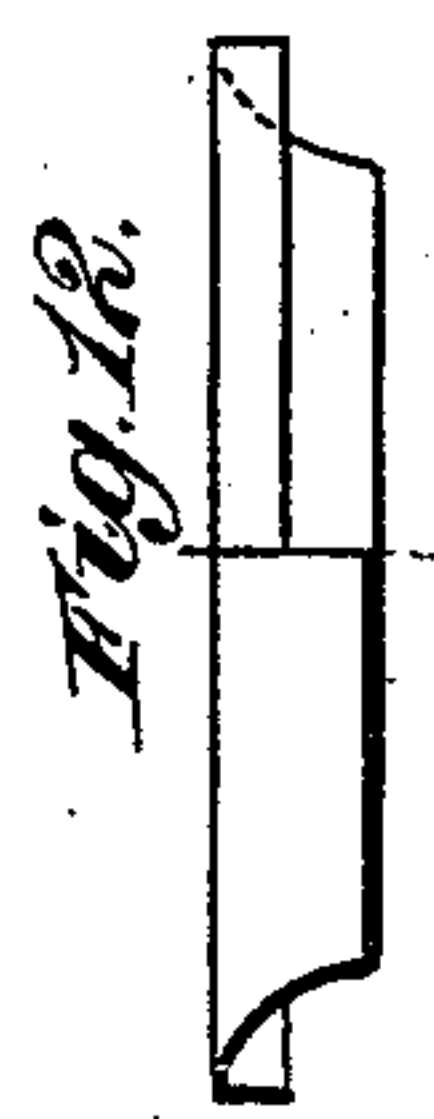
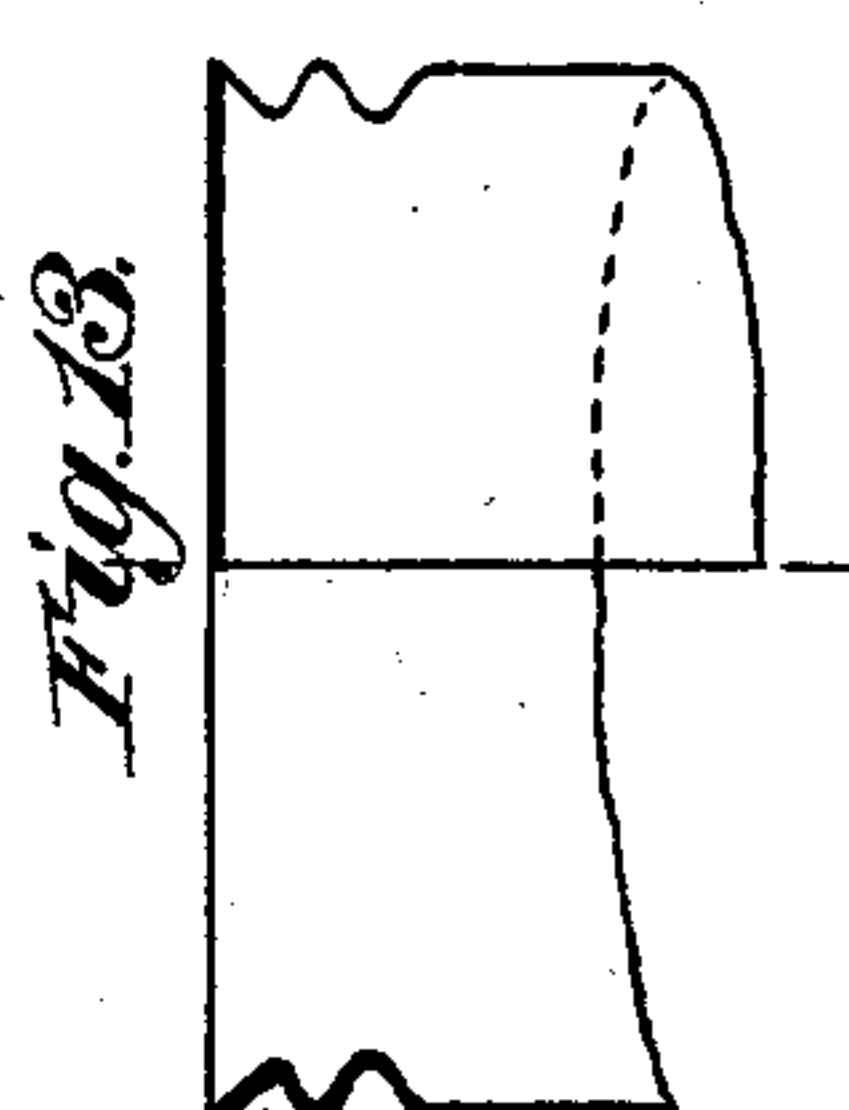
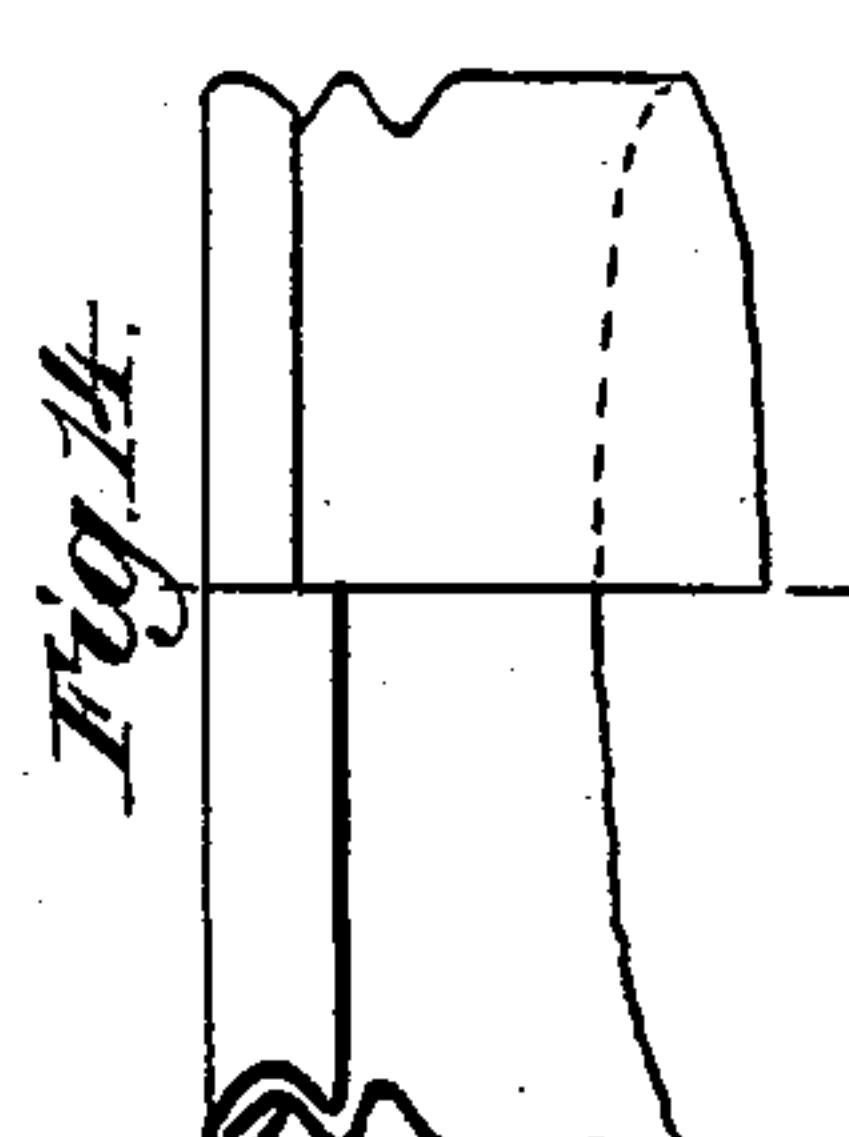
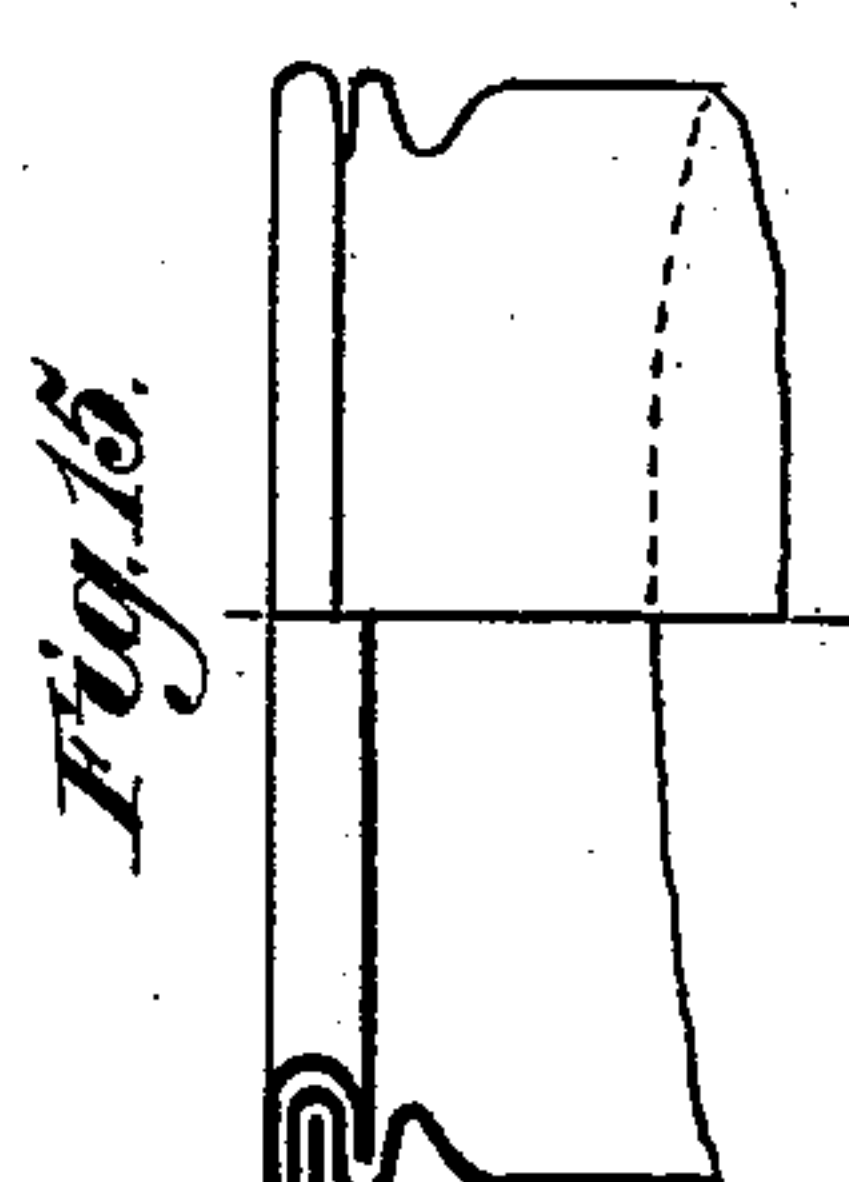
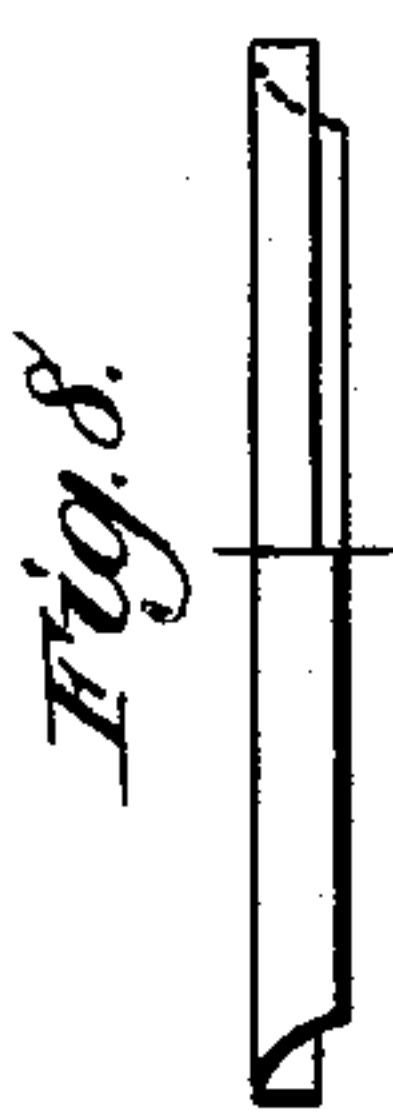
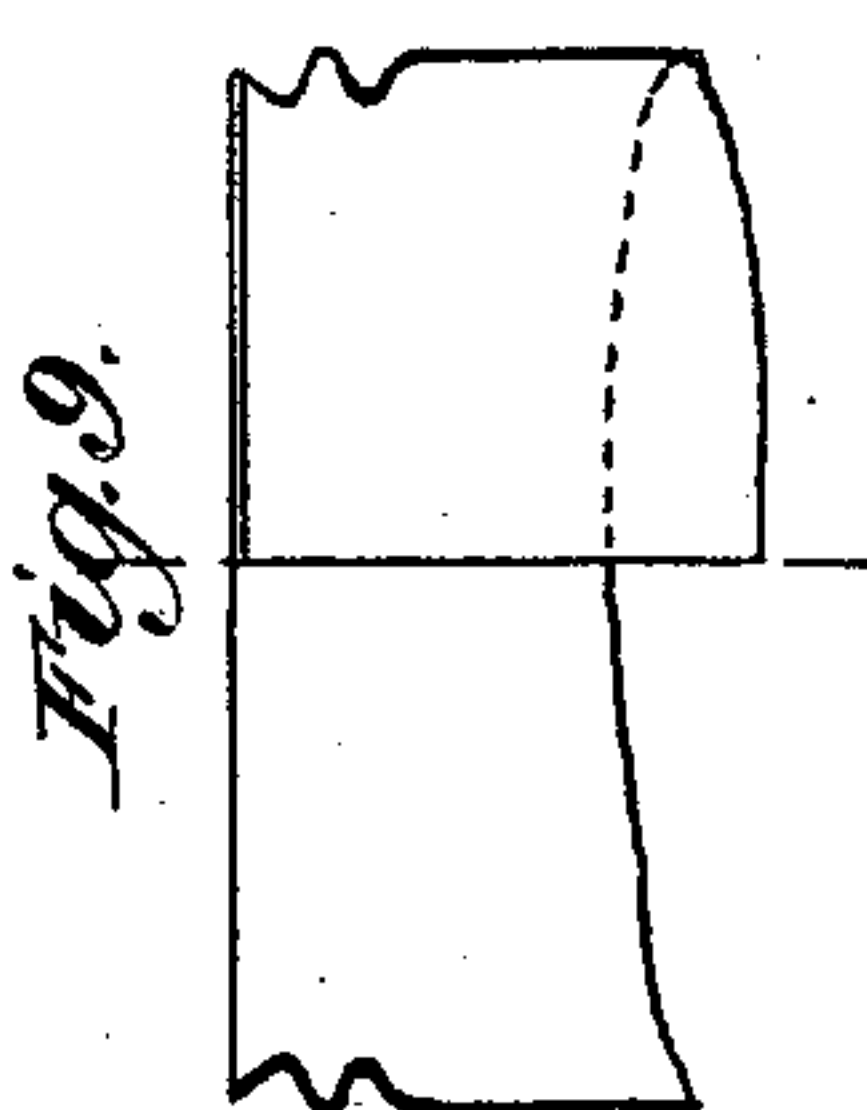
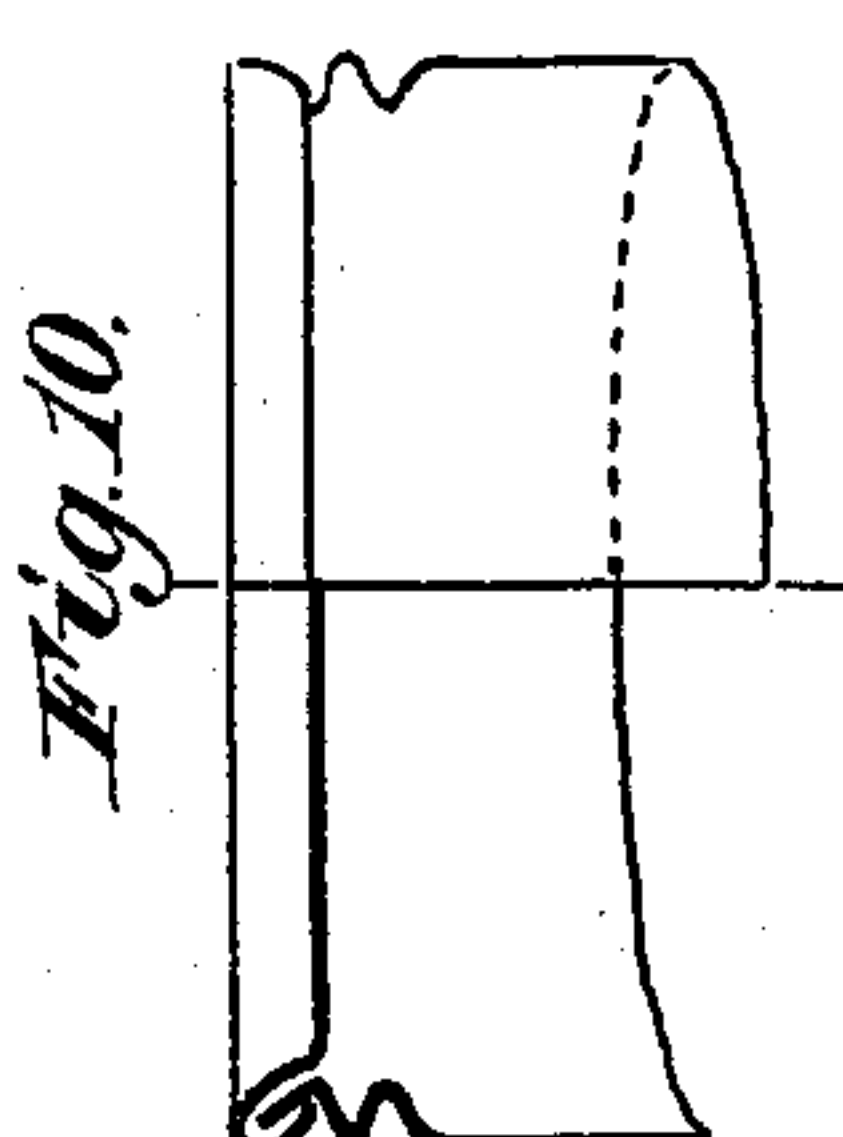
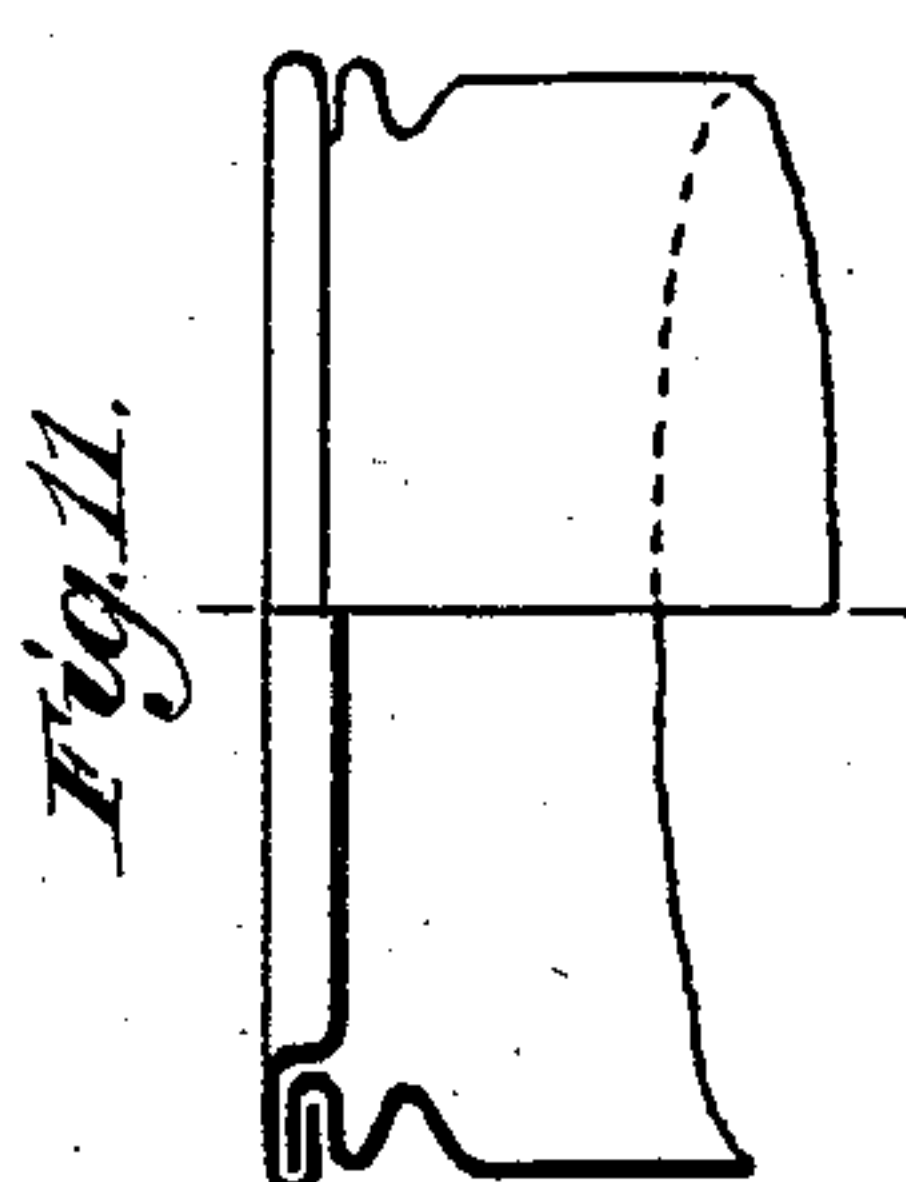
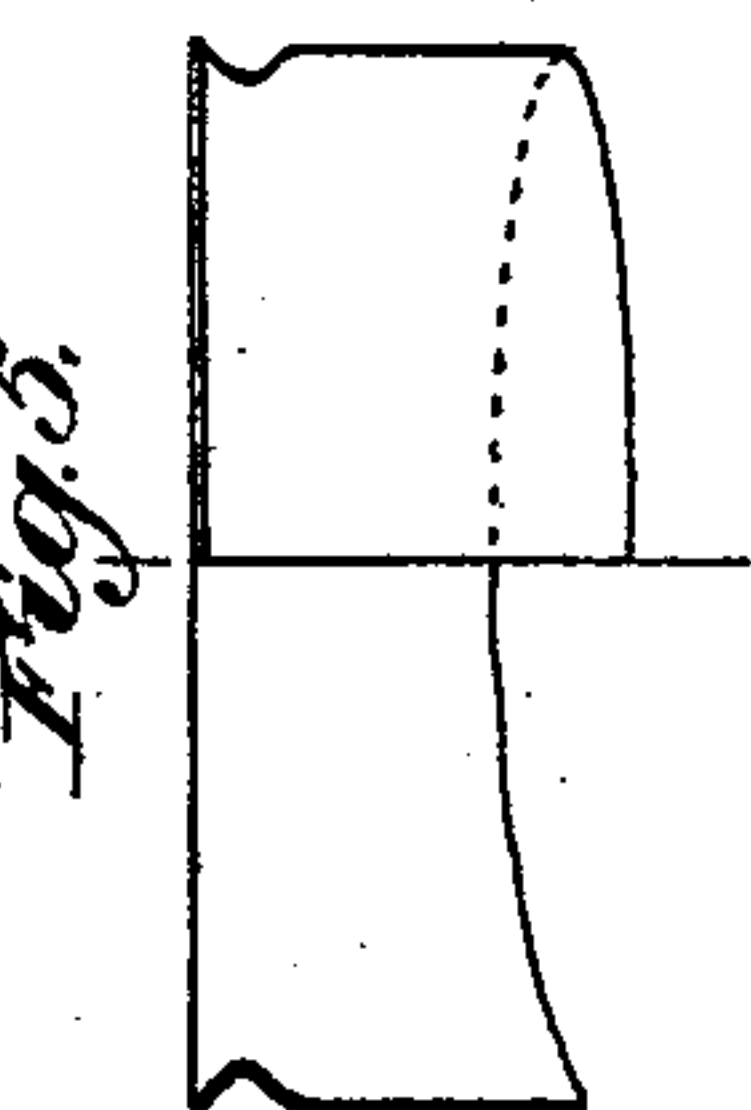
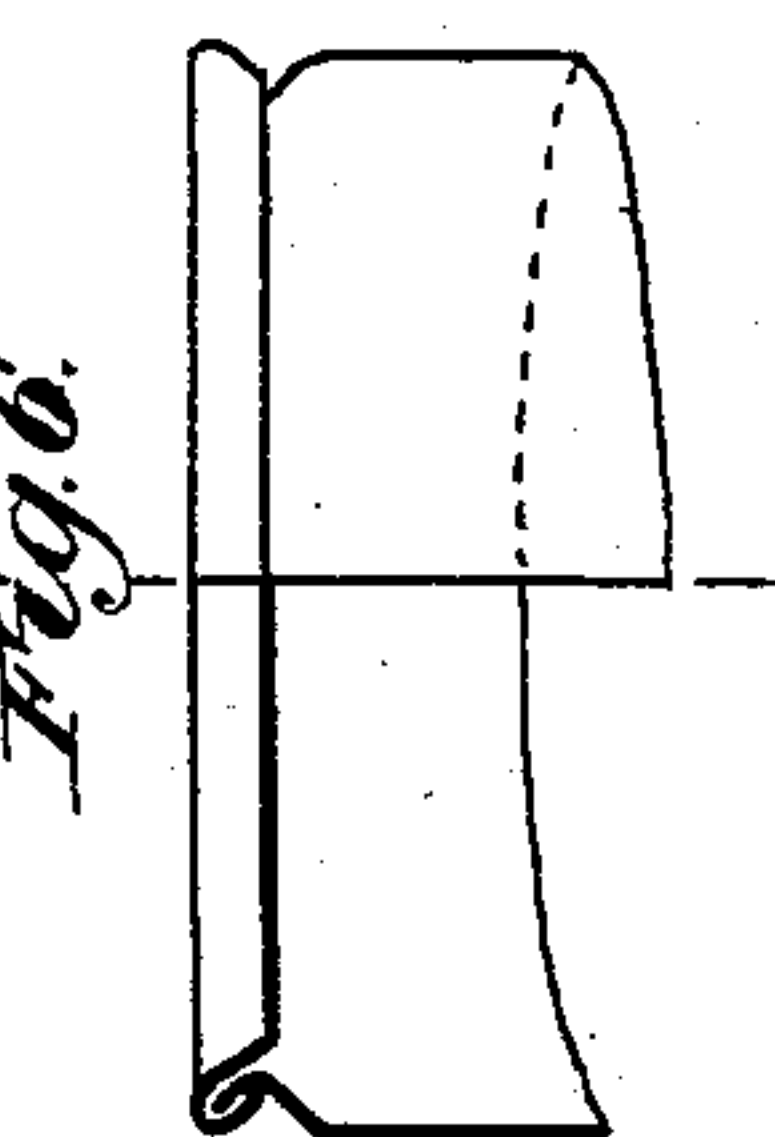
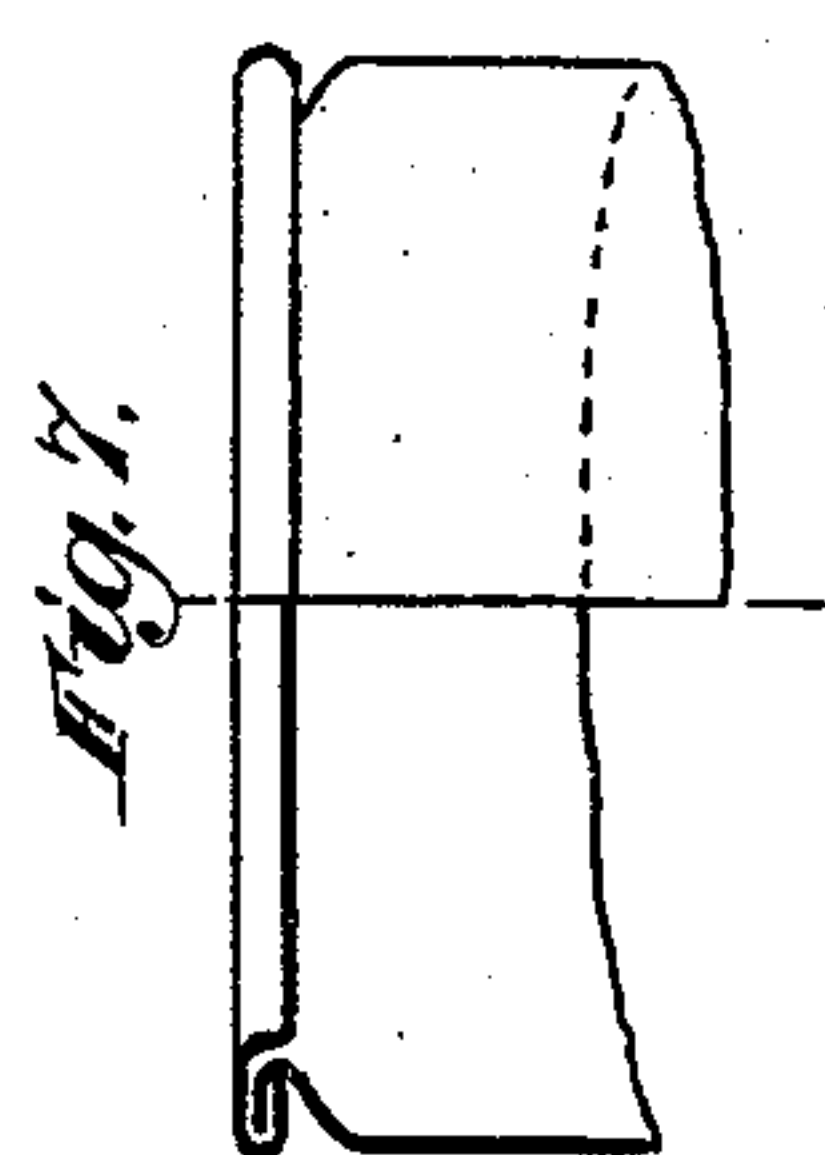
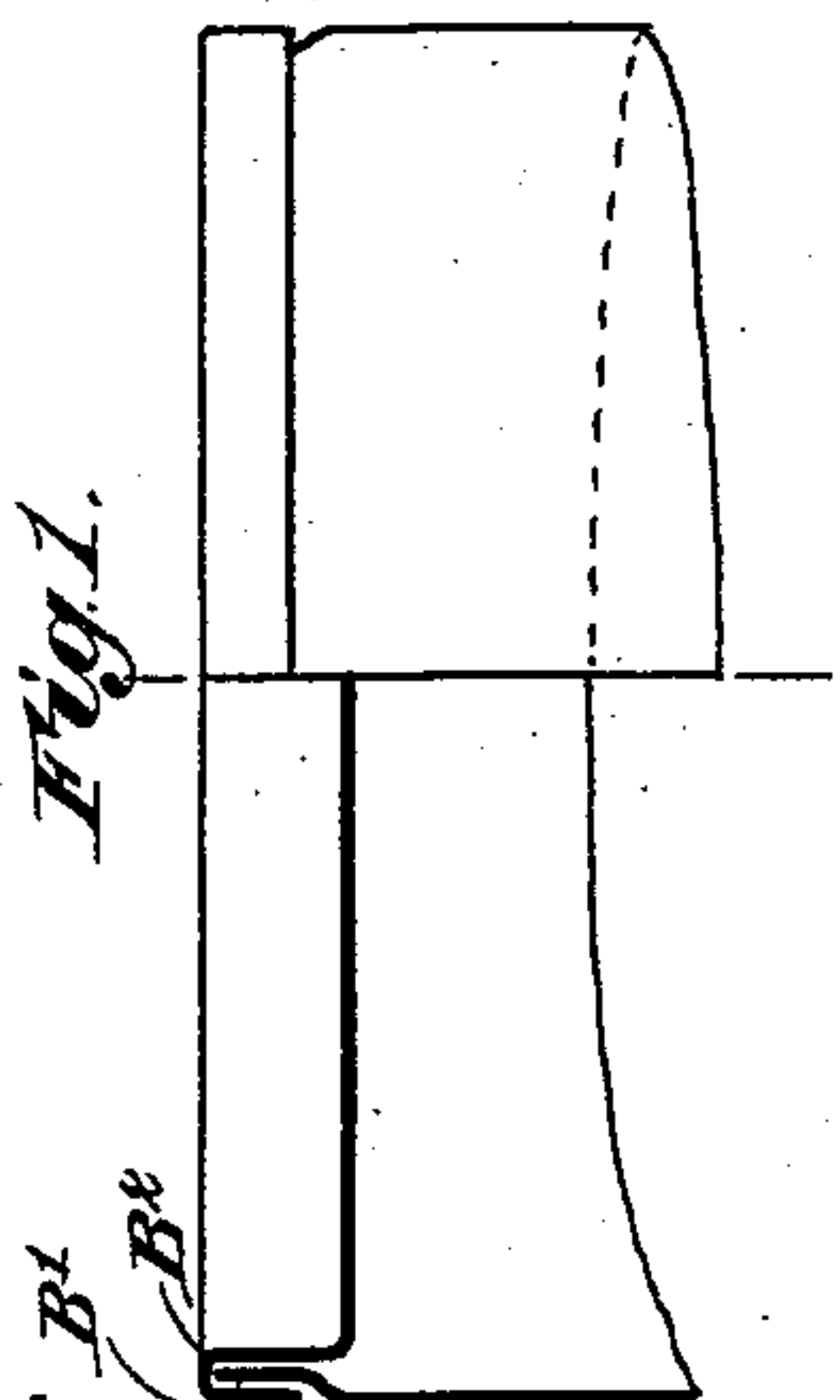
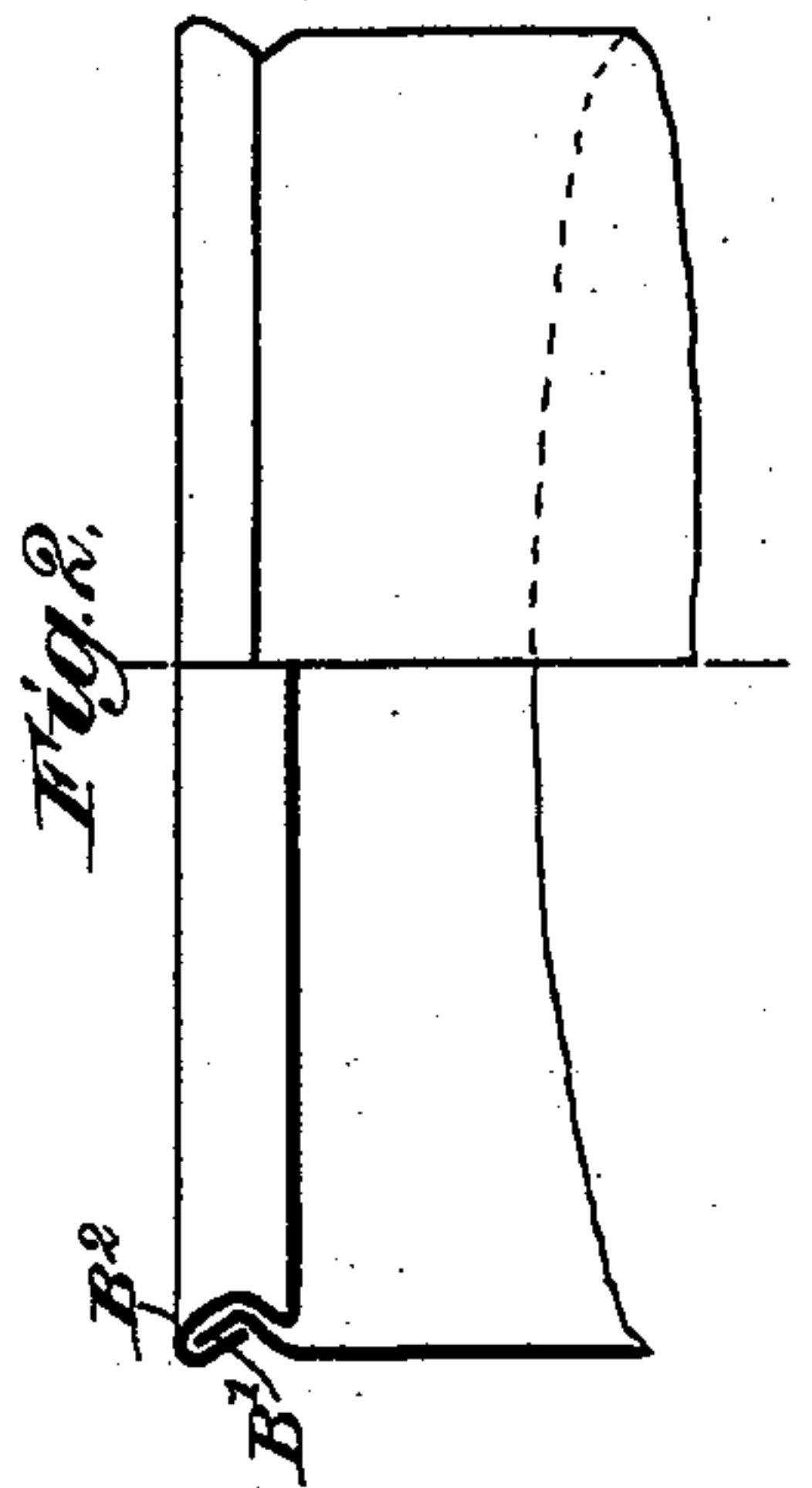
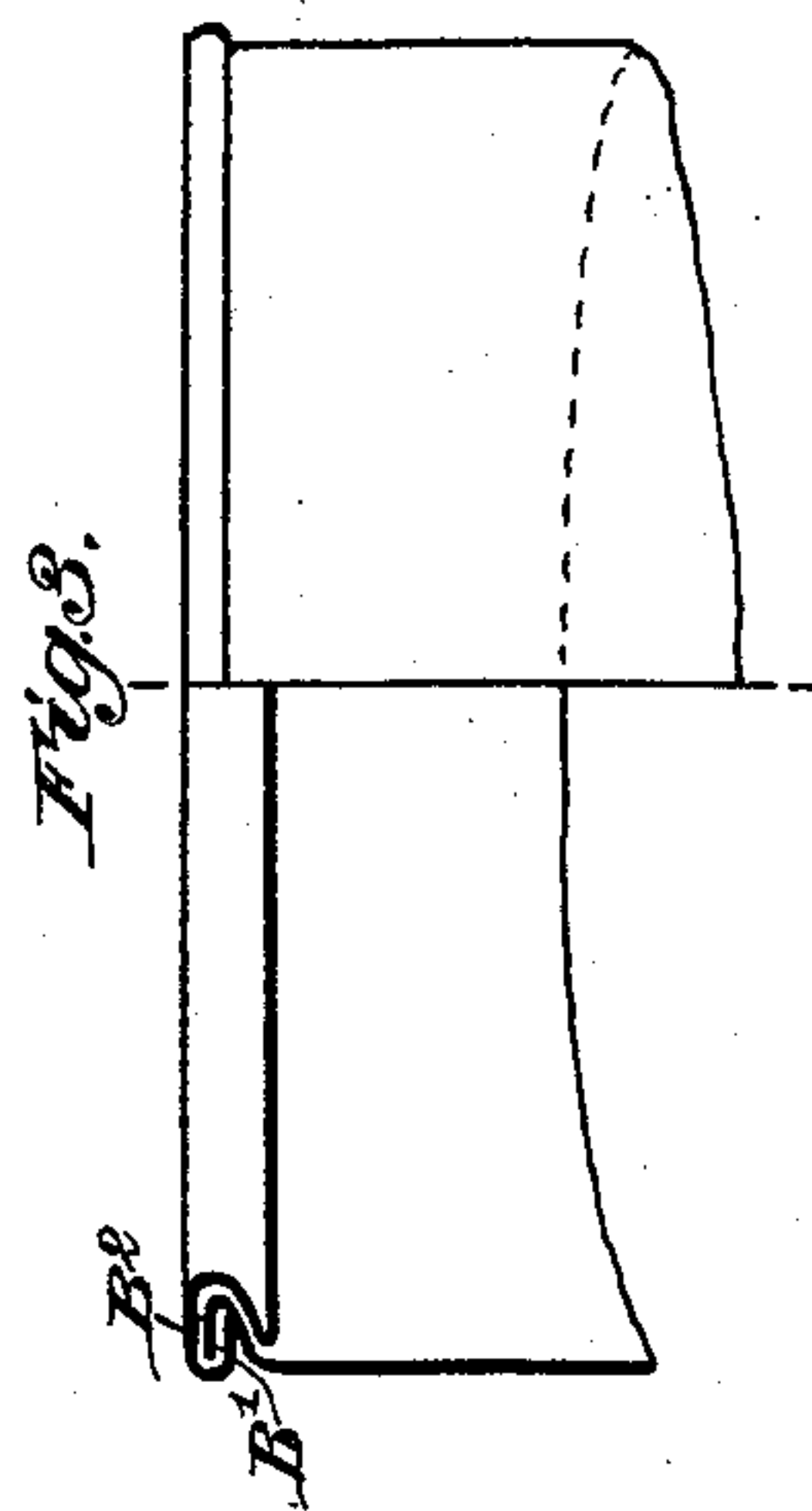
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O. ASCHE.

MECHANISM FOR CLOSING TOPS AND BOTTOMS OF SHEET METAL CANS.

No. 538,890.

Patented May 7, 1895.



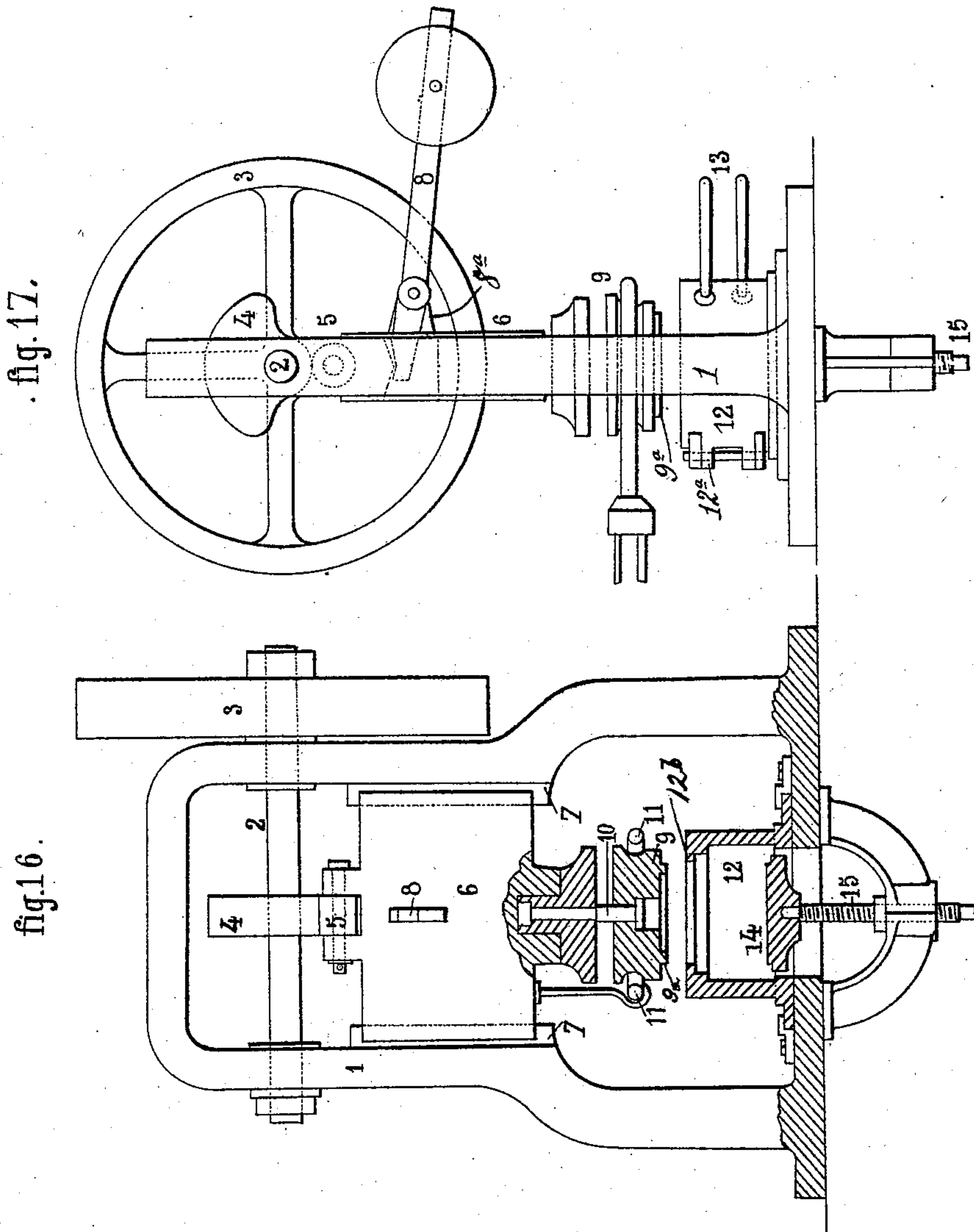
Witnesses,
Wm. J. Jones
G. Delour

Inventor,
Otto Asche

(No Model.)

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Witnesses

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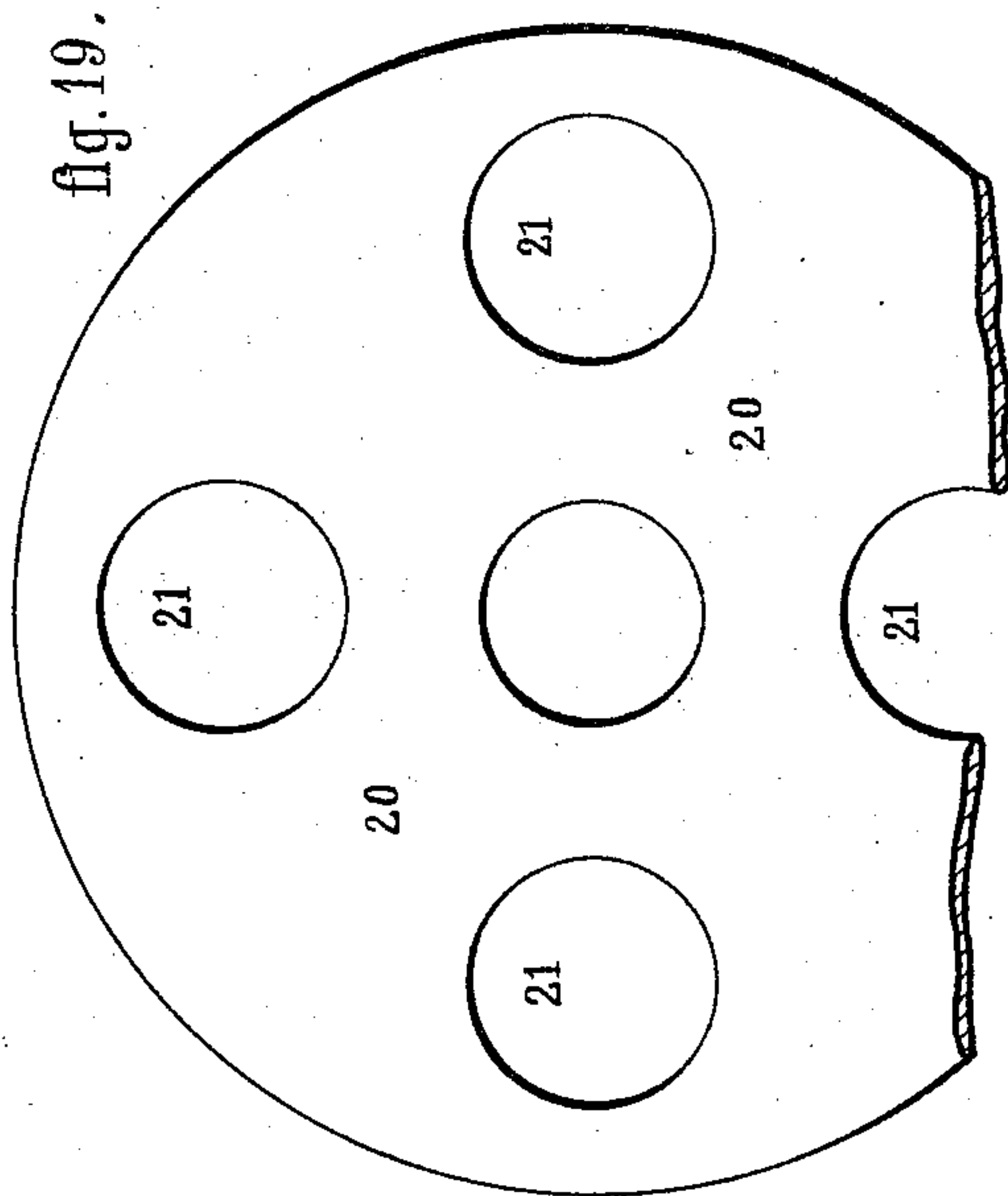
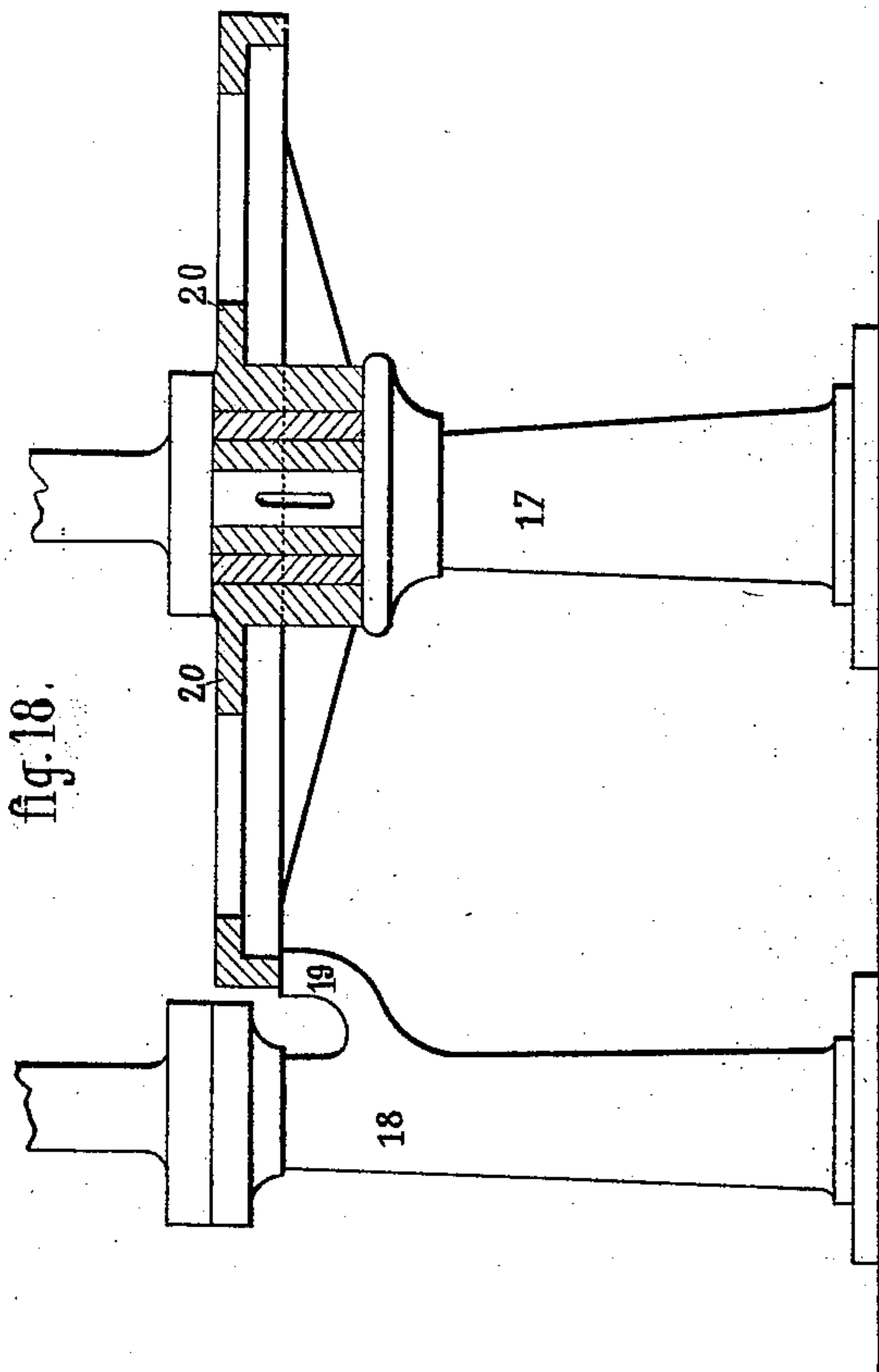
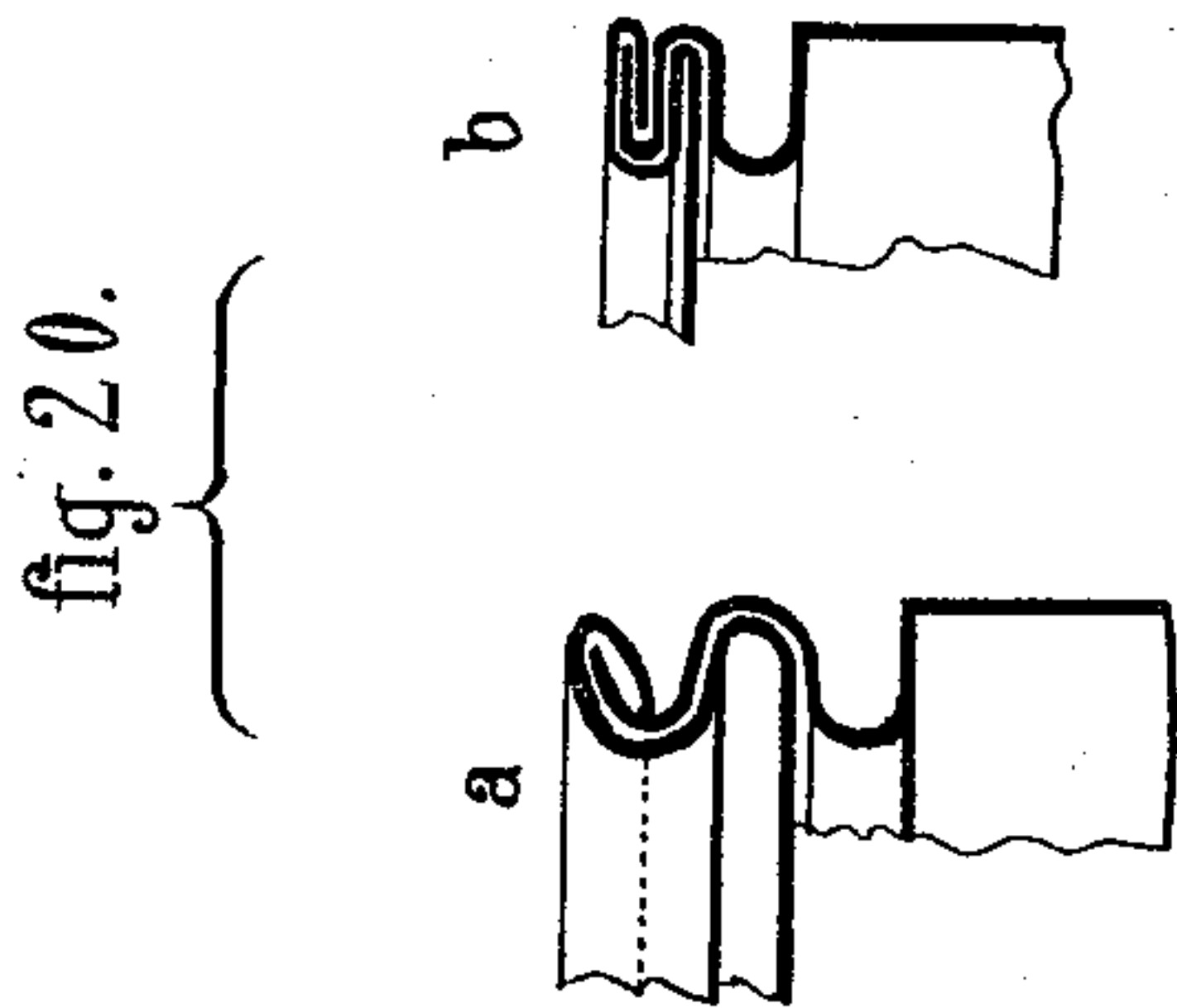
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Witnesses

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Inventor

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(No Model.)

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fig. 22.

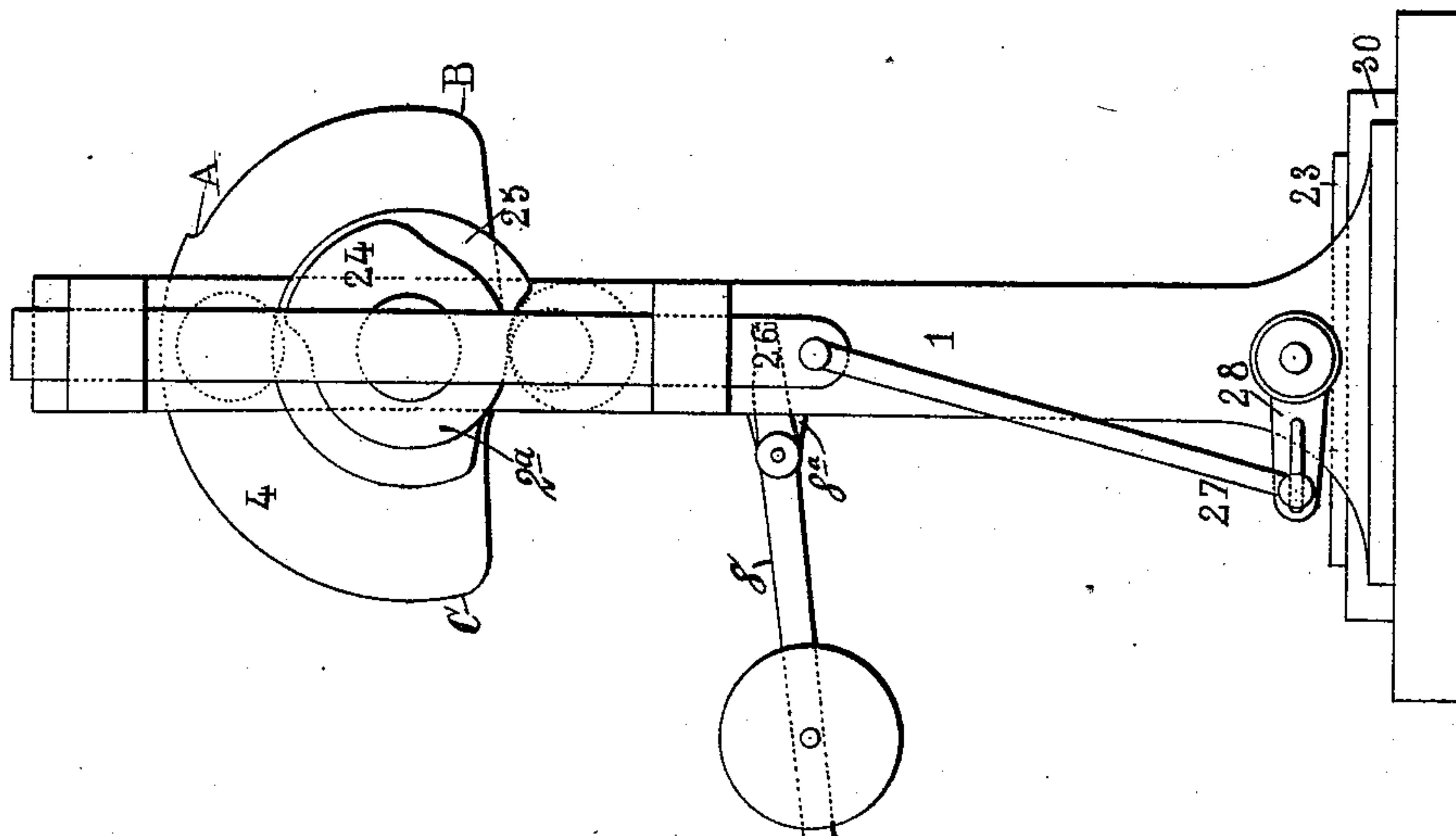
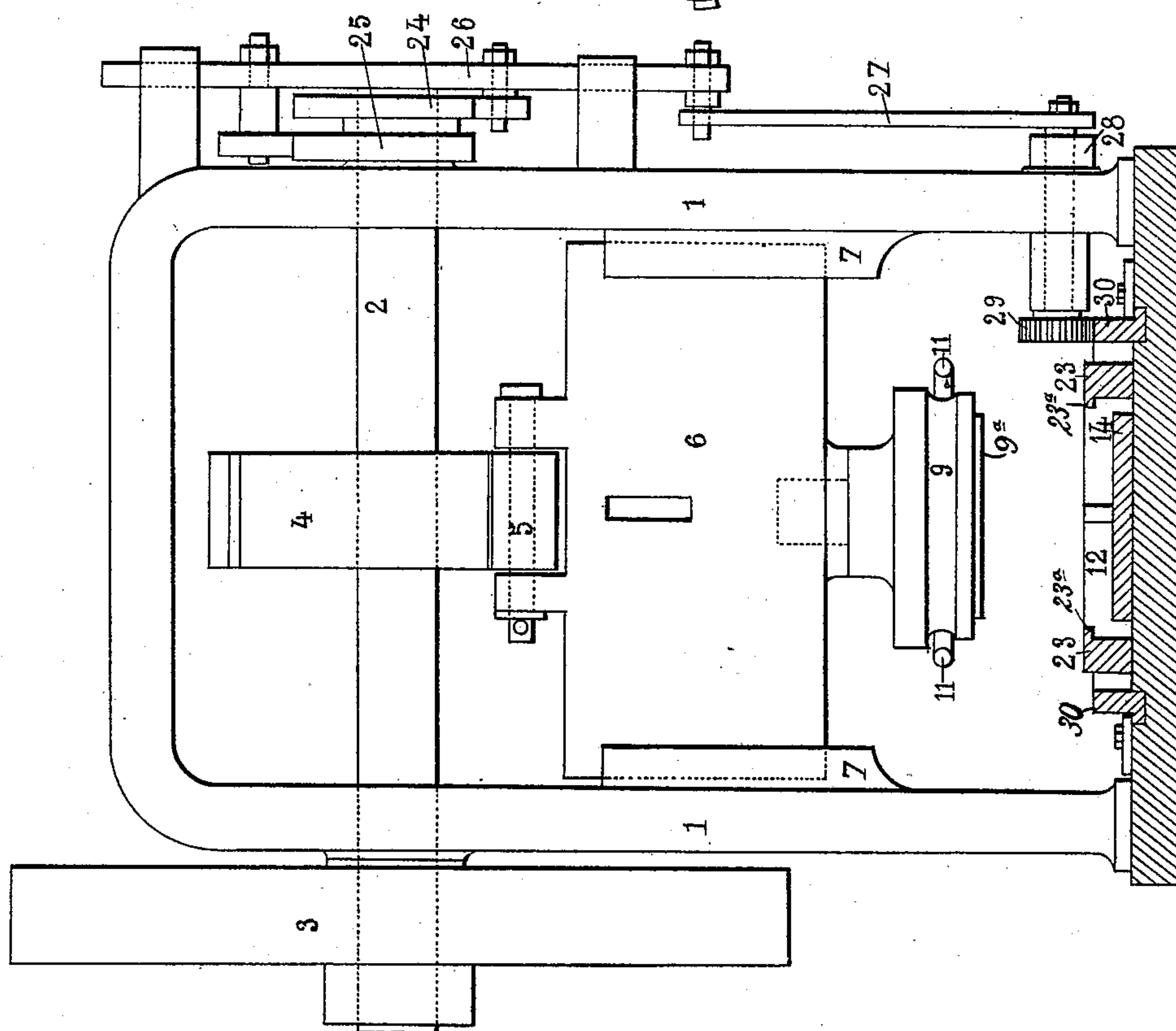


fig. 21.



Witnesses

G. Delom

Inventor

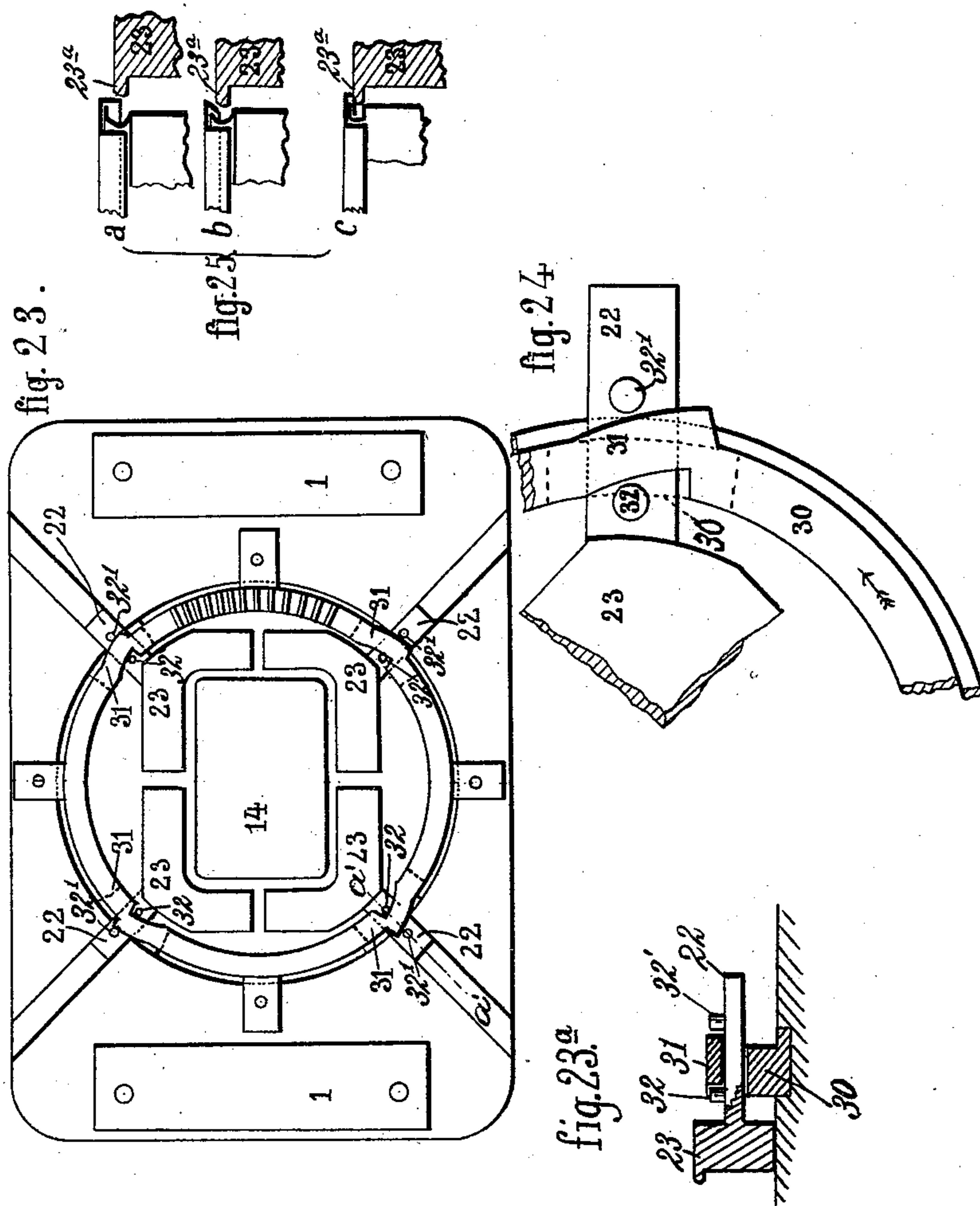
O. Asche

(No Model.)

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Patented May 7, 1895.



Witnesses

Wm. G. Delon

Inventor

O. Asche

UNITED STATES PATENT OFFICE.

OTTO ASCHE, OF PARIS, FRANCE.

MECHANISM FOR CLOSING TOPS AND BOTTOMS OF SHEET-METAL CANS.

SPECIFICATION forming part of Letters Patent No. 538,890, dated May 7, 1895.

Application filed March 5, 1892. Serial No. 423,949. (No model.) Patented in France August 24, 1889, No. 200,394, and August 10, 1891, No. 215,448; in Switzerland February 18, 1892, No. 4,902; in Italy March 5, 1892, XXVI, 31,305; in Belgium March 16, 1892, No. 98,822; in Portugal March 23, 1892, No. 1,666; in Argentine Republic May 27, 1892, No. 1,159; in Germany June 25, 1892, No. 62,752, and October 14, 1892, No. 65,007; in Austria-Hungary August 31, 1892, No. 7,742; in Norway November 23, 1892, No. 2,805; in England December 31, 1892, No. 3,294; in Spain January 2, 1893, No. 13,909; in Canada March 10, 1893, No. 42,245, and in Sweden August 10, 1893, No. 4,551.

To all whom it may concern:

Be it known that I, OTTO ASCHE, a subject of the Emperor of Germany, and a resident of Paris, Republic of France, have invented
5 a new and useful Mechanism for Closing the Tops and Bottoms of Sheet-Metal Cans, (for which Letters Patent have been obtained in France, dated August 24, 1889, No. 200,394, and August 10, 1891, No. 215,448; in Great
10 Britain, No. 3,294, dated December 31, 1892; in Switzerland, No. 4,902, dated February 18, 1892; in Italy, dated March 5, 1892, R. 31,305, Vol. XXVI; in Portugal, dated March 23, 1892, No. 1,666; in Spain, dated January 2,
15 1893, No. 13,909; in Belgium, dated March 16, 1892, No. 98,822; in Canada, dated March 10, 1893, No. 42,245; in Argentine Republic, dated May 27, 1892, No. 1,159; in Germany, No. 62,752, dated June 25, 1892, and No. 65,007, dated
20 October 14, 1892; in Austria-Hungary, No. 7,742, dated August 31, 1892; in Sweden, No. 4,551, dated August 10, 1893, and in Norway, No. 2,805, dated November 23, 1892,) of which the following is a specification.

25 My invention relates to mechanism for closing the tops and bottoms of sheet-metal cans.

The invention consists, to these ends, in the several novel features of construction and in the new combinations of parts hereinafter
30 fully set forth and then pointed out definitely in the claims concluding this specification.

To enable others skilled in the art to understand and to practice my said invention, I will now proceed to describe the same in detail, reference being had to the accompanying
35 drawings, in which—

Figures 1, 2, and 3 are elevations, partly in section, showing the forms successively imparted to the edge of the can and cover during the operation of sealing the can. Figs.
40 4, 5, 6, and 7 are similar elevations, partly in section, showing, respectively, a modified form of cover and can edge, separately in Figs. 4 and 5 and united in Figs. 6 and 7, the two
45 latter figures also showing the forms imparted to the edges in sealing the can. Figs. 8, 9, 10, and 11 are elevations, partly in section, showing a modified form of can edge used with

a cover substantially similar to that shown in Fig. 4, said cover and can being shown separately in Figs. 8 and 9 and united in Figs. 10
50 and 11, the two latter figures also showing the forms imparted to the edges in sealing the can. Figs. 12, 13, 14, and 15 are elevations, partly in section, showing a further modification
55 of both cover and can edge, said parts being shown separately in Figs. 12 and 13 and united in Figs. 14 and 15, the two latter figures also showing the forms imparted in sealing the can. Figs. 16 and 17 show ar-
60 rangements of mechanism adapted to act upon round or oval boxes in those cases wherein the molding of the bottoms and covers is previously performed by a molding or metal-setting machine of any ordinary type. Figs. 18
65 and 19 are respectively a side elevation and a plan view showing a table having rotary movement and provided with a plurality of collars or circular openings to accomplish the proposed work more rapidly and economi-
70 cally. Fig. 20 is a view in two parts, showing successive forms given to the margin of the can and cover at different stages in the operation of closing the can. Figs. 21 to 23, both
75 inclusive, illustrate an organization of mechanism whereby the operation of setting or forming either the bottom of the box or its cover and the closure of the set or formed parts are all accomplished by a single stroke. Fig. 23^a is a sectional view taken upon the
80 line *a' a'*, Fig. 23. Fig. 24 is a view of the cam-annulus shown in Fig. 23. Fig. 25 is a view in three parts, showing the result of each successive action of the shaping device upon the edge of one of the modified forms of the cover. 85

In Figs. 1 to 15, inclusive, the box and cover, either together or separately, are shown, in each figure, in section and in side elevation, the left-hand portion of the figure being in section and the right-hand part in elevation. 90 These two parts are separated, in each figure, by a vertical line which extends somewhat above and below the figure, like a section line.

In Figs. 1, 2, and 3 the upper margin of the box is denoted by the letter *B'*, and the rim, 95 or flange, of the cover by the letter *B*².

In carrying my invention into practice, I usually stamp the edges of the body of the box, or mold the same, substantially in accordance with one of the configurations shown in Figs. 1, 5, 9, or 13. Upon the body of the box is placed a bottom and a cover, or top, each molded throughout its edge, or periphery, substantially in accordance with the outline seen in Figs. 1, 4, 8 or 12. By the aid of special mechanism, the closure of the box is then effected at all points of the molded edge simultaneously, and upon the corresponding portions of the box-body, giving said parts the form seen in Figs. 2, 6, 10 or 14. The sealed, or closed portions are then smoothed by a presser-head operated automatically by the machine presently to be described. The operation, thus terminated, leaves the parts in the form substantially shown in section in Figs. 3, 7, 11, or 15, according to the particular form of dies employed.

The invention is applicable to boxes which are either round, or in which the form is practically or nearly rectangular, as the case may be, and in which the engaging parts of the box-bottom and of the cover have been previously formed by an ordinary metal stamping machine.

In both the arrangements referred to, viz: in organizations acting upon round, as well as those used upon oval boxes, the presser-head finishes and perfects the clasp engagement, or molded connection of the parts, and forms a smooth surface thereon, leaving the molded and closed joint with a workmanlike appearance, exteriorly.

Referring to the drawings, the reference-numeral 1 indicates the vertical parts of the machine frame, which serve to support the operative devices. In its upper part is arranged a shaft 2, having a fly-pulley 3 and a cam 4, which reciprocates, at each revolution, the cross-head 6. The form of the cam 4 is such that at each full revolution of the shaft 2, it produces a rapid rise of the cross-head 6, which carries the presser-head 9, said cam having a portion of its face concentric with its axis of revolution, by which the presser-head is held after descent, at its lowest point of movement, during half, or nearly half of a complete revolution of the shaft, during which time it ought to rest upon the edge, or margin, of the cover. The duration of its period of rest is determined by the speed of revolution of the shaft. During this time it is in close contact with the part upon which it rests.

During the operation, the box is held in a collar, or flange, of a shell 12, within which is arranged a head 14, which enters the body of the box and holds it at the required height in order that the collar, or flange, shall be pressed into the narrow part, or neck, which is best seen in the part *a*, of Fig. 20. The regulating screw 15 serves to force the head 14 into the proper position. The projecting handles 13 serve to close the collar of the shell.

The rise of the presser-head is effected by means of a counterpoised lever 8, which is shown in Figs. 17 and 22 of the drawings, but omitted in Fig. 21, said lever being fulcrumed on brackets 8^a mounted on the vertical parts 1 of the machine-frame. I may, however, substitute for the counterpoised lever any other equivalent device which will accomplish the same purpose.

The presser-head 9 is provided with a gas-pipe 11, which surrounds it, as seen in Figs. 16 and 17. In operation, the can is placed with its end upon the head 14, and its body-portion within the collar, the two parts of which turn upon a hinge, or pivotal joint 12^a (Fig. 17). When properly arranged the presser-head is caused to descend, pressing and smoothing in its descent, the prepared, or stamped margin, formed for example, as shown in Fig. 20, parts *a*, and *b*, or of any other suitable form. The presser-head rests for a suitable length of time upon the marginal surface, which is smoothed and given a finished appearance thereby. It then rises and at the same moment the collar is opened quickly and the box is removed to make place for another.

Figs. 18 and 19 of the drawings represent an organization consisting of a revoluble table 20, carried by a vertical column 17 and provided with a series of collars, or circular openings 21. The exterior edge, or periphery of the table, with or without a flange, rests for support upon a shoulder 19 on an adjacent column 18. As shown in said figures, the arrangement does not comprise the forming devices, or the presser-head and its actuating mechanism, shown in other figures. Substantially similar devices will, however, be used in connection with said parts, the purpose of the latter being simply to enable the work to be more rapidly performed.

Figs. 21, 22 and 23 of the drawings represent a further organization of the same machine especially arranged for the sealing of the boxes presenting forms other than circular, or cylindrical. The parts correspond, so far as they bear the same reference numerals and letters with those already explained in the preceding portion of this specification, and the functions they discharge are also the same. One peculiarity of this construction consists in a mechanism of special form, which forms, sets the border, or marginal portion of the box-body, and smooths, or finishes, the formed portion immediately after such formation. This mechanism comprises a series of cams and levers 24, 25, 26, 27, and 28, by which a toothed wheel 29 receives an oscillatory motion, whereby movement alternately in opposite directions is imparted to a circular rail 30, upon which are formed, or mounted, four inclined faces, or cam-edges 31, which act upon friction-rolls 32 and 32' mounted upon arms 22 of the jaws 23, one upon each side of the circular rail 30, whereby the four jaws 23 are caused to advance and recede toward and

from a central point. These jaws effect the formation of the marginal portions of either the box-cover, or box-bottom, as the case may be, the manner of formation being substantially that illustrated in Fig. 25, parts *a*, and *b*. After this operation is completed, the said jaws lie beneath and support the margin during the pressure of the presser-head 9, by which the molded form given to the margin is finished, in the manner shown in Fig. 25, part *c*. After placing the box-body, with its bottom attached, upon the head 14, the machine is started, and the cam 4, revolves, carrying with it the presser-head which is pressed down upon the margin to be formed. The concentric, or holding face of the cam 4 is cut between two radii drawn from the axis of the cam-shaft, the angle formed by said radii being proportioned to the length of time the presser-head 9 is to be held upon the molded margin. This holding face of the cam I preferably divide into two parts, A—B and A—C, the first part A—B giving a comparatively light pressure to the parts to be formed. The purpose of this operation is to prevent the box-bottom from rising and escaping from its position during the advancement of the automatically operating jaws 23, which turn the edge substantially into the form shown by part *b*, of Fig. 25. The advance of these jaws takes place during the period occupied by the cam face A—B, in passing over the friction roll 5, against which the cam exerts its pressure. The second concentric portion of the cam 4 effects the sealing, and the flattening and smoothing of the molded, or set margin, this being done by the presser-head 9, substantially as shown in part *c*, of Fig. 25. It will be noticed that these jaws are arranged symmetrically as shown in Fig. 23, around a head 14 which, in all substantial respects, is like the head 14 in Fig. 16, the chief difference being that the said part in the figure last named is circular, and in Fig. 23, said part is square, or rectangular, or substantially so. In all respects, save in the addition of these jaws and their actuating mechanism, and in the absence of the regulating screw 15, shown in Figs. 16 and 17, the parts are not materially different, in construction or function, from those shown in the other figures of the drawings.

The operation of the machine is practically identical, whether the boxes are filled, or empty. In each of the forms shown, the presser-head 9, is provided with a rib 9^a, adapted to enter the collar and assist in the stamping and forming of the marginal parts of the box and box-end.

It will readily be seen that the collar, or flange 12^b of the two-part shell 12, discharges the same functions accomplished by the jaws 23, and in substantially the same manner, the operation upon the marginal parts of the can body and end being the same in all essential respects. The two parts of the shell 12, pro-

vided with lips 12^b, are thus equivalents for the series of movable jaws 23, each having a lip, or flange 23^a, (Fig. 25.)

Referring to Fig. 23^a, it will be noted that the arms 22, pass between the rail 30 and the cam-edges 31, the latter overhanging said arms. The space in which said arms lie is sufficiently extended to permit the movement of the rail required for the operation of the jaws 23.

Fig. 24 is a detail plan view, representing a portion of one of the jaws 23, with its arm 22 and the cam-edges 31 which act upon the friction rolls 32, 32', on the arm 22.

Fig. 25 merely shows a part of one of the jaws 23 at successive stages in the operation, to illustrate the manner in which said jaw acts upon the edges of the can and its cover.

What I claim is—

1. The combination with separable jaws having lips, or flanges, of a head provided with a channel adapted to receive said lips, a presser-head having a rib adapted to enter between the flanges of the said jaws, and a cam for reciprocating said presser-head and having two concentric holding, or pressure-maintaining surfaces, one of which is struck upon a greater radius than the other, substantially as described.

2. The combination with a head of suitable form, of a plurality of movable jaws having upon their interior edges suitably formed lips which are provided with a contour similar to that of the head, a circular rail surrounding the jaws and having at points corresponding in number with the number of jaws, a series of inner and outer cam-edges, which engage friction rolls mounted upon arms, or bars, forming rigid parts of the jaws, one adjacent to the inside and the other to the outside of each cam-edge upon the circular rail, and means for giving circular movement to said rail, substantially as described.

3. The combination with a head adapted to support the end of a sheet metal can, of a series of movable jaws having lips adjacent to the head and corresponding in form, or contour, with the latter, a series of arms, one upon each jaw, having with the jaws a movement toward and from the common center of the head, a circular rail surrounding the jaws and provided with cam-edges lying between friction-rolls upon the arms of the jaws, means for imparting circular movement to said rail, a presser-head adapted to rise and fall and having a flange to rest upon the head, at or near its periphery, and means for imparting vertical movement to said presser-head, substantially as described.

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

OTTO ASCHE.

Witnesses:

ROBT. M. HOOPER,
W. JOUE.