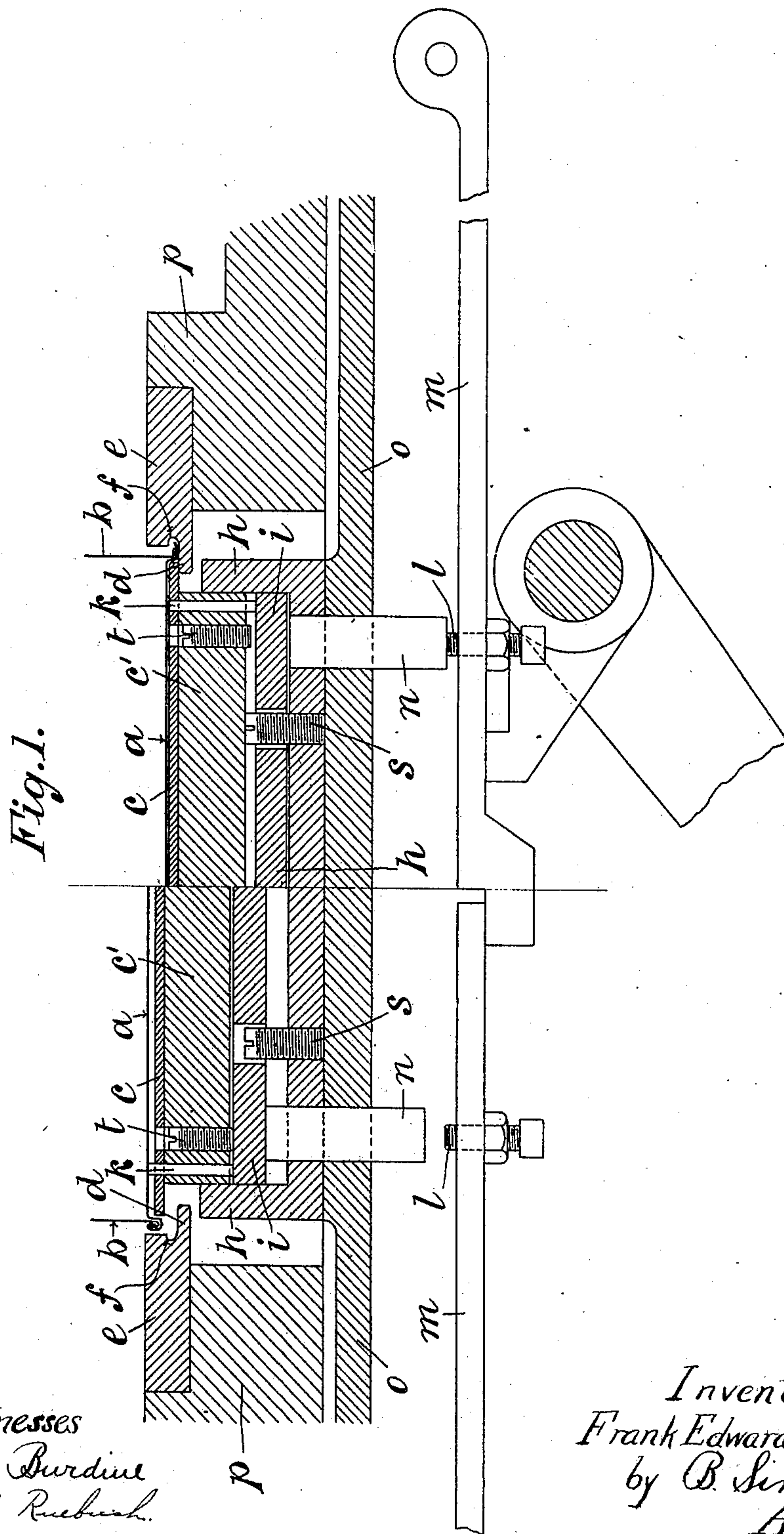


F. E. ADAMS.
MACHINE FOR JOINING OR SEAMING THE EDGES OF SHEET METAL PLATES.
APPLICATION FILED MAY 14, 1909.

995,649.

Patented June 20, 1911.

2 SHEETS—SHEET 1.



Witnesses
D. E. Burdine
M. E. Ruebush.

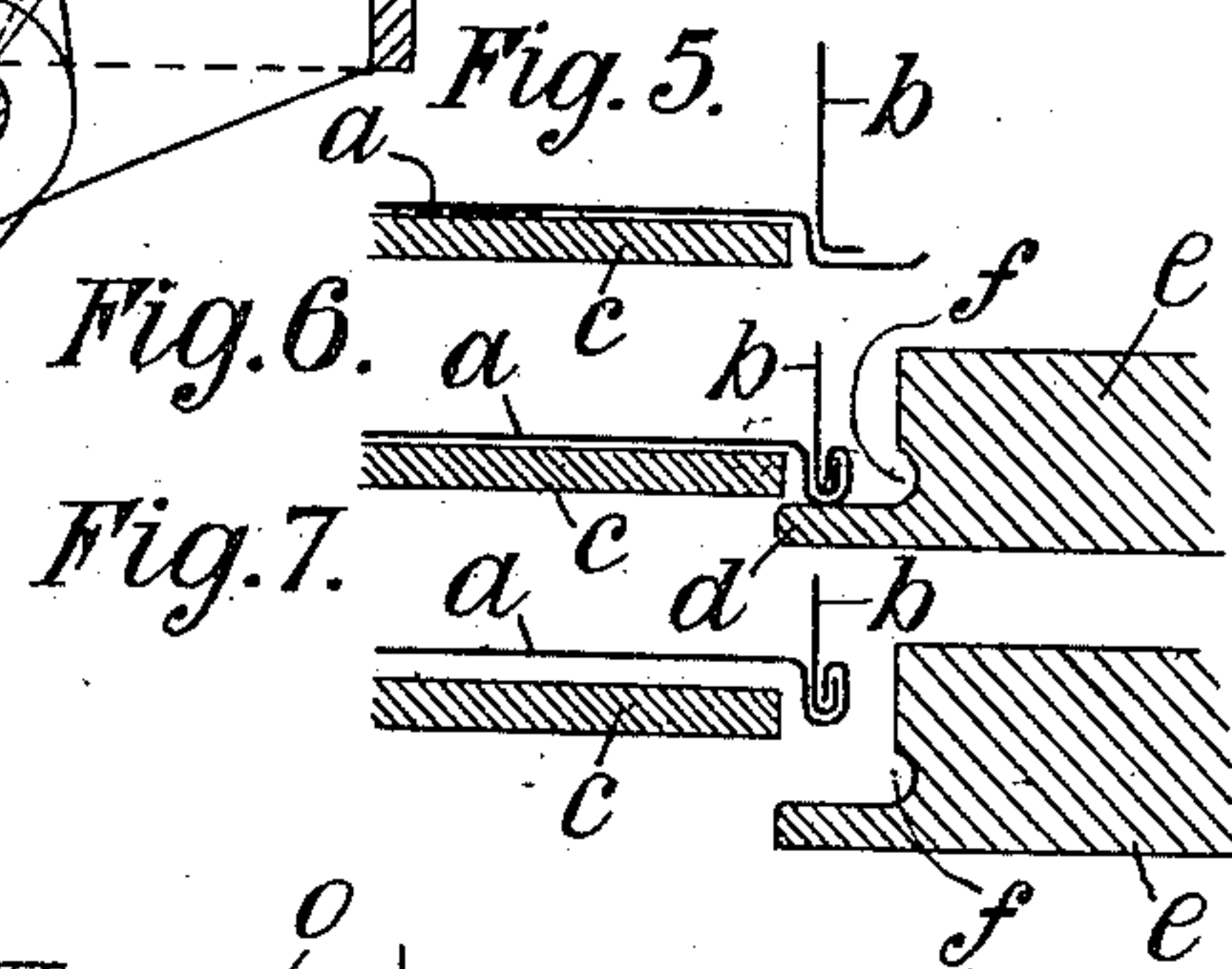
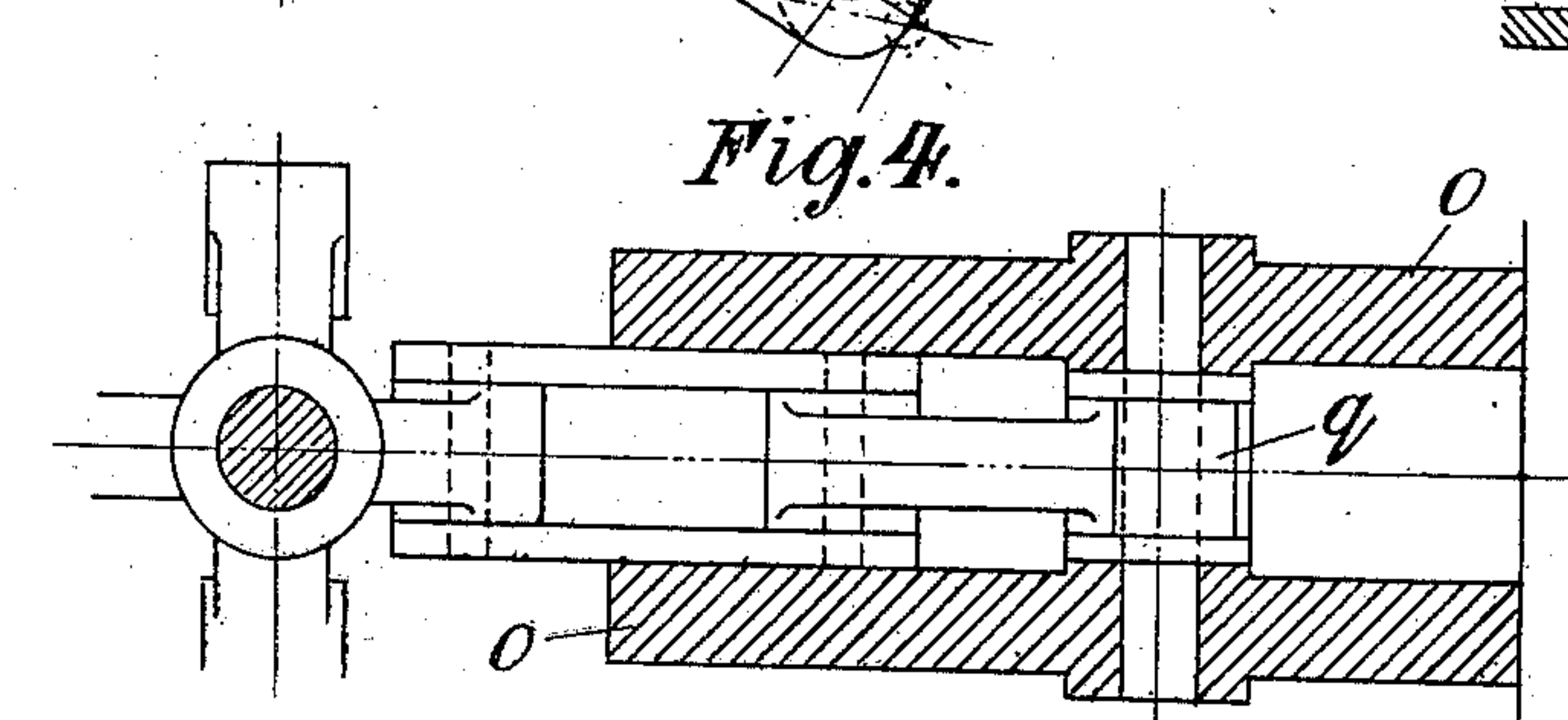
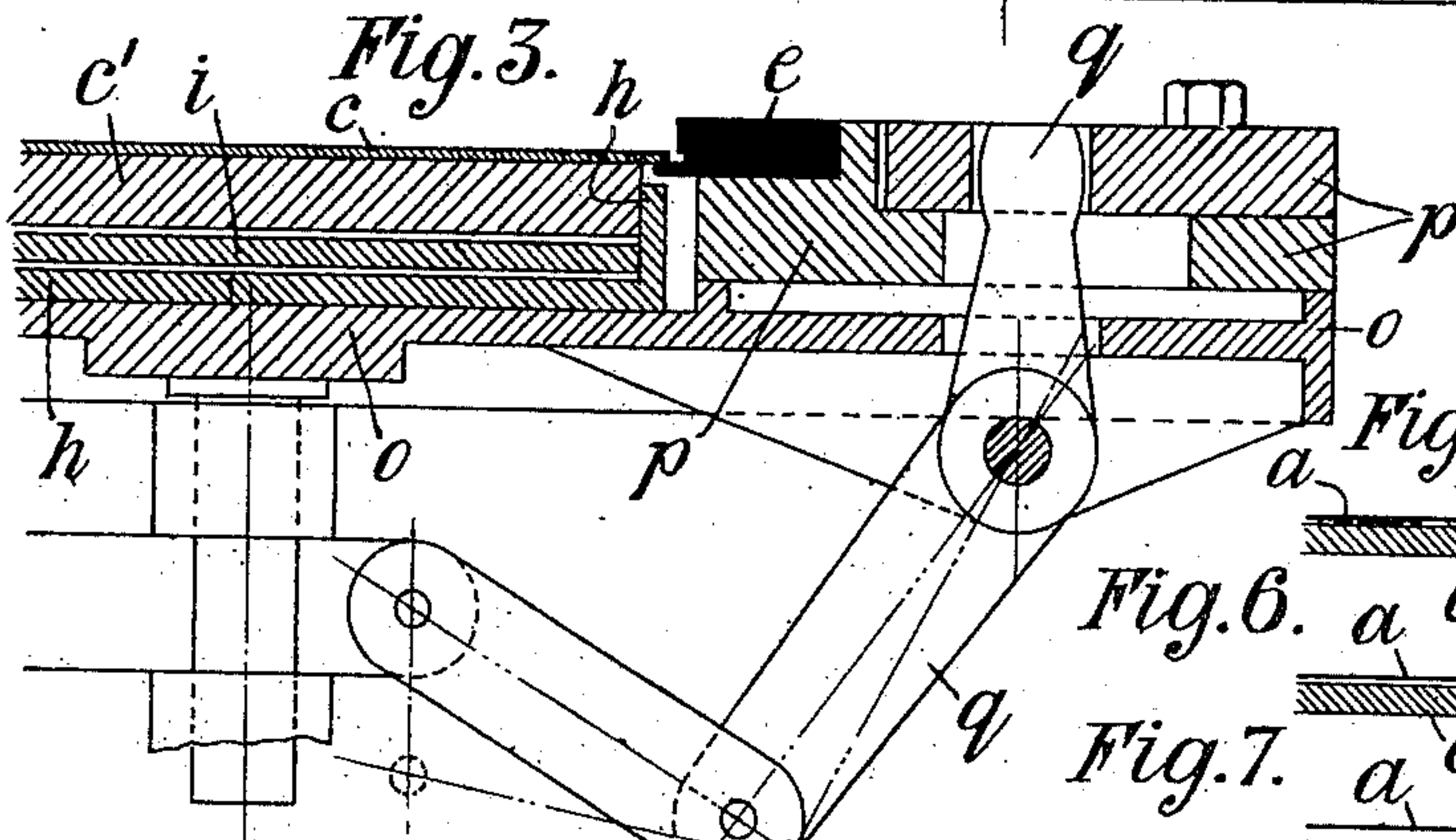
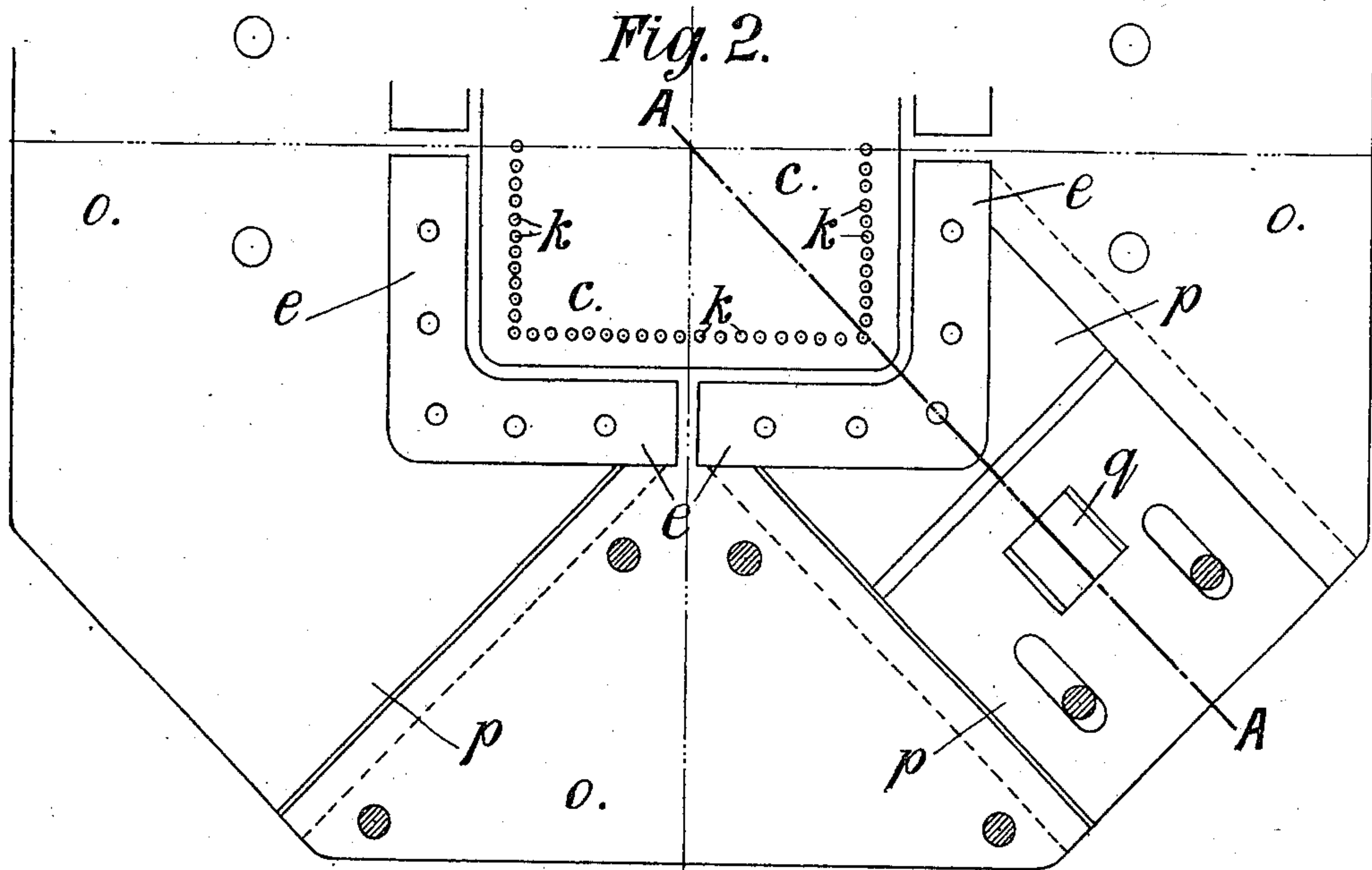
Inventor,
Frank Edward Adams,
by B. Singer,
Atty.

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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

FRANK EDWARD ADAMS, OF WALLASEY, ENGLAND.

MACHINE FOR JOINING OR SEAMING THE EDGES OF SHEET-METAL PLATES.

995,649.

Specification of Letters Patent. Patented June 20, 1911.

Application filed May 14, 1909. Serial No. 496,032.

To all whom it may concern:

Be it known that I, FRANK EDWARD ADAMS, a subject of the King of England, residing at Wallasey, in the county of Chester, England, have invented certain new and useful improvements in or connected with machines for joining or seaming the edges of sheet-metal plates for or in the manufacture of cans or boxes, of which the following is a specification, reference being made to the accompanying drawing.

This invention has reference to the fastening together of the edges of metal sheets or plates, constituting the portions of sheet metal cans or boxes, such, for instance, as the bottom or top, and the sides, of a can or box in the general form of a poly-sided figure, that is, one having four or other number of sides; and it refers particularly to that kind of fastening which is known as "double seaming," in which the edge of one plate, say the bottom or top, is pressed or wrapped over an edge—generally a rectangular flange, on the side or body, and prior to the two being pressed down flush and parallel with the said side or body.

The object and effect of the present invention is to provide improved means whereby the seaming and fastening shall be entirely satisfactory, always, and under all conditions, and this is accomplished by a machine of the character referred to, in which not only do the seamed or joined portions of cans or boxes receive movement in relation to the plate or part which carries it prior to and during the final squeezing action, but the seam or joint is supported at the back or inner surface during this squeezing action.

The invention will be described in connection with the accompanying drawings, which illustrate a machine for joining or seaming the edges of sheet metal plates, in which the invention hereunder is comprised.

In these drawings, Figure 1 is a cross section showing the carrying or supporting parts on the opposite side of the center line, in its two different positions. Fig. 2 is a plan of the tools; Fig. 3 is a longitudinal

section across the machine taken at the line A A, Fig. 2; and Fig. 4 is a plan and section of the lower parts of the table frame shown in Fig. 3. Fig. 5 shows the position and form of the body and bottom before being operated upon; Fig. 6 shows them after receiving the first operation; Fig. 7 shows the final position of the canister in relation to the tools, in which the final action of the latter takes place.

With regard to the machine illustrated, and the box or canister parts which it is adapted to operate upon, it is to be assumed that the edges of the sheets or parts are those of the bottom (or top) *a*, and the sides *b*, of a can or box, the general form of the body of which is that of a four sided figure, the four edges of which are to be joined and seamed up simultaneously in the machine by four tools; while the tools of the machine are of the kind which have a lip which projects beyond the normal face of the tool. And it is to be assumed that the edge of the body part *b* is already flanged outward in the usual way, as shown, and the end *a* has a short vertical up-set parallel portion, which fits just under the lower part of the body.

c is the carrier plate of the machine on which the bottom or end plate of the box rests; and in seaming, this end plate of the body *b* is placed in the usual way in the machine, in which position the upper surface of the projecting lip *d* of the tools *e* is parallel with the under surface of the carrier plate or support *c* (see Fig. 6). The tools *e* are then moved inward and in this action, the outer portion of the flange of the end *a* is curled up by a curved or grooved portion or recess *f* in the face of the tools, above the upper surface of the lip, and over on to the upper side of the can body flange, which is also bent up as shown in Fig. 6.

The relative position between the parts of the can so far partially seamed and fastened together, and their carrier plate or support *c* is then changed; that is, they are moved away from one another, preferably the can parts being raised away from the carrier plate after the tools *e* have receded, whereby

the lower edge of the metal of the can end will be slightly above the lower surface or edge of the support or carrier plate *c*, and then, in this relative position, these parts, namely, the support or carrier *c*, and the can parts, have movement in relation to the tools *e*, so that another part of the face of the tools—*i. e.* that above the groove *f*—will be opposite the partially finished joint or seam, and this part—called the closing part—in the drawings is flat, but it may be grooved. The tools *e* are then again moved toward the can, and press and squeeze and close the folded edges flat and parallel with the sides or body of the can or box, which finishes the seam.

When the tools again recede, the box or can is taken off, and the parts of the carrier or support move to their normal position.

In one arrangement of parts, namely, that shown in the drawings, the carrier or support for the end *a* of the can or box consists of two plates of different widths, the upper plate *c* being of the depth of the parallel portion or up-set of the can end, and overhanging the lower plate *c*¹, to admit of the action and inward movement of the lip *d* of the squeezing tools; and the lower smaller plate *c*¹ is suitably guided in a box or guide *h* within which also there is another plate *i*. Then in connection with these plates there are a series of pins *k* (or the like), whose length is slightly greater than the combined thicknesses of the two plates *c*, *c*¹, and which pass through the two plates, so that the lower movable pad or plate *i*, on which the lower ends of these pins *k* rest, is raised, it lifts the box or can end *a* a short distance above the plate *c* on which it rests; and then, continuing to rise, it lifts the tin, and the plates *c*, *c*¹, until the partially formed seam is opposite the "closing" face of the tools or jaws.

By the bottom *a* being lifted from the plate *c* as described, the lower edge of this plate will be a little below the bottom of the seam (as shown in Fig. 7), and no bur or on the lower part of the seam can get or be pressed under the lower edge of the plate *c*, and so cause the box to stick on it and prevent it being easily removed after the completion of the seaming action.

The lifting plate *i* is raised by pins *l* carried in hinged levers *m* and disposed under depending pins *n* on the plate *i*, and passing through the table *o* of the machine; the levers *m* being adapted to be raised and lowered by a cam or cams or the like in any known way.

The tool slides or carriers *b* slide in guides in the table *o* and the tools *e* are therefore conveniently reciprocated up to, and away from the can edges to be seamed by levers *q*,

carried in the table *o* and worked in any known suitable way.

To enable the pins *k* to fall, and their upper ends to be flush with the upper surface of the plate *c*, after the plate *i* is lowered, pins *s* are fixed in the box *h*, and project through the plate *i*, and hold the plate *c*¹ up and off the plate *i* when in its lower position, as shown on the right hand half of Fig. 1. And adjustable means *t* are provided in the plate *c*¹ to adjust and regulate its position in relation to the plate *i*.

What is claimed is:—

1. In a machine for joining and seaming the edges of sheet metal plates for and in the manufacture of cans and boxes, a carrier support for the work having pins which are movable relatively thereto, and serve to move and support the work a predetermined distance away from and above the support during the operation of the machine.

2. A machine for joining or seaming the edges of sheet metal plates for or in the manufacture of cans or boxes having a carrier support for carrying and supporting the end plate of a box or can, movable pins adapted to be moved relatively to the carrier support supporting means for the carrier support, and means for raising the carrier support relatively to the other parts of the machine, and means for raising the movable pins relatively to and for causing them to project above the upper surface of the carrier; substantially as and for the purposes described.

3. A machine for joining and seaming the edges of sheet metal plates for and in the manufacture of cans and boxes having reciprocating tools provided with seaming and pressing surfaces, means for reciprocating the tools; a carrier support for the end plates and bodies of boxes and cans to be seamed having an upper plate extending beyond the sides of the body of the support, and pins movable relatively to the support; a movable device for supporting the pins in position, a fixed support for the carrier support; and means for moving the movable device for moving the carrier support relatively to the machine and for moving the pins relatively to the carrier support.

4. A machine for joining and seaming the edges of sheet metal plates for and in the manufacture of cans and boxes, having reciprocating tools provided with seaming and pressing surfaces, means for reciprocating tools; a carrier support for the end plates and bodies of boxes or cans to be seamed having an upper plate extending beyond the sides of the body of the support, and pins movable relatively to the support a perforated movable plate for supporting the pins in position; a box guide for the carrier support and plate; adjustable

screws extending through the perforated
plate for supporting the carrier support at
a predetermined distance therefrom; and
means for raising the perforated movable
5 plate and for raising the carrier support and
for moving the pins relatively to the car-
rier support.

In testimony whereof I affix my signature
in presence of two witnesses.

FRANK EDWARD ADAMS.

Witnesses:

SOMERVILLE GOODALL,
DONALD COULTER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
