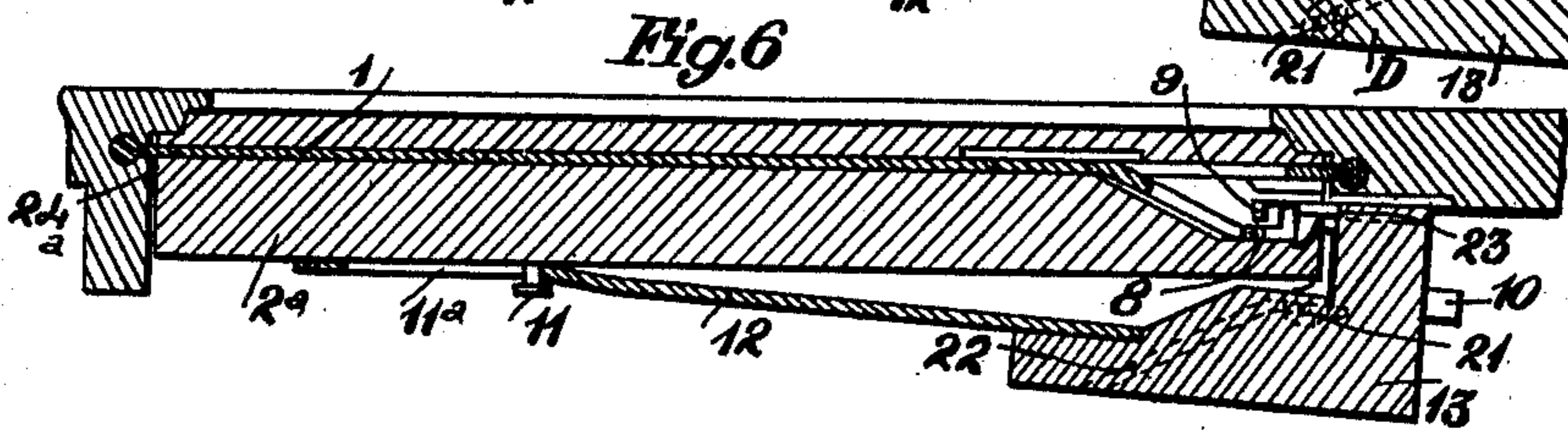
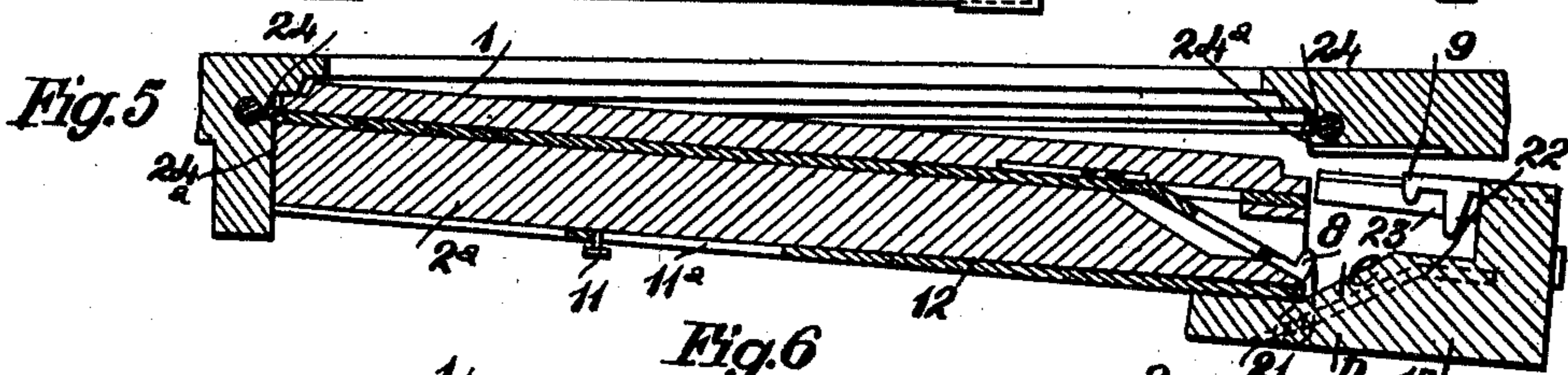
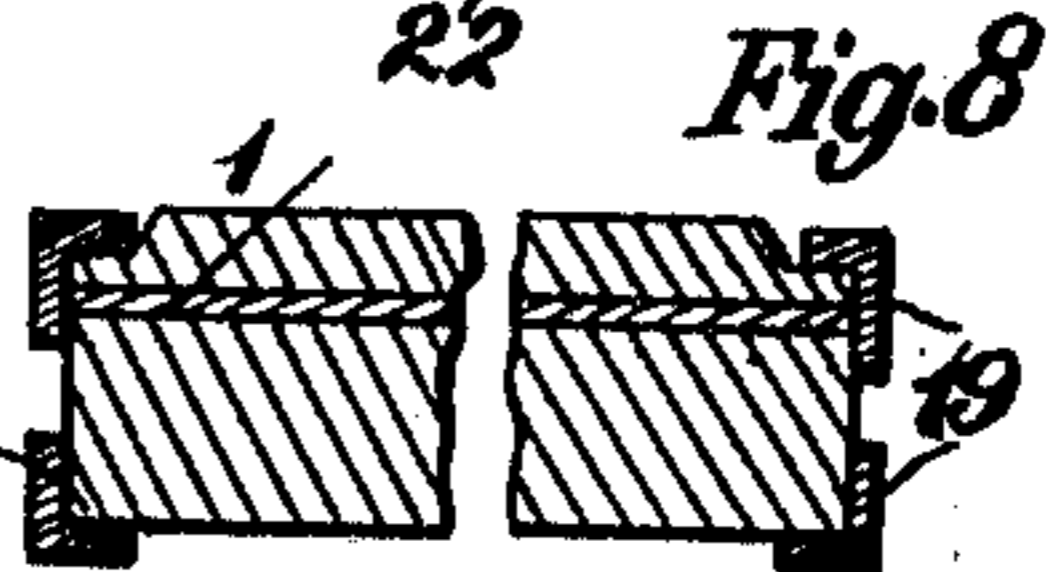
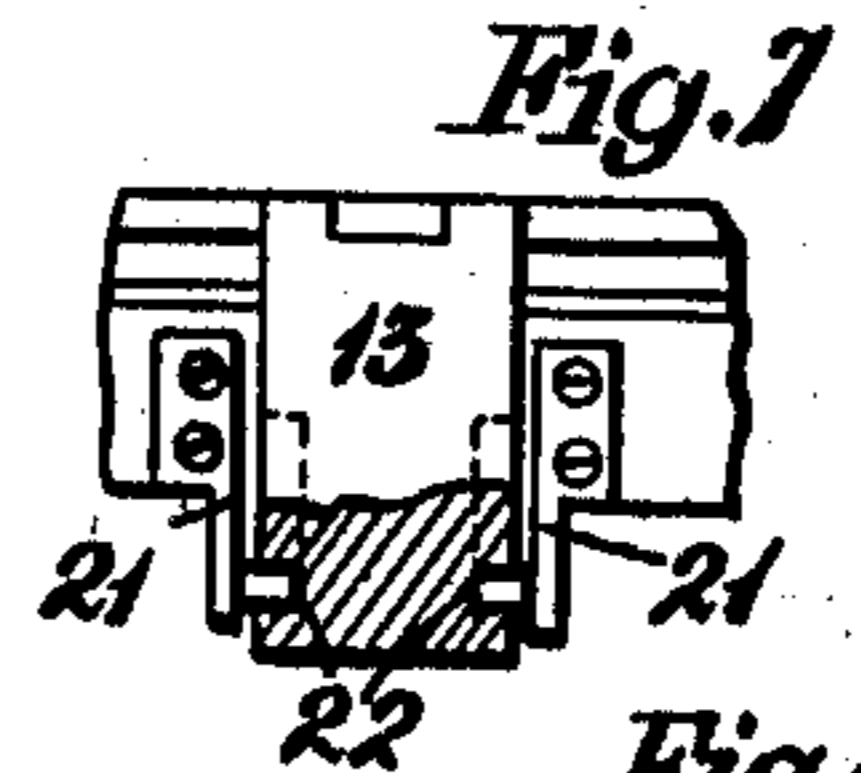
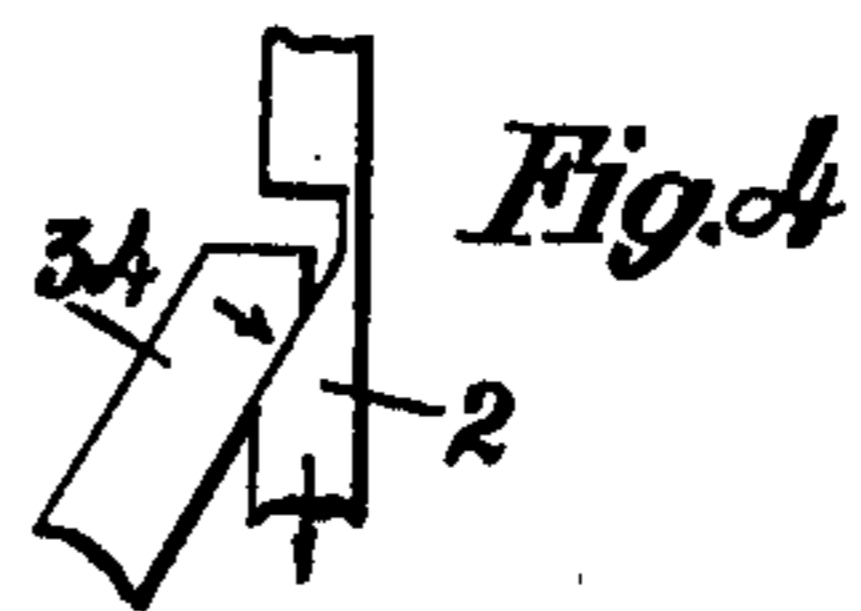
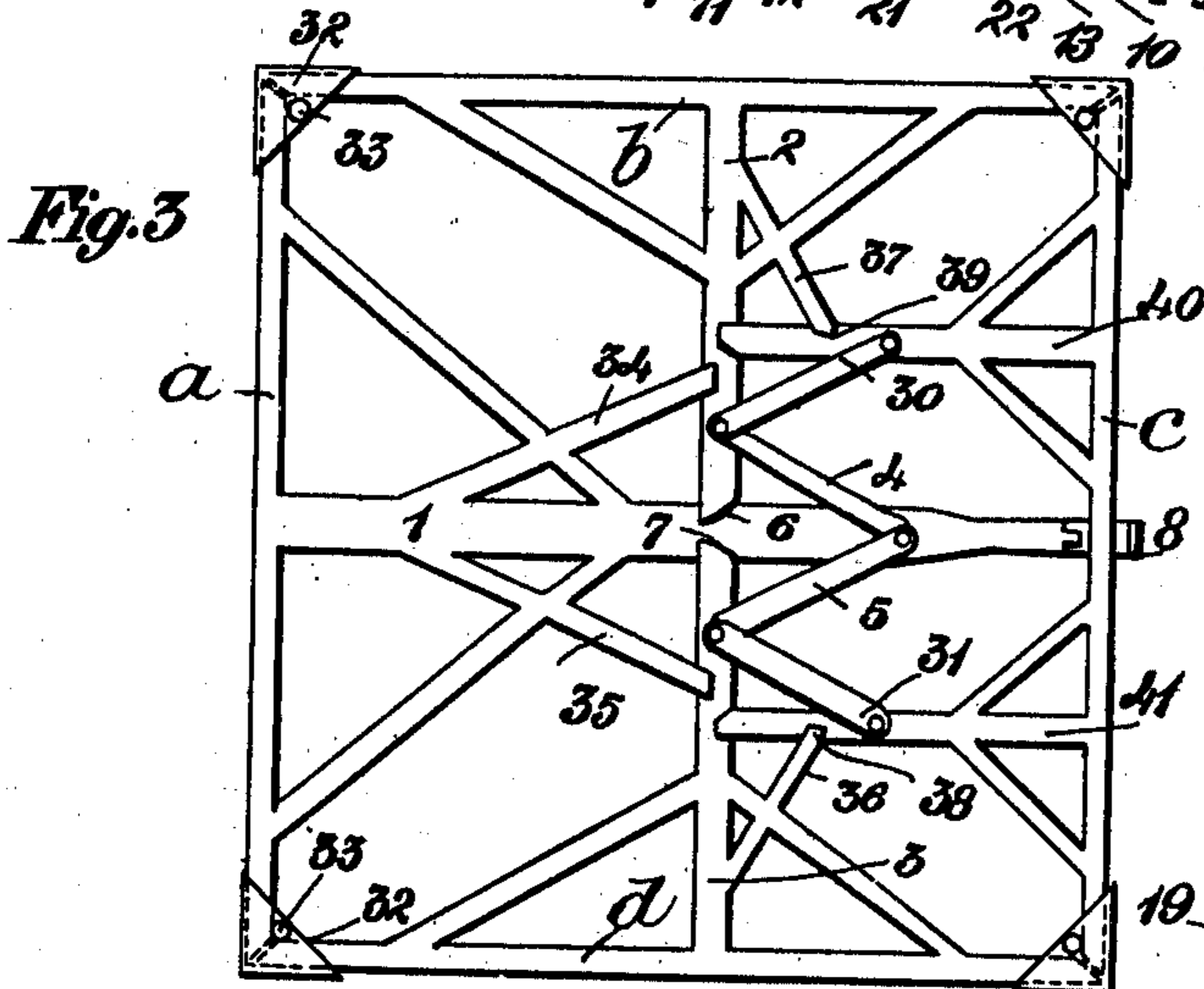
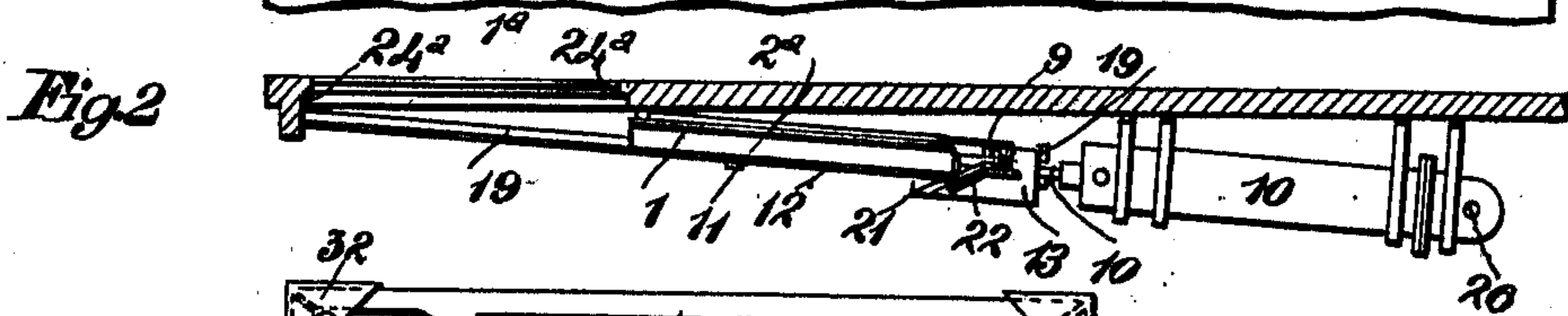
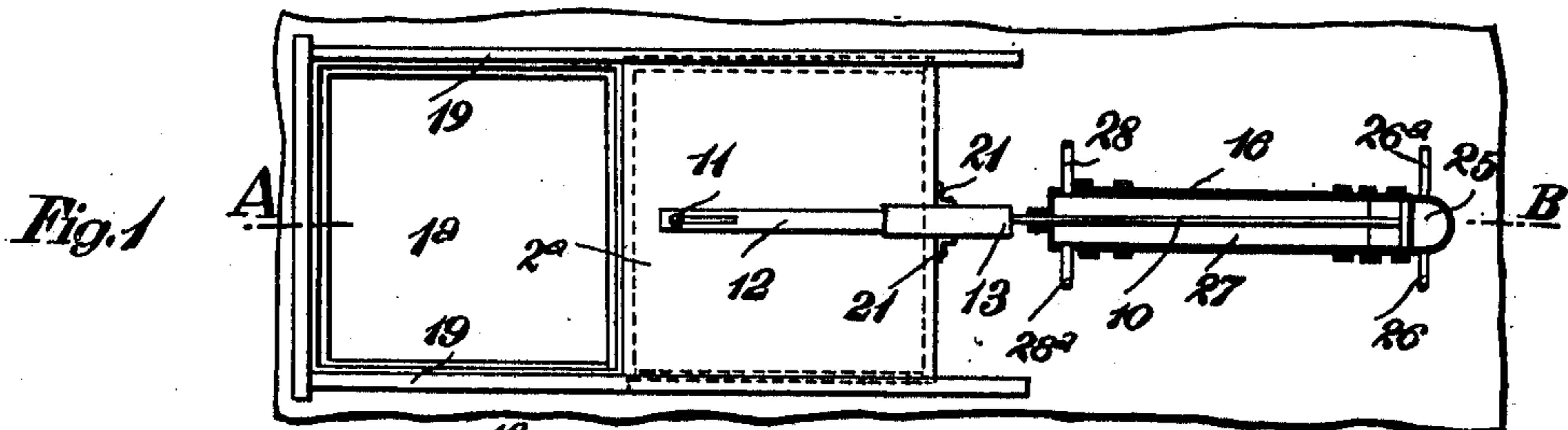


G. MAZZOLINI.
HATCH OPENER.
APPLICATION FILED JUNE 5, 1908.

989,988.

Patented Apr. 18, 1911.



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GIUSEPPE MAZZOLINI, OF ROME, ITALY.

HATCH-OPENER.

989,988.

Specification of Letters Patent.

Patented Apr. 18, 1911.

Application filed June 5, 1908. Serial No. 436,973.

To all whom it may concern:

Be it known that I, GIUSEPPE MAZZOLINI, a subject of the King of Italy, residing at Rome, Italy, gentleman, have invented certain new and useful Improvements in Hatch-Openers, of which the following is a specification.

The object of the present invention is a device for hermetically closing from a distance openings in the walls of ships, such as hatches, doors and windows.

The device includes a closing means intended to cover the opening to be closed and which will hereafter be designated by the general term of panel; this panel which is provided with a frame the movable sides of which can be pressed beyond the edges of the panel and be drawn back within these edges, is combined with a piston adapted to be operated by fluid under pressure, the piston rod of which by its movement in one direction moves the panel before the opening to be closed, then presses this panel against the edges of the opening, and finally acts upon the sides of the frame pushing them beyond the edges of the panel, in order to press them (the sides of the frame) against the walls framing the opening to be closed by the edges of the panel, so as to produce hermetic closing of the opening. By its movement in the other direction, the piston rod causes the withdrawal of the sides of the frame, then the removal of the panel from the edges of the opening and finally withdraws the panel from before the opening.

The accompanying drawing represents, by way of illustrating the manner of carrying out the object of the invention, a device for closing a hatchway.

Figure 1 is a plan view of the hatchway and its closing device, the cylinder being shown in longitudinal section. Fig. 2 is a section through the line A B of Fig. 1 with the closing device in sight. Fig. 3 represents a plan view the frame of the panel on a larger scale. Fig. 4 is a detail, of the frame on a larger scale. Figs. 5 and 6 are partial sectional views of the closing device showing the panel in two different positions. Fig. 7 shows a detail partly in elevation and partly in section through the line C D of Fig. 5. Fig. 8 is a transverse section of the panel and the guides therefor.

1^a is the opening to be closed, such as a hatchway, and 2^a the panel intended to cover this opening; this panel 2^a runs in the guides 19

which grasp the panel on two opposite edges (Figs. 1 and 8). In the portion of the guides which are situated opposite the opening 1^a, the flanges thereof facing the opening are discontinued (Fig. 2) so as to permit of pressing the panel against the edges of the opening when once it has been carried in front of the same.

Within the panel is set a frame separately shown in Fig. 3; the sides *a*, *b*, *c*, *d* of which are movable in such a manner that they can be pushed beyond the edges of the panel 2^a, that is to say so as to project beyond these edges as is shown in Fig. 6, and be drawn back from these edges (Fig. 5). The side A of the frame is rigid with a rod 1 having in its middle part notches 6 and 7 one of the edges of each of which is sloping; at its extremity the rod bears an articulated hook 8. The sides *b* and *d* adjacent to the side *a* are rigid with the posts 2 and 3 the feet of which engage with the notches 6 and 7, these feet presenting a slanting edge corresponding to the sloping edges of the notches; the rods 4 and 5 are articulated on one end with the rod 1 and on the other end with the posts 2 and 3, while other rods 30 and 31 are articulated at one end with the posts 2 and 3 and at the other end with the posts 40 and 41 rigid with the side *c*; the extremities of these posts 40 and 41 engage with notches in the posts 2 and 3; these extremities and these notches have, the same as posts 2 and 3 and notches 6 and 7, corresponding sloping and slanting edges. Rods 34 and 35 rigid with the rod 1 engage at their extremities in the notches of the rods 2 and 3, which notches have sloping edges to which are applied the extremities of the rods 34 and 35, in a similar manner the extremities of rods 37 and 38 rigid with the posts 2 and 3 engage in the notches 38 and 39 provided in the posts 40 and 41. By pushing the rod 1 from right to left (Fig. 3) the side *a* and simultaneously the other sides *b*, *c* and *d* are moved outward, the rod 1 acting on the posts 2 and 3 of the sides *b* and *d* by the rods 4 and 5, and on the extremities of these posts by the sloping edges of the notches 6 and 7, while the posts 2 and 3 for their part acting on the posts 40 and 41 of the side *c* through the rods 30 and 31 and on the extremities of these posts through the sloping edges of the notches, which these extremities engage. By pulling the rod 1 from left to right, the sides *b*, *c* and *d* are simultaneously

with the side *a*, brought back by the tractive action of the rods 4, 5, 30 and 31 on the posts 2, 3, 40 and 41, and the pressure of the extremities of the rods 34, 35, 36 and 37 on the sloping sides of the notches of the posts 4, 5, 30 and 31, in which these extremities engage. (See Fig. 4.)

The corners of the frame *a*, *b*, *c*, and *d* are fitted with triangular caps 32, which are impelled forward by the sides *a*, *b*, *c*, and *d* when the latter are moved outward and are drawn back with the sides of the frame by the action of these sides on the gudgeons 33. To the panel 2^a is affixed a button 11 which engages in a slit 11^a of a metallic strip 12, fastened to a wedge 13 secured to the extremity of the piston rod 10 which is operated by fluid under tension. On the sides of this wedge 13 are arranged sloping grooves 22 in which engage the hooks 21 attached to the panel 2^a (Fig. 7). A toothed hook 23 is attached to the wedge 13.

Communicating with the ends of the cylinder 27 are conduits 26 and 28 for the admission of the fluid under pressure, and also communicating with the ends of the cylinder are conduits 26^a and 28^a for the exhaust of the fluid.

To close the hatchway the fluid under pressure is allowed to enter the cylinder 27 through the conduit 26. The piston together with its rod will be pushed toward the left (Fig. 1) and the wedge 13 secured to the piston rod 10, by acting on the panel 2^a, which is prevented by the guides 19, from moving in a direction perpendicular to the guides, will push this panel before it, and will finally place it in front of the opening 1^a (its position in Fig. 5) in that part where the guides of the panel are eliminated on the side toward the opening; the piston continuing to advance, the panel can then move under the action of the wedge 13 in a direction perpendicular to the guides and will be pressed against the edges of the opening 1^a (Fig. 6); during this movement the hook 8 enters into engagement with the hook 9, the tooth 23 of which, during the last part of the movement of the wedge 13, by its action on the hook 8, will push before it the rod 1, as the result of which there will be an outward movement of the sides *a*, *b*, *c* and *d* of the frame. By reason of this movement the sides *a*, *b*, *c* and *d* which were within the edges of the panel (Fig. 5) are pushed beyond these edges and pressed against the walls 24^a inclosing the opening 1^a, opposite the edges of the panel. In order to assure a perfectly hermetic closing, grooves 24 are provided in these walls into which grooves the sides *a*, *b*, *c* and *d* enter in their outward movement or expansion.

To open the hatchway the fluid under pressure is allowed to enter the cylinder 27 through the conduit 28, the result of which

is a movement of the piston and its rod from left to right (Fig. 1). During the first part of this movement the hook 9 by its action on the hook 8 with which it engages, draws back the rod 1, which has the effect of causing the sides *a*, *b*, *c* and *d* to return to their original positions. Then the sloping parts of the grooves 22 by their action on the hooks 21 place the panel in the position shown in Fig. 5. During this movement of the panel, a displacement of the same in relation to the wedge takes place, by means of which the hooks 8 and 9 are disengaged. The left extremity of the slot 11^a at this movement reaches the button 11, which in the first part of the movement of the wedge 13 from left to right, the same as in the corresponding part at the end of the movement of the wedge from right to left, has played freely from one extremity to the other of the slot. During the subsequent movement of the piston, the metal strip 12 will, by means of the button 11, exert a pull on the panel and will draw it from in front of the opening 1^a into the position shown in Fig. 1.

Having now fully described my said invention and the manner in which the same is to be performed, what I claim and desire to protect by Letters Patent of the United States, is:

1. In a device of the class described, in combination, a panel adapted to close an opening, an extensible frame associated with said panel, a cylinder, a piston therein provided with a piston rod operatively connected to said panel, the outer end of said piston rod being provided with a wedge-shaped member having inclined grooves formed therein and hooks operatively connected to said panel and engaging said grooves whereby the panel will be moved into and out of the opening to close or open the same.

2. In a device of the class described, in combination, a panel adapted to close an opening, an extensible frame associated with said panel and comprising a rod, a jointed hinge attached to said rod at its rear end, a cylinder, a piston provided with a piston rod and a hook secured to the outer end of said piston rod for coacting with said jointed hook to expand and contract said extensible frame.

3. In a device of the class described, in combination, a panel adapted to close an opening, an expansible frame associated with said panel, said frame having a plurality of side members adapted to be moved beyond the edges of said panel, a rod provided with notches secured to one of said side members for moving the same, one of the walls of each of said notches being inclined, rods secured to others of said side members and provided with surfaces engaging the in-

clined walls of the notches in said first-mentioned rod, whereby said other side members will be displaced upon movement of said first-mentioned rod.

5 4. In a device of the class described, in combination, a panel adapted to close an opening, a button secured thereto, a cylinder, a piston therein and provided with a piston rod, a wedge-shaped member secured
10 to the outer end of said piston rod and operatively associated with said panel to actuate the same and a strip having one end secured to said wedge-shaped member and having a slot formed in its outer end within
15 which slot said button is adapted to engage.

5. In a device of the class described, in combination, a panel adapted to close an opening, an extensible frame associated with said panel and adapted to be extended beyond the edges thereof whereby it will engage the walls of the opening to effect a tight closure, and means for moving said panel to close said opening and extending said frame.

25 6. In a device of the class described, in combination, a panel adapted to close an opening, an extensible frame associated with said panel and adapted to be extended beyond the edges thereof whereby it will engage the walls of the opening to effect a tight closure, and means for successively moving said panel into registry with the opening, causing said panel to close the opening and finally extending said frame to
30 engage the walls of the opening.

35 7. In a device of the class described, in combination, a panel adapted to close an opening, an extensible frame associated with said panel and adapted to be extended beyond the edges thereof whereby it will engage the walls of the opening to effect a

tight closure, and means for successively moving said panel into registry with the opening, causing said panel to close the opening and finally extending said panel to engage the walls of the opening, said means comprising a wedge engaging said panel and adapted to move relatively thereto and provided with grooves, and members secured to said panel and engaging said
45 grooves. 50

8. In a device of the class described, in combination, a panel adapted to close an opening, an extensible frame associated with said panel and adapted to be extended beyond the edges thereof whereby it will engage the walls of the opening to effect a tight closure, and means for successively moving said panel into registry with the opening, causing said panel to close the opening and finally extending said frame to engage the walls of the opening, said means comprising a member provided with a slot and a member secured to said panel and engaging with said slot. 65

9. In a device of the class described, in combination, a panel adapted to close an opening, an extensible frame associated with said panel, said frame having a plurality of side members adapted to be moved beyond the edges of said panel, a rod secured to one of said side members for moving the same, means operatively associated with said rod for moving the other side member and means adapted to move said rod to extend or retract said frame. 70 75

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

GIUSEPPE MAZZOLINI.

Witnesses:

TOMMASO BARBOLUTZ,
A. RUZZI.