

No. 844,737.

PATENTED FEB. 19, 1907.

G. F. McKEE & W. F. SCHILLING.
MOLDING APPARATUS.

APPLICATION FILED AUG. 11, 1905.

2 SHEETS—SHEET 1.

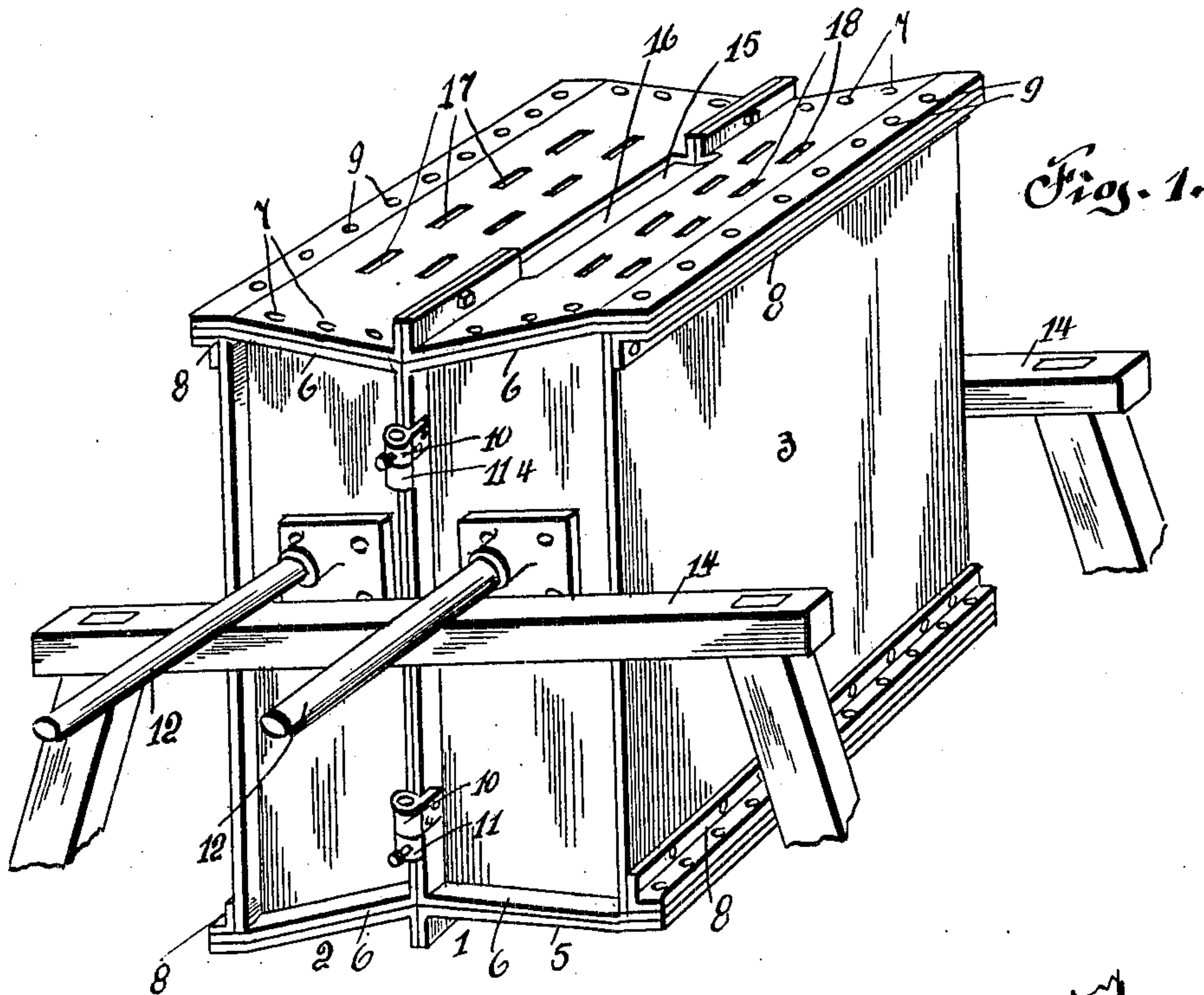


Fig. 1.

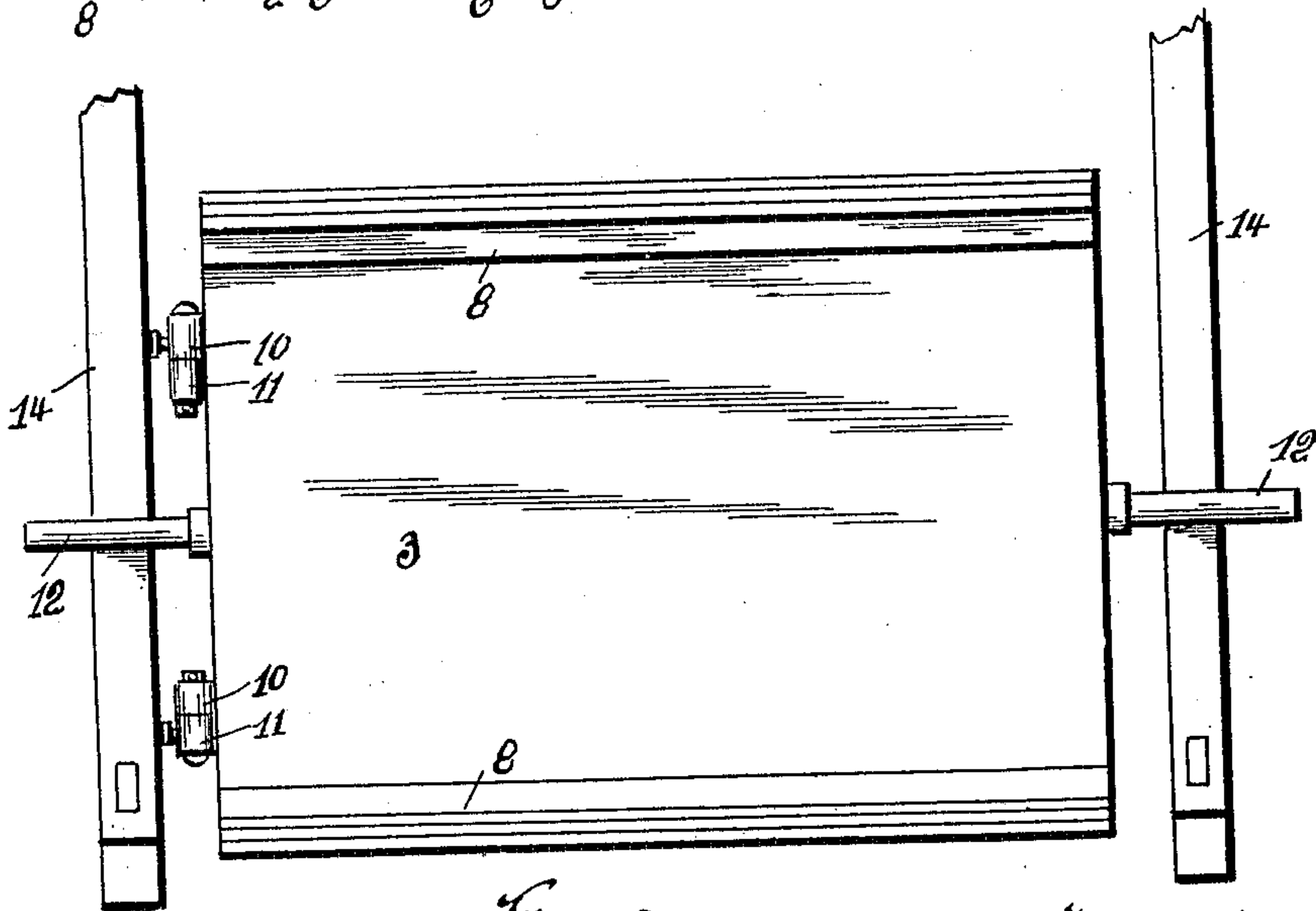


Fig. 2.

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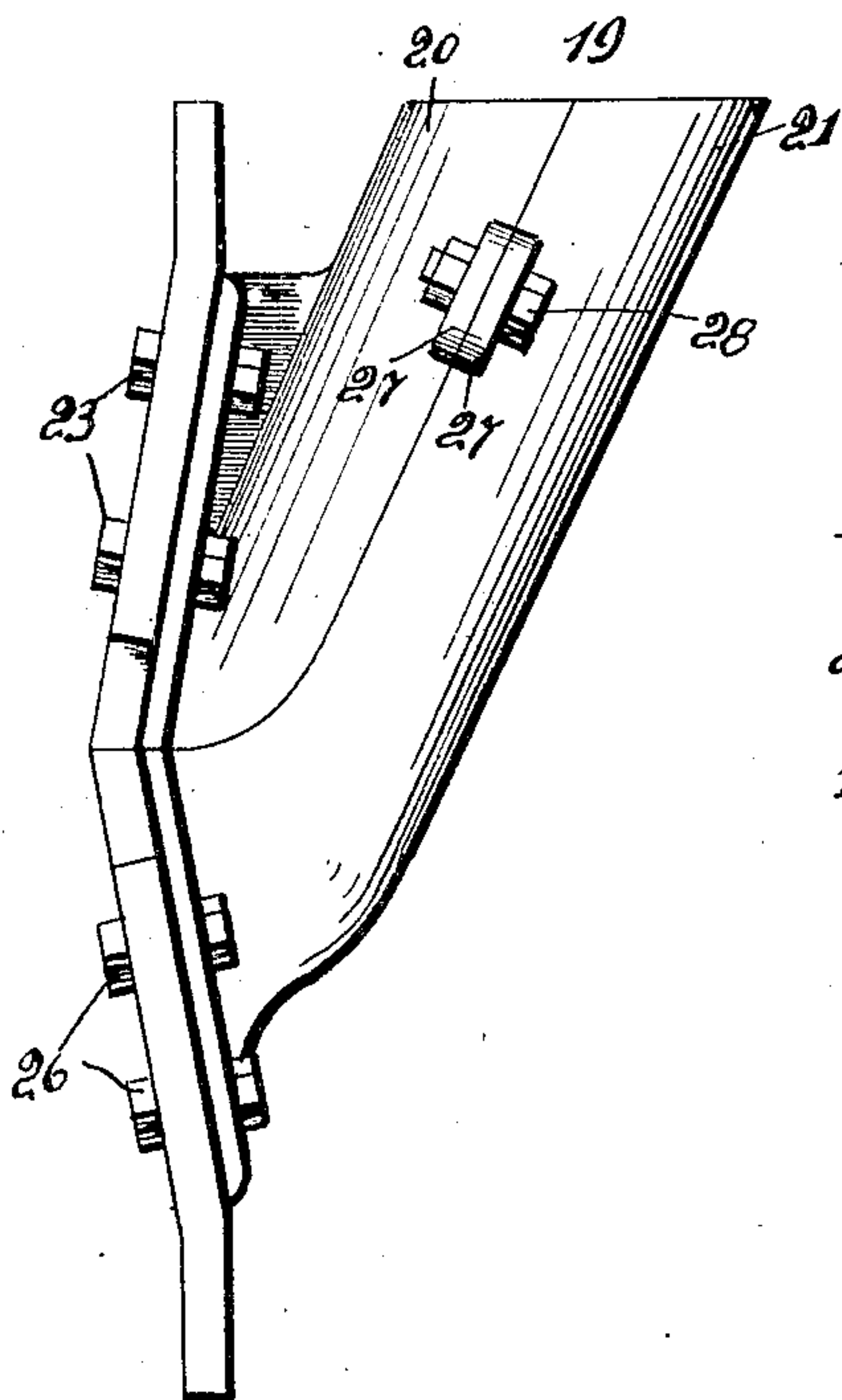
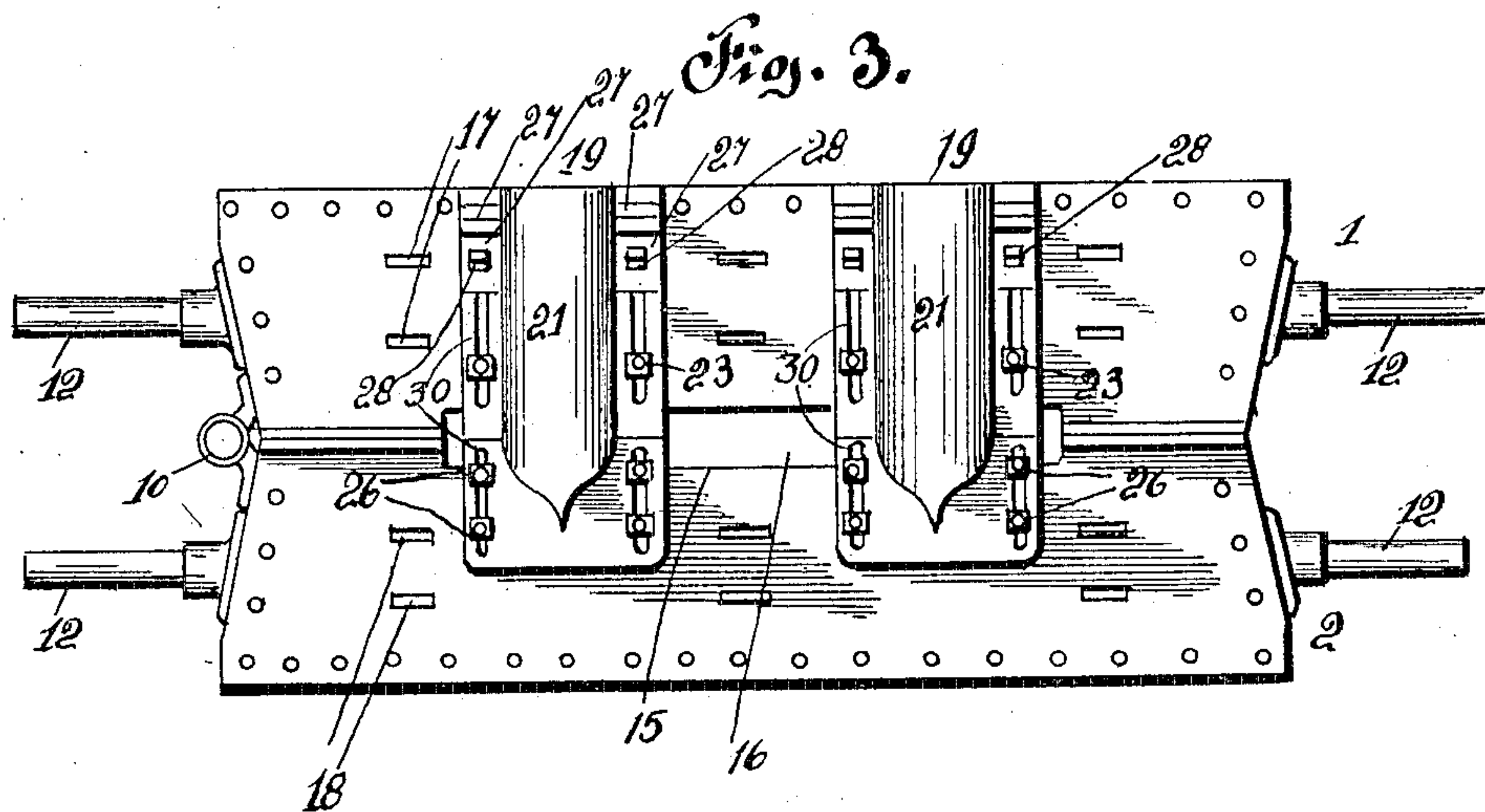


Fig. 4.

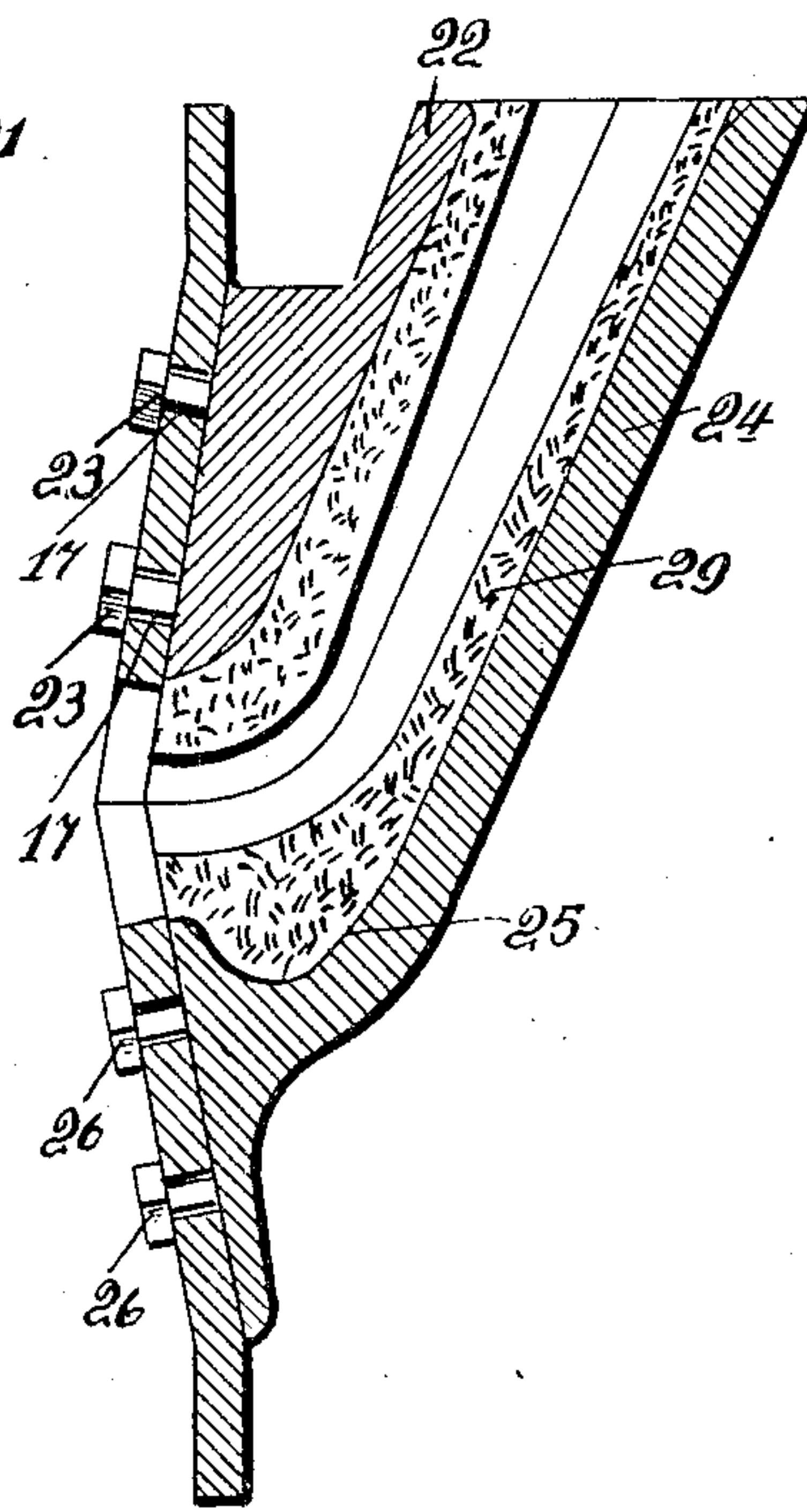


Fig. 5.

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UNITED STATES PATENT OFFICE.

GEORGE F. McKEE AND WILLIAM F. SCHILLING, OF ASPINWALL,
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MOLDING APPARATUS.

No. 844,737.

Specification of Letters Patent.

Patented Feb. 19, 1907.

Application filed August 11, 1905. Serial No. 273,840.

To all whom it may concern:

Be it known that we, GEORGE F. McKEE and WILLIAM F. SCHILLING, citizens of the United States of America, residing at Aspinwall, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Molding Apparatus, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in molding apparatus; and the invention has for its object to provide a novel form of flask for molds which will permit of the sand of said flask being used a number of times for castings.

Heretofore in molding apparatus it has been impossible to use the sand formation of a flask for another casting, the removal of the casting either disfiguring the sand formation or the character of sand, requiring that it be repacked before it can be used again.

Our invention aims to devise novel means whereby the sand formation can be used a number of times to produce castings, and in this connection we have constructed a novel form of flask which permits of sand formation being removed from the casting and used again to produce another casting.

We have also devised a novel form of gate which is particularly adapted to be used in connection with our improved flask; but we do not care to confine our improved gate particularly to our flask, as in some instances it can be readily used in connection with other types of flasks.

With the above and other objects in view the invention consists in the novel construction, combination, and arrangement of parts to be hereinafter more fully described and then specifically pointed out in the claims, and, referring to the drawings accompanying this application, like numerals of reference designate corresponding parts throughout the several views, in which—

Figure 1 is a perspective view of our improved flask. Fig. 2 is a top plan view of the same. Fig. 3 is an edge view of a flask equipped with our improved gate. Fig. 4 is a side elevation of the gate. Fig. 5 is a vertical sectional view of the same.

To put our invention into practice, we construct our improved flask of two parts 1 and 2, each one of these parts having its sides con-

structed of strong and durable metal, while a wood bottom plate is preferably used in connection with each part. Each part consists of a bottom 3, ends 4 4, and sides 5 5, and the ends and sides are flanged, as at 6 6, and bolted together, as at 7, to form a substantially rectangular frame having inclined or tapering sides that converge toward the top of each part of the flask. Suitable angle-irons 8 8 are employed for further bracing the sides and bottom of each part, these angle-irons being secured to the flanges of the sides by nuts and bolts 9 or the like fastening means. The part 1 is adapted to be hinged to the part 2, whereby these parts of the flask may be opened endwise, and to accomplish this we use hinges 10 10 of a conventional form upon the one end of the flask and employ set-screws 11 11 in connection with the hinges for maintaining a rigid connection of the parts 1 and 2 at any time desired.

In Fig. 1 of the drawings we have illustrated the flask in position for pouring, it being assumed that the flasks have been packed and tamped with sand to produce a desired casting. After the sand has been packed in the desired formation within the flask the two parts of the flask are placed together, as in Fig. 1 of the drawings, and to conveniently retain them in this position we have provided the ends 4 4 of each flask with outwardly-extending rods or handles 12 12, and in practice these handles are adapted to support the flask upon a suitable framework 14.

In order that the molten metal may be poured into the sand formation contained within the flask, we provide one of the sides 5 of each part of the flask with a cut-away portion 15, which, together with the cut-away portion of the other part of the flask, forms an elongated slot 16, this slot permitting easy access to be had to the gates of the sand formation.

In the accompanying drawings we have illustrated various forms of gates which may be readily used in connection with our improved flask, and in Figs. 3 to 5, inclusive, of the drawings we have illustrated a two-part gate of a novel form adapted to be used in connection with our improved flask when the same is poured in a horizontal position—that is, when the flasks are positioned as illustrated in Fig. 3 of the drawings. By referring to this figure, together with Fig. 1, it

will be observed that we have provided the one side 5 of each of the parts 1 and 2 of the flask with longitudinally-disposed slots 17 and 18, and these slots are provided whereby our improved two-part gate 19 can be clamped to the sides of the flasks. The gate 19 consists of two parts 20 and 21, which when placed together form an angularly-disposed spout adapted to convey molten metal to the sand formation contained within the flask. The part 20 of the gate 19 consists of a semicylindrical member 22, which is clamped to the part 1 of the flask by bolts and nuts 23 23, said bolts passing through the slots 17 of the part 1, and in this connection any desired form of fastening means can be readily used for clamping the parts 20 and 21 of the gate to their respective parts of the flask. The part 21 of the gate 19 consists of a semicylindrical member 24, having a cup-shaped recess 25 formed therein, and this part of the gate is also secured to the part 2 of the flask by nuts and bolts 26, similar to the part 22 of the gate 19. Each part of the gate is provided with outwardly-extending pierced lugs 27 27, adapted to aline with one another when the parts 1 and 2 are assembled, and nuts and bolts 28 28 may be employed for clamping the parts 20 and 21 of the gate together. Each part of the gate is packed with a lining of sand 29, the sand within the gate being supported by the members of the gate, particularly the member 24, having a recess 25 formed therein, this recess serving as a pocket for the sand and firmly retaining the same in shape within the gate. By referring to Fig. 3 of the drawings it will be observed that we have provided each part of the gate with slots 30, which permit of the parts 20 and 21 of the gate being adjusted vertically relative to the flask, while the longitudinally-disposed slots 17 and 18 of the flask permit of longitudinal adjustment of the gate. In this figure of the drawings we have illustrated two gates being employed, and either one of these gates may be adjusted upon the flask relative to the slot 16 of said flask. One of the gates 19 may readily serve as a vent-opening when the flask is being poured.

The vertical adjustments of the parts 20 and 21 is a feature of importance, for the reason that it permits of the gate being adjusted upwardly or downwardly, so as to bring the opening at the bottom of the gate into horizontal alinement with the lowest portion of the molding-cavity in the sand or into horizontal alinement with the sprues, which are usually provided at the level of the lowest point of the mold-cavity when the mold is so arranged that the molten metal first enters the cavity in the sand at its lowest point. The angular disposition of the gates is also a feature of importance, as it provides

for the gradual flowing of the molten metal along the outermost surface of the sand contained within the gates and permits of the cavity in such sand being curved so as to conduct molten metal gradually and evenly into the molding-cavity within the flask without presenting any sharp corners which would be liable to impede the flow of metal or to be broken off by the weight of the metal against the sand.

By the construction of our improved flask it will be observed that we have devised gates which permit of the two-part flasks being readily opened and the castings removed without in any way disfiguring the formation of sand contained within the flask, and while this construction has been our main object we have also devised novel forms of gates which can be readily used in connection with other forms of flasks than that illustrated.

An important advantage of the construction of our improved gate and its location with relation to the side of the flask is that the gate is at an angle to the side of the flask, and its interior adjacent to the point of connection with the flask-sections is curved or rounded, thus permitting the metal within the gate after pouring and that portion of the metal within the flask adjoining the gate to shrink in a more or less direct line or in one direction as distinguished from a shrinkage around an angular point and against a vertical surface, as would result if the gate were arranged vertically and had a horizontal interior space at its lower end at its point of connection with the flask-sections. Our construction permits the flask and gate-sections to be separated by a direct upward movement of the upper flask and gate-sections without destroying the mold, the binding of the metal by contraction or shrinkage against the inner side of the upper gate-section not preventing the separation of the gate-sections, but, on the contrary, having a tendency to force them apart.

We do not care to confine ourselves to the particular shape of flask illustrated nor to the material from which it is made. It is thought from the foregoing that the construction, operation, and advantages of the herein-described molding apparatus will be apparent without further description, and various changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit of the invention or sacrificing any of the advantages thereof.

What we claim, and desire to secure by Letters Patent, is—

1. The combination with a two-part molding-flask, of a two-part gate projecting from the flask in an inclined position, the inner ends of the parts of the gate being secured respectively, one part to each part of the flask,

while their outer ends project from the flask, and serve as a pouring-opening for the molten metal.

2. The combination with a two-part molding-flask, of a gate comprising two parts of semicylindrical form in cross-section extending at an incline to the side of the flask, one part of said gate being secured to each part of the flask, and forming, when connected, a tubular passage for molten metal.

3. The combination with a two-part flask, of a gate divided longitudinally into two separable parts or sections, one part or section being connected to each part of the flask, and said gate projecting in an inclined position with relation to the side of the flask, whereby the outer end of the gate serves as a

pouring-opening for molten metal and whereby the flask, and gate-sections may be readily separated without destroying the mold. 20

4. The combination with a two-part molding-flask, of a two-part gate, one part of said gate being secured to each part of the flask and projecting from the flask in an inclined position, the interior of the gate having a curved and inclined surface against which the metal contracts. 25

In testimony whereof we affix our signatures in the presence of two witnesses.

GEORGE F. McKEE.

WILLIAM F. SCHILLING.

Witnesses:

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WM. C. HEITZ.