

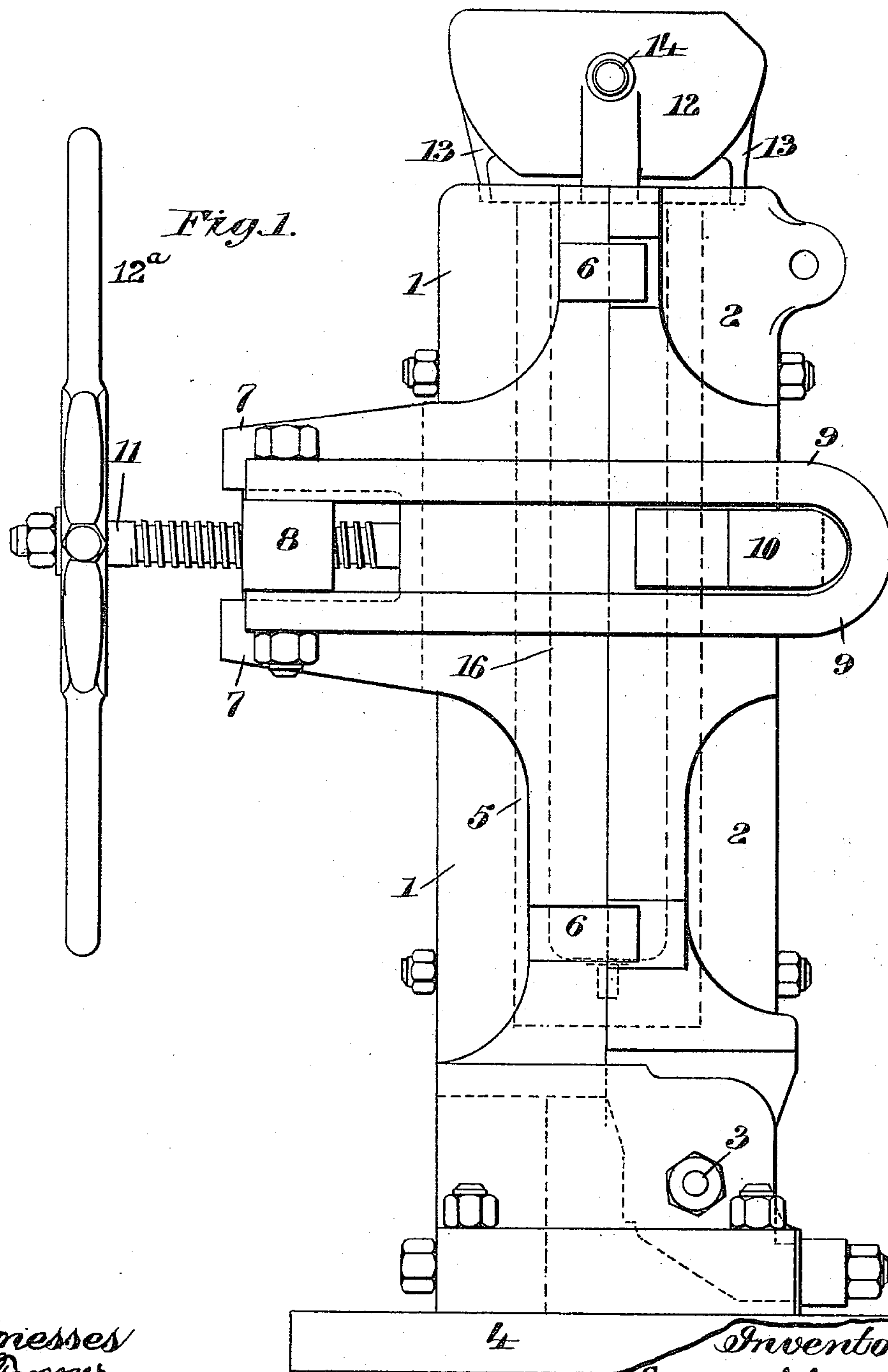
(No Model.)

5 Sheets—Sheet 1.

E. W. JOHNSON.  
MOLD.

No. 440,810.

Patented Nov. 18, 1890.



*Witnesses*  
*Wm. J. Parmer*  
*A. J. Tamm*

*Inventor*  
*Edmund W. Johnson*  
*by his attorney*  
*J. H. Hubbard.*

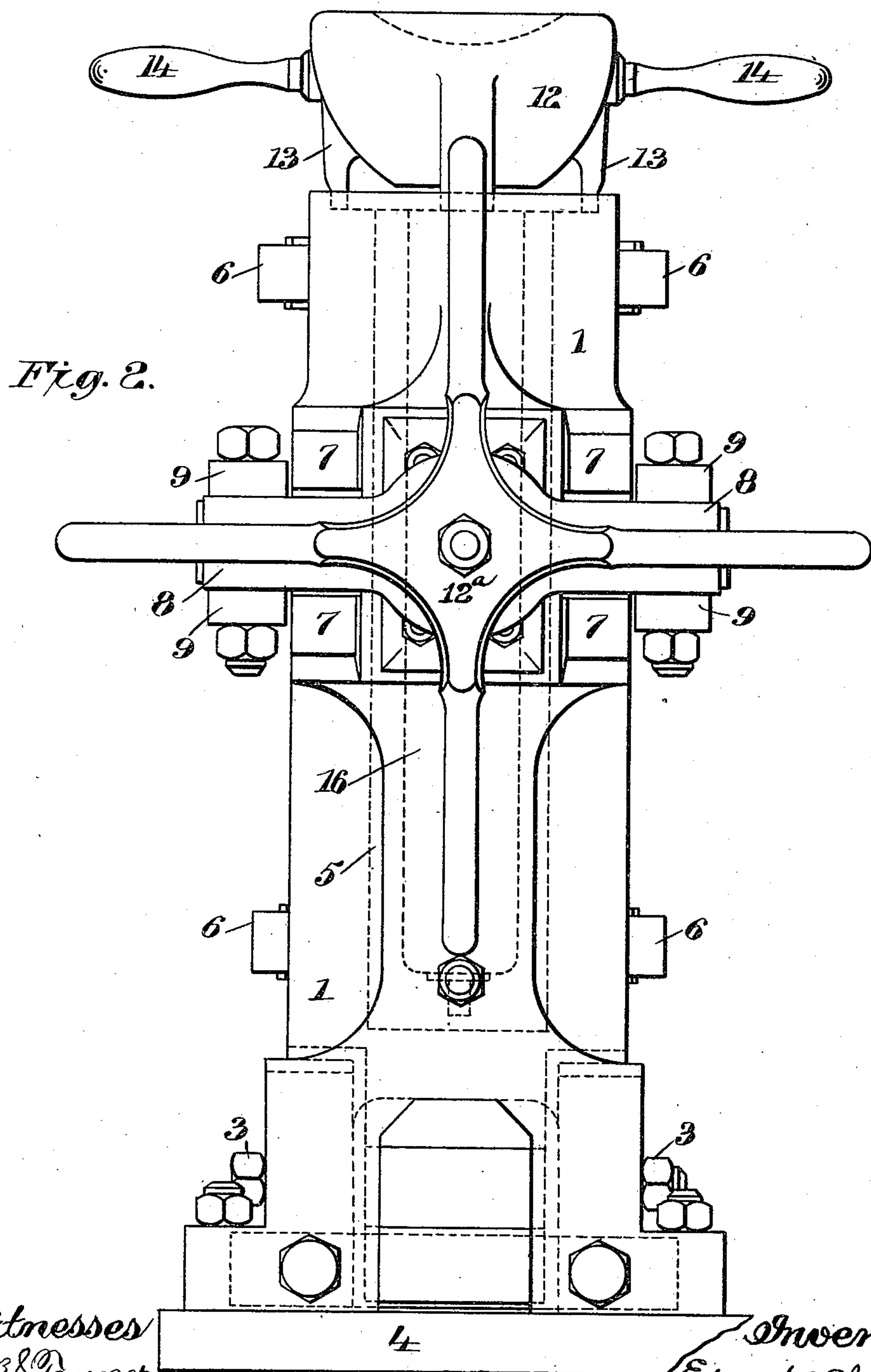
(No Model.)

E. W. JOHNSON.  
MOLD.

5 Sheets—Sheet 2.

No. 440,810.

Patented Nov. 18, 1890.



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(No Model.)

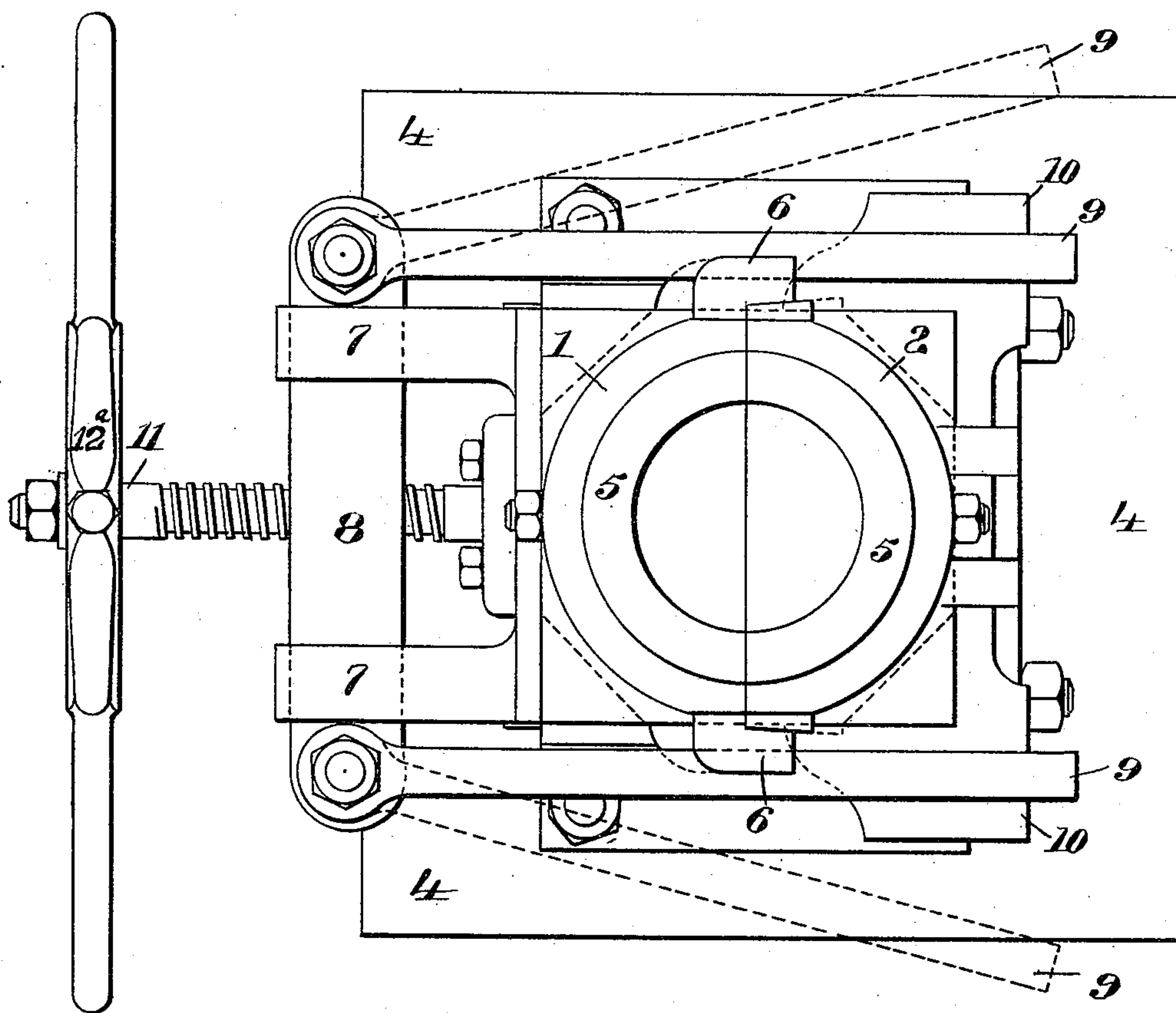
E. W. JOHNSON.  
MOLD.

5 Sheets—Sheet 3.

No. 440,810.

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*Fig. 3.*



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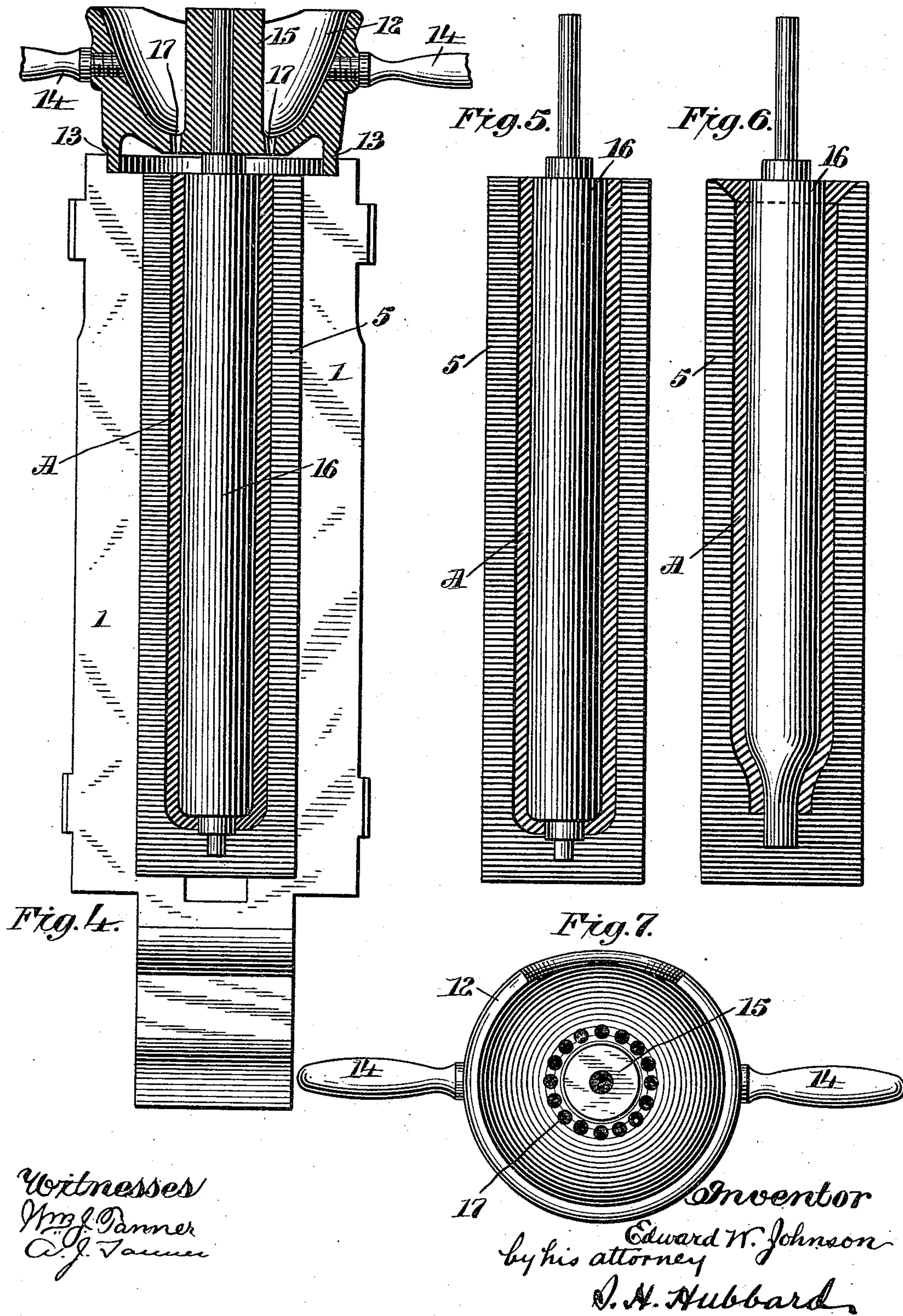
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5 Sheets—Sheet 5.

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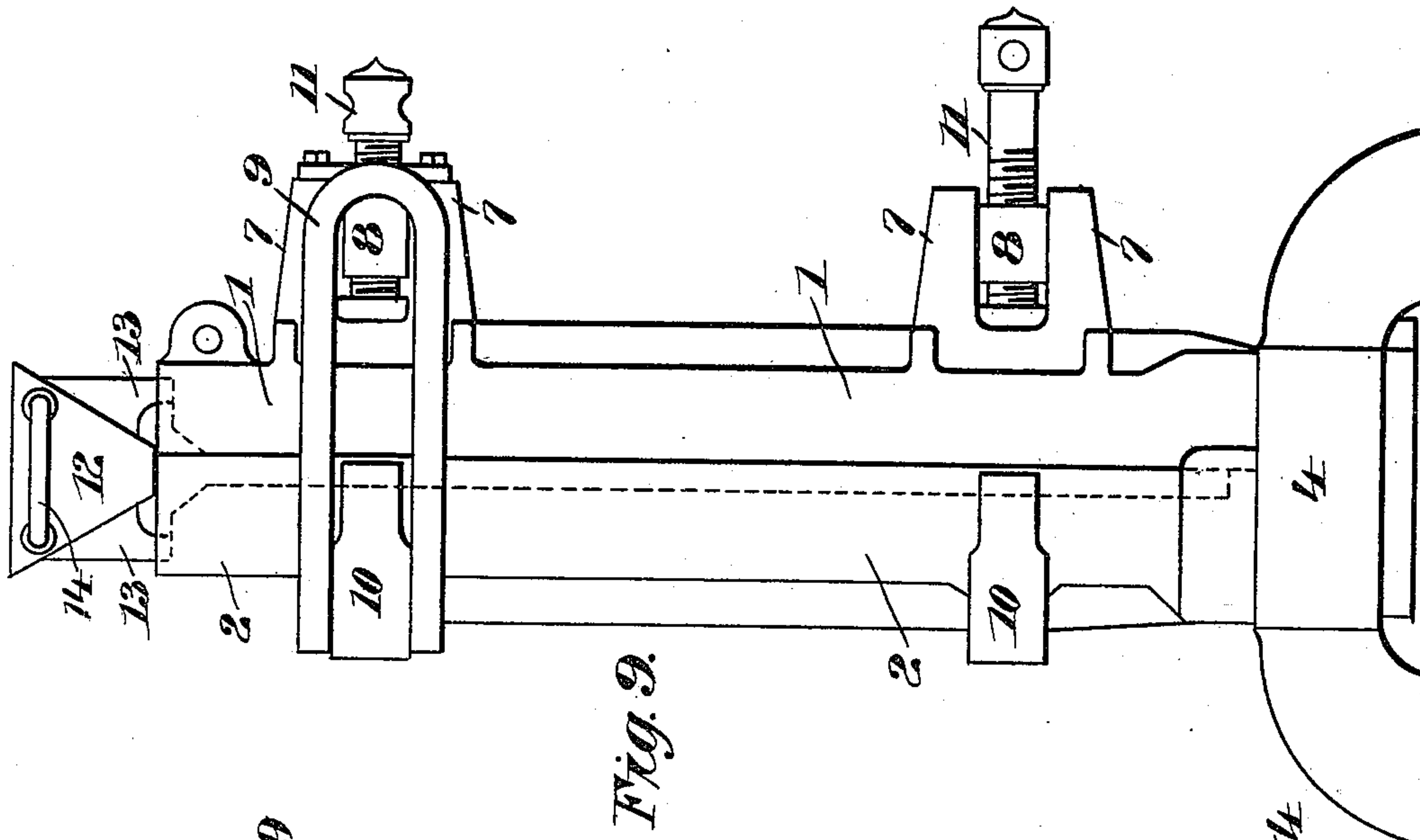


Fig. 9.

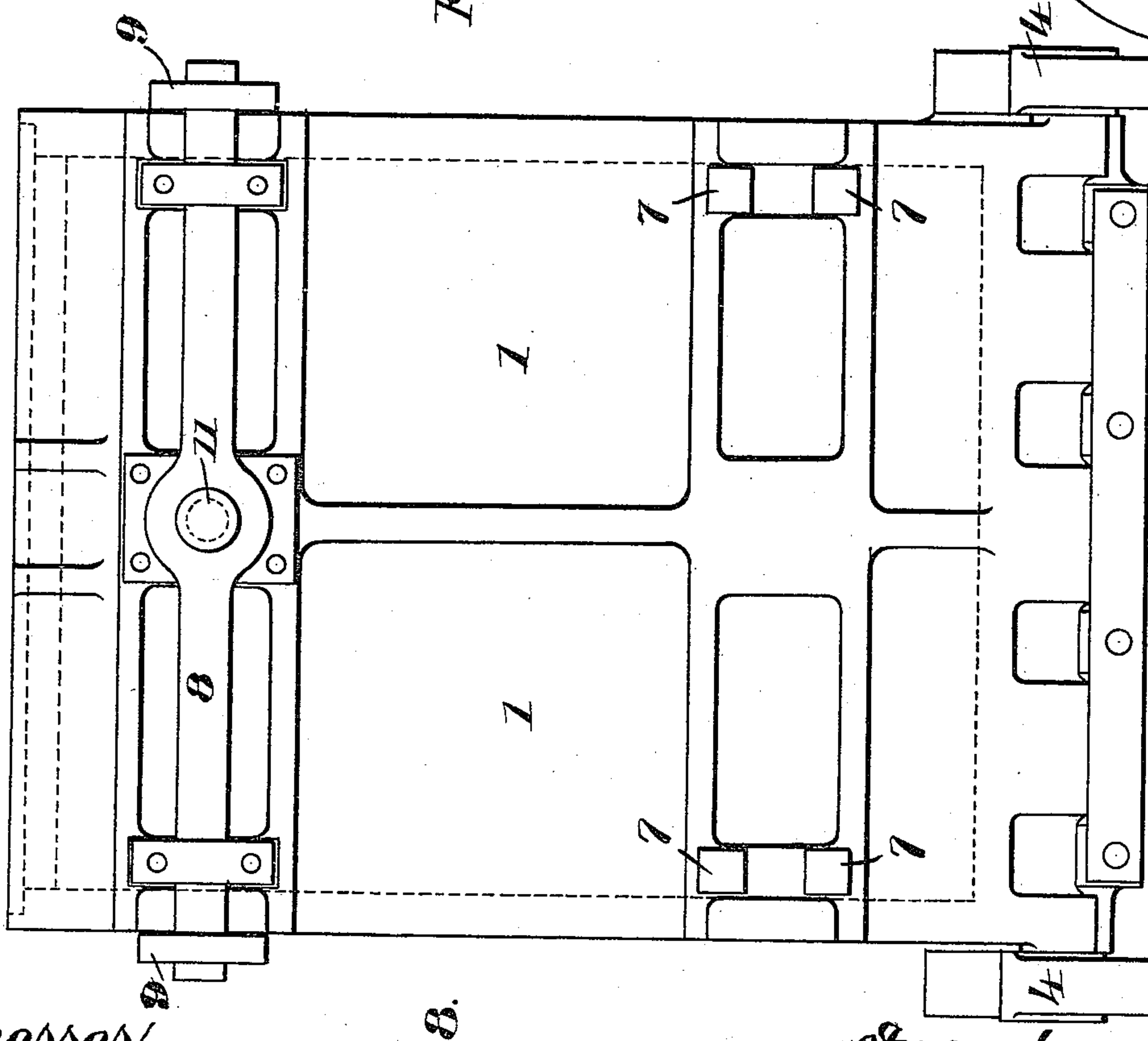


Fig. 8.

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# UNITED STATES PATENT OFFICE.

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## MOLD.

SPECIFICATION forming part of Letters Patent No. 440,810, dated November 18, 1890.

Application filed June 12, 1890. Serial No. 355,184. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD W. JOHNSON, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Molds; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain new and useful improvements in molds for casting ingots, slabs, tubes, and similar articles from copper, brass, or other metal, and has for its object to improve upon the construction of the molds now commonly used for these purposes.

Heretofore in the process of casting brass and like metals into slabs, ingots, and wire rods it has been customary to employ a two-part mold having its sections normally disconnected and to secure said sections together by rings or hoops and wedges. In the casting of tubular ingots for drawing into seamless tube a like mold has been employed in which a core is held in position by clamps.

The use of the molds just described introduces into the business of casting a necessity for skilled labor, and experienced casting hands command high wages, particularly in the manufacture of tubular ingots, the perfect casting of which is esteemed particularly difficult.

It is the object of my invention to provide a mold into which the metal may be introduced without the element of judgment required by the present method and with a saving of time to the workman over the well-known hand-casting process, to provide a mold capable of producing castings of great uniformity, and particularly in utilizing my invention for the production of tube-blanks, and to form said blanks with the bore perfectly axial.

Finally, it is an object of my invention to provide means for drawing and holding together the sections of the mold, which shall be of greater efficiency than those now in use; and with these ends in view my invention consists in the mold having its parts hinged together and the means for closing said parts

together and there holding them to receive the metal, in the means for introducing the metal into the interior of the mold, in the means for holding the core within the mold, and generally in the details of construction and combination of elements hereinafter fully set forth, and then recited in the claims.

In order that those skilled in the art to which my invention appertains may fully understand its construction and method of operation, I will describe the same in detail, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a profile elevation of a mold made in accordance with my invention and designed for casting ingots or tube-blanks; Fig. 2, a front elevation thereof, showing the screw-operating wheel; Fig. 3, a plan view; Fig. 4, a sectional elevation showing one part of the mold, the lining therein, and the core, all in elevation, and a cast tube and the tureen in vertical section; Fig. 5, a detail sectional elevation of the mold-lining, core, and tube; Fig. 6, a like view, but showing a slightly-different shape of tube; Fig. 7, a detail plan view of the tureen as adapted for tube-casting; Figs. 8 and 9, front and profile elevations, respectively, of a mold so modified in shape as to be adapted for casting slabs or plates, but otherwise in accordance with the preceding figures.

Like numerals denote the same parts in all the figures of the drawings.

The mold consists, primarily, of two parts or sections 1 and 2, which are hinged together by a bolt, as 3, near their bottom ends, so that they may be swung apart, like the letter V, for cleaning and oiling prior to casting, and for the removal of the ingot or other object after casting. One of the parts is shown as detached in Fig. 4. Any suitable base 4 serves to support the mold as a whole. While it is not essential, I prefer to make the two parts of large interior diameter and to insert in these parts a pair of slabs or linings 5, in whose opposed faces the mold proper is formed, and which are retained in position in any suitable manner. This not only permits of changes in the size and shape of the object to be produced by the substitution of



different linings, but it leaves the wear and tear of the mold to be principally borne by the inexpensive rather than the expensive portion of the apparatus. When in their

5 closed or nearly closed position, guides 6 insure the proper meeting of the parts.  
At the rear of part 1 are formed or secured four outwardly-projecting posts 7, (see Figs. 1 and 2,) and 8 is a heavy traveler-bar, which,  
10 as seen in the figures just mentioned, is guided between said posts, so as to be capable of a sliding movement toward and away from the part 1. To the ends of this bar are pivoted shackle-links 9, adapted to swing in-  
15 ward and embrace suitably-formed lugs 10 on the section 2 of the mold, or to swing outward clear of said lugs, as shown in dotted lines in Fig. 3. When so swung outward, it will of course be understood that the sections  
20 are free to be opened for access to the mold. Through the center of the bar 8 a screw 11 has a threaded bearing. Its forward end engages the rear face of section 1, and at its rear end it is provided with a hand-wheel 12<sup>a</sup>  
25 or its equivalent. The purpose of this screw is to back off the traveler-block after the links are engaged with the lugs on section 2, and thereby draw the faces of the parts very tightly together to prevent leakage.

30 The top ends of the two sections are recessed, (see dotted lines at the top of Figs. 1 and 2,) and 12 is a tureen or bowl whose legs 13 rest within the recess and thereby support it. At one side the edge of the tureen is cut  
35 away to provide a rest for the crucible in emptying the contents of the latter, and transversely-extending handles 14 afford means for the manipulation and removal of the tureen. The bottom of the tureen is perforated  
40 either with a single hole or a plurality of holes 17, grouped over the center of the mold and varying in size or number, or both, according to the cubical contents of the mold, or for use in producing tubular castings with  
45 an annular row of holes above the space surrounding the core, as seen in Figs. 4 and 7.

The mold of the first seven figures, when equipped as above specified, is capable of making solid castings of any shape to which  
50 its interior may be conformed.

In using this mold for tubular castings, a tureen having a centrally-placed and axially-bored hub 15 is employed, (see Fig. 4,) and the lower end of the mold is provided with a  
55 recess, which forms a seat for one end of a cylindric core 16, whose diminished upper extremity enters and is held in place by the central orifice of the hub. The close engagement of the legs of the tureen with the annular recessed top surface of the two parts, as heretofore set forth, retains the core central within the mold. The core may be of any usual or suitable material.

In the drawings, A represents the casting.  
65 In describing the operation of my invention I will set forth the method of producing a tubular casting, since this contains all

the steps necessary to make ingots or rods and in addition thereto has features peculiar to itself. The parts of the mold are first  
70 oiled, as is usual in casting brass. They are then closed together and the links swung inward over the hubs on part 2. By means of the screw the traveler-bar is then backed off so as to draw the mold-sections very tightly to-  
75 gether. (See Fig. 1.) A core is then inserted from the top of the mold and its lower extremity seated in the recess, its reduced upper extremity being inserted upward within the central hole of the tureen as the latter is set  
80 in position. A pot of metal of the proper heat is then emptied into the tureen, not by gradually pouring, as in hand-casting, but bodily, so as to lodge in the tureen at once  
85 metal sufficient to fill the mold and a little to spare. Said metal then drains downward through the holes 17, at a rate determined by the number and size of the holes, until the interior of the mold is filled.

The tureen should be lifted off immediately  
90 the mold is full and the metal and dross remaining in said tureen removed, as by inverting the latter. As soon as the metal within the mold has set the shackles are loosened by reverse movement of the screw and then  
95 swung clear of the lugs, when the parts of the mold may be separated upon their hinge and the casting and its contained core removed.

The mold shown in Figs. 8 and 9 needs no description beyond that applicable to the  
100 other figures, except to say that said mold is designed and intended for production of slabs and is slightly different in construction to adapt it to that use. It has two sets of links and screws, upper and lower, the links, bar,  
105 and screw of the lower set, Fig. 8, being shown as removed, and also the links in Fig. 9. The links are also shown as oppositely pivoted relative to the preceding figures, their closed ends being adapted to swing over the ends of  
110 the traveler-bar instead of over lugs on one of the parts. This is merely a reversal, however, and is entirely within the spirit of the preceding description. The tureen also is long and narrow and trough-shaped, its bot-  
115 tom being perforated with a straight row of holes immediately over the mouth of the mold, but separated slightly therefrom.

The use of the tureen having eduction-apertures of such size as to properly regulate  
120 the inflow of metal conduces to great regularity in the product for two reasons: first, the mold is filled every time alike and in the same time, and, second, the metal is discharged directly over the center of the mold,  
125 so that the air is expelled equally and no metal flows down the side walls. The space shown in the drawings as intervening between the bottom of the tureen and the mouth of the mold is sufficient to allow the air to flow freely  
130 outward as it is expelled by the metal.

I claim—

1. In a machine of the character described, the combination, with the two mold-sections



hinged together and provided with a seat in the lower end of their opposed faces, of the bowl having a central and axially-bored hub, and eduction-apertures around said hub, and legs adapted to the top of the mold, whereby said tureen or bowl is supported accurately above the mouth of the mold, but out of contact therewith, whereby free exit for the air and fumes is afforded, substantially as described.

2. In a machine of the character described, the mold having its top surface recessed and the bowl provided with suitable handles and

with draining-apertures, said bowl having also legs 13, adapted to fit the recess in the top of the mold, whereby said tureen or bowl is held accurately over the mold-opening, but whereby free space is afforded between the bottom of the bowl and the top of the mold, substantially as described.

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

EDWARD W. JOHNSON.

Witnesses:

S. H. HUBBARD,  
WM. J. TANNER.