

J. G. COOMER.
MOLD.
APPLICATION FILED MAR. 24, 1908.

Patented Nov. 10, 1908.

903,453.

2 SHEETS—SHEET 1.

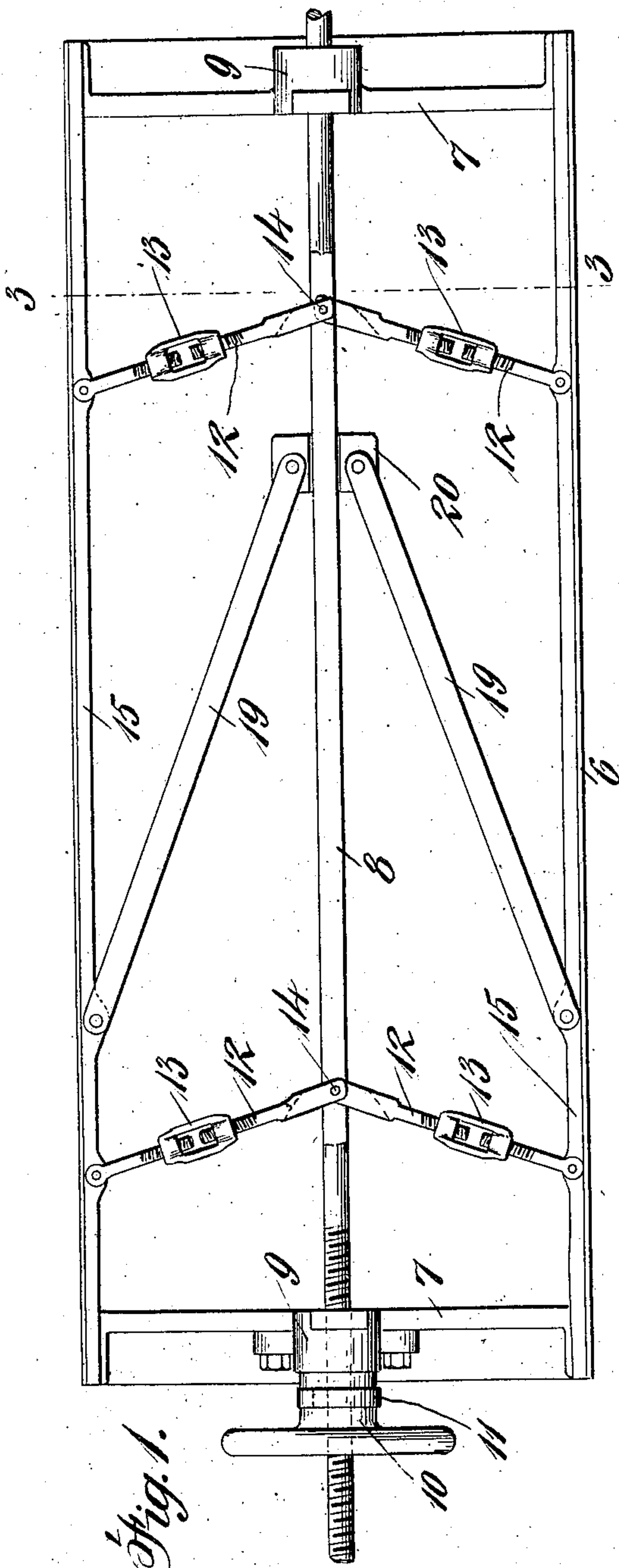


Fig. 1.

Witnesses

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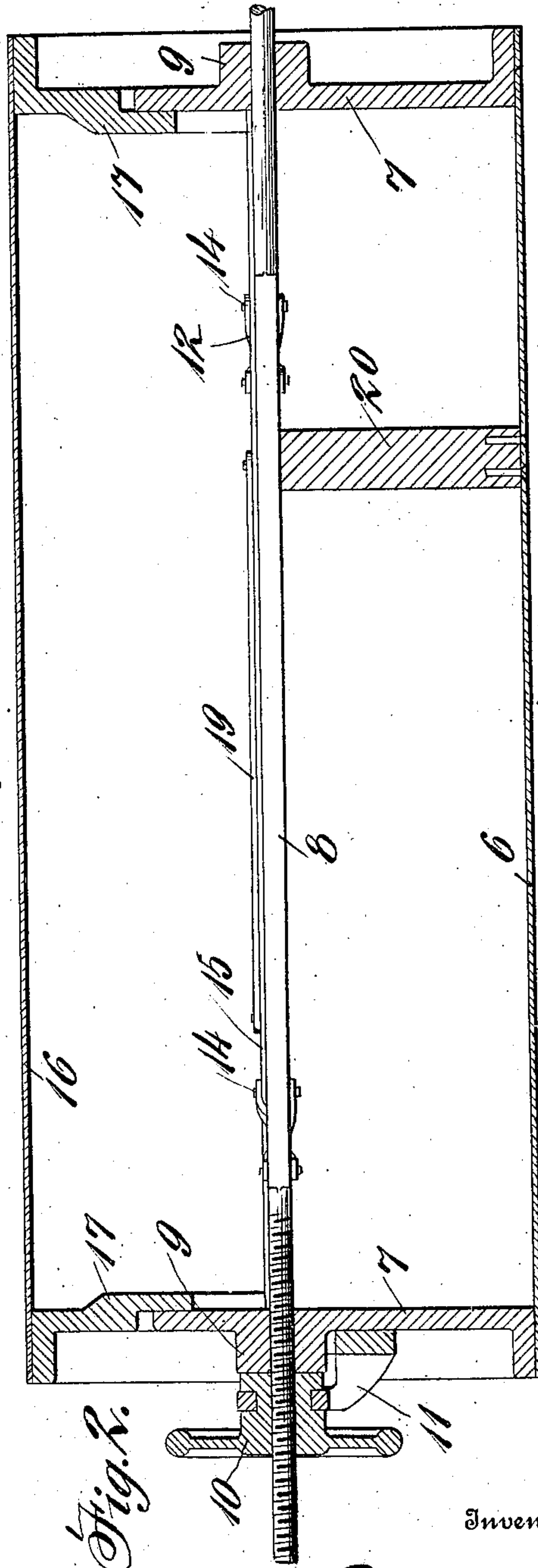


Fig. 2.

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2 SHEETS—SHEET 2.

Fig. 3.

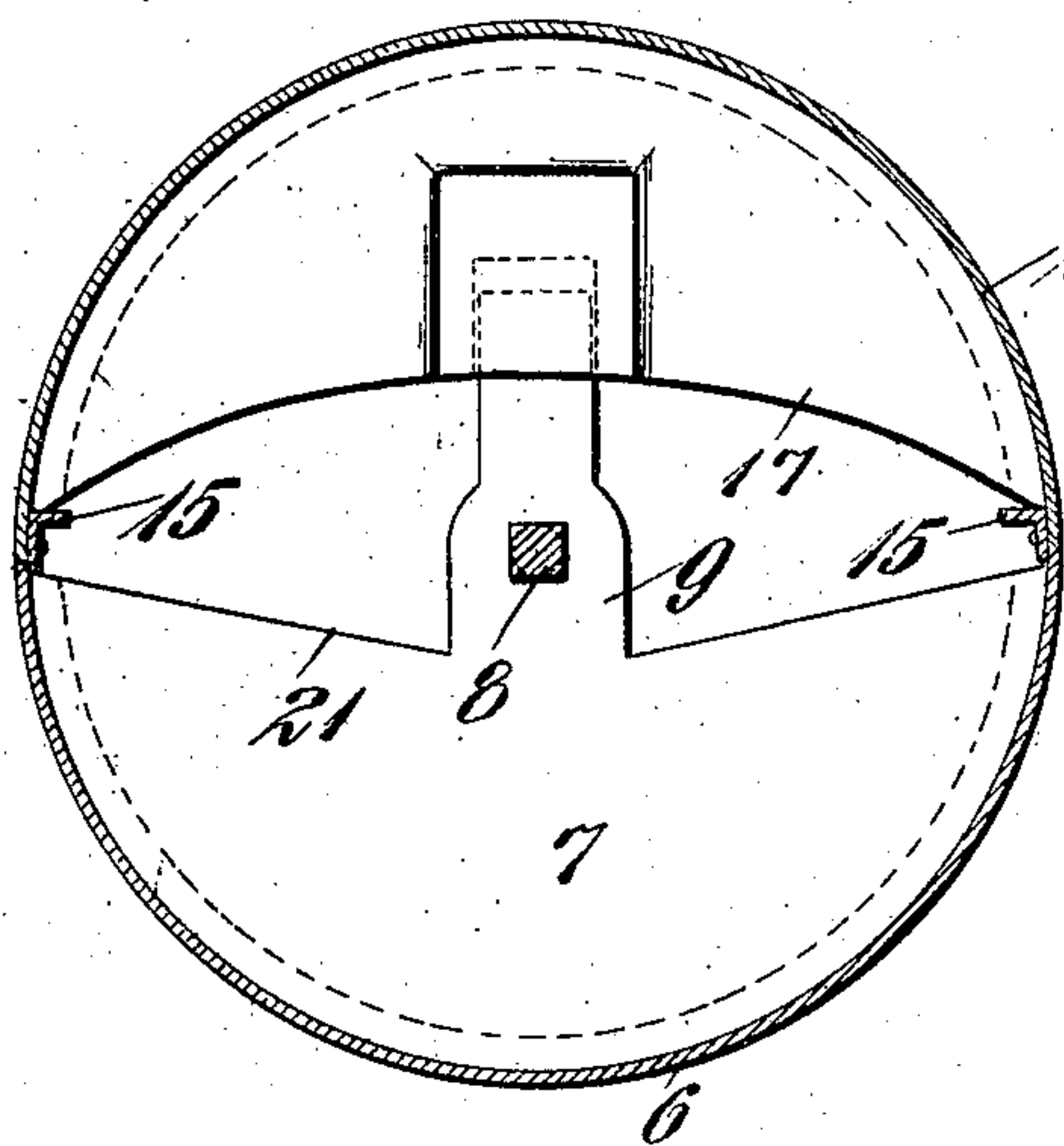


Fig. 4.

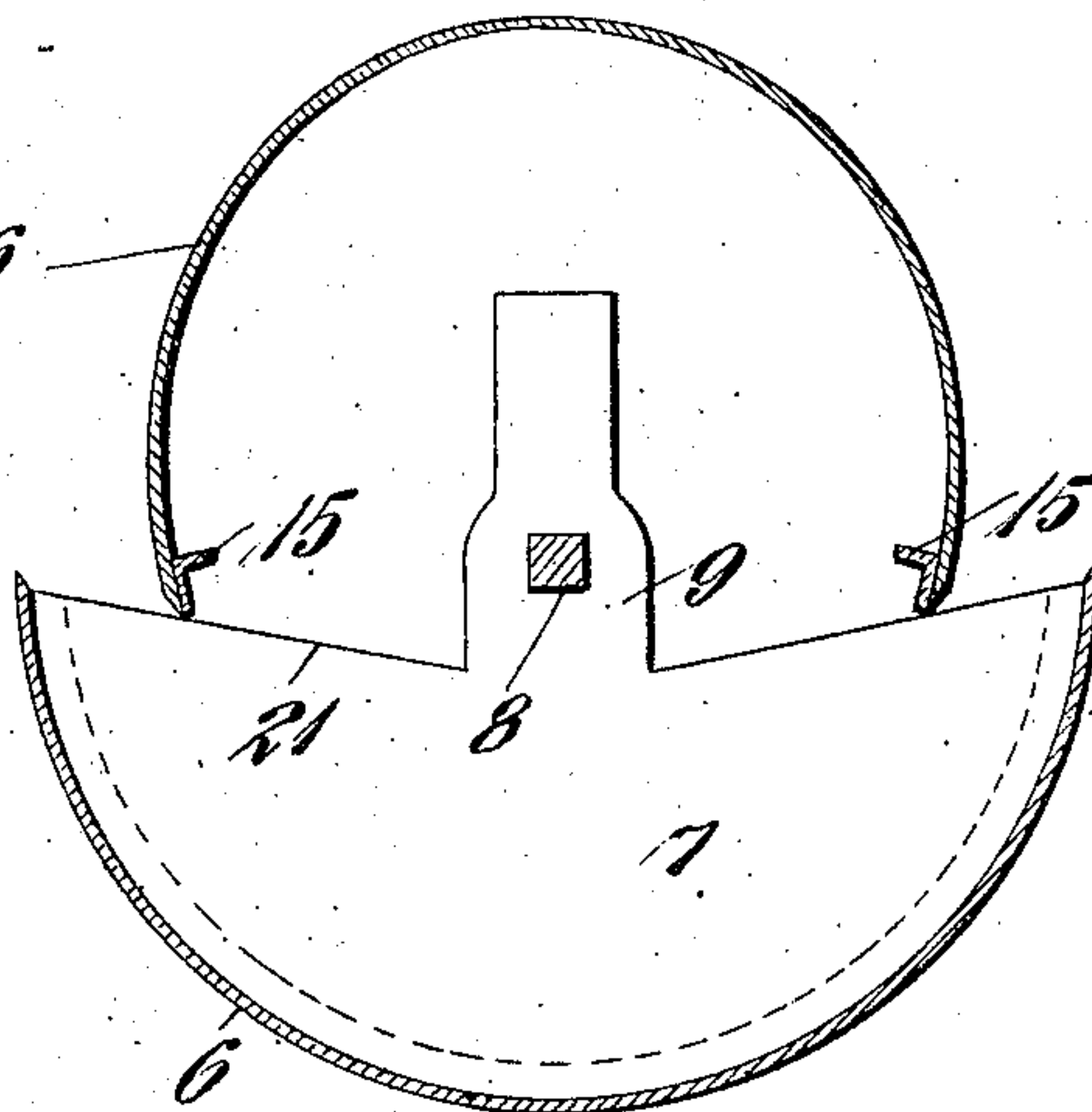


Fig. 5.

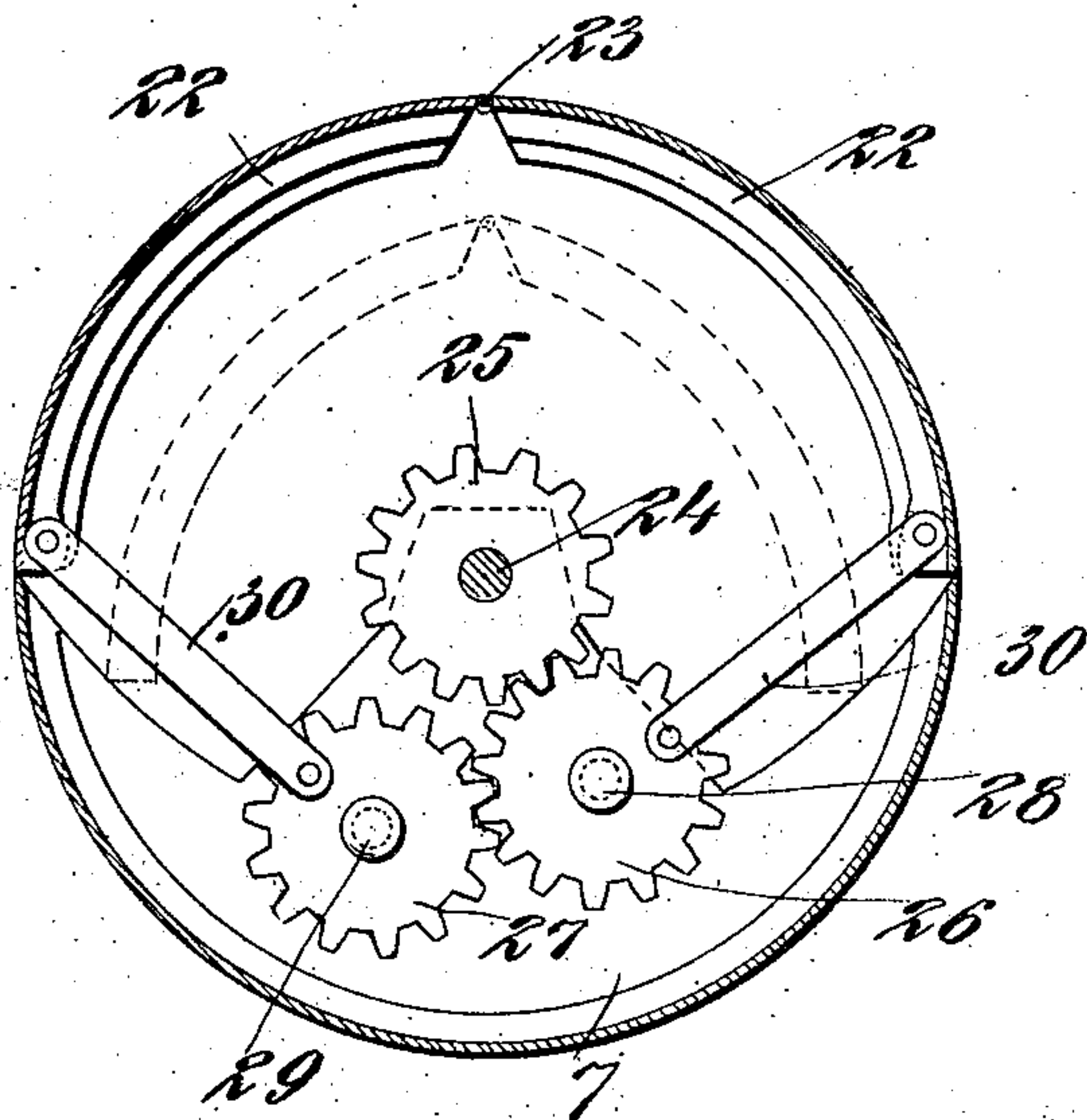
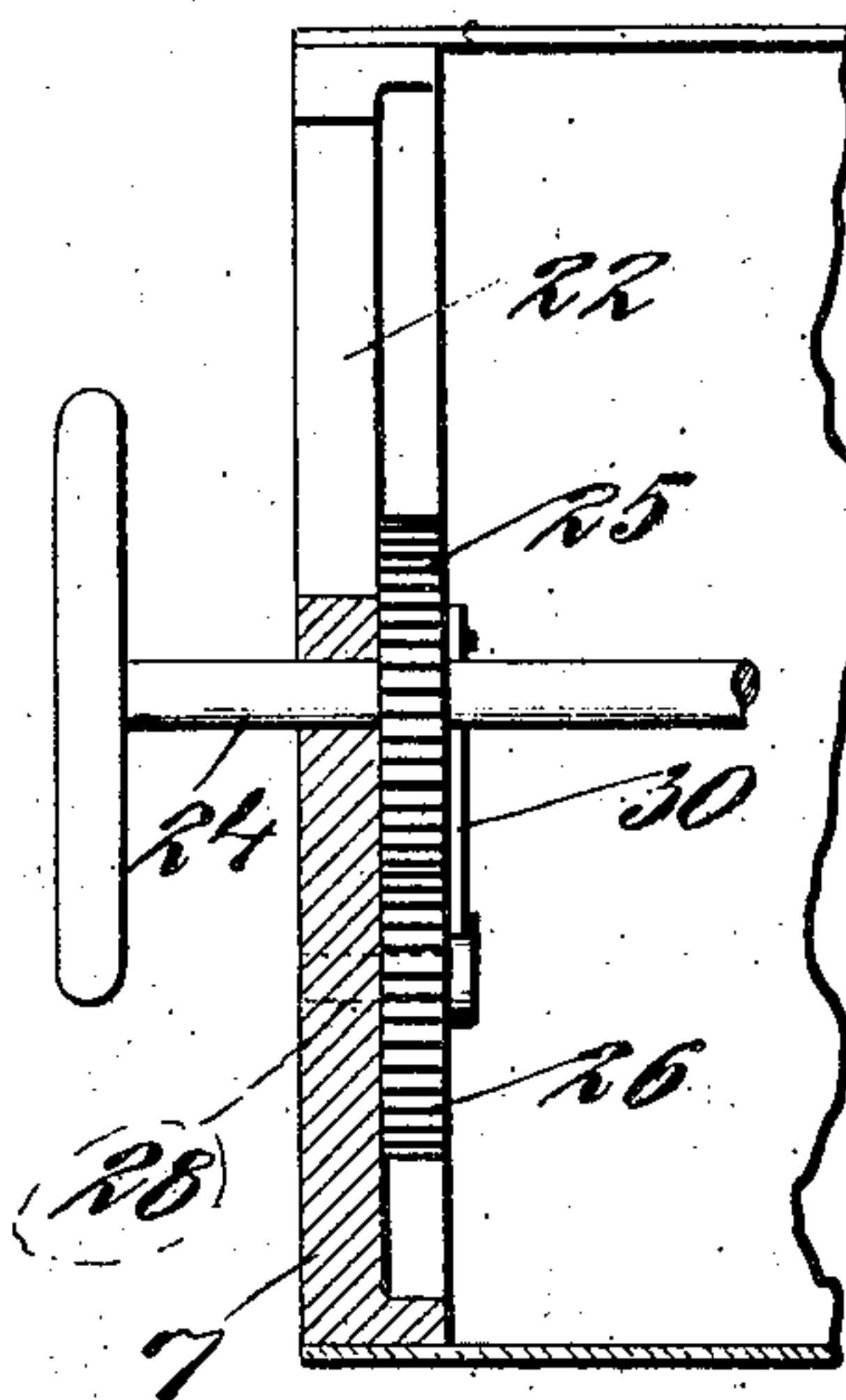


Fig. 6.



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UNITED STATES PATENT OFFICE.

JAMES G. COOMER, OF BELLEVILLE, MICHIGAN.

MOLD.

No. 903,453.

Specification of Letters Patent.

Patented Nov. 10, 1908.

Application filed March 24, 1908. Serial No. 422,937.

To all whom it may concern:

Be it known that I, JAMES G. COOMER, a citizen of the United States, residing at Belleville, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Molds, of which the following is a specification.

This invention is an expanding mold, particularly adapted and intended for molding sewer pipes, culverts and the like in the place or site where they are to remain, and has for its object to provide improved means for expanding or collapsing the shell of the mold, in such manner that it can be easily withdrawn when the structure is completed.

The details of the invention will more fully appear from the following description and the accompanying drawings, in which,

Figure 1 is a top plan view of the mold, the upper part of the shell being broken away or removed. Fig. 2 is a longitudinal section. Fig. 3 is a cross section on the line 3-3 of Fig. 1. Fig. 4 is an end view with the mold partly collapsed. Fig. 5 is a front elevation of a modification. Fig. 6 is a longitudinal section of the parts shown in Fig. 5.

In some machines now in use it is necessary for a man to enter the pipe to release the braces or whatever is used to sustain the form around which the cement is molded. This is impractical with small pipes, and the present invention is designed to provide means whereby the supporting parts may be expanded or contracted from the end of the pipe, without the necessity of a man entering the same. The device is also similarly useful for large sewers or pipes, since it may be made any desired size, according to the work to be done.

The lower half of the mold consists of a semi-circular shell or casing 6, which may be made of sheet iron or the like, and this is secured at the ends to cast iron semi-circular crescents or heads 7, which support the shell in shape. Two of these are shown, one at each end, but the number may be increased by the addition of intermediate similar heads, in the case of long pipe.

At the center of the form is a longitudinal rod 8 the ends of which extend through central guides 9 on the head plates 7. One end of the rod is threaded to receive a hand wheel nut 10 which is supported by a bracket

11 secured to the head plate, and by turning this nut the rod can be moved lengthwise to expand or contract the upper part of the form. The rod carries a series of toggle arms 12 projecting horizontally on opposite sides thereof, and each toggle arm has a turn buckle 13 whereby it may be adjusted with respect to its length. The arms are pivotally connected at 14, to the long rod 8, and at their outer ends are pivotally connected to parallel side bars 15 against which the side edges of the upper part 16 of the shell rest. This shell is semi-circular in form when expanded, but is made of sheet iron or material sufficiently flexible to allow it to be bent or contracted when the arms 15 are drawn together by appropriate movement of the rod 8. The heads are completed and the upper part of the shell stiffened or held in form when expanded by means of removable segments 17 made of cast iron or the like and adapted to be inserted in the ends of the form and supported upon lugs 18 formed upon the lower sections 7 of the heads. These upper head sections 17 are of proper size and shape to fit snugly within the ends of the upper section 16 of the shell.

In order to prevent any endwise movement of the bars 15, and to insure the spreading or expansion thereof, they are connected by long links 19 to a block 20 which is mounted upon the lower shell section 6 and fixed within the same, at about the middle thereof. Thus when the rod 8 is operated the bars 15 do not move lengthwise, but in consequence of the links 19 the bars are spread apart or drawn together, which expands or contracts the upper part of the shell accordingly.

In the use of the apparatus the lower form section 6 with the heads 7 are set in place, with the upper form section 16 thereon, and the nut 10 is turned to advance the rod 8 and expand the upper section to full size. The upper head sections 17 are then set in place and the mold is ready to receive the concrete filling. To remove the mold, the head pieces 17 are first taken out and then the nut 10 is turned to retract the rod 8 which contracts or draws the bars 15 together, thereby withdrawing the sides of the upper mold section 16 and bending the same along the middle line, thereby reducing its size so that it may be removed from the structure, and after this is done the lower shell 6 and other parts of

the mold may be pulled out. The upper part 16 of the shell rests at its ends upon the upper inclined edges 21 of the heads 7, and these edges are sufficiently inclined toward the center that when the upper section 16 is collapsed the shell will fall or be drawn away from the upper part of the concrete structure; and also said inclines 21 act when the bars 15 are expanded to guide the movement of the upper part of the shell and increase the same to its full size, to match with the lower part 6 of the shell.

The apparatus may be made as long or short as desired, according to the nature of the work at hand.

The modified form shown in Fig. 4 is particularly useful for pipes of large size, or large sewers. In this form the upper section 16 is made in two parts hinged along the middle line at the top and fastened at the ends to cast ribs or frames 22, the hinge being indicated at 23. The means used to expand the upper section are different, a turning shaft or rod 24 being used which extends lengthwise through the mold and is supported in bearings upon the head pieces 7. At the opposite ends this shaft has spur gears 25 which mesh with gears 26 which in turn mesh with gears 27, the latter being supported respectively upon stub shafts 28 and 29 fixed to the head pieces 7. Each of the gears 26 and 27 has a wrist pin 29 connected by a rod 30 to the lower ends of the braces 22. When the shaft 24 is turned the gears are rotated, which advances or retracts the rods 30, according to the direction of rotation, and so expands or contracts the upper mold section; and when the mold is contracted the whole structure can be pulled out of the sewer or

culvert, or moved along for the next operation, by any appropriate means.

Various modifications may be made within the scope of the invention, particularly with respect to the means for expanding and contracting the upper section of the mold.

I claim:

1. A collapsible mold comprising a lower section provided with arcuate heads having inwardly and downwardly inclined upper edges, an upper collapsible section resting at its ends upon the upper edges of said heads, and means to expand and contract said upper section.

2. A collapsible mold comprising a lower shell provided with semi-circular head sections, an upper collapsible shell resting at its ends upon said heads, means to expand or contract said upper shell, and removable head sections adapted to be inserted in the ends of said upper shell when expanded.

3. A collapsible mold comprising a lower shell provided with head sections at the ends, having central guides, a longitudinally movable rod slidable in said guides, toggles connected to the rod, parallel bars connected to the outer ends of the toggles, links connected to the lower shell and to the bars, to prevent lengthwise movement of the latter, an upper collapsible shell, resting at its side edges against the bars, and means to operate the rod to expand said upper shell.

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

JAMES G. COOMER

Witnesses:

CORA E. HEMPEL,
ELIZABETH J. PRICE.