

D. E. TINGLEY.  
 CONCRETE MOLD.  
 APPLICATION FILED MAR. 30, 1909.

931,351.

Patented Aug. 17, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

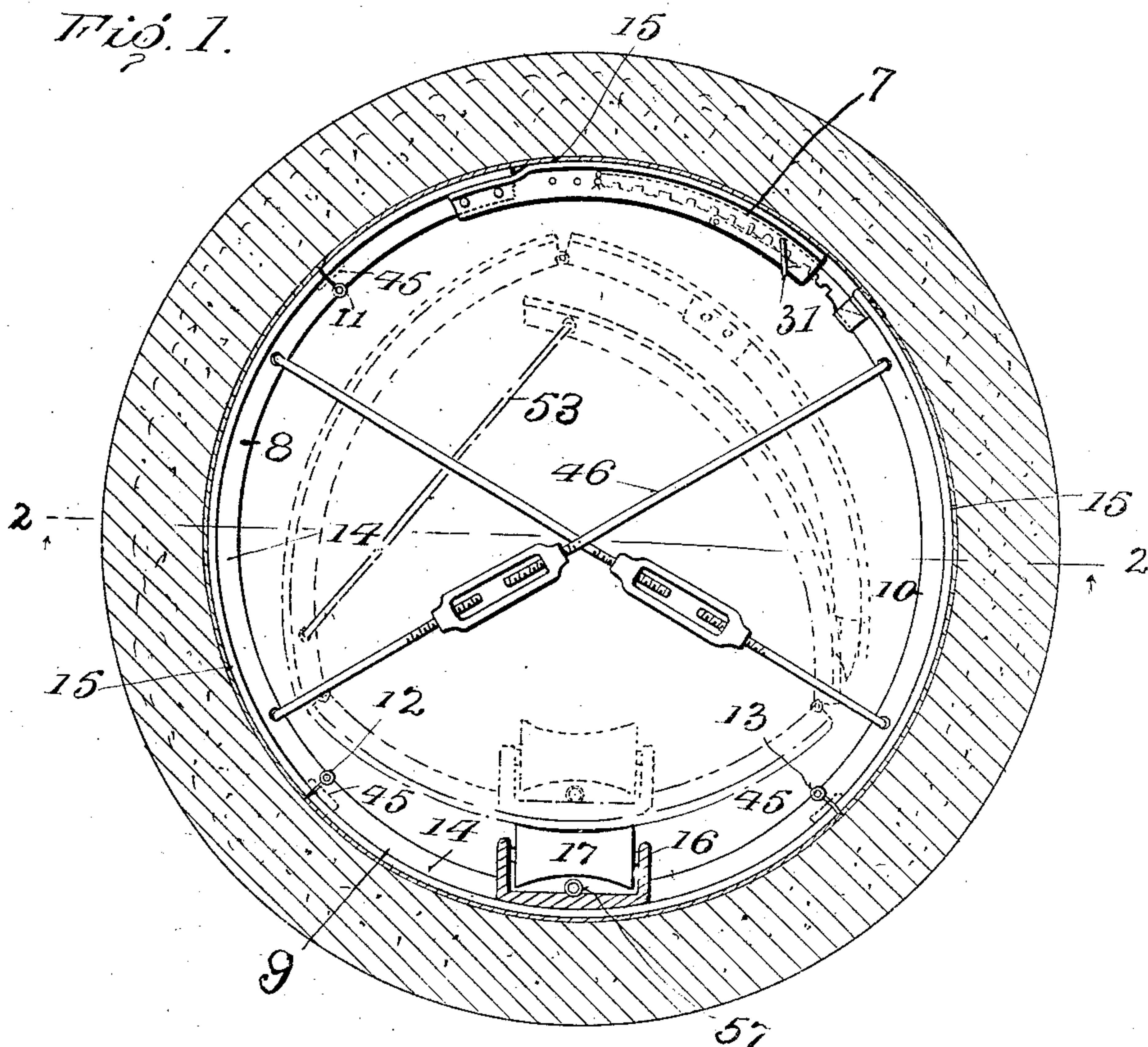
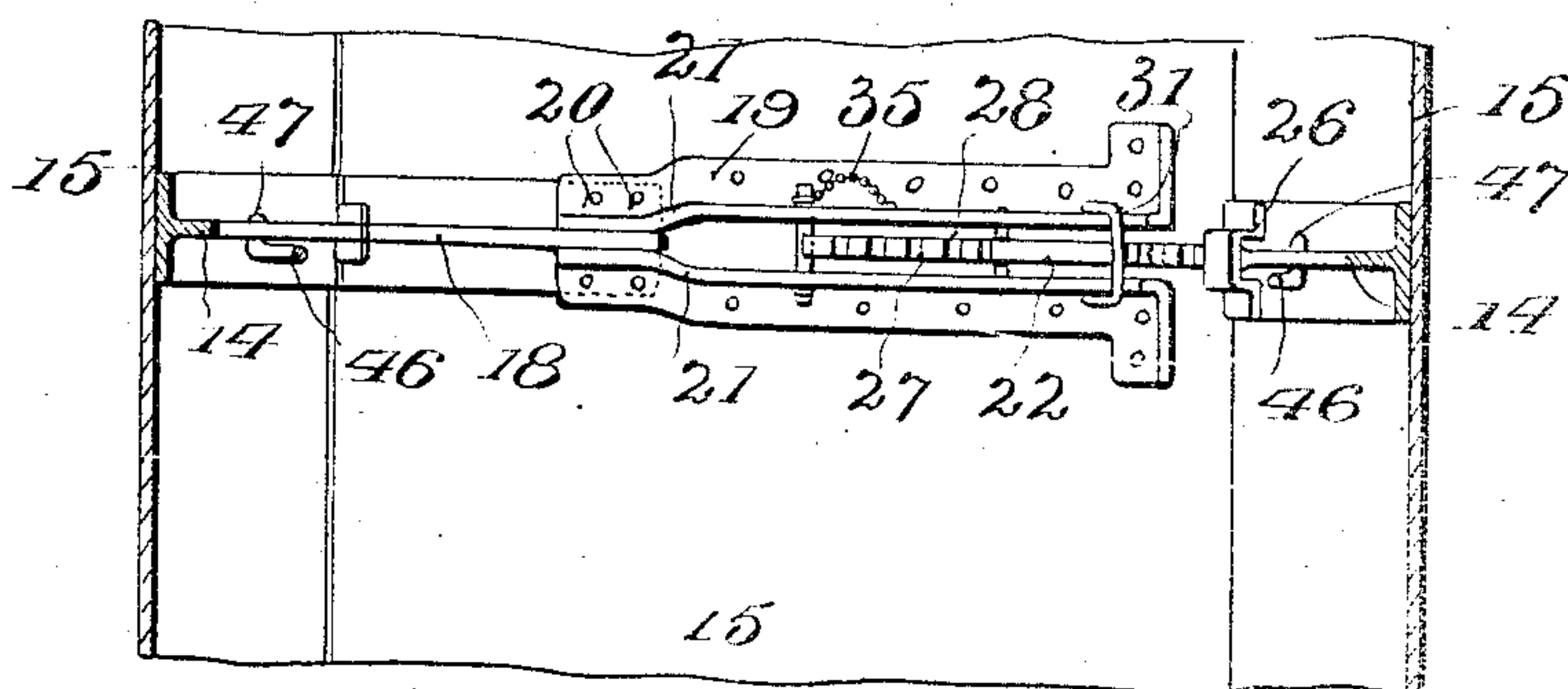


Fig. 2.



Inventor

David E. Tingley

Witnesses

W. G. D. Murray.  
 A. F. Meyer

By

Dudley, Browne & Phelps  
 Attorneys

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2 SHEETS—SHEET 2.

Fig. 3.

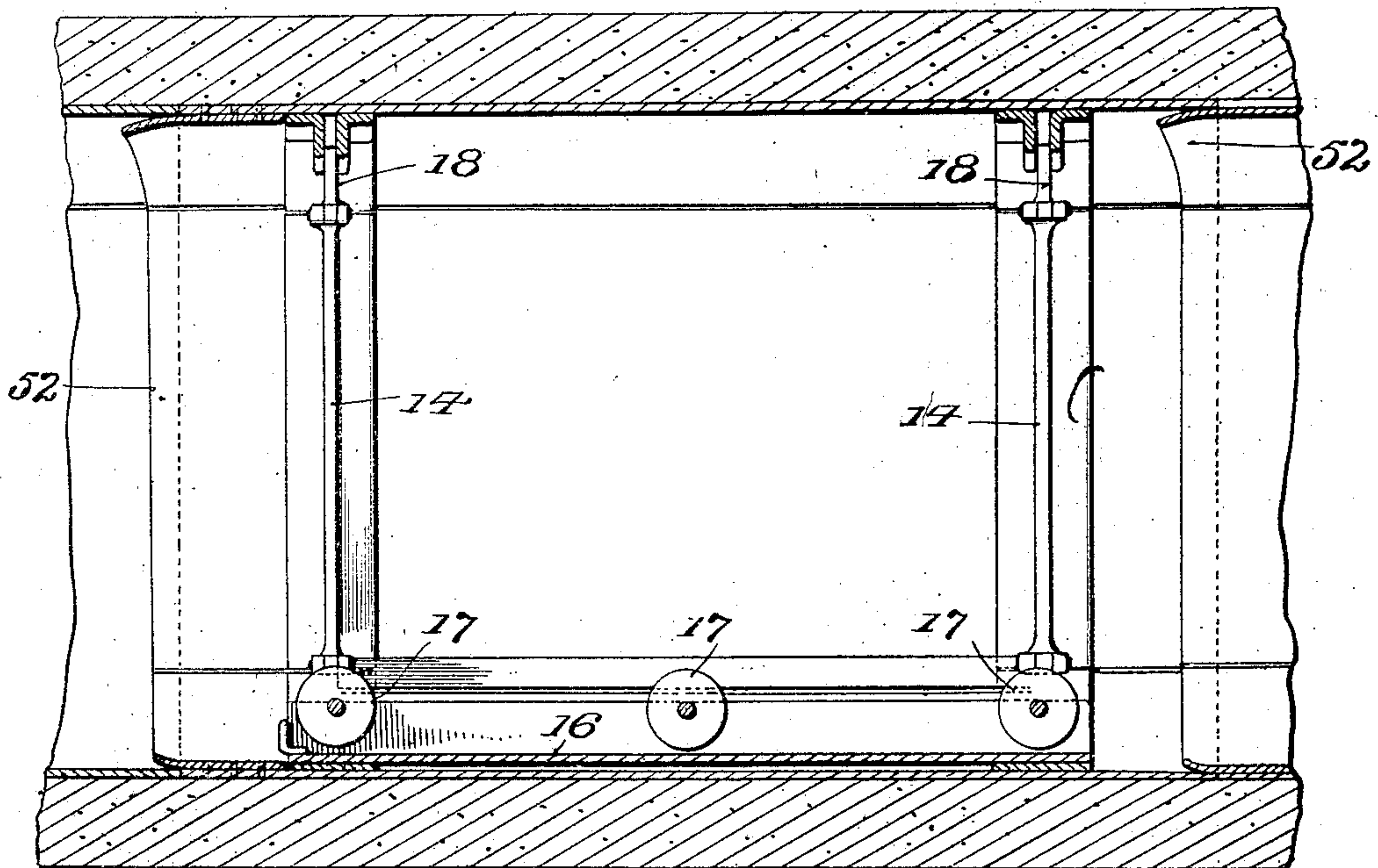


Fig. 4.

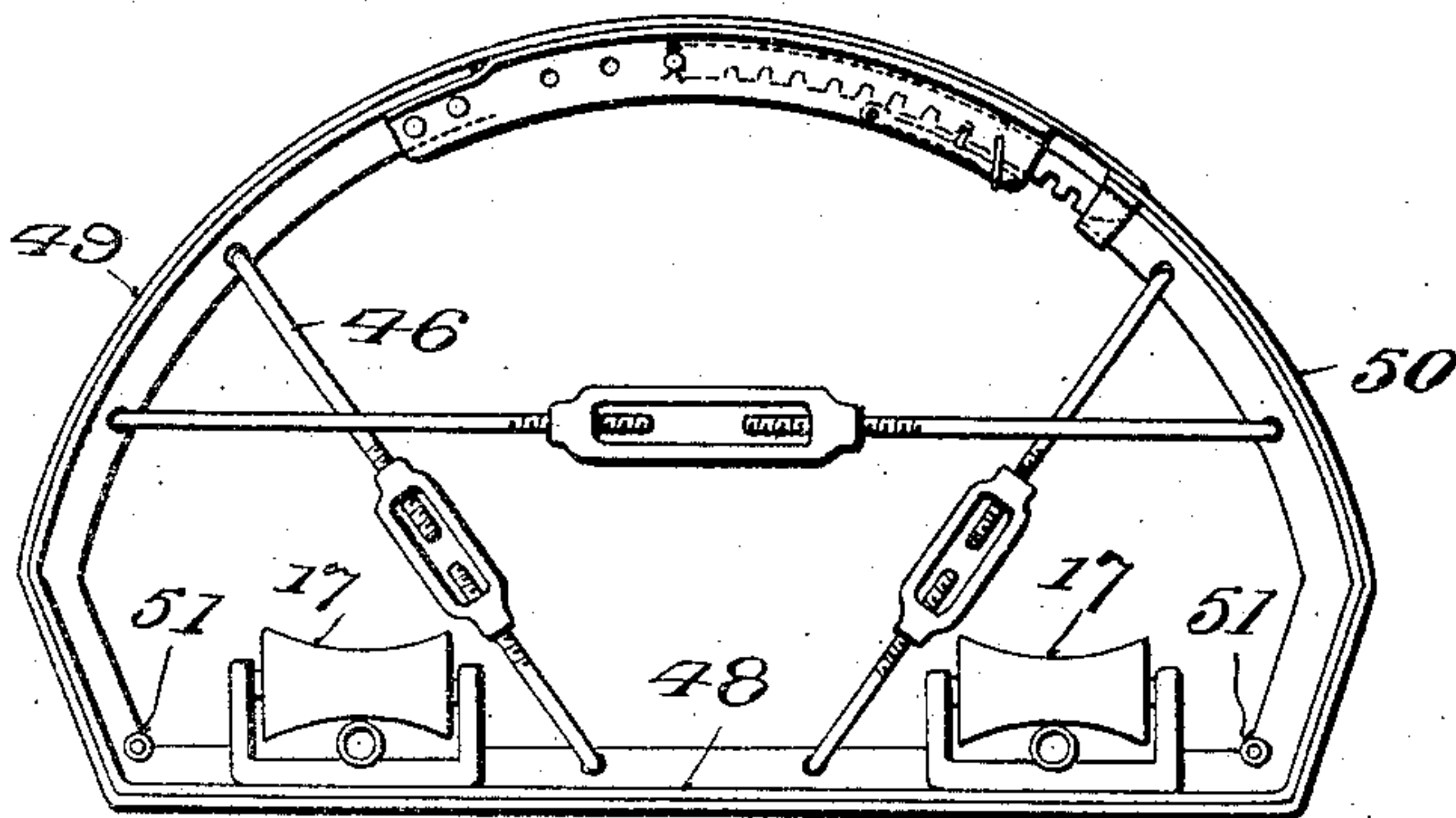
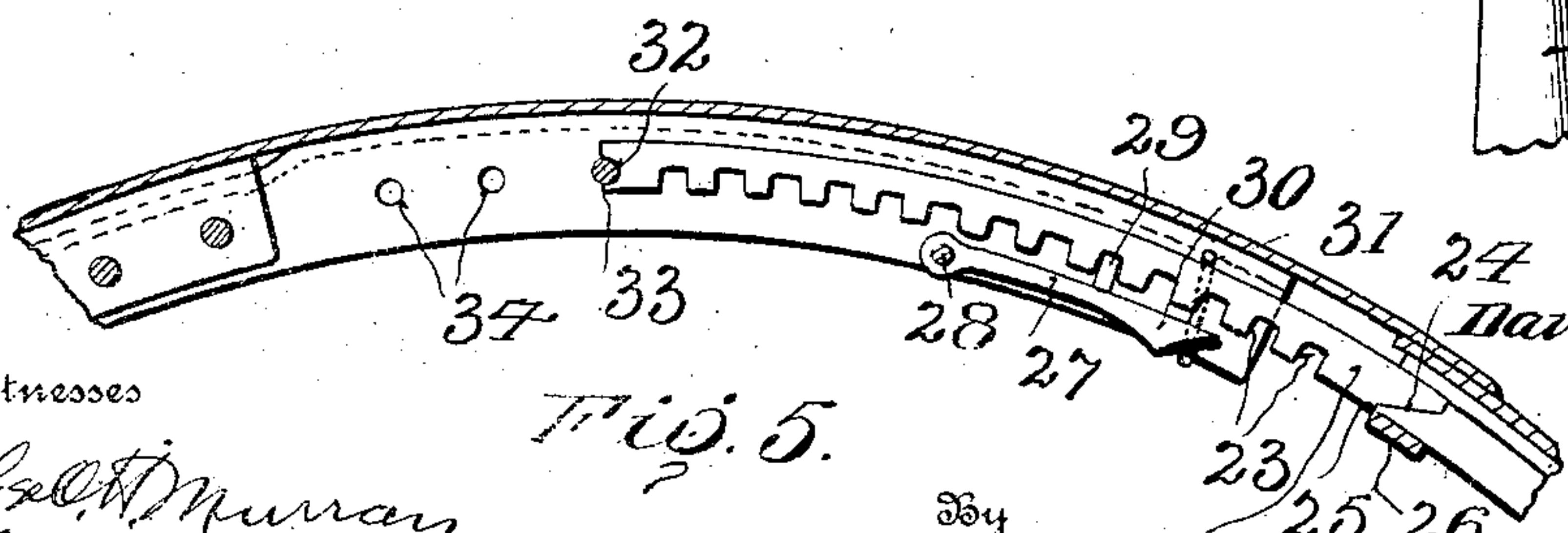
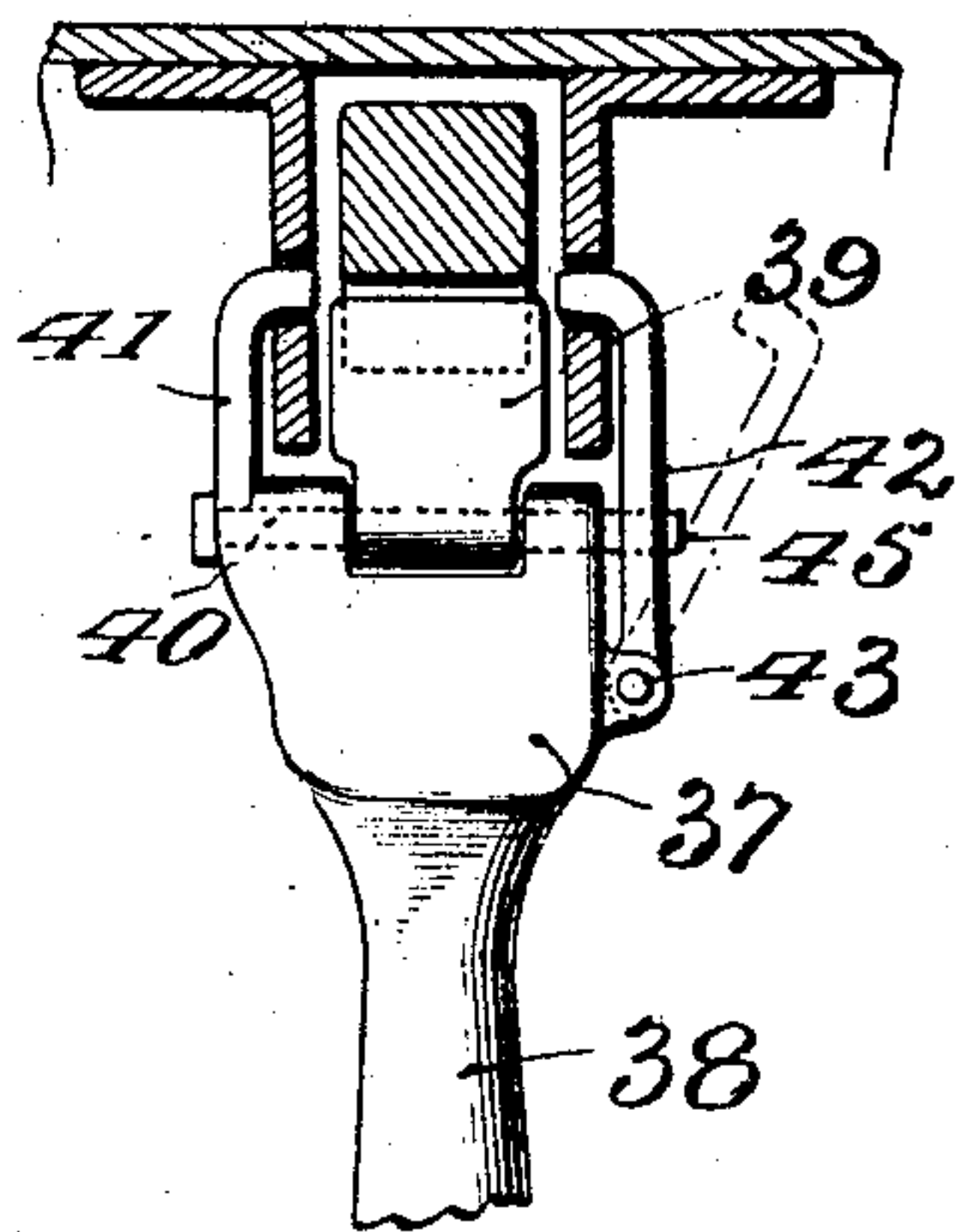


Fig. 6.



Witnesses

Wm. H. Murray.  
J. S. Menden

Fig. 5.

By

Inventor  
David E. Tingley  
Dudley, Brown & Phelps  
Attorneys



# UNITED STATES PATENT OFFICE.

DAVID E. TINGLEY, OF MARSHALL, ILLINOIS.

## CONCRETE-MOLD.

No. 931,351.

Specification of Letters Patent.

Patented Aug. 17, 1909.

Application filed March 30, 1909. Serial No. 486,782.

*To all whom it may concern:*

Be it known that I, DAVID E. TINGLEY, a citizen of the United States, residing at Marshall, in the county of Clark and State of Illinois, have invented certain new and useful Improvements in Concrete-Molds, of which the following is a specification.

My invention relates to certain new and useful improvements in concrete molds, and has particular reference to molds for hollow concrete masonry constructions for building arches, conduits, sewers and other structures of this general class.

By my invention the forms or molds are built in collapsible sections, and the lengths of molds at the rear or first completed portion of the work may be collapsed when the concrete is sufficiently set and carried forward or ahead through sections supporting more recently deposited concrete and placed in position for continuing the work, whereby the work may be continuously carried forward and does not have to be done in sections, each section of which has to be permitted to thoroughly set before the forms can be removed for use in building the next supporting section. The interior of the forms are unobstructed, when in position and after the concrete has been placed around the same, so that workmen experience no difficulty in bringing the forms forward from the rear to the front end of the work.

With these and other objects in view my invention consists in certain constructions, combinations and arrangements of parts the preferred form of which will be first described in connection with the accompanying drawings, and then the invention particularly pointed out in the appended claims.

Referring to the drawings wherein the same part is designated by the same reference numeral wherever it occurs, Figure 1 is a cross section of a sewer pipe in process of construction and in which my improved molds are employed; Fig. 2 is a section of the mold taken on line 2, 2 of Fig. 1 and looking in the direction of the arrows; Fig. 3 is a longitudinal section of a concrete sewer in process of construction and showing my molds in position therein; Fig. 4 is an end view of a modification showing my invention as adapted for arch work; Fig. 5 is a detail sectional view showing the securing means for the overlapping sections; and Fig. 6 is a sectional view showing my preferred

form of device for locking the overlapping sections of the mold together.

From the drawings it will be seen that I employ a plurality of sections which are adapted to be placed end to end to form the continuous construction. The length of these sections depends upon the character of work to be done, as where the masonry tube or the like is straight longer sections may be used than where it is necessary to form curves. Each of these mold sections is formed of a plurality of members 7, 8, 9, 10, hinged together at 11, 12 and 13. While I have shown four of these members in the form of construction shown in Fig. 1, it is to be understood that this number may be increased or diminished, as may be found desirable.

For convenience in describing the form of my invention illustrated, I will designate the member 7 as the top member, the member 9 as the bottom member, and the members 8 and 10 as the side members, though it is obvious that the relative positions of these members may be changed as desired.

The side members 8 and 10 are preferably formed with a plurality of curved T-bars 14, to the heads of which are riveted plates 15, thus forming a rigid shell. The T-bars are formed in an arc of a circle whose center is the longitudinal axis of the set-up mold sections, and consequently the plates 15 are similarly curved.

The bottom section 9 is similarly formed of T bars 14 covered by plates. In the central portion of the bottom section 9 however I preferably cut through the T bars to form a channel in which may be removably placed the U-shaped section 16 having open slots in its upper edges in which are removably mounted the journals of the rolls 17.

The top section 7 is formed by short lengths of T irons 18 which extend from one edge of the section partly across the same, and to the inner ends of these irons 18 are secured the ends of a pair of L irons 19 by means of rivets 20 or other fastening devices. The plates 15 are secured to these sets of irons. Preferably, and as shown, the pair of L irons 19, beyond the end of the T irons 18 are slightly broadened out, as shown at 21, to increase the space between the parallel sides of the irons, as most clearly seen in Fig. 2. Slidably mounted between the widened portions of the L irons 19 is a bar 22 provided with notches 23 on its under face, this bar being arc-shaped the same as



the angle irons, and provided with a wedge shaped end 24, and a shoulder 25 which is adapted to engage under a keeper 26 formed at the edge of the section 10 in line with the end of the T irons 14 of this section.

27 is a latch pivotally mounted upon a pin 28 extending between the sides of the L irons 19, the latch being provided with a tooth 29 adapted to engage in the notches 23 of the bar 22 upon the tooth 29. The latch is provided with a nose 30 over which a bail 31, mounted in the sides of the L irons 19, is adapted to engage, whereby the latch may be held with its tooth in engagement with a notch 23 of the bar, and prevent its endwise movement. As an additional means of preventing movement of the bar 22 I preferably form its inner end concaved, as shown at 32, and 33 is a pin adapted to be passed through openings 34 in the L irons and be engaged by the notch 32 in the end of the bar, whereby back movement of the bar is absolutely prevented. As shown in Fig. 2, the pin is secured to one of the L irons 19 by means of a chain 35, and 36 is a cotter pin which may be passed through the end of the pin to prevent it from falling out of the opening 34 in which it is placed.

As a means for moving the bar 22 to lock the mold in its expanded position I have shown in Fig. 3 a device which consists of a head 37 having a handle 38 at one end of the head and a pawl 39 at the other end thereof.

40 is a pin extending through the head and on which the pawl 39 is pivoted. This pin also carries at one end a finger 41 which extends outwardly from one side of the head and 42 is a second finger on the other side thereof, said finger 42 being pivoted at 43 to the head and adapted to be swung toward and away from the same whereby the fingers 41 and 42 may be caused to engage and disengage with the openings 34 in the L irons. When the finger 42 is moved up into full line position shown in Fig. 6, the opening 44 shown in dotted lines in Fig. 6 is adapted to pass around the end of the pin 40, in order to strengthen the finger and hold the same rigid. It will be seen that with this construction the fingers 41 and 42 may be caused to engage openings 34 and then by causing the end of the pawl 39 to engage one of the notches 23 the bar 22 may be forced longitudinally between the L bars 19 and the nose 24 of the bar be forced into locking position under the keeper 26.

It will be noted that the plate 15 of the section 7, when the parts are in locked position, laps over the plate 15 of the section 10, so as to prevent concrete from working through the joint. Preferably, and as shown, I also provide strips 45 which overlap the joints between the other members of the mold section.

As the greatest strain on the mold section

occurs when the concrete is being placed in position around the section I preferably provide turn buckles 46 having hooked ends 47 adapted to engage openings formed in the T irons of the various sections, whereby while the concrete is being placed in position around the section it will be interiorly braced. As soon as all the concrete is in place the turn buckles may be removed.

57 are rings which I preferably provide in the front edge of the lower portion 9 into which a crow-bar may be inserted in order, after the mold is collapsed, to loosen the same from the concrete to which it may stick.

In Fig. 4 I have shown a construction adapted for building concrete arches, culverts and the like, and in its essentials it is the same as the construction heretofore described except that the bottom member 48 is made flat and only two side members 49 and 50 are employed, the three members being hinged together at 51 and the two side members being secured together by the latching means heretofore described. With this construction I preferably provide two sets of rolls 17 instead of one as in the form of construction previously described.

As best shown in Fig. 3, I provide at one end of each mold section, flanges 52 secured to the front end of each member of the mold section, said flanges being inwardly curved, as shown, in order to assist in placing the various sections end to end.

When each section is set up or expanded for use, as illustrated, it forms a strong rigid mold section, and by placing a sufficient number of these sections end to end and covering each section with concrete successively such a length of pipe may be laid that the concrete of the first sections covered will be dry when the concrete of the sections last covered is being placed in position. As the turn buckles to brace the mold sections are preferably removed as fast as the concrete has been placed around the mold, a workman may enter the sections and pass along the same until he reaches the first section covered by concrete, whereupon he removes the safety pin 33 from behind the bar 22, and then withdraws the tooth of the latch 27 from engagement with the notch of the bar, when he can move back the bar out of engagement with the keeper 26, and then fold the members of the mold section around each other, as shown in Fig. 1. In order to hold the members in this position he may connect two of them together by a stay rod 53 as shown in Fig. 1. He then raises the bottom member of the section from its position and if it sticks to the concrete can force it up by placing a crow bar in the ring 47. The section is now lifted up until its bottom member 9 rests upon the rolls 17 of the adjacent section, when it can be readily pushed



through the series of mold sections to the front end of the work and placed in position, expanded and locked up, the turn buckles placed in position and the concrete  
 5 tamped thereon. This operation is repeated taking the mold section at the back of the work from position, moving it through the sections to the front of the work and again placing it in position. From this it will be  
 10 seen that the operation of making pipes, conduits, arches and the like can be carried on continuously and no delay caused by having to wait for various sections of the work to dry before the mold sections can be removed.  
 15 I realize that considerable variation is possible in the details of construction and arrangement of parts without departing from the spirit of my invention, and I therefore do not intend to limit myself to the specific  
 20 form shown and described.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is—

1. A mold comprising a plurality of members shaped to conform to the conduit or  
 25 other construction to be molded thereover, said members being hinged together whereby they may be collapsed to pass through an adjacent expanded mold, latching means  
 30 carried by one section, cooperating means carried by another member with which said latching means is adapted to engage to hold the mold in expanded condition, a U  
 35 shaped section mounted on the interior of the lower member of each mold section, and

rollers, journaled in said U shaped section, to support a collapsed mold section while being passed therethrough.

2. A mold comprising a plurality of members shaped to conform to the conduit or  
 40 other construction to be molded thereover, said members being hinged together, a notched bar slidably mounted on one of said members, a keeper mounted on the edge of another member adapted to receive the end  
 45 of the bar for locking said parts together, a latch pivoted over the sliding bar and provided with a tooth adapted to engage a notch in the bar, and means for locking the latch with its tooth in engagement with a  
 50 notch.

3. A mold comprising a plurality of members shaped to conform to the conduit or  
 other construction to be molded thereover, said members being hinged together, a  
 55 notched bar slidably mounted on one of said members, a keeper mounted on the edge of another member adapted to receive the end of the bar for locking said parts together, a latch pivoted over the sliding bar and pro-  
 60 vided with a tooth adapted to engage a notch in the bar, and a ring surrounding the bar and adapted to lock the latch with its tooth in engagement with a notch.

In testimony whereof I affix my signature 65  
 in presence of two witnesses.

DAVID E. TINGLEY.

Witnesses:

F. L. BROWNE,  
 E. T. WHITE.