

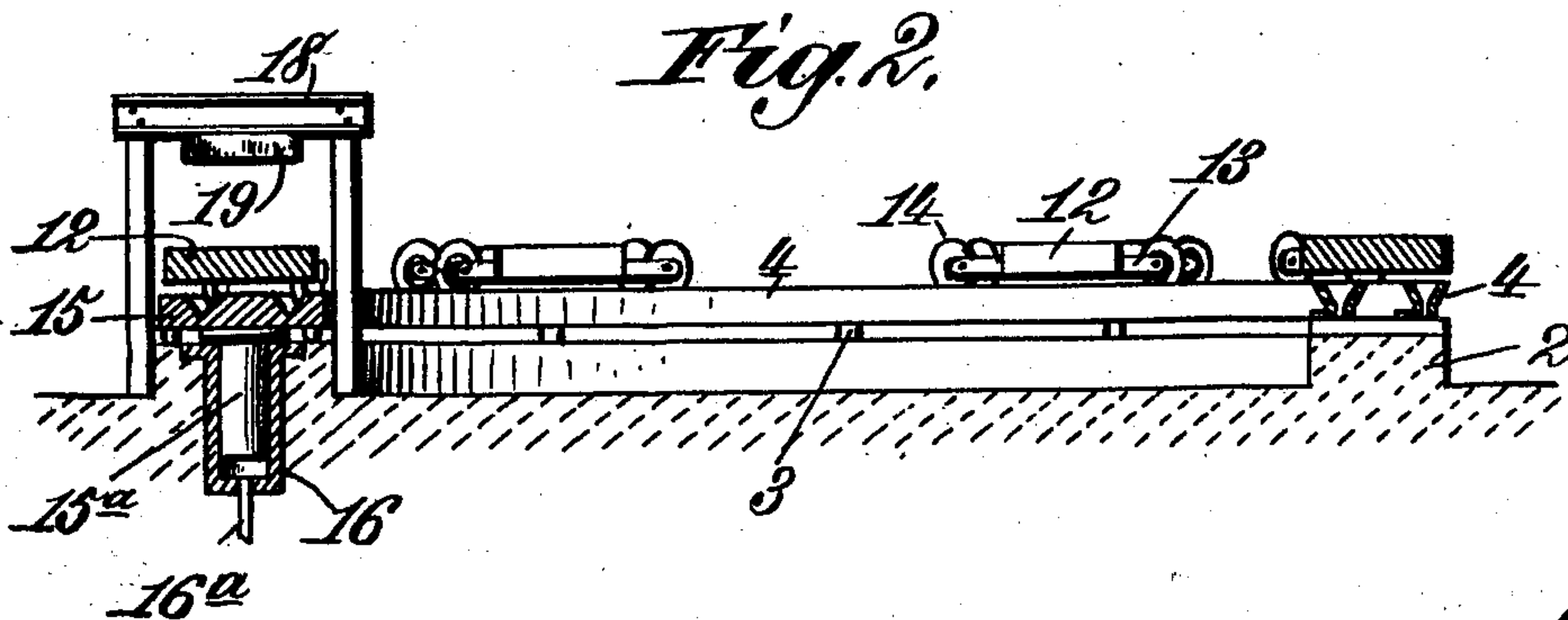
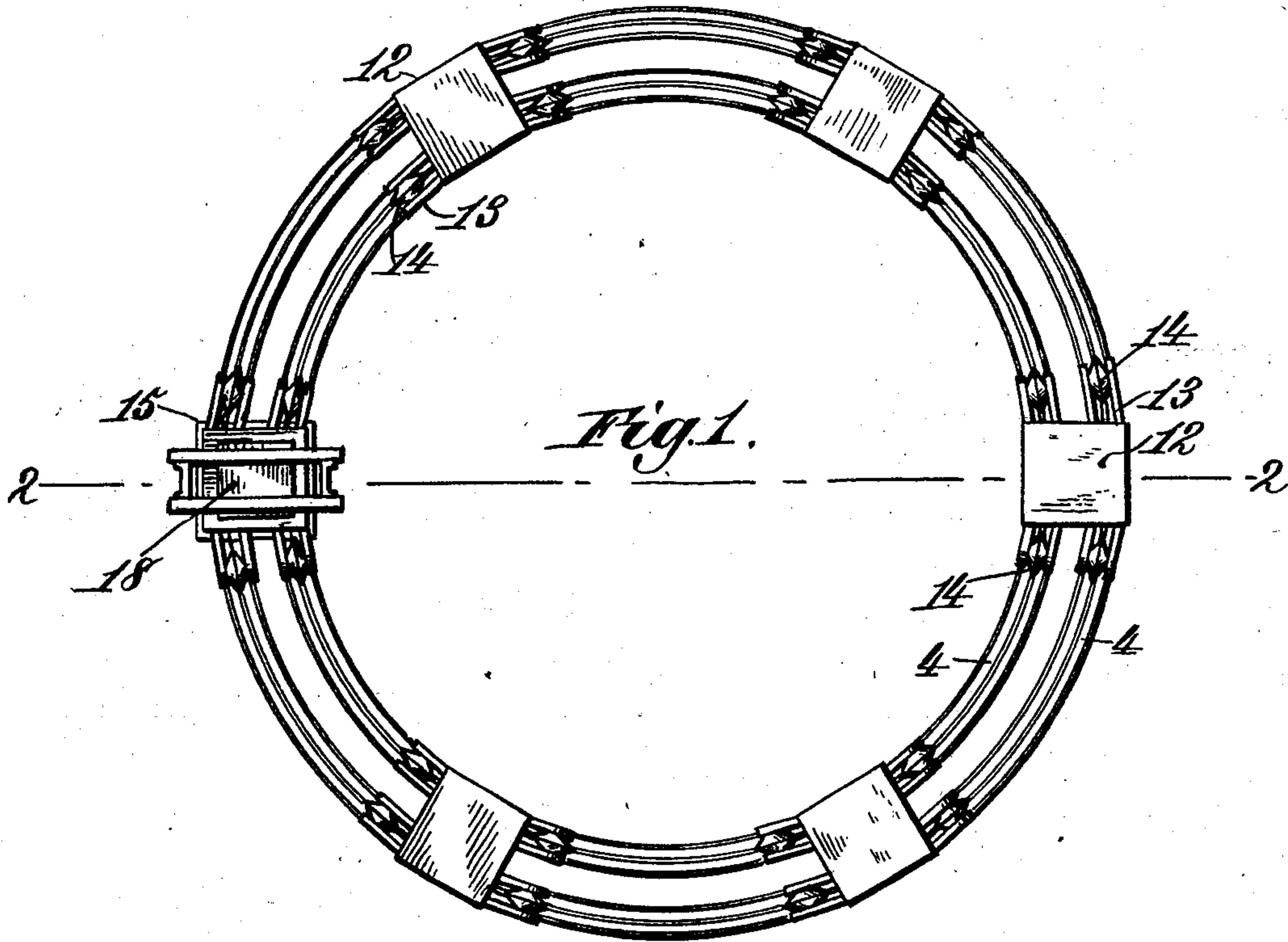
No. 720,408.

PATENTED FEB. 10, 1903.

E. CROSS.  
MOLDING APPARATUS.  
APPLICATION FILED OCT. 11, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



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James A. Tomlinson, Jr.

Inventor,  
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By James L. Norris,  
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No. 720,408.

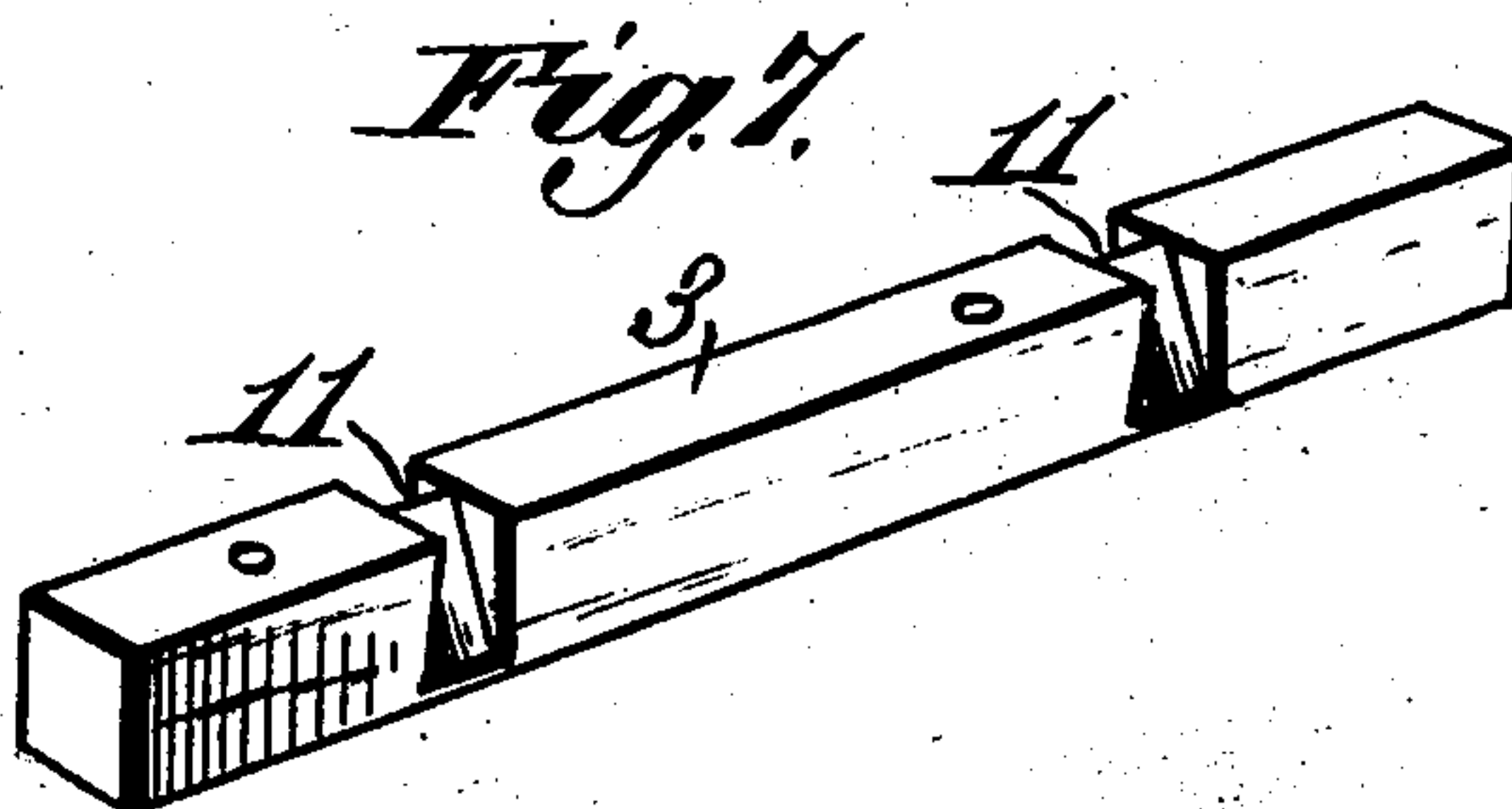
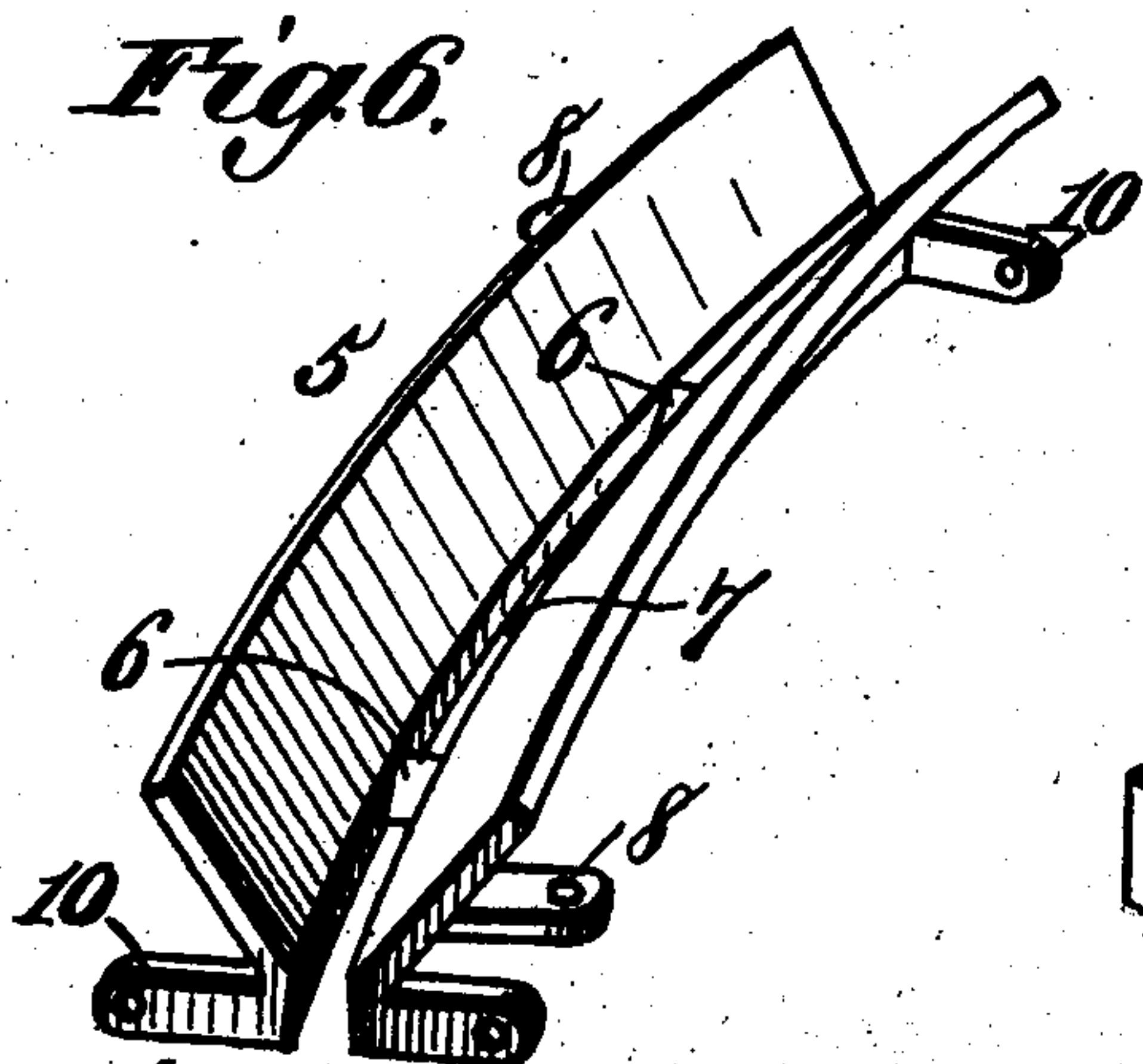
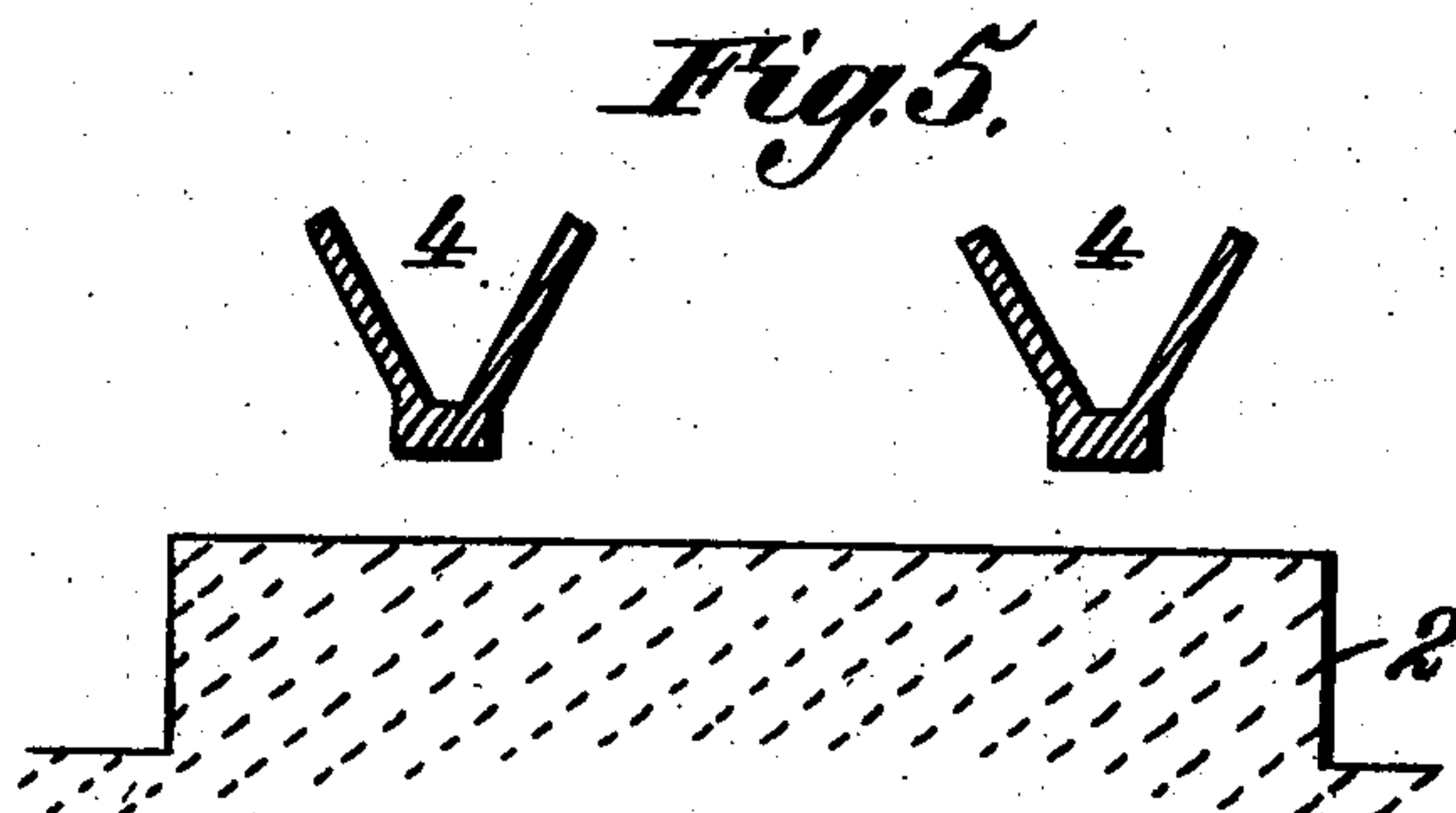
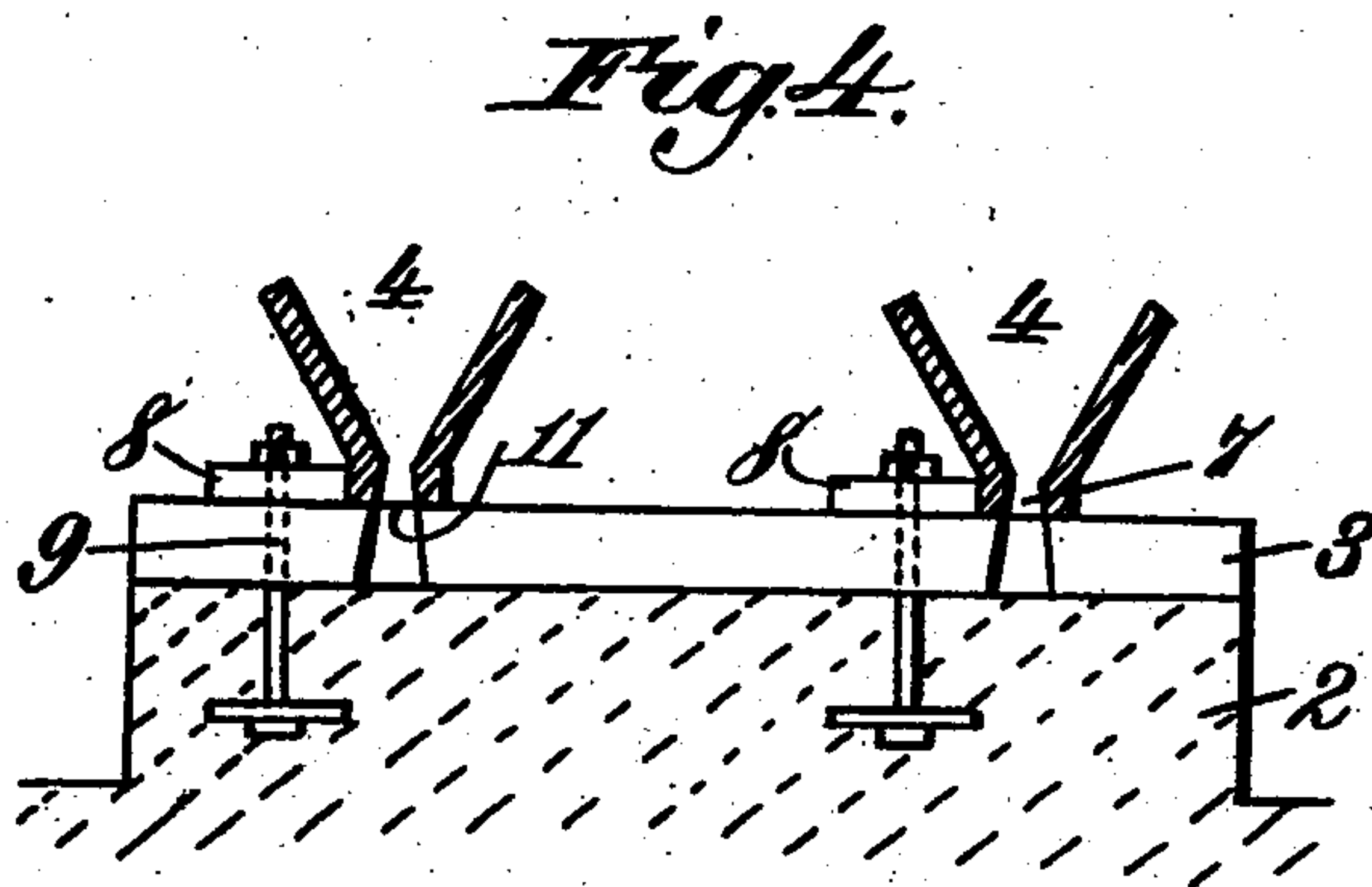
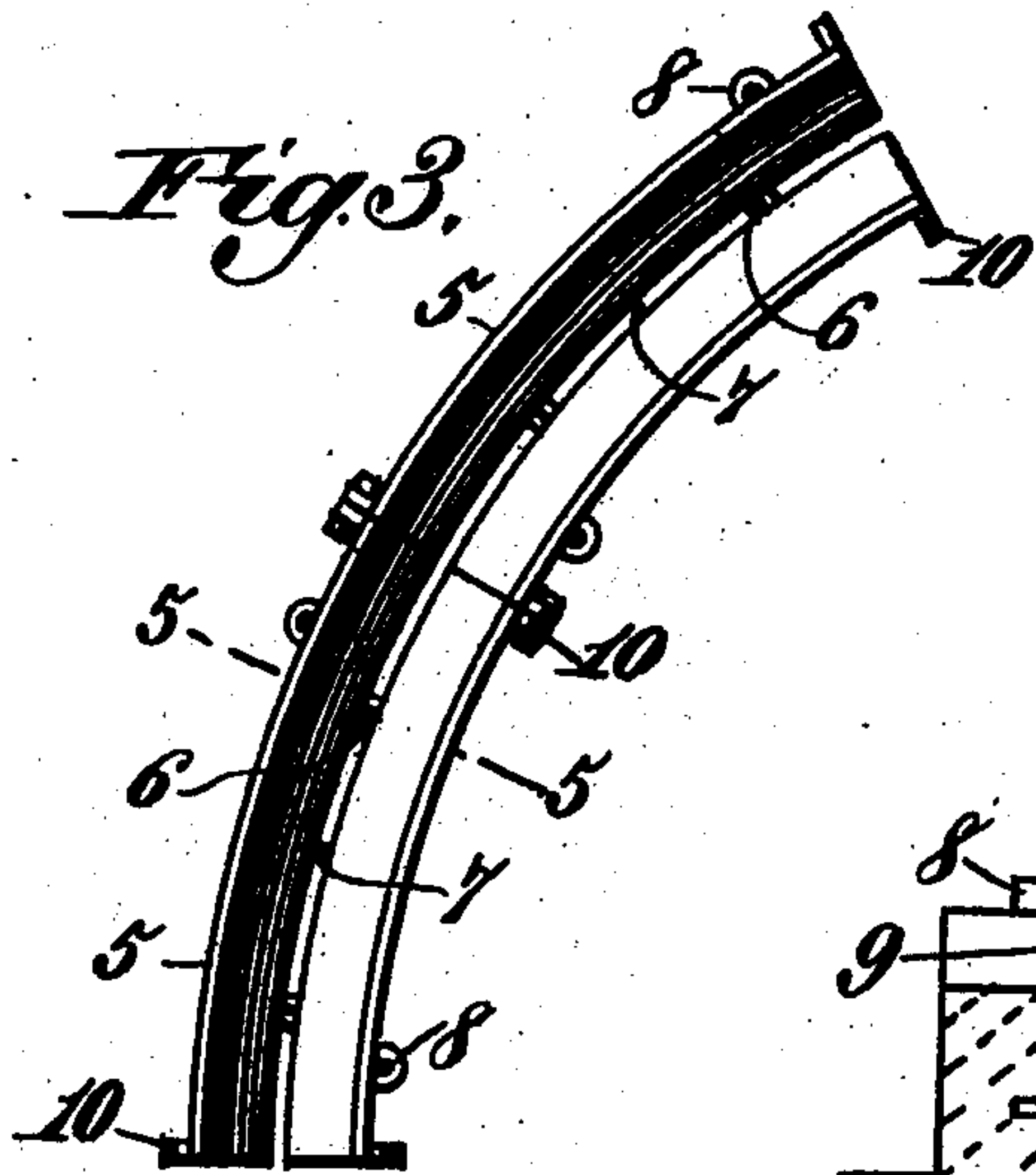
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MOLDING APPARATUS.

APPLICATION FILED OCT. 11, 1902.

NO MODEL.

2 SHEETS—SHEET 2.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

EDWIN CROSS, OF BURNHAM, PENNSYLVANIA.

## MOLDING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 720,408, dated February 10, 1903.

Application filed October 11, 1902. Serial No. 126,895. (No model.)

*To all whom it may concern:*

Be it known that I, EDWIN CROSS, a citizen of the United States, residing at Burnham, in the county of Mifflin and State of Pennsylvania, have invented new and useful Improvements in Molding Apparatus, of which the following is a specification.

This invention relates to a molding apparatus; and the object of the invention is to provide an efficient device of this character for rapidly handling trucks or carriages supporting the flasks, the tracks upon which the trucks or carriages travel being so constructed that they cannot become clogged with sand, to thereby interfere with the proper propulsion of said trucks. In the present case the track upon which the trucks travel has a movable section, and this movable section is preferably arranged for vertical movement, so that a truck carried thereby can be elevated to the rammer, by virtue of which the sand in the flask can be more uniformly packed or rammed. By reason, also, of this feature the journals of the truck can extend beyond the movable track-section, so as to not receive the stress of the ramming operation. I prefer to make the track of annular form, by reason of which I am enabled to simultaneously handle a large number of trucks—six, for example—a man to each truck, so that the ramming operation can be made practically a continuous one. The rails constituting the track are of peculiar construction, they being of channeled or grooved form to receive the correspondingly or substantially correspondingly shaped peripheries of the wheels of the respective trucks, and the channels have openings for the escape of sand that may fall thereinto during the packing of the flasks by the attendants, the openings being in the present instance at or along the bottoms of the rails. The ties that sustain the rails at points below the openings in the latter are of wedge or knife-edge form, so that the accumulation of sand at these points is not possible. The rails may be made of segments suitably united together and easily and inexpensively produced by casting. The annular track, of course, may be of a size that can best be accommodated in the shop or foundry in which it is installed.

The invention is clearly illustrated in the

accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a plan view of a molding apparatus including my invention in one simple embodiment thereof. Fig. 2 is a sectional elevation taken in the line 2 2, Fig. 1. Fig. 3 is a plan view of two segments of a rail. Fig. 4 is a sectional elevation of the track and its supporting-tie and foundation. Fig. 5 is a cross-section of one of the rails, taken in the line 5 5, Fig. 3. Fig. 6 is a detail view in perspective of one of the segments of the rail. Fig. 7 is a similar view of one of the ties.

Like characters refer to like parts in the several figures.

While the invention is not limited to the shaping of the track in any particular manner, it is illustrated and will be hereinafter described as being of annular form, the same being upheld by the foundation 2 of a shape corresponding with the track and sunk into the floor with its upper face substantially level with said floor. The foundation, it will be understood, is of a form corresponding with the track, and upon its upper face at suitable intervals are laid the ties 3, of any suitable material. They may be of wood or cast metal. The rails are each denoted by 4, and they are arranged concentrically and are spaced apart a suitable distance. The rails consist of segments 5, which may be in the form of castings, and each segment, it will be seen, consists of two wings or cheeks arranged a little less than a right angle to each other and resting upon the ties 3. In other words, the segments are substantially V-shaped in cross-section. It will be seen that the wings or cheeks of the respective segments are separated, except for the very narrow web 6 along their lower edges, to provide openings 7 for the escape of sand that might fall into the segments during the packing of flasks mounted upon trucks adapted to travel on the track. The webs 6, it will be seen, are of wedge form, their apexes being uppermost, so that they are adapted to shed any sand that may fall thereonto. The segments terminate upon their lower outer sides in lateral ears 8, through which bolts or similar fastening devices 9 can pass, said bolts being adapted to be connected in some suitable manner to the



foundation 2 and also extending through the cross-ties 3. Upon reference to Figs. 1 and 3 it will be seen that the segments of the respective tracks abut each other and at their ends are provided with ears or lugs 10 to receive bolts, rivets, or other fastening devices by which the said segments can be rigidly connected together to form, in effect, unitary rails. It will be seen, therefore, that the track comprises two annular rails, one arranged within the other, and upon which trucks or carriages can travel and which are of grooved form and have openings in their bottoms for the escape of sand that may fall off the trucks while the flasks thereon are being packed. The ties have wedge or knife-edge portions 11, the apexes of which are arranged under the openings 7, it being understood that the upper or beveled edges of said wedges extend transversely of said openings, by reason of which the sand after it passes through said openings cannot accumulate upon the ties, the inclined sides of the said wedges preventing such result. The trucks which travel upon the tracks are denoted by 12, and they include bodies of a size suitable to accommodate a flask and its appurtenances and provided with projecting arms 13, in which the wheels 14 are journaled. It will be seen that the peripheries of the wheels are shaped to agree with the groove or channel of the rails 4, so that any sand falling upon the said peripheries cannot lodge thereon, but drops from the same into the channels and from thence through the openings 7.

The track includes a movable section 15, which in the present case is mounted for rising-and-falling movement, so that the flask carried by the track thereon can be elevated by suitable power to the rammer head or block for the purpose of packing the sand in said flask, and the movable section 15 of the track is of such length that the wheels 14, or rather the journals of said wheels, project beyond the movable section or platform, so that when the latter is elevated to ram the sand in the flask the pressure due to the ramming operation cannot be possibly transmitted to said journals. The movable section or platform 15 of the track has upon its under side the depending plunger or piston 15<sup>a</sup>, fitted into the cylinder 16 and adapted to vertically travel therein. An inlet-pipe 16<sup>a</sup> for compressed air or other motive agent leads into said cylinder 16 for the purpose of supplying compressed air or its equivalent thereto in order to elevate the plunger, and consequently the track section or platform 15. When the latter is elevated, the flask upon the truck is carried to the rammer-block 19 upon the cross-piece 18 to compress the sand in the flask. The rammer-block 19 is secured to the cross-piece 18, fastened in some suitable manner to the uprights 17, located at opposite sides of the track section or platform 15, which are usually made of channeled iron. Other means than that illustrated may be em-

ployed for elevating the track-section, and consequently the truck carried thereby.

The track is adapted to support a large number of trucks. As many as six can be very conveniently handled, one operator performing one operation while the others are performing other operations, and during this time the ramming mechanism can be working, so that the ramming operation is practically a continuous one, and by reason of the construction of the track the same cannot possibly be clogged with sand used in packing the flasks.

It will be remembered that the track upon which the trucks travel is of annular form. This is particularly advantageous, as the trucks always move in the same direction and not forward and then backward, as is the case with a straight track or one of a similar nature. By making the track annular a number of trucks can be used. At the commencement of operation an empty flask will be placed by an operator on a truck and the latter advanced to a second operator, who puts facing-sand in the flask. The second operator then advances the truck to a third operator, who fills the flask with heap or common sand and then advances the truck to a fourth operator, who places the ramming-board on top of the flask and advances the truck to a fifth operator, who positions the truck with its flask on the movable track-section, so that the latter can be elevated to effect the ramming of the contents of the flask. When the ramming operation is concluded, the movable track-section will be lowered and the truck moved off said movable track-section, so that the flask and its contents can be taken therefrom, after which the truck will be moved empty to the first operator. The operation described is practically a continuous one, and a large number of trucks—say six—can be simultaneously handled.

From the preceding description it will be understood that my improved molding apparatus includes the combination, with a fixed rammer, of a track having a section movable toward said rammer, so that the flask-carrying truck upon said movable track-section can be carried toward the rammer to thereby bring the flask on said truck against the rammer in order to pack the sand therein in a dense uniform condition.

The apparatus is comparatively simple. It can be readily and inexpensively assembled and can be made of a size to suit that of the shop or foundry in which it is installed.

The invention is in no wise limited to the foregoing construction and to the formation of any of the parts of any particular material.

Having described the invention, what I claim is—

1. In a molding apparatus, a track having a vertically-movable section, a relatively fixed rammer located above said movable track-section, and a truck provided with rollers journaled at its ends, to travel on the



track, and said journals being arranged to extend outward beyond the opposite sides of said movable track-section when the truck thereon is elevated.

5 2. In a molding apparatus, a rail consisting of two sections separated at their lower edges and diverging from each other toward their upper edges and narrow webs uniting  
10 to thereby hold said sections in proper relation with each other.

3. In a molding apparatus a rail consisting of two sections separated at their lower edges and diverging from each other toward  
15 their upper edges and narrow, wedge-shaped webs uniting said sections in proximity to their lower edges to hold them in proper relation to each other.

20 4. In a molding apparatus, the combination of a rammer, a track having grooved rails each rail having an opening in its bot-

tom for the escape of sand, and ties for supporting the rails each tie having wedge-shaped portions arranged under the openings and the apexes of said wedge-shaped portions being up. 25

5. In a molding apparatus, the combination of a rammer, an annular track consisting of grooved rails having openings in their bottoms, and said track having a section movable toward said rammer, and a truck having wheels the peripheries of which are shaped to agree with and to fit into the grooves of said rails. 30

In testimony whereof I have hereunto set  
my hand in presence of two subscribing witnesses. 35

EDWIN CROSS.

Witnesses:

JOHN WELLATT,  
WALTER I. MINNICK.