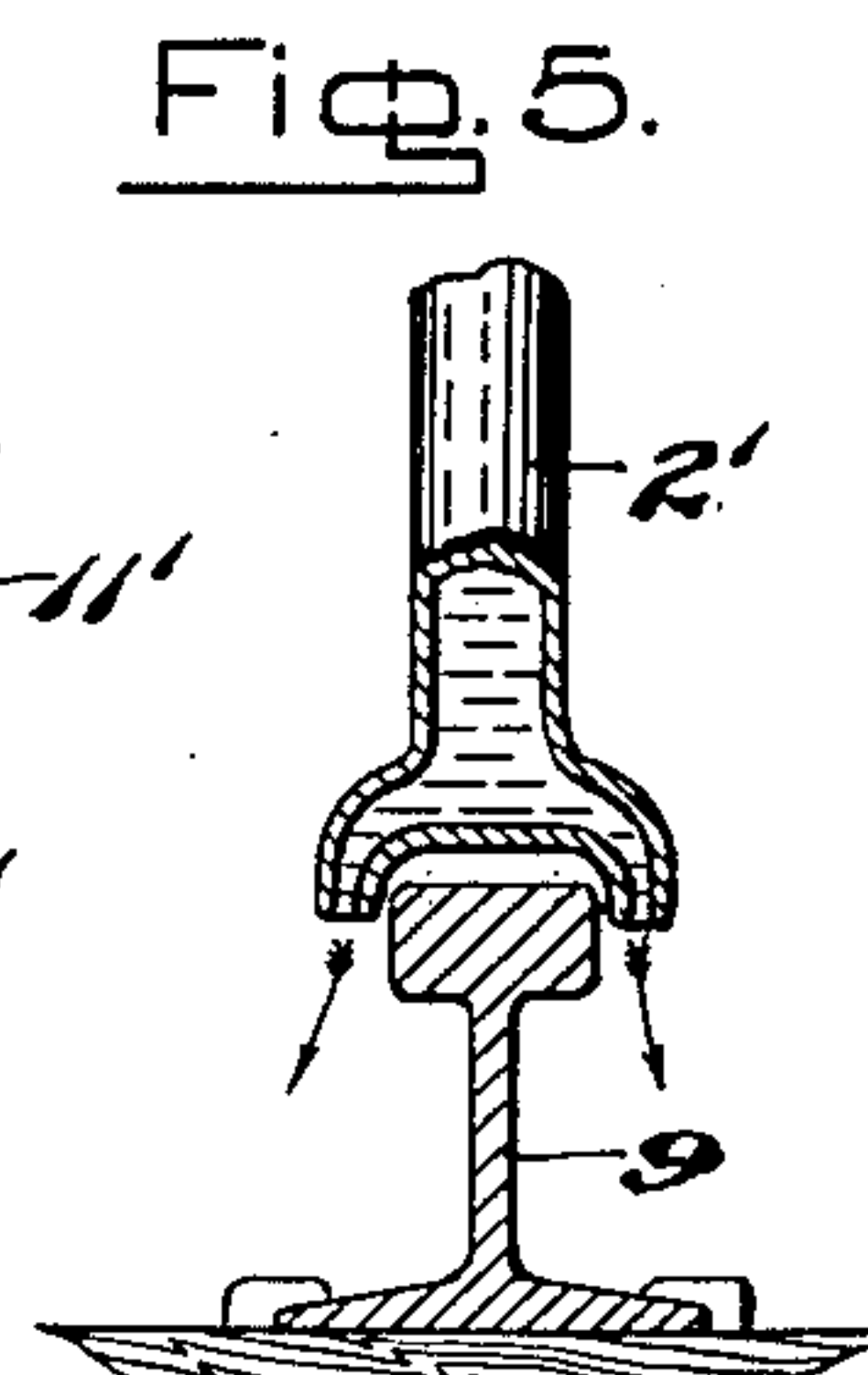
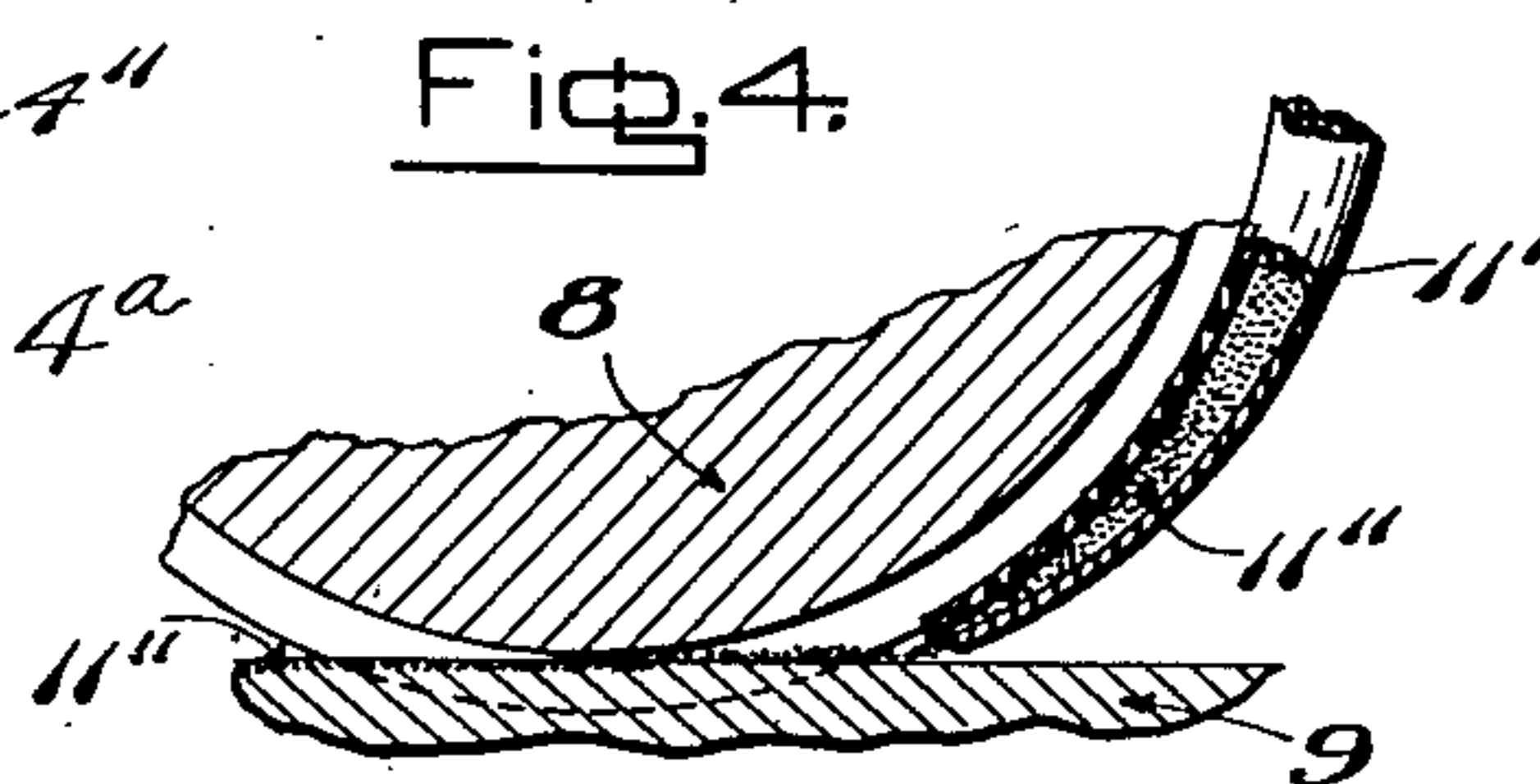
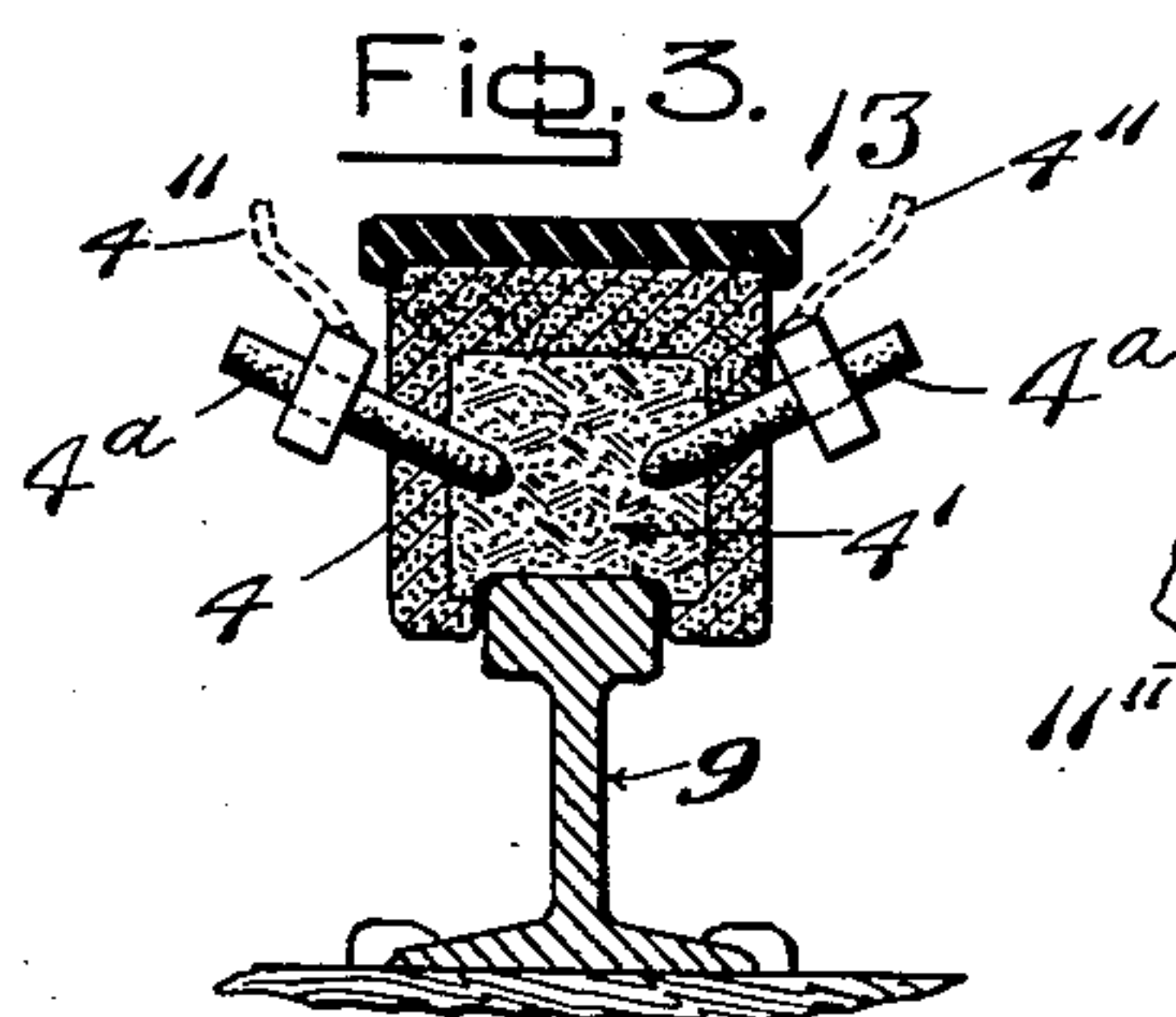
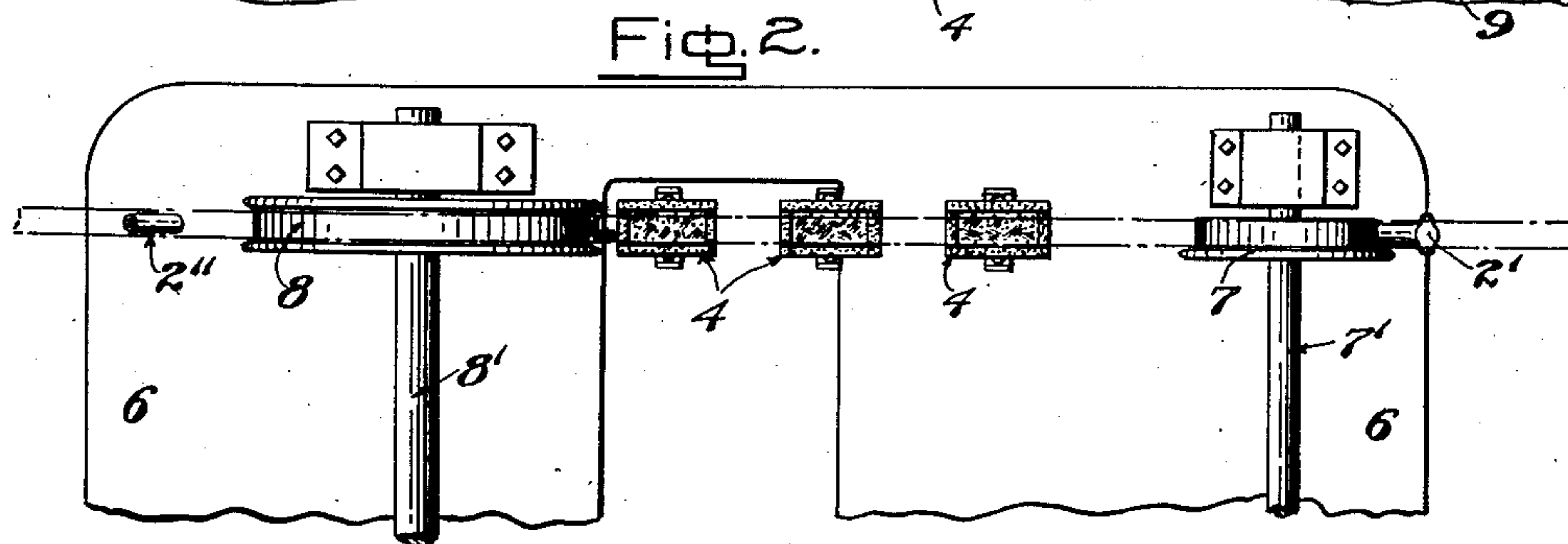
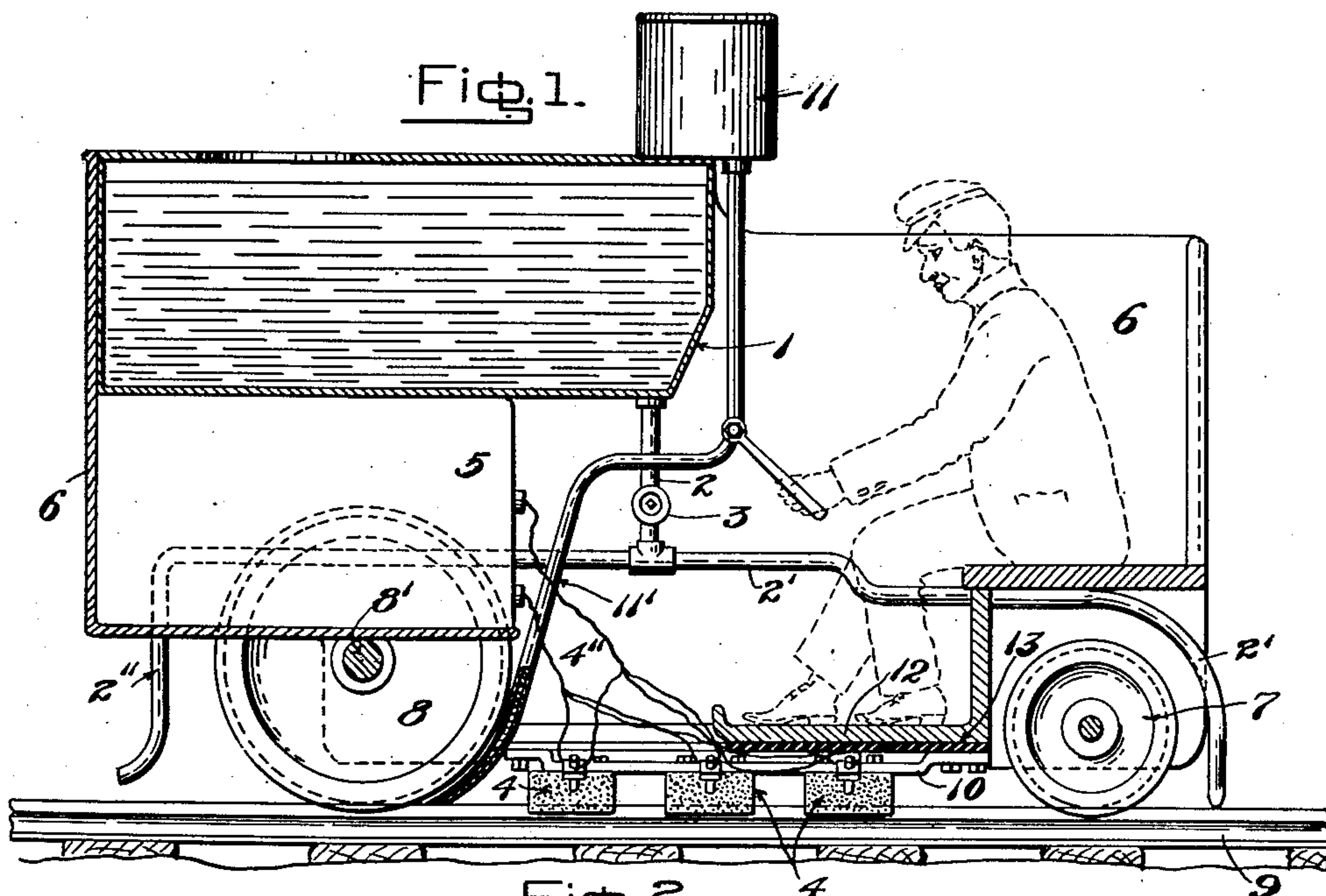


E. M. BOYNTON.  
 APPARATUS FOR TREATING TRACTION MEMBERS.  
 APPLICATION FILED JUNE 8, 1910.

976,627.

Patented Nov. 22, 1910.



Witnesses:  
*M. B. Crozier*  
*P. W. Dwyer*

Inventor,  
 Eben Moody Boynton,  
 by *Wright Brown Lundy & May*  
 Attorneys



# UNITED STATES PATENT OFFICE.

EBEN MOODY BOYNTON, OF WEST NEWBURY, MASSACHUSETTS.

APPARATUS FOR TREATING TRACTION MEMBERS.

976,627.

Specification of Letters Patent.

Patented Nov. 22, 1910.

Application filed June 8, 1910. Serial No. 565,816.

*To all whom it may concern:*

Be it known that I, EBEN MOODY BOYNTON, of West Newbury, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Apparatus for Treating Traction Members, of which the following is a specification.

The purpose of the present invention is to provide an apparatus for embedding in the traction surface of rails relatively hard material in granular form so as to produce a rail of the character set forth in my co-pending application Serial No. 564,210, filed May 31, 1910.

The purpose of embedding grains of hard material in the traction portion of a rail is to prolong the life of the rail and increase the tractive property thereof. The method of so treating the rail is as follows: The rail, or the traction portion thereof, is preliminarily heated to a degree sufficient to render it comparatively soft and to distribute over the traction surface of the heated portion the grains which are to be embedded, and then to impress the grains into the heated portion in any appropriate manner, such as by a rolling member traveling upon the rail.

Of the accompanying drawings which illustrate an apparatus intended for the purpose of the present invention, Figure 1 represents a longitudinal section of a vehicle adapted to roll upon the rail or rails, said vehicle being equipped with means for heating the traction portion of the rail and with means for distributing the granular material thereon so that the said material may be impressed by one or more of the rolling traction members of the vehicle. Fig. 2 represents a top plan view of portions of said vehicle. Fig. 3 represents a vertical section of an electrical heating furnace for softening the traction portion of the rail. Fig. 4 represents a longitudinal section of a fragment of a rail, a rolling traction member for embedding the granular material, and a delivery nozzle for delivering the granular material to the rail in advance of the rolling traction member. Fig. 5 represents a vertical cross section of a rail and a delivery nozzle delivering a cooling medium such as water to the roadbed of the rail.

The same reference characters indicate the same parts wherever they occur.

It should be borne in mind that the apparatus illustrated is more or less conventional and is intended only for disclosing the necessary elements without attempting to illustrate the invention in detail or in its most practical form.

The vehicle illustrated is adapted to be drawn or otherwise propelled over the rail or rails of a previously constructed railroad, said vehicle being equipped with the apparatus for treating the rail in the manner hereinafter described. The vehicle illustrated is represented as a car 6 having wheels 7 and 8 which roll upon a rail or rails 9.

The apparatus for preliminarily heating the traction portion of the rail includes means for heating the rail electrically. The heating furnaces are indicated at 4 and are mounted in any appropriate manner upon the body 6 so as to slide upon the traction portion of the rail. A series of three of such furnaces is illustrated, but it should be borne in mind that the number of such furnaces may be varied according to requirements. Each of the furnaces includes a body of heating material 4' which directly engages the traction surface of the rail. Each of the furnaces includes a pair of electrodes which are indicated at 4<sup>a</sup>, said electrodes being partly embedded in the heating material 4' as shown by Fig. 3. The source of electrical current for the electrodes is indicated at 5 in Fig. 1. In this form it may be assumed that the source of current consists of storage battery plates; but a dynamo electric machine may be substituted for the storage battery. The conductors for connecting the electrodes with the source of current are indicated at 4''. The heating furnaces are, of course, suitably insulated from the body of the vehicle by insulating material indicated at 13, said insulating material being interposed between the furnaces and the floor 12 of the vehicle. A beam 10 is provided for mounting the furnaces. According to the arrangement illustrated, the furnaces are arranged between the wheels 7 and 8. The wheels 7 are the forward wheels and the wheels 8 are the rear wheels according to the apparatus illustrated.

A reservoir for relatively hard material in granular form is indicated at 11, and a conduit for conducting the granular material to the traction surface of the rail is indicated at 11'. The said conduit is ar-



ranged to deliver the granular material in advance of the wheel 8, and between the said wheel and the last furnace of the series of furnaces so that the granular material may be delivered to the rail at the hottest point of the latter and also at the point where it will be immediately impressed into the rail by the wheel before it can be dislodged from the rail. The conduit 11' is provided with a manually controllable valve by which the attendant may govern the supply of granular material.

As a precautionary measure for preventing burning of the sleepers or other inflammable members of the road, the invention contemplates the provision of apparatus for spraying a fire-proofing medium such as water upon the inflammable members in advance of the vehicle, and for delivering a cooling medium upon the rail after the granular material is embedded therein. For this purpose the vehicle is equipped with a tank indicated at 1 for containing the supply of water. A conduit 2 connects the tank with branch conduits 2' and 2'' which extend respectively to the forward and rear ends of the vehicle. A hand valve 3 is provided in the conduit 2 for controlling the supply of water. The forward branch 2' terminates in a double nozzle having outlets arranged one on either side of the rail, said outlets being adapted to direct the water to the roadbed without permitting the water to touch the traction portion of the rail. (See Fig. 5.) The rear branch 2'' is arranged to direct the water to the traction surface of the rail at the rear of the wheel 8.

The apparatus constituting the source of current and the tank 1 for containing the supply of water are preferably arranged so that the greater proportion of their weight will be imposed upon the axle 8' of the wheel 8, for the purpose of employing as much of the available weight as possible for embedding the granular material.

The relatively hard material which is to be embedded in the rail may be emery, corundum, hard sand or iron sand, crushed glass, or other analogous material. It is not intended that the invention as defined by the scope of the appended claims shall be limited to the agents illustrated and described.

Having thus explained the nature of my

said invention and described a way of constructing and using the same, though without attempting to set forth all of the forms in which it may be made or all of the modes of its use, what I claim is:

1. An apparatus of the character described, comprising means for heating and softening the traction portion of a traction member, means for delivering to the heated traction portion a relatively hard material in granular form, and means for impressing said granular material into said heated traction portion.

2. An apparatus of the character described, comprising a vehicle provided with a traction member adapted to travel upon a rail, means for heating and softening the traction portion of the rail in advance of said traction member, and means for delivering a relatively hard material in granular form to the traction surface of the rail between said heating means and said traction member.

3. An apparatus of the character described, comprising a vehicle provided with a traction member adapted to travel upon a rail, means for heating and softening the traction portion of the rail in advance of said traction member, means for delivering a relatively hard material in granular form to the traction surface of the rail between said heating means and said traction member, and means for delivering a fire-proofing medium upon the roadbed in advance of said heating means.

4. An apparatus of the character described, comprising a vehicle provided with a traction member adapted to travel upon a rail, means for heating and softening the traction portion of the rail in advance of said traction member, means for delivering a relatively hard material in granular form to the traction surface of the rail between said heating means and said traction member, and means for delivering a cooling medium upon the rail in the rear of said traction member.

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

EBEN MOODY BOYNTON.

Witnesses:

E. BATCHELDER,  
P. W. PEZZETTI.