

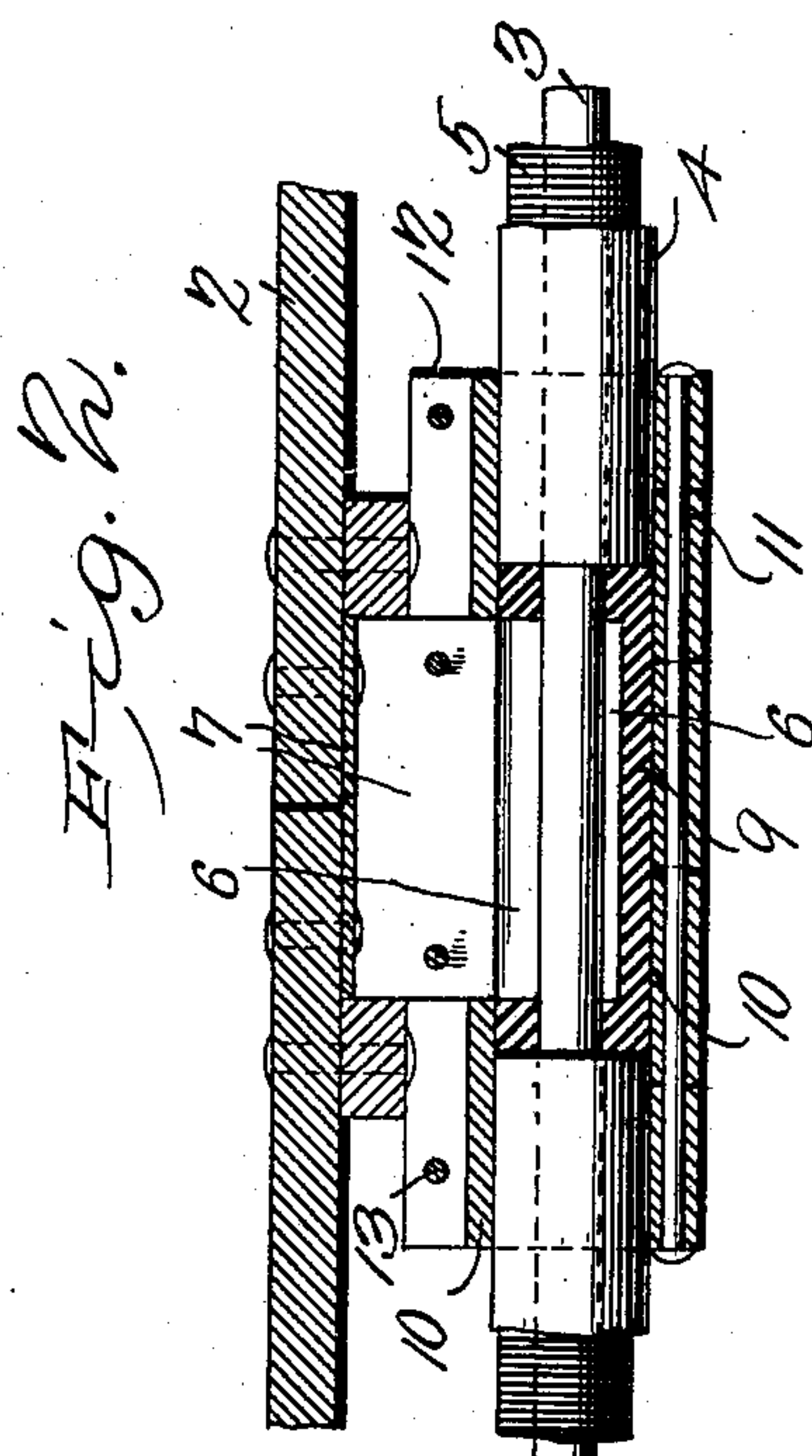
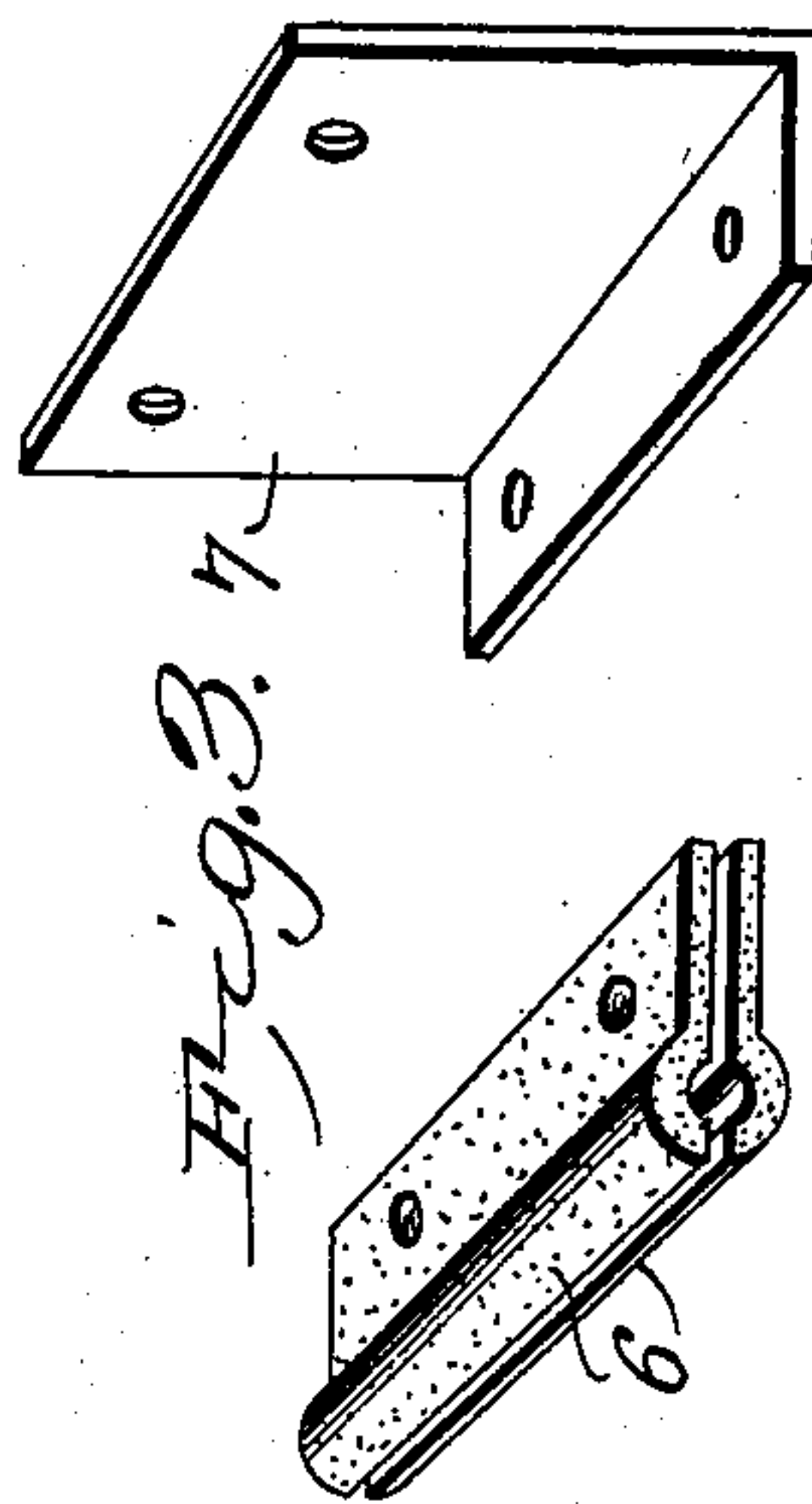
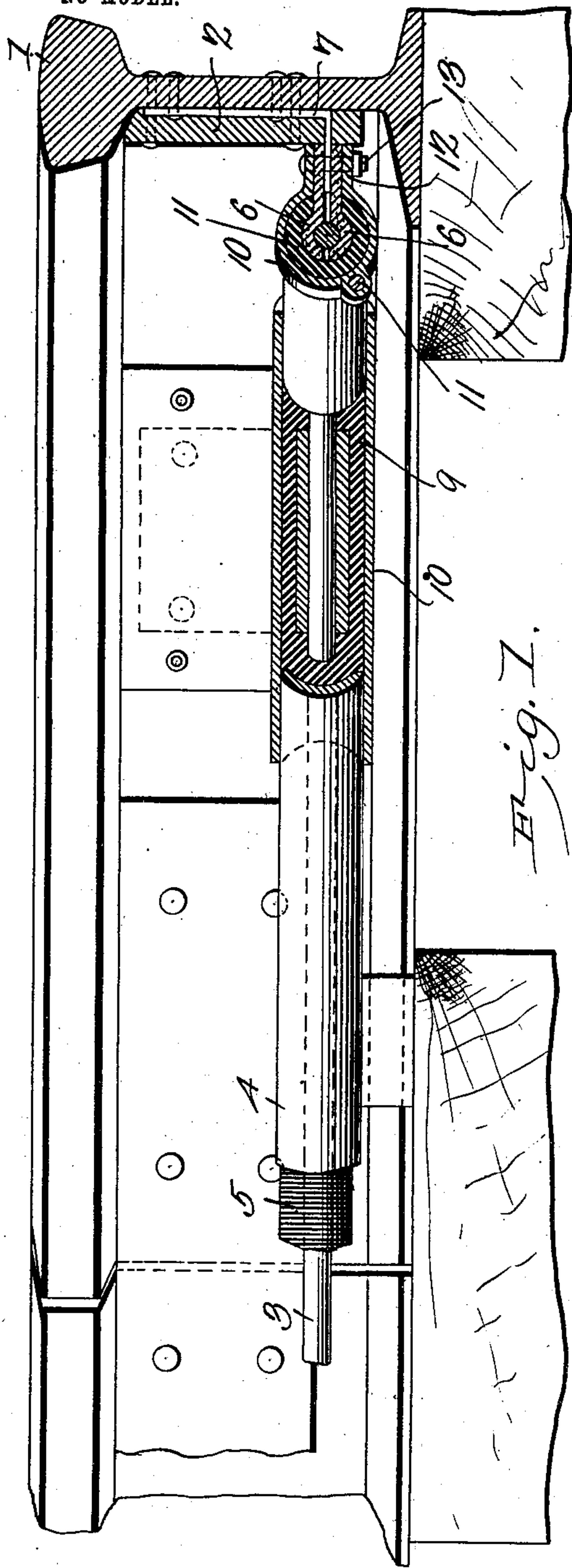
No. 744,247.

PATENTED NOV. 17, 1903.

A. A. SHOBE & W. EMBLEY.
ELECTRIC RAILWAY SYSTEM.

APPLICATION FILED JUNE 23, 1903.

NO MODEL.



Witnesses
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UNITED STATES PATENT OFFICE.

ABRAHAM A. SHOBE AND WILLIAM EMBLEY, OF JERSEYVILLE, ILLINOIS.

ELECTRIC-RAILWAY SYSTEM.

SPECIFICATION forming part of Letters Patent No. 744,247, dated November 17, 1903.

Original application filed April 10, 1903, Serial No. 153,079. Divided and this application filed June 23, 1903. Serial No. 162,798. (No model.)

To all whom it may concern:

Be it known that we, ABRAHAM A. SHOBE and WILLIAM EMBLEY, citizens of the United States, residing at Jerseyville, in the county of Jersey and State of Illinois, have invented a new and useful Electric-Railway System, of which the following is a specification.

This invention relates to certain improvements in electric-railway systems, and particularly to that general class of systems in which the current is collected from a third rail or an overhead trolley and is returned through one or both of the traffic-rails.

The principal object of the invention is to provide a system of this character in which provision is made for the return of the current through a separate wire having connections with the traffic-rail sections at suitable intervals, and a further object is to provide means for protecting the return-conductor and thoroughly and effectually insulating the same.

A still further object of the invention is to provide an improved means for connecting the current-conductor to the traffic-rails, whereby good electrical connection will be rendered certain at all times, the parts in contact being protected from deterioration due to exposure to the weather or accidental injury.

With these and other objects in view the invention consists in the novel construction and arrangement of parts hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is a sectional perspective view of a traffic-rail and return-wire connected together in accordance with the invention. Fig. 2 is a sectional plan view of the same. Fig. 3 is a detail perspective view of the connecting devices between the conductor and the rails.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The device forming the subject of the present invention is intended principally to provide an improved return for the current in a third-rail or other system in which one or both of the traffic-rails are ordinarily employed for the return of the current to central station, other details of the system being set forth in an application for United States Letters Patent filed by us on April 10, 1903, Serial No. 153,079, of which the present application is a division.

In the drawings, 1 designates a traffic-rail, which may be divided into the usual sections and connected together by fish-plates 2. At one side of the traffic-rail is a return-conductor 3, formed of copper or other metal of comparatively low resistance, the conductor being continuous and uninterrupted. This conductor is surrounded by an armor formed of metallic tubes 4, which for convenience are made in lengths of about twenty feet, the ends of the tubes being slightly spaced from each other, and between the wire and the tubing is a lining 5, formed of insulating material of any desired character. At the spaced portions of the tubes, which are preferably so arranged as to come opposite the fish-plates 2, the wire is exposed, and the exposed portion is partly surrounded by a pair of plates 6, formed of carbon or other suitable material and recessed in order that they may inclose all or the greater portion of the circumference of the wire. These plates 6 extend toward the fish-plates 2, and one or both are recessed to receive the end of a keeper or other strip 7, which is clamped between the plates, the opposite end of the strip being extended up between the fish-plate and the rail-sections, being electrically connected to both and held in place mechanically by the usual bolts, which extend through both the fish-plates and the rails. The connections between the rail-sections and the conducting-wire may be formed at each fish-plate or at alternate fish-plates. The space between the ends of the tube is filled with an insulating material 9, which may be of any suitable character, and over this insulating material and the adjoining ends of the tubes is clamped a collar 10, formed of two members pivotally

connected, as at 11, for convenience in assembling the parts, the opposite edges of these members being provided with flanges 12, which engage the outer portions of the carbon plates 6, and the whole is secured in position by bolts 13, which extend through the flanges of the collar, the carbon plates, and the keeper or strip 7. This forms a convenient means of connecting the rails at intervals to the continuous return-conductor and by decreasing the resistance will materially increase the effectiveness of the system. The arrangement is such as to permit the ready expansion and contraction of the rails, and the conductor and the rails, being of larger area, will tend to expand and contract to an extent greater than the conductor. The collars 10 will readily move with the rail-sections without destroying the insulation or in any manner injuring the return-conductor or its armor.

It is obvious that the invention may also be utilized in connection with third-rail systems to furnish the current to a sectional third rail, as well as to return the current in the manner described.

Having thus described the invention, what is claimed is—

1. In an electric-railway system, a sectional rail, a continuous armored conductor, clamps formed of conducting material connecting exposed portions of the conductor to the rail-sections, and means for covering and protecting portions of the clamps.

2. In electric-railway systems, a sectional rail, fish-plates connecting the sections, a continuous conductor, and bonding devices secured at one end to the continuous conductor and at the opposite end clamped between the fish-plates and the rail-sections.

3. In electric-railway systems, a sectional rail forming a conductor, a continuous armored conductor, carbon contact-plates embracing said continuous conductor, and strips of conducting metal extending between the rail-sections and the carbon plates.

4. In electric-railway systems, a sectional rail forming a conductor, a continuous conductor, means for insulating said continuous conductor, carbon plates embracing exposed portions of the continuous conductor, metallic connections extending between the carbon plates and the rail-sections, and a protecting-

sleeve surrounding said contacts, substantially as specified.

5. In electric-railway systems, a sectional rail forming a conductor, a continuous conductor disposed adjacent thereto, a sectional armor surrounding the continuous conductor, insulating material between the conductor and its armor, carbon plates clamped to the exposed portion of the conductor between sections of the armor, metallic plates extending from the carbon plates to the sectional rails, insulating material surrounding such carbon plates, and a protecting-sleeve surrounding the insulating material and the plates, the sleeve embracing portions of the ends of adjacent sections of the armor.

6. In an electric-railway system, the combination with an electric conductor, of a sectional tubular armor inclosing the conductor, insulating material between the conductor and the tube-sections, a traffic-rail, fish-plates connecting the adjacent ends of rail-sections, and current-conductors connected at intervals to the main conductor and having end portions clamped between the fish-plates and the rail-sections.

7. In an electric-railway system, the combination with a continuous conductor, a sectional tubular armor inclosing the conductor, insulating material between the conductor and its armor, a sectional traffic-rail, fish-plates connecting the adjacent ends of the rail-sections, carbon plates embracing the exposed portion of the continuous conductor between the sections of armor, one of said plates being recessed, a metallic plate clamped within the recessed portion and having its opposite end clamped between the fish-plate and the rail-section, insulating material surrounding said carbon plates, a two-part sleeve having edge flanges in engagement with the carbon plates, and securing devices extending through the flanges and plates, substantially as specified.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

ABRAHAM A. SHOBE.
WILLIAM EMBLEY.

Witnesses:

GEORGE W. WARE,
ROBERT W. MCCLURE.