

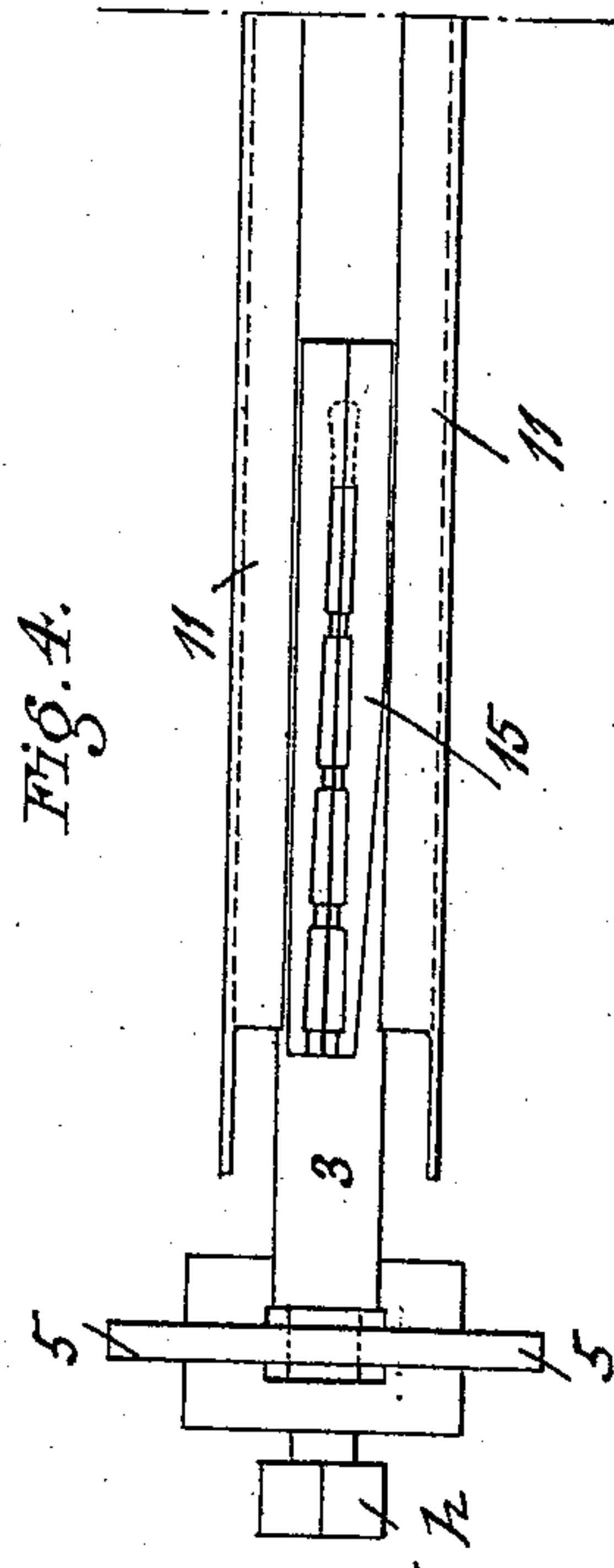
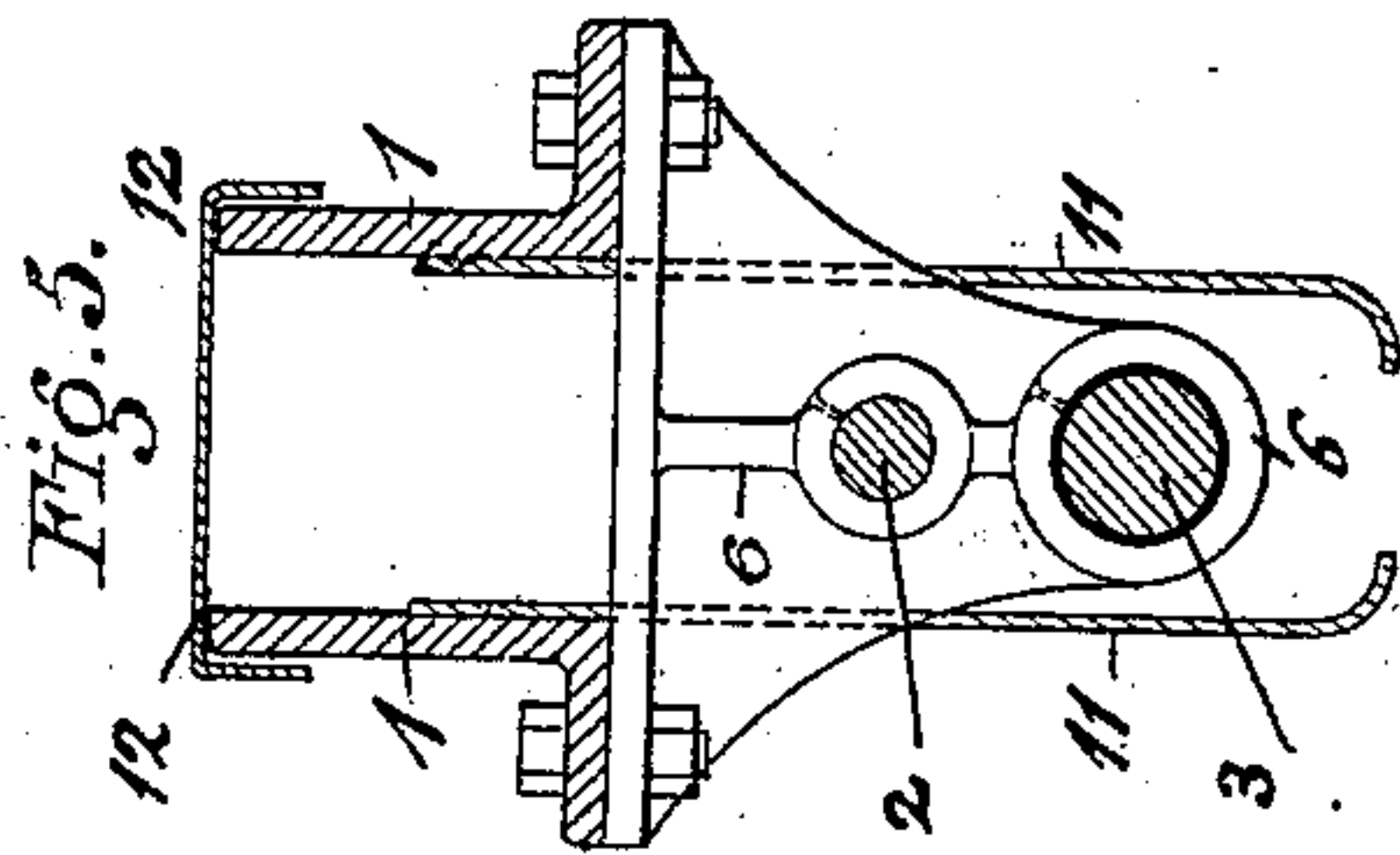
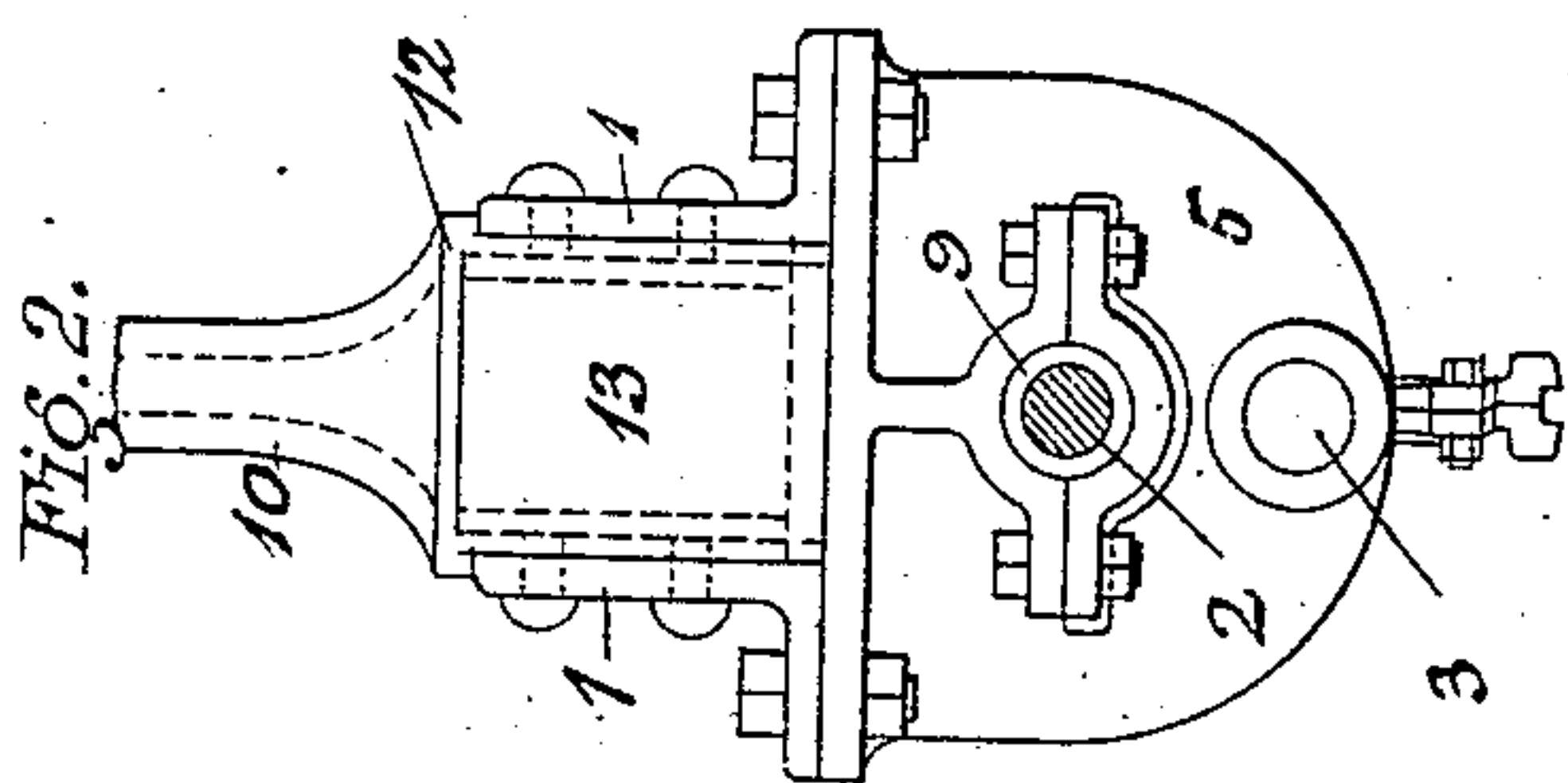
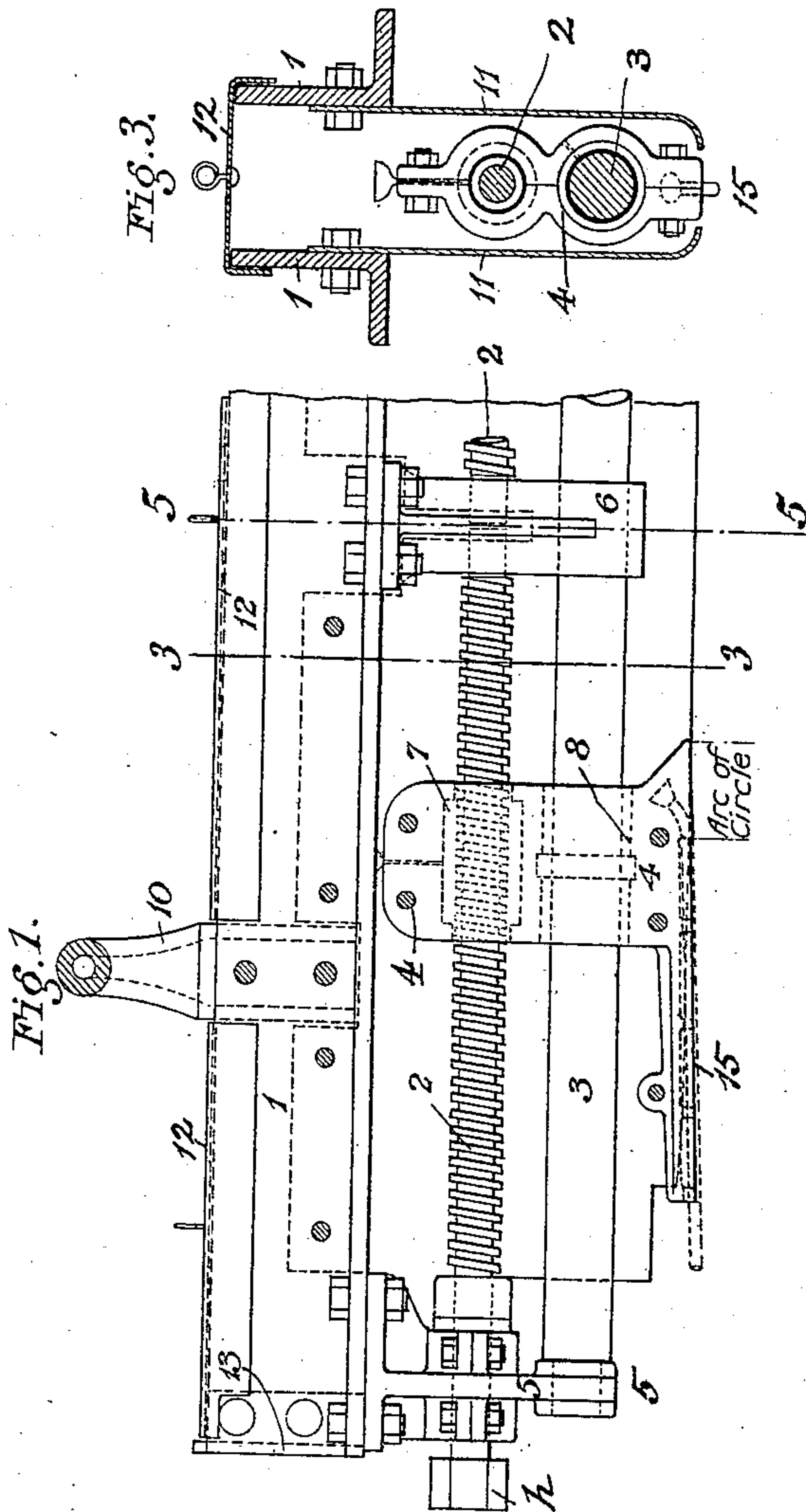
No. 855,323.

PATENTED MAY 28, 1907.

J. MAYER.

STRAIN ADJUSTER FOR CONTACT WIRES OF ELECTRIC RAILWAYS.

APPLICATION FILED FEB. 5, 1907.



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# UNITED STATES PATENT OFFICE.

JOSEPH MAYER, OF RUTHERFORD, NEW JERSEY.

## STRAIN-ADJUSTER FOR CONTACT-WIRES OF ELECTRIC RAILWAYS.

No. 855,323.

Specification of Letters Patent.

Patented May 28, 1907.

Application filed February 5, 1907. Serial No. 355,895.

*To all whom it may concern:*

Be it known that I, JOSEPH MAYER, a citizen of the United States, residing in Rutherford, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Strain-Adjusters for Contact-Wires of Electric Railways, of which the following is a specification.

This invention relates to an improved strain-adjuster for contact-wires of electric railways.

The changes of temperature produce changes in the length and consequent changes in the deflections of and tensions in contact-wires. The change in the deflection also produces bending strains in the wire at the suspenders. The large vertical deflection of the wire in long spans at high temperature, is accompanied, during high winds, normal to the line, by large lateral deflections which carry the contact-wire beyond the range of a sliding bow of the usual practicable length. The length of spans of the contact-wire, or the distance between the supports, is, therefore, owing to these causes, limited to some extent. If the length of the contact-wire would be shortened in summer or the span between its supports increased, the variations in the deflection would be greatly reduced and much longer spans would become practicable. This would reduce the number and the cost per mile of the carrying structures required.

The object of this invention is to furnish a strain-adjuster which is intended to accomplish this purpose. By means of two screw-spindles and cross-heads on the same, to which the ends of two contact-wires are attached, they can be moved together or apart. The suspenders between them must be so attached to their carrying structures that they can move a small distance in the direction of the track without producing a large one-sided pull on the contact-wire which they carry. This can be accomplished by using a span-wire suspension with considerable drop in the span-wire, or by using brackets which can swing a small distance around vertical hinges at the side-poles.

For these purposes the invention consists of a strain adjuster for contact-wires of electric railways, which comprises two screw-spindles turning in suitable hanger-bearings, an adjustable cross-head on each spindle, each cross-head carrying means for suspending and anchoring one end of the contact-

wire, a guide-rod for the cross-heads supported in the hangers and running parallel with the screw-spindles, and side-plates for guiding the sliding bow and for inclosing and protecting the adjusting devices.

The invention consists further of certain details of construction which will be fully described hereinafter and finally pointed out in the claims.

In the accompanying drawings, Figure 1 represents a side elevation of one-half of my improved strain-adjuster, with the side guide-plate removed, Fig. 2 is a sectional end-elevation of the strain-adjuster, Fig. 3 is a vertical transverse section on line 3, 3, Fig. 1, Fig. 4 is a bottom-view of the lower part of Fig. 1, and Fig. 5 is a vertical transverse section on line 5, 5, Fig. 1.

Similar characters of reference indicate corresponding parts throughout the several figures.

Referring to the drawings, 1, 1 represent angle-irons from which are suspended hanger-brackets 5, 6 which are provided with journal-bearings 9 for the ends of two screw-spindles 2, 2. The opposite ends of the screw-spindles 2 are extended beyond the hanger-brackets 5, 6 and provided with a polygonal head *h* for turning the screw-spindle in its bearings. On each screw-spindle 2 is arranged a cross-head 4, which is provided with a female thread forming a nut for the screw-spindle. Each cross-head 4 is provided below the screw-spindle with an opening for a guide-rod 3, which is supported in the hanger-brackets 5, 6 and which serves for guiding the cross-head when the same is moved in one or the opposite direction by the turning of the screw-spindle 2. The cross-head 4 is provided with suitable bushings 7, 8 for the screw-spindle and guide-rod so as to reduce the friction. The cross-head 4 is formed of two semi-sections which are connected by bolts at the upper and lower ends. To the lower end of the cross-head is applied a suspending device 15 for the contact-wire, which latter is anchored in the lower part of the cross-head. The suspending device is split longitudinally and cast integral with the semi-sections of the cross-head. The suspender is fully shown and described in a separate application filed conjointly herewith, Serial No. 355,894. The supporting hangers 5, 6 are bolted at their upper ends to the angle-irons 1, 1, which form a frame which is connected by cross-pieces 13 at the ends, said



frame being suspended by means of malleable iron hangers 10 from pins and insulators (not shown) of the usual construction from the carrying structure. Sheet-metal roof-plates 12, extend over the upper ends of the angle-irons so as to protect the screw-spindles against the weather and give access to the cross-heads for oiling the parts. The screw-spindles and cross-heads are inclosed by side-plates 11 which are bent inwardly at their lower ends so as to give a smooth track to the sliding bow, from one suspender to the other.

By means of the strain adjuster described the contact-wire can be lengthened in the fall and shortened in the spring. By means of two or four adjustments during the year, the variations of temperature which have to be provided for with one length of contact-wire are the variations during a season instead of those during a whole year. The strain adjusters may be placed about a mile apart, or more, if desired. They must be so designed as to suit their distance apart, the length of the spans, the size of the wire, and the variations of temperature of the contact-wires in their location.

I claim as new and desire to secure by Letters Patent:

1. A strain adjuster for the contact-wires of electric railways, comprising a frame suspended by means of insulators, hanger-brackets attached to the frame, two screw-spindles turning in said hanger-brackets, two cross-heads provided with female threads engaging the screw-spindles, and a guide-rod for said cross-heads supported in the hanger-brackets, the cross-heads being provided at

the lower part with suspending and anchoring means for the contact-wire, and side-plates for guiding the sliding bow.

2. A strain adjuster for the contact-wires of electric railways, comprising a supporting frame, means for suspending the same, hanger-brackets attached to said supporting frame, two screw-spindles the ends of which are supported in said hanger-brackets, two cross-heads formed of two semi-sections connected by cross-bolts, a stationary guide-rod passing through the hanger-brackets and the cross-heads, means at the lower part of the cross-heads for suspending and anchoring the ends of the contact-wires, and side-plates for guiding the sliding-bow.

3. In a strain adjuster for the contact-wires of electric railways, the combination of a supporting frame, removable roof-plates for the same, side-plates attached to said frame, hanger-brackets attached to the supporting frame, screw-spindles supported at their ends in said hanger-brackets, a stationary guide-rod also supported in said hanger-brackets below said screw-spindles, cross-heads provided with a screw-nut for engaging the screw-spindles, and openings for the guide-rod, and means at the lower ends of the cross-heads for suspending and anchoring the ends of the contact-wires.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

JOSEPH MAYER.

Witnesses:

PAUL GOEPEL,  
HENRY J. SUHRBIER.