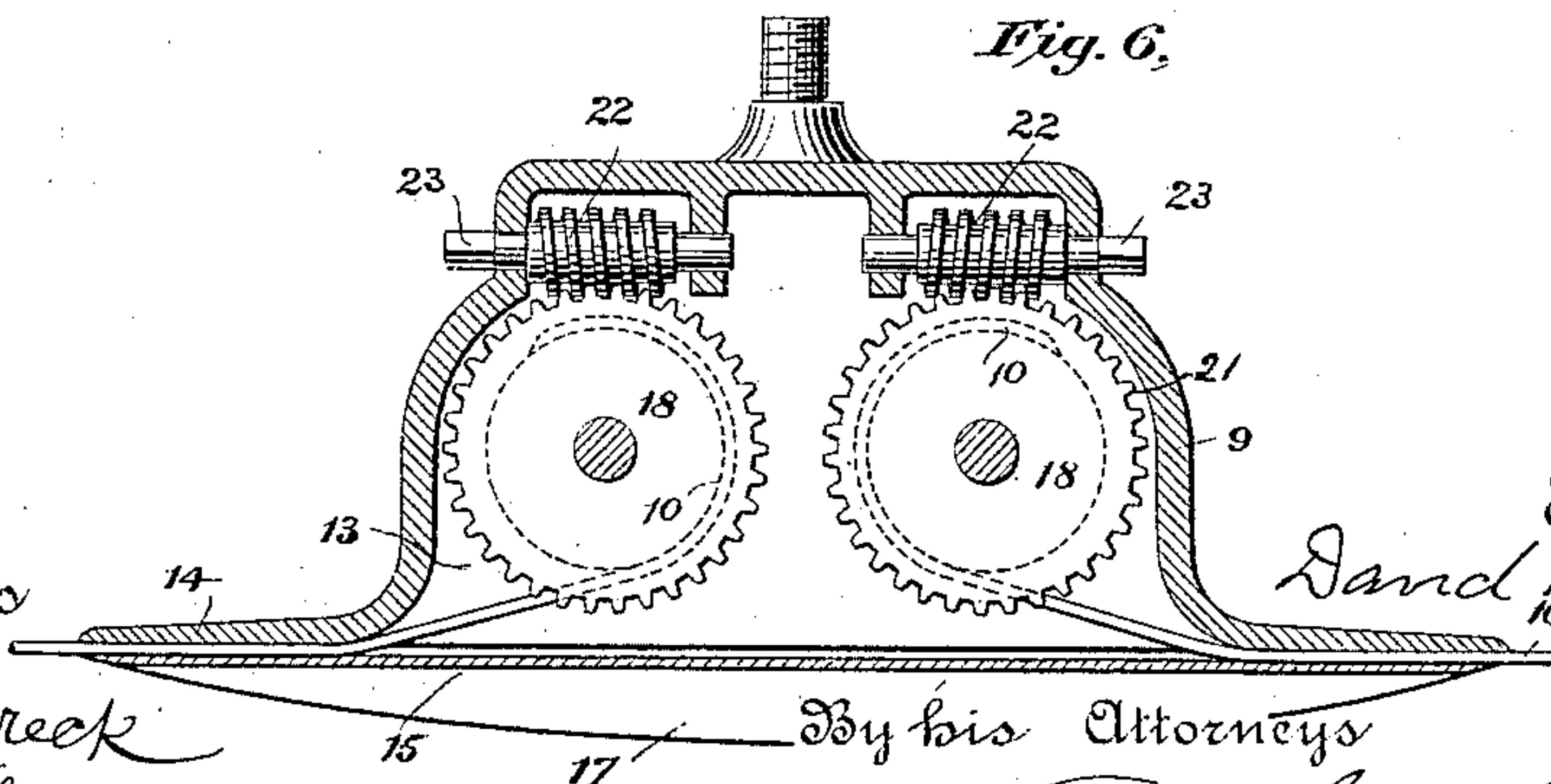
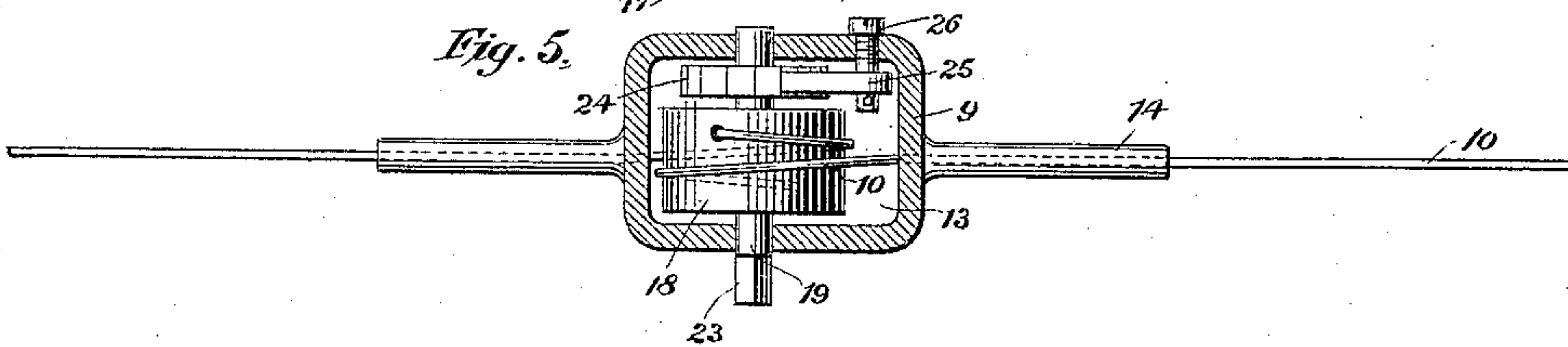
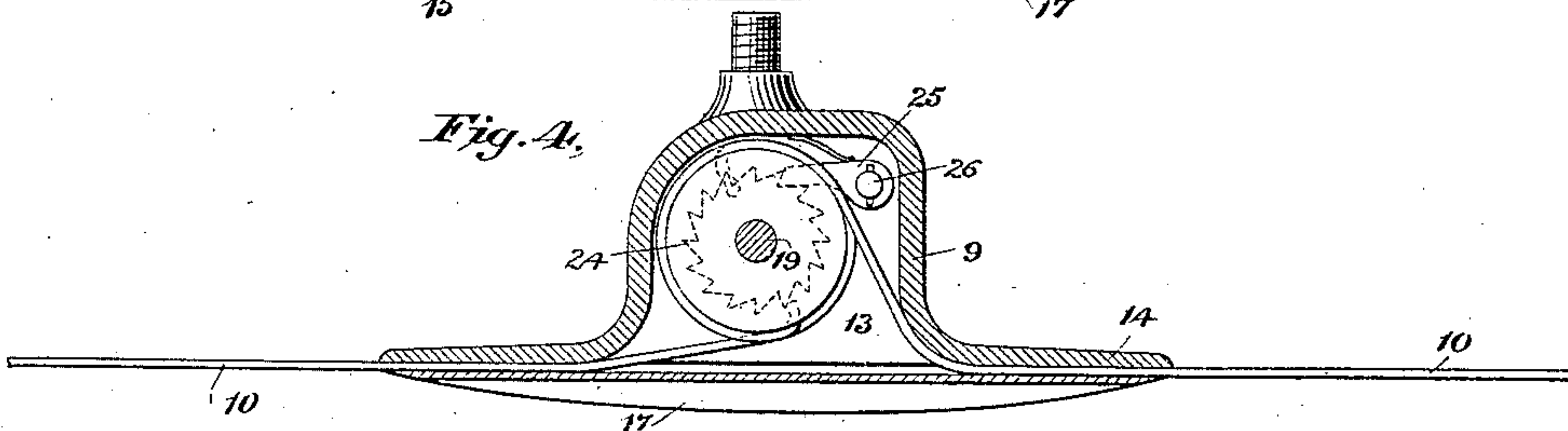
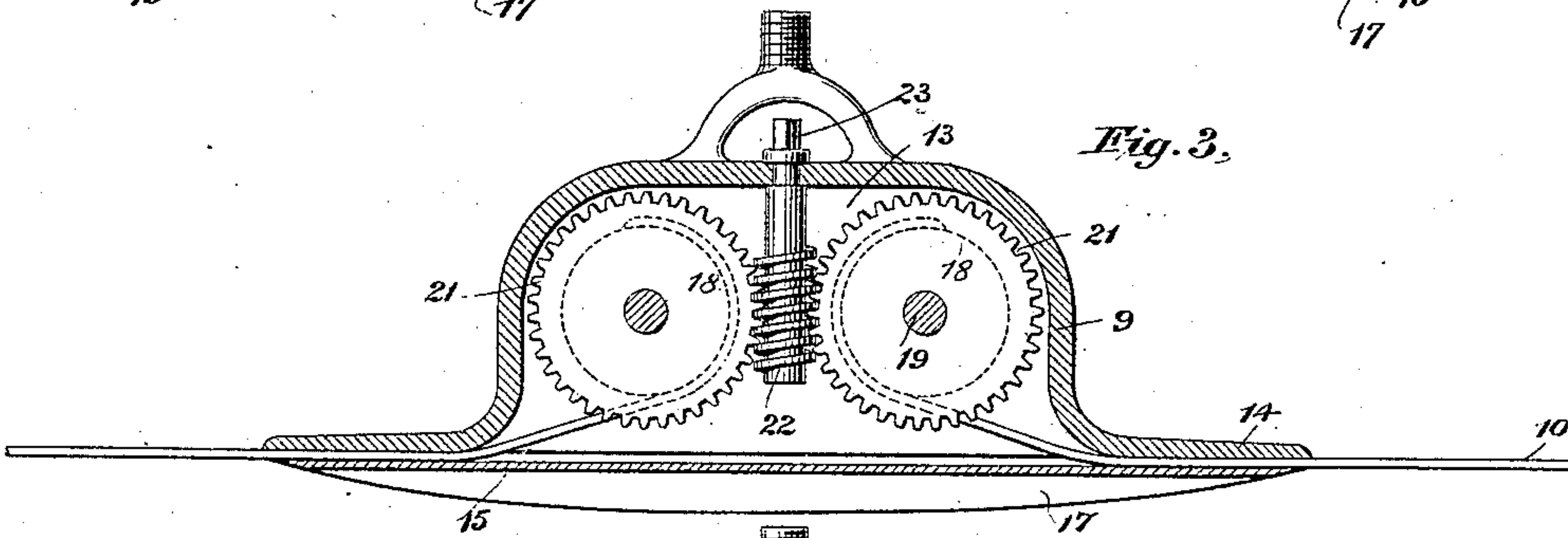
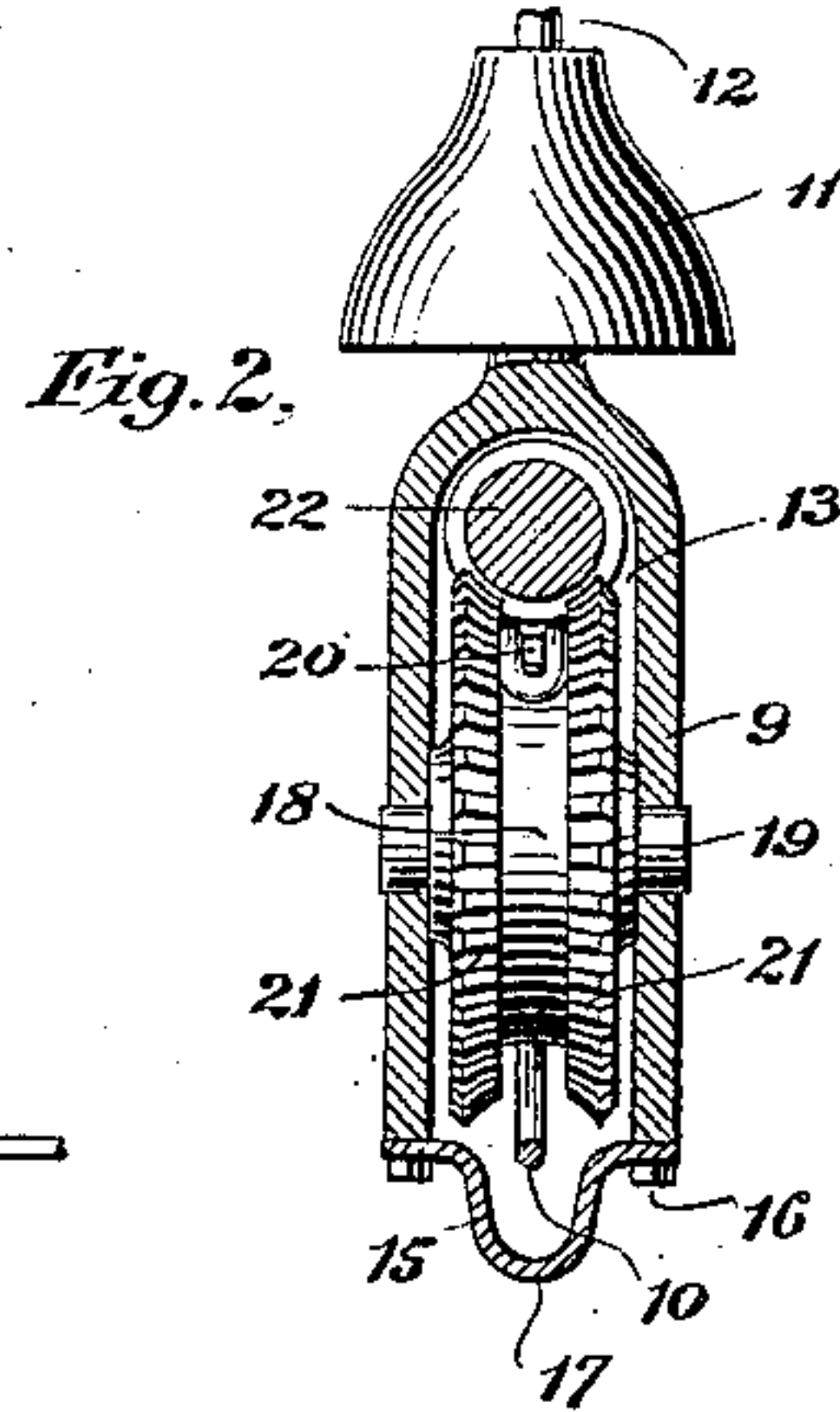
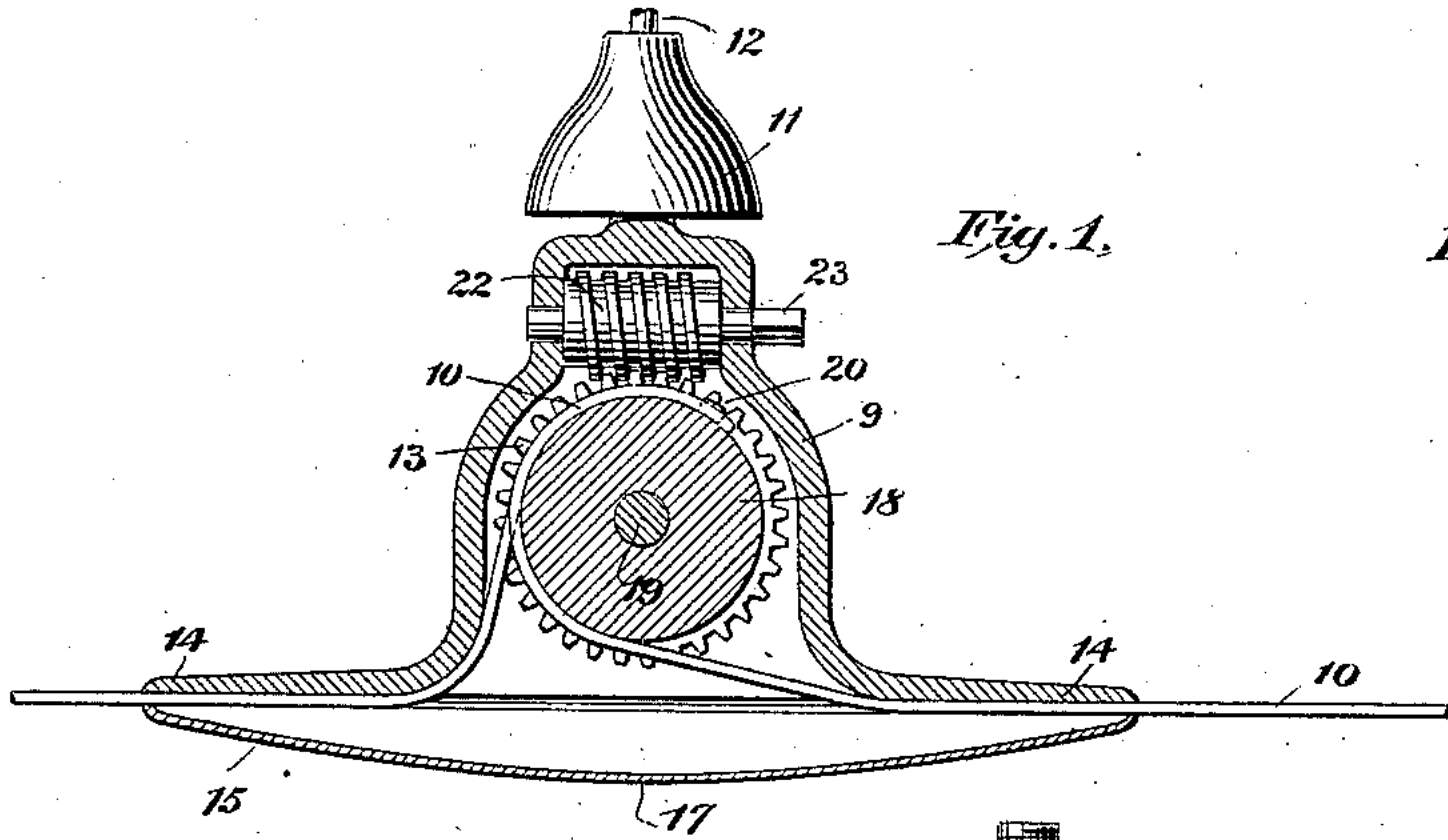


(No Model.)

D. MASON.
TIGHTENING DEVICE FOR SUSPENDED ELECTRIC CONDUCTORS.
No. 444,005. Patented Jan. 6, 1891.



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UNITED STATES PATENT OFFICE.

DAVID MASON, OF NEW YORK, N. Y.

TIGHTENING DEVICE FOR SUSPENDED ELECTRIC CONDUCTORS.

SPECIFICATION forming part of Letters Patent No. 444,005, dated January 6, 1891.

Application filed May 28, 1890. Serial No. 353,492. (No model.)

To all whom it may concern:

Be it known that I, DAVID MASON, a citizen of the United States, residing at New York, county and State of New York, have invented certain new and useful Improvements in Tightening Devices for Suspended Electric Conductors, of which the following is such a full, clear, and exact description as will enable any one skilled in the art to which it appertains to make and use the same, reference being had to the drawings forming part of this specification.

My invention relates to devices for tightening or stretching suspended electric conductors, and is especially designed for and applicable to electric-railway systems in which are used overhead conductors, from which the current is collected by means of suitable contact devices or trolleys.

The invention is designed to be employed at any points along the line at short intervals, and is preferably used in conjunction with the hanger or device for suspending the conductors.

In the accompanying drawings, which show several different embodiments of my invention, Figure 1 is a longitudinal central vertical section of a hanger provided with a wire-tightening device, and Fig. 2 is a transverse central vertical section of the same. Fig. 3 is a longitudinal central vertical section of another form of my invention. Figs. 4 and 5 show another form of the invention on a central vertical section and a horizontal section, respectively. Fig. 6 is a longitudinal vertical section of still another form of the invention.

In the said drawings like numbers of reference designate like and corresponding parts throughout.

Referring to the drawings, 9 designates a frame which constitutes in the main the hanger for sustaining the trolley-wire 10, the upper part of the hanger being provided with the usual insulating-bell 11, above which extends the ordinary hook, the shank of which is shown at 12, by means of which the hanger is swung from the usual span-wire. The hanger or frame 9 has mounted upon it, or preferably within a chamber formed therein, devices, hereinafter to be described, for tight-

ening or taking up the slack in the conductor and letting out or loosening the same.

In order to accommodate the peculiar form of tightening device that may be employed with the hanger, the latter may be made in any suitable and desired form. In the present construction this hanger is formed with a chamber 13, which opens downwardly, and the base of the frame is provided upon opposite ends with extensions 14, projecting in the direction of the length of the trolley-wire 10, which is led along such extensions and held loosely thereto, the extensions being grooved slightly in order to receive the wire.

The under side of the hanger is provided with a removable section or plate 15, which is attached thereto by means of fasteners 16. This plate extends the length of the hanger and is of sufficient breadth to extend across the base of the same, and is provided with a central and longitudinally-disposed guide or depressing-rib 17, which is curved downwardly, as clearly indicated in the drawings. In traveling by the hanger the trolley or contact device upon leaving the wire 10 travels over the rib 17 of the plate 15, and passes again onto the wire in an obvious manner, so that this plate may of itself serve as a bridge-piece for preserving the continuity of the circuit across the hanger.

The hanger or frame 9 may be cast, if preferred, in the form desired, and the base 15, with its rib 17, may also be made integral therewith, in which case the openings in the hanger through which the wire enters and leaves the same would be substantially the same as here shown—that is, tubular at the ends.

The wire-tightener proper consists, essentially, of a winding-drum 18, suitably mounted on the hanger and to which the conductor-wire 10 is attached in such a way that turning the drum in one direction tightens the wire, while turning it in the reverse direction loosens the wire. This drum is provided with mechanism for conveniently turning it by hand and is mounted within the chamber 13 of the hanger, and is thereby kept practically water and dust proof. This drum is also provided with means for holding it from rotating backwardly, so as to keep the lines taut.

In the form shown in Figs. 1 and 2 the drum 18 is mounted upon a horizontal shaft 19, placed at right angles to the length of the trolley-wire, which is carried in a loop around the barrel and is held fixed thereto by a pin 20, set in the periphery of the drum, and around which the loop of the wire passes. The wire in this case, therefore, is not severed, but is continuous, as is clearly shown in the drawings. Each end of the drum is provided with a beveled cog 21, which meshes with a horizontally-disposed worm 22, which is also mounted within the chamber 13, so as to be housed thereby, and the shaft of the worm is extended to the outside of the frame 9, where it is formed with an angular head 23, adapted to receive a key, by means of which the worm may be turned in either direction to either wind or unwind the drum.

In the construction shown in Fig. 3 the trolley-wire is severed and the ends thereof are each secured to a separate drum 18, which are rotated simultaneously in opposite directions, in order to effect the simultaneous loosening or tightening of the wire by means of the worm 22, which is in this instance arranged vertically and intermediate the cog-wheels 21 of the respective drums.

In Figs. 4 and 5 I show a construction of the tightener in which the use of the worm 22 is dispensed with. In this instance the drum is provided with a ratchet 24, with which a pawl 25 engages, so as to hold the drum against backward rotation, it being understood that in the constructions employing the worm no retaining-pawl is necessary, since the worm itself acts as a retainer. The pawl 25 is mounted on a stud 26, which extends through the side of the frame 9 and is provided at its outer end with a slotted head. By entering a blade in the slot at the head of the stud 26 and slightly turning the same the pawl 25 may be raised out of engagement with its ratchet after the same has been slightly rotated backward by means of a key being applied to the squared end 23 of the shaft. The wire 10 in this construction is severed and the cut ends thereof are made fast to the drum, which acts to wind on the respective ends or unwind them when rotated in one direction or the other. The form shown in Fig. 6 is the same as that shown in Fig. 3, with the exception that each drum 18 has an independent worm 22 instead of a worm in common. By means of this construction the independent sections of the trolley-wire, which approach the hanger from opposite ends, can be independently operated upon. If preferred, the drum shown in this form may be arranged vertically instead of horizontally and the same effect be obtained thereby; but there are obvious objections to having the drum placed vertically.

There are many simple ways that will readily suggest themselves in the use of this invention in which a tightener may be interposed in the line at any desired point or may

be mounted upon and combined with the hanger, which latter arrangement is the preferred adaptation. It is obvious that the hanger-frame 9, instead of being chambered, may be flat and the tightener mounted upon one side thereof, so that the trolley or contact device may travel over the lower edge of such plate.

From the foregoing description the operation of the invention will be readily understood. Where it is desired to tighten the wire, which for various reasons may have become slackened, the same is readily accomplished by applying a key to the squared end 23 of the shaft and turning it.

Having thus described my improvements in tightening devices for suspended electric conductors, what I claim as my invention, and desire to secure by Letters Patent, is—

1. A suspended electric conductor having a tightening device interposed therein for tightening or loosening the same, substantially as and for the purpose set forth.

2. A suspended electric conductor having a winding-drum interposed therein and to the barrel of which the conductor is attached, whereby the winding of the drum may act to tighten the conductor.

3. A suspended electric conductor having in combination therewith a winding-drum interposed in the line and to which the conductor is attached, so as to be wound or unwound thereby, said drum provided with a cog or ratchet, and a detent for engaging said cog or ratchet and retaining the same against backward rotation, substantially as and for the purpose set forth.

4. A suspended electric conductor having in combination therewith a suitably-mounted winding-drum interposed in the line and to which the conductor is attached, and a manually-operated worm for controlling the cog, substantially as and for the purpose set forth.

5. The combination, with a severed but electrically-connected conductor, of a pair of winding-drums, to each of which is attached the respective ends of the severed conductor, and a device for manually operating the drums independently or simultaneously to effect the tightening or loosening of the conductor, substantially as and for the purpose set forth.

6. The combination, with a hanger for sustaining a suspended electric conductor, of a tightening device mounted upon the hanger and to which the conductor suspended thereby is attached, whereby the conductor may be tightened, for the purpose set forth.

7. The combination, with a hanger for sustaining a suspended electric conductor, of a manually-operated winding-drum mounted upon the hanger and to which the conductor is attached, substantially as and for the purpose set forth.

8. The combination, with a hanger for sustaining a suspended electric conductor, of a tightening device mounted upon the hanger and to which the suspended conductor is at-

5 tached, so as to be tightened or loosened there-
by, and a removable plate mounted upon the
hanger and provided with a guide-rib for
guiding the trolley over the hanger, substan-
tially as and for the purpose set forth.

10 9. The combination, with a suspended elec-
tric conductor 10, of a manually-operated
winding-drum 18, to which the said conductor
is attached, and a detent for retaining the
drum against backward rotation, substantial-
ly as and for the purpose set forth.

15 10. The combination, with a suspended elec-
tric conductor 10, of a winding-drum 18, to
which said conductor is attached, a cog 21
for actuating the drum, and a worm 22 for
operating the cog, substantially as and for the
purpose set forth.

20 11. The combination, with a hanger 9, pro-
vided with the extensions 14 14 for receiv-
ing the conductor 10, of a tightening device
mounted upon the hanger and to which is at-

tached the said conductor, and a removable
plate 15, attached to the hanger and provided
with a guide-rib for the trolley, substantially
as and for the purpose set forth.

25 12. The combination, with a hanger for sus-
taining a suspended electric conductor 10, the
said conductor being severed at the hanger,
of a pair of winding-drums 18, having cogs 21,
to which the respective ends of the conductor 30
10 are attached, and a worm 22 for operating
the cogs, substantially as and for the purpose
set forth.

35 In testimony whereof I have hereunto set
my hand and seal, this 23d day of May, 1890,
in the presence of the two subscribing wit-
nesses.

DAVID MASON. [L. S.]

Witnesses:

JOHN L. GRUBBS,
GEO. E. SANGSTER.