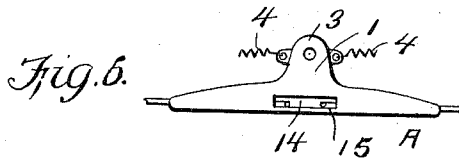
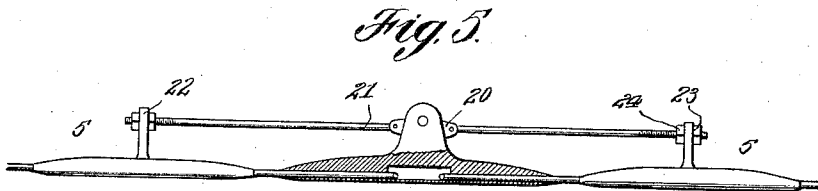
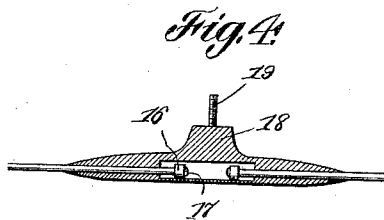
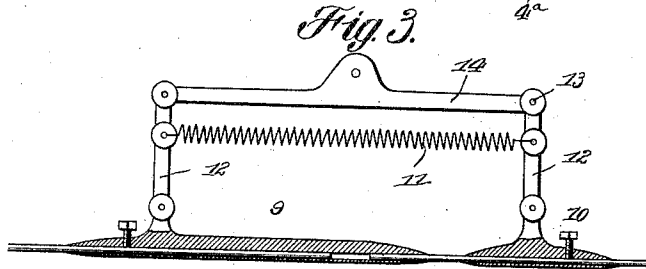
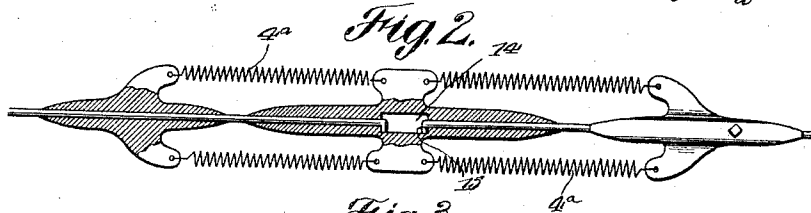
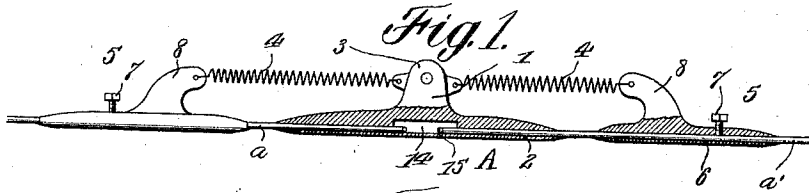


C. BRIZZOLARA.
SAG PREVENTING DEVICE FOR TROLLEY WIRES.
APPLICATION FILED AUG. 31, 1910.

1,018,869.

Patented Feb. 27, 1912.



Witnesses
J. H. Crawford
E. Edwinton

Inventor
Charles Brizzolara

By Victor J. Evans
Attorney

UNITED STATES PATENT OFFICE.

CHARLES BRIZZOLARA, OF RICHMOND, VIRGINIA.

SAG-PREVENTING DEVICE FOR TROLLEY-WIRES.

1,018,869.

Specification of Letters Patent.

Patented Feb. 27, 1912.

Application filed August 31, 1910. Serial No. 579,809.

To all whom it may concern:

Be it known that I, CHARLES BRIZZOLARA, a citizen of the United States, residing at Richmond, in the county of Henrico and State of Virginia, have invented new and useful Improvements in Sag-Preventing Devices for Trolley-Wires, of which the following is a specification.

This invention relates to overhead trolley wire suspending systems and has to do more especially with means for stretching the sections of the trolley wire or for preventing sagging of the wire sections as the latter expands with heat, and although the invention is especially useful for trolley wires, it can be used in other places where two line elements are connected together.

The invention has for one of its objects to provide an extremely simple, practical and durable device of this character which is efficient in operation, and of such design as to be readily applicable to trolley wire systems without requiring changes in standard parts.

Another object of the invention is the provision of a sag preventing device, which includes a bridging element or section in which the ends of the trolley wires are received, and connected between this element and portions of the trolley wire are means for constantly pulling the wires together, the said bridging section serving to hold the meeting ends of the wire in alinement and forming part of the conductor under which the trolley wheel passes.

With these objects in view and others, as will appear as the description proceeds, the invention comprises the various novel features of construction and arrangement of parts which will be more fully described hereinafter and set forth in the claims appended hereto.

In the accompanying drawing, which illustrates one embodiment of the invention:—Figure 1 is a side view of one form of the device with portions shown in section. Fig. 2 is a plan view of another form of the device partly in section. Fig. 3 is a side view of another modification with portions in section. Fig. 4 is a detail sectional view of a stud or bolt method of supporting the device. Fig. 5 is an elevation partly in

section of a modified form of adjustment. Fig. 6 is a side view of the intermediate section of the device.

Similar reference characters are employed to designate corresponding parts throughout the several views.

Referring to the drawing, and more particularly to Fig. 1, *a* and *a'* designate the meeting ends of two portions of a trolley wire or overhead conductor, and these ends are connected together by a stretching device A. This device may be constructed of a central bridging section 1, which is a metal casting or other suitable structure in the form of a bar-like body that has a longitudinal passage 2 open at the ends of the body so that the extremities of the conductors can enter the passage, the size of the passage being such that the conductors can freely move in and out as they change in length under variations in the temperature. The body of the section 1 has an upstanding projection or boss 3, which can be connected with a supporting arm on a trolley pole or with a cross wire. Extending from opposite sides of the central or bridging section 1 are strong helical springs 4 that connect with the end sections 5 of the device. These end sections are each in the form of a bar-like body having a passage 6 extending the full length thereof, so that part of the trolley wire can extend therethrough and the end sections can be clamped in any suitable manner to the wires, as, for instance, by set screws 7. These end sections have upwardly extending arms 8 to which the springs 4 are connected. By making the bar portions of the end and central sections in the form of a bar they more nearly conform to the shape of the trolley wire so that the trolley wheel can ride under the stretching device without causing the wheel to leave the wire. The springs 4 constantly draw the sections of the wire together and thereby prevent sagging of the sections of the wire at intermediate points, and here it may be noted that the hangers that support the sections of the wire at intermediate points will be so constructed that the wire can readily slip through the hangers as the trolley wire expands or contracts.

The construction shown in Fig. 2, is sub-

stantially as that shown in Fig. 1, except that a pair of springs 4^a are used between the bridging and each end section of the device.

5 Referring to the construction shown in Fig. 3, the bridging section 9 serves not only to connect the parts of the trolley wire sections together, but also takes the place of one of the end sections of the device since
10 the part *a* of the trolley wire and the contractile spring 11 acts between the elements 9 and 10 to draw the same together, and hence remove any slack in the trolley wire. The elements 9 and 10 are hingedly connected to the lower end of levers 12 that
15 have their upper ends pivoted at 13 on the end of a hanger 14, which hanger is supported on a trolley pole arm or cross wire of the suspension system. The spring 11 is
20 connected at its ends with levers 12 at points between the ends thereof so that the spring acts through the levers to draw the parts of the trolley wire together. Stretching devices of the character described can be readily
25 applied to ordinary trolley wire suspension systems with comparatively little trouble and expense, and the parts of the trolley wire will be effectively held tight.

In Figs. 1 and 2, a recess 14 is shown so
30 as to receive the ends of the trolley wires and permit their being bent at right angles as shown at 15 in Fig. 2 so as to prevent the trolley wire from dropping to the ground should the springs break. One wall of the
35 recess in the hanger may be open in order to permit a tool to be inserted for bending the ends of the wires into stops. Another structure for accomplishing this purpose is shown in Fig. 4 where the trolley wire has
40 secured upon its respective ends suitable collars 16 and the wire headed up at 17 so as to prevent disengagement of the collar. The recess in which the collars 16 are disposed may be open at one side of the hanger
45 so that the collars can be applied to the inner ends of the wires and the ends of the wires upset by a tool insertible in the open side of the recess. The bridging section in Fig. 4 is provided with a vertical projection or boss 18 from which extends a
50 threaded stud or bolt 19 by which the device is suspended. In Fig. 5, the central bridging section is shown as provided with a pair of oppositely extending pivotal ears
55 20 to which are pivoted the threaded rods 21. These rods pass through suitable apertures formed in arms 22 carried by the end sections 5. Suitable nuts 23 are provided for drawing up the end sections 5 and suitable lock nuts 24 are threaded upon the rods
60 on opposite sides of the arms 22 to lock the parts in adjusted position.

From the foregoing description taken in connection with the accompanying draw-

ings, the advantages of the construction and 65 of the method of operation will be readily apparent to those skilled in the art to which the invention relates, and while I have described the principle of operation of the invention, together with the device which I
70 now consider to be the best embodiment thereof, I desire to have it understood that the device shown is merely illustrative and that such changes may be made when desired as are within the scope of the claims. 75

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

1. The combination of two parts of an element to be stretched, a bridging device having a longitudinal channel enlarged at an
80 intermediate point to form shoulders, said parts being slidable in the passage of the bridging device, means on the inner ends of the parts for engaging the shoulders in the said channel, springs connected with the
85 bridging device and extending from opposite sides thereof, and means for adjustably connecting the springs to the parts of the said element.

2. The combination of outer and intermediate 90 sections having alining channels, trolley wire ends extending wholly through the channels of the outer sections and partially through and slidable in the channel of the intermediate section, fastenings on
95 the outer sections for clamping the said ends adjustably in the latter, a plurality of springs between each outer section and the intermediate section for drawing the outer sections inwardly, and means for preventing
100 the trolley wire ends from pulling out of the intermediate section upon breakage of the springs.

3. A trolley wire stretcher comprising relatively movable sections having alining 105 channels, the channels of one of the sections being formed with a recess, a trolley wire extending longitudinally of the channels and having means on its end for engaging the wall of the said recess in one section,
110 means for clamping the other section to the wire, and a contractile device extending from one section to the other and connected with both, the said means on the end of the wire serving to prevent separation
115 of the sections and dropping of the wire upon breakage of the said device.

4. A device of the class described comprising a pair of parts to be stretched a
120 bridging element having a longitudinal passage into which the ends of the parts to be stretched extend, an element clamped to one of the said parts, and a contractile spring extending from one element to the other and operatively connected therewith
125 for drawing the elements toward each other.

5. A trolley wire stretcher comprising a

pair of sections clamped to the trolley wire, an intermediate section having a channel to slidably receive the trolley wire, and a recess dividing the channel, means interconnecting the outside and intermediate sections for adjusting the relative position of said sections, and means carried by the trolley wire within said recess for preventing

the trolley wire from dropping to the ground should said adjusting means break. 10

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES BRIZZOLARA.

Witnesses:

M. M. STOKES,
C. B. STOKES.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."