

No. 765,850.

PATENTED JULY 26, 1904.

W. O. MILLER.
TROLLEY.

APPLICATION FILED FEB. 10, 1903.

NO MODEL.

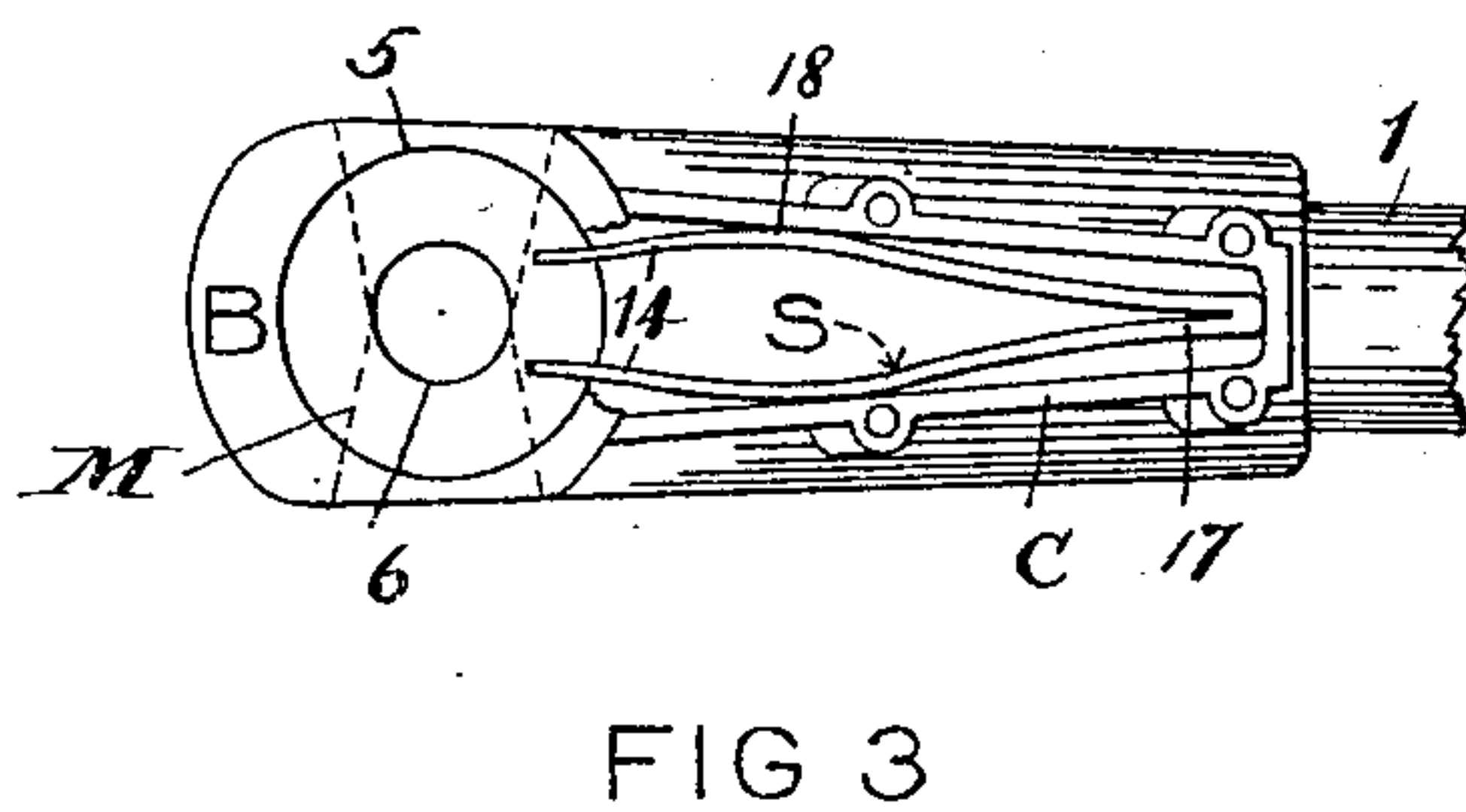
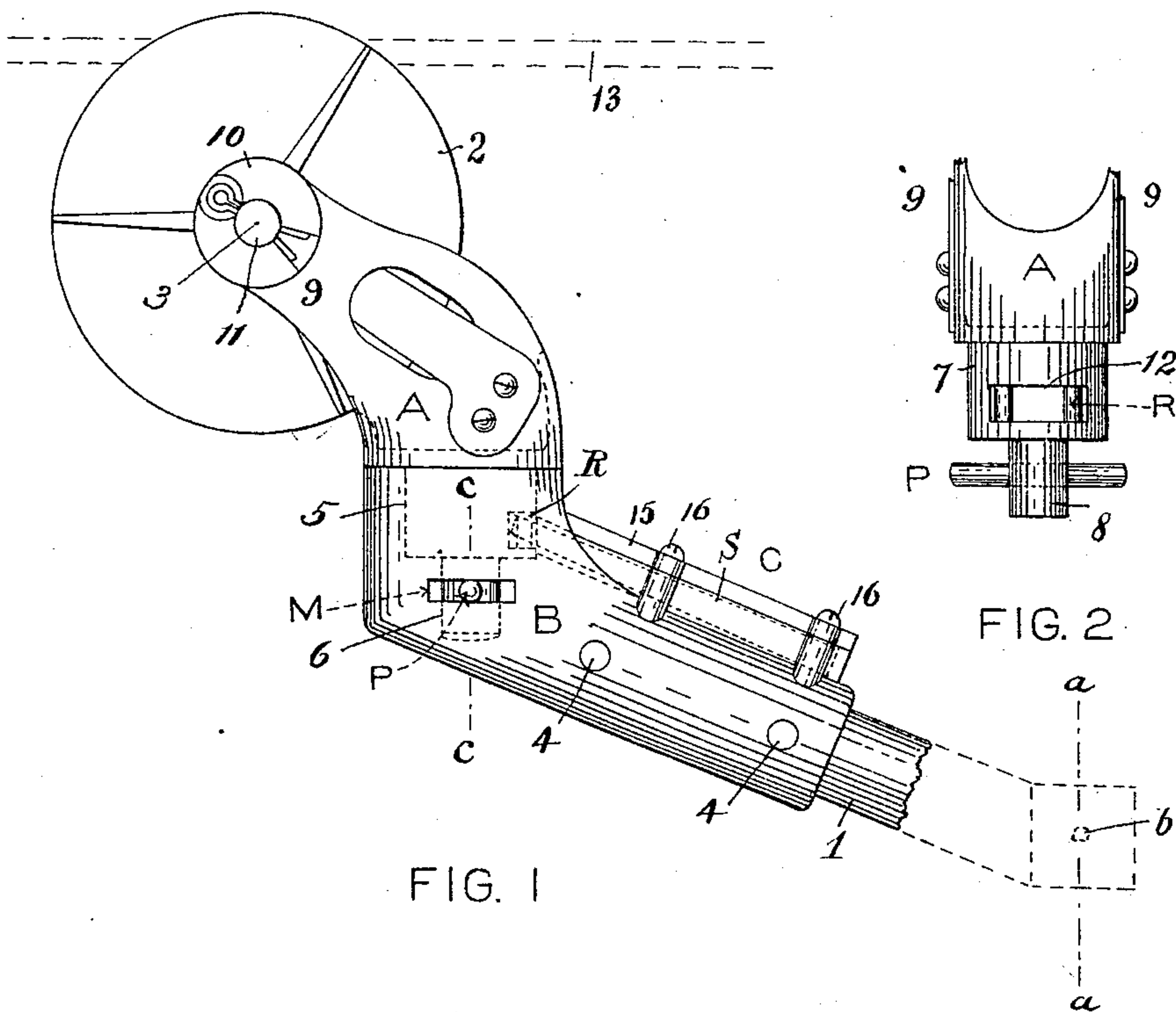


FIG. 3

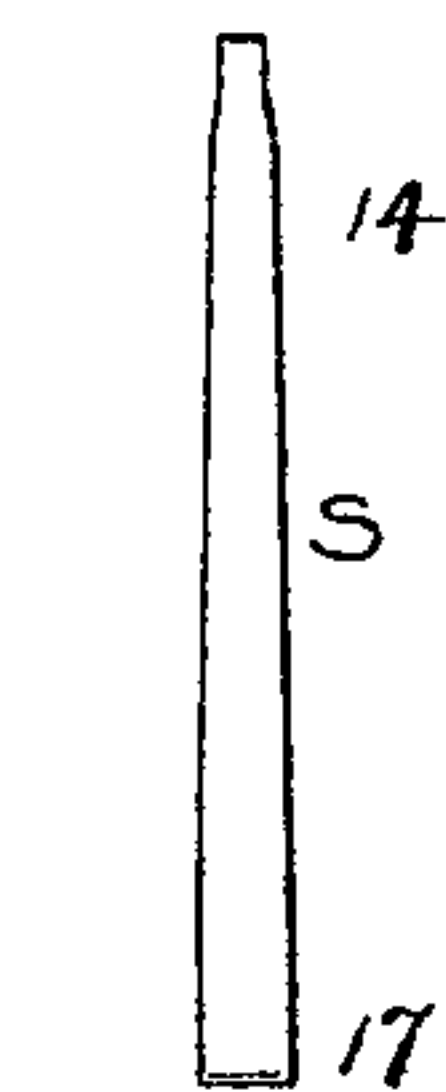


FIG. 5

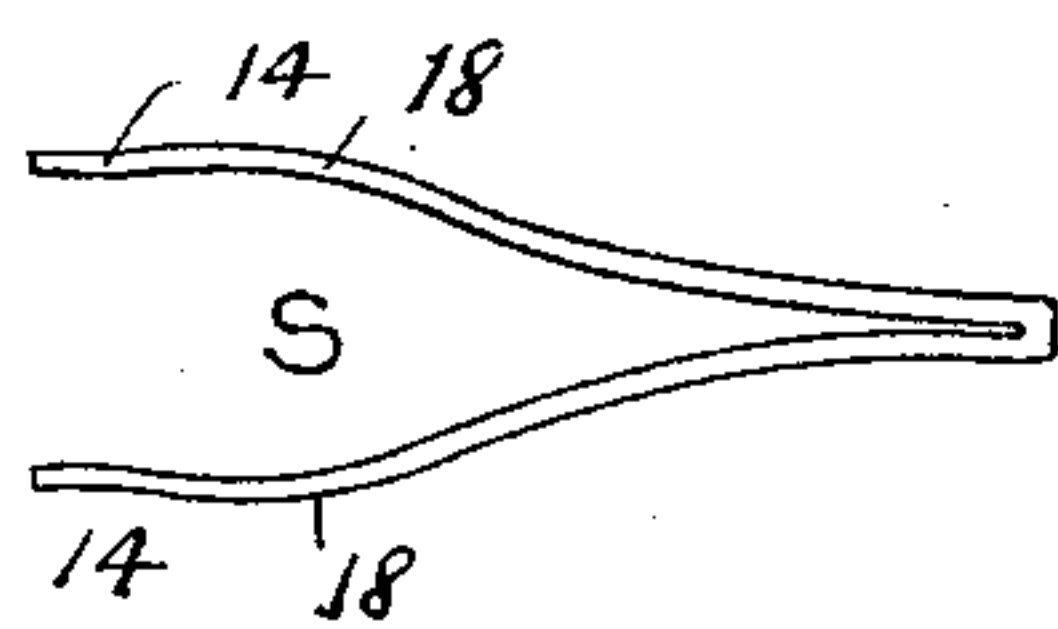


FIG. 4

WITNESSES

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TROLLEY.

SPECIFICATION forming part of Letters Patent No. 765,850, dated July 26, 1904.

Application filed February 10, 1903. Serial No. 142,778. (No model.)

To all whom it may concern:

Be it known that I, WALTER O. MILLER, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Trolleys, of which the following is a specification.

My invention relates to trolleys for traveling electric contacts, adapted for use in all cases where an automatic alinement of the trolley-wheel with the line conductor is desirable—for instance, at the loops, curves, and switches of electric railways.

The object of the improvement is to lessen the jumping and grinding of the wheel and to equalize the wear on the wheel-flanges, also to reduce the wear and tear to which both the wheel and line conductor are ordinarily subjected, especially at places of irregular or out-of-line wiring, where the paths of the conductor and of the car are not parallel. This I accomplish by mounting the wheel support or bearing to turn on an axis which is substantially transverse to the wheel-axis and to the line conductor (ordinarily on an approximately vertical axis) and by controlling said wheel-support in its axial and automatic movements. It is to be understood that the wheel-support above referred to is distinct from the laterally-movable trolley pole or arm and may be termed the "immediate" wheel-support, while the pole may be termed the "remote" wheel-support. The laterally-movable pole, which is ordinarily mounted on a vertical axis, and the immediate wheel-support, carried with the pole and also axially movable relative to the pole, enable the wheel to both follow the conductor and also to aline itself with the conductor, while by the mechanism hereinafter described the wheel is positively controlled within certain limits of axial movement and also yieldingly controlled, with a constant tendency to reassume a normal position.

The invention consists in the parts and combinations thereof herein set forth and claimed.

In order that the invention may be more clearly understood, I have shown in the accompanying drawings means for carrying the same into practical effect without limiting my

improvements in their useful applications to the particular construction which for the sake of illustration I have delineated.

In said drawings, Figure 1 is a side elevation of a trolley-wheel and so much of the supporting devices of the same as is necessary to an understanding of the invention, the same embodying my improvements. Fig. 2 is an end view of a portion of the immediate support of the wheel. Fig. 3 is a plan view of the upper portion of the remote support or trolley-pole, a portion of the same being broken away. Figs. 4 and 5 are plan and side views of the controlling-spring.

Referring to the drawings, 1 indicates the trolley-pole or equivalent remote support for the wheel 2. Said pole is mounted upon an axis *b*, approximately parallel with the normal line of the axis 3 of the wheel, and on an axis *a*, which may be approximately vertical and which is transverse to the axes *b* and 3. Said axes *a* and *b* are indicated diagrammatically in Fig. 1. At its upper end the support 1 is provided with a casting B, having pins or other means at 4 by which it is attached to the support.

5 6 represent a cylindrical socket in the casting B, arranged on a vertical axis *c* and adapted to serve as a bearing in which is received the journal 7 8 of the immediate trolley-support A. The latter may be a casting of usual or suitable form having arms 9, provided with bearings 10 for the trolley-axle 11. In the construction shown the axle 11 is fixed in the bearings 10 and is arranged to have the trolley-wheel turn on it.

M is a transverse slot through the casting B opposite the smaller portion 6 of the socket, and in said slot is arranged a transverse pin P, which is fixed in the smaller portion 8 of the journal of the support A. The construction is such that the support A is adapted to oscillate in planes parallel with the axis 3, and such oscillation is positively limited at its extremes by the ends of the slot M, against which the pin P abuts. Said slot and pin form a positive stop or stops to limit the pressure of the support A on the spring hereinafter described. Said pin also serves to keep the support A in place on the casting B.

Eccentric to the axis c the support A is formed or provided with shoulders or bearing-pins R. These are preferably arranged in a slot 12, formed in the larger journal portion 7, as seen in Fig. 2.

S is a spring arranged to control the oscillation of the support A in either direction, and while it allows said support to yield readily to bring the trolley-wheel 2 into alinement with the line conductor 13 it tends constantly to bring the support A and trolley-wheel back to its central or normal position on the casting B. The said spring is preferably constructed and arranged as shown, of approximately V shape, having arms 14, which rest in the slot 12 and bear outwardly on the pins R. The body of the spring is situated in a box C, formed on the top of the casting B, and inclosed by a cover 15, which is secured in place by screws 16. The arms 14 of the spring are supported out of contact with the bottom of said box by the lower part of the slot 12, as seen in Fig. 1 in dotted lines, to give freedom of movement to the spring-arms without undue friction. The spring is also arranged to have a limited movement in the box to give sufficient freedom and sensitiveness of movement to the support A, the narrow end 17 of the spring having a little play in the box, as seen in Fig. 3. and the spring being adapted to rock slightly on rounded portions 18 of the arms 14, which rounded portions bear against the sides of the box. Small motions of the trolley-wheel are thus very little resisted by the spring, while the latter serves to yieldingly maintain the support A in an approximately central position, offering more and more resistance as the eccentricity of position of the part A increases.

What I claim is—

40 1. The combination of a trolley-wheel, a pivotal support for the same, a spring controlling the movement of said support, and a box containing the spring and allowing a bodily movement of the same without resistance prelimi-

nary to putting the spring under tension, substantially as set forth. 45

2. The combination of a trolley-wheel, a pivotal support for the same, a controlling-spring engaging said support and adapted to move without bending during a part of the movement of said support to allow a free oscillation of the trolley-wheel, and means for arresting the movement of the spring during a further movement of said support to bring a yielding pressure against the said further movement of the support, substantially as set forth. 55

3. The combination of the trolley-wheel, the pole, the casting carried at the upper end of said pole, a support A carrying the wheel and journaled in said casting, and a bodily-movable two-armed spring held on said casting and arranged to move freely and bodily during the initial movement of the support and to resist yieldingly the further movement of said support, substantially as set forth. 65

4. The combination of the trolley-wheel, the support A carrying said wheel and having the pins R, the casting B carrying said support on a vertical pivotal axis c , and the two-armed spring S held so as to be bodily movable on the casting during the initial movement of the trolley-wheel and engaging said pins R, substantially as set forth. 70

5. The combination of the trolley-wheel, a pivoted support for the same and a V-shaped spring having its arms arranged to act on said support and formed with portions 18 on which said spring may rock, and a holder for the spring arranged to allow such movement, substantially as set forth. 80

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

WALTER O. MILLER.

Witnesses:

F. A. COLDOVEY,
A. L. WUESTEFELD.