E. C. DIETRICH AND C. W. BLISS.

EXTENSIBLE TROLLEY POLE.

APPLICATION FILED JAN. 29, 1920.

1,355,946. Patented Oct. 19, 1920.

Fig. 1

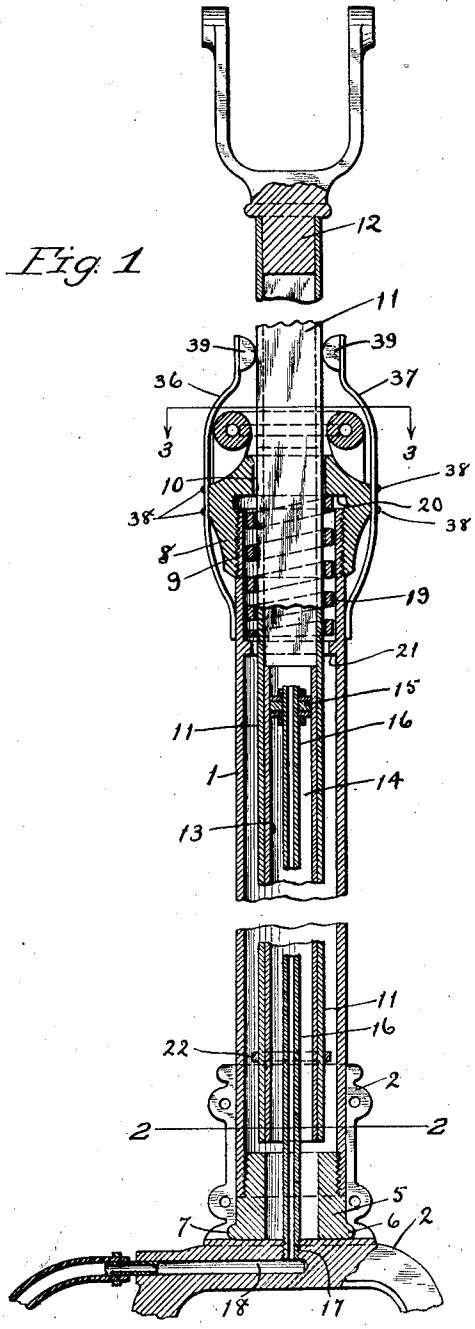


Fig. 2

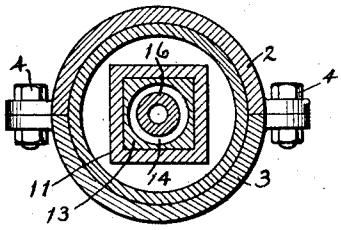
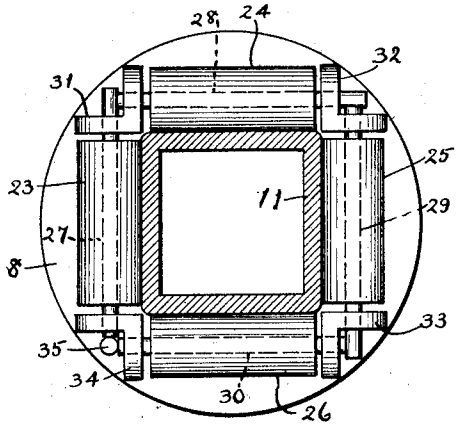


Fig. 3



Witness:-
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UNITED STATES PATENT OFFICE.

EDWARD C. DIETRICH AND CHARLES W. BLISS, OF SOUTH BEND, INDIANA.

EXTENSIBLE TROLLEY-POLE.

1,355,946. Specification of Letters Patent. **Patented Oct. 19, 1920.**

Application filed January 29, 1920. Serial No. 354,812.

To all whom it may concern:

Be it known that we, EDWARD C. DIETRICH and CHARLES W. BLISS, citizens of the United States, residing in the city of South Bend, county of St. Joseph, Indiana, have invented new and useful Improvements in Extensible Trolley-Poles, of which the following is a specification.

Our invention relates to extensible trolley poles, and especially to a trolley pole of the class described in which a telescopic member is actuated by compressed air or fluid under pressure.

An object of our invention is the production of a simple and effective extensible trolley pole wherein the extensible member is actuated by compressed air issuing through a stationary piston arranged within the extensible pole member. Another object is the production of an extensible trolley pole wherein antifriction bearings are provided to facilitate the actuation of the extensible pole member. Other objects of our invention are mentioned and described herein.

The preferred embodiment of our invention is illustrated on the accompanying drawing in which Figure 1 is a section in elevation through the pole and a fragment of a forked pole support; Fig. 2 is a section taken on the line 2—2 of Fig. 1; and Fig. 3 is a section taken on the line 3—3 of Fig. 1.

Similar numerals of reference indicate like members and parts of members throughout the several views on the drawing.

Referring to the drawing in detail, the numeral 1 indicates a tubular pole member the lower end whereof is clamped within a socket formed in a pole fork member 2, the detachable cap 3, which is fastened or clamped to pole member 1 by bolts 4, 4 constituting a part of said socket. The fork 2 may be formed in any suitable manner and is adapted to be pivotally mounted upon a trolley car top or roof—not shown—the lower extremities of said fork not being disclosed in the drawing.

The numeral 5 indicates a hollow or tubular pole step member screw threaded into the lower end of the pole member 1 and provided with an annular head or flange member 6 on the lower end thereof, said flange being adapted to be clamped within the annular recess or chamber 7 to prevent longitudinal displacement of the pole 1.

The numeral 8 indicates a tubular roller bearing carrier member within which the upper end of the pole 1 may be screw threaded at 9, said carrier member being provided with the opening 10 within which the hollow telescopic pole member 11 is movably arranged. The pole 11 is preferably square or polygonal in cross-section and extends upward through the aperture 10 and downwardly and interiorly of the fixed pole 1, a harp 12 being mounted upon the upper end thereof and by which said pole end may be plugged. The numeral 13 indicates a hollow pole bushing member rigidly fastened within the telescopic pole 11 in any suitable manner and extending substantially from the lower end thereof to a point intermediate the extremities thereof. The bushing 13 may be provided with the cylindrical bore 14 within which the stationary piston 15 is arranged and around which said bushing and pole are slidable, said piston being mounted upon the hollow or tubular piston rod 16 which may be screw threaded into the base member 2 at 17 for supporting said rod and for placing the interior thereof in communication with an air receiving chamber 18, the latter being adapted to receive compressed air, or fluid under pressure, from any suitable source the pressure whereof may pass through the hollow piston rod 16 into the upper part of the hollow pole 11.

The numeral 19 indicates a coil buffer spring arranged within the upper end of the pole 1 and encompassing the pole member 11, said spring being seated against the face 20 interiorly of the carrier 8, and the annular flange 21 disposed interiorly of and upon the pole 1. The numeral 22 indicates an annular buffer or stop collar encompassing the pole 11 and rigidly secured thereto adjacent the lower end thereof but spaced therefrom, which collar is adapted to engage the spring 19 under an extreme outer or upward movement of the pole 11 to cushion the contact therewith and to prevent the displacement of the pole member 11 from the interior of pole member 1.

The member 8 may be provided with four antifriction roller bearing members 23, 24, 25 and 26, respectively, arranged in rectangular formation, and mounted upon suitable

shafts 27, 28, 29 and 30, respectively, which shafts may be detachable from the rollers in one direction only and may be journaled in suitable bearing apertures formed in the L shaped bearing brackets 31, 32, 33 and 34, respectively. One end of each of the roller shafts 27, 28 and 29 overlaps the detachable end of the other shaft to prevent displacement thereof, and a pin or set screw 35, carried in the member 8 adjacent the end of shaft 27, maintains its juxtaposition. The rollers 23, 24, 25 and 26 engage the flat exterior faces of the pole 11 and serve both as guides therefor and to reduce friction created when the pole is actuated telescopically of the member 1.

Numerals 36 and 37 indicate electric conductor members which may be rigidly fastened to and upon opposite sides of the carrier member 8 by screws 38, 38 and provided with the hemispherical points 39 39 to conduct the electric current from pole 11 to pole 1 around the member 8.

Obviously, when compressed air, or fluid under pressure, is admitted to the interior of the pole 11 through the hollow piston rod 16, the pole 11 is projected upward and outward and a trolley wheel—not shown—which may be carried by the harp 12 will be held against the overhead current supply wire.

We claim:

1. A pneumatic extensible trolley pole comprising an outer hollow pole member; a hollow telescopic pole member slidably arranged within said outer pole member and projecting therefrom, said telescopic pole member being closed at its outer end; a stationary piston fitted within said telescopic pole member and around which said pole is slidable; and means for the introduction of fluid under pressure to the interior of the telescopic pole member for outward actuation thereof.

2. A pneumatic extensible trolley pole comprising an outer hollow pole member; a hollow telescopic pole member slidably arranged within said outer pole member and projecting therefrom, said telescopic pole member being closed at its outer end; a stationary piston fitted within said telescopic pole member and around which said pole is slidable; means for the introduction of fluid under pressure to the interior of the telescopic pole member for outward actuation thereof; and means for limiting the outward movement of said telescopic pole member.

3. A pneumatic extensible trolley pole comprising an outer hollow pole member; a hollow telescopic pole member slidably arranged within said outer pole member and projecting therefrom, said telescopic pole member being closed at its outer end; a stationary piston fitted within said telescopic pole and around which said pole is slidable; means for the introduction of fluid under pressure to the interior of the telescopic pole for outward actuation thereof; and resilient means for limiting the outward movement of the telescopic pole member.

4. A pneumatic extensible trolley pole comprising an outer hollow pole member; a hollow telescopic pole member slidably arranged within said outer pole member and projecting therefrom, said telescopic pole member being closed at its outer end; a hollow stationary piston rod within said telescopic pole member; a piston mounted on said piston rod and around which said telescopic pole is slidable; and means for the introduction of fluid under pressure through said piston rod to the interior of the telescopic pole member for outward actuation thereof.

5. A pneumatic extensible trolley pole comprising an outer hollow pole member; a hollow telescopic pole member slidably arranged within said outer pole member and projecting therefrom, said telescopic pole being polygonal in cross-section and closed at its outer end; a stationary piston fitted within said telescopic pole member and around which said pole is slidable; means for the introduction of fluid under pressure to the interior of the telescopic pole member for outward actuation thereof; and means for limiting the outward movement of said telescopic pole member.

6. A pneumatic extensible trolley pole comprising an outer hollow pole member; a hollow telescopic pole member slidably arranged within said outer pole member and projecting therefrom, said pole being closed at its outer end; a stationary piston fitted within said telescopic pole and around which said pole is slidable; means for the introduction of fluid under pressure to the interior of the telescopic pole for outward actuation thereof; and means to prevent the rotation of said telescopic pole member.

7. A pneumatic extensible trolley pole comprising an outer hollow pole member; a hollow telescopic pole member slidably arranged within said outer pole member and projecting therefrom, said telescopic pole member being closed at its outer end; a stationary piston fitted within said telescopic pole member and around which said pole is slidable; means for the introduction of fluid under pressure to the interior of the telescopic pole member for outward actuation thereof; and anti-friction bearings carried by the outer pole member and adapted to bear against the telescopic pole member.

8. A pneumatic extensible trolley pole comprising an outer hollow pole member; a hollow telescopic pole member slidably arranged within said outer pole and pro-

jecting therefrom, said telescopic member being closed at its outer end; a hollow stationary piston rod within said telescopic pole; a piston mounted on said piston rod and around which said telescopic pole is slidable; means for the introduction of fluid under pressure through said piston rod to the interior of said telescopic pole for outward actuation thereof; and means to limit the outward movement of said telescopic pole, said means comprising a coil spring seated within said outer pole member, and a buffer member carried by said telescopic pole member adapted to engage said spring.

9. A pneumatic extensible trolley pole comprising an outer hollow pole member; a hollow telescopic pole member slidably arranged within said outer pole member and projecting therefrom, said telescopic pole being closed at its outer end and provided with an interior lining or bushing; a stationary piston fitted within the bushing of said telescopic pole member and around which said pole and bushing are slidable; and means for the introduction of fluid under pressure to the interior of the telescopic pole member for outward actuation thereof.

10. A pneumatic extensible trolley pole comprising a hollow outer pole member; a base member upon which said pole is rigidly mounted; a hollow telescopic pole member rectangular in cross-section slidably arranged within said outer pole member, said pole being closed at its outer end and provided with a bushing or lining having a cylindrical bore; a stationary piston fitted within said telescopic pole member bushing and around which said bushing and pole are slidable; and means for the introduction of fluid under pressure to the interior of the telescopic pole member for outward actuation thereof.

In testimony whereof we have hereunto affixed our signatures this 10th day of January, 1920.

EDWARD C. DIETRICH.
CHARLES W. BLISS.