

No. 749,509.

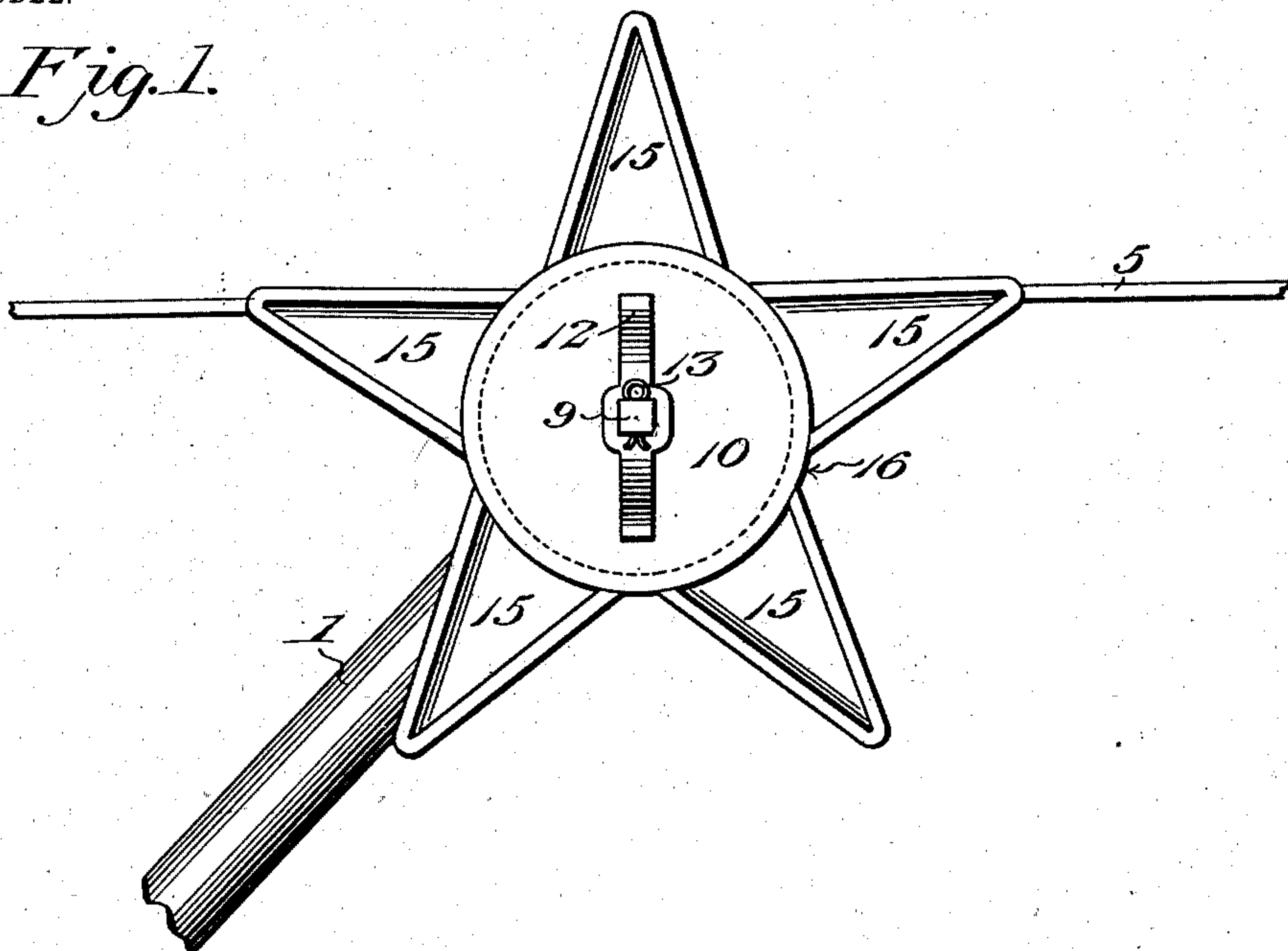
PATENTED JAN. 12, 1904.

W. D. WILLIAMS.  
TROLLEY.

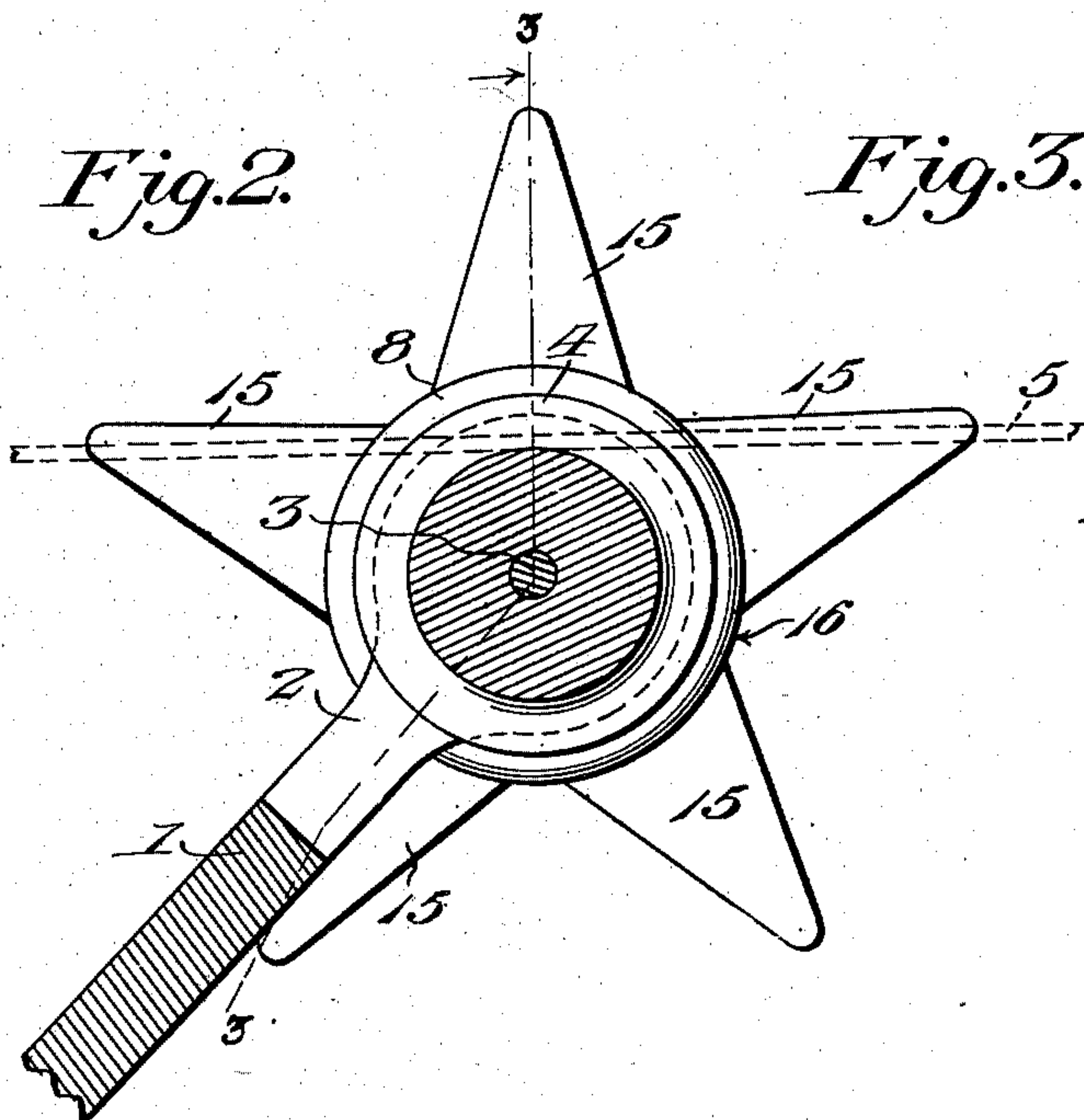
APPLICATION FILED AUG. 19, 1903.

NO MODEL.

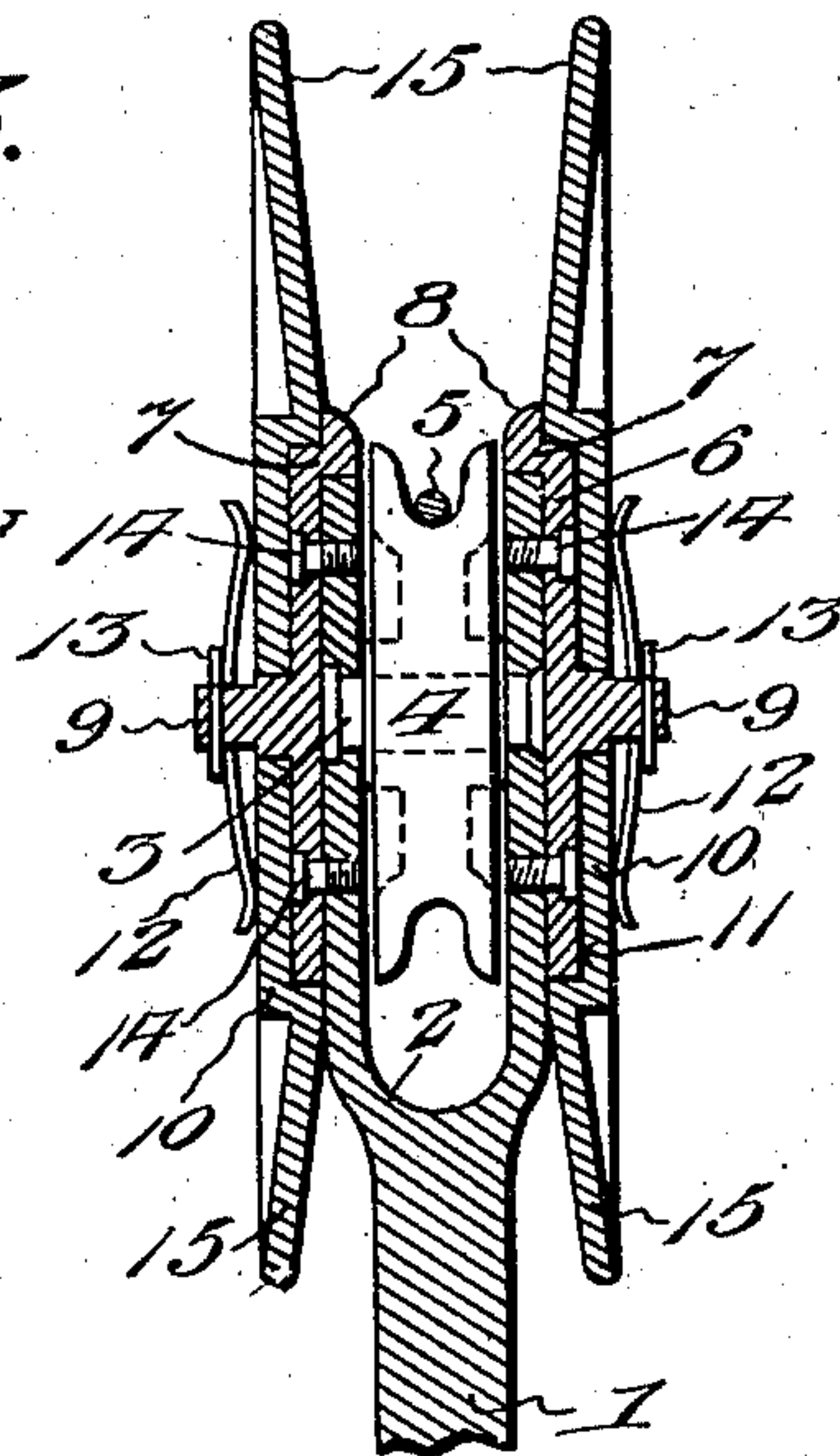
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



Witnesses

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# UNITED STATES PATENT OFFICE.

WILLIS D. WILLIAMS, OF KIRKLAND, ARIZONA TERRITORY.

## TROLLEY.

SPECIFICATION forming part of Letters Patent No. 749,509, dated January 12, 1904.

Application filed August 19, 1903. Serial No. 170,022. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIS D. WILLIAMS, a citizen of the United States, residing at Kirkland, in the county of Yavapai and Territory of Arizona, have invented new and useful Improvements in Trolleys, of which the following is a specification.

My invention relates to new and useful improvements in trolleys; and its object is to provide guards of novel construction which are adapted to be attached to the sides of the fork of the trolley-pole and which serve to retain the wheel upon the wire.

A further object is to so construct the guards as to cause them to automatically turn upon their bearings when they contact with the hangers of the trolley-wire.

A further object is to provide guards which are so shaped and arranged as to extend above the trolley-wheel and at opposite sides of the trolley-wire at all times.

With the above and other objects in view the invention consists in the novel construction, combination, and arrangement of parts hereinafter more fully described and claimed, and illustrated in the accompanying drawings, showing the preferred form of my invention, and in which—

Figure 1 is a side elevation of a trolley having my improved guard thereon. Fig. 2 is a longitudinal section through the trolley, and Fig. 3 is a section on line 3 3, Fig. 2.

Referring to the figures by numerals of reference, 1 is a trolley-pole having a forked end 2, within which is arranged a bearing-pin 3. Mounted on this pin is a trolley-wheel 4 of any suitable construction, and lateral movement of this wheel is prevented by the fork 2. Secured to the outer face of each side of the fork is an attachment for preventing accidental displacement of the trolley-wheel from the trolley-wire 5. Each of these attachments comprises a plate 6, having a flange 7, which overlaps the end of the fork and is beveled, as shown at 8. A stud 9 is formed at the center of the plate, and upon it is revolubly mounted a star-wheel 10, which is recessed in its inner face, as shown at 11, for the reception of the plate 6. A bow-spring 12 is mounted on the stud 9 and bears on the outer face of the wheel

10, and this spring, as well as the wheel, is retained in position upon the stud by means of a pin 13. The plates 6 are secured to the fork by means of screws 14, rivets, or other suitable devices.

The inner ends of the arms 15 of the wheel 10 are spaced apart, as shown at 16, and these arms are so arranged that one of them at all times extends above the trolley-wheel 4, at each side thereof, so as to prevent said wheel from moving laterally in relation to the trolley-wire. When the trolley is moved forward, the upper arm 15 of each star-wheel 10 will, as is obvious, come in contact with the adjacent hanger of the trolley-wire and will be thrown backward thereby, and thus cause the arms 15 adjacent thereto and in front of the wheel to swing upward and assume upright positions. The springs 12 prevent the star-wheels from rotating after the hangers have been removed from contact therewith. By the arrangement of guard-wheels herein described it will be seen that at least one arm is always in a substantially upright position at each side of the trolley-wheel. It will be understood that the guards can be readily attached to the ordinary form of trolley by simply drilling the fork and inserting the screws 14 or rivets, as desired.

In the foregoing description I have shown the preferred form of my invention; but I do not limit myself thereto, as I am aware that modifications may be made therein without departing from the spirit or sacrificing the advantages thereof, and I therefore reserve the right to make such changes and alterations as may fairly fall within the scope of my invention.

Having thus described the invention, what is claimed as new is—

1. The combination with the fork of a trolley-pole having a wheel journaled therein; of a guard secured to the outer face of each side of the fork and said guard comprising a plate, a stud centrally arranged thereon, a star-wheel journaled upon the stud and overlapping the plate, and means for clamping the wheel upon the plate.

2. The combination with the fork of a trolley-pole and a wheel journaled therein; of



plates secured to the outer faces of the fork, studs extending from the plates, star-wheels revolubly mounted upon the studs and having recesses for the reception of the plates, and  
5 springs secured to the studs and bearing on the wheels.

3. A guard attachment for trolley-poles comprising a plate, a lug extending therefrom, a star-wheel revolubly mounted upon the lug  
10 and having a recess for the reception of the plate, and a bow-spring secured to the stud and bearing upon the wheel.

4. A guard attachment for trolley-poles comprising a plate adapted to be secured to

the fork of a trolley-pole, a lug extending from the plate, a star-wheel revolubly mounted upon the lug and having a recess for the reception of the plate, the arms of said wheel being spaced apart at their inner ends, and a bow-spring mounted upon the stud and bearing at its ends upon the wheel.

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

WILLIS D. WILLIAMS.

Witnesses:

P. S. WREN,

A. F. LOCKHART.