(No Model.)

C. A. LANGFORD.

SPIRAL TROLLEY WHEEL.

No. 576,405. Patented Feb. 2, 1897.

Fig. 1.

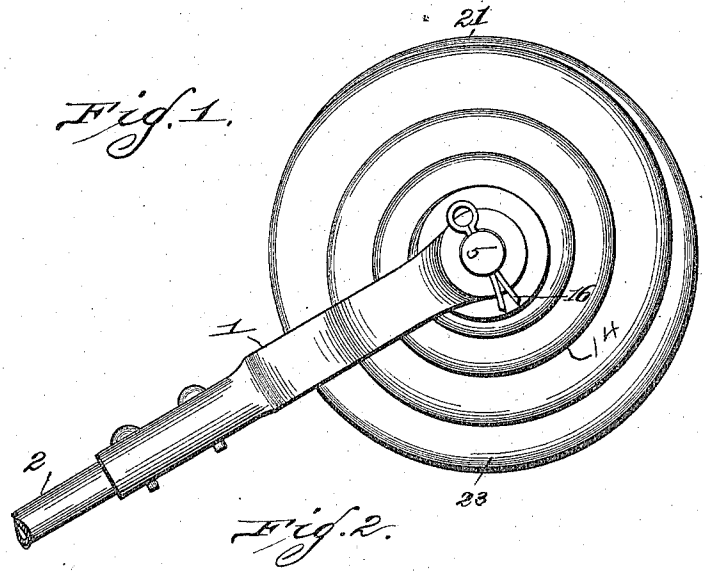

Fig. 2.

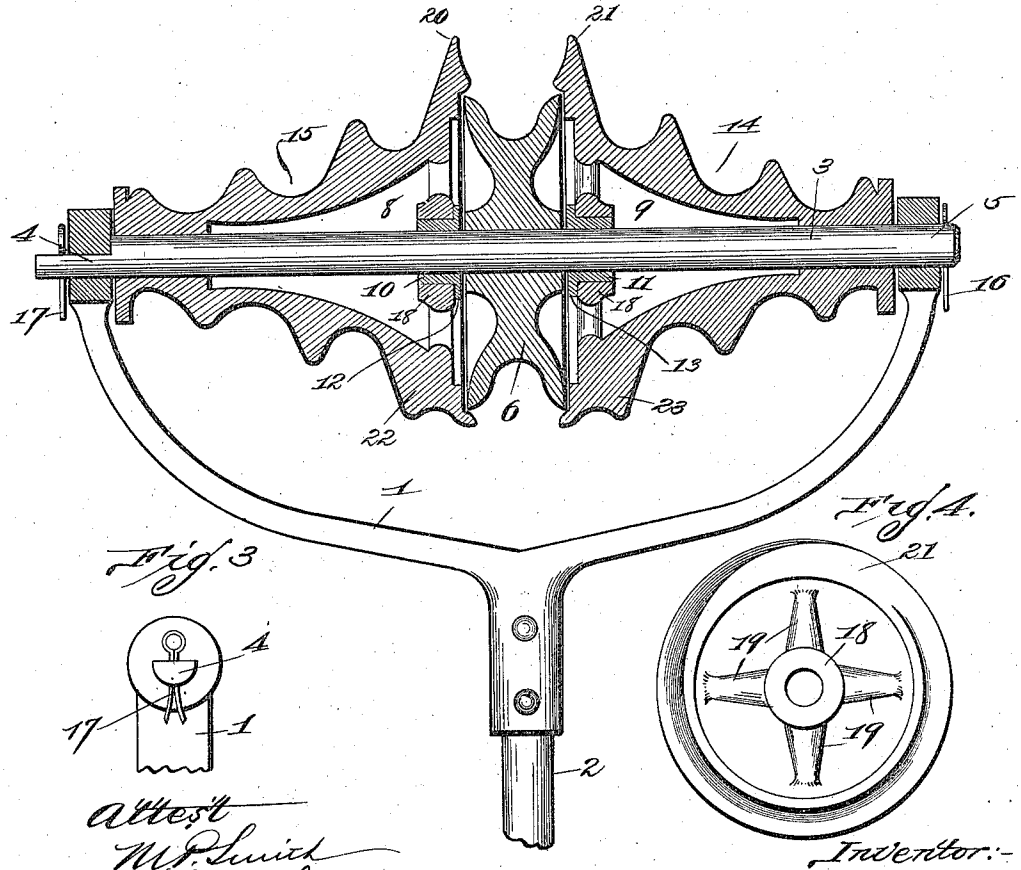

Fig. 3.

Fig. 4.

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Attest
M. P. Smith
S. G. Wells.

Inventor:-
Charles A. Langford:-
By Higdon & Higdon & Longan Attys

UNITED STATES PATENT OFFICE.

CHARLES A. LANGFORD, OF ST. LOUIS, MISSOURI, ASSIGNOR OF THREE-FOURTHS TO HENRY LANGFORD, JAMES LANGFORD, AND HERMAN F. NESLAGE, OF SAME PLACE.

SPIRAL TROLLEY-WHEEL.

SPECIFICATION forming part of Letters Patent No. 576,405, dated February 2, 1897.

Application filed May 25, 1896. Serial No. 593,023. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. LANGFORD, of the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Spiral Trolley-Wheels, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to a spiral trolley-wheel; and it consists in the novel construction, combination, and arrangement of parts hereinafter shown, described, and claimed.

Figure 1 is an end elevation of my improved spiral trolley-wheel. Fig. 2 is a longitudinal sectional elevation. Fig. 3 is an end elevation of the trolley-wheel shaft, taken at the opposite end from the view in Fig. 1. Fig. 4 is a view in elevation of the inner end of one of the spirals of which I make use.

In the construction and use of my improved spiral trolley-wheel the yoke 1 is attached to the trolley-pole 2 in any suitable way. A shaft 3 is rigidly mounted in the alined apertures 4 and 5 in the ends of the yoke. The aperture 4 is semicircular in cross-section, and the shaft 3 fits within said aperture 4 in such a way that said shaft cannot rotate. A grooved wheel 6 is rotatably mounted upon the center of said shaft. The spiral wheels 8 and 9 are mounted upon the shaft 3, one upon each side of said grooved wheel 6. Bushings 10 and 11 are placed in the apertures in the inner ends of said spiral wheels and surrounding said shaft 3, and said bushings are fixed to said spiral wheels and rotate upon said shaft. Annular lugs 12 and 13 project outwardly from the inner ends of said bushings and form bearing-surfaces for the hub of the wheel 6. The wheels 8 and 9 are considerably smaller in diameter at their outer ends than at their inner ends, and spiral grooves 14 and 15 are formed in their peripheries.

The shaft 3 is held in position by the spring-cotters 16 and 17. The large end of each of the spiral wheels 8 and 9 is constructed as shown in Fig. 4. The interior of the wheel is funnel-shaped, and the hub 18 is located directly in the center of the large end of the funnel, and arms 19 extend from said hub 18 to the inner surface of the wheel, thus forming spokes and holding said hub in position. When the wheels 8 and 9 are in position upon the shaft 3, the spiral grooves 14 and 15 extend around said wheels in opposite directions.

In the construction of the wheels 8 and 9 they are overbalanced in such a way that they will normally stand in the position shown in Fig. 2; that is, with the sharp edges 20 and 21 directly over the shaft 3. The edges 20 and 21 are formed by the running out of the grooves, and on the opposite side of the wheels from said sharp edges the flanges 22 and 23 are thicker and heavier than said edges 20 and 21. It is found that by constructing the wheel in this way the trolley-wire is less liable to run out of the groove in the wheel 6 than it would be if the spiral wheels 8 and 9 stood in any other position. When the trolley-wheel gets out of engagement with the trolley-wire and an attempt is made to restore the connection, the wire will catch the spiral wheels anywhere between the extreme outer ends of said wheels and will thus close the electric circuit and cause the car to go forward. The forward motion of the car will rotate the spiral wheels by frictional contact with the trolley-wire, and the rotation of the wheels will run the wire toward the center and ultimately throw it into the groove in the wheel 6. For the purposes of this operation it does not matter which one of the spiral wheels comes in contact with the wire.

I claim—

1. A trolley-wheel, comprising a wheel having an annular groove in its periphery, a stationary shaft supporting said wheel, a yoke supporting the ends of said shaft, wheels, having spiral grooves, mounted upon said shaft, one upon each end of said first-mentioned grooved wheel, said spiral grooves being designed to throw the trolley-wire toward said first-mentioned grooved wheel by the frictional contact of said trolley-wire with said grooves, said spirally-grooved wheels being overbalanced so that the inner ends of their spirals will normally be at the top of said wheels, substantially as specified.

2. A trolley-wheel, comprising a yoke 1, the shaft 3 mounted rigidly in the ends of said

yoke, the grooved wheel 6 rotatably mounted upon the center of said shaft, the spirally-grooved wheel 8 mounted upon said shaft at one side of said grooved wheel, the spirally-grooved wheel mounted upon the said shaft and upon the opposite side of said grooved wheel, said wheels 8 and 9 being overbalanced so that the edges 20 and 21 are normally at the top of said wheels, substantially as specified.

3. A trolley-wheel, comprising the yoke 1, the shaft 3 rigidly mounted in the ends of said yoke, the grooved wheel 6 rotatably mounted upon the center of said shaft, the spiral wheels 8 and 9 rotatably mounted one upon each side of said grooved wheel, the bushings 10 and 11 in the ends of said spiral wheels, the flanges 12 and 13 projecting outwardly from the inner ends of said bushings and forming bearing-surfaces for the ends of the hubs of said grooved wheels, substantially as specified.

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

CHARLES A. LANGFORD.

Witnesses:
S. G. WELLS,
MAUD GRIFFIN.