

No. 686,017.

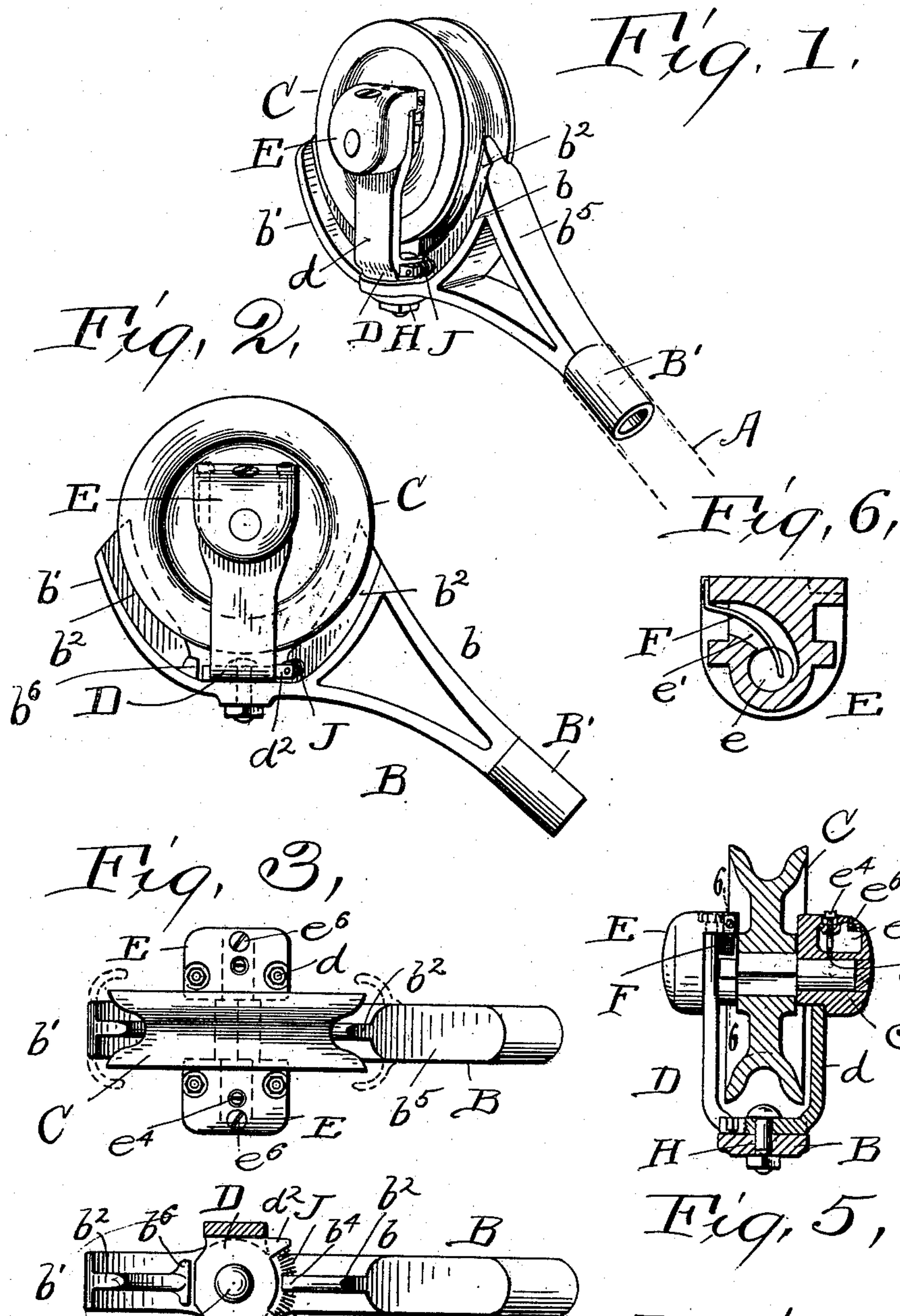
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M. J. WILSON.

TROLLEY.

(Application filed Feb. 21, 1901.)

(No Model.)



Witnesses H. J. *Fig. 4,*  
E. B. Gilchrist  
F. D. Ammen

Inventor:  
Milford J. Wilson,  
By his Attorneys,  
Thurston & Bates



# UNITED STATES PATENT OFFICE.

MILFORD J. WILSON, OF PAINESVILLE, OHIO.

## TROLLEY.

SPECIFICATION forming part of Letters Patent No. 686,017, dated November 5, 1901.

Application filed February 21, 1901. Serial No. 48,211. (No model.)

*To all whom it may concern:*

Be it known that I, MILFORD J. WILSON, a citizen of the United States, residing at Painesville, in the county of Lake and State of Ohio, have invented a certain new and useful Improvement in Trolleys, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

The invention is an improvement in the class of trolleys in which the trolley-wheel housing is swiveled to the upper end of the pole on a substantially vertical axis, whereby the housing will turn automatically and allow the wheel to adapt itself to curves in the overhead conductor-wire and be thereby less liable to become disengaged therefrom.

The objects of the invention are to provide means to prevent the conductor-wires and guy-wires from being caught between the trolley-wheel and the parts adjacent thereto, to the injury of such wires or the trolley, or both; to insure a perfect electric connection between the rotating trolley-wheel shaft and the non-rotating part of the trolley device; to provide for the automatic lubrication of the rotating shaft, and in general to provide an exceedingly practical and efficient trolley which is not liable in use to jump from the overhead wires.

In the drawings, Figure 1 is a perspective view of the upper end of a trolley constructed in accordance with my invention. Fig. 2 is a side elevation thereof. Fig. 3 is a plan view. Fig. 4 is a plan view when the trolley-wheel is mounted and the housing is cut off near its base. Fig. 5 is a vertical transverse sectional view, and Fig. 6 is a sectional view of one of the movable boxes on line 6.6 of Fig. 5.

Referring to the parts by letters, A represents the trolley-pole, which may be of a suitable construction, adapted to be attached to the car in any of the usual ways. At its upper extremity an end frame B is secured, preferably by means of a stem B', which is inserted and secured in the end of the pole A. This end frame passes beneath the trolley-wheel C, and the part thereof directly beneath the trolley-axle is substantially horizontal when the trolley is in working position. Two guard-arms  $b b'$ , which are inte-

gral parts of this end frame, are curved up in front of and behind the trolley-wheel at suitable distances therefrom, and they prevent to a large extent the guy-wires from getting below the trolley-wheel and between it and the frame B. It would be possible, however, but for the preventive means provided, for the guy-wires to pass down between the trolley and the guard-arms. The preventive means provided are ribs  $b^2$  on the guard-arms, which project toward the trolley-wheel past the peripheries of its flanges. In the best construction one rib is formed centrally on the inner face of each guard-arm, and it projects into the groove of the wheel. When this construction is employed, the end frame may be easily and cheaply cast, and the ribs, if continued down the said guard-arms, as shown, will strengthen said frame. If desired, however, each guard-arm may have two ribs or fingers, which extend along the sides of said wheel, as indicated by dotted lines in Fig. 3. An inclined member  $b^5$  extends from the top of the front guard-arm at an inclination down to the front end of said frame and is integral with the other parts of the frame. This part of the device causes the trolley, if it has left the main feed-wire, to pass beneath the guy-wires without injuring them or being injured by them.

The housing D for the trolley has a substantially flat base, which rests upon the horizontal part of the frame B and is swiveled thereto on a vertical pivot H, which permits the housing to turn freely. It has two substantially vertical standards  $d d'$ , whose upper ends are forked. Each fork supports a removable box E, in which the ends of the trolley-wheel shaft  $c$  have their bearings. The trolley-wheel is fast to this shaft, and consequently when the device is in operation the shaft turns in its said bearings, which are cylindrical holes  $e$  in said boxes. These bearings may and frequently do become considerably worn, and except for the means hereinafter provided the electric connection between said shaft and boxes might not be continuous. The means shown consist of a flat spring F, secured to each box and passing through a cored-out opening  $e'$  across one side of the shaft-bearing, which spring bears upon the shaft, however much the shaft or



bearing may be worn. Therefore the electric connection between the rotating shaft and a non-rotating element through the spring F will be always maintained. Each box has  
 5 a receptacle  $e^2$  above the shaft for oil, and a small duct  $e^3$ , passing through the bottom of this receptacle to the bearing, permits oil to pass onto the shaft to lubricate it. A screw-valve  $e^4$ , which screws down through the top  
 10 of the box, has a tapered end which enters the tapered upper end of said duct, and thus by screwing this valve up or down it may regulate the rapidity with which the oil flows through said duct. The receptacle  $e^2$  is closed  
 15 by a screw-plug  $e^6$ , whose top when it is screwed down is below the top surface of said box. It will be noticed that the top surfaces of these boxes have a downward outward inclination, which causes them to slide off the  
 20 main conductor-wire if said tops chance to engage with said wires.

In the operation of this device the trolley-housing turns freely on its swiveled connection with the end frame when the trolley-wheel is engaging with a curved part of the  
 25 conductor-wire, and thus very greatly reduces the danger that said wheel may leave said wire. The extent to which said housing may turn on this vertical axis is limited by a suitable stop or stops carried by the frame B. These may be transverse shoulders  $b^6$   $b^6$  on  
 30 the base of the end frame, with which the bottom or base of the housing D engages. The housing is returned to its normal position by two coil-springs J J, which lie between a lug  $b^4$  on the end frame and the lugs  
 35  $d^2$   $d^2$  on the housing.

Having described my invention, I claim—

1. In a trolley, an end frame, a trolley-wheel  
 40 housing swiveled thereto on a vertical pivot, and having side standards, combined with boxes removably secured to said standards and each having a transverse hole for a shaft-bearing, and a recess crossing the same, a  
 45 spring secured to said box and passing through said recess into said shaft-bearing, a trolley-wheel shaft mounted in said shaft-bearing, and a trolley secured thereto between said  
 50 boxes, substantially as specified.

2. In a trolley, in combination, an end frame,

a trolley-wheel housing swiveled thereto on a vertical pivot, and having side standards, boxes removably secured to said standards and each having first a hole for a shaft-bearing, second an oil-receptacle above said hole,  
 55 and third an oil-duct leading from said receptacle to said shaft-bearing, a valve for said duct, a trolley-wheel shaft mounted in the shaft-bearing in said boxes, and a trolley-wheel secured to said shaft, substantially as  
 60 specified.

3. In a trolley, an end frame having the upward-extended guard-arms  $b$   $b'$ , the ribs  $b^2$  formed on their inner faces, and a lug integral with said frame and lying between said  
 65 guard-arms, combined with a trolley-wheel housing swiveled to said frame between said guard-arms and having the lugs  $d^3$  projecting on opposite sides of the lug  $b^3$ , springs engaging with said lugs, a trolley-wheel shaft mounted in said housing, and a trolley-wheel secured  
 70 to said shaft between said guard-arms and fingers, substantially as specified.

4. In a trolley, the combination of an end frame, a trolley-wheel housing swiveled there-  
 75 to on a vertical pivot, boxes removably secured to the upper ends of the standards of said housing, said boxes having downwardly and outwardly inclined upper faces, and having also bearings for a shaft, with a shaft  
 80 mounted in said bearings, and a trolley secured thereto, substantially as specified.

5. In a trolley, an end frame having an upwardly-extended guard-arm in front of the  
 85 trolley, a rib on the inner face of said guard-arm, and an inclined member connecting the top of said guard-arm with the front end of said end frame, combined with a rotatable trolley-wheel supported on said end frame be-  
 90 hind said guard-arm and in such position relative thereto that the rib on said guard-arm shall project rearward behind the peripheries of the flanges of said trolley-wheel, substantially as specified.

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

MILFORD J. WILSON.

Witnesses:

E. L. THURSTON,  
 E. B. GILCHRIST.