No. 658,745. Patented Sept. 25, 1900.

D. F. L. JONES.

TROLLEY WHEEL.

(Application filed Aug. 12, 1899.)

(No Model.)

Fig. 1.

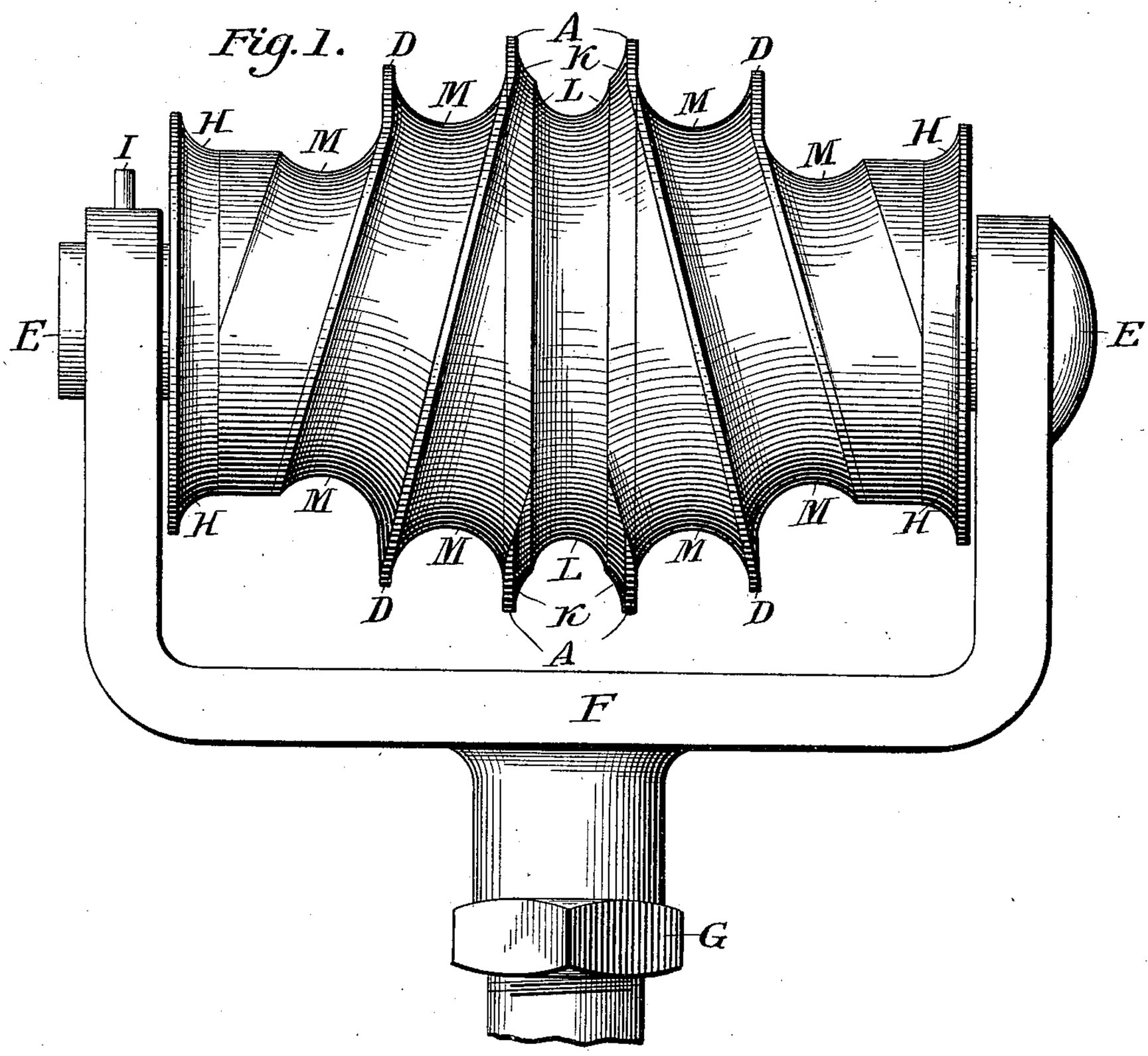
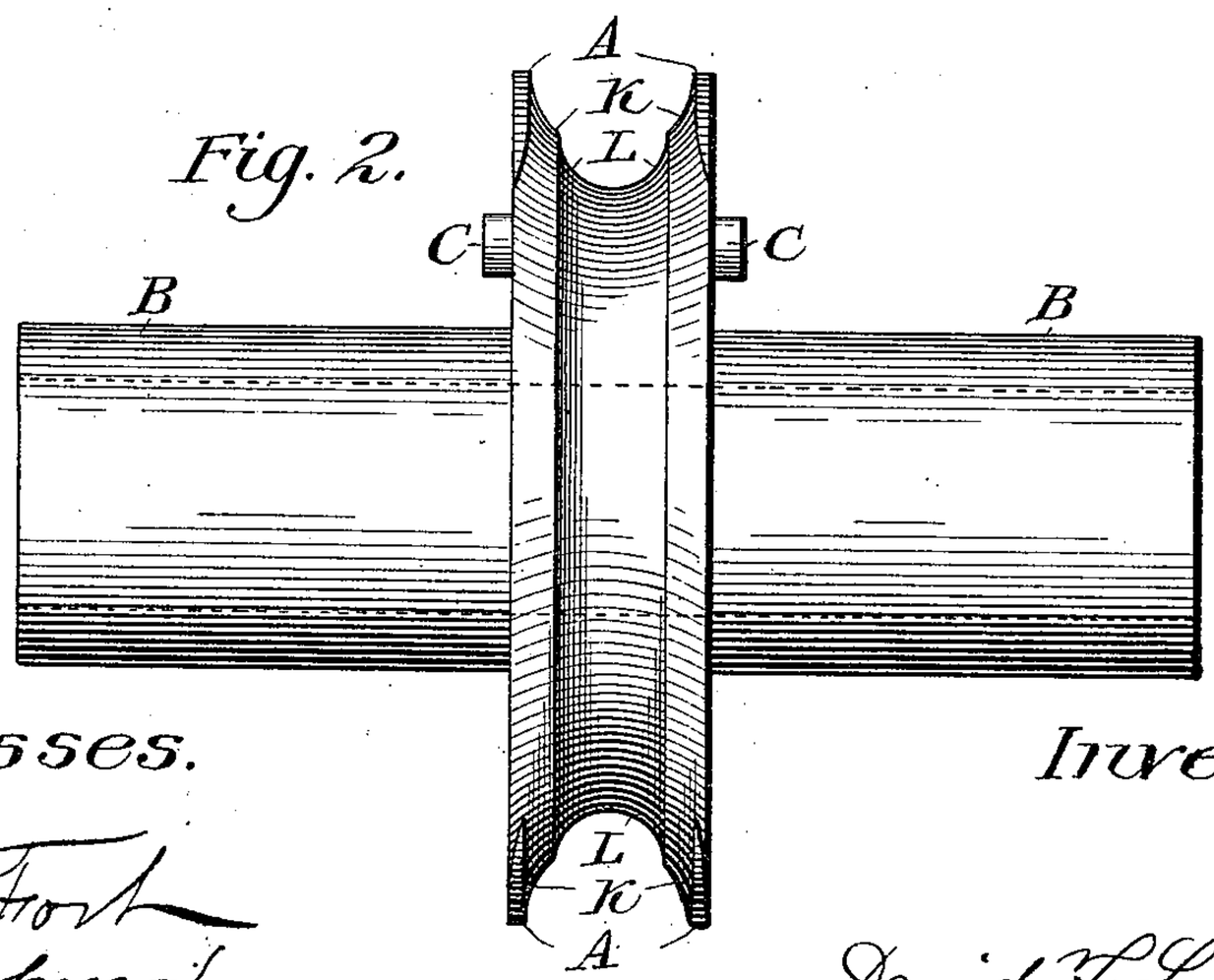


Fig. 2.



Witnesses.

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DAVID F. L. JONES, OF COLUMBUS, GEORGIA.

TROLLEY-WHEEL.

SPECIFICATION forming part of Letters Patent No. 658,745, dated September 25, 1900.

Application filed August 12, 1899. Serial No. 727,030. (No model.)

To all whom it may concern:

Be it known that I, DAVID F. L. JONES, a citizen of the United States, residing at Columbus, in the county of Muscogee and State of Georgia, have invented a new and useful Electric-Car Trolley-Wheel, which is set forth in the following specification and illustrated in the accompanying drawings, in which latter—

Figure 1 shows the wheel complete and mounted in its yoke as viewed from the rear end of the car, which latter is supposed to be prepared for forward motion. Fig. 2 shows the central grooved disk of the wheel in rear elevation, being removed from its yoke and divested of its conoidal sleeves and central supporting-spindle.

At present when from some cause any trolley-wheel of the ordinary type known to me as being now in service is thrown off from the wire the electric current is, in consequence of this accident, broken, and the car at once loses its motive force. It is then usually necessary by some extraneous means to replace the wheel on the wire, as it cannot put itself back there, and the resulting trouble and delay are sometimes considerable, and under certain conditions may even be disastrous. Various forms of apparatus have been devised to remedy this; but none known to me have satisfied all requirements. I aim to obviate this annoyance and danger by providing a trolley-wheel which if its main central groove is thrown off from the wire will during the forward motion of the car automatically and at once replace said wire in said groove and will during the backing of the car for any cause catch and retain said wire and return it, as before, into said main central groove after the car starts forward again, all this being effected without any break in the electric current or halt in the motion of the car.

The edge or rim of the trolley-wheel disk A is encircled by a groove K, in whose middle and bottom a deeper and narrower groove L, adapted to receive and travel on the wire, is formed. From each disk side face and perpendicular thereto a hollow tube B, concentric with the disk, projects outward. A hole concentric with said disk and tubes extends entirely through them and is adapted to contain the spindle E, supporting the wheel, which latter is to turn freely around said spindle. The tubes and disk are preferably made in one piece. A lug C also projects perpendicularly from each disk-face, for a purpose to be hereinafter soon stated. Two conoidal sleeves D D, each containing a central hole adapted to inclose and to fit accurately around one of the tubes B, are slipped upon said tubes up to and against the disk, being largest in diameter where they bear against it, and since they contain holes or recesses adapted to receive and fit accurately to the lug C said conoids are when placed properly in position prevented by said lugs from turning independently of said disk, the disk, its tubes, and the conoids together making up the wheel. Through the two arms of the forked yoke F the spindle E is to pass, as is shown in the drawings, being held there by a cotter-pin I or other suitable means, and the parts of the wheel, when properly assembled together, placed between the yoke-arms and supported there by the spindle passed through them, as stated, are by said yoke kept together, while the whole wheel, though thus confined, is yet permitted to rotate freely. The conoids are made, preferably, of the same material as the disk. Each of them is at its smaller or outer end encircled by a groove H as deep as the central groove L, having an outer flange and a flattened bottom, with no inner flange. The reason for this will soon be evident. A screw-thread-like channel H, preferably as wide as the disk-groove K, extends spirally around each sleeve from its end groove H into said disk-groove K, the bottom of said channel being next to the sleeve end groove cut deeper than said groove and next to the disk being higher than the bottom of the central groove L. When the wheel is placed as is shown in Fig. 1, an observer behind the car looking forward sees the right-hand sleeve spiral channel to be right-handed and the left-hand sleeve spiral channel to be left-handed. The car like those at present in service can be backed when desired while the motorman remains on the front platform; but when without being turned around the car is required to reverse its motion and to begin its return-trip the wheel must, as at present, be shifted around horizontally one hundred and eighty degrees, so as to work correctly.

The sleeves are in separate pieces from the disk, so as to permit them to be withdrawn therefrom and used again after said disk is worn out. The grooves H and L are respectively farther from the axis and nearer to it than the channels M at their junctions therewith, so as more easily to keep the wire in its place and for other reasons hereinafter to be evident. The conoidal form of the sleeve, having its largest diameter next to the disk, facilitates the passage of the wheel through switch-junctions, inasmuch as the sleeve is intended to remain constantly clear away from the wire and its connections while the wheel is adjusted and running properly. Channels may be cut in the spindle, so as to hold oil, and the yoke F after having been screwed on the pole the proper distance is to be held firmly there by means of a jam-nut G, also screwed on the pole and against said yoke.

The operation of this device is as follows: If after having been properly placed the wheel-disk during the motion of the car is thrown off from the wire either toward the right or the left, one of the sleeves will in that event catch the wire in either its end groove H or in its spiral channel M. In the former case and during the forward motion of the car the groove H will by means of its outer flange retain the wire and can travel safely on it, driving the car just as the central disk does. Now since said groove has a flattened bottom and no inner flange and is, moreover, higher than the outer end of the channel M the wire can easily slide off from said groove's bottom and be dropped into the channel M, which latter during the motion of the wheel and car will guide the wire into the disk-groove K, from whence said wire drops back into and is easily retained in the narrower and deeper central groove L. In the latter case and during the forward motion of the car the wire after falling into the spiral channel M will by its help be, as before, brought into the central disk-grooves K L. Let now the car be for any reason backed without turning either it or the trolley-wheel horizontally around one hundred and eighty degrees and let the wire be supposed to be thrown out from the central disk-groove L into either the end groove H or the spiral channel M, as before. Then in the former case the wire will be by the end flange kept in said groove H and the wheel will continue running backward until the car halts and starts forward again, after which the wire drops into the channel M and is, as before, returned back into the central grooves K L. In the latter case the wire is by the channel M guided outward to the end groove H, mounts easily thereinto, is kept there, and, as before, is returned back to the central grooves K L after the car halts and starts forward again. In no one of these four cases does any continued break in the electric current occur or is there any halt in the car's motion caused by suck break. Furthermore, as the sleeves are always in contact with the disk and its tubes and as the tubes bear constantly upon the spindle the electric current is not broken, and hence the stoppage of the car from such breakage does not occur.

No other trolley-wheel known to me as surrounded by a spiral channel has such safeguards as those here described, for when a car equipped with such other trolley-wheel is backed without turning said wheel around horizontally if during such backing the wire from some cause gets into the spiral channel said channel at once guides the wire to the end of the wheel and entirely off therefrom, thus breaking the electric current and depriving the car of its motive force.

It is known that prior to my invention trolley-wheels have been devised turning around spindles mounted in fork-shaped yokes and encircled by spiral channels. I therefore do not claim these features broadly, but

What I do claim, and desire to secure by Letters Patent, is—

1. In grooved trolley-wheels, a conoidal sleeve bored with a central circular hole adapted to receive and fit closely around a tube secured in the center of the side face of a trolley-wheel disk; the larger end of said sleeve being adapted to fit against said disk side face, and the smaller end of said sleeve being encircled by a groove having an outer flange, a flattened bottom and no inner flange; said sleeve being also encircled by a helical channel extending spirally around it from the aforesaid smaller end groove to the larger end of said sleeve; all being so adapted that when said sleeve has been slipped on said tube up to said disk side face, said spiral channel shall extend from the aforesaid smaller end groove into the disk-groove; all substantially as described.

2. In a trolley-wheel, the whole combination, embracing; a trolley-wheel disk encircled by a groove adapted to receive and travel on a wire, a conoid, concentric and turning with and having its larger end secured against one side face of said disk, said conoid having its smaller end encircled by a groove provided with an outer flange, a flattened bottom and no inner flange; said conoid being also surrounded by a right-handed helical spiral channel extending from said end groove into the groove of the aforesaid disk; said end groove being adapted, when by any cause the wire is thrown out from said disk-groove, to catch said wire, to retain it, and to deliver it into the spiral channel aforesaid; and said spiral channel being adapted either to catch said wire when it is thrown off from the disk-groove or to receive it from the end groove, and to return said wire to the disk-groove when the car is running forward or to deliver said wire to the end groove when the car is backing; a conoid, concentric and turning with and having its larger end secured against the other side face of said disk; said conoid

having its smaller end encircled by a groove provided with an outer flange, a flattened bottom and no inner flange; said conoid being also surrounded by a left-handed helical spiral channel extending from said end groove into the groove of the aforesaid disk; said end groove being adapted, when by any cause the wire is thrown out from said disk-groove, to catch said wire, to retain it and to deliver it into the spiral channel aforesaid; and said spiral channel being adapted, either to catch said wire when it is thrown off from the disk-groove or to receive it from the end groove, and to return said wire to the disk-groove when the car is running forward or to deliver said wire to the end groove when the car is backing; all substantially as described.

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Witnesses:
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FRANK U. DOWNING.