(No Model.) 2 Sheets—Sheet 1.

F. N. KELSEY.

TROLLEY STAND.

No. 561,168. Patented June 2, 1896.

Fig. 1.

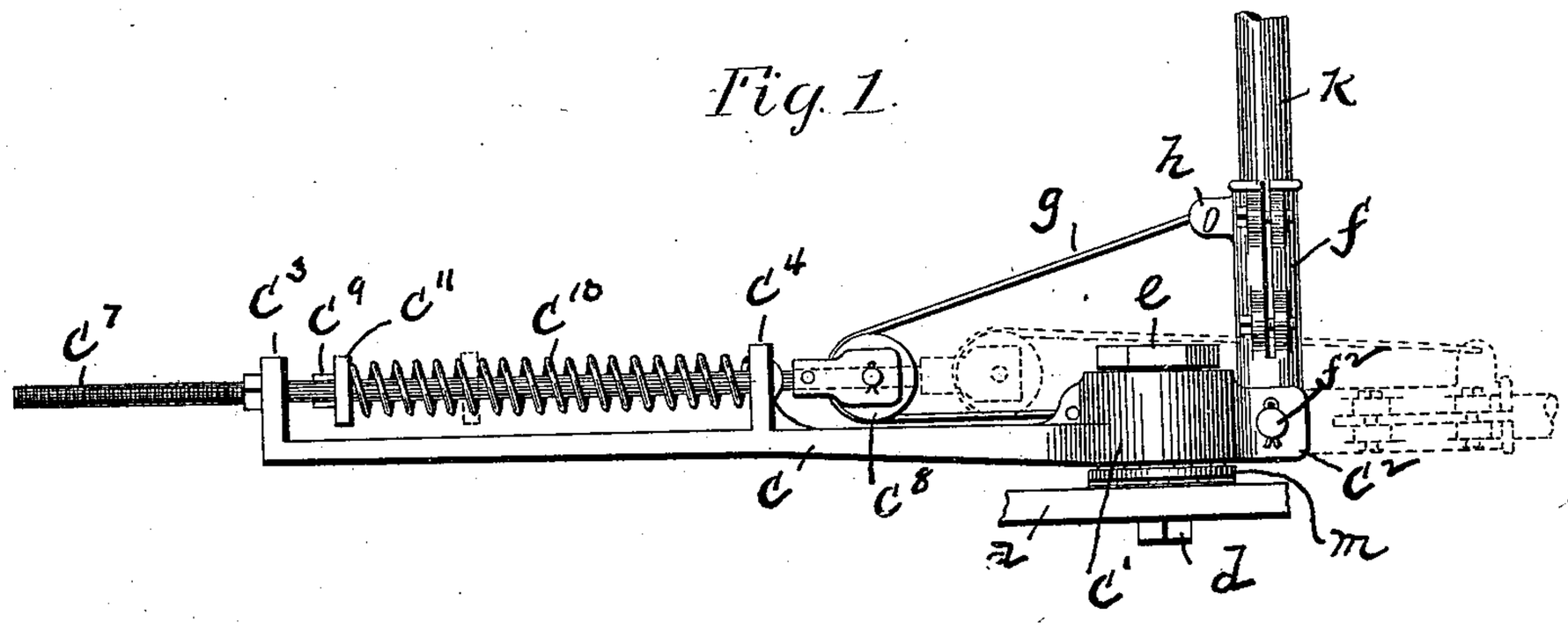
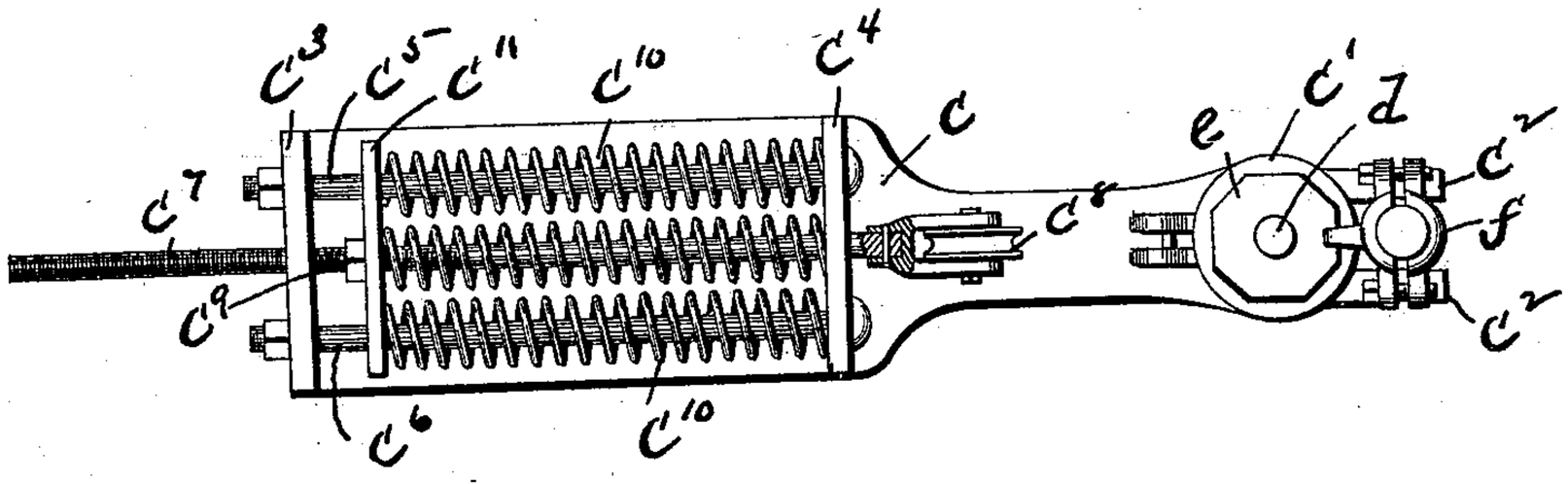


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

F. N. KELSEY.

TROLLEY STAND.

No. 561,168. Patented June 2, 1896.

Fig. 3.

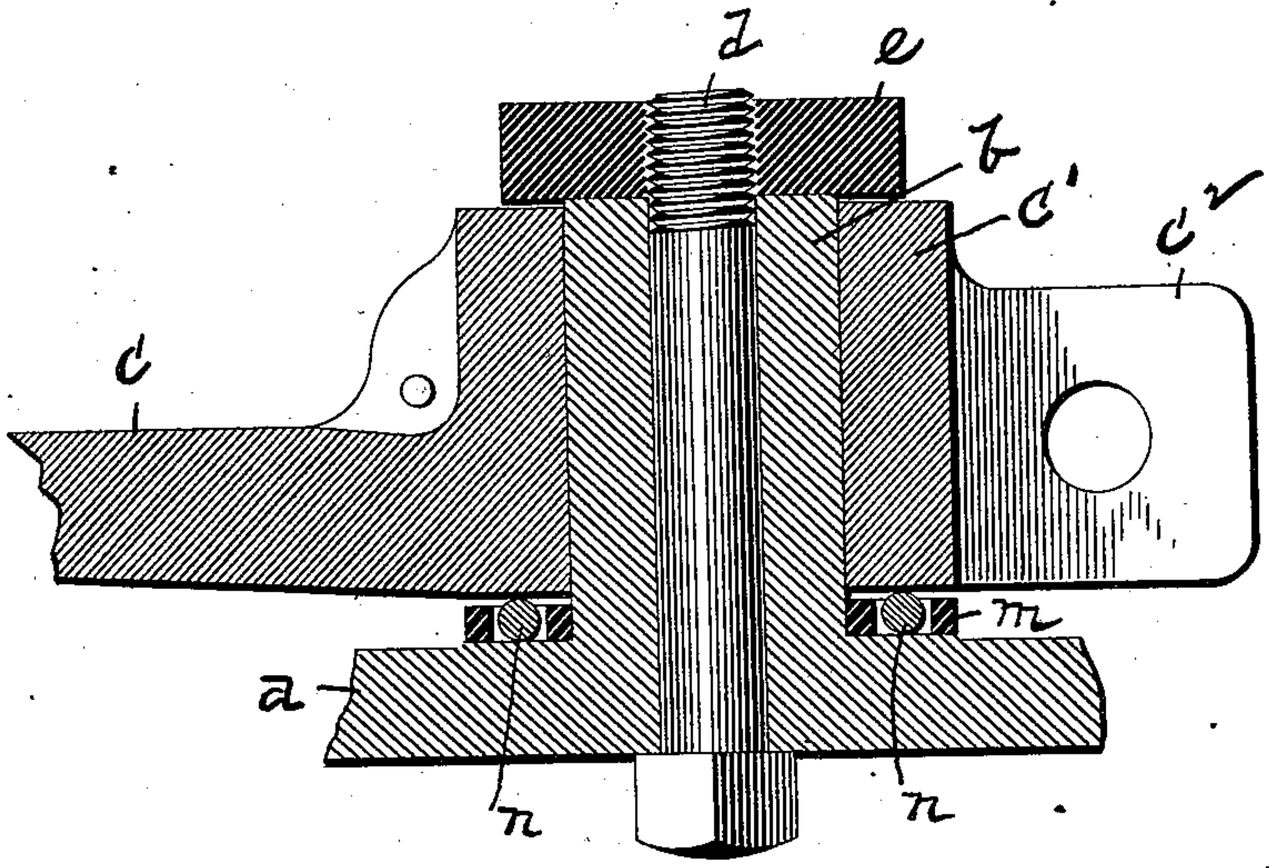


Fig. 4.

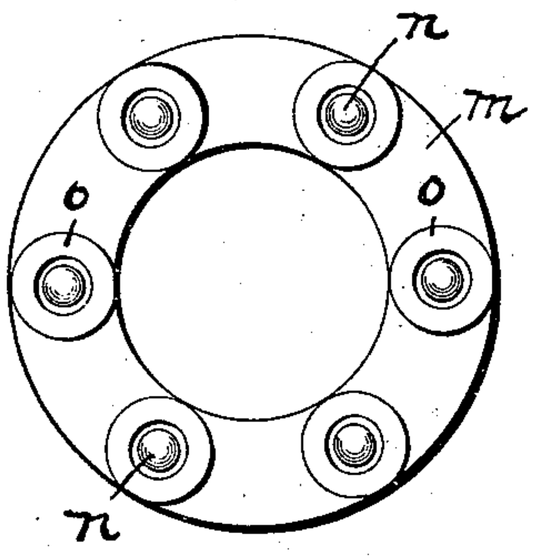


Fig. 5.

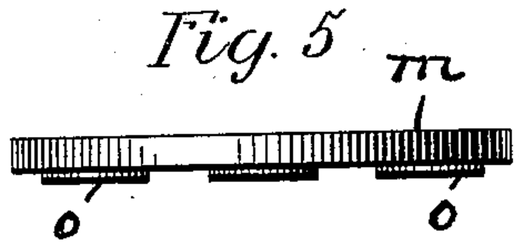


Fig. 6.

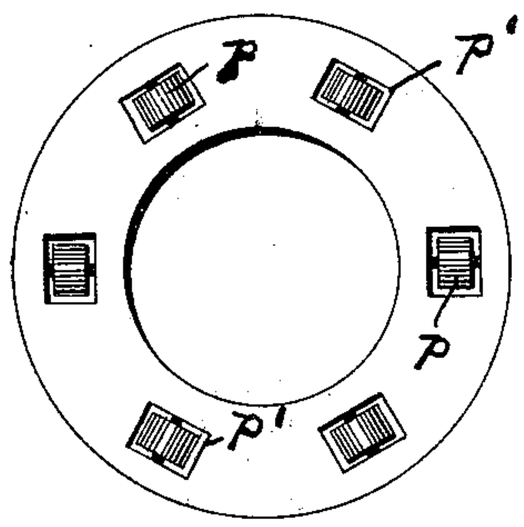


Fig. 7.

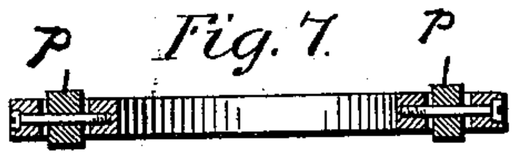
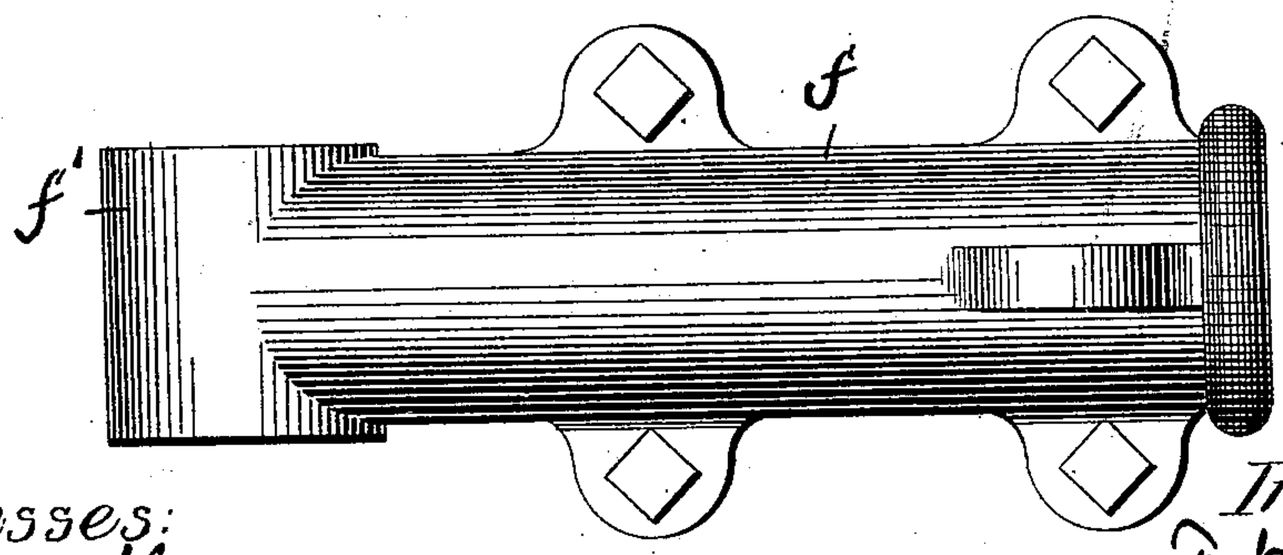


Fig. 8.



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Inventor
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UNITED STATES PATENT OFFICE.

FRANK N. KELSEY, OF NEW HAVEN, CONNECTICUT, ASSIGNOR OF ONE-HALF TO CHARLES L. WRIGHT, OF SAME PLACE.

TROLLEY-STAND.

SPECIFICATION forming part of Letters Patent No. 561,168, dated June 2, 1896.

Application filed March 28, 1895. Serial No. 543,543. (No model.)

To all whom it may concern:

Be it known that I, FRANK N. KELSEY, a citizen of the United States, residing at New Haven, county of New Haven, and State of Connecticut, have invented a new and useful Improvement in Trolley-Stands, of which the following is a specification, reference being had to the accompanying drawings, forming part thereof.

My invention relates to devices for supporting the trolley-poles of electrically-propelled cars; and it has for its object to provide a simple and compact but very strong and durable form of stand for such purpose which will project above the car-roof a much less distance than most of those now in use, which will have a very free swiveling movement upon the car, and which will maintain a substantially uniform tension upon the trolley-pole in any position to which the latter may be moved.

To these ends my invention consists in the trolley-stand constructed and operating as hereinafter fully described, and particularly pointed out in the claims.

Referring to the drawings, in which like letters designate like parts in the several views, Figure 1 is a side elevation of a trolley-stand embodying the invention. Fig. 2 is a plan view thereof. Fig. 3 is a vertical section, drawn to a larger scale, of the swiveling mechanism thereof. Fig. 4 is a plan view of the antifriction-ring upon which the table rests. Fig. 5 is an edge view of said ring. Fig. 6 is a plan view of a slightly different form of antifriction-ring for the same purpose. Fig. 7 is a cross-section thereof. Fig. 8 is an enlarged plan view of the socket-piece for the trolley-pole.

The letter *a* designates the base of the stand devised by me, which base is adapted to be secured to the roof of a car in the usual manner, and has projecting upwardly therefrom the bearing-hub *b*. (See Fig. 3.)

The letter *c* designates the table, which is provided near one end thereof with the bearing-collar *c'* to embrace the hub *b* in such manner as to permit the table to revolve about said hub as a center, a bolt *d* and nut *e* serving to retain said parts in operative engagement with each other. At one side of said collar *c'* the table *c* is provided with the ears c^2 to receive the hub *f'* of the trolley-pole socket-piece *f* and the bolt f^2, by which a hinge-joint is formed to permit said socket-piece to swing about said bolt as a center in a vertical plane. The socket-piece *f* is split longitudinally, as usual, and provided with clamping screws or bolts to enable the trolley-pole to be securely fastened therein. At the opposite side of said collar *c'* the table *c* is extended for a considerable distance and is provided with the two upwardly-extending and parallel bars c^3 c^4, which bars are provided with holes to receive the two rods c^5 c^6, which are provided with a head at one end and receive a nut at their opposite end, as shown, and also a third rod c^7, which passes loosely through said bars and carries at one end the sheave or pulley c^8, and has its opposite end threaded to receive an adjusting-nut c^9. Each of said rods carries a coil-spring c^{10}, which springs bear at one end against the bar c^4 and at their opposite end against a backing-piece c^{11}, loosely embracing the rods. The nut c^9 on rod c^7 bears against the outer side of said backing-piece, and by means thereof the tension exerted by all of the springs upon said rod c^7 can be very accurately adjusted. A flexible cord or band *g* is secured at one end to a lug *h* on socket-piece *f*, is then passed about the sheave c^8 on rod c^7 and has its opposite end anchored to the table *c*, preferably at the side of the collar *c'*, as shown. As the trolley-pole *k* is moved from a vertical position toward the horizontal said flexible cord or band *g* draws the sheave c^8 and rod c^7 toward the collar *c'*, as represented by broken lines in Fig. 1, and against the stress of the springs c^{10}, and the leverage is exerted in such manner that the tension of said springs is substantially uniform at any point in such movement of the trolley-pole. The amount of movement thus imparted to the rod c^7 is very small, as is also the compression of the springs, as compared with the length of the arc traveled by the lug *h* on the socket-piece, and I am thereby enabled to greatly prolong the ordinary life of the springs, besides, as before stated, maintaining a substantially uniform pressure of the trolley upon the trolley-wire regardless of variations in the level of the latter. An-

other important advantage secured by such construction is that it enables me to provide a stand which does not project greatly above the roof of the car, a matter of great moment when the road passes beneath bridges and other overhead structures.

With a view to increasing a free swiveling movement of the table upon its base I interpose between said base and table an antifriction-ring *m*, which ring, as shown in Figs. 4 and 5, is provided with a series of holes extending therethrough to receive the series of balls *n*, made of steel, said balls being of sufficiently less diameter than said holes to afford them a free rolling movement, and they are of slightly greater diameter than the thickness of the ring, so that they are caused to support the weight of the table *c*, as shown in Fig. 3. The ring *m* is preferably provided with annular bosses *o* on its under side, surrounding the holes therein, to lessen the amount of its frictional contact with the base. I thus provide a simple form of ball-bearing for the table, which gives it perfect freedom of movement about its center of motion and greatly lessens the liability of the trolley to leave the trolley-wire in passing around curves, &c.

In Figs. 6 and 7 I have shown a slightly-modified form of said bearing-ring, in which, instead of using balls, I employ rolls *p*, mounted upon short arbors extending transversely across slots *p'* in the ring, and in this form, as shown in Fig. 7, the ring has no frictional contact with either the base or the table, it being supported by the arbors of said rolls.

I do not wish to restrict the application of such antifriction device to the particular form of trolley-stand herein shown and described, as it can obviously be applied to any of the various forms of stands now in use with equally beneficial results.

The trolley-stand herein described, besides possessing the special advantages hereinbefore pointed out, is extremely simple in construction, thoroughly strong and durable, and presents a neat and pleasing appearance.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a trolley-stand, a suitable base adapted to be secured to a car-roof, a table mounted upon said base and having a swivel connection therewith, a spring-retracted sheave or pulley carried upon said table, a trolley-pole socket-piece pivotally connected to said table, and a flexible connection passing about said sheave or pulley and connected at one end to said socket-piece, and at its opposite end to a rigid support combined and operating substantially as set forth.

2. In a trolley-stand, a swivelly-supported table, a trolley-pole socket-piece pivotally connected to said table at one side of its swiveling center, a spring-retracted sheave or pulley located upon the opposite side of said center, and a flexible connection secured at one end to said socket-piece, passing thence about said sheave or pulley, and having its opposite end secured to said table, combined and operating substantially as set forth.

3. In a trolley-stand, the combination with a base, of a table, as *c*, swivelly mounted thereon, a socket-piece, as *f*, pivotally hung upon said table, a rod, as c^7, guided for endwise movement upon said table and carrying a sheave at one end, a spring or springs pressing said rod in one direction, and a flexible connection as *g* passing partially about said sheave and having one end thereof secured to said socket-piece and its opposite end secured to said table, substantially as described.

4. The combination with the base *a* provided with the hub *b*, of table *c* provided with the bearing-collar *c'* and the upwardly-projecting bars c^3 c^4, rods c^5 c^6 extending between said bars, rod c^7 passing loosely through said bars and carrying sheave c^8 and adjusting-nut c^9, cross-bar c^{11}, springs c^{10}, socket-piece *f*, and flexible connection *g*, arranged and operating substantially as set forth.

FRANK N. KELSEY.

Witnesses:
W. H. CHAPMAN,
J. E. CHAPMAN.