

No. 811,101.

PATENTED JAN. 30, 1906.

C. D. SMITH.
ELECTRIC SURFACE AND ELEVATED TROLLEY RAILWAY.

APPLICATION FILED MAR. 2, 1903.

2 SHEETS—SHEET 1.

Fig. 1

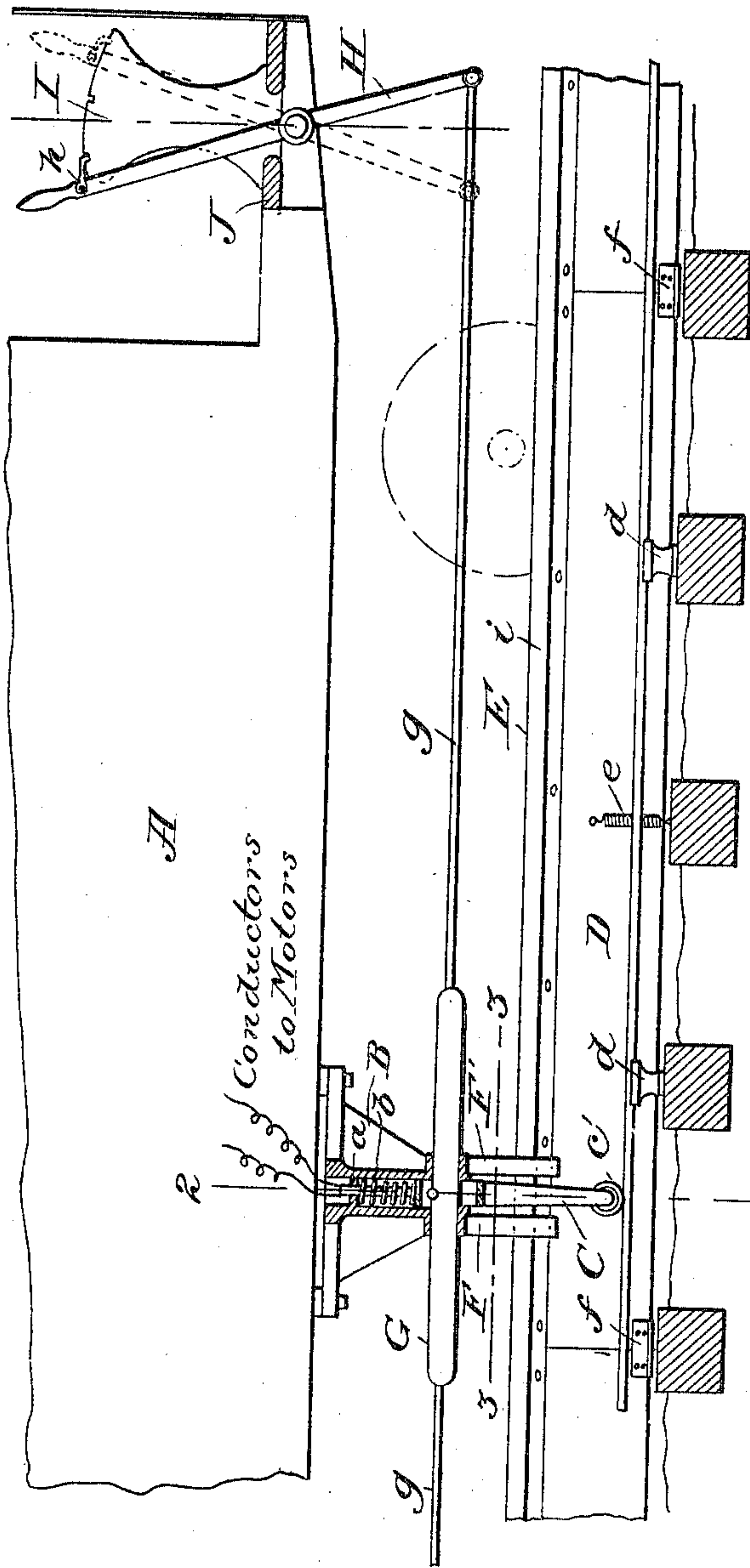


Fig. 3.

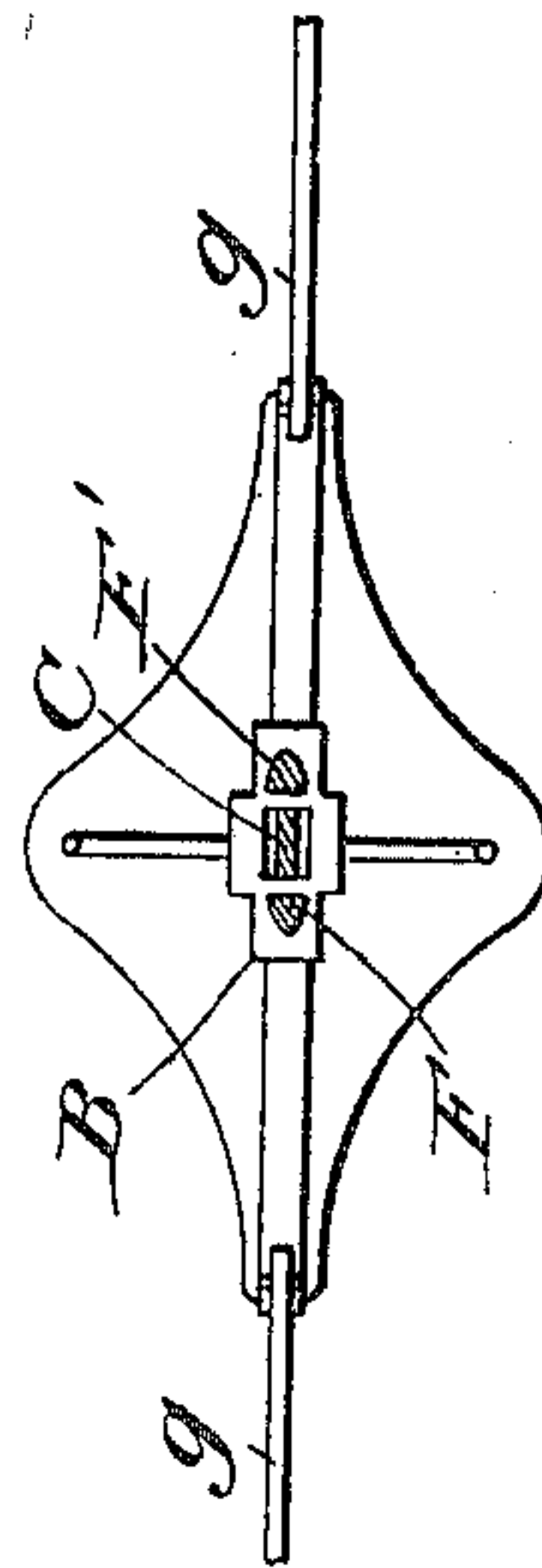
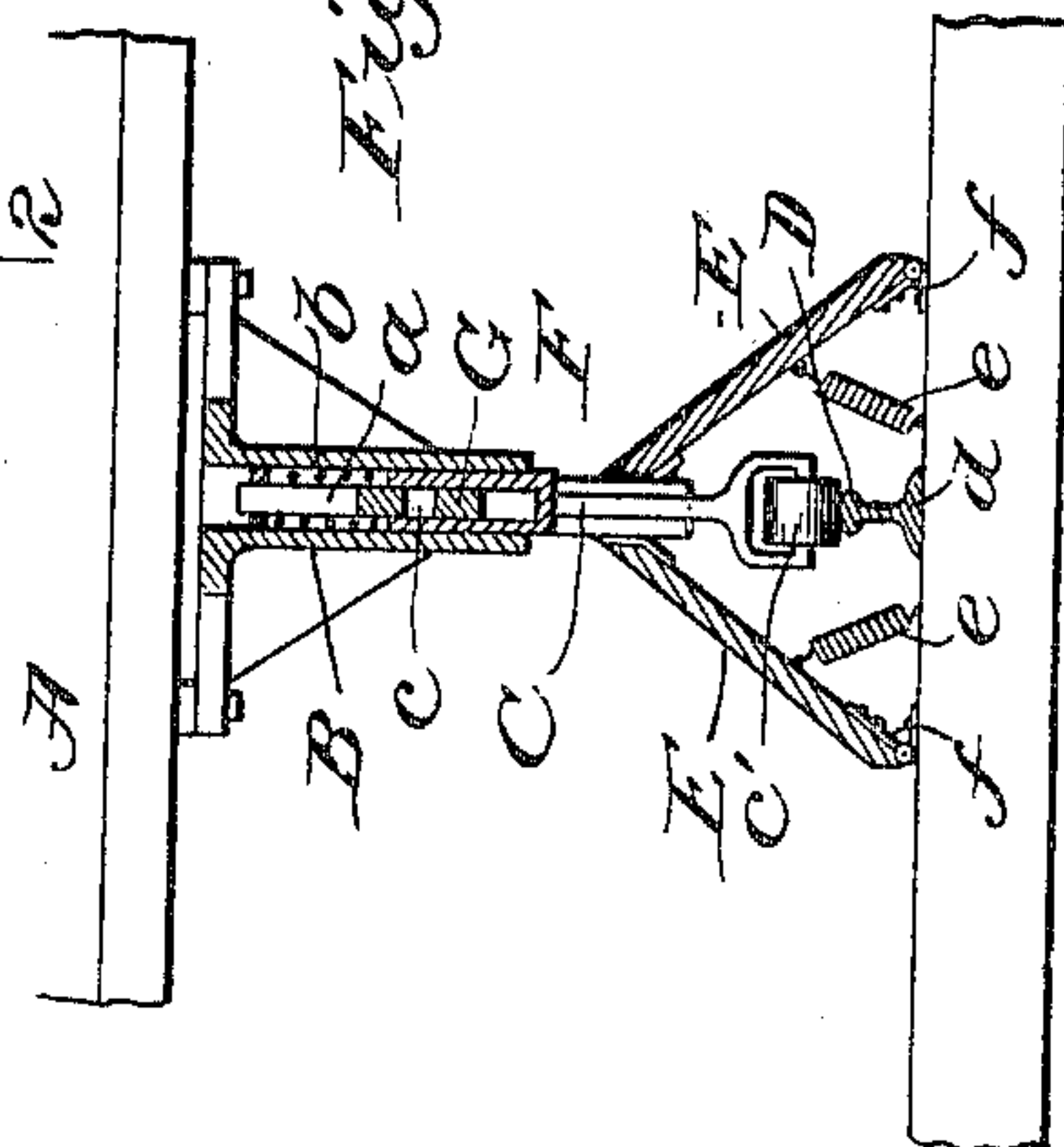


Fig. 2.



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Fig. 4.

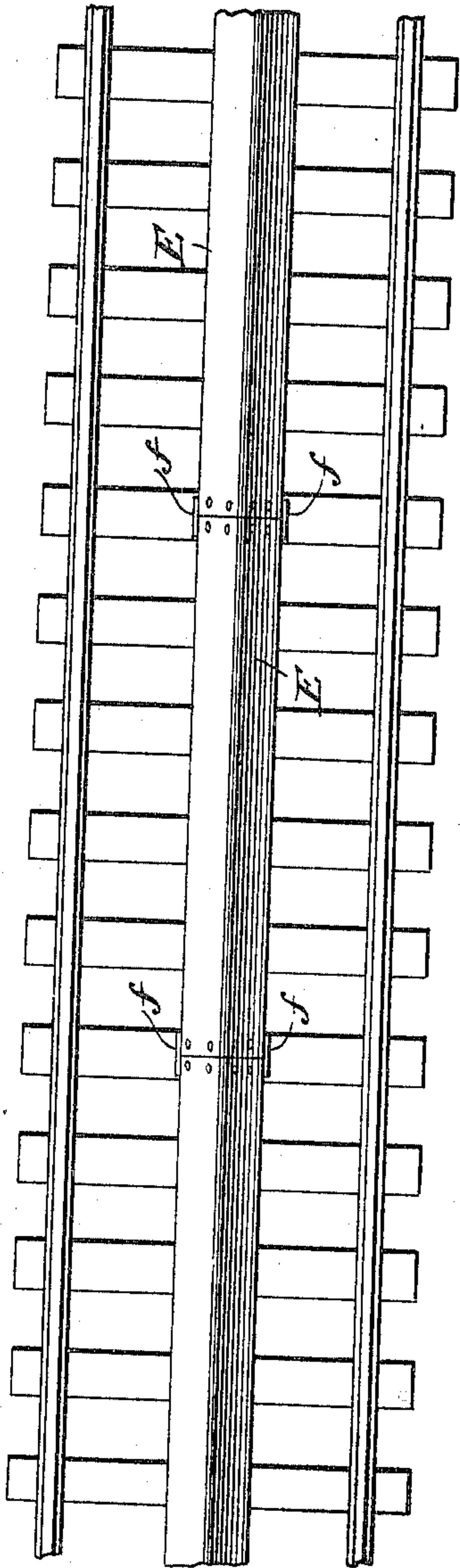
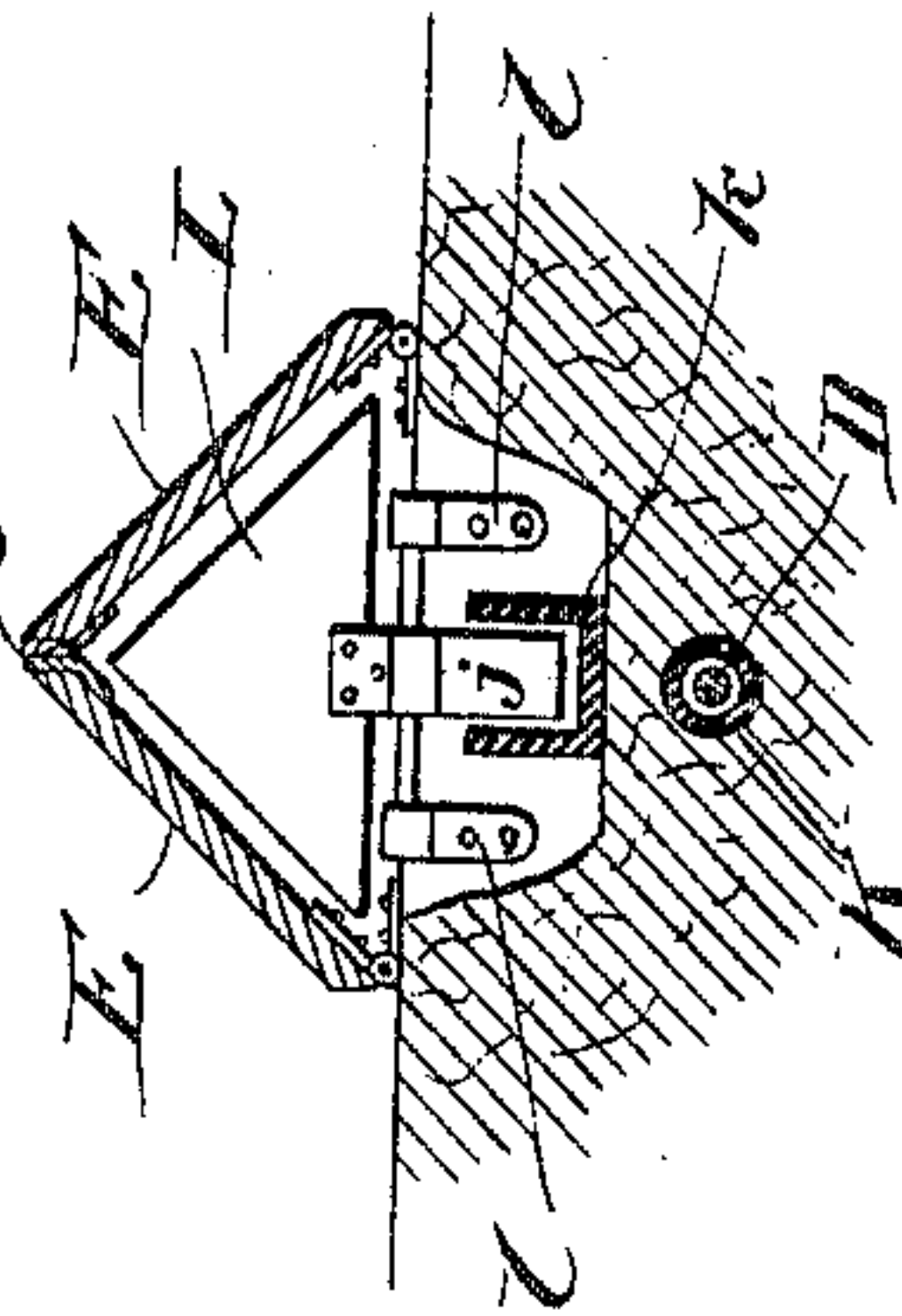


Fig. 5.



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UNITED STATES PATENT OFFICE.

CHARLES D. SMITH, OF FOND DU LAC, WISCONSIN.

ELECTRIC SURFACE AND ELEVATED TROLLEY-RAILWAY.

No. 811,101.

Specification of Letters Patent.

Patented Jan. 30, 1906.

Application filed March 2, 1903. Serial No. 145,849.

To all whom it may concern:

Be it known that I, CHARLES D. SMITH, a citizen of the United States, and a resident of Fond du Lac, in the county of Fond du Lac and State of Wisconsin, have invented certain new and useful Improvements in Electric Surface and Elevated Trolley-Railways; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention has for its object to provide an electric surface and elevated railway-trolley for suburban and elevated electric-railway use which is durable as well as simple in construction, the feed-wire of which is effectively protected from weather and accident from contact with said wire; and it consists in certain peculiarities of construction and combination of parts to be fully set forth hereinafter with reference to the accompanying drawings and subsequently claimed.

In the drawings, Figure 1 is a side elevation with parts in section and parts broken away of portion of track and car embodying my invention. Fig. 2 is a detail section of the same on line 2 2 of Fig. 1; Fig. 3, a detail plan view of the trolley mechanism on line 3 3 of figure 1; and Fig. 4 is a plan view of a portion of a track, showing several sections of the hinged guard. Fig. 5 is a longitudinal section of the track, illustrating my method of protecting the feed-wire where the track is intersected by a crossing; and Fig. 6 is a detail cross-section of the same on line 6 6 of Fig. 5.

Referring by letters to the drawings, as shown in Figs. 1 and 2, A is the body of a car which is equipped with a metal frame B, centrally located beneath the latter, said frame being provided with a right-angle recess into which a trolley-arm C is adapted to play. The upper portion of said arm terminates in a reduced shank *a*, which is also guided in the frame B. A coil-spring *b* surrounds the shank, resting upon the base of the recess in the aforesaid frame at one end and against the trolley-arm at other, thereby causing the trolley-wheel C' of the latter to be pressed down firmly upon the feed-wire D and insuring at all times a perfect contact therewith, which is necessary owing to the variation in distance between the car and track.

The conductors leading from the trolley to the motors may be insulated in any well-known manner, and as it forms no part of my invention I deem it unnecessary to illustrate or describe this detail.

As shown, my feed-wire D is placed centrally between the rails (this position, however, not being essential so long as it is parallel therewith) and is supported by brackets *d*, projecting from the ties of such height as to prevent any possible contact of said wire with the ground. Guard-lids E E are also secured to the ties at either side of the feed-wire by hinges *f*, the upper edges normally coming together tightly just over the wire D and forming a cone in cross-section, so as to shed the weather effectively. These guards, as shown, are held down by springs *e* and are bound with angle-irons *i*, which connect the series of guards E together and also serve as wear-plates.

When the car is traveling in either direction, the guards are forced open by wedge-shaped fingers F F, projecting from the frame B at the front and rear of the trolley-arm. These fingers are of sufficient thickness so as to prevent the latter from rubbing said guards, it being desirable at all times that the trolley should have freedom of motion.

In Fig. 1 I have illustrated mechanism at one end of the car A for controlling the trolley by the motorman, it being understood that the mechanism is duplicated at the other end thereof. This consists of a lever H, pivoted to a detent I, which is secured to the platform J, the former being provided with notches into which a locking-pawl *h*, pivoted to the lever H, may be dropped. A rod *g* connects the said lever to a cam-plate G, that passes through a slot in the trolley-arm C and the frame B in which it is guided. A V-shaped cut in the center of the cam-plate is adapted to engage a roller C, pivoted in the slot of the trolley-arm, and when said cam-plate G is moved in one direction by the motorman rocking the lever H the former will engage the roller *c*, causing the trolley-arm to lift the trolley-wheel C' clear of the feed-wire, in which position it may be held by dropping the pawl *h* in the notch of the detent I, as illustrated by dotted lines in Fig. 1 of the drawings, and when the motorman is not operating the car from the end shown it is only necessary for him to swing the pawl *h* over its pivot, so that it will not engage its detent when its lever H is rocked by the duplicate mechanism at the other end of the car.

At road-crossings it is necessary to dispense with the guards, for the reason that it would be an obstruction, and with this object in view the feed-wire D is carried beneath the

ties where a crossing occurs and is incased in an insulated pipe K, as shown in Fig. 5 of the drawings. The guard terminates at a slight distance beyond where the wire enters the pipe, so as to insure safety against accident, there being a flap-cover L pivoted within the guards, so as to prevent snow or rain from blowing in. This flap-cover is normally held perpendicular by a weight *j*, which is adapted to swing in a casing *k*. The cover and weight, as shown, are secured to a rod which turns in bearings *l*, fastened to the tie. While I have shown a weight to control the cover L, it is obvious I may substitute therefor a spring, the function of which is only to return said cover to a perpendicular when it has been rocked down by the trolley, it being understood that when a car passes one of these crossings the motorman raises his trolley so that it will not strike the ground when the wheel *c'* of the latter leaves the wire D.

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

1. The combination with a vehicle-body, of a frame depending therefrom, a vertical slot in said frame, a contact-arm adapted for vertical travel in said slot, an actuating-bar extending transversely through said frame, and inclined surfaces on said actuating-bar for engaging said contact-arm, whereby said arm may be raised.

2. The combination with a vehicle-body, of a frame depending therefrom, a vertical slot through said frame, a contact-arm adapted for vertical travel in said slot, a spring tending to push said arm downwardly, and an actuating-bar extending transversely through said frame, said bar being provided with inclined surfaces for engaging said contact-arm, whereby said arm may be raised against the pressure of said spring.

3. The combination with a vehicle-body, of a frame depending therefrom, a vertical slot through said frame, a contact-arm adapted for vertical travel in said slot, a reduced shank portion on said arm, a spring encircling said shank portion and tending to press said arm downwardly, an actuating-bar extending transversely through said frame, inclined surfaces on said actuating-bar, and a roller on

said arm for engaging said inclined surfaces, transverse movement of said actuating-bar with respect to said arm causing said arm to be raised.

4. The combination with a vehicle-body, of a frame depending therefrom, a vertical slot extending through said frame, a contact-arm adapted for vertical travel in said slot, a compression-spring in said slot interposed between said arm and said frame and tending to press said arm downwardly, a horizontal slot extending transversely through said frame and said vertical slot, an actuating-bar disposed in said horizontal slot, a roller on said contact-arm, inclined surfaces on said actuating-bar for engaging said roller, and levers on said vehicle associated with said actuating-bar, actuation of said levers causing said roller to travel over an inclined surface to cause said contact-arm to be raised.

5. The combination with a vehicle-body, of a frame depending therefrom, a vertical slot in said frame, a contact-arm adapted for vertical travel in said slot, a conductor for engaging with said contact-arm, and a horizontal actuating-bar having inclined surfaces for engaging said contact-arm, horizontal motion of said actuating-bar causing said contact-arm to be raised from the said conductor.

6. The combination of a vehicle-body, a frame depending therefrom, a vertical slot through said frame, a contact-arm having vertical travel in said slot, a contact-wheel at the lower end of said arm, a conductor, a compression-spring in said slot disposed between said arm and said frame for compressing said contact-wheel into engagement with said conductor, an actuating-bar extending transversely through said frame, a roller on said arm, and an inclined surface on said actuating-bar for engaging said roller to raise said arm from the conductor upon horizontal movement of said actuating-bar.

In testimony whereof I have signed my name to this specification in presence of two subscribing witnesses.

CHARLES D. SMITH.

Witnesses:

C. A. SMITH,
SWAYNE SMITH.