

O. H. JADWIN.
Propelling Cars.

No. 223,592.

Patented Jan. 13, 1880.

Fig. 1.

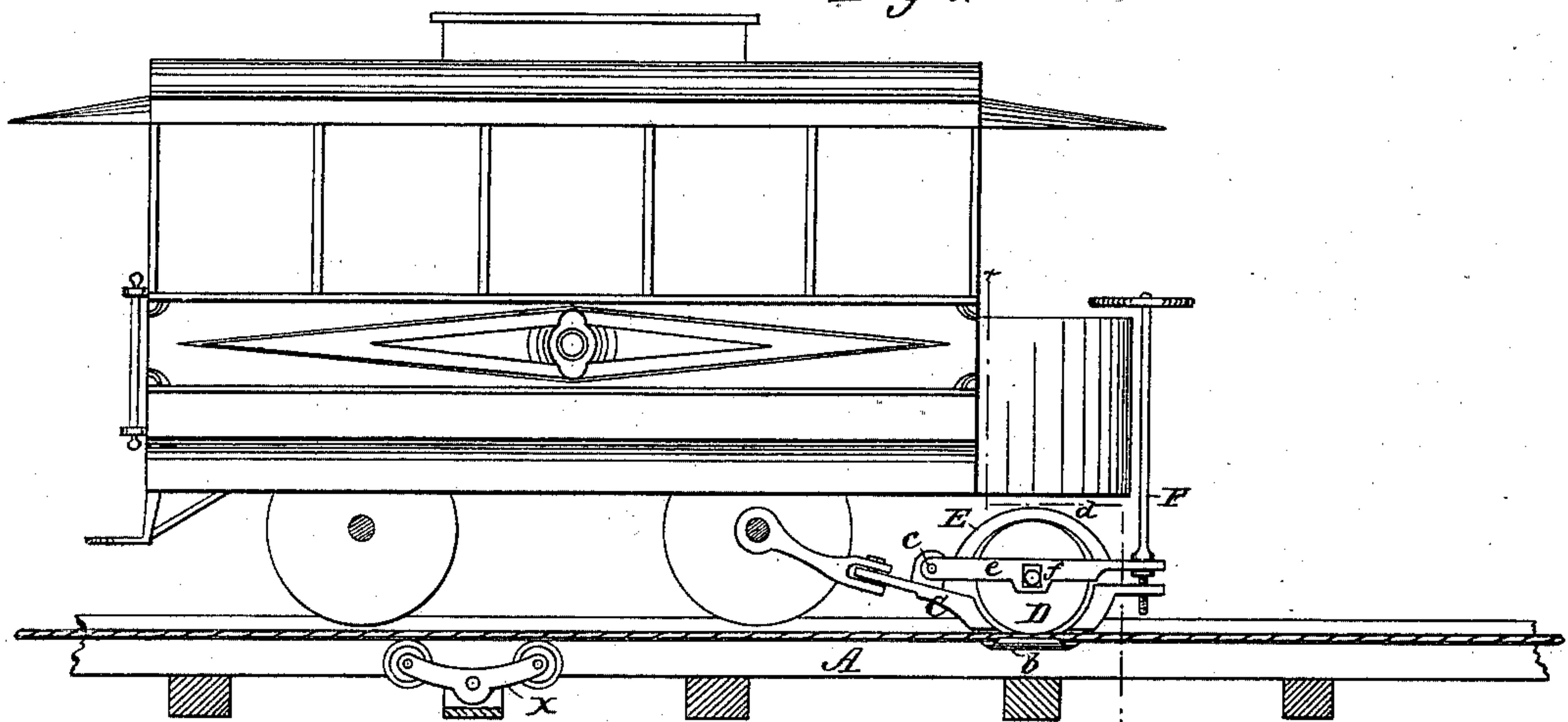


Fig. 2.

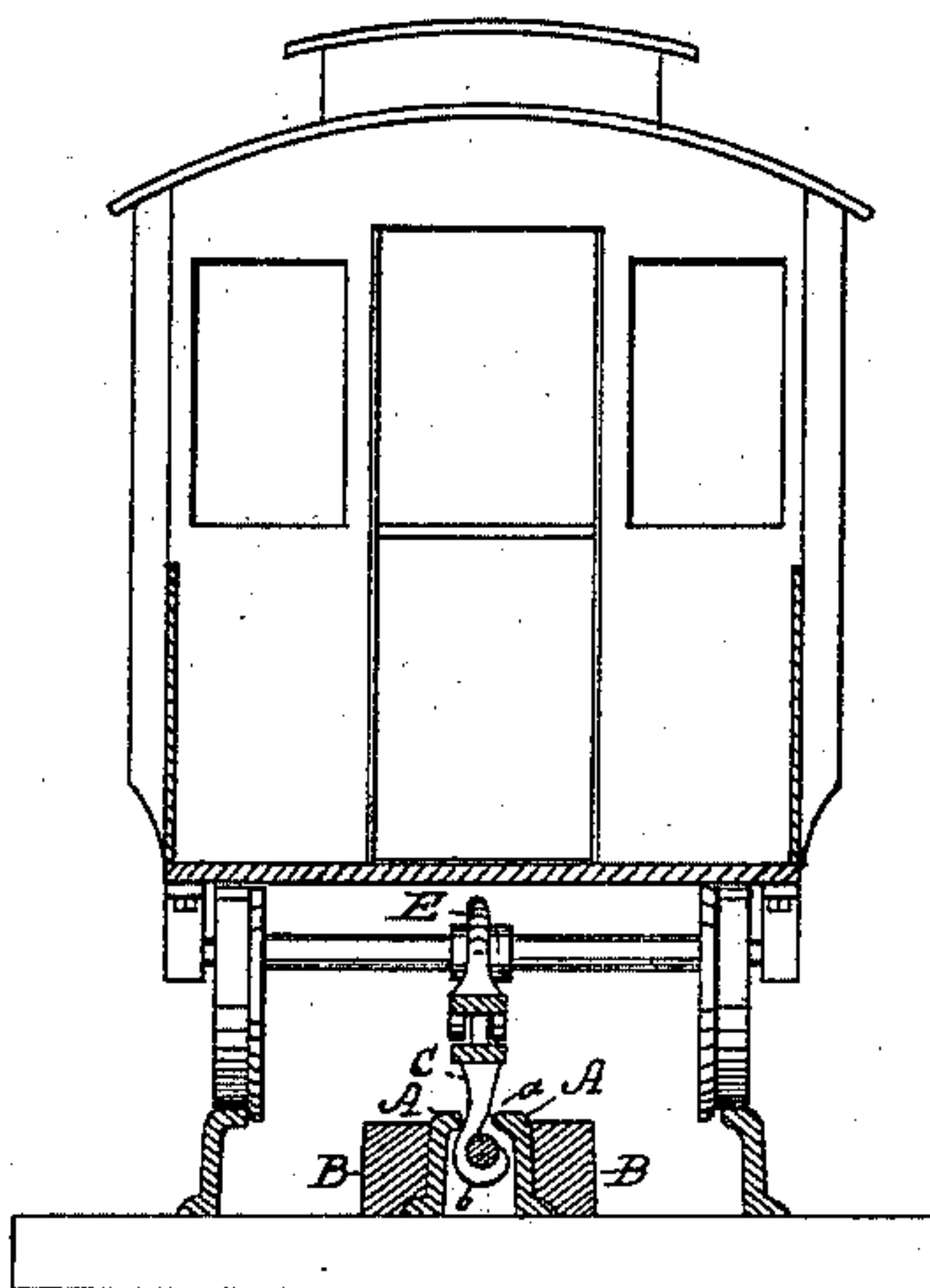


Fig. 3.

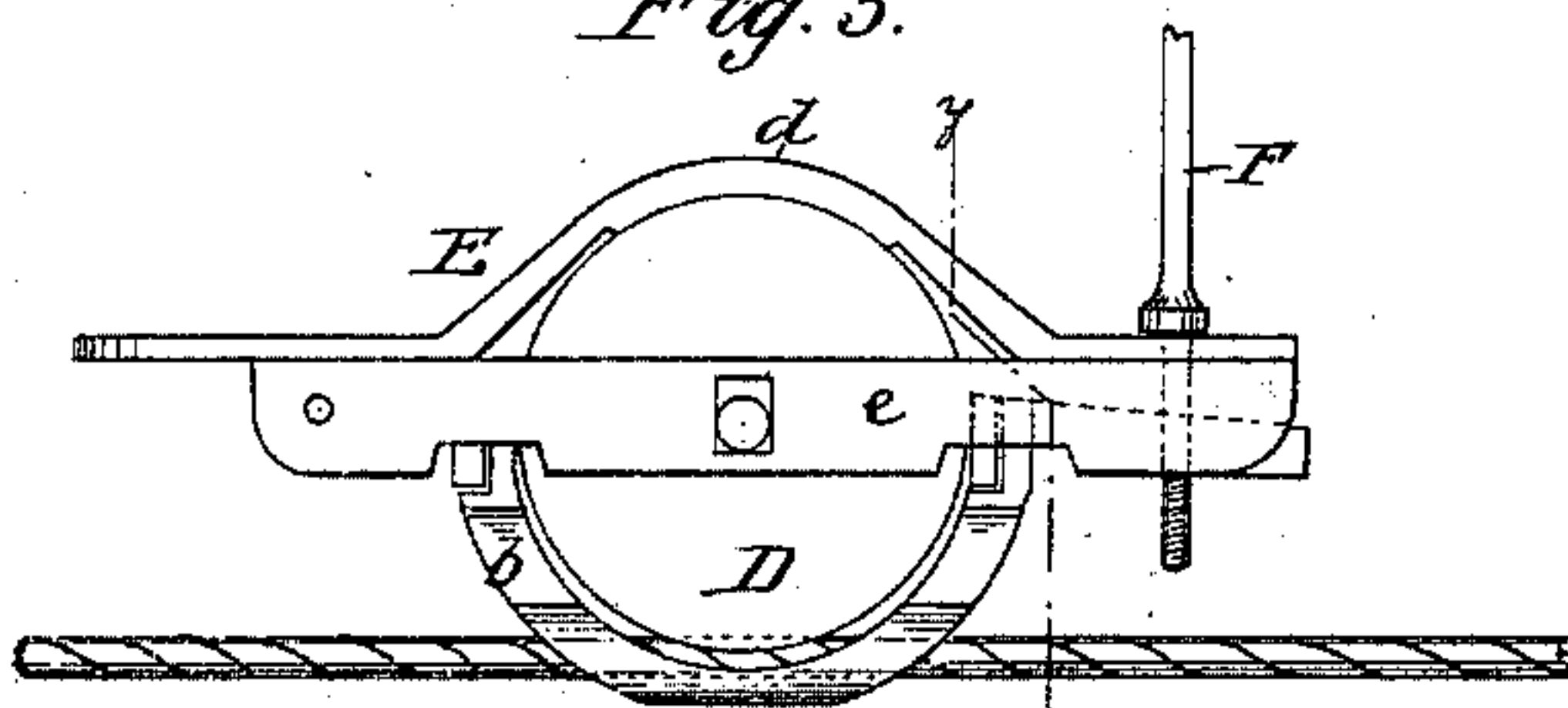


Fig. 4.

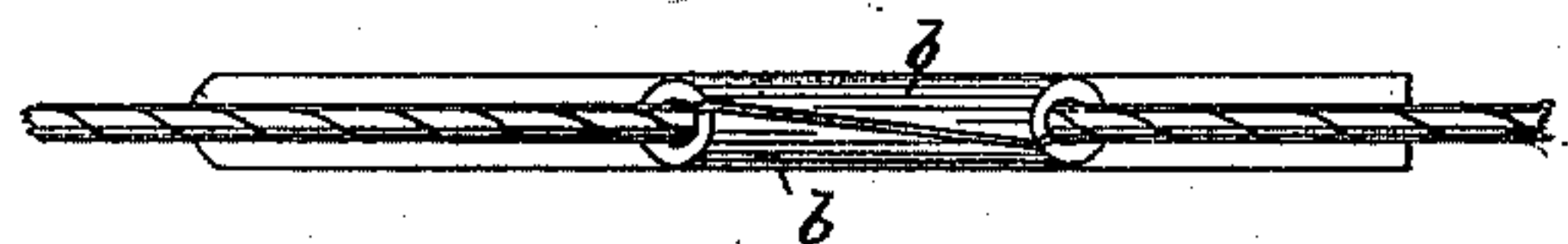
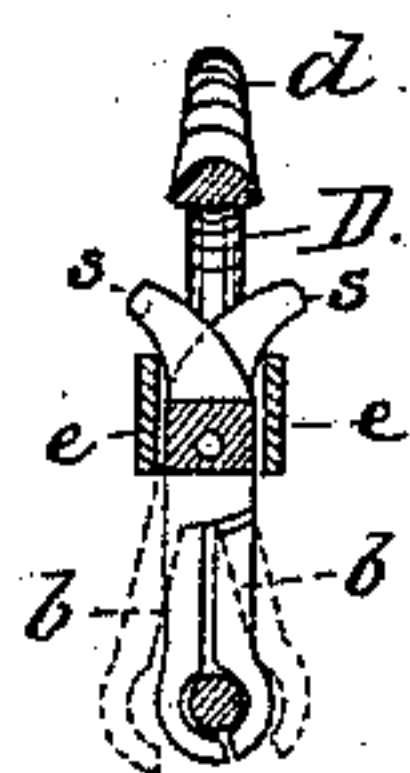


Fig. 5.



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ORLANDO H. JADWIN, OF NEW YORK, N. Y.

PROPELLING CARS.

SPECIFICATION forming part of Letters Patent No. 223,592, dated January 13, 1880.

Application filed October 31, 1879.

To all whom it may concern:

Be it known that I, ORLANDO H. JADWIN, of the city, county, and State of New York, have invented a new and Improved Means for Propelling Cars; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of a car provided with my clutch, the cable-way being open to show connection of the cable and the clutch. Fig. 2 is a vertical cross-section through the line *xx* of Fig. 1. Fig. 3 is a side view of a modification of my clutch. Fig. 4 is an underneath view of same. Fig. 5 is a cross-section through the line *yy* of Fig. 3.

My invention relates to that means for propelling cars in which an endless cable of wire-rope is caused to travel over a given route by the action of stationary engines, and the cars or other bodies are either connected to said cable to be drawn along therewith, or are disconnected therefrom, by means of a clutch affixed to the car or other body.

My invention consists in the construction of this clutch or tension device, which is loosely connected with the car and formed of three principal parts—a pulley, a foot for holding the rope to the pulley, and a brake upon the opposite side of the pulley from the foot—the said parts being arranged in such relation that a pressure of the brake upon the periphery of the pulley projects the pulley against the rope, and gradually clamps the same between the pulley and foot until the car attains the speed of the traveling cable.

The invention also consists in the adaptation of the clutch, the cable, and the passage in which the cable travels, as hereinafter fully described.

In the drawings, A A represent two rails, flanked on their outer sides by beams B B. These rails and beams are arranged upon the cross-ties between the railway-rails, and are flanged inwardly toward each other at the top. These rails may be held apart a uniform distance by bolts, and together form a passage for the cable, with a continuous narrow opening, *a*, between the upper edges of the rails, through which the clutch on the car projects

into engagement with the cable. This clutch consists of a freely-swinging bar, C, fixed to the car, a pulley, D, and the brake E. The swinging bar C is strongly attached to the car, underneath the same, and as near the pavement as possible, to prevent the cable from rising from the pulleys in draft. The freely-swinging character of this bar permits it to move up or down and sidewise, and be thus adapted to horizontal and vertical curves without binding. The lower portion of said bar is curved to conform to the lower periphery of the pulley, and is formed with a foot, *b*, hollowed out to receive the rope and hold it in contact with the pulley.

The brake E is jointed at one side, *c*, to the swinging bar, and is made with a circumferential portion, *d*, with a straight frame portion, *e e*, on each side, to receive the pulley. This pulley is provided with journals *f*, and is hung in the brake between the bars *e e*, and with its journals resting in slotted bearings in said bars.

Through the free end of the brake there passes a screw-rod, F, extending up outside the car in position to be easily reached from the platform, which rod is connected to the brake by means of a swivel, and is screw-threaded at its lower end, which threaded end passes through a corresponding threaded hole in the swinging bar C.

Now, by turning the rod F, it will be seen that the brake is made both to impinge against the periphery of the pulley to retard its revolution and to force said pulley down against the cable, resting between the pulley and foot. The result is, that the clutch is made to clamp the rope, and the car starts gradually, since it does not immediately partake of the velocity of the rope; but the pulley revolves until the friction of the brake has overcome entirely the inertia of the car, at which time the pulley ceases to revolve and acts as a rigid clamp, and the car then moves with quite or nearly the same velocity as the rope.

In adapting the clutch to the passage-way of the cable it is arranged vertically; and I may employ a guide-roller at its forward end, which is to be arranged on a vertical axis and rest in the space *a* between the rails; and I may also employ a horizontal roller resting on

the face of the rail. The rear end of the foot *b*, where the rope enters when the car is stationary, should be made perfectly smooth and well rounded, or without rough and sharp edges, so that when the car is standing still straggling wires from the rope are not caught as the rope travels forward through the same.

In adapting the space *a* between the rails, the cable, and the clutch to each other, I make the space *a*, the pulley, and the portion of the bar *C* above the foot, all of less thickness than the diameter of the cable. My object in this is, first, to reduce the opening *a* to as small size as possible, so as to make it as little objectionable in the street as possible; secondly, to prevent the foot from lifting the cable out; and, thirdly, by making the pulley of less thickness than the diameter of the rope, the concave on the periphery of the pulley pinches the rope with a wedging action and makes a firmer clutch. While in some cases I may prefer to make the opening *a* narrower than the cable, I may use the clutch with any ordinary cable-way or with the traveling cable of an elevated railway.

To facilitate the gripping of the cable by the clutch and the quick discharge of said cable at the end of a section or the crossing of another cable, I make the foot *C* in two longitudinal sections, as in Figs. 3, 4, and 5, which are hinged together at the top and close together upon the cable at the bottom. Their line of union or contact when they close under the cable is not parallel with said cable, but diagonal to the same, as seen in Fig. 4, so that each half of the foot will at one point bear a direct pressure of the rope when forced against them by the brake.

For closing the two sections of the foot the bars *e e* are made deep enough, so that when the hinged ends of the foot are drawn up by the screw they pass between bars *e e* and are pinched together by the same, so as to close together on the cable.

For throwing the two parts of the foot open by a positive action, projections *s s* may be formed upon the same above their hinged point, which, by an extreme pressure of the screw, may be made to bind against bars *e e*, and act reversely to throw the foot-sections apart.

It will be seen that the single screw-rod thus controls the management of the entire clutch and brake.

In defining my invention more clearly, I would state that I do not claim, broadly, the forcing of a pulley against a rope by a brake; but I do claim the combination of a brake and a foot arranged upon opposite sides of a freely-moving pulley so adapted that the clutch or clamp may rest upon any vertical pulley or press against any horizontal pulley without increasing the pressure of the clutch on the rope.

By hanging the pulley in the brake as shown, also, it insures the application of the pressure

of the brake at a point diametrically opposite the point of clamping the rope, and no wedging action can possibly take place to defeat the gradual action of the clutch.

The advantages of my invention are as follows: In most clutches of this kind two pulleys are made to clamp the rope between them, and are arranged in a more or less horizontal position, in order to be out of the way of the pulleys sustaining the cable, which are placed at intervals along the line. To still further avoid conflict with these supporting and guide pulleys, the old clutches of the kind referred to are not arranged in the line of the cable, but a little above it, so as to lift the cable and not touch the carrying-pulleys for the cable in passing over them. This is objectionable, for it is specially liable to throw the cable off its pulleys at a curve, and there is a heavy downward strain on the car, caused by the lifting of a wave or bend in the heavy wire-rope.

My single pulley, combined, as described, with the brake and shoe, can be arranged vertically with the foot in the line of the cable without carrying the weight of the same, and readily rides the supporting and guide pulleys for the cable, and is especially well adapted to the improved rocking pulleys patented by me September 25, 1877, and reissued March 11, 1879, an example of which may be seen at the point *x*.

As most of my clutch is above the cable passage or way also, the latter can be made shallow and small enough to be placed above the cross-ties without digging a tunnel for the same.

Having thus described my invention, what I claim as new is—

1. A swinging clutch adapted to horizontal and vertical curves, consisting of a single wheel or pulley suspended in and working instantly with the brake for quick engagement and disengagement to or from the cable, as described.

2. In combination with the brake and the pulley loosely contained therein, the divided and hinged foot, constructed substantially as and for the purpose described.

3. A clutch for a traveling cable consisting of a loose or freely moving pulley combined with a shoe arranged to hold the cable to the pulley, and a brake arranged upon the opposite side of the pulley from the shoe, and adapted to both impart pressure to the rope and act with a frictional contact upon the pulley, substantially as described.

4. The brake provided with bars *e e* and loose pulley, in combination with the divided sections of the foot, hinged and adapted to be compressed by being drawn up between the bars *e e*, for the purpose described.

5. The combination, with the shoe for holding the rope, of a brake and loose pulley, the said pulley being contained in and carried by the brake, substantially as described.

6. The sectional hinged foot constructed

with diagonal edges, adapted to form a diagonal joint beneath the rope, combined with the brake and pulley, as described.

5 7. The combination of shoe *b*, the brake E, carrying the pulley D, and the screw-rod F, substantially as and for the purpose described.

8. The combination, with a traveling cable, of the rails A A, arranged to form a passageway for the same, having an opening, *a*, of

less width than the diameter of the cable, together with a clutch-pulley and frame, made also of less thickness than the rope at the point where it rests in space *a* between the rails, substantially as and for the purpose set forth.

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Witnesses:

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