

No. 644,675.

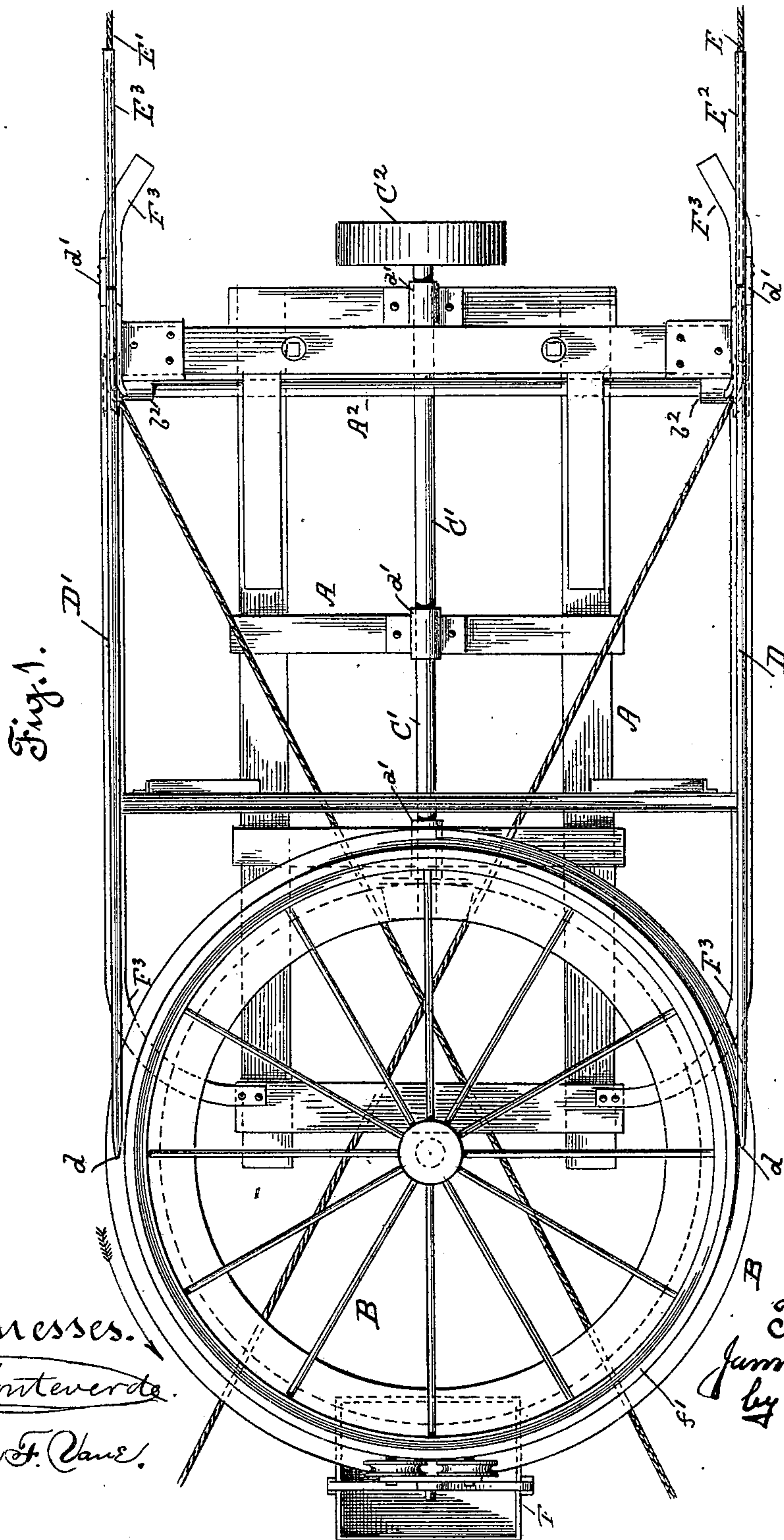
Patented Mar. 6, 1900.

J. T. LUDLOW.  
ROPE TRAMWAY SYSTEM.

(Application filed Aug. 9, 1899.)

(No Model.)

2 Sheets—Sheet 1.



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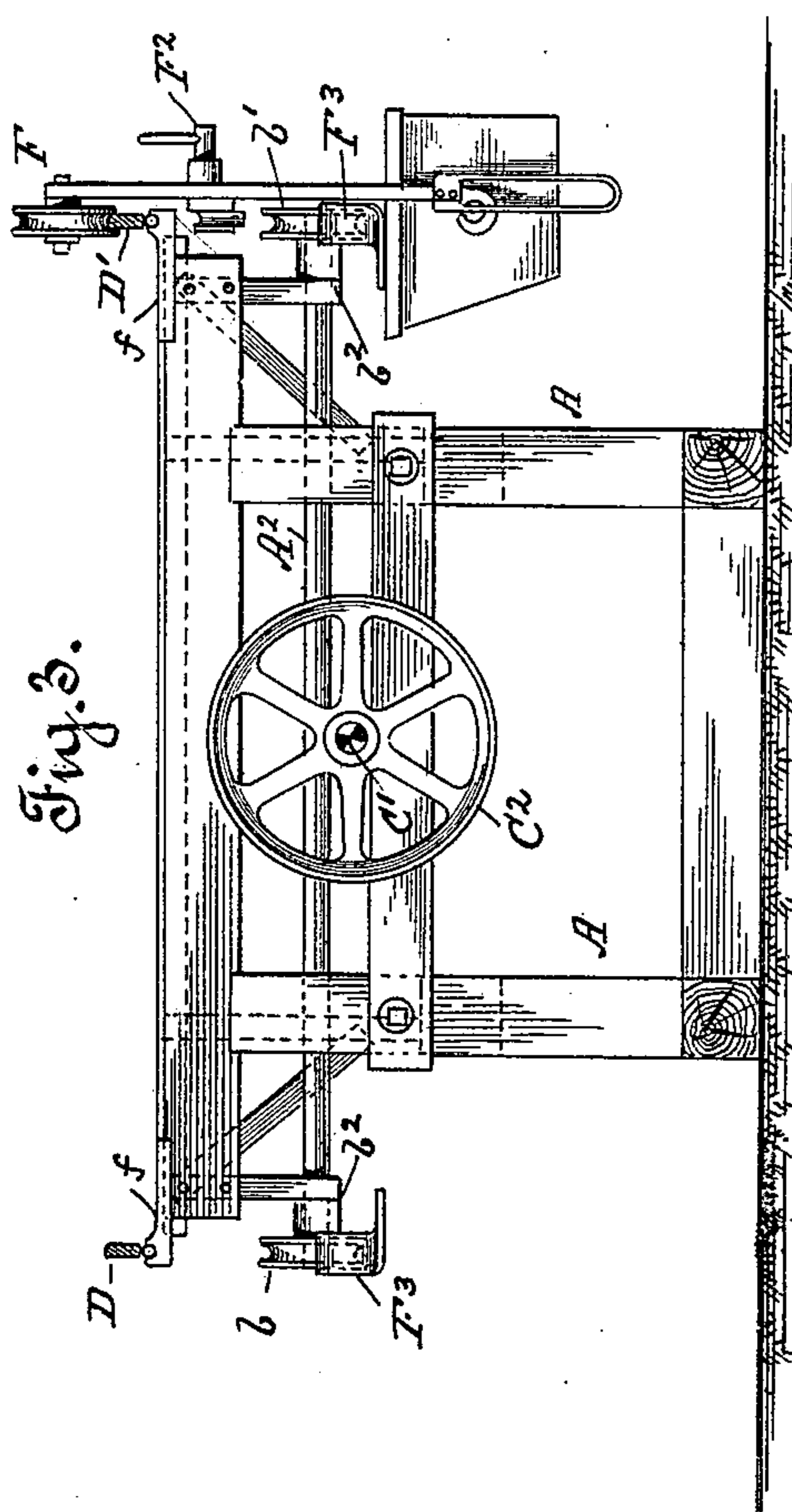
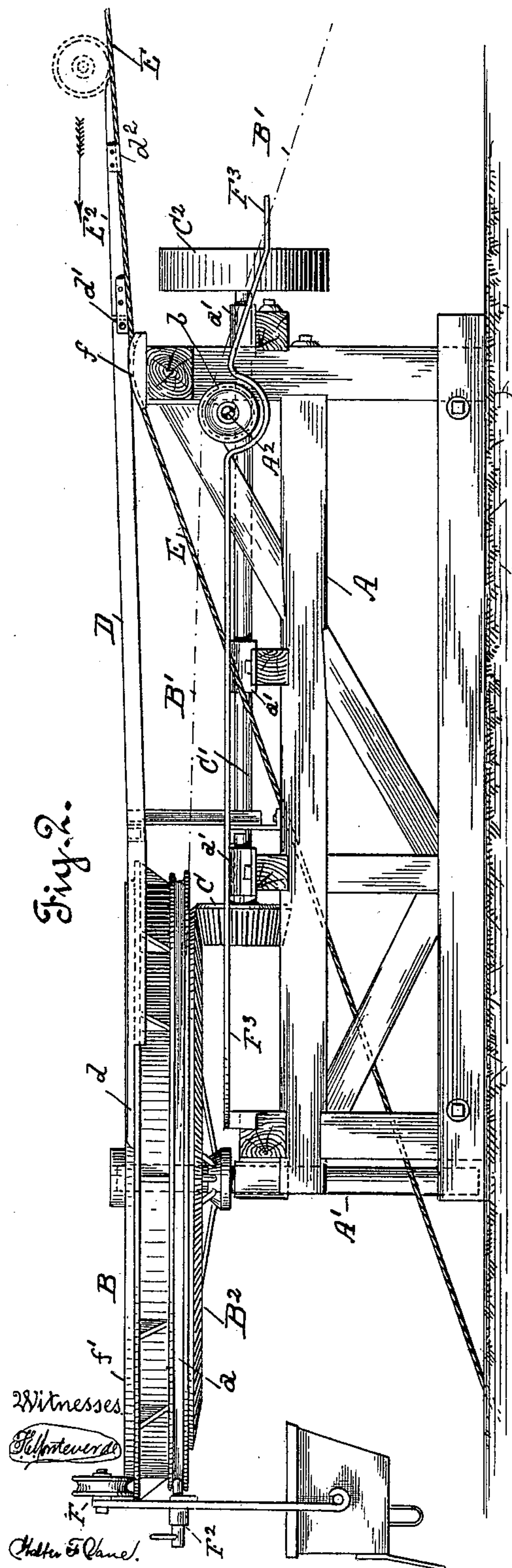
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**2 Sheets—Sheet 2.**



Inventor.  
James T. Ludlow  
by ~~naack~~ <sup>his atty</sup>



# UNITED STATES PATENT OFFICE.

JAMES T. LUDLOW, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO THE  
VULCAN IRON WORKS, OF SAME PLACE.

## ROPE-TRAMWAY SYSTEM.

SPECIFICATION forming part of Letters Patent No. 644,675, dated March 6, 1900.

Application filed August 9, 1899. Serial No. 726,631. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES T. LUDLOW, a citizen of the United States, residing in the city and county of San Francisco, in the State of California, have invented certain new and useful Improvements in Rope-Tramway Systems; and I do hereby declare that the following is a full, clear, and exact description thereof.

This invention relates to certain new and useful improvements in the switch mechanism of a wire-rope-tramway system, which consists in the arrangement of parts and details of construction, as will be hereinafter fully set forth in the drawings and described and pointed out in the specification.

In rope-tramway systems it is customary that a workman be stationed at the terminal thereof in order to release the carrier from the haulage-rope and switch the same from one track-rope onto the opposite one. This manner of shifting the carriers not only adds to the expense of manipulating the system, but delays the work of the cars by reason of the time consumed in the shifting of the same.

The object of the present invention is to dispense with the employment of an operator at the switching end of the tramway and to provide means whereby the carriers as they reach such end are automatically shifted from one track-rope onto the other without the carrier being released from the haulage-cable during such transfer operation.

In order to comprehend the invention, reference should be had to the accompanying sheets of drawings, wherein—

Figure 1 is a top plan view illustrating the terminal or switching end of a rope-tramway system. Fig. 2 is a side view in elevation of the mechanism illustrated in Fig. 1; and Fig. 3 is an end view of the mechanism disclosed by Fig. 2 of the drawings, viewed in the direction of the arrow.

In the drawings the letter A is used to indicate any suitable framework for supporting the horizontally-rotating sheave or turn-table B and switching mechanism for the cars. This sheave or turn-table works upon the vertical support A' and in its periphery is provided with a groove *a*, within which works the haulage-cable B', said cable working over

pulleys *b b'*, secured to ends of the cross-shaft A<sup>2</sup>, working in bearings *b*<sup>2</sup> at each side of the frame A near its forward end. The under face of the sheave or turn-table terminates in or has attached thereto the gear B<sup>2</sup>, with which meshes the pinion C, secured to the inner end of the drive-shaft C', working in bearing *a'*. This shaft is driven to transmit motion to the sheave or turn-table B by means of a driven belt (not shown) working over pulley-wheel C<sup>2</sup>, secured to the outer end of said shaft. However, any suitable form or style of mechanism may be employed for the purpose of driving the sheave or turn-table B.

In line with the sheave or turn-table B and a short distance above the frame A are arranged the switch-rails D D', said rails being arranged parallel to each other. The inner end of each rail overhangs the upper face of the turn-table or sheave B, said rails being cut away or reduced for this purpose, as shown at *d*, Fig. 2 of the drawings. By thus cutting away the inner or projecting ends of the rails D D' the same are permitted to come approximately flush with the upper surface of the said sheave or turn-table B. In order that the carriers may enter or move onto the switch-rails, to the outer end of each a switch E<sup>2</sup> E<sup>3</sup> is movably connected to the respective rails by a hinge-joint *d'* and are held to their respective track-ropes E E' by means of the supports *d*<sup>2</sup>, through which the said rope extends. By making the switch a movable or hinged one the same will give to the sag of the rope as a carrier F moves thereover. From each carrier F is suspended a tilting bucket F', which is held to the haulage-rope by the grip F<sup>2</sup>.

The track-ropes run over saddles *f* and are anchored at the terminal or switch end of the tramway system below the sheave or turn-table B.

As the carrier F is conveyed over track-rope E toward the terminal end of the tramway it moves onto switch E<sup>2</sup> and is shifted or run onto switch-rail D, over which it travels until finally deposited or placed upon the horizontally-rotating sheave or turn-table B. When placed upon this sheave or turn-table, it is held in position by the upwardly-projecting circular flange *f'* of the sheave or table.



Inasmuch as the sheave or table is a continually-rotating one, it is obvious that after the carrier has been placed thereon it will be carried around until brought or placed into line with the switch-rail D'. As at all times the carrier is held locked to the haulage-rope by the grip F<sup>2</sup> and as the haulage-rope leaves the sheave or table B at the point of the switch-rail, it is obvious that the moment the carrier F comes into line with the switch-rail D' it is drawn thereon by the said haulage-cable, which is a continually-driven one, and conveyed thereover and directed onto the track-rope E' by the switch E<sup>3</sup>. In this manner the carrier F, with its suspended bucket, is shifted from one track-rope to the other without being released from its haulage-rope and without the aid of an operator to make the transfer.

It will be observed that the sheave or table B not only serves to transfer the carrier from one track-rope to the other, but also serves as a means for driving the haulage rope or cable.

Below each switch-rail there is attached to the frame A a guard-rail F<sup>3</sup>, which serves to prevent undue inward swing of the suspended bucket as the carrier is conveyed toward or away from the sheave or turn-table B.

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

1. In a rope-tramway system, the combination with the track-ropes, of a transfer device located at the terminal or transfer end of the system, the switch-rails leading onto the said

transfer device, a switch movably attached to each switch-rail, connection between each switch and the track-ropes, and of means for imparting rotary motion to the transfer device.

2. In a rope-tramway system, the combination with the track-rope, of a transfer device located at the terminal or transfer end of the system, of devices for guiding the carriers from one track-rope onto the transfer device and from said device onto the opposite track-rope, mechanism for imparting rotation to the transfer device and of independent means for conveying the carriers onto the transfer device and removing same therefrom, whereby the said carriers are automatically shifted from one track-rope to the opposite one.

3. In a rope-tramway system, the combination with the track-ropes for the carriers, an endless haulage-rope for propelling the carriers, connection between the carriers and the haulage-rope, a turn-table located at the transfer end of the system, mechanism for imparting rotary motion to the turn-table, switch-rails leading onto the turn-table, of a switch movably connected to the outer end of each rail, and a connection between each switch and the track-ropes.

In testimony whereof I hereunto affix my signature, in presence of two witnesses, this 19th day of July, 1899.

JAMES T. LUDLOW.

Witnesses:

N. A. ACKER,  
WALTER F. VANE.