(No Model.) 3 Sheets—Sheet 1.

C. W. RASMUSEN.

WIRE ROPE TRAMWAY.

No. 266,520. Patented Oct. 24, 1882.

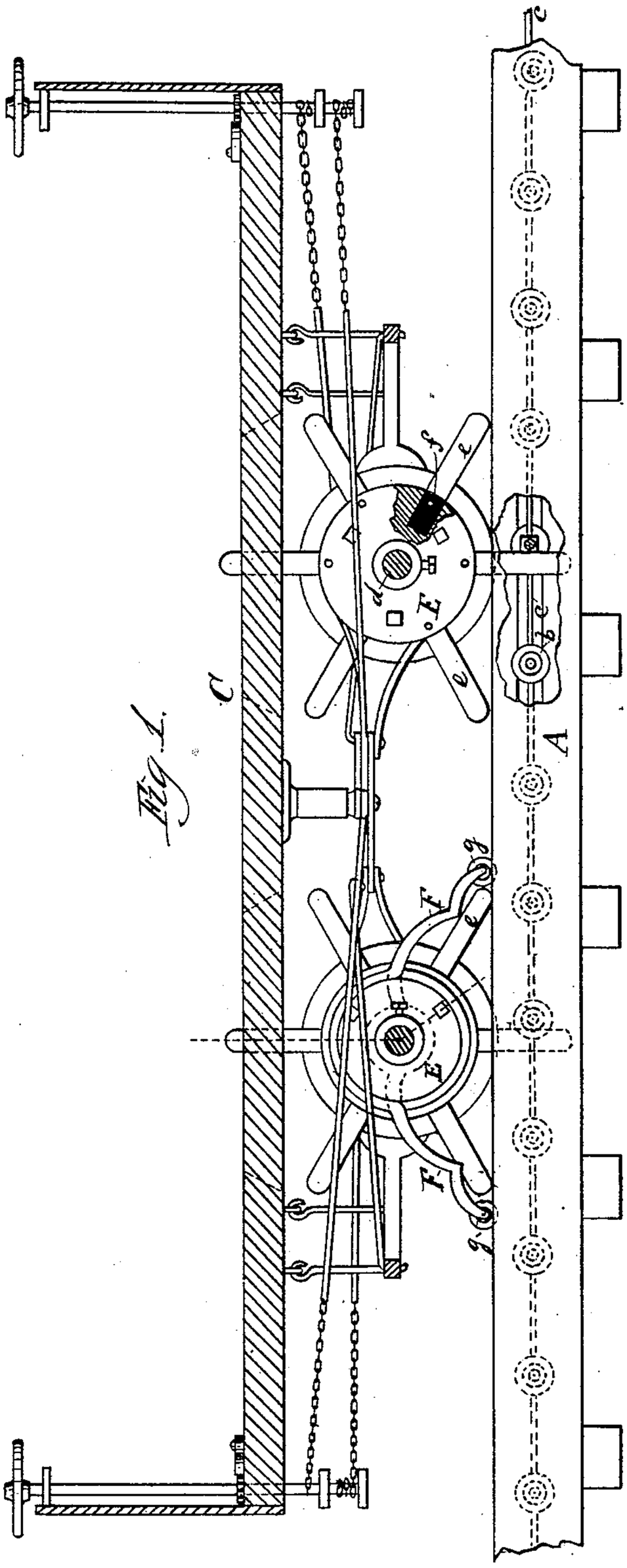


Fig. 1.

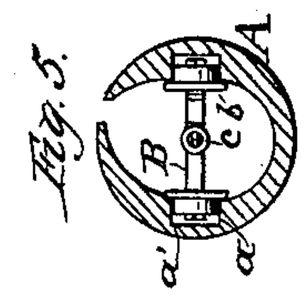
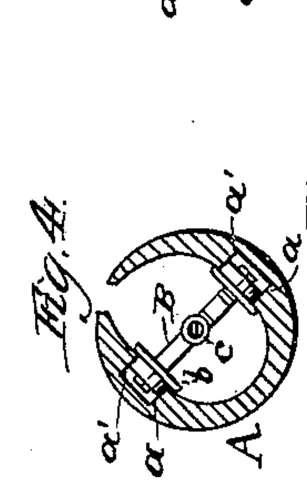


Fig. 5.



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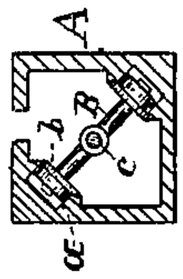

Fig. 5a.

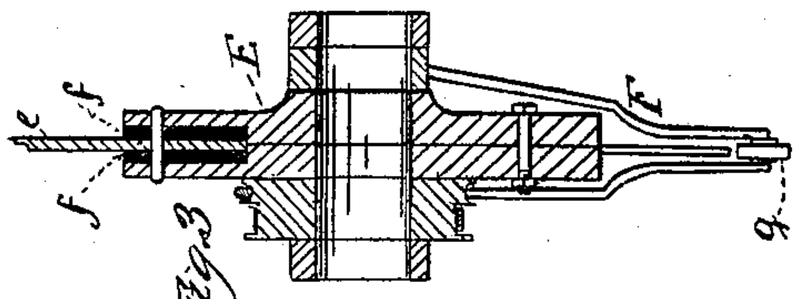

Fig. 3.

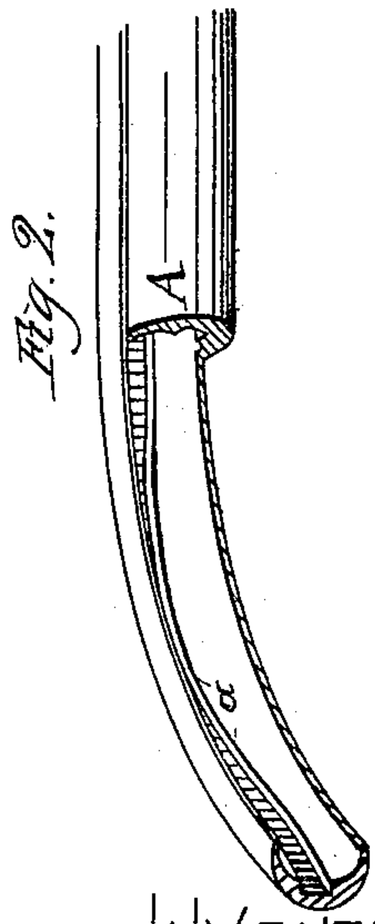

Fig. 2.

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(No Model.) 3 Sheets—Sheet 2.

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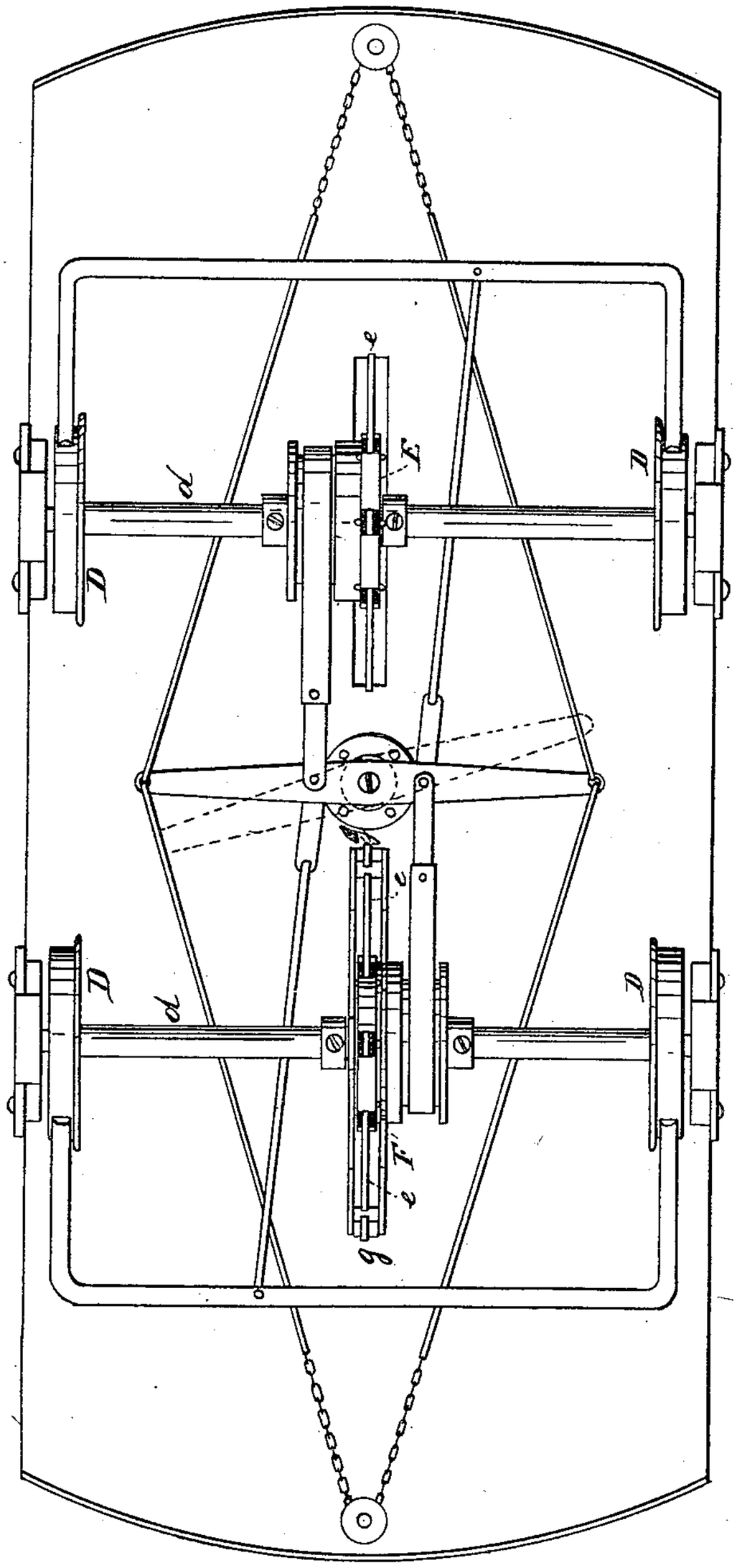

Fig. 6.

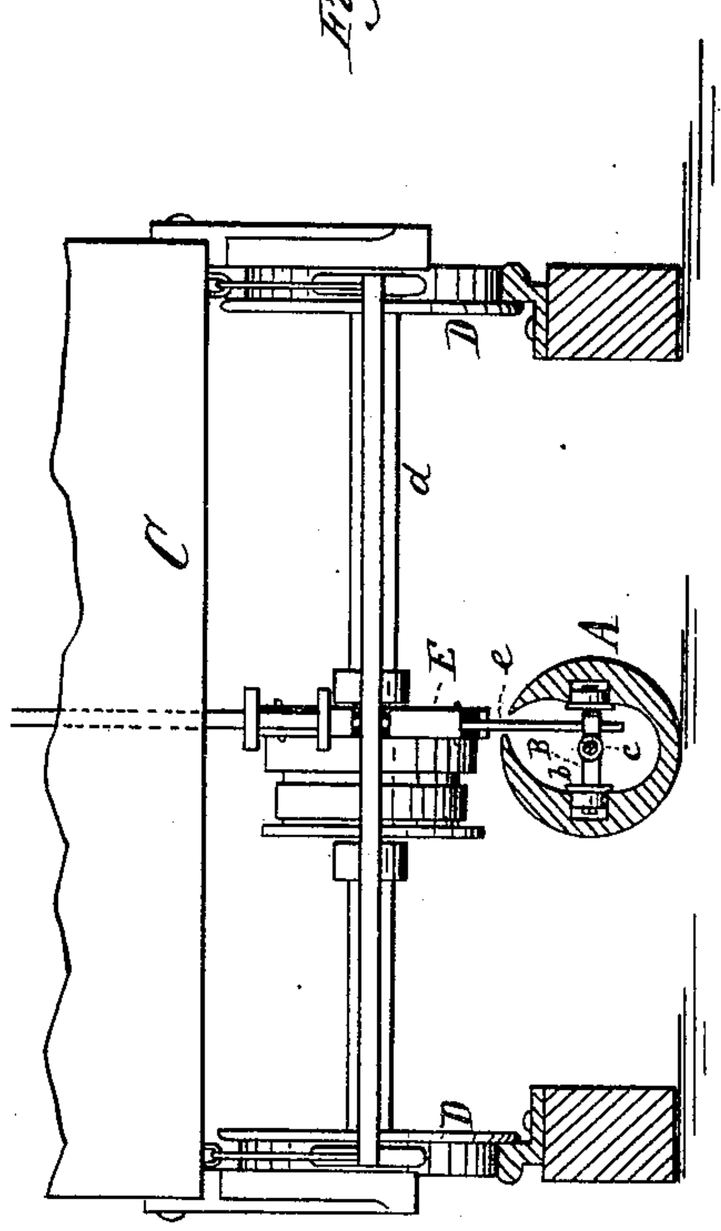

Fig. 7.

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3 Sheets—Sheet 3.

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WIRE ROPE TRAMWAY.

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Fig. 2.

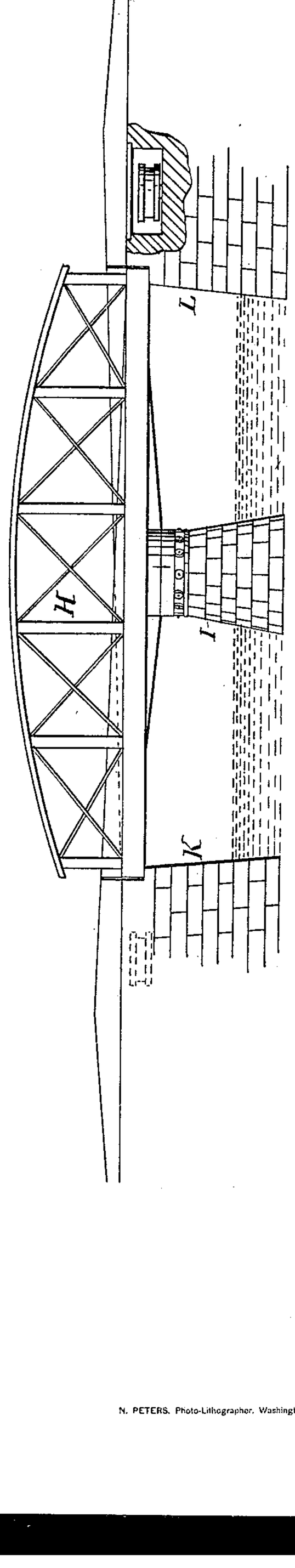
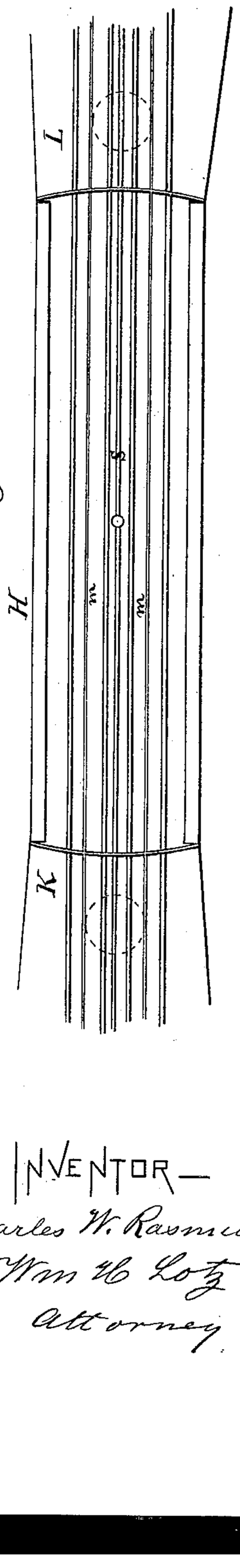


Fig. 1.



WITNESSES—

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F. W. Kasehagen

INVENTOR—

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By Wm H. Lotz

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UNITED STATES PATENT OFFICE.

CHARLES W. RASMUSEN, OF CHICAGO, ILLINOIS.

WIRE-ROPE TRAMWAY.

SPECIFICATION forming part of Letters Patent No. 266,520, dated October 24, 1882.

Application filed June 6, 1881. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. RASMUSEN, of Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Wire-Rope Tramways, of which the following is a specification.

My invention relates to that class of tramways in which a moving endless rope or cable located beneath the car is used to propel the car along the track; and the invention consists of certain improvements in structure, all as hereinafter set forth, and more particularly defined in claims.

In the accompanying drawings, forming a part hereof, Figure 1 represents a sectional side elevation of an ordinary car and of the tube having my improvements; Fig. 2, a sectional perspective view of a portion of the curved tube; Fig. 3, a section of a wheel arranged with laterally-yielding arms, and with the elastic guide-yokes for said arms; Fig. 4, a transverse section of a round tube with the tracks on a diagonal line, as intended for turning a curve; Fig. 5, a similar section of a tube with its tracks on a horizontal line, as intended for a straight-line track; Fig. 5ª, a similar section of a square tube with the track on a diagonal line, as in a curve; Fig. 6, a bottom view of the car or dummy; Fig. 7, an end elevation of the car or dummy; and Fig. 8, a draw-bridge with inclined tracks, as arranged for moving the cars by gravity from the cable-way on one end to the cable-way on the opposite end of the bridge. Fig. 9 is a plan view of a draw-bridge.

Like letters denote corresponding parts in all the figures.

A denotes the tube, which may be round, square, oval, or of any other suitable shape, and which has a slot on top in the usual manner, through which the car to be propelled is to form a connection with the cable. This tube A is provided internally with double tracks *a a'* for guiding the carrier-wheels *b*, that travel upon the lower track, and are guarded against jumping off said lower track by an upper or counter track. These double tracks may be formed inside of the tube by projecting ribs, or by grooves cast therein. The wheels *b* are pivoted upon the ends of axles B, that carry the cable *c*, and clamped thereon by any suitable device. Wherever the cable *c* has to follow a curve the track inside the tube A will change from a horizontal to a more or less diagonal line that will divide the traction strain of the rope as much as possible upon the peripheries of both wheels *b*, and not upon their flanges.

C is the platform or body-frame of the car or dummy, below which are journaled, in suitable boxes, the axles *d*, with track-wheels D mounted thereon in the usual manner. Upon about the center of said axles are loosely sleeved the wheels E, having radial arms *e*, that are laterally in position to enter the slot in tube A and engage with the axles B carrying the cable. These arms *e* are so spaced relative to the axles B of the cable that they will engage therewith in succession, in the same manner as the teeth of a gear-wheel will engage with the teeth of a rack, and that said wheels, when not otherwise resisted, will be rotated by the motion of the cable at a uniform speed; but when the armed wheels are resisted, so as to be allowed only a slower speed than the speed of the cable, the car will move the difference of that speed, and if the armed wheels are held rigid the car will move at an equal speed with the cable.

The stopping and starting of the car is accomplished by an arrangement of brake-straps and brake-shoes that are operated simultaneously from the platform of the car, as already described and claimed in my former application, filed on or about February 12, 1881.

The arms *e* of the wheels E may be made of any suitable shape best adapted for insuring an accurate engagement with the axles B of the cable. These arms *e* are secured in the rim of the wheels E, either in sockets when the wheel is cast solid, or between grooves, when the wheel is composed of two sections bolted together, as represented in Fig. 3 of the drawings. These grooves are fitted radially to hold the arms steady, while laterally they are of more width than the thickness of the arms *e*, and this extra space at each side of the arms is filled with a plate of rubber, *f*, or with other elastic material that will permit a lateral yield to the arms.

In place of rubber or similar material for an elastic lining, steel springs may be interposed

between the arms *e* and the sides of the wheel for a like purpose with equal advantage.

While slacking the speed of the car, or while stopping the car entirely when passing over a curve of the track, the armed wheels E would of course be rotated, and the danger would be that the arms *e* of the wheels E might strike upon the solid iron of the tube A instead of entering the slot, and a breakdown would be the consequence, without some device that will insure their proper course, and therefore, for the purpose of obviating that danger, I have attached to and sleeved upon the hubs of each wheel E a guide-yoke, F, that consists each of a pair of thin flexible steel plates having small wheels *g* pivoted between their ends. The rims of these wheels *g* enter the slot of tube A and follow its course, one in advance of each wheel E and the other in the rear of the same, and with any deviation from a straight line of the track these wheels will follow the slot and will bend the yoke-bars into line with the slot of tube A. The bars that form guide-yoke F are so shaped that the arms *e* have to move in the space between, so as to be laterally deflected and forced to enter the slot of tube A, one by one, before they become entirely free from said guide-yoke.

In cities which are intersected by rivers or water-channels that, for the purpose of not interfering with the shipping traffic, have to be spanned by draw-bridges, it would be impossible to have a continuous wire-cable way for driving cars over the bridges. This difficulty I have solved by a very simple and practicable device that I will now proceed to describe.

H is a draw-span of any usual construction, that will turn upon the central pier J, and will connect the abutments K and L, each of which is the terminus of a wire-cable road. The roadway of this bridge I divide longitudinally through the center by a strong railing or fence, S, so as to form a rigid division of the ways for wagons moving in opposite directions, and these two roadways I build with opposite inclined planes of sufficient grade that a car will run by the momentum of the cable and its own gravity until it has arrived at the opposite abutment, where the car will again be engaged with the other cable. These inclined planes are continued the necessary distance on each abutment, that the car, before leaving the traction-cable that moves it toward the bridge, may release the same at a point where, if brought to a stand before the open draw, gravity will start to move it when the draw is closed. These roadways or tracks, being on opposite sides of the bridge inclined in opposite directions, will always be right with the abutments, no matter how the bridge is turned, and the inclinations need be but very little, and not of sufficient consequence to interfere with the teaming. The groove *m* in the center of each track on the bridge will give room for the passage of the arms *e* of wheels E.

What I claim as my invention is—

1. In cable-tramways, a tube or guideway for the cable, having at its curved portions grooves of varying curvature or twist, whereby said cable, with its supports, may be given new direction without undue strain, substantially as described.

2. In cable-tramways, a car drive-wheel the radial arms of which are laterally yielding, substantially as described.

3. In cable-tramways, the combination, with the drive-wheel of the car, of the radial arms secured therein, and the yielding side supports to said arms, whereby a lateral movement thereof is allowed, substantially as described.

4. In cable-tramways, a car drive-wheel formed in two halves or sections, in combination with radial arms, and yielding side supports secured therein, substantially as set forth.

5. In cable-tramways, the combination, with the slotted cable-tube or guideway and of the cable moving therein, of the car drive-wheel, having radial arms and a depending yoke to direct said arms, substantially as described.

6. In cable-tramways, the combination, with two traction-cable lines, of an interposed bridge or like swinging section having a track of single incline to connect with said cable-lines, substantially as described.

7. In cable-tramways, the combination, with two traction-cable lines, of an interposed bridge or like swinging section having double tracks of single and reverse incline, to connect with said cable-lines, substantially as described.

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Witnesses:
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P. SCHREINER.