(No Model.)

2 Sheets—Sheet 1.

F. H. MORSE.

CABLE RAILWAY.

No. 365,756. Patented June 28, 1887.

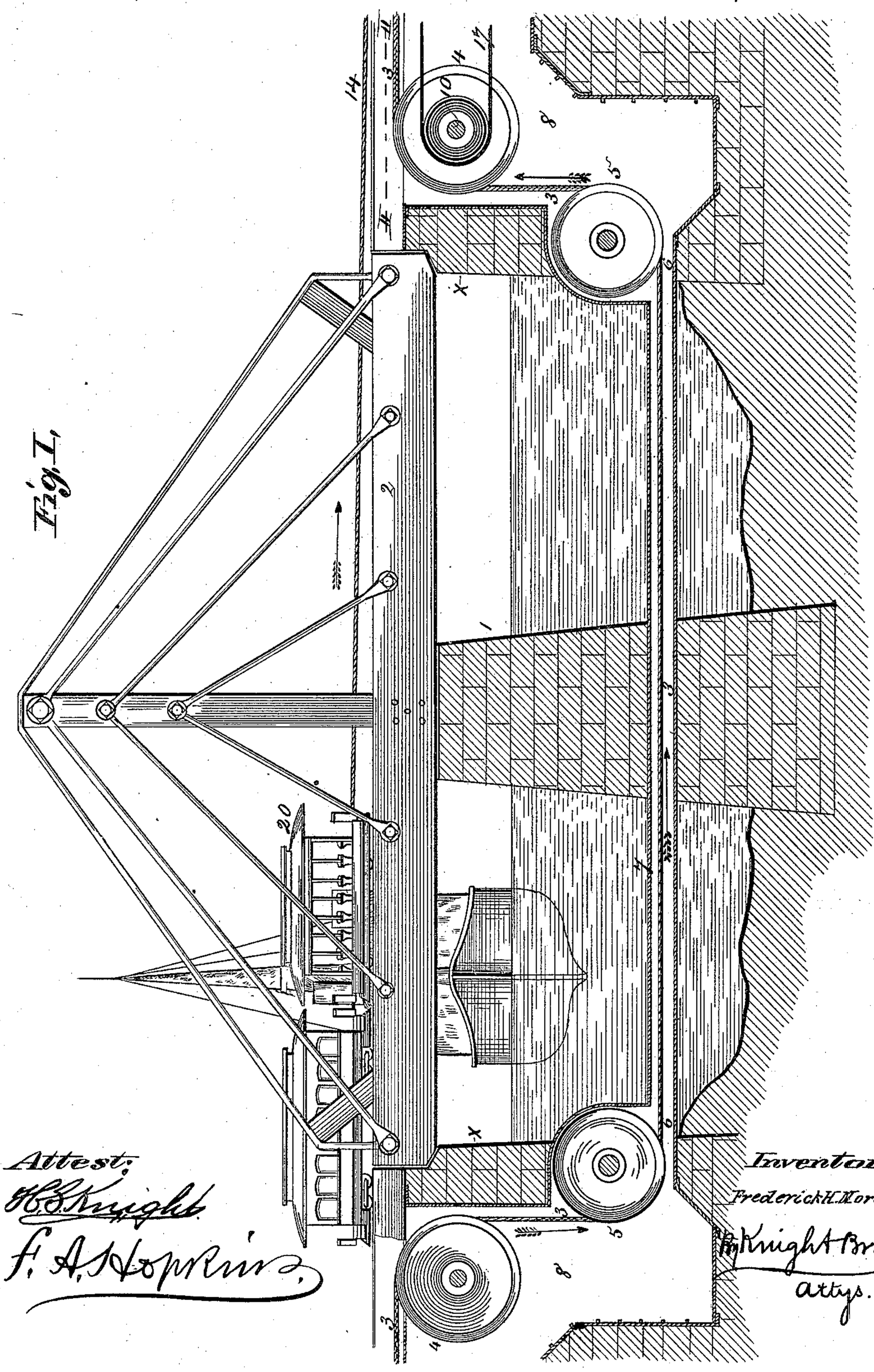

Fig. 1.

Attest:
H. B. Knight
F. A. Hopkins.

Inventor:
Frederick H. Morse.
By Knight Bros.
attys.

(No Model.) 2 Sheets—Sheet 2.

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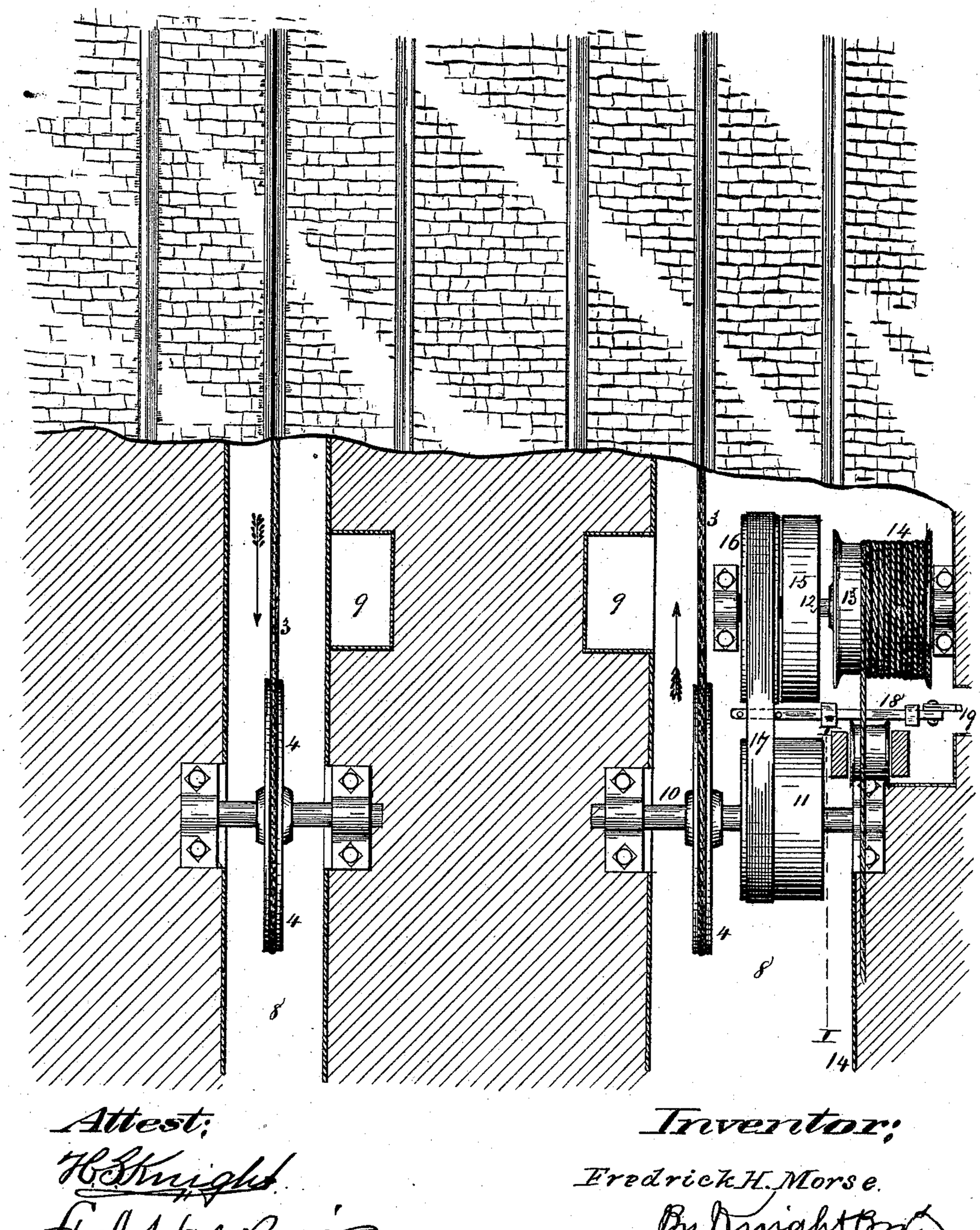
Fig. II.



Attest:
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Inventor:
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UNITED STATES PATENT OFFICE.

FREDERICK H. MORSE, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO JOHN H. WILLIAMS, OF SAME PLACE.

CABLE RAILWAY.

SPECIFICATION forming part of Letters Patent No. 365,756, dated June 28, 1887.

Application filed March 21, 1887. Serial No. 231,731. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK H. MORSE, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Cable Railways, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

The invention relates to a means of carrying the cable beneath the stream spanned by a draw-bridge. It also relates to a means for drawing the cars over the draw-bridge.

Figure I is a vertical section of the device on the plane of I I, Fig. II, showing the bridge in side elevation. Fig. II is part in horizontal section at II II, Fig. I, and part in plan, showing the machinery at one end of the bridge.

1 is the pier on which the draw-bridge turns, and X X the abutments, the bridge being of that class known as "pivot-bridges."

The invention is applicable to other sorts of draw-bridges.

2 is a draw-bridge, in which no novelty is claimed.

The grip-cables are shown at 3. Two of the cables are shown; but the invention is applicable when there is only one cable or when there are more than two. A description of the appliances of one cable will equally describe those of the other.

The cable passes over pulleys 4 at each end of the draw-bridge, and from each pulley 4 extends downward and beneath a pulley, 5, the pulleys 5 being placed so far beneath the level of the bridge as may be required to carry the cable below any point where the traffic of the stream, canal, &c., would interfere with the cable passing from the pulley 5 on one side to the pulley 5 on the other side of the stream. The part 6 6 of the cable, extending between the pulleys 5, I prefer to pass through a conduit, 7, to preserve it from moisture and dirt and to enable its passage through water-tight chambers 8, in which the pulleys 4 and 5 are supported. The chambers 8 are entered by man-holes 9, which may be located in any desired position for the purpose.

It will be understood that the connection between the chambers 8 and conduit 7 is made water-tight. When the cars reach one end of the bridge, the grip must be disconnected from the cable and raised, so that it will pass over the pulley 4. The cars may then be propelled over the bridge by any suitable means. I will now describe the means I propose to use to draw them over. The pulley 4 at the farther end of the bridge is fast upon a shaft, 10, which carries a belt-pulley, 11.

12 is a shaft, which carries a drum, 13, on which is coiled a cable, 14. The shaft also carries a tight pulley, 15, and loose pulley 16.

17 is a belt, which passes over the pulley 11 and over either of the pulleys 15 or 16.

18 is a belt-shifter, of ordinary construction, by which the belt 17 may be shifted to either the tight or loose pulley. This shifter may be actuated by a lever, 19.

The cable 14 passes from the drum up to the surface of the ground, and its end has suitable appliance for engagement with a car, 20, to be by it drawn over the draw-bridge. When the belt 17 is running on the loose pulley 16, the cable may be drawn out and uncoiled from the drum 13 by hand or by other means, and its end carried across the draw-bridge and attached to the car. The belt may then be shifted to the tight pulley 15, when the cable 14 will be coiled upon the drum and the car drawn over the bridge into a position to grip the main or grip cable.

It will be understood that there would be a transferring mechanism, as above described, at each end of the bridge where the cars run in both directions, so that the cars may be pulled from either end. A single transferring mechanism might, however, be used by having a pulley at the other end of the bridge from such mechanism, the cable being carried across the draw-bridge through the pulley and back to a car at the end of the bridge at which the transferring mechanism is located.

In place of the tight and loose pulley to allow the connection and disconnection of the shafts 10 and 12, so as to cause the coiling up of the cable 14, or to leave the drum free to turn to allow the uncoiling of the cable, I may use any suitable clutch.

I claim as my invention—

1. The combination of a cable railroad, the draw-bridge abutments in the line of the rail-

road, pulleys over which and other pulleys beneath which the grip-cable passes to a level beneath the draw-bridge, a drum driven by one of the said pulleys, a cable coiled upon the drum and fitted for attachment to the car, and a device for connecting the grip-cable pulley and the drum, for the purpose set forth.

2. The combination of a cable railroad, the draw-bridge abutments, chambers at each end of the draw-bridge containing pulleys over which and other pulleys beneath which the grip-cable passes, a tubular conduit for the cable connecting the two chambers, a drum actuated by one of the pulleys turned by the grip-cable, and a cable coiled upon the drum, for the purpose set forth.

3. The combination of a cable railroad, the draw-bridge abutments in the line of the railroad, water-tight chambers at each end of the draw-bridge containing pulleys over which and other pulleys beneath which the grip-cable passes, a pulley on the shaft of one of the grip-cable pulleys, a shaft carrying tight and loose pulleys connected by a belt with a pulley upon the shaft of a grip-cable pulley, a cable-winding drum on the shaft carrying the tight and loose pulleys, and a belt-shifter, all substantially as and for the purpose set forth.

FREDERICK H. MORSE.

In presence of—

WILLIAM MUEFORD,

JOSEPH WAHLE.