(No Model.) 3 Sheets—Sheet 1.

J. E. BOEGEN & C. A. TEPOORTEN.

CABLE SYSTEM FOR DRAW BRIDGES.

No. 385,743. Patented July 10, 1888.

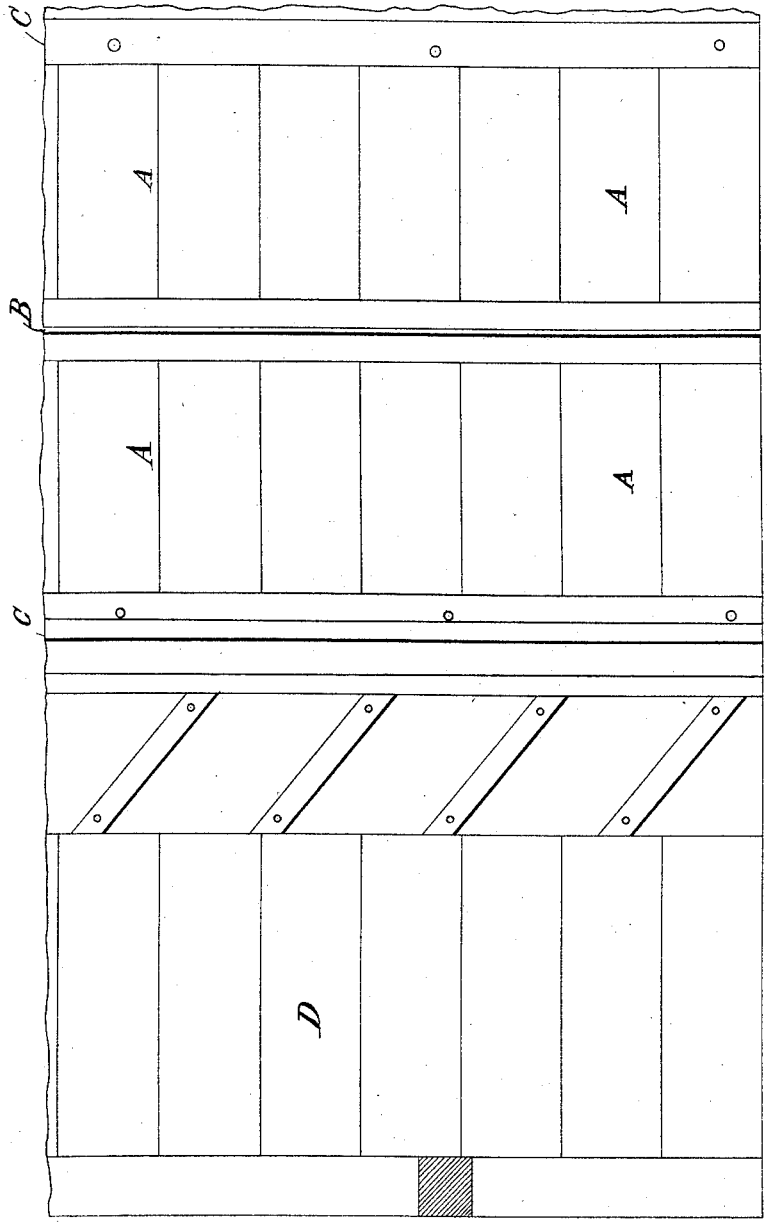

Fig. 1.

WITNESSES:

S. C. Cumins.

J. C. Edwards

John E. Boegen,
Charles A. Tepoorten. INVENTORS.

BY Wm. Knox Hayness.

their ATTORNEY.

(No Model.) 3 Sheets—Sheet 2.

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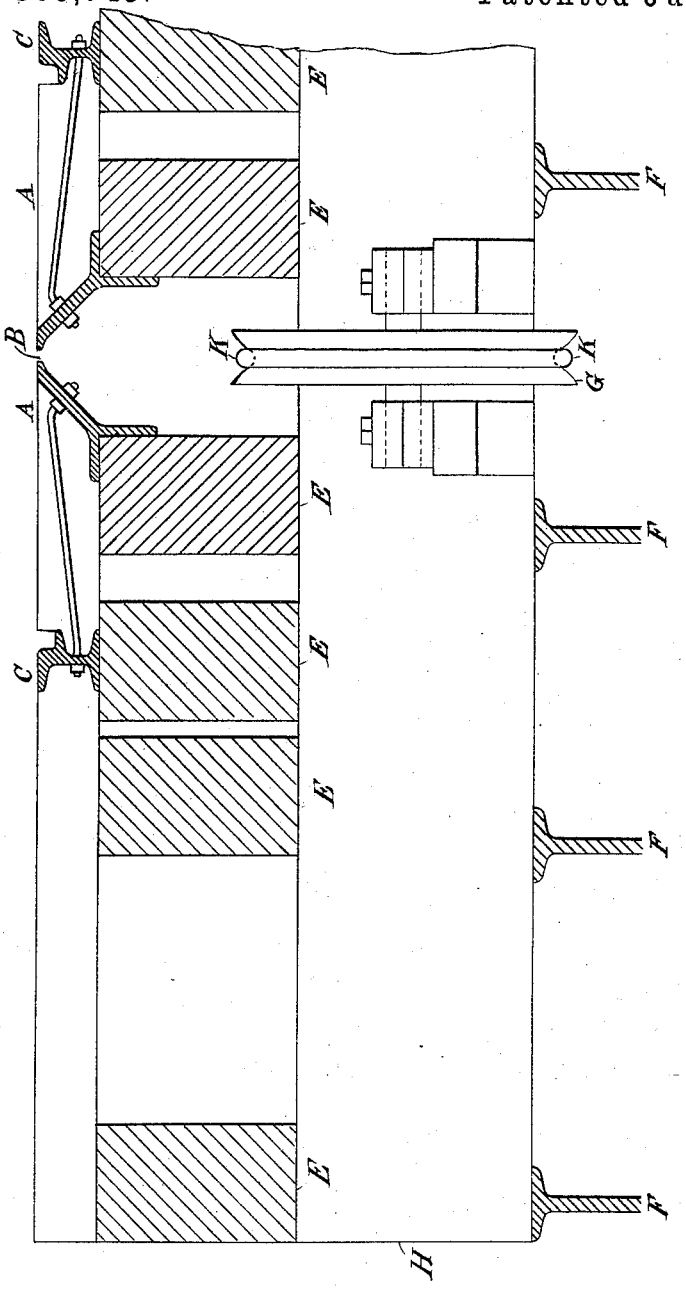

Fig. 2.

WITNESSES:
S. C. Cumins.
J. C. Edes.

John E. Boegen.
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(No Model.) 3 Sheets—Sheet 3.

J. E. BOEGEN & C. A. TEPOORTEN.

CABLE SYSTEM FOR DRAW BRIDGES.

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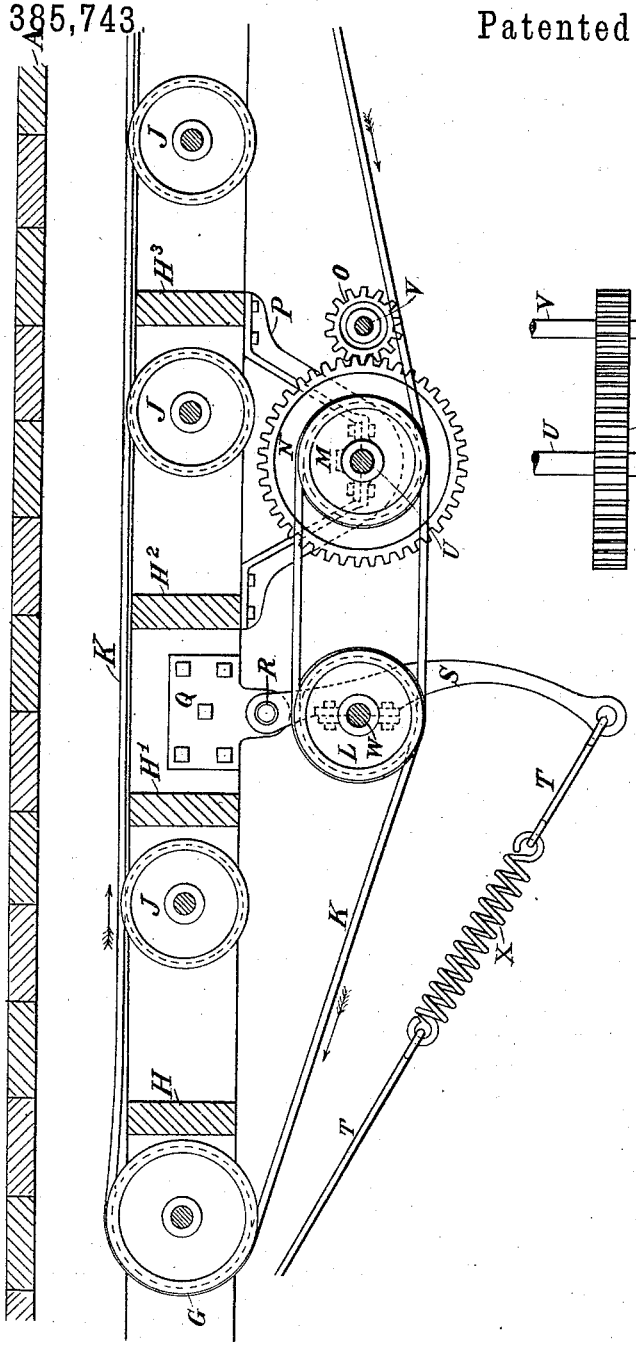

Fig. 3

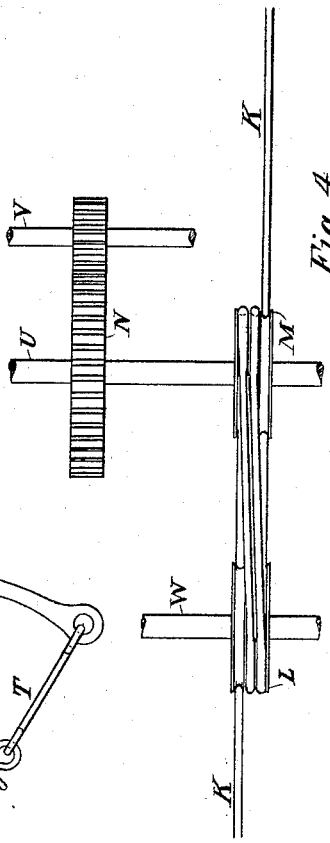

Fig. 4.

WITNESSES:

S. C. Cumins.

J. C. Edelen.

John E. Boegen.
Charles A. Tepoorten. INVENTORS.

BY W. Knox Haynes.

their ATTORNEY.

UNITED STATES PATENT OFFICE.

JOHN E. BOEGEN AND CHARLES A. TEPOORTEN, OF CHICAGO, ILLINOIS.

CABLE SYSTEM FOR DRAW-BRIDGES.

SPECIFICATION forming part of Letters Patent No. 385,743, dated July 10, 1888.

Application filed June 6, 1887. Serial No. 240,466. (No model.)

To all whom it may concern:

Be it known that we, JOHN E. BOEGEN and CHARLES A. TEPOORTEN, citizens of the United States, and both residents of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Cable Systems for Draw-Bridges, of which the following, in connection with the three accompanying sheets of drawings, is a full, accurate, and complete specification.

Our invention relates to cable systems for the propulsion of street-railway cars; and the object of our improvement is to continue the propelling system over the movable part of draw-bridges; to which end we comb ne in the construction of the movable part of the draw-bridge a track upon which the car may run, and a propelling endless cable beneath the said track, said cable to be propelled by the engine or other motor used to swing the bridge, transferring the power when the bridge is closed by a shifting-clutch from the turning mechanism to the mechanism propelling our system of cable. A car may be propelled by a cable traversing the street on either side of a bridge up to the edge or end of the draw or turning part of the bridge, when the driver releases the clutch or grip upon the main cable, the impetus of the car driving it upon the draw, where the cable forming part of our invention may be clutched and the car propelled to the other end of the draw, when the driver releases the clutch or grip, allowing the impetus of the car to drive it sufficiently forward to clutch the main cable on the other side of the draw. We attain this object by the mechanism illustrated in the three accompanying sheets of drawings, in which—

Figure 1 is a top plan of a section of the draw, showing rails of street-car track, top planking of bridge, and slot through which grip or clutch is extended downward to connect with moving cable. Fig. 2 shows partial end section of draw in elevation, the end of rails of track, slot, and ends of upper timbers or joist there appearing, and the position of end sheave, over which cable passes, being also shown. Fig. 3 is a side elevation showing cable passing over sheaves, and also the mechanism for driving and maintaining tension of cable. Fig. 4 is a top plan showing arrangement of driving mechanism.

In the several figures like letters of reference indicate like parts.

A is the top planking of the bridge; B, the slot through which the clutch reaches from the car to connect with the cable; C, wherever repeated, represents a rail of the car-track; D, the planking of the bridge outside the car-track; E, the timbers or joist next beneath the top planking; F, iron I-beams supporting the cross-timbers of the bridge; G, the larger or end sheaves at or near the extreme end of draw; H H′ H², &c., the cross-timbers of the draw; J, the idle running sheaves placed at intervals in the lengths of the draw, over which cable passes between the larger end sheaves, previously noted G; K, the moving and propelling cable; L, the tension-sheave; M, the driving-sheave, whereby the cable is propelled; N, the main gear, whereby the power is received from the driving-gear; O, the driving-gear, whereby power is transmitted to main gear N; P, a bracket, whereby the shaft supporting main gear N and driving-sheave M is suspended; Q, the upper portion of tension-bracket, whereby shaft of tension sheave L is suspended.

R is a hinge-bolt, upon which lower portion of tension-bracket plays; S, the arm of tension-bracket; T, the tension-rod; X, the tension-spring; U, shaft of main gear (N) and driving-sheave, (M;) V, driving-shaft by which power from motor is applied; W, shaft of tension-sheave.

The operation of our invention is accomplished when the draw is in closed position and the motor not in use for the purpose of turning the bridge, the power from this motor then being diverted, by means of any of the ordinary friction or other clutches, from the turning mechanism of the bridge to the driving-shaft V, thus rotating driving-gear O, which in turn revolves driving sheave M. The cable K, passing twice over the upper and thrice over the lower arc of the driving-sheave M, is moved by friction and passed in endless sequence over end sheave, G, in the direction indicated by arrows in Fig. 3; thence over the idle-sheaves J; thence over an end sheave at the other end of draw corresponding to end sheave, G, (shown in Figs. 1 and 2,) and returning, as appears in Fig. 3, to the driving-sheave M. The cable K, being thus placed in

motion, is clutched by a clutch or grip extending downward from a street-car and the car propelled across the draw in the direction traveled by the cable passing over the top of the various sheaves G and J, the clutch from the car reaching the cable K by passing down through the slot or channel B midway between the rails of the track; and whereas the cable K is necessarily subject to the expanding and contracting influence of a varying atmospheric temperature, and whereas an approximately even tension of said cable is desirable and necessary, the said cable K is passed repeatedly over the tension-sheave L. Tension-sheave L has its shaft W boxed in hinged arm S, and arm S is continually drawn backward by a powerful tension-spring, X, thereby increasing the distance between driving-sheave M and taking up any expansion of cable K resulting from a high temperature and keeping cable taut, and any contraction resulting from a lower temperature will, by the strength of the cable, overcome the tension-spring X and allow the sheaves L and M to approach each other to such extent as may be necessary.

We are aware that cables for the propulsion of street-railway cars have been propelled on land by substantially similar mechanism.

We therefore confine our claims of invention to the following, to wit:

1. In a draw or movable part of a draw-bridge, the combination, with the frame-work thereof, of the sheaves G and J, cable K, driving-sheave M, gears O and N, tension-sheave L, shafts U, V, and W, movable arm S, tension-rod T, and spring X.

2. In a draw or movable part of a bridge, an endless cable passing over sheaves at either end of said bridge, the entire cable being upon or within the structure of said bridge and being suitable for the propulsion of railway-cars across said bridge, in the manner specified, in combination with a railway-track upon said bridge, and a motor and gearing, also located upon or within the structure of said bridge, to propel the said cable, as specified.

3. In a draw or movable part of a bridge, having thereon a motor for the purpose of turning the draw, the combination of the bridge, motor, shaft V, and a cable, with gearing to propel said cable, all substantially as and for the purposes above set forth, shown, and described.

JOHN E. BOEGEN.
CHARLES A. TEPOORTEN.

In presence of—
W. KNOX HAYNES,
EDWARD J. PHILLIPS.