

(No Model.)

2 Sheets—Sheet 1.

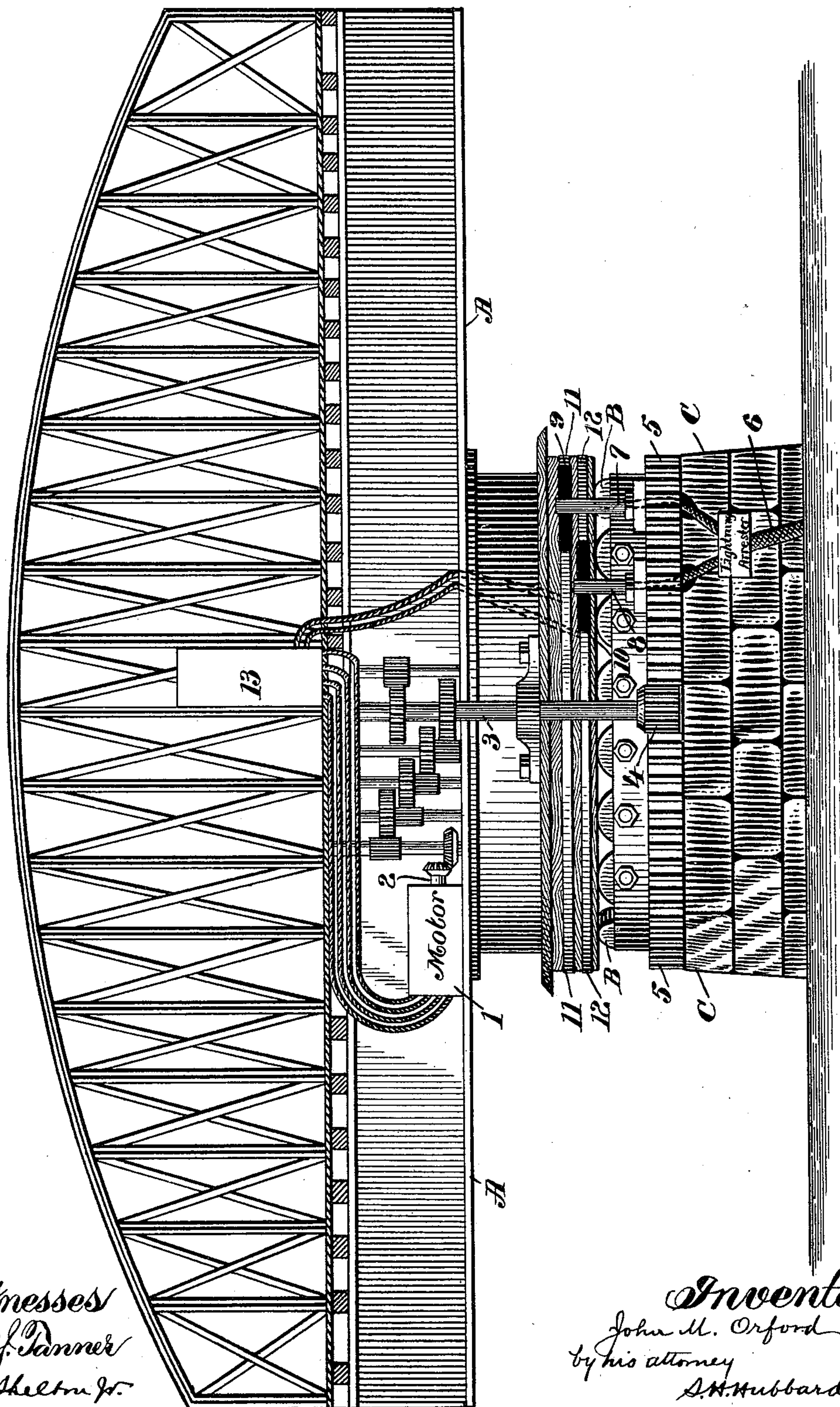
J. M. ORFORD.

MEANS FOR OPERATING DRAW BRIDGE SPANS BY ELECTRICITY.

No. 403,549.

Patented May 21, 1889.

Fig. 1.



Witnesses
Wm. J. Panner
H. D. Shelton Jr.

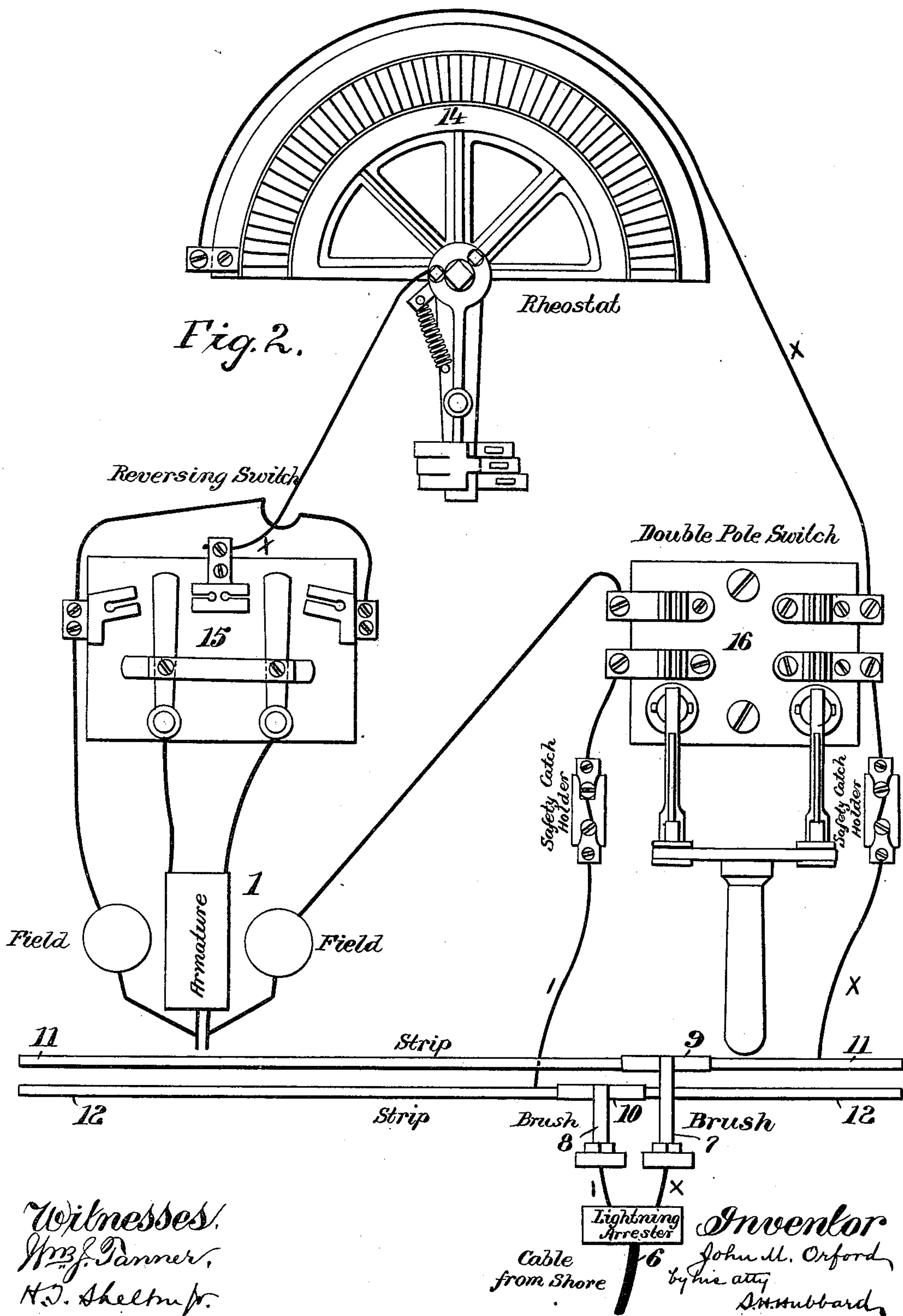
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UNITED STATES PATENT OFFICE.

JOHN M. ORFORD, OF BRIDGEPORT, CONNECTICUT.

MEANS FOR OPERATING DRAW-BRIDGE SPANS BY ELECTRICITY.

SPECIFICATION forming part of Letters Patent No. 403,549, dated May 21, 1889.

Application filed March 2, 1889. Serial No. 301,745. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. ORFORD, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Means for Operating Draw-Bridge Spans by Electricity; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain new and useful improvements in means for operating draw-spans of bridges, and has for its object to utilize as the power for moving the draw-span electricity furnished from any convenient source on the shore—as, for instance, an ordinary electric light or motor circuit; and with these ends in view my invention consists in the construction hereinafter shown and described, and then recited in the claims.

In order that those skilled in the art to which my invention appertains may fully understand the construction and method of operation thereof, I will describe the same in detail, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is an elevation of a draw-span equipped with my invention; Fig. 2, a diagrammatic view showing the instruments, circuit, and connections.

Like numerals and letters denote the same parts in both the figures.

A is the draw-span, which, as is usual, is mounted upon wheels B, suitably journaled in bearings upon the abutment C.

1 is a series-wound motor mounted upon the draw-span and having its armature-shaft 2 connected through suitable gearing arranged to diminish the speed thereof, with a vertical shaft, 3, journaled on the span, upon whose lower end is mounted a pinion, 4. This pinion meshes with a circular rack, 5, secured upon the top of the abutment.

The means for supplying current to the motor consist of a cable, 6, having therein both the flow and return wires, which cable is passed from the shore-circuit under the chan-

nel and is brought up alongside the abutment on which the draw-span is mounted.

Upon the abutment and connected to the negative and positive wires of the cable, respectively, are a pair of vertical posts, 7 8, carrying upon their upper ends copper brushes 9 10, the one in a plane slightly higher than the other.

Secured around the circular support on which the draw-span is upheld and insulated therefrom are continuous copper strips or ribbons 11 12, and these strips are engaged by the brushes 9 10, which, as before stated, project upward from the abutment. From each of the two strips a conductor is extended upward to a box, 13, on the bridge-floor, containing a rheostat, 14, a reversing-switch, 15, and a double-pole switch, 16. Thence current is communicated to the motor, which by means of the rheostat may be supplied with current for greater or less speed, and which by the reversing-switch, whereby the polarity of the armature is changed, may be caused to run forward or backward to open or close the draw. The rotation of the motor-shaft through the gearing is communicated to the vertical shaft carrying the pinion, and this pinion by engaging the rack on the abutment swings the draw-span.

It will be observed that by the arrangement hereinbefore described the current is supplied to the motor in such manner that the draw-span may be turned in either direction or to any extent without any possibility of twisting or entangling the wires forming the circuit, since the connections through which current is obtained from the strips are all contained in and move with the span, their relative positions never changing. Furthermore, the switches and rheostat are all located at a point on the platform of the bridge, so that they are accessible to and under the control of the bridge-tender, who may by means of them properly direct the movements of the span.

The instruments are inclosed from the elements by means of a tight box, and the motor also is protected both by the bridge-floor above it and by a suitable house or box surrounding it.

I claim—

1. The combination, in an apparatus for electrically actuating draw-bridge spans, with a cable containing the circuit-wires and extended beneath the channel, of a pair of brushes connected to said cable and rigidly secured upon the abutment, a pair of continuous copper conductors secured upon and movable with the draw-span and engaged by said brushes, a motor connected to said conductors and geared to the driving-pinion, and suitable mechanism, as a rheostat and switches, interposed between the conductors on the span and the motor, whereby the speed and direction of rotation of the motor may be governed, substantially as set forth.

2. The combination, in an apparatus for electrically operating draw-bridge spans, with the abutment upon which said span is mounted and adapted to turn, of the shore-circuit ex-

tended beneath the channel and terminating in a pair of brushes affixed to the abutment, a pair of continuous metallic strips mounted upon and insulated from the draw-span base and engaged by said brushes, a motor secured in and moving with the draw-span, gearing arranged between the motor and the bridge-driving pinion-shaft, connections extending from the metallic strips to the motor, and suitable instruments for the control of said circuits located at a point accessible from the bridge-floor and interposed into the circuit between the motor and the metallic strips, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN M. ORFORD.

Witnesses:

S. H. HUBBARD,
M. C. HINCHCLIFFE.