(No Model.) 2 Sheets—Sheet 1.

W. WOOD.

TRAVELING CRANE.

No. 456,187. Patented July 21, 1891.

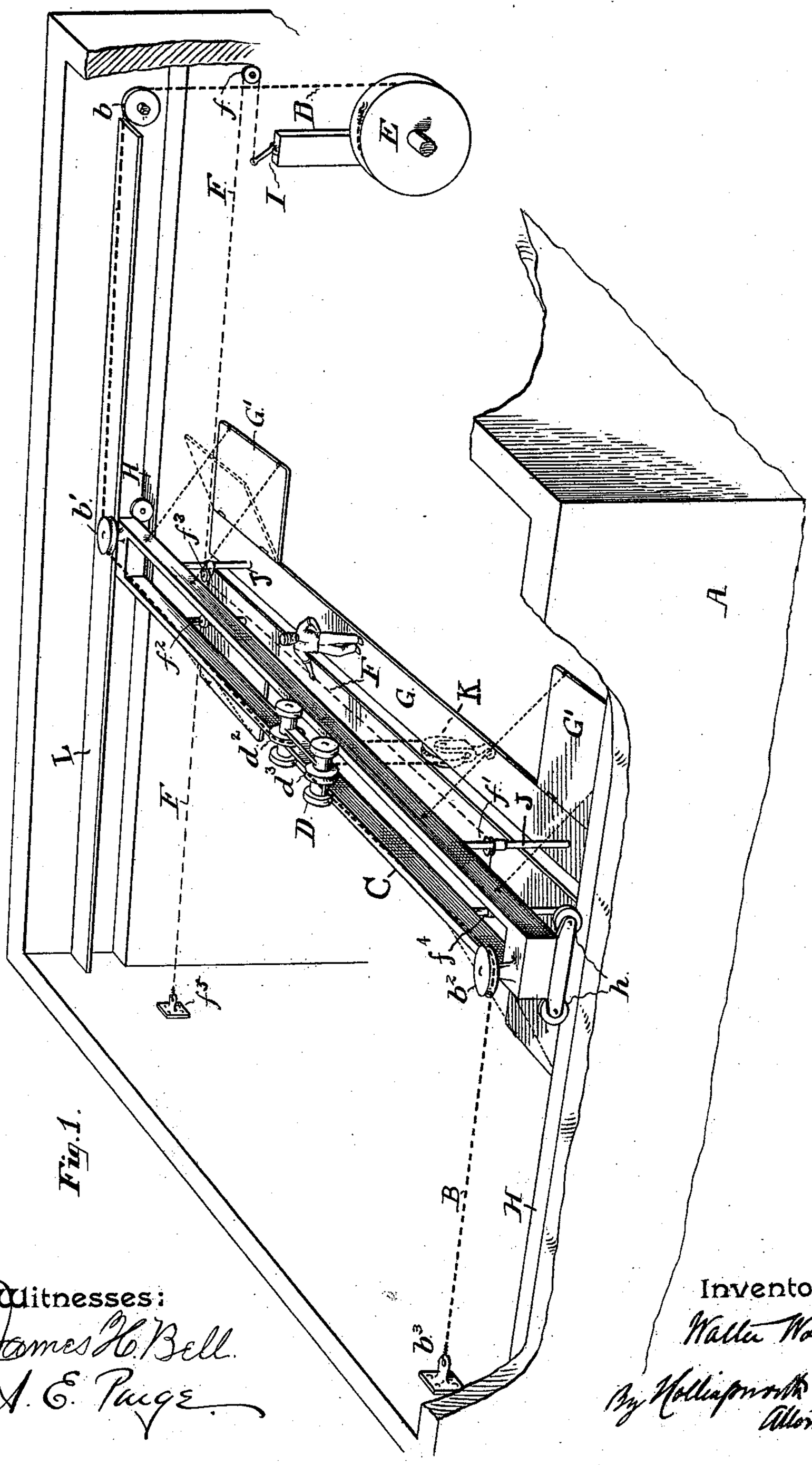

Fig. 1.

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(No Model.) 2 Sheets—Sheet 2.

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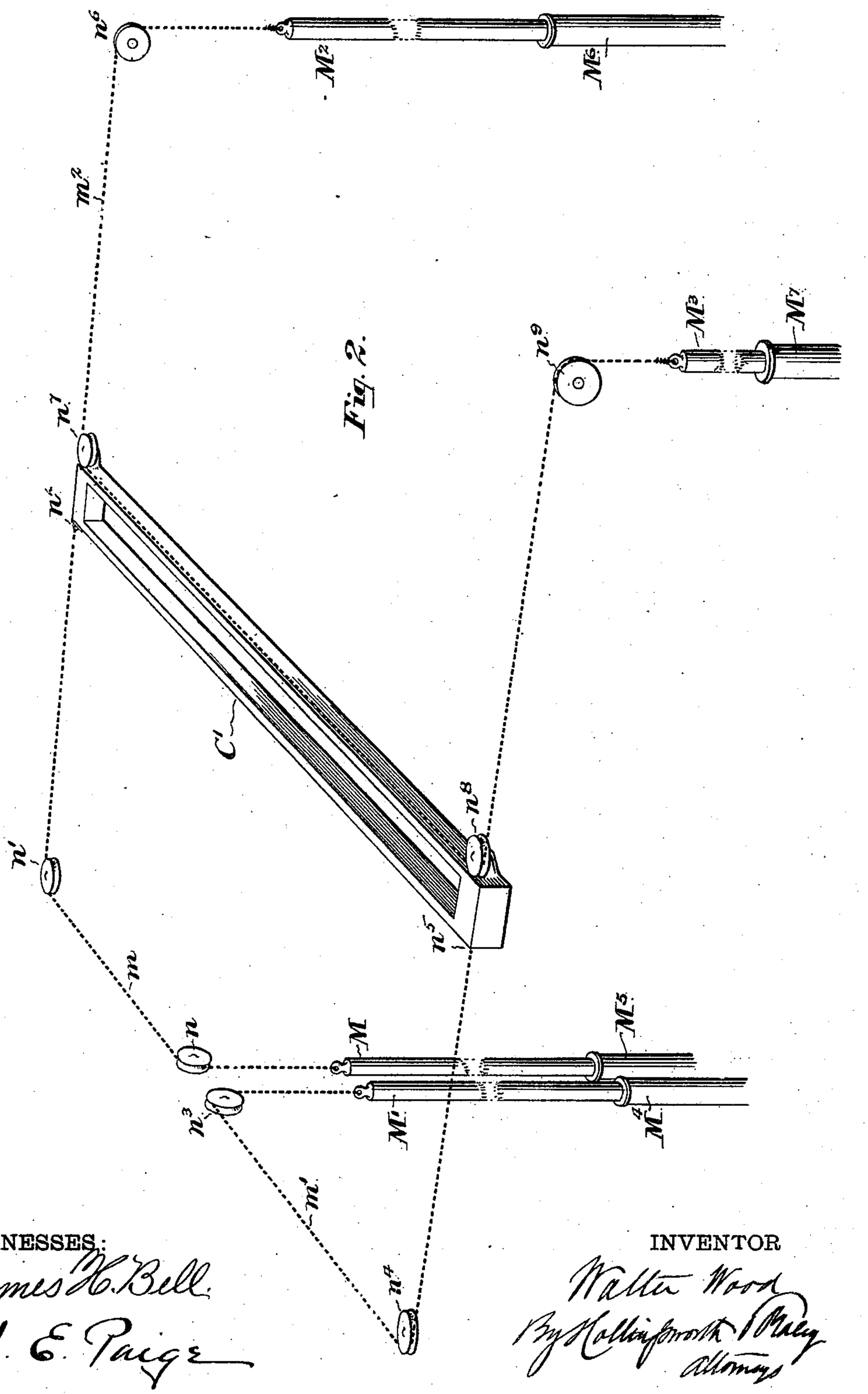

Fig. 2.

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WALTER WOOD, OF PHILADELPHIA, PENNSYLVANIA.

TRAVELING CRANE.

SPECIFICATION forming part of Letters Patent No. 456,187, dated July 21, 1891.

Application filed April 9, 1890. Serial No. 347,171. (No model.) Patented in France February 24, 1890, No. 203,951; in Belgium February 28, 1890, No. 89,668, and in England March 11, 1890, No. 3,817.

To all whom it may concern:

Be it known that I, WALTER WOOD, of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Traveling Cranes, (for which I have obtained Letters Patent of the Kingdom of Belgium, dated February 28, 1890, No. 89,668, and of the Republic of France, dated February 24, 1890, No. 203,951, and of the United Kingdom of Great Britain and Ireland, dated March 11, 1890, No. 3,817.) The following is a specification of my said improvements, reference being had to the accompanying drawings.

My invention relates particularly to the devices for actuating and controlling the bridge of the crane; and the features of improvement consist in combining with the bridge an actuating-rope arranged and actuated in a peculiar and novel manner.

In the accompanying drawings, Figure 1 represents a general view in perspective illustrating the construction of the bridge and its adjuncts, without, however, showing the system of ropes by which the movements of the bridge and the trolley are produced, and merely indicating a simple form of lifting-rope. Fig. 2 is a partial view of the bridge in perspective, illustrating at one end of the sheet one method of applying the actuating-chain thereto for moving it along its tracks, and at the other end of the sheet a variation of the arrangement.

Referring to Fig. 1, A indicates the wall of the building or other inclosure having suitable longitudinal ways H, upon which the rollers *h* of the bridge C run. The trolley D is arranged to travel along said bridge or transversely with the building. To avoid confusion, the actuating-ropes of the bridge and trolley, as well as the actuating mechanism, are omitted from this figure. By means of suitable rods J, or in any other convenient manner, I suspend from the bridge, and preferably upon each side thereof, a platform G, of such width as to afford room for the operator to stand upon and walk from one end of the bridge to the other, and I also prefer to add to said platform, at the end of the bridge, extensions G′, which may be hinged so as to fold up, as indicated at the right hand of the figure, when it is necessary for the crane to approach closely to either end of the building. To avoid confusion in said figure, I have merely shown a simple arrangement of the lifting-rope B, which arrangement I do not claim herein, and which therefore need not be described in detail. Said rope is connected at one end with the actuating mechanism, which in the present instance is indicated as merely a large drum E, but which of course may be of any known character.

Along each side of the building I arrange a supporting ledge or shelf L (either continuous or divided into fingers or brackets) in such relation to the actuating rope or ropes as to support them and prevent sagging.

Control over the actuating mechanism is effected by means of a cord or rope F, which, starting from its point of attachment to the valve I or other controlling member of the actuating devices, passes over the pulley *f* upon the wall of the building, and thence to a horizontal pulley f^3 upon the bridge. From this pulley it runs the length of the bridge and around a pair of pulleys f' f^4, and thence returning along the other side of the bridge to a pulley f^2, from whence it leads to an anchoring-point f^5 upon the wall of the building. Thus the cord F is unaffected by any change in the position of the bridge, but remains of constant length throughout the movements thereof and is always accessible to the operator from his position on the platform. The extension-wings G′ afford a convenient position for him to overlook the work from either side thereof, and as the cord F may be brought around the end of the building and along its other side before permanently anchoring the operator can control it from almost any point which he finds desirable.

In Fig. 1, as before stated, only the lifting-rope and its relation to the other parts are indicated, and consequently said figure shows but a single controlling-cord *f;* but it must of course be understood that the number of such controlling-cords should correspond with the number of actuating devices used.

Referring now to Fig. 2, the construction and mode of operation of the device for effecting the bridge movement will be described. Heretofore in cases where the bridge

has been directly shifted by means of ropes or cables actuated from a point independent thereof such ropes have heen conducted to a single actuating-point and there wound or coiled about a drum whose rotation in one direction or the other was intended to cause a corresponding movement of the bridge. Where, however, hydraulic actuating mechanism is employed it is most desirable that the thrust of the plungers should directly operate the bridge-ropes instead of conveying power thereto indirectly by rotating a drum. Furthermore, it is highly advantageous to provide a separate actuating device for effecting the bridge movement in each direction, and preferably to arrange the respective actuating devices at the opposite ends of the line. This system tends to preserve the alignment of the bridge better than where all the ropes are returned to a common drum or single motor, since it obviates the difficulties arising from differences of tension between the different ropes and the consequent unequal strains upon the bridge, which tend to cause irregular travel upon the ways. The actuating mechanism is in the present instance indicated by hydraulic cylinders M^4, M^5, M^6, and M^7, having plungers M', M, M^2, and M^3, respectively, to which the actuating-ropes are directly attached without the intervention of any drum. In the arrangement shown at the left-hand side of the sheet the rope passes from the plunger M over a pulley n and around a second pulley n' upon the wall of the building to a point of attachment n^2 at one end of the bridge C'. A second rope m' is directly attached to the other plunger M', and passes from thence over and around pulleys n^3 n^4, respectively, to a second point of attachment n^5 at the opposite end of the bridge.

At the right-hand end of the sheet in Fig. 2 is shown a slightly-modified arrangement of the bridge-actuating rope. In this instance the rope m^2 leads from the actuating-plunger M^2 over a pulley n^6 to and around a pulley n^7 on one end of the bridge, thence along the bridge around a pulley n^8 at the other end of the bridge, and thence over a pulley n^9 to the plunger M^3. I have found that by directly attaching each bridge-shifting rope to its own plunger more uniform strains are produced and a simpler mode of operation is possible than where the ropes are all returned to and carried around a common drum or grip-wheel for actuation in either direction. The plungers M, M', M^2, and M^3 are actuated by hydraulic pressure derived from any convenient source and (when my several improvements in their entirety are used) are controlled by means of cords arranged similarly to the cord F.

I disclaim the combination, with bridge ways or rails, of a bridge mounted upon said ways, two hydraulic motors connected with a common source of hydraulic pressure, and independent rope connections leading from said motors to said bridge and approaching said bridge in opposite directions; and I further disclaim the combination, with bridge ways or rails, of a bridge mounted upon said ways, two hydraulic motors, a source of hydraulic pressure, pipes leading from said sources of hydraulic pressure, respectively, to said motors, and flexible connections by which said motors are respectively connected to said bridge to occasion its travel in opposite directions, neither of the combinations thus disclaimed being of my invention.

Having thus described my improvements, I claim—

The combination, with the bridge mounted upon longitudinal ways and adapted to travel thereon, of a hydraulic cylinder arranged at a point independent of the bridge structure, a plunger for said cylinder, and a rope directly attached to said plunger and leading thence to one end of the ways, thence to and around a pulley attached to one end of the bridge, thence along the bridge to and around a pulley attached at the other end thereof, and thence returning to a point of attachment at the aforesaid end of the ways, substantially as set forth.

WALTER WOOD.

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