(No Model.) 4 Sheets—Sheet 1.

W. WOOD.

TRAVELING CRANE.

No. 433,157. Patented July 29, 1890.

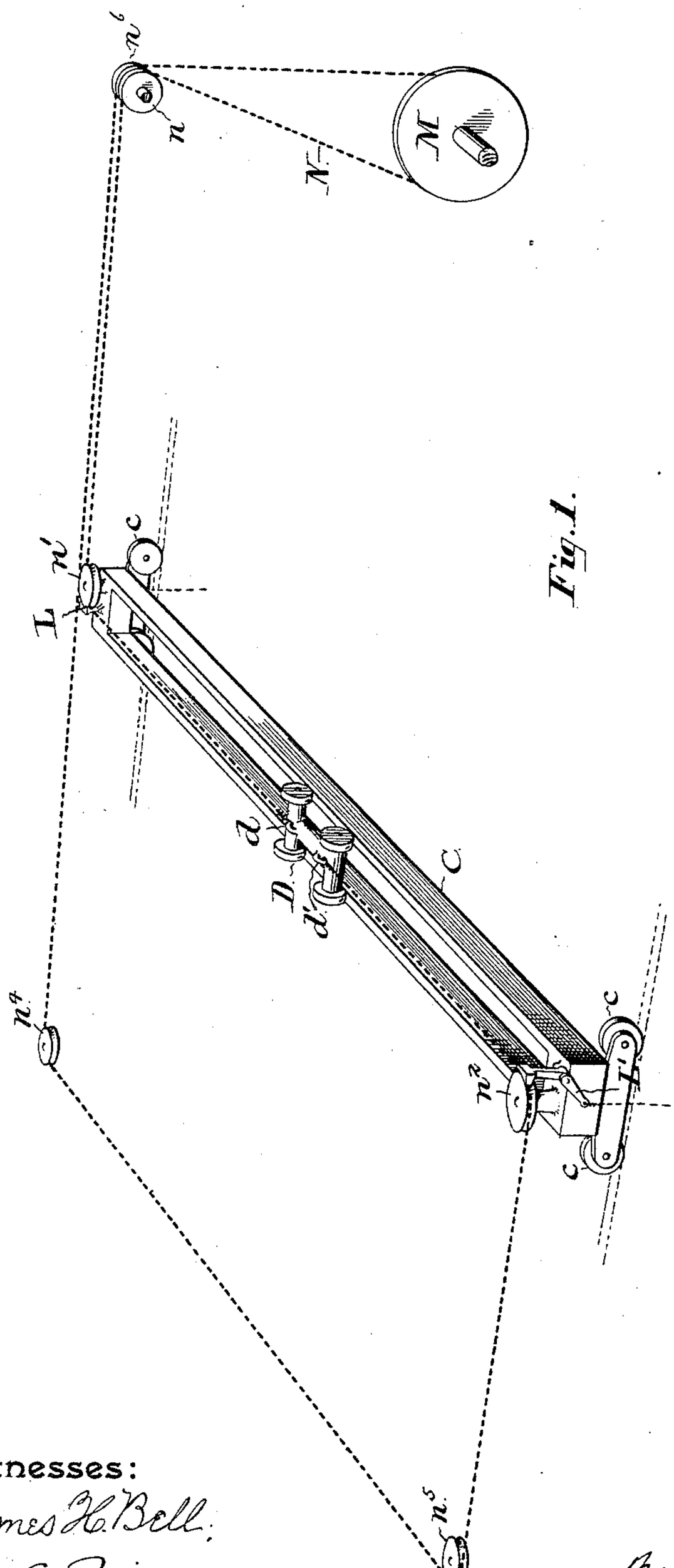

Fig. 1.

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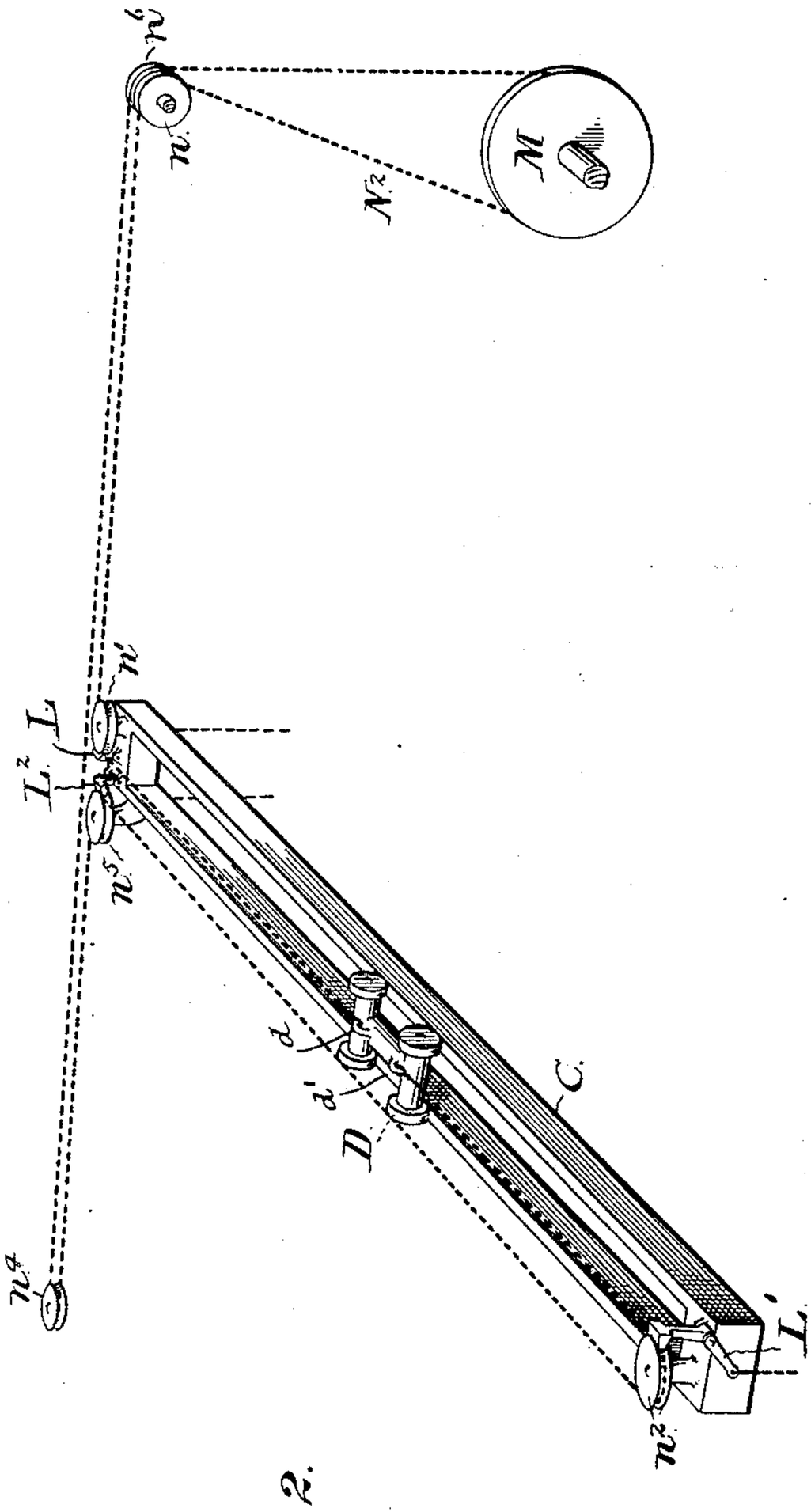

Fig. 2.

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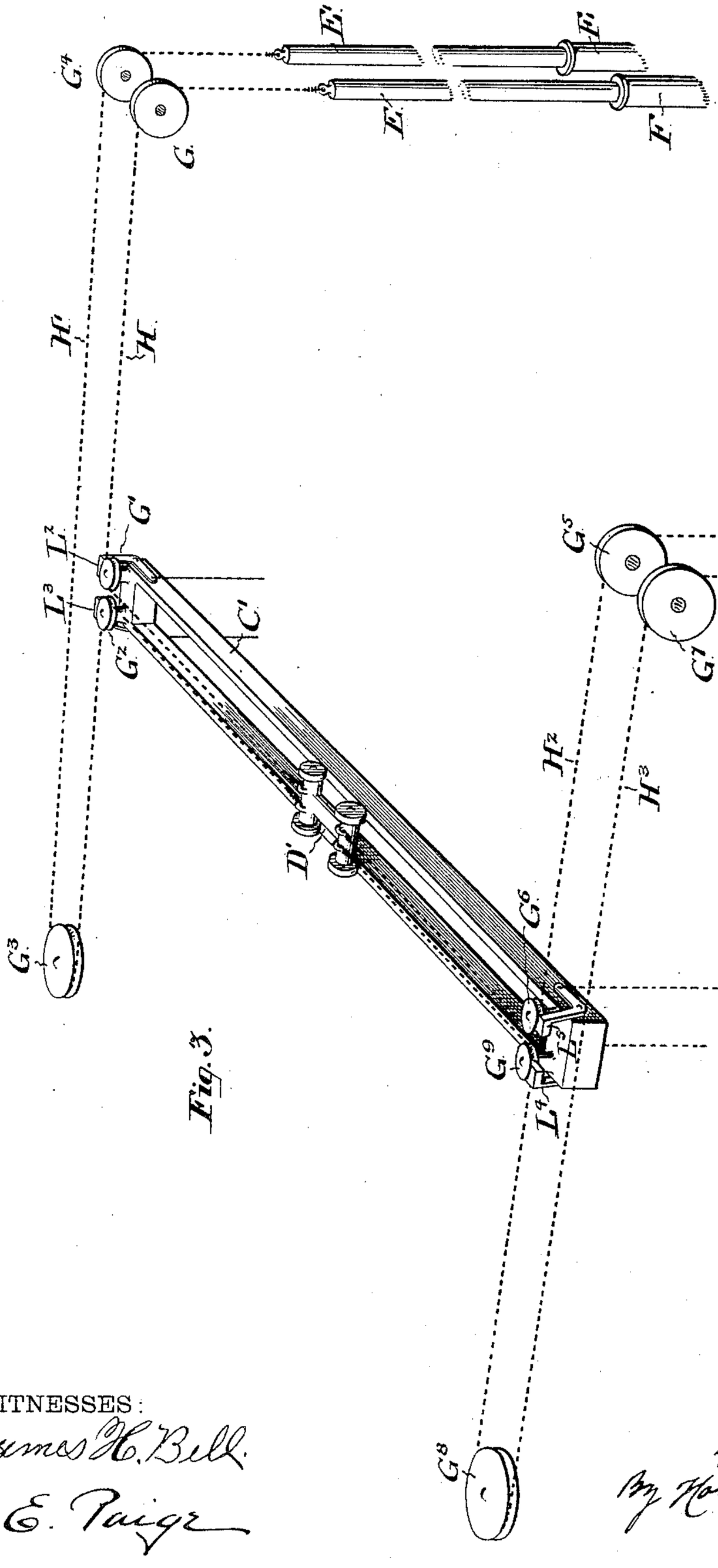

Fig. 3.

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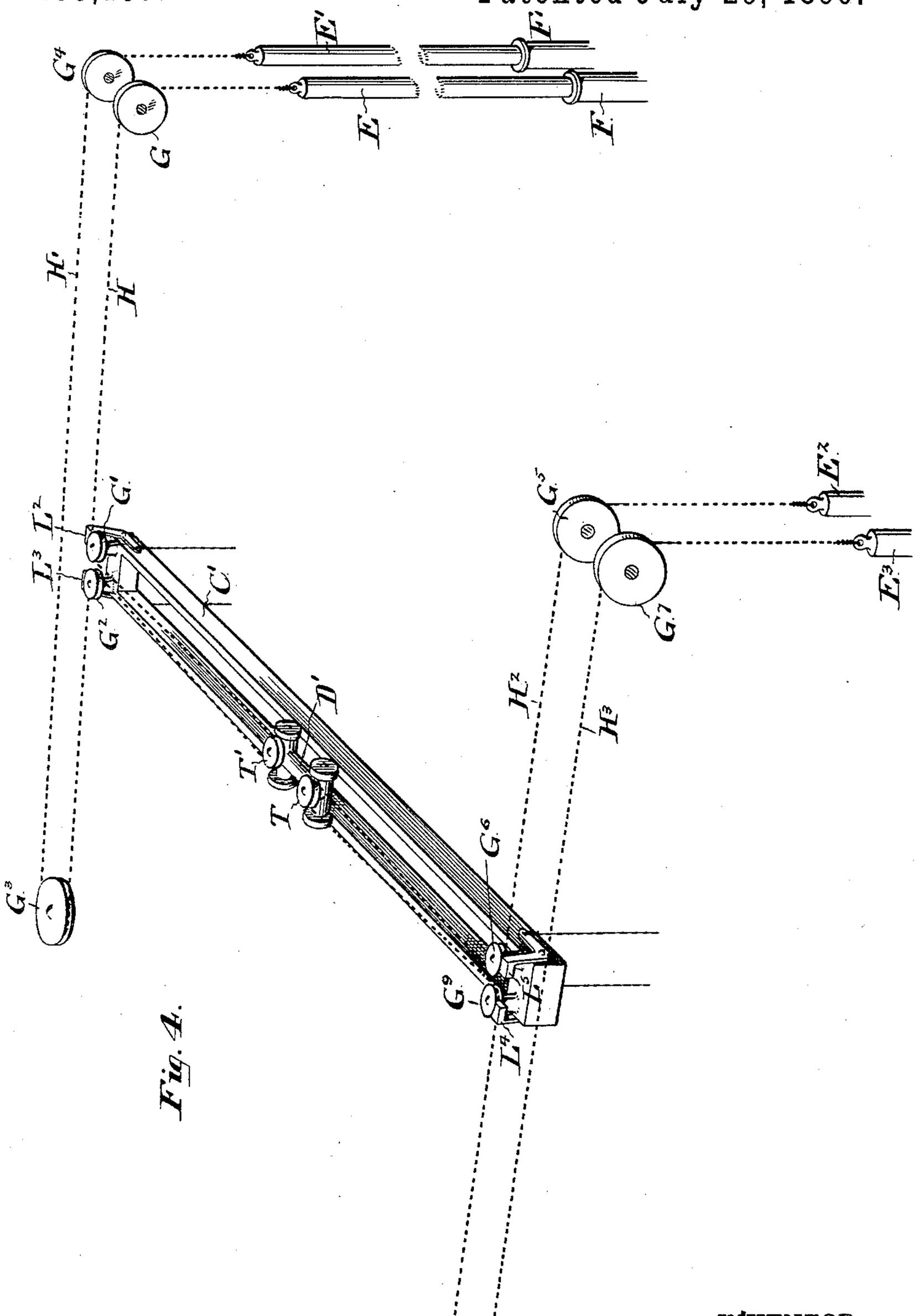

Fig. 4.

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UNITED STATES PATENT OFFICE.

WALTER WOOD, OF PHILADELPHIA, PENNSYLVANIA.

TRAVELING CRANE.

SPECIFICATION forming part of Letters Patent No. 433,157, dated July 29, 1890.

Application filed March 27, 1890. Serial No. 345,612. (No model.)

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, whereof the following is a specification, reference being had to the accompanying drawings.

For convenience of description the three essential movements of a traveling crane may be classified as follows: First, the bridge movement or travel of the crane as a whole along its ways; second, the trolley movement or travel of the trolley along the bridge, and, third, the lifting movement, whereby the fall-block or other device suspended beneath the trolley and carrying the weight may be raised or lowered.

My present invention has reference only to the production of the first two of these movements—viz., the bridge movement and the trolley movement; and it consists in the combination of a rope with the bridge and trolley in such a manner that the movement of either may be produced by the actuation of the same rope and from a point independent of the structure.

In the accompanying drawings, Figure 1 represents a partial view of the bridge and trolley of the traveling crane in perspective, showing a simple form of embodying the principles of my improvements. Fig. 2 represents a similar view, in perspective, of the same parts, showing another arrangement of the ropes. In both Figs. 1 and 2 the rope is represented as endless. Fig. 3 represents a partial view in perspective of another arrangement where two ropes are employed, neither of which is endless; and Fig. 4 represents another arrangement of two ropes similar to those of Fig. 3, but differently connected with the trolley.

I have omitted from said drawings any illustration of the ways upon which the bridge travels and of the lifting-rope which is combined with the trolley, since the construction and operation of these parts is well understood.

Referring now to Fig. 1, C represents the bridge provided with the usual rollers *c* for the travel thereof upon longitudinal ways. D represents the trolley provided with rollers for traversing the bridge from end to end thereof. The source of power is represented in this instance by a drum M, actuated in any convenient manner and preferably arranged at one end of the ways. A rope N is coiled upon said drum and passes thence (upon one side) over a pulley n, mounted at or near the commencement of the ways. Thence it leads to the bridge, where, after passing around a pulley n' at one end thereof, it is connected with the trolley at the point d. The rope passes from the other side of the drum M over a pulley n^6, arranged in proximity to the pulley n, and thence leads to the other end of the ways, where it passes around pulleys n^4 n^5, and thence returns to the end of the bridge opposite to that at which the other member of the rope entered. After passing around a pulley n^2 at said end of the bridge it leads to a point of attachment d' upon the trolley. The rope N is thus theoretically endless or continuous, the trolley constituting in effect one portion thereof; but, as will be seen hereinafter, the continuity of the rope either at the actuating-point or at the trolley is not essential. Either or both the pulleys n' n^2 upon the bridge may be provided with brakes L L', respectively, so arranged as to grip the rope or prevent its free movement at said points around the pulley. So long as said brakes are inactive the rope can run free upon all the pulleys of the system. It is obvious that rotation of the drum in one direction or the other would cause a corresponding travel of the trolley along the bridge from end to end thereof. If, however, the free motion of the rope be checked at the bridge by the application of the brakes L L', the trolley will remain stationary during actuation of the rope, since that portion of the rope which is between the points of application of the brakes becomes temporarily inoperative. In such case, however, the bridge itself will be shifted bodily in one direction or the other along its ways, according to the direction of movement of the drum M.

In Fig. 2 the rope, instead of leaving the bridge at the pulley n^2 and returning to the actuating mechanism around the walls of the building, passes back along the bridge and around a second horizontal pulley n^5 at the end where it first entered. Thence it passes to a pulley n^4 at the distant end of the ways and

returns directly to the initial point. The operation is, however, similar to that just described. While I have described the rope as single in each of these instances, it must be understood that I use that word with reference to the fact that the bridge and trolley movements are both produced from the same rope, and not necessarily as indicative of number. Thus without departing from the principles of operation the rope N might be duplicated upon the other side of the structure, leading from a separate drum or actuating device to the bridge, and after connection with the trolley leaving the bridge at the end thereof opposite to that at which the described rope enters and leaves. The effect of such duplication will of course be to more thoroughly balance the strain upon the bridge when the ropes are actuated for the purpose of causing the travel of the same.

In Fig. 3 I have shown another arrangement where two sets of ropes are employed, neither being endless. In this case the source of power is represented as a series of hydraulic cylinders, two of which F F′ are shown. From the plunger E of the cylinder F the rope H leads from a pulley G, arranged near the commencement of the ways, to one end of the bridge C′, where it passes around a pulley G′ and is attached to one end of the trolley D′. A second rope H′ leads from the plunger E′ of the cylinder F′ over a pulley G^4, arranged in proximity to the pulley G, and thence passes to the other end of the way upon that side, whence it returns around a pulley G^3 to a pulley G^2 to the same end of the bridge as that at which the first rope entered. Thence it passes to a fixed point of attachment upon the proximate end of the trolley D′. The pair of ropes upon the opposite sides are similarly arranged—that is to say, from the plunger E^2 (which cylinder is not shown) the rope H^2 passes over a pulley G^5 at the commencement of the ways to a pulley G^6 upon the end of the bridge, and thence to the proximate end of the trolley D′. The other rope H^3 leads from the plunger E^3 over a pulley G^7, arranged in proximity to the pulley G^5, thence passes around the pulley G^8 at the distant end of the ways, and returns to the end of the bridge, where it passes around the pulley G^9 and leads to a point of attachment on the proximate end of the trolley. The brakes L^2 L^3 control the movement of the rope at one end of the bridge, and the brakes L^4 L^5 control it in a similar manner at the other end thereof, said brakes being coupled or conjoined to separate uses, as may be desired. In this instance, the rope not being endless, the movements of the hydraulic plungers must be made in proper correspondence—that is to say, to shift the trolley, the plungers E E′ must be actuated in one direction and the plungers E^2 E^3 in the converse direction. To produce the movement of the bridge, the plungers E and E^2 must be actuated in the same direction and the plungers E′ E^3 in the converse direction, the brakes in this latter case being of course applied at the bridge-pulleys.

In Fig. 4 the arrangement is in all respects similar to that of Fig. 3, except that the ropes are not secured to the trolley by fixed points, but pass around pulleys T T′, arranged at opposite ends of the trolley. The object of this method of arrangement is to obviate the necessity of moving both plungers of the pair whose ropes lead to the one end of the trolley, since it is obvious that the free running of the ropes with the trolley-pulleys T T′ will permit the proper action thereof, although only one of the plungers upon that side be actuated, provided a corresponding but converse movement be effected by the plunger upon the opposite side of the apparatus.

Having thus described my invention, I claim—

In a traveling crane, the combination of a transverse bridge adapted to travel on longitudinal ways, a trolley mounted upon said bridge and adapted to travel along the same, an actuating-rope connected with each end of said trolley and leading therefrom on each side to the proximate end of the bridge, thence to the respective ends of the line, and thence to an actuating-point, pulleys for said rope arranged at opposite ends of the bridge, brake mechanism for one or more of said bridge-pulleys, and actuating mechanism for said rope arranged at a point independent of the structure, substantially as set forth.

WALTER WOOD.

Witnesses:
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