

(No Model.)

4 Sheets—Sheet 1.

T. W. CAPEN.
TRAVELING CRANE.

No. 278,775.

Patented June 5, 1883.

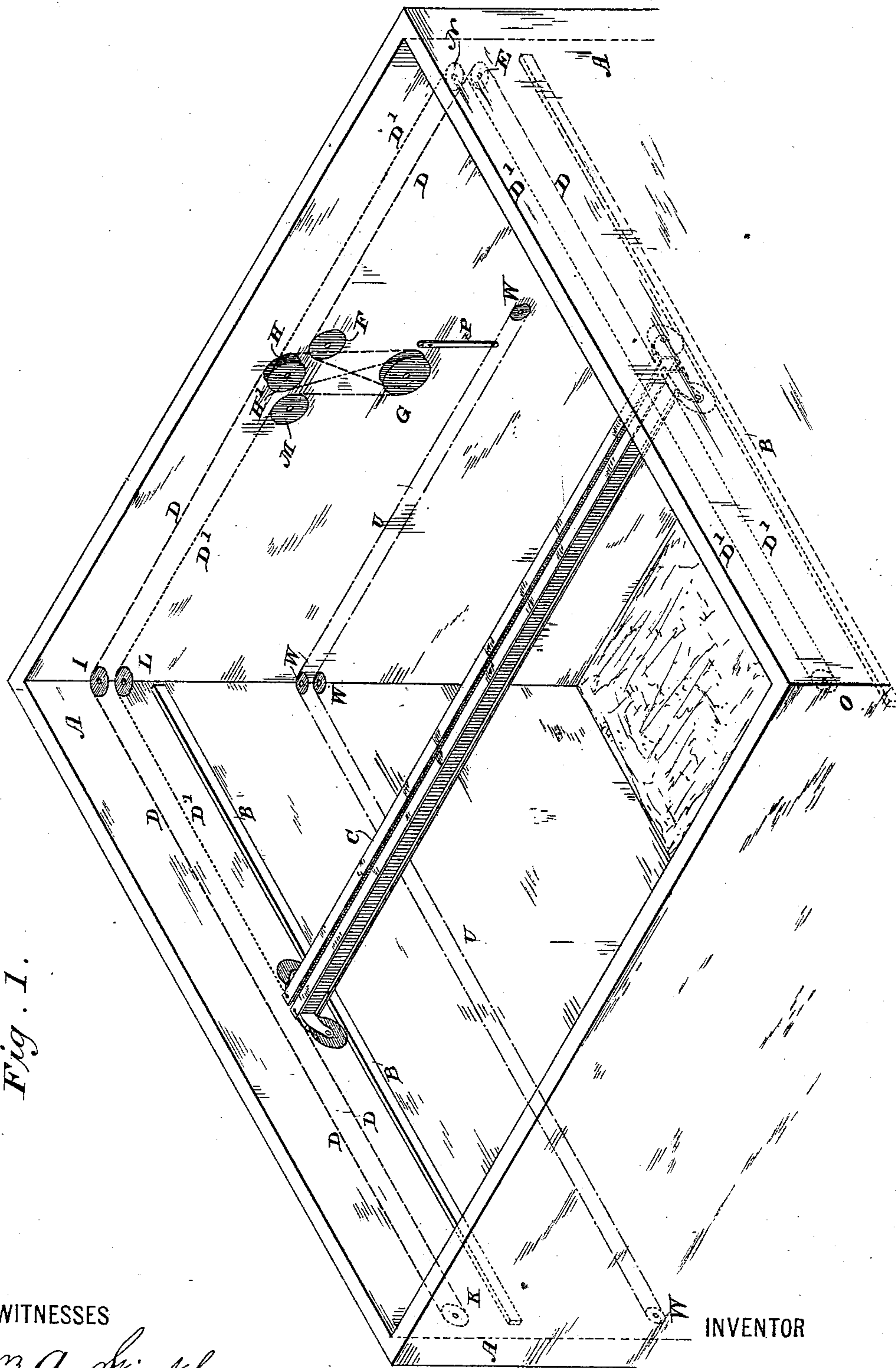


Fig. 1.

WITNESSES

Wm A. Skinkle.
Edwin A. Skuman.

INVENTOR

By *his Attorneys* *Thomas W. Capen*

Baldwin, Hopkins, Peyton

(No Model.)

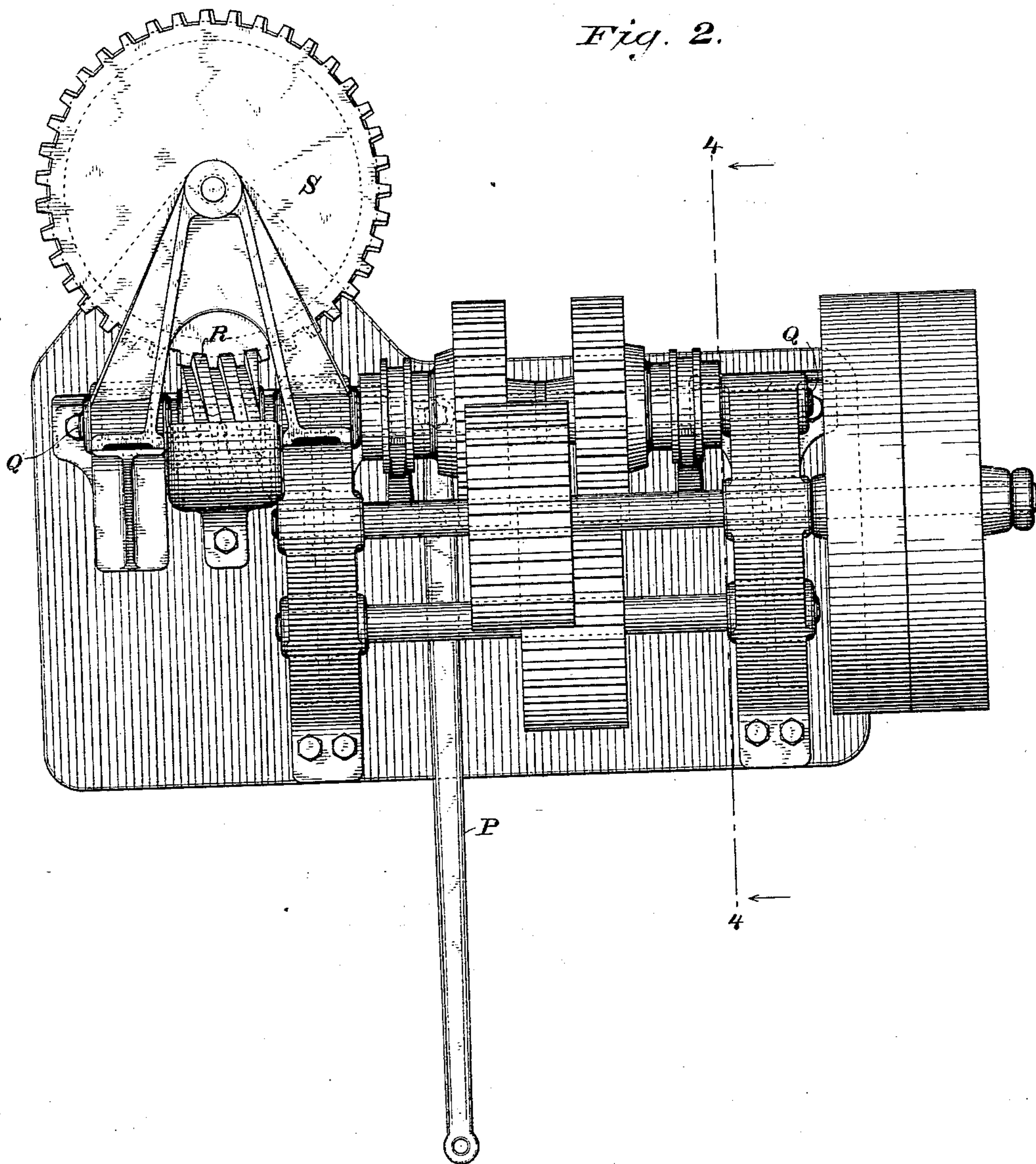
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Fig. 2.



WITNESSES

Wm A. Sinkle
Edwin A. Stuman

INVENTOR

Thomas W. Capen.

By his Attorneys

Baldwin, Hopkins & Peckham

(No Model.)

4 Sheets—Sheet 3.

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Fig. 3.

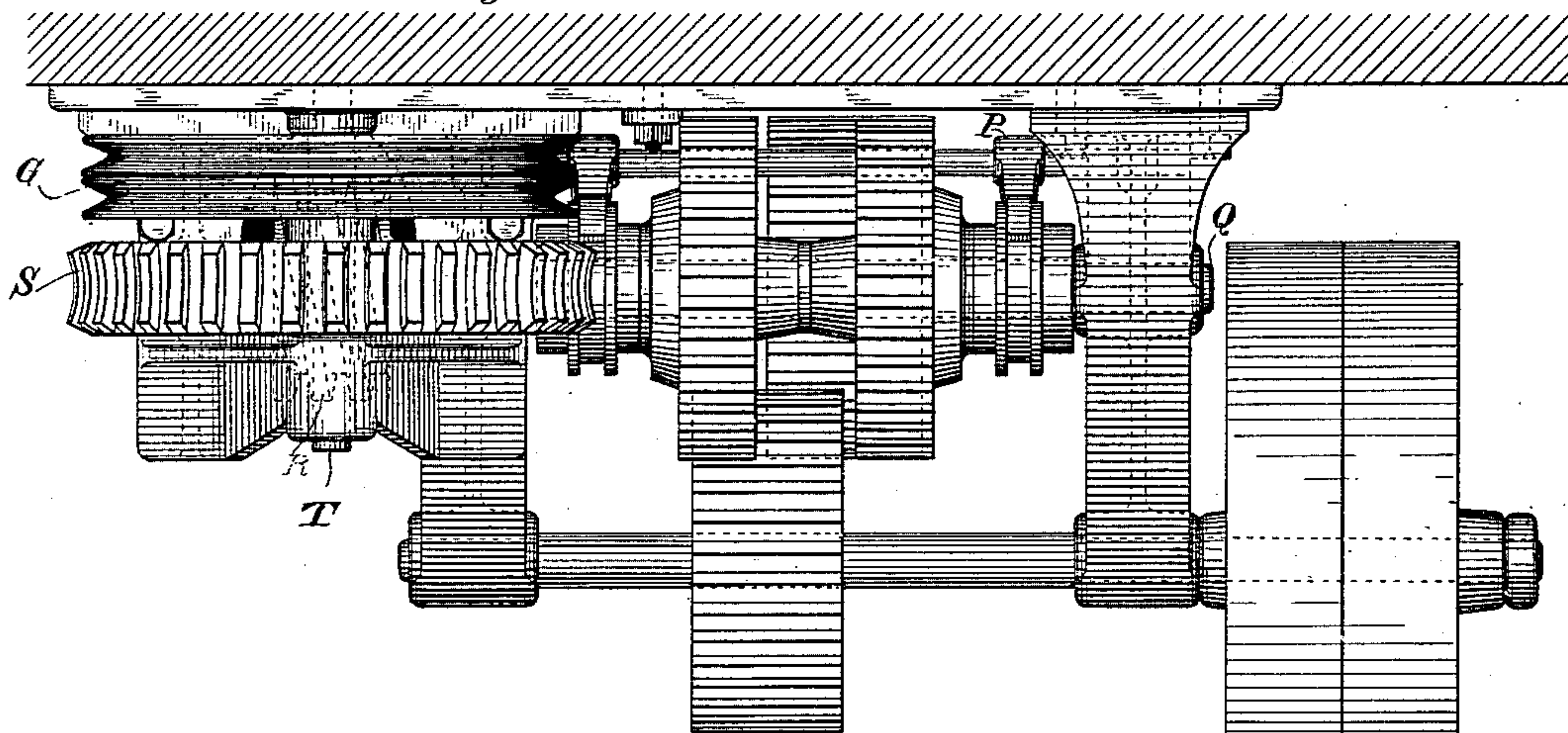
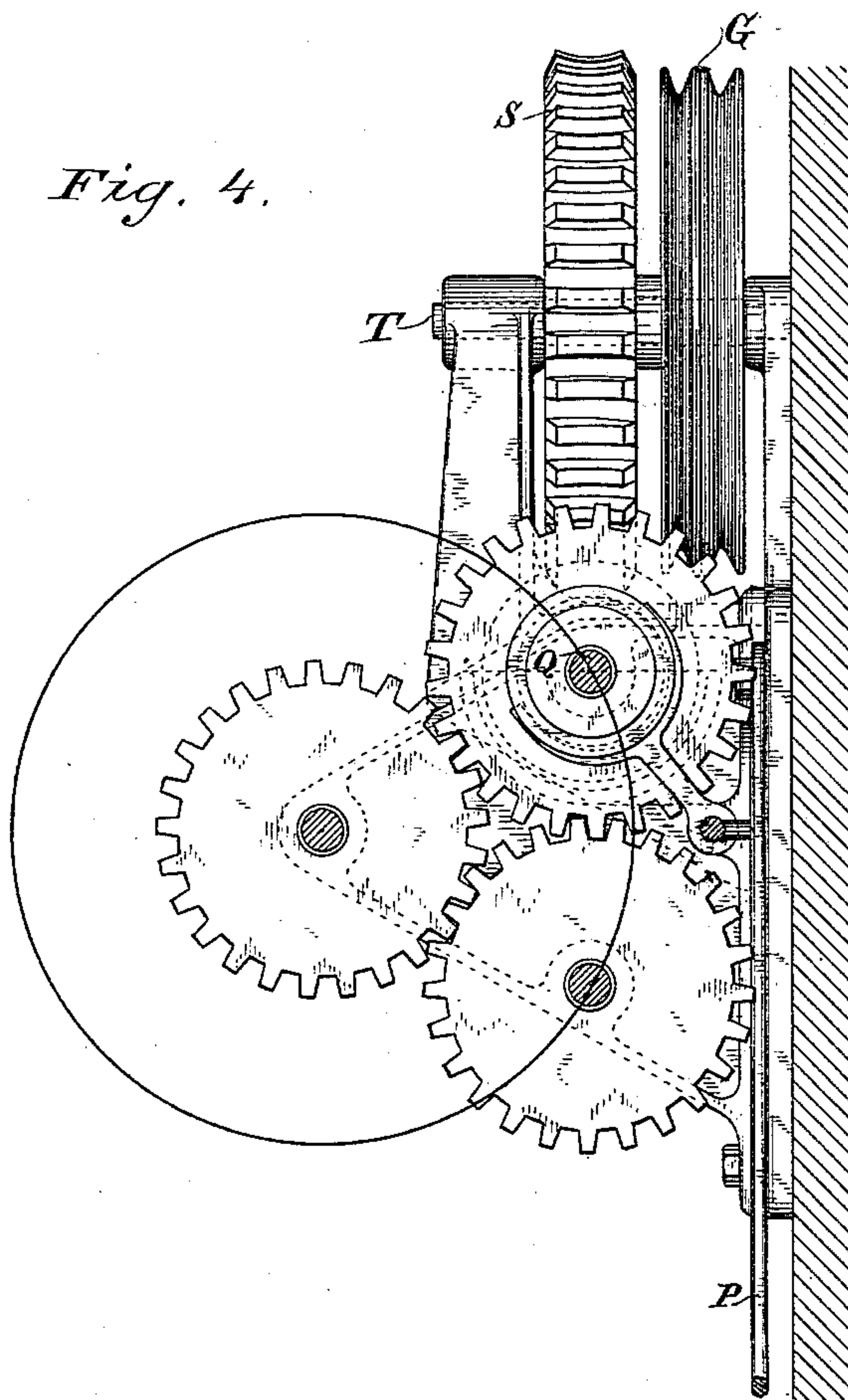


Fig. 4.



WITNESSES

Wm A. Sink
Edwin A. Newman,

INVENTOR

Thomas W. Capen

By *his Attorneys,*

Baldwin, Hopkins, & Peyton.

(No Model.)

4 Sheets—Sheet 4.

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Fig. 5.

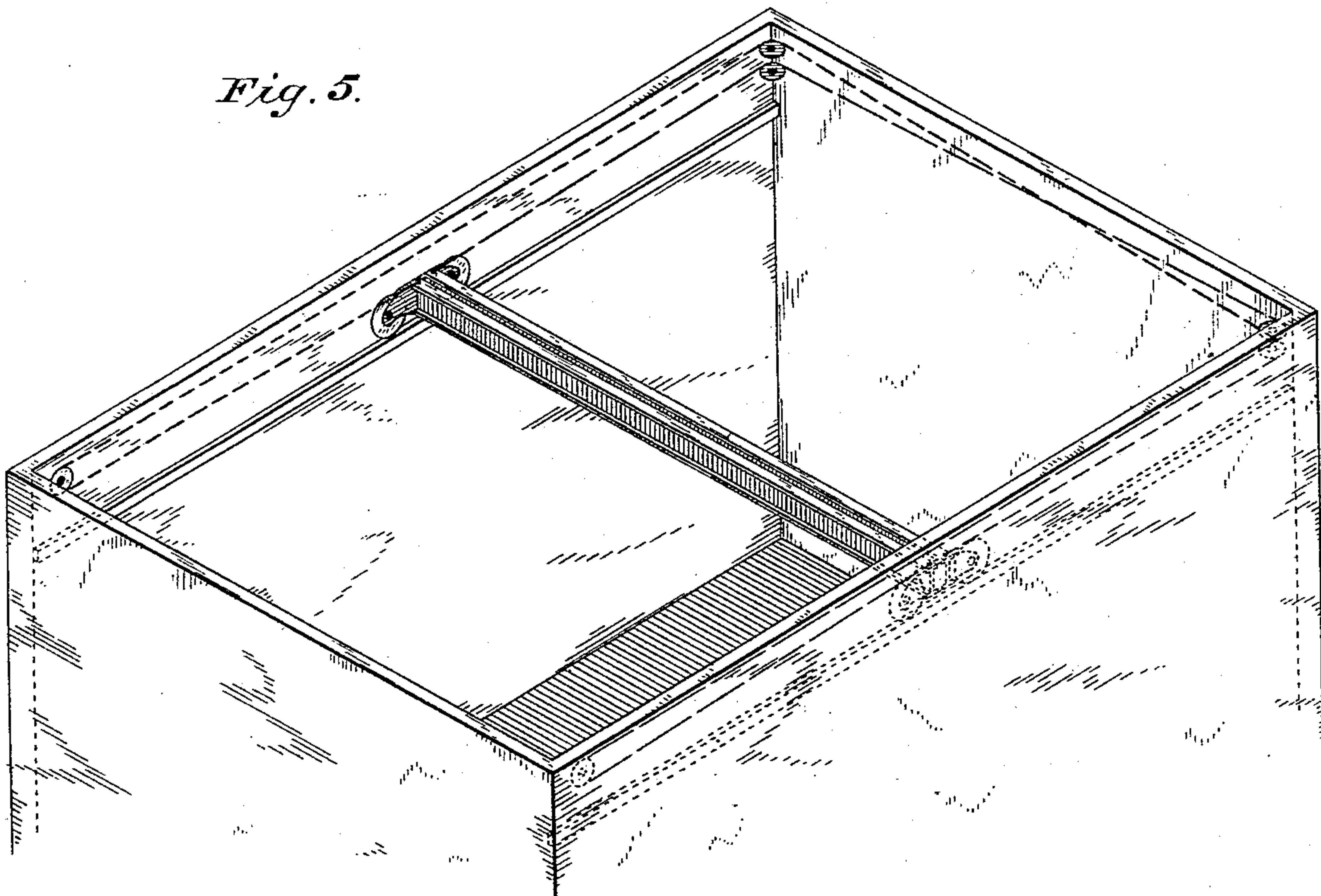
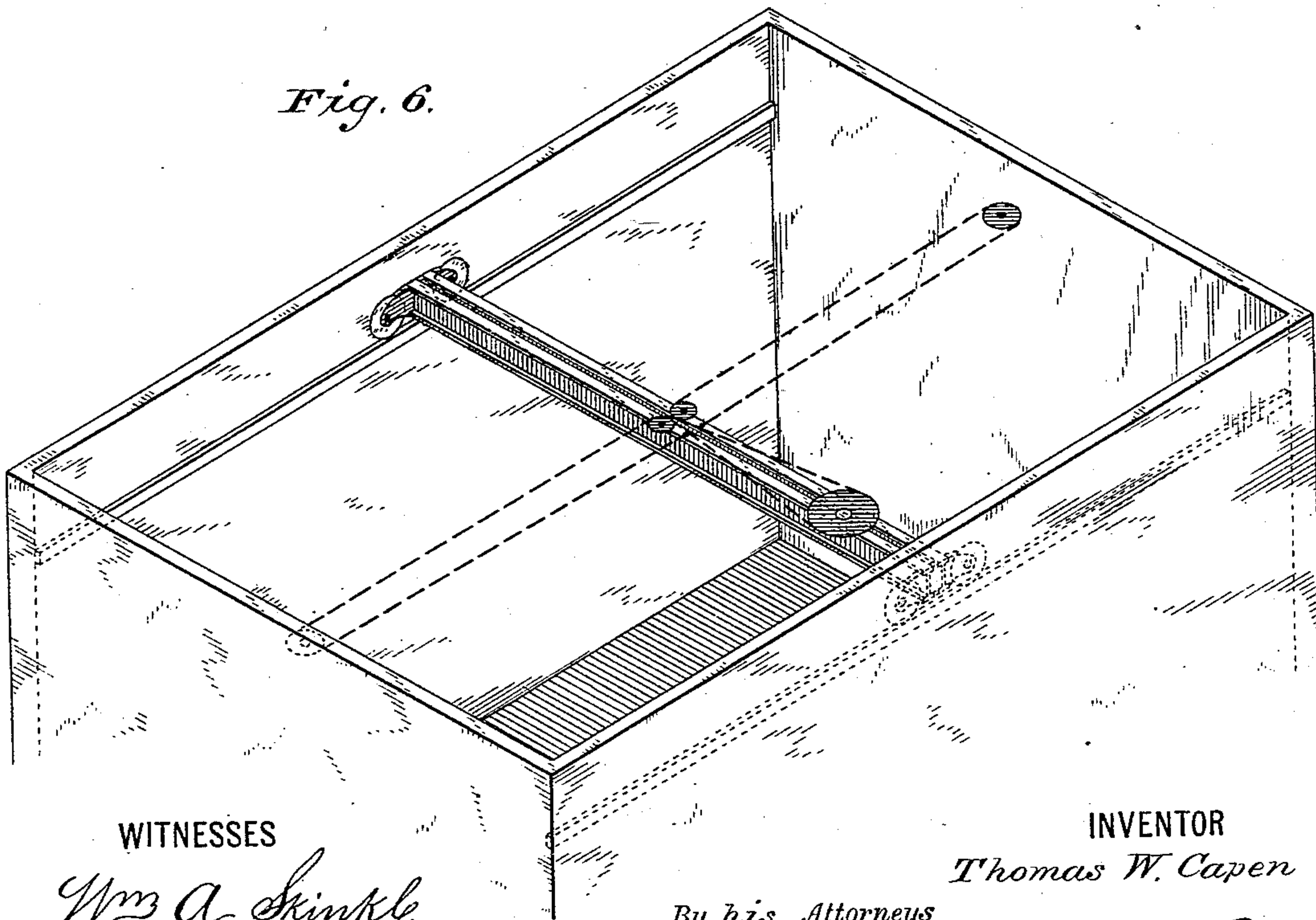


Fig. 6.



WITNESSES

Wm A. Skink
Edwin A. Newman,

INVENTOR

Thomas W. Capen

By his Attorneys

Baldwin, Hopkins, & Peyton.

UNITED STATES PATENT OFFICE.

THOMAS W. CAPEN, OF STAMFORD, CONNECTICUT, ASSIGNOR TO THE YALE & TOWNE MANUFACTURING COMPANY, OF SAME PLACE.

TRAVELING CRANE.

SPECIFICATION forming part of Letters Patent No. 278,775, dated June 5, 1883.

Application filed April 2, 1883. (No model.)

To all whom it may concern:

Be it known that I, THOMAS W. CAPEN, of Stamford, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Traveling Cranes, of which the following is a specification, reference being had to the accompanying drawings.

In traversing the bridges of traveling cranes upon their longitudinal tracks great difficulty has heretofore been experienced in causing the two ends of the bridge to start at the same time and to travel at equal speeds. Where one end of the bridge starts first or travels faster than the other the truck-wheels will not remain parallel with the longitudinal tracks, and hence cramp and give a jerky motion to the bridge. The object of my invention is to devise a mechanism which shall cause the two ends of the bridge to start at the same time and to travel smoothly and at equal speeds. This object has been perfectly accomplished by the device patented by T. A. Weston in Patent No. 198,718, dated December 25, 1877; but I accomplish the same result by different means, as will be hereinafter pointed out.

In the accompanying drawings, Figure 1 is a diagrammatical view illustrating the theory and mode of operation of my improvements without regard to the details of construction. It shows merely a perspective view of a proper building for containing a traveling crane with the roof removed so as to exhibit the bridge upon its tracks, and the cables and their sheaves for moving the bridge back and forth. It also shows a hand-lever connected with an endless cord for throwing the grip-wheels which operate the bridge-cables into and out of gear. Fig. 2 is a side elevation of suitable driving mechanism, or so much thereof as it is necessary to illustrate. Fig. 3 is a plan view of the same; and Fig. 4 is an elevation, partly in section, on the line 4 4 of Fig. 2. Figs. 5 and 6 are diagrammatic views showing particular applications of my improvements by way of illustrating their utility.

Referring to Fig. 1, A indicates a suitable frame of a building, shed, or the like for supporting the tracks B B of a traveling crane. C indicates the bridge running upon these tracks. D and D' represent cables, the cable D being indicated by elongated dots or bars,

and the cable D' being indicated simply by dots. Tracing the course of cable D, it will be noted that it begins on the right-hand end of the bridge, where it is securely attached, thence passes around sheave E, thence along the upper end of the frame over sheave F, thence down and around one part of the double grip-wheel G, thence up over the sheave H, thence on around sheave I, thence along the left-hand side of the frame around sheave K, thence back to the opposite end of the bridge, where it is again securely attached. Tracing the course of cable D', it will be noted that it begins on the left-hand end of the bridge, where it is securely attached, thence passes around sheave L, thence along the upper end of the frame over the sheave M, thence down and around the other part of the grip-wheel G, thence over the sheave H', thence on around sheave N, thence along the right-hand side of the frame around sheave O, thence back to the opposite end of the bridge, where again it is securely attached.

It will be noted that one of the cables, in this instance cable D, crosses itself between the grip-wheel G and the sheaves F and H. The object of this is that the grip-wheels may be combined in one, and both parts always revolve together in either direction, so that the pull upon the cables will be in the proper direction simultaneously to draw the opposite ends of the bridge in either direction required.

It will also be noted that with this construction, when the cables D and D' are taut, as they should be in practice, it will be impossible to pull one end of the bridge in either direction without simultaneously and with the same force and speed pulling the other end in the same direction.

It is not necessary that both cables should pass over grip-wheels, because, if one only passes over a grip-wheel, a pull on that cable will be transmitted through the end of the bridge, and, through the other cable, around to the other end of the bridge, so that the pull on both ends of the bridge will be simultaneous and equal. One grip-wheel, therefore, may be omitted without departing from my invention.

The principle of my invention is capable of several formal modifications. For example,

I might employ two cables, one end of each being secured to one side of the bridge at one end thereof, thence passing around a guide-sheave at one end of the building, thence back again over a grip-wheel, and thence returning and being attached to the opposite side of the same end of the bridge. With such a construction it is evident that if both grip-wheels are simultaneously revolved in either direction at equal speeds the bridge will be pulled in one direction or the other, as desired.

It is obvious that any convenient means of turning the grip-wheels may be employed, and they might be connected with a shaft revolved by suitable mechanism.

In cases of short spans, or where the trucks have a considerable wheel-base, I may use the simplest form of my invention, which would consist of a single cable fastened at the center of the bridge and passing over a grip-wheel at one end of the building and a guide-sheave at the other. It is obvious that a revolution of this grip-wheel in one direction or the other would pull the bridge as desired.

Any suitable reversing mechanism might be employed, but substantially that shown in my United States Patent No. 237,675, granted February 15, 1881, is well adapted for the purpose.

In Figs. 2, 3, and 4 I have illustrated such a mechanism in substance, which is adapted, by the operation of the shipping-lever P, to give the worm-shaft Q and worm R motion in opposite directions at will, or to maintain them at rest when the shipping-lever is in the perpendicular or neutral position. I need not describe the details of reversing mechanism illustrated in Figs. 2, 3, and 4, because they are sufficiently set forth in my patent above mentioned, and also are, in substance, well illustrated and described in my United States Patent No. 270,386, granted January 6, 1883.

It will be perfectly understood by those skilled in the art that I can readily reverse the direction of rotation of the worm-wheel S and the double grip-wheel G, which are fixed to the same shaft, T.

In Fig. 1 the shipping-lever P is shown attached to an endless cord, U, passing around suitable sheaves W, and extending to all parts of the building where it may be convenient for the operator to be to operate the lever for starting, stopping, or reversing the motion of the grip-wheels, cables, and bridge. This cord might be extended through the cage underneath the bridge, so that all the operations of the crane could be accomplished from the cage in substantially the same manner as is set forth in my said Patent No. 270,386.

It will thus be seen that the fundamental difference between the device patented by T. A. Weston, as above set forth, and the device above described is that Weston uses fixed cables upon which the bridge is pulled along, whereas I use moving cables which pull the bridge along.

It will be observed, also, that my device

may be used simply for the purpose of squaring the two ends of the bridge with the longitudinal tracks, or, in other words, of causing the bridge to move in a direction parallel to its longitudinal tracks, irrespective of the method used to propel the bridge—that is, if to any of the ordinary defective methods of propulsion now in use should be added the ropes or cables as shown in my device, but without any grip-wheels, it would be impossible to move the bridge in either direction without my device causing the two ends of the bridge to move at the same time and at equal speed, in consequence of the squaring operation of my device, as above set forth.

It may be noted, further, that instead of two ropes, as shown in the drawings, a continuous rope may be used, provided it is made fast at both ends of the bridge.

Having thus described my invention, what I claim to be new, and desire to secure by Letters Patent of the United States, is—

1. The combination of a bridge of a traveling crane with a moving rope or cable suitably connected with such bridge and passing over a grip-wheel, so that when the grip-wheel is revolved in either direction the bridge will be pulled one way or the other, as desired.

2. The combination of the bridge of a traveling crane with two ropes or cables, either one or both of said cables passing over a grip wheel or wheels, and so led to and connected with said bridge that a revolution of the grip wheel or wheels will cause the ropes to pull the two ends of the bridge in the same direction at the same time and at the same speed, substantially as described.

3. The combination of the bridge of a traveling crane with a cable or cables for pulling said bridge, a grip wheel or wheels, and reversing mechanism for causing the grip wheel or wheels to revolve in one direction or the other, substantially as described.

4. The combination, with mechanism for operating the driving-cables of a traveling crane, of a shipping-lever and an endless cord, so arranged that the lever may be operated from any desired point in the building where the crane is situated, substantially as described.

5. The combination of the bridge of a traveling crane with a rope or ropes so led to and connected with said bridge that however said bridge may be propelled the action of the rope or ropes will cause the two ends of the bridge to move at the same time in the same direction and at the same speed, substantially as described.

In testimony whereof I have hereunto subscribed my name this 16th day of March, A. D. 1883.

THOS. WELLS CAPEN.

Witnesses:

SCHUYLER MERRITT,
GEO. E. WHITE.