(No Model.)

A. E. BROWN.

MEANS FOR TRANSLATING POWER AND MOTION OF DRIVE SHAFTS.

No. 428,886. Patented May 27, 1890.

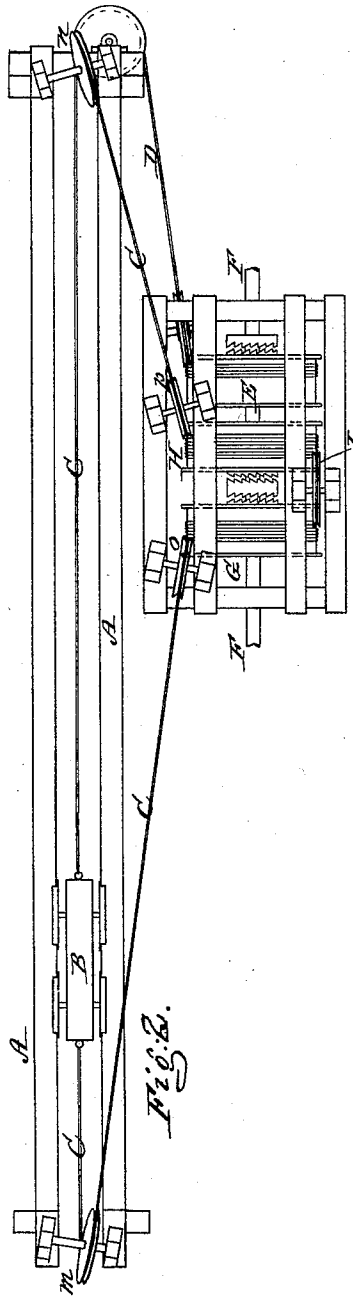


Fig. 2.

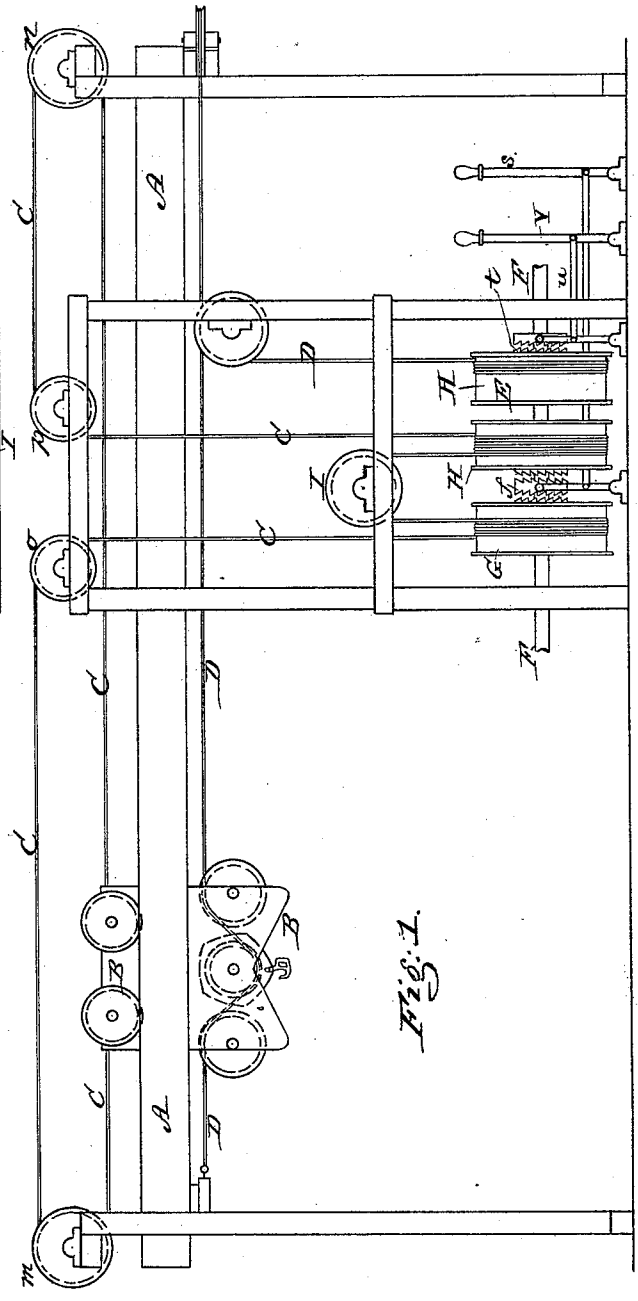


Fig. 1.

Witnesses
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ALEXANDER E. BROWN, OF CLEVELAND, OHIO.

MEANS FOR TRANSLATING POWER AND MOTION OF DRIVE-SHAFTS.

SPECIFICATION forming part of Letters Patent No. 428,886, dated May 27, 1890.

Application filed March 10, 1890. Serial No. 343,239. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER E. BROWN, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a Novel Means for Translating the Power and Motion of a Drive-Shaft; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the the accompanying drawings, forming part of this specification.

In hoisting and conveying machinery, as well as in other mechanical contrivances or machines, it is frequently very desirable that some simple and efficient means be provided by which from a single drive-shaft, while rotated in one direction, power and motion may be transmitted through suitable pulleys and bands (or other devices for the transmission of power and motion) to drive the parts or mechanism to be operated in either one of two directions. This is especially desirable in that class of contrivances, for instance, designated as hoisting and conveying machines, in which from the same motor or engine it may be desired to impart power and motion continuously in one direction to a hoist-rope, for instance, while at the same time the power and motion can be transmitted in first one direction and then the other to cause the travel or traverse of the trolley or carriage of the hoisting and conveying machine in opposite directions. I have devised mechanism or means by which this desirable end can be accomplished in an exceedingly simple and efficient manner and through the use of a single drive-shaft, receiving its power and motion in any approved manner from the engine or other motor, and rotated always in the same direction.

To enable those skilled in the art to make and use my invention, either in the form in which I have so far successfully practiced it, or under any of the various modifications under which my improvement may be carried into effect, I will now proceed to more fully describe the said invention, referring by letter to the accompanying drawings, which form part of this specification, and in which I have shown my invention applied to a hoisting and conveying machine of a familiar type and made substantially according to inventions and improvements of my own, embodying what is known in the market as the "Brown" hoisting and conveying machine.

In the accompanying drawings, Figure 1 is a partial side view or elevation of a hoisting and conveying machine embracing my present improvement, and Fig. 2 is a top view of the same.

In both views the same parts will be found designated by the same letters of reference.

A is the tramway; B, the trolley or carriage; C, the cable for traversing the carriage back and forth on the tramway, and D the hoist rope or cable of the machine, all arranged and operating substantially as shown and after the fashion well-known to those skilled in the art.

The hoist-rope D is wound upon a drum E in about the usual manner, which drum is mounted on the main drive-shaft F and may be loose thereon, as such drums frequently are, in which case, as is usual, engagement with and disengagement from the drive-shaft F is effected at pleasure by means of an ordinary clutch mechanism—such as seen at *t*—operated through the medium of a link-bar *u* and hand-lever V in the customary manner. On this same shaft are loosely mounted two pulleys or drums G and H, around each of which the traversing-rope or cable C of the trolley makes two or three turns, and by each of which the said cable is caused to travel in one or another direction in a manner which I will now explain. As will be readily seen by reference to the drawings, this traversing cable C, which is of course in the form of an endless band, except that the trolley B forms a connecting-link between its two ends, passes partially around the pulleys or rope-wheels *m n* at either end of the tramway, and thence passes with about a quarter-turn around each one of the idlers or pulleys *o p*, from which the two runs or strands of the cable descend to and after having made, preferably, about three turns around each one of the loose drums or pulleys G and H, pass in the form of a loop around the idler I, by which the circuit of the endless traversing cable or band is thus completed.

As before remarked, each one of the drums G and H is mounted loosely on the drive-shaft F; but intermediately of these drums is arranged any suitable form of clutch—such, for instance, as seen at *f*—provided with a suitable handle or shipper-bar *s*, which clutch is adapted to slide in either direction on the shaft F, to which it is splined, for the purpose of effecting an engagement between itself and either one or the other, as occasion may require, of the loosely-mounted drums G and H.

Now it will be readily understood that if, for instance, while the shaft F is revolving in a given direction—say, for instance, the proper direction to wind up the hoist-rope D on the drum E—the said shaft be clutched to the loose drum G, said drum will become the driver of the traversing cable or practically endless band C and will operate to drive said band in one direction, the loose drum H in the meantime, as well as the wheels I, *o*, *p*, *m*, and *n*, all acting merely as idlers driven by the cable. If, on the other hand, the shipper-bar or handle *s* of the clutch *f* be now moved so as to unclutch the drum or pulley G from the shaft F and bring the pulley or drum H into engagement with the shaft F, then, although said shaft continues to revolve in the same direction and the drum H is rotated in the same direction in which the drum G was previously rotated, the cable C, which will now be driven by the drum H, will of course be caused to travel in precisely an opposite direction to that in which it was moved when driven by the drum G, which latter, together with the other idlers of the system, now turns simply in obedience to the influence of the cable, instead of acting, as before, to drive the cable. In this manner, it will be seen, by simply shifting the clutch *f* so as to bring either one or the other of the drums G and H into clutch with the shaft F the traversing cable C will be caused to move the carriage or trolley B in either one or the other direction on the tramway, as occasion may require, while at the same time the shaft F may rotate in only one direction. Of course the same results may be effected under the variable condition necessary when the shaft rotates in an opposite direction to that first assumed for the purpose of lowering or letting out the hoist-rope D, instead of winding it up on the drum E.

I have shown an ordinary form of clutch at *f*, which of course may be set or adjusted out of engagement with both of the drums G and H, so that the hoisting-rope may be operated in either direction without having the shaft F impart any motion through the medium of these drums to the traversing cable.

It will be readily understood by any person skilled in the art that in lieu of the precise arrangement of driving-drums G and H and the cable C the principle of construction and mode of operation of my improved contrivance may be carried into effect by the use of a driving-shaft provided with suitable sprocket-wheels, over which may be passed a substantially endless belt or drive-chain running over suitable idlers properly arranged and operating to move in either one or the other direction any other carriage or device than the trolley of a hoisting and conveying machine, while the main drive-shaft of said sprocket-wheels may rotate always in one direction for the purpose of driving some other device the direction of motion of which does not require to be changed at the same time that that of the drive-chain has to be reversed.

Of course various changes may be made in the precise construction and arrangement together of the devices or parts going to make up the improved mechanism which I have shown and described without changing its novel principle of action, in which rests the pith of my invention.

Having now so fully explained my novel machine or contrivance that those skilled in the art may practice my invention either in the precise form of machine shown or under some modification thereof, what I claim as new, and desire to secure by Letters Patent, is—

The combination, with a drive-shaft adapted to rotate for any necessary purpose in a given direction at a given time, of a series of loose driving drums or wheels adapted to be separately clutched to said shaft, as occasion may require, and any suitable cable or drive-belt arranged in engagement with both drums, but actuated always by that one of the drums which may be thrown into engagement with the shaft, whereby I am enabled to effect the transmission of power and motion through the medium of such drive cable or belt in either one of two directions, while the said drive-shaft rotates in a given direction, all substantially as and for the purposes hereinbefore set forth.

In witness whereof I have hereunto set my hand this 18th day of January, 1890.

ALEX. E BROWN.

In presence of—

CHAS. W. KELLY,

C. B. KRAUSE.