

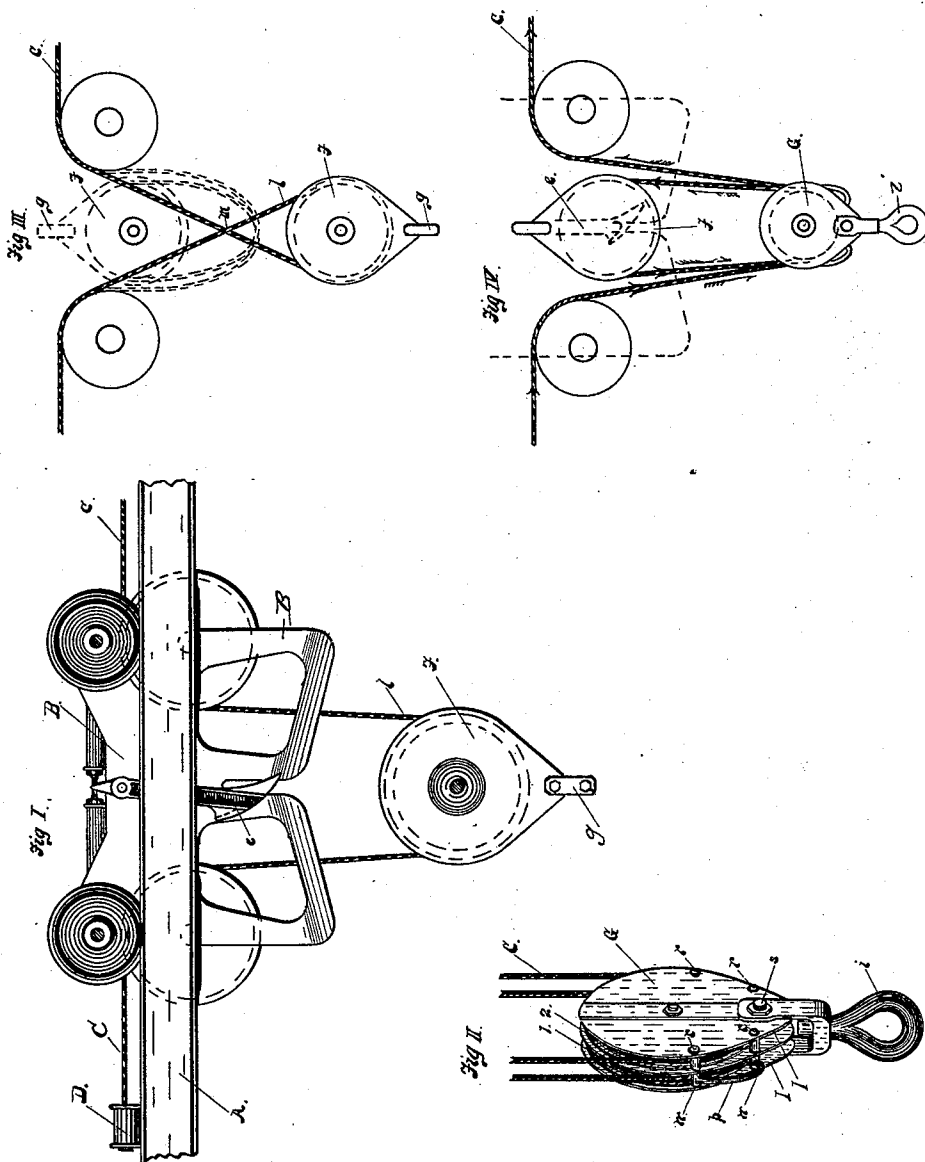
(No Model.)

A. E. BROWN.

DEVICE FOR DOUBLING UP THE PURCHASE OF HOIST ROPES.

No. 465,318.

Patented Dec. 15, 1891.



WITNESSES.

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DEVICE FOR DOUBLING UP THE PURCHASE OF HOIST-ROPE.

SPECIFICATION forming part of Letters Patent No. 465,318, dated December 15, 1891.

Application filed July 16, 1891. Serial No. 399,737. (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 new and useful Device or Mechanism for the Doubling Up or Increasing of the Purchase of the Hoist-Rope of a Hoisting and Conveying Machine; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to doubling up or increasing and diminishing the purchase of the hoist-rope on the load-carrying block in a hoisting and conveying machine, and has for its object to provide means by which the desired changes or variations may be made without disconnecting the hoist-rope from either the anchorage or fixed point of attachment to which one of its ends is fastened, or from the winding-drum of the hoist-engine, to which its other end is secured.

To this main end and object my invention consists, essentially, in the use, in connection with the usual devices of the hoisting and conveying machine, of a supplemental sheave-block or load-sustaining device, which is introduced within the sheave-block loop of the hoist-rope whenever it is desired to multiply the purchase of the rope and is removed or thrown into disuse when the purchase power of the rope is to be reduced, all as will be hereinafter more fully explained and as will be more specifically defined or more particularly pointed out in the claim of this specification.

To enable those skilled in the art to which my invention relates to understand and practice the same, I will now proceed to more fully describe my improved contrivance, referring by letters to the accompanying drawings, which form part of this specification, and in which I have shown my said invention carried into effect in the precise form of apparatus or mechanism with which I have so far practiced it, though it may of course be practiced with other forms of hoisting and conveying machines and under various modifications as to the structural details.

In the drawings, Figure 1 is a side view of

so much of an elevated-tramway hoisting and conveying machine as is necessary to be shown in order to illustrate my invention. Fig. 2 is a perspective view, on a slightly enlarged scale, of a supplemental sheave-block such as may be added to and detached from the parts seen at Fig. 1 to respectively increase and diminish the purchase or lifting capacity of the hoist-rope. Fig. 3 is a diagrammatical view showing the manner of doubling up the rope and its usually attached hoist-block; and Fig. 4 is another diagrammatical view showing a further step in the rope-doubling operation, and also showing the introduced supplemental hoist-block illustrated as detached at Fig. 2.

In all the views the same parts will be found designated by the same letters and figures of reference, and in the diagrammatical views the scale is somewhat smaller than that of Fig. 1.

A is part of an ordinary bridge tramway, such as commonly used in one well-known form of "Brown hoisting and conveying machines," and B one of the trolleys or traveling carriages commonly employed in connection therewith.

C is the hoist-rope, which in this species of machine is supposed to be fastened at one of its ends to some permanent point of anchorage or attachment—as, for instance, at D—and the other end of which (not seen in the drawings) is supposed to be secured to and wound upon the winding-drum of some suitable sort of hoist-engine.

The trolley B is provided, as usual, with the type of machine shown with suitable load-sustaining hooks *e*, with which are engaged and from which are disengaged, as occasion requires, the laterally-projecting trunnions of the hoist-block F, all in a manner well understood by those familiar with the construction and operation of hoisting and conveying machines. The said hoist-block F is shown at Fig. 1 suspended in the single loop of the hoist-rope, as if in the act of either ascending or descending, and is provided with the usual load-supporting hook *g*, from which may depend the dump-bucket or other load-carrying device of the machine.

G is a supplemental hoist-block to be used

only when it may be desired to double up or multiply the lifting power of the hoist-rope C, and, as will be seen best by reference to Fig. 2, this hoist-block G has two rope wheels or sheaves instead of one only, as in the case of the usual hoist-block F.

The supplemental duplex hoist-block G is of course provided with a depending hook *i* or equivalent device for engagement with the handle of the dump-bucket or other load-receptacle with which the hoisting and conveying machine may be provided.

In the manipulation or adjustment of the mechanism or contrivance from one to the other of its two different conditions the following *modus operandi* should be followed: Supposing the machine to be set or arranged for use in the usual condition, and, as illustrated correctly by Fig. 1, to double up or multiply the power of the machine, (with a proportionate loss of speed, of course, in the movement of the load to be lifted,) the loop *l* of the rope C is crossed, as seen at Fig. 3, by giving the hoist-block F a half turn or revolution in a horizontal plane. Then the thus-crossed loop *l* is doubled on itself at the point *m*, at which the strands of the loop cross each other, by lifting the block F up and giving it a half-turn sidewise, so as to bring it into about the position indicated in dotted lines at Fig. 3, with its load-hook *g* uppermost, as shown, and in this position (or after slightly lifting it while in this position) said hoist-block is brought into engagement with the trunnion-supporting hooks *e* of the trolley. Then the double loop of rope C, depending from the thus-suspended block F, is pulled or distended downwardly into a condition (about such as seen at Fig. 4) to permit the convenient insertion within the lower portion of such double loop of the supplemental block G, which is now inserted in such manner, as shown at Fig. 4, as to have the two sheaves or rope-wheels 1 and 2 of said block run in peripheral engagement with the two strands of the said double loop, as clearly indicated in the drawings. When thus adjusted, with the duplex supplemental block G in place, as shown at Fig. 4, the hoist-rope C will run, it will be seen, from the point of anchorage at D along to and partially over one of the rope-wheels of the trolley, thence down to and partially around one of the two sheaves of the block G, thence up and over the single sheave-block F, thence down and partially around the other one of the two sheaves of block G, and thence up and partially around the other rope-wheel of the trolley, from which it passes onward toward the winding-drum of the hoist-engine.

By reference to the arrows at Fig. 4 the course of the hoist-rope just explained may be easily followed visually, and from an observation of what is there shown it will be understood that by the rearrangement of the strands of the rope C as there shown, and the introduction of the duplex sheave-block

G, the purchase or lifting capacity of the hoist-rope will have been multiplied so as to become four to one, and that hence any load suspended from the load-hook *i* of the block G, while it will be lifted more slowly by the winding up on the hoist-drum of the rope C, will be lifted with less power.

In applying the supplemental block G (see now Fig. 2) the bolts *r s*, which tie together the lower side portions of the two plates *I I* of the block, and also the bolts *w w*, which secure in place the handles *p p*, that are used to render the handling of the block more convenient, have of course to be removed to get the strands of the double loop of the rope seated or placed properly round about the lower portions of the grooved peripheries of the two rope-wheels of said block, and said bolts or pins are replaced after the block shall have been put in place in the rope-loops, as seen at Fig. 4.

Of course more or less modification can be made in the details of the contrivance shown and described without changing its novel principle of construction and mode of operation, and hence without departing from the pith of my invention, the gist of which rests in the introduction of the supplemental sheave-block, in the manner described, to multiply the purchase of the hoist-rope without releasing either end of the rope from its attachment and translating the usual hoist-block F into a fixed sheave-block, as described.

Indeed, in the mode of operation by which I am enabled to thus multiply the purchase of the hoist-rope there is involved a method or system of doubling up the purchase which might perhaps be carried into effect by mechanical means substantially different from the thing made the subject of this application, and hence I have in another application, filed simultaneously with this one and serially numbered 399,739, set up a claim to the method by which I am enabled to increase the purchase of the hoist-rope either by the use of the mechanical means herein shown and described or by any other substantially different devices.

In any species of hoisting and conveying machine in which an endless hoist-rope may be employed the same supplemental sheave-block may be used in the same manner to multiply the purchase, and under any and all structural modifications under which my invention may be carried into effect it possesses the great advantage, it will be seen, of transforming a hoisting and conveying machine built only heavy and powerful enough to do a given class of work, for which it may be used most of the time, into one capable, when occasion may require, of handling heavier loads with the same cable, hoist-engine, &c., and that without unrigging the hoist-rope and other cumbersome parts of the mechanism.

What I claim as new, and desire to secure by Letters Patent, is—

In a hoisting and conveying machine provided with a hoist-block suspended in a loop

of the hoist-rope and adapted to be engaged
with the trolley for the purpose of conveying
the elevated load, the combination, with said
hoist-block and said hoist-rope, of a supple-
5 mental sheave-block having a series of rope-
wheels adapted to be swung in the doubled
loop of the said hoist-rope when the latter
shall have been doubled up and the single-
sheave hoist-block shall have been engaged

with the trolley, all substantially as and for to
the purpose set forth.

In witness whereof I have hereunto set my
hand this 18th day of June, 1891.

ALEX. E. BROWN.

In presence of—

H. N. CHAMBERLAIN,

M. MILLARD.