

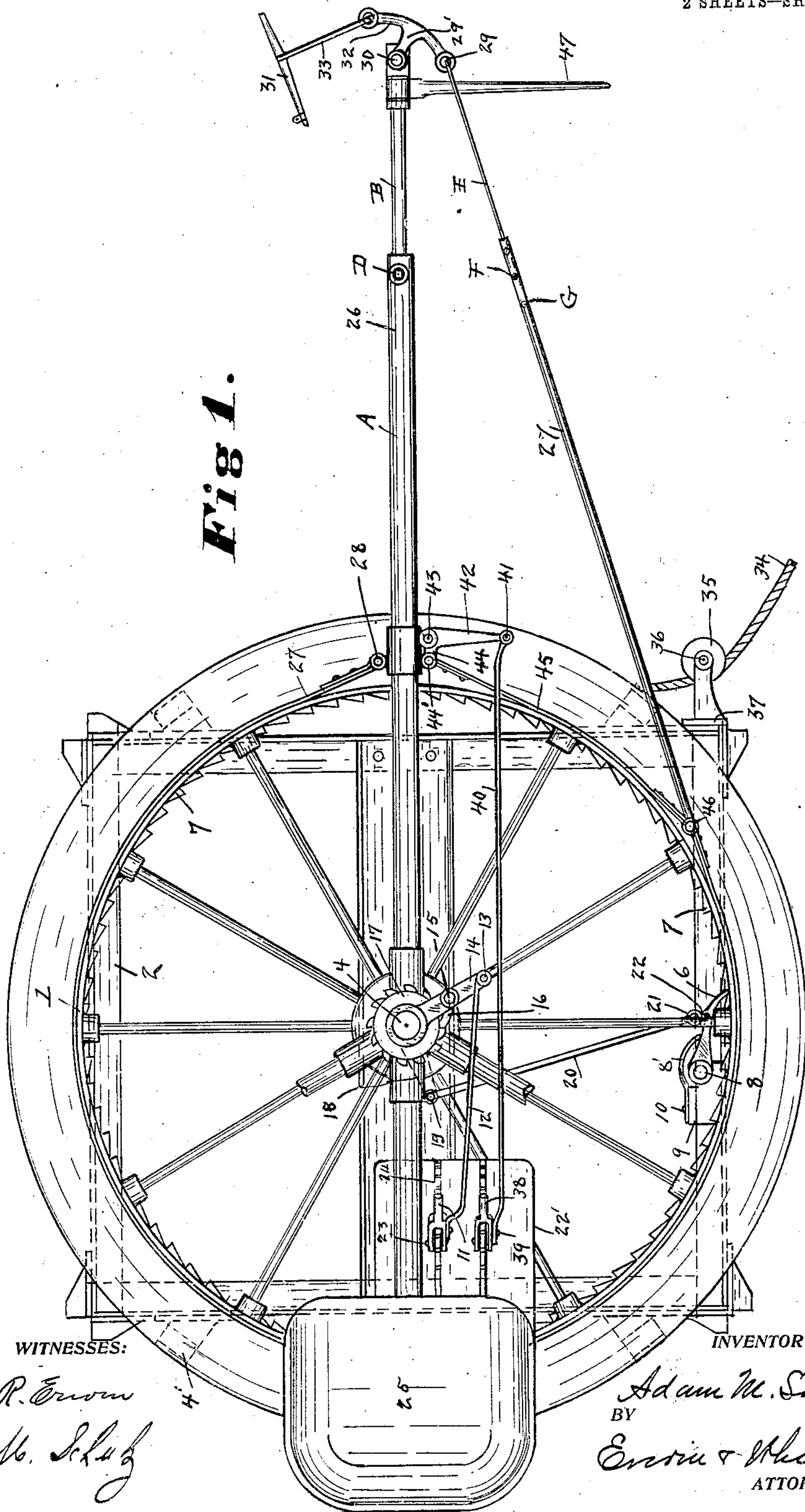
No. 845,201.

PATENTED FEB. 26, 1907.

A. M. SMITH.  
HORSE POWER AND HOIST.  
APPLICATION FILED OCT. 12, 1906.

2 SHEETS—SHEET 1.

Fig 1.



WITNESSES:

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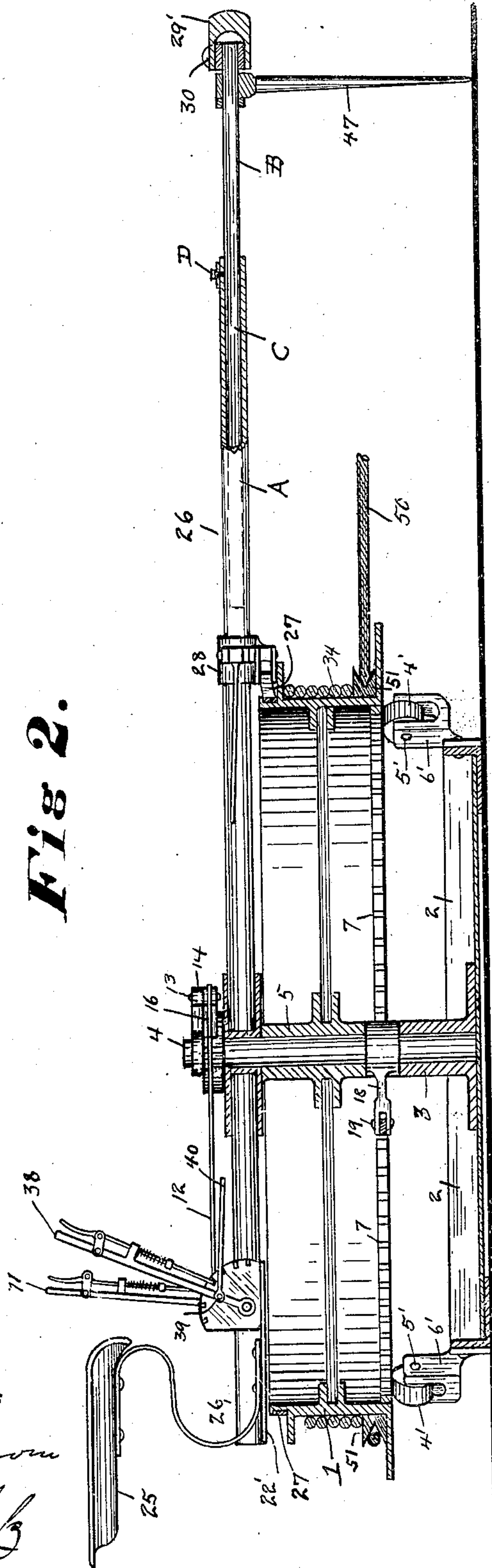
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2 SHEETS—SHEET 2.

**Fig 2.**



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# UNITED STATES PATENT OFFICE.

ADAM M. SMITH, OF WHITEWATER, WISCONSIN.

## HORSE-POWER AND HOIST.

No. 845,201.

Specification of Letters Patent.

Patented Feb. 26, 1907.

Application filed October 12, 1906. Serial No. 338,570.

*To all whom it may concern:*

Be it known that I, ADAM M. SMITH, a citizen of the United States, residing at Whitewater, county of Walworth, and State of Wisconsin, have invented new and useful Improvements in Horse-Powers and Hoists, of which the following is a specification.

My invention relates to improvements in that class of horse-powers which are adapted to be used both as a hoist for raising loads and as a power for driving various kinds of machinery; and it pertains more especially, among other things, first, to the means of communicating either a continuous or intermittent rotary movement from one or more sweeps of the power to a centrally-located revoluble hoisting-drum around which the hoisting-rope is adapted to be wound and upon and by which an endless belt, rope, or cable is adapted to be operated; second, to the device for manually controlling a reverse movement of the drum when the power is being used for hoisting purposes as such drum is released from the sweep-actuating mechanism, whereby the elevating-carriage or load suspending from the free end of the hoisting-rope is free to descend of its own gravity and whereby the load may, if desired, be stopped and suspended from the rope independently of the action of the horse or the movement of the sweep; third, to the means of applying a brake to the hoisting-drum whereby the descent of the hoisting-carriage or other load suspended from the hoisting-rope may be controlled and regulated by the manual act of the driver; fourth, to the means employed for communicating a continuous rotary movement from the hoisting-drum to an endless belt, rope, or cable for driving machinery; fifth, to the trailing stop or arm carried by the sweep, which is adapted to arrest the rearward movement of the sweep as the same is relieved from the action of the horse, whereby the horse is relieved of the load or rearward pull upon the sweep which is communicated to it from the suspended load through the hoisting-drum and brake mechanism when the brake mechanism is set while such load is suspended or being lowered, and, sixth, to the construction of the sweep, which is preferably made of two or more telescoping parts, whereby when the load is light or when desirous to increase the speed of the power said parts may be telescoped together, whereby the circle de-

scribed by the horse will be shortened and the speed will be proportionately increased, also whereby when it is desirous to increase the power of the horse said telescoping parts may be drawn out and the sweep elongated, whereby the speed will be diminished and the power of the horse proportionately increased.

The construction of my invention is further explained by reference to the accompanying drawings, in which—

Figure 1 is a top view thereof, and Fig. 2 is a vertical section.

Like parts are identified by the same reference characters in both views.

1 represents the hoisting-drum, which is revolubly supported at its center from a stationary frame 2 upon a collar 3 and at its periphery from the supporting-frame 2 by a plurality of rollers 4', roller-supporting pins 5', and pin-supporting bracket 6', and the same is retained in place by the central vertical shaft 4, around which shaft the drum is free to revolve. The shaft 4 is supported at its lower end in a socket formed therefor in said collar 3. Thus the hoisting-drum 1 is free to revolve in either direction around the shaft 4 without revolving said shaft while said shaft may be revolved a partial revolution in either direction independently of said drum, whereby the operator is enabled to communicate the required movement through said central shaft to the drum-retaining pawl 6 for throwing such pawl into and out of engagement with the annular ratchet 7 of the hoisting-drum regardless of the movement of said drum.

The pawl 6 is pivotally supported from the frame 2 upon the vertical stud 8 and is yieldingly retained in contact with said ratchet 7 by the spring 8', which spring is rigidly secured at one end to the stationary arm 9 of said frame 2 by the retaining-pin 10. Motion is communicated to said pawl 6 from the manually-actuated lever 11 through the link 12, pivot 13, arm 14, pivot 15, pawl 16, annular ratchet 17, shaft 4, arm 18, pivot 19, link 20, and pivot 21, operating in the elongated slot 22, formed in said pawl 6. The slot 22 permits the required movement of the pawl 6 pass the ratchet 7 without communicating motion from said pawl to the manually-operated mechanism connected therewith.

The lower end of the manually-actuated lever 11 is pivotally connected with the



driver's platform 22' by the pin 23 and pin-supporting plate 24, the same being located in close proximity to the driver's seat 25.

It will be understood that the driver's platform 22' and seat 25 and operating-lever 11 are all supported from the inner end of one of the sweeps and that they maintain the same relative position to each other and are adapted to revolve either with or independently of the hoisting-drum, as the same are being revolved by the action of the horse.

Motion is communicated to the drum 1 from the sweep 26 through the flexible clamping-band 27, one end of said clamping-band being pivotally connected to the sweep 26 by the bracket 28, said band being carried from thence around the periphery of the hoisting-drum, and from thence to the arm 29 of the three-armed lever 29', the central arm of the lever 29' being pivotally connected with the end of the sweep 26 by the bolt 30, while the draft mechanism 31 is connected with the other arm of the lever 32 by the connecting-link 33. Thus it will be understood that as the power of the horse is applied to the draft mechanism 31, said three-armed lever will be caused to turn a partial revolution upon the bolt 30, whereby the band 27 will be put under the required tension for clamping the hoisting-drum, thus causing the drum to revolve with the sweep as the latter is being moved forward in a circular course by the action of the hoist. 34 represents the hoisting-rope, which as the hoisting-drum is revolved is wound upon the periphery of the same beneath the clamping-band. It will be understood that the hoisting-rope 34 is guided to and from the hoisting-drum by the guiding-pulley 35 in the ordinary manner, said pulley 35 being revolvably supported upon the vertical shaft 36, which shaft is in turn supported from the frame 2 of the horse-power by the bracket 37. It will now be understood that when the rope 34 has been connected with an elevated pulley and the free end connected with a load which it is desired to elevate motion will be communicated from the sweep to the hoisting-drum through the clamping-band 27, whereby said drum will be caused to revolve with the sweep, thereby winding the hoisting-rope 34 upon its periphery until the load has been elevated. When the load has been thus elevated and removed, the load-carrying carriage or lifting mechanism connected with the free end of the rope will be free to descend of its own gravity by releasing the clamping-band 27 upon the periphery of the hoisting-drum, when said drum will be free to revolve in the opposite direction until the carriage connected with the free end of the rope has descended to the starting-point. The tension of the clamping-band 27 is released by stopping the horse and releasing the pull upon the draft mechanism. To prevent the hoisting-car-

riage or other load connected with the hoisting-rope from descending too rapidly when thus releasing, the revolving movement of the hoisting-drum is manually controlled from the operating-lever 38 through said clamping-band 27, which lever is located within a convenient reach of the operator. Motion is communicated from the lever 38 to the clamping-band 27 for thus manually controlling the reverse movement of the hoisting drum through the pivot 39, link 40, pivot 41, lever 42, pivot 43, lever 44, pivot 44', and flexible band connection 45, which band 45 is connected at its opposite end from said arm 44 with said clamping-band 27 by the fastening mechanism 46. Thus it will be understood that the same clamping-band which is used for communicating the revolving movement from the sweep to the hoisting-drum also serves the additional purpose of a friction clamping-band for retarding the reverse movement of the drum and the same is controlled, as stated, by the manual act of the operator. Levers 11 and 38 are provided with ordinary hand-actuated pawls and ratchets for locking them at any desired point of adjustment.

It will be understood that the forward or reverse movement of the hoisting-drum, communicated to it either by the horse or by the weight of the descending carriage or other mechanism suspended therefrom, is thus completely under the control of the operator and that the operating mechanism for thus controlling the hoisting-drum is in a convenient reach of the operator. The same is also at all times in the same relative position to the driver's seat and platform.

To relieve the horse from the load suspended from the hoisting-rope when desired to stop the power when the load is suspended therefrom, I preferably provide the outer end of the sweep 26 with a trailing arm 47, the upper end of which is pivotally connected with the sweep, while the lower end is adapted to trail upon and engage in the surface of the ground or track, whereby it is obvious that as soon as the horse ceases his forward movement and the draft mechanism becomes slack the rearward movement, which would otherwise be communicated to the sweep from the suspended load, will be resisted by said trailing arm.

The sweep 26 is preferably formed in two or more parts A and B, which are telescoped or otherwise adjustably connected together, as shown at C, when they are secured at the desired point of adjustment by the lock-nut D or in any convenient manner.

It will be understood that when the sweep 26 is thus made in two parts it will become necessary to connect the clamping-band 27 adjustably with the lever 29, whereby the length of said clamping-band may be increased or diminished to correspond with the



length of the sweep when it is extended and contracted. To accomplish this object, I preferably interpose an intermediate connection E between the lever 29 and said clamping-band 27, and such parts are adjustably connected together by the transverse pin F, which is inserted through one of the several apertures G of said clamping-band and corresponding apertures formed in said intermediate connection E, or such parts may be connected together in any convenient manner.

When desirous to use my horse-power both as a hoist and as a means for driving machinery, I provide the drum 1 with an endless belt 50, which encircles the drum and is led therefrom to the machinery to which it is desirous to operate thereby.

To prevent the endless belt 50 from slipping on the drum, I preferably provide the same with a plurality of V-shaped or angular contact-bearings 51, which are connected at short distances apart around the periphery of the drum for the reception of said endless belt, whereby the same is prevented from slipping. The endless belt thus used may be of ordinary rope or metallic cable, as circumstances require.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a horse-power of the class described the device for communicating a rotary movement from the movable sweep to a hoisting-drum, consisting in the combination with the sweep and drum of a flexible clamping-band, means for connecting one end of said band to the sweep in close proximity to said drum and means for connecting the other end of said band to the draft mechanism carried by the sweep, whereby the pull upon the draft mechanism and sweep will simultaneously tighten the clamping-band around the periphery of the drum and cause said drum to move with the sweep.

2. In a horse-power of the described class the device for manually controlling the reverse movement of the hoisting-drum consisting of the combination of a manually-operated lever pivotally connected with a sweep-actuated platform, a two-armed lever pivotally connected with the sweep a link connected at one end with said manually-operated lever and at its opposite end with one of the arms of said two-armed lever, a

drum encircling clamping-band and a flexible connection connected at one end to one of the arms of said two-armed lever and at its opposite end with said drum-encircling clamping-band.

3. In a horse-power of the described class, a device for manually throwing a pawl into and out of locking engagement with the annular ratchet carried by the hoisting-drum, consisting in the combination of a hand-actuated lever pivotally connected with a sweep-supported platform, a lever revolvably connected at one end with a central drum-retaining shaft, a link connected at its respective ends with said levers respectively, a ratchet-wheel rigidly connected with the upper end of said central shaft, a pawl connected at one end with said revolvable lever and adapted to engage at its opposite end with said ratchet-wheel, an arm rigidly connected with the lower end of said central shaft, a pawl pivotally supported from the drum-supporting frame and adapted to engage the annular ratchet carried by said drum, a link connected at one end to said pawl and at its opposite end to said shaft-actuated lever, whereby as said sweep-supported lever is inclined forwardly and backwardly upon its supporting-pivot said pawl will be thrown into and out of engagement with the annular ratchet of said drum, substantially as set forth.

4. In a device of the described class the combination with a hoisting-drum of a plurality of angular contact-bearings formed in a series around the periphery of said drum in combination with an endless belt, all substantially as and for the purpose specified.

5. In a device of the described class the combination with a revolvable hoisting-drum of an extension-sweep formed of two parts slidably connected together, the inner end of said sweep being pivotally connected with said drum-supporting shaft, means for detachably connecting said sweep with said drum both automatically and manually, and means for locking the members of said sweep at any desired point of adjustment.

In testimony whereof I affix my signature in the presence of two witnesses.

ADAM M. SMITH.

Witnesses:

JAS. B. ERWIN,  
O. R. ERWIN.