No. 706,105. Patented Aug. 5, 1902.

W. F. PILLMORE & D. ANDEREGG.

DRIVING MECHANISM FOR HOISTING AND CONVEYING APPARATUS.

(Application filed Dec. 22, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

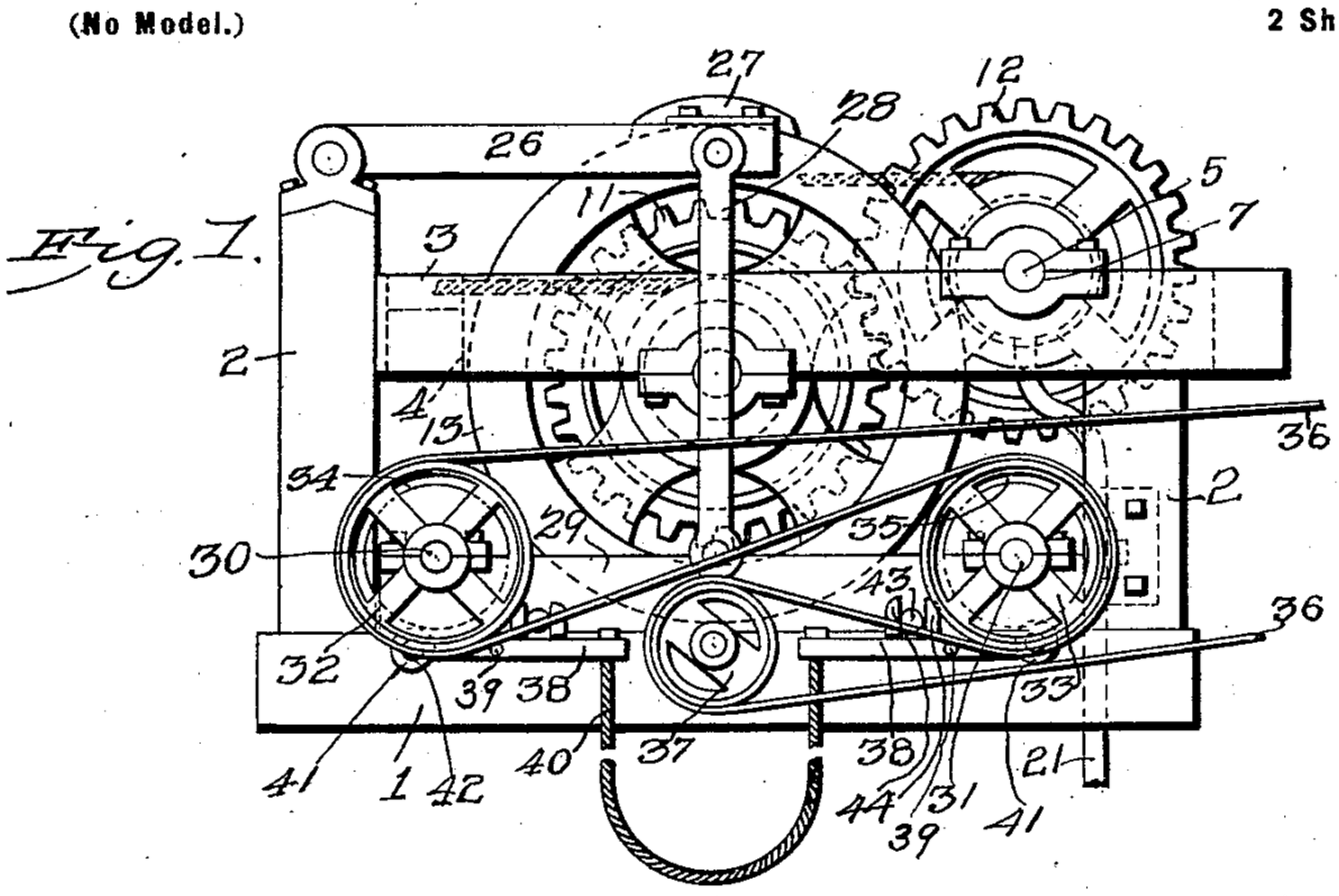


Fig. 2.

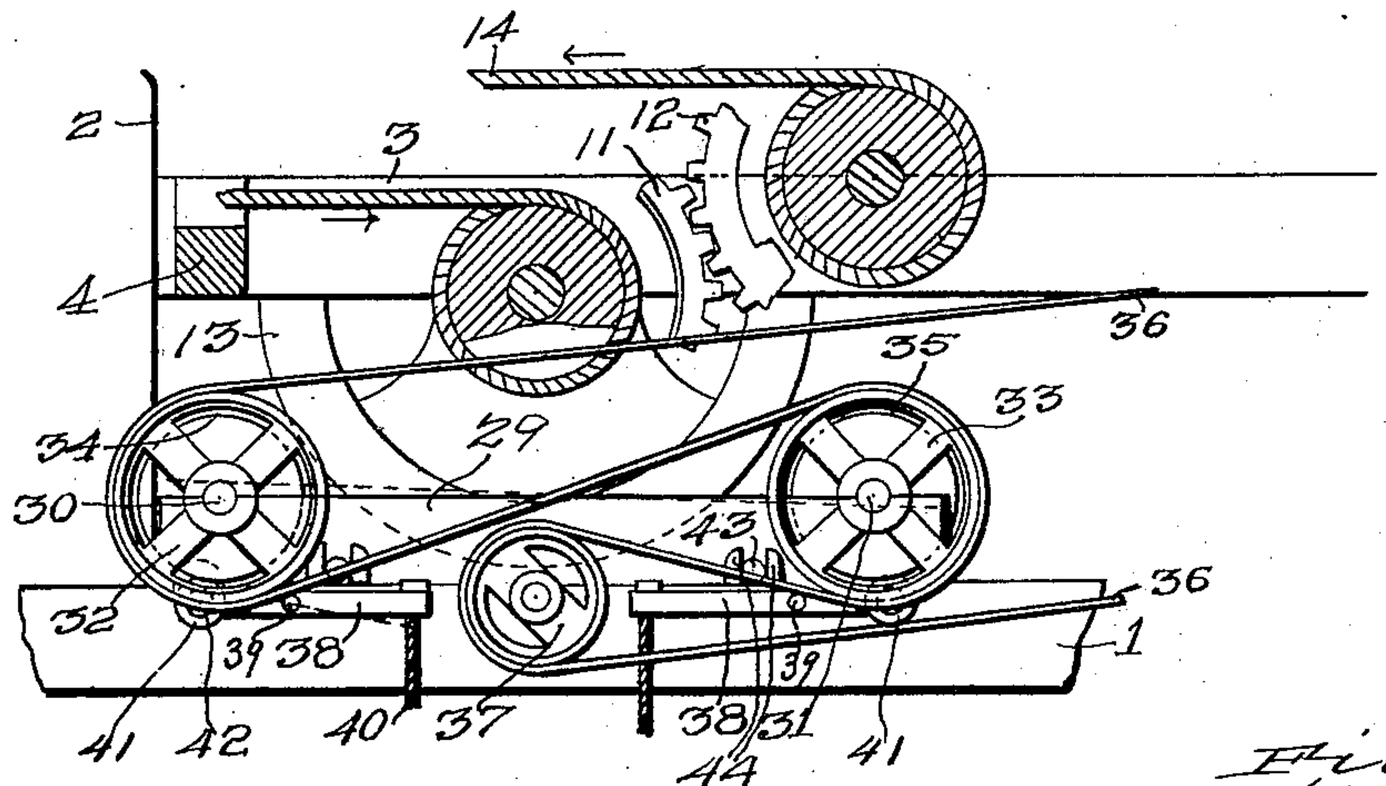


Fig. 5.

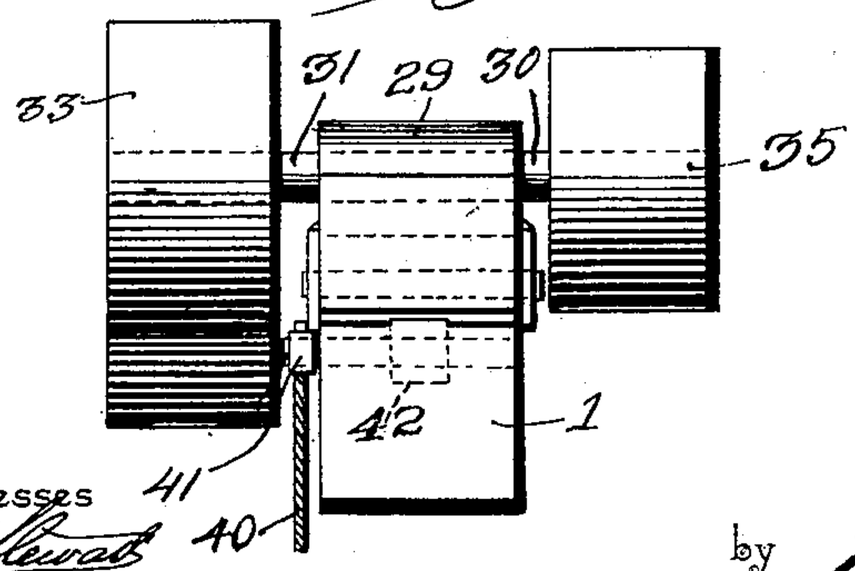
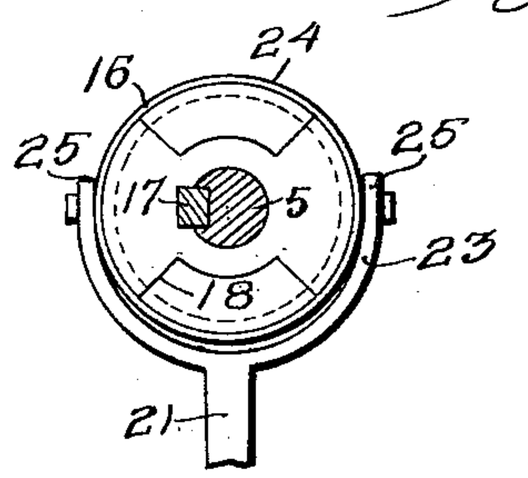


Fig. 6.



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(No Model.) 2 Sheets—Sheet 2.

Fig. 3.

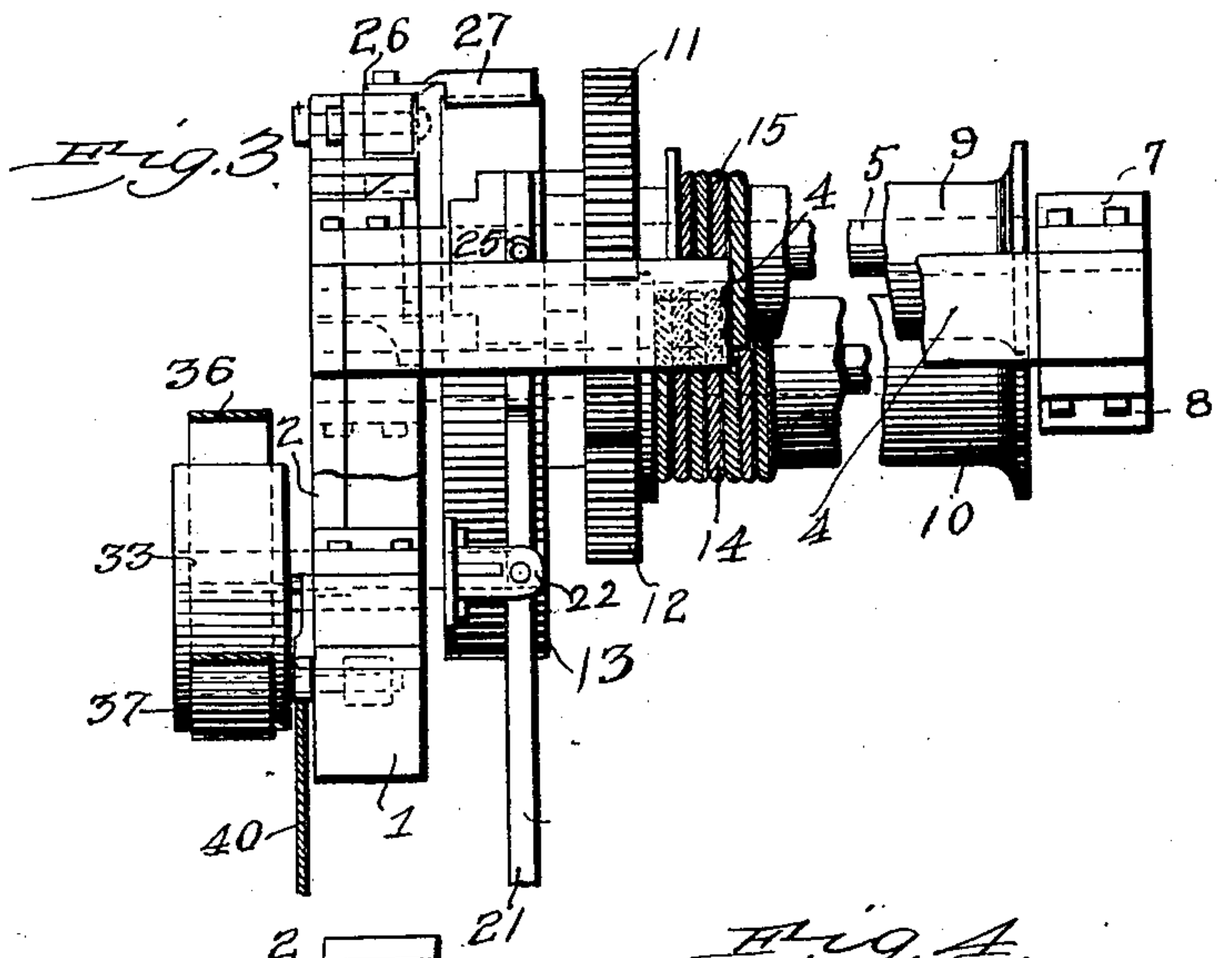

Fig. 4.

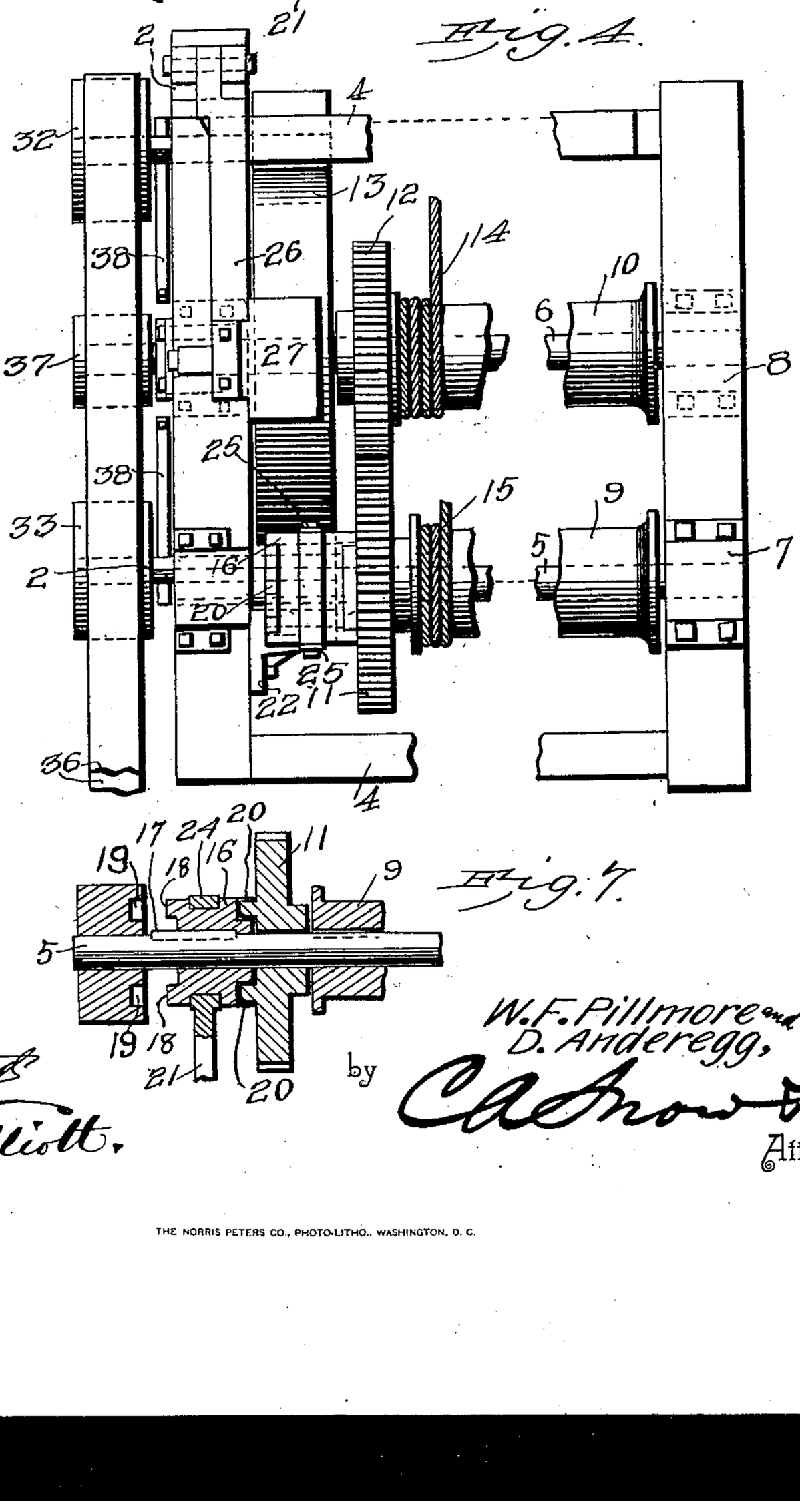

Fig. 7.

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UNITED STATES PATENT OFFICE.

WILLIAM F. PILLMORE AND DAVID ANDEREGG, OF WESTERNVILLE, NEW YORK.

DRIVING MECHANISM FOR HOISTING AND CONVEYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 706,105, dated August 5, 1902.

Application filed December 22, 1900. Serial No. 40,830. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM F. PILLMORE and DAVID ANDEREGG, citizens of the United States, residing at Westernville, in the township of Western, county of Oneida, and State of New York, have invented a new and useful Driving Mechanism for Hoisting and Carrying Apparatus, of which the following is a specification.

This invention relates to the art of loading and unloading, and has for its object to provide an improved driving mechanism for hoisting and carrying apparatus which is under the control of a single attendant, so that the hoisting and carrying operations may be independently carried on without stopping or reversing the engine employed for the operation of the apparatus. It is furthermore designed to arrange for bringing the apparatus to a complete stop when changing the direction of operation thereof and when changing from the hoisting to the traveling operation, and vice versa, so that there may be no sudden reverse movements to interfere with the proper operation of the apparatus or to injure the same in any manner.

A final object resides in the provision of means whereby the apparatus is effectively locked against accidental operation during a period of inaction, although the engine may continue to operate, so that the apparatus may be quickly thrown into operation for either purpose and in either direction of motion.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a side elevation of the controlling portion of the apparatus. Fig. 2 is a detail sectional elevation thereof. Fig. 3 is a broken front end view. Fig. 4 is a broken top plan view. Fig. 5 is a detail elevation of a drive-pulley and the adjacent friction-pulley. Fig. 6 is a detail sectional elevation of the clutch for locking the drum that operates the traveling portion of the cable. Fig. 7 is a detail sectional view of the clutch mechanism.

Like characters of reference designate corresponding parts in all of the figures of the drawings.

In carrying out the invention there is provided a frame for the support of the controlling mechanism consisting of a pair of parallel base-sills, one of which has been illustrated at 1 and from the opposite ends of which rise the corner-posts 2, which support the longitudinal frame-beam 3, located a suitable distance above the sill and parallel therewith. As shown in Fig. 4 of the drawings, the opposite longitudinal beams are connected at opposite ends by means of the respective cross-bars 4, and thereby completing the supporting-frame.

A pair of transverse rotatable shafts 5 and 6 are mounted upon the side beams, the front shaft 5 being journaled upon the tops of the beams, as at 7, and the rear shaft 6 upon the under sides of the said beams, as at 8, whereby the forward shaft is slightly elevated above the other shaft. These shafts are provided with the respective drums 9 and 10, which terminate short of one of the side beams for the accommodation of the intermeshed gear-wheels 11 and 12, carried by the respective shafts. The gear 11 is loosely mounted upon its shaft, while the gear 12 is fixed to rotate with its shaft, there also being a broad-faced friction-wheel 13 fixed to the shaft 6 and located between the gear 12 and the adjacent side beam 3. It will be understood that the drum 10 is driven by the friction-wheel 13, and the drum 9 is simultaneously operated in the opposite direction through the medium of the intermeshed gears 11 and 12, whereby as the cable portion 14 is being wound upon the drum 10 the opposite cable portion 15 is being unwound from the opposite drum 9, and vice versa, thus to accommodate for the opposite directions of travel a suitable carrier, not herein illustrated.

The drum 9, which will be termed the "trav-

eling drum," is designed to move the carrier, and the other or hoisting drum is designed to perform the hoisting operation, and in order that the last operation may be accomplished while the carrier is at rest it is necessary to throw the traveling drum out of operation during the hoisting operation. To accomplish this result, a clutch device is provided for the loosely-mounted gear 11, consisting of a disk 16, slidably mounted upon the shaft 5 and located between the gear 11 and the adjacent side beam 3, said disk being held against rotation upon the shaft by means of a key or feather 17. The outer side of the disk is provided with a pair of lateral projections 18, which are designed to take into corresponding notches or sockets 19 formed in the inner face of the adjacent side beam 3, thereby to hold the shaft against rotation, and as the gear 11 is loosely mounted upon the shaft and is free from the traveling drum the shaft and the latter remain idle during the hoisting operation of the hoisting-drum. The opposite inner side of the disk 16 is provided with a socket, one or more, for the reception of a lateral projection, one or more, 20, upon the outer face of the gear 11, whereby the gear may be interlocked with the shaft 5 to operate the same and the drum 9, which is fixed thereto. For the convenient manipulation of the clutch to slide the same in opposite directions upon the shaft for alternate engagement with the frame and the gear there is provided an operating-lever 21, which is fulcrumed intermediate of its ends upon a suitable bracket 22, provided upon the inner side of the adjacent post 2, the upper end of the lever being provided with a fork 23 to loosely embrace the lower marginal edge portion of the clutch-disk. A band 24 loosely embraces the marginal edge of the disk and is provided with diametrically opposite pivot projections 25, which are snapped into terminal perforations in the fork of the lever, whereby the latter is connected to the clutch-disk and the latter may be slid in opposite directions upon the shaft by manipulation of the lower free end of the lever.

Normally to hold the drum against accidental operation there is provided a friction-brake, consisting of a brake-lever 26, fulcrumed at its outer end upon the rear corner-post 2, which is adjacent to the friction-wheel 13 and projected above the top of the frame, so that the outer free end of the lever may lie at the outer side of the wheel and adjacent to the upper portion of said wheel. A brake-shoe 27 is projected laterally inward from the free end of the lever, so as to lie in frictional engagement with the marginal edge of the wheel. A link 28 is pivotally hung from the outer side of the free end of the brake-lever, and at the lower end of this link there is suspended a substantially horizontal rocker-bar 29, which is pivotally connected at its middle to the lower end of the link. This bar lies immediately over and parallel with the adjacent base-sill 1 and just out of contact therewith, so that its weight is supported by the brake-lever, thereby normally drawing the brake-shoe into frictional engagement with the friction-wheel for the purpose of holding the same and the drums against accidental rotation when the entire device is at rest.

For conveying power from an engine (not shown) to the friction-wheel 13, which is really the power-wheel of the apparatus, the opposite ends of the rocker are provided with the respective stub-shafts 30 and 31, which project at opposite sides of the rocker, as best shown in Fig. 5 of the drawings, and are provided upon their respective outer ends with the drive-pulleys 32 and 33 and upon their inner ends with the friction-pulleys 34 and 35, shown in Figs. 4 and 5 and designed for alternate frictional engagement with the friction power-wheel 13 by rocking the rocker-bar 29 upon its pivotal connection with the link 28. A continuous drive-belt 36 comes from an engine and passes from the front to the rear of the apparatus, around the drive-pulley 32, from the top thereof, thence forwardly and around the top of the drive-pulley 33, thence rearwardly and around an idle pulley 37, mounted upon the outer side of the adjacent base-sill 1, and finally back to the engine. By this arrangement of the drive-belt the drive-pulleys are driven in opposite directions, as indicated by the arrows in Fig. 2 of the drawings, whereby said drive-pulleys are adapted to drive the friction-wheel 13 in opposite directions when alternately applied thereto, thus reversing the direction of rotation of the drums without stopping and reversing the engine.

To facilitate the rocking of the rocker-bar 29 to alternately bring the friction-pulleys into engagement with the power-wheel, there are provided duplicate means for elevating the respective ends of the rocker, each of said means consisting of a lever 38, which is fulcrumed intermediate of its ends, as at 39, to the outer side of the adjacent base-sill and substantially parallel therewith and also between the latter and the adjacent drive-pulley. The inner end of the lever is provided with a pendent rope 40, forming means for conveniently throwing the lever, while the opposite free end thereof is provided with a lateral spindle or projection 41, that lies between the base-sill and the adjacent end portion of the rocker, there being a suitable antifriction-roller 42 mounted upon the spindle and lying within a suitable socket formed in the top of the sill, so that by depressing the inner end of the lever the roller 42 will be thrown upwardly against the rocker-bar 29 for the purpose of elevating the adjacent end thereof, and thereby bring the adjacent friction-pulley into engagement with the marginal edge of the friction-wheel 13. It will be understood that the lower side of the rocker-bar is bowed or beveled upwardly in opposite

directions from its center to accommodate for the rocking action thereof.

It will be apparent that it is necessary to raise the brake-shoe out of engagement with the friction or power wheel 13 when the friction-pulleys are applied thereto, and to provide for this release of the brake simultaneously with the application of either friction-pulley the opposite end portions of the rocker are provided with the respective lateral outwardly-directed studs or projections 43, that normally lie above and out of contact with the top of the base-sill, there being opposite upstanding guides 44, rising from the sill and lying closely at opposite sides of the projection, so as to guide the rocker in its vertical movement. When one end of the rocker is elevated, the opposite lateral projection 43 will move downwardly and strike the top of the sill, thereby acting as a fulcrum for the rocker, whereby the middle portion thereof will be slightly elevated, thus pushing the link 28 upwardly and lifting the brake-lever 26, thereby removing the brake-shoe 27 from the friction-wheel 13, so that the latter may be turned by the friction-pulley. When the reversing-lever is permitted to return to its normal position, the rocker will also resume its original position, thereby drawing the friction-pulley from the drive-wheel and again applying the brake, whereby the apparatus is brought to a complete stop before the other reversing-lever can be manipulated to reverse the direction of operation of the apparatus. Thus the apparatus is normally locked by the brake against accidental operation, and the brake is automatically applied during the intervals between the reversings of direction of operation.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a reversing apparatus, the combination of a power-wheel, a brake normally applied thereto, opposite drive-wheels supported by the brake and constructed for alternate engagement with the power-wheel, and means for automatically removing the brake by the application of either drive-wheel.

2. In a power-controlling device, the combination with a power-wheel, of a drive-wheel normally out of engagement therewith, a brake supporting the drive-wheel and normally in engagement with the power-wheel, means for applying and removing the drive-wheel with respect to the power-wheel and a connection between the drive-wheel and the brake constructed for automatically removing the latter by the application of the former.

3. In a power-controlling device, the combination with a power-wheel, of a normally-applied brake therefor, a drive-wheel normally out of engagement with the power-wheel and supported solely by the brake whereby the latter is normally applied, and means for applying the drive-wheel to the power-wheel and removing the brake through the connection between the latter and the drive-wheel.

4. In a power-controlling device, the combination with a power-wheel, of a normally-applied brake therefor, a rocker supported solely by the brake whereby the latter is normally applied, opposite drive-wheels mounted upon the opposite end portions of the rocker, means for operating the rocker to alternately apply the drive-wheels to the power-wheel, and opposite fulcrum-supports for the rocker.

5. In a power-controlling device, the combination with a power-wheel, of a normally-applied brake therefor, a rocker pivotally hung at its middle from the brake whereby the latter is normally applied, drive-wheels mounted upon the opposite end portions of the rocker and constructed for alternate engagement with the power-wheel, means for tilting the rocker upon its pivotal support to apply either drive-wheel to the power-wheel, and fulcrum-supports for the rocker located at opposite sides of the middle pivotal support and constructed for alternate engagement by the rocker in its opposite tilting movements to force the brake from the power-wheel.

6. In a power-controlling device, the combination with a power-wheel, of an intermediately-fulcrumed rocker, drive-wheels mounted upon the opposite end portions thereof and constructed for frictional engagement with the power-wheel, and opposite levers operatively connected to the respective ends of the rocker and constructed to tilt the latter and alternately apply the drive-wheels to the power-wheel.

7. In a power-controlling device, the combination with a frame, of a power-wheel mounted thereon, a brake-lever pivoted to the frame and having a shoe normally applied to the power-wheel, a rocker pivotally supported at its middle upon the brake-lever, whereby the weight of the rocker normally applies the brake, pairs of belt and drive wheels mounted upon the opposite end portions of the rocker, the drive-wheels being constructed for engagement with the power-wheel, a continuous drive-belt passed in opposite directions about the belt-wheels, means for tilting the rocker in opposite directions upon its pivotal support, and opposite fulcrum-supports carried by the frame at opposite sides of the pivotal support of the rocker and constructed for alternate engagement by the rocker in its opposite tilting movements, whereby the brake is forced out of engagement with the power-wheel when either drive-wheel is applied thereto.

8. In a power-controlling device, the combination with a frame, of a power-wheel mounted thereon, a brake hinged to the frame and normally applied to the power-wheel, a rocker pivotally hung at its middle from the brake and adjacent to the upper side of one of the frame-bars, the weight of the rocker normally applying the brake, operatively-con-

nected pairs of belt and drive wheels mounted upon the opposite end portions of the rocker, the drive-wheels being constructed for alternate engagement with the power-wheel, a continuous drive-belt passed in opposite directions about the belt-wheels, lateral fulcrum projections carried by the rocker at opposite sides of its middle and constructed for alternate engagement with the adjacent frame-beam, and opposite levers fulcrumed upon the frame, and having operative connections with the respective ends of the rocker to tilt the same in opposite directions.

In testimony whereof we, WILLIAM F. PILLMORE and DAVID ANDEREGG, have signed our names to this specification in the presence of subscribing witnesses.

WILLIAM F. PILLMORE.
DAVID ANDEREGG.

Witnesses:
ALFRED B. ANDEREGG,
DESIRE HOWE.