No. 620,007. Patented Feb. 21, 1899.

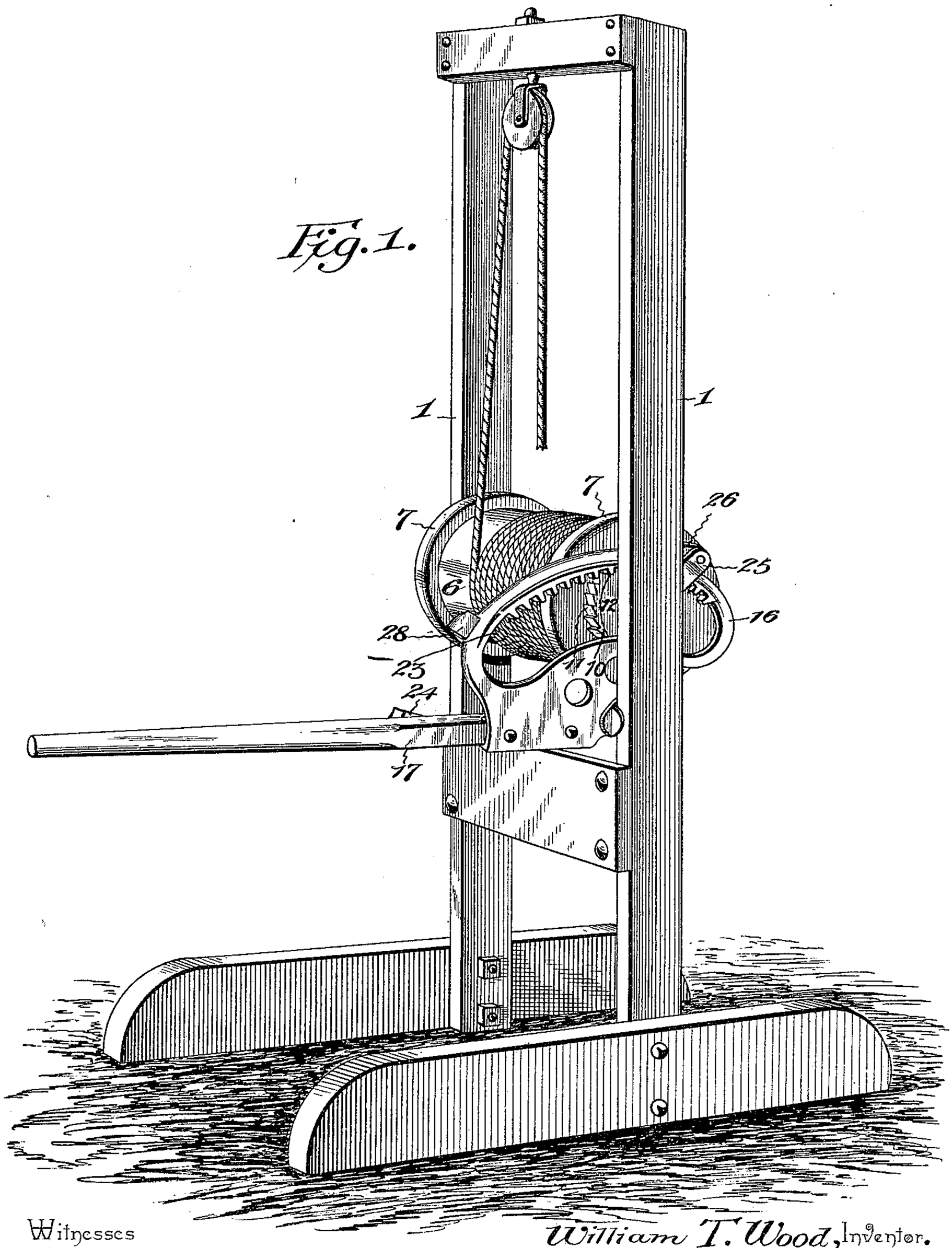
W. T. WOOD.

WINDLASS.

Application filed Apr. 20, 1898.

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.



Witnesses
A. Roy Appleman
O. E. Hoyt

William T. Wood, Inventor.
By his Attorneys.
C. A. Snow & Co.

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

No. 620,007. Patented Feb. 21, 1899.

W. T. WOOD.

WINDLASS.

(Application filed Apr. 20, 1898.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 2.

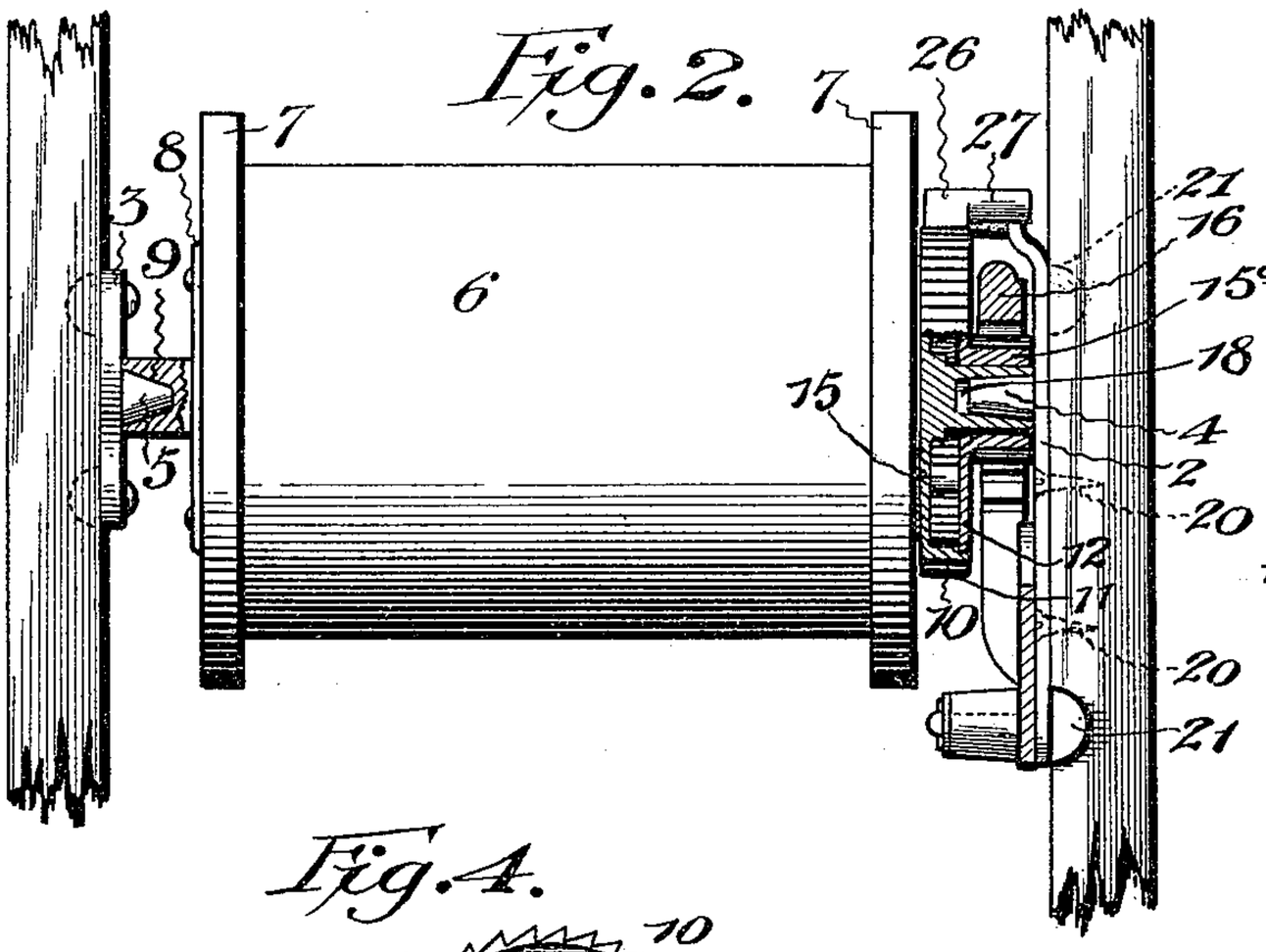


Fig. 5.

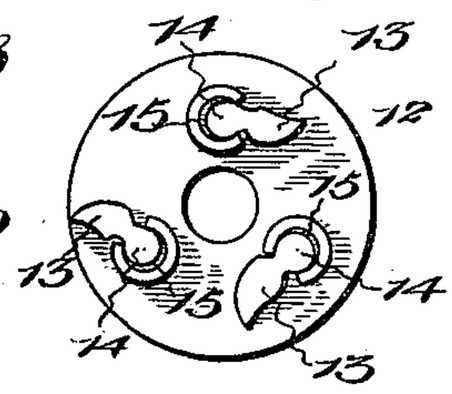


Fig. 4.

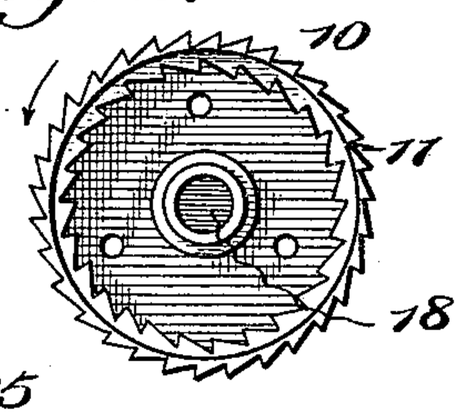


Fig. 1.

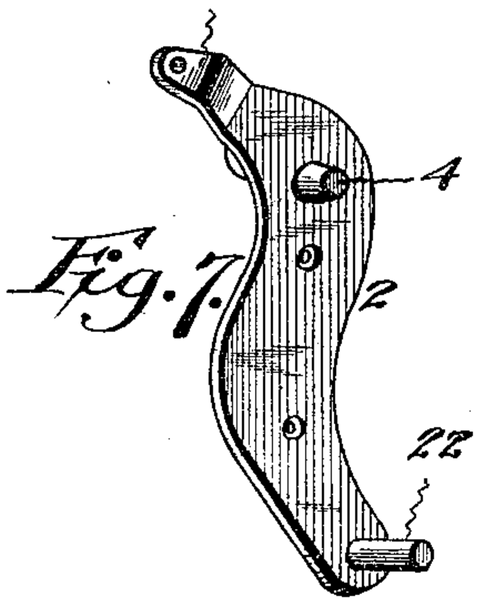


Fig. 3.

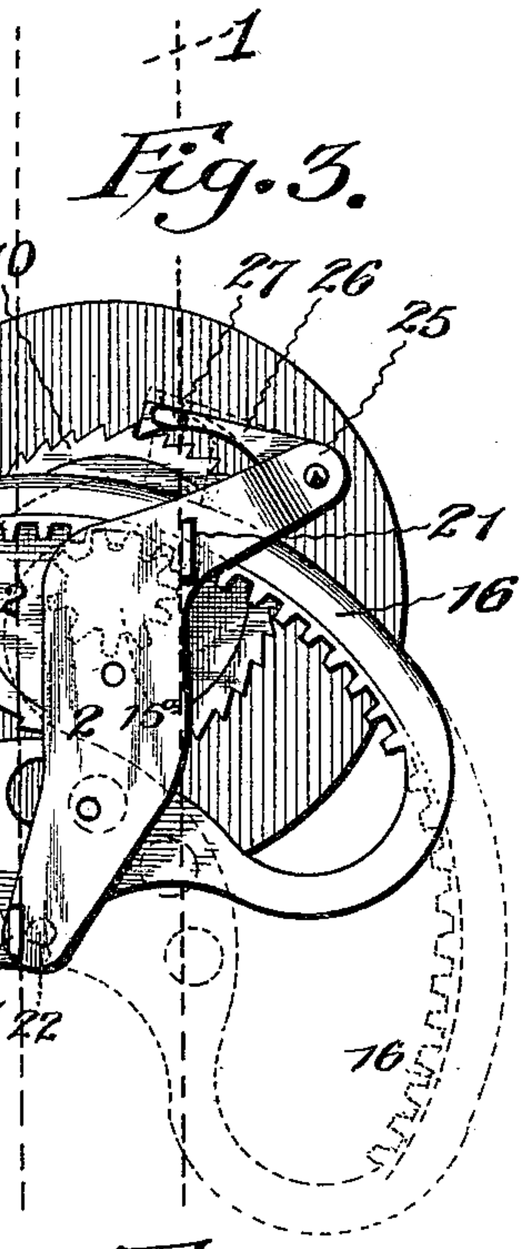
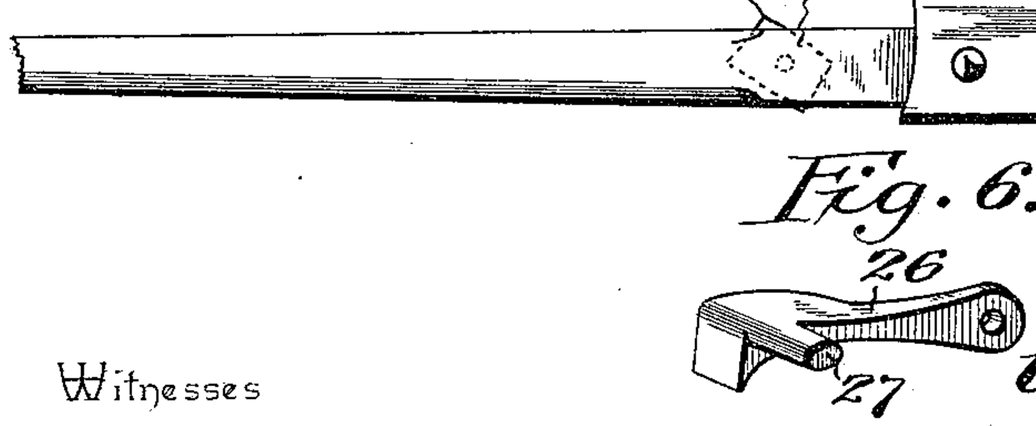


Fig. 6.



Witnesses

A. Roy Appleman

T. G. Hoyle

William T. Wood, Inventor.

By his Attorneys.

C. A. Snow & Co.

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

UNITED STATES PATENT OFFICE.

WILLIAM THOMAS WOOD, OF NASHVILLE, TENNESSEE.

WINDLASS.

SPECIFICATION forming part of Letters Patent No. 620,007, dated February 21, 1899.

Application filed April 20, 1898. Serial No. 678,245. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM THOMAS WOOD, a citizen of the United States, residing at Nashville, in the county of Davidson and State of Tennessee, have invented a new and useful Windlass, of which the following is a specification.

My invention relates to a windlass suitable for raising weights, and particularly designed for use in elevating well-buckets; and the object in view is to provide a simple and efficient combination and arrangement of parts for facilitating the elevation and controlling the descent of a weight, the mechanism being so assembled as to adapt it to be supported by a frame of simple construction.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of a windlass and supporting-frame constructed in accordance with my invention. Fig. 2 is a front view, partly in section, of the drum and operating mechanism, the frame being partly broken away. Fig. 3 is a side view of the operating mechanism, the frame being broken away and the operating-lever being shown in full lines in an intermediate position and in dotted lines in its tripping position. Fig. 4 is a face view of the ratchet. Fig. 5 is a similar view of the actuating clutch member with the pawls arranged in operative position. Fig. 6 is a detail view of the stop-pawl detached. Fig. 7 is a similar view of the bracket detached.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

The frame which I prefer to use as a support for the mechanism embodying my invention includes uprights 1, which respectively carry a bracket 2 and a journal-plate 3, provided with chilled cone journals or studs 4 and 5. The drum 6, which is terminally flanged, as shown at 7, is provided at one end with a bearing-plate 8, having a bearing-socket 9, in which the journal-stud 5 fits, and secured to the opposite end of the drum is a receiving clutch member 10, having an interiorly-toothed clutch-rim carrying an exterior ratchet 11. Fitted for revoluble movement in the clutch-rim is an actuating clutch member 12, consisting of a disk carrying pawls 13 for engaging the internal clutch-teeth, whereby motion may be communicated from the actuating clutch member to the receiving clutch member when the former is turned in one direction, while the receiving clutch member and the attached drum are adapted to rotate freely in the opposite direction. In the construction illustrated the clutch-pawls are provided with enlarged rounded heads 14, fitting in open-sided seats 15 on the inner surface of the actuating clutch-disk and are held from accidental displacement by the contiguity of the receiving clutch-plate, said actuating clutch-disk being housed within the receiving clutch-rim to exclude dust from the operating members of the clutch; also, the actuating clutch member carries a rigidly-attached exterior pinion 15^a, with which meshes an internally-toothed segmental or arc-shaped rack 16, carried by an operating-lever 17. The pinion, with the attached clutch member or disk 12, is mounted upon a stud 18, which projects axially from the end of the drum 6 and may, as illustrated, consist of an integral portion of the receiving clutch member 10, which is attached rigidly to the end of the drum, and said stud is recessed at its outer end to form a bearing-socket 18^a, in which fits the cone bearing or stud 4, carried by the above-described bracket-plate 2, from which it will be seen that the drum is not provided with a spindle extending axially therethrough, but is mounted upon the supporting-frame by means of fixed cone-journals on the frame projecting into axial bearing-sockets carried by the drum.

The bracket-plate 2 may be secured to the contiguous upright 1 by any suitable means, such as fastening-screws 20, and in order to prevent the straining of such fastening devices I preferably provide said bracket-plate with outwardly-extending bearing-ears 21, located, respectively, contiguous to the extremities of said plate and bearing, respectively, against opposite sides of the upright, the above-described journal or stud 4 being located contiguous to the upper bearing-ear,

whereby any strain applied to said journal or stud in the operation of the rack is communicated by means of said contiguous ear to the upright of the supporting-frame. In the same way, contiguous to the lower bearing-ear, I provide the bracket-plate with a stud shaft or spindle 22, upon which is mounted the operating-rack, and which therefore forms the fulcrum of the operating-lever. At one end of the rack the internal teeth thereof are omitted to form a releasing-space 23, in which the pinion is adapted to rotate independently of the motion of the rack, said releasing-space being arranged at such a point that it is brought into registration with the pinion when the operating-lever is at one limit of its stroke, and in order that backward rotation of the drum, as in lowering a weight, may be controlled the lever is shown provided with a brake-shoe 24, which is located contiguous to one of the terminal flanges 7 of the drum, when the operating-pinion is released, as above described. Under ordinary circumstances, however, it is necessary to employ means for preventing backward rotation of the drum, and hence mounted upon an arm or extension 25 of the bracket-plate is a stop-pawl 26 to engage the exterior ratchet-teeth of the clutch-rim or an equivalent ratchet carried by that end of the drum contiguous to the operating-pinion. This stop-pawl is provided with a trip-stud 27 and the rack with a trip-ear 28, arranged contiguous to the releasing-space of the rack, whereby when the operating-lever is disposed to register the releasing-space with the operating-pinion the stop-pawl will be disengaged from the ratchet by the contact of the bevel-faced trip-ear with the trip-pin of the stop-pawl. This arrangement of parts is particularly advantageous in the fact that after oscillating the lever to elevate a weight to the proper height the continuation of one of the strokes sufficient to arrange the releasing-space of the rack in registration with the pinion will release the latter and at the same time trip the stop-pawl, whereupon the drum is free to rotate backwardly and allow the descent of the weight. If this descent is too rapid without control, a still further movement of the operating-lever in the same direction and through a very small arc, as will be seen by reference to Fig. 3, wherein in dotted lines the stop-pawl is shown tripped and the brake-block is located near the periphery of the adjacent flange 7 of the drum, will cause the frictional contact of the brake-block with the drum, and thus enable the operator by the application of greater or less pressure to vary the rapidity of descent of the weight.

It will be understood that in applying the mechanical movement above described to the various uses to which it is suited any other revoluble or movable part constituting a driven member may be substituted for the drum, and that various other changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described my invention, what I claim is—

1. The combination with a revoluble driven member, of an operating-pinion having a clutch connection with said driven member, an oscillatory rack normally meshing with said pinion, and adapted at one point of its movement to release the same, a stop-pawl for normally preventing backward rotation of the driven member, and trip mechanism actuated by the rack to disengage the stop-pawl, and release the driven member when the operating-pinion is released by the rack, substantially as specified.

2. The combination with a revoluble driven member, of an operating-pinion connected by a clutch mechanism with said driven member for communicating motion thereto in one direction, an oscillatory rack normally meshing with said pinion and adapted at one point of its movement to release the same for backward rotation, a stop-pawl for normally preventing backward rotation of the driven member, and a trip carried by the rack for disengaging the stop-pawl when the operating-pinion is released by the rack, substantially as specified.

3. The combination with a revoluble driven member, of an operating-pinion having a clutch connection with said driven member, an oscillatory rack normally meshing with the pinion and adapted at one point of its movement to release the same for independent rotation, a stop-pawl normally in engagement with the driven member to prevent backward rotation thereof, and having a trip-pin, and a trip-ear carried by the rack for engaging said trip-pin and disengaging the stop-pawl from the driven member when the said pinion is released by the rack, substantially as specified.

4. The combination with a revoluble driven member, of an operating-pinion having a clutch connection with said driven member, an oscillatory rack normally meshing with the driving-pinion and adapted at one point of its movement to release the same for free rotation, a stop-pawl for normally preventing backward rotation of the driven member, trip mechanism, of which one member is carried by the rack, for disengaging the stop-pawl when said pinion is released by the rack, and brake mechanism, operatively connected with the rack, for engagement with the driven member when the pinion is released by the rack, substantially as specified.

5. The combination with a revoluble driven member, of a driving-pinion having a clutch connection with the driven member, an oscillatory rack meshing with said pinion and having a releasing-space at one end of its toothed portion, a stop-pawl normally engaged with the driven member to prevent backward rotation thereof, a trip device for disengaging the pawl to release the driven member, when

the releasing-space of the rack registers with said pinion, and a brake-shoe operatively connected with the rack for contact with the driven member when released by the stop-pawl, substantially as specified.

6. The combination with a revoluble driven member, of a coaxial driving-pinion, a clutch mechanism for communicating motion in one direction from the pinion to the driven member, an oscillatory rack normally meshing with the pinion and provided at one end with a toothless releasing-space, a trip device carried by the rack for disengaging the stop-pawl from the driven member when said releasing-space registers with the pinion, an operating-lever attached to the rack, and a brake-shoe on the operating-lever for contact with the driven member at the limit of the throw of the rack, substantially as specified.

7. The combination with a revoluble driven member, of a coaxial operating-pinion, receiving and actuating clutch members respectively carried by said driven member and pinion, and provided with ratchet-teeth and pawls for engaging the same, a segmental rack mounted for oscillation in the plane of, and normally meshing with, the pinion, said rack being capable of a movement in one direction sufficient to release the pinion, a stop-pawl engaged with exterior ratchet-teeth on the receiving clutch member and provided with a trip-pin in the plane of the rack, and a trip-ear carried by the rack for disengaging the stop-pawl to release the driven member, substantially as specified.

8. In a windlass, the combination of oppositely-located bracket and journal plates, respectively provided with bearing journals or studs, a drum provided at its ends with bearing-sockets to receive said journals or studs, an operating-pinion mounted coaxially with the drum, receiving and actuating clutch members, consisting respectively of a clutch-rim and a clutch-disk carried respectively by the drum and the operating-pinion and provided, respectively, with internal ratchet-teeth and clutch-pawls for engaging said teeth, the clutch-rim being also provided with external ratchet-teeth, an oscillatory rack meshing with said pinion and provided with means whereby motion may be communicated thereto, and a stop-pawl engaged with the external ratchet-teeth of the clutch-rim for preventing backward rotation of the drum, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WILLIAM THOMAS WOOD.

Witnesses:

P. L. HOYTE,

W. R. ANDERSON.