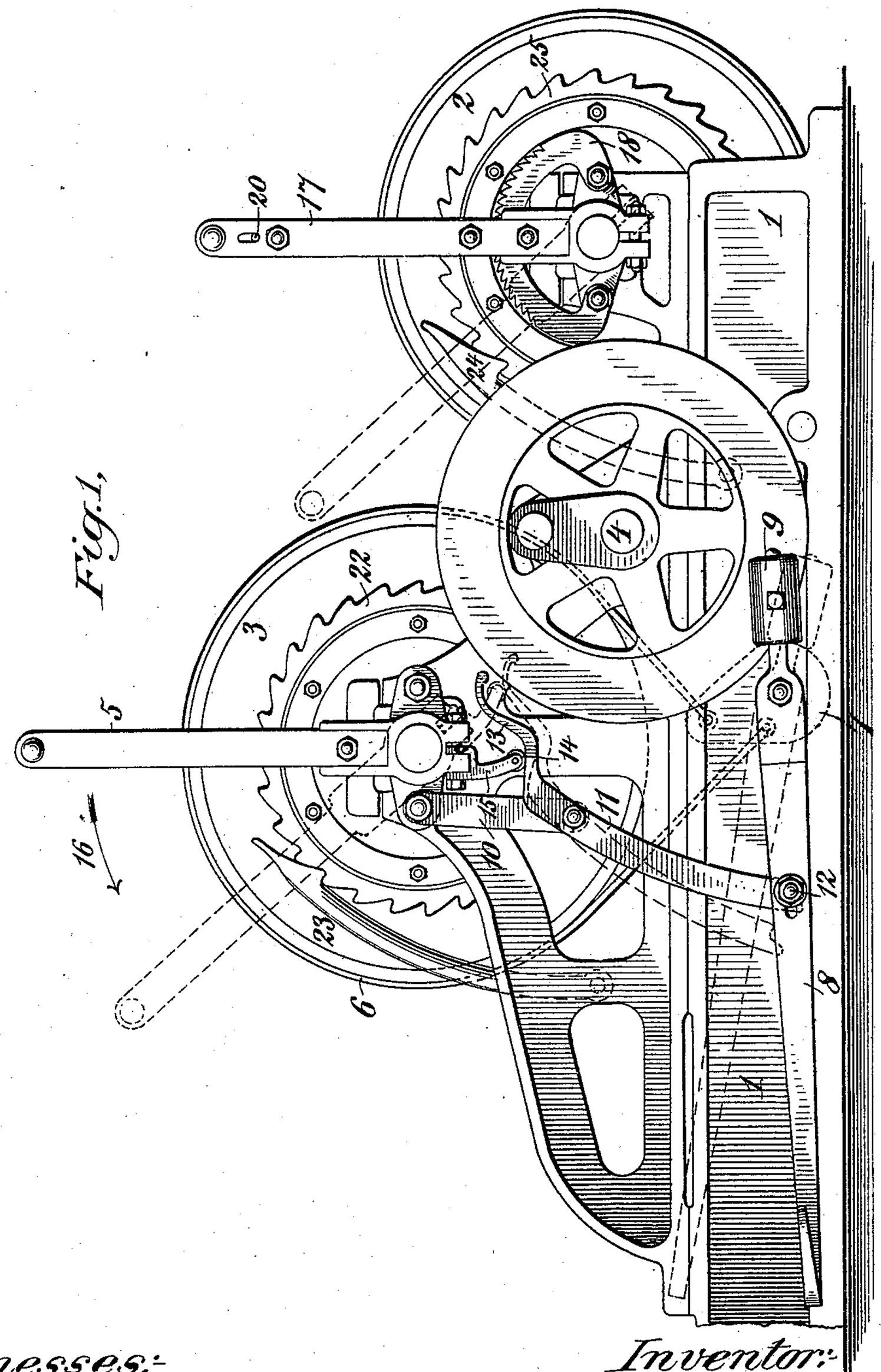
(No Model.) 2 Sheets—Sheet 1

W. F. COURSEN.

ROPE DRUM APPARATUS.

No. 576,554. Patented Feb. 9, 1897.

Fig. 1.



Witnesses:-

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Inventor:-

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(No Model.) 2 Sheets—Sheet 2.

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No. 576,554. Patented Feb. 9, 1897.

Fig. 2.

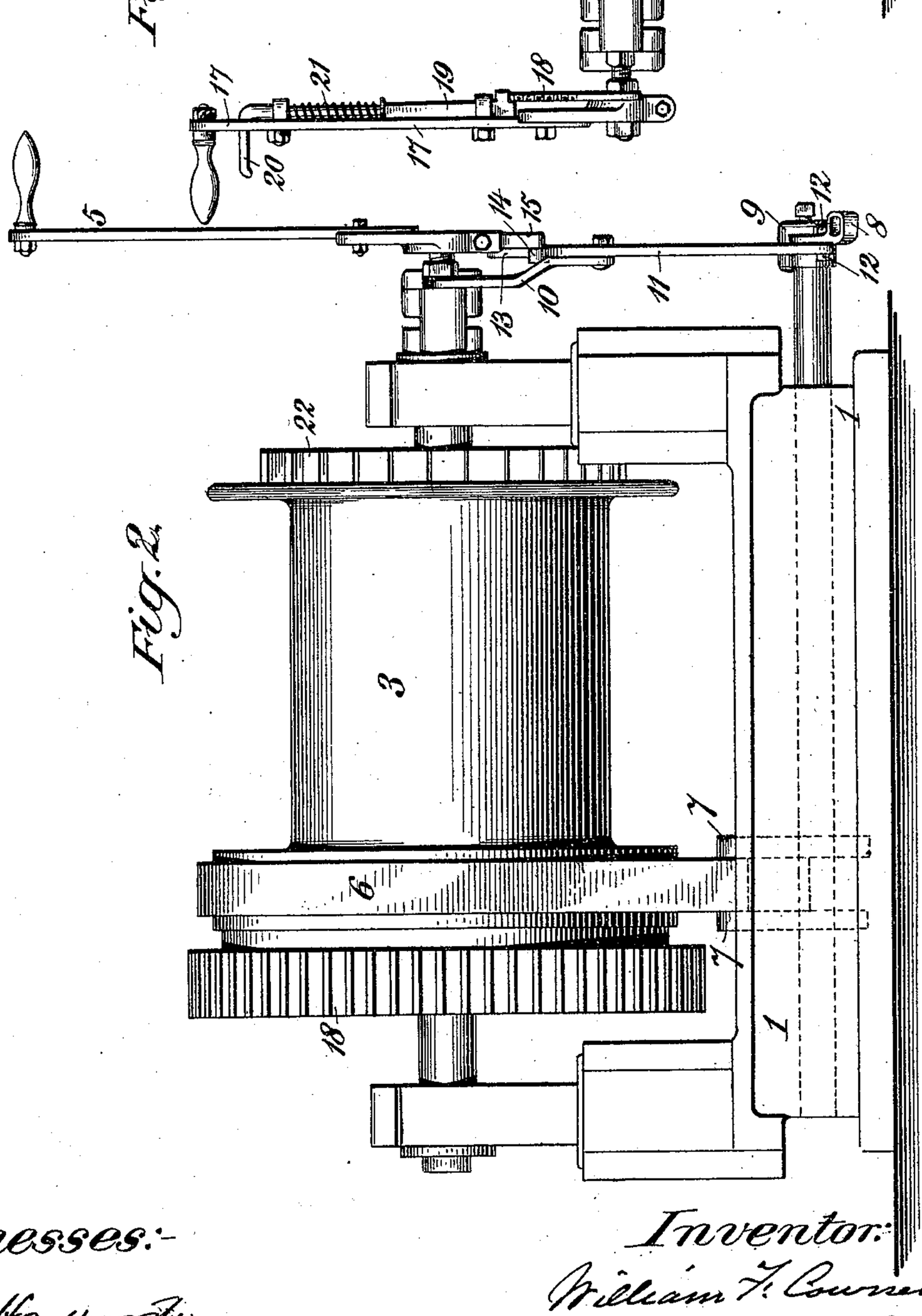

Fig. 3.

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UNITED STATES PATENT OFFICE.

WILLIAM F. COURSEN, OF PURDY'S STATION, NEW YORK.

ROPE-DRUM APPARATUS.

SPECIFICATION forming part of Letters Patent No. 576,554, dated February 9, 1897.

Application filed March 28, 1895. Serial No. 543,517. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. COURSEN, a citizen of the United States, and a resident of Purdy's Station, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Rope-Drum Apparatus, of which the following is a specification.

This invention relates to rope-drum apparatus which is especially adapted for use in connection with derricks.

In the accompanying drawings, Figure 1 is an end view of the apparatus with gear-wheel omitted. Figs. 2 and 3 are side views of different portions thereof.

1 is the frame.

2 is the friction-drum by which the fall-rope is usually operated. 3 is the friction-drum by which the boom is usually operated. They may be constructed as shown in United States Patent No. 429,991, dated June 10, 1890. Heretofore the movements of these drums have been controlled by levers, as 5 and 17, by which the friction is applied, and by brakes, as shown in United States Patent No. 150,765, dated May 12, 1874, but no mechanism has been provided whereby the friction or brake of either drum could be positively held mechanically in a determined position.

The object of my invention is to provide means whereby the attendant can place the friction of the drum 2 in proper adjustment and leave it mechanically held there while he gives his whole attention to the drum 3 that operates the boom.

Another object is to provide means whereby the brake is so controlled as to give the operator additional control over the boom.

4 is the shaft from which the gear-wheel is usually driven, as, for instance, gear-wheel 18 of the drum 3.

5 is the lever by which the friction is thrown onto the rope-drum 3 in the ordinary manner.

6 is the ordinary band-brake, and 7 is the ordinary rocker, whereby the band-brake is operated.

8 is the ordinary foot-lever, whereby the shaft of the rocker 7 is operated, and 9 is the ordinary counterbalance-weight.

Between the parts above referred to I introduce the following mechanism, whereby the brake is mechanically held in operation when the friction is off and automatically thrown out of operation as the friction is applied: Upon the hanger 10, fixed to the frame, is fulcrumed a lever 11. One arm of this lever abuts against a pin 12, carried by the foot-lever 8, and the other arm is constructed of the form shown in Fig. 1 at 13, so as to be operated upon by a roller 14, carried by an arm 15, fixed on the lever 5. The form of the lever 11 at 13 is such that it is inclined to the sweep of the roller 14, and will therefore be depressed as the lever 5 is moved in the direction of the arrow 16, so as to throw the lever 11 into the position shown in dotted lines in Fig. 1. This disengages the lever 11 from the pin 12 and permits the counterbalance-weight 9 to move the foot-lever into the dotted position shown in Fig. 1, so as to release the band-brake. The form for the lower end of the lever 11, adapting it to engage with the pin 12, is shown in the dotted position. It will now be seen that so long as the friction is off, the lever 11 will hold the foot-lever in the position to automatically hold the band-brake on. When, however, the friction is thrown on by the movement of the lever 5 in the direction of the arrow 16, so long as the friction remains on the lever 11 will be held in such position that it cannot engage with the pin 12 in any position of the foot-lever 8. In other words, when the roller 14 lies against the horizontal surface of the lever 11, as shown in full lines in Fig. 1, as is the case when the friction-surfaces are out of contact with each other, the lever 11 will lock the brake-lever, and this lock will not be removed until the lever 5 is moved far enough in the direction of the arrow 16 to bring the friction-surfaces in contact and to bring the roller 14 onto the inclined surface 13. Therefore, starting with the brake locked and with the friction-surfaces out of contact, the first effect of moving the lever 5 will be to bring the friction-surfaces into contact and to move the roller 14 along the horizontal surface of the lever 11. The second effect of moving the lever 5 will be to vary the pressure of the friction-surfaces against each other, and it is during this stage of the movement of the lever that the lock is held removed from the brake. Therefore so long as the friction is

on to a greater or less extent the operator can use the foot-lever 8 just as though the lever 11 were not present. The importance of this feature will be better understood when it is considered that in the operation of such a contrivance the operator regulates the movements of the drum either by the alternate application of the friction and the brake or in some cases by the brake assisted by a slight application of the friction, sufficient, for instance, to enable the brake to control the movement of a boom loaded beyond the capacity of the brake alone to control it.

17 is the lever by which the friction is applied to the drum 2. Upon the frame of the machine adjacent to the lever 17 is placed a stationary ratchet 18, with which engages a reciprocating pawl 19, mounted on the lever 17 and moved in one direction by the handle 20 and in the opposite direction by the spring 21. By the handle 20 the operator can place the pawl in any tooth of the ratchet 18 and thereby cause the lever 17 to be mechanically held in any desired position.

22 is a ratchet-wheel fixed to the drum 3, with which a dog 23 engages, so as to prevent backward movement of the drum 3. Backward movement of the drum 2 is prevented by the engagement of dog 24 with ratchet 25, fixed to that drum.

I claim—

1. In combination a friction-drum, a lever operating the friction thereof, a brake engaging said drum, a brake-lever, a brake-locking bar 11 and a projection operated by the friction-lever whereby said brake-locking bar is tripped, substantially as described.

2. In combination a friction-drum, a lever operating the friction thereof, a brake engaging said drum, a brake-locking bar and a connection between said brake-locking bar and said friction-lever constructed substantially as described whereby said bar remains in locking position when the friction-surfaces are substantially disconnected but is moved and held out of locking position as the pressure between said friction-surfaces is varied, substantially as described.

3. In combination, a friction-drum, a lever by which the friction is applied, an arm 15 connected with said lever, a lever 11 engaging with said arm, a brake, a brake-lever 8 containing the counterbalance 9 and a member mounted upon said lever 8 against which the lever 11 abuts, substantially as described.

4. In combination with the frame, the following parts: a fall-rope friction-drum 2, a boom-rope friction-drum 3, a lever by which friction is applied to the drum 2, means whereby said lever may be locked at various degrees of friction, a brake acting upon the drum 3, a lever by which said brake is applied, a stop whereby said brake is locked in position, a lever whereby friction is applied to said drum 3 and a trip connected with said last-named lever whereby said stop is moved, substantially as described.

Signed at Purdy's Station, in the county of Westchester and State of New York, this 25th day of March, A. D. 1895.

WILLIAM F. COURSEN.

Witnesses:

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CHARLES L. SEAMAN.