

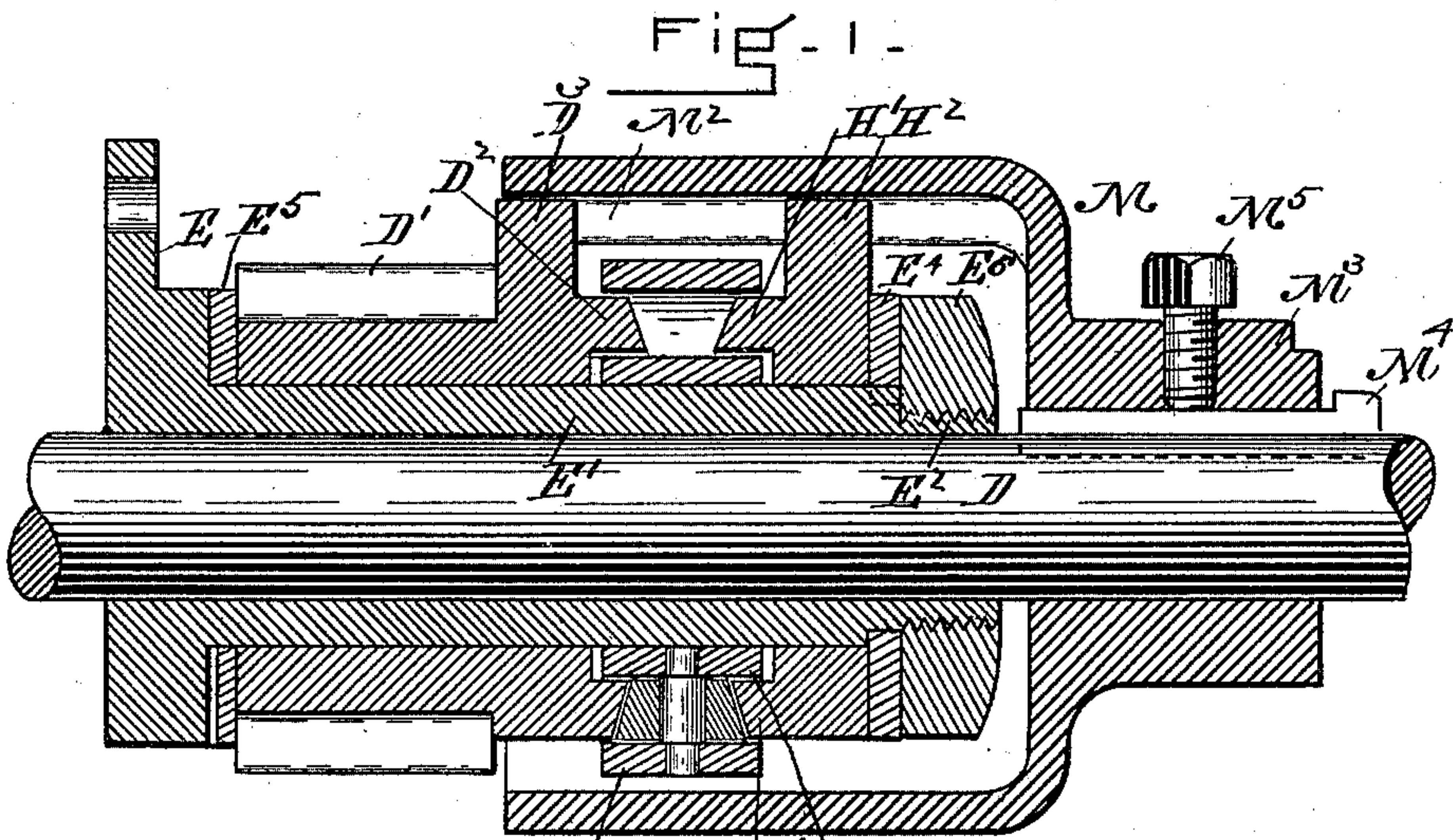
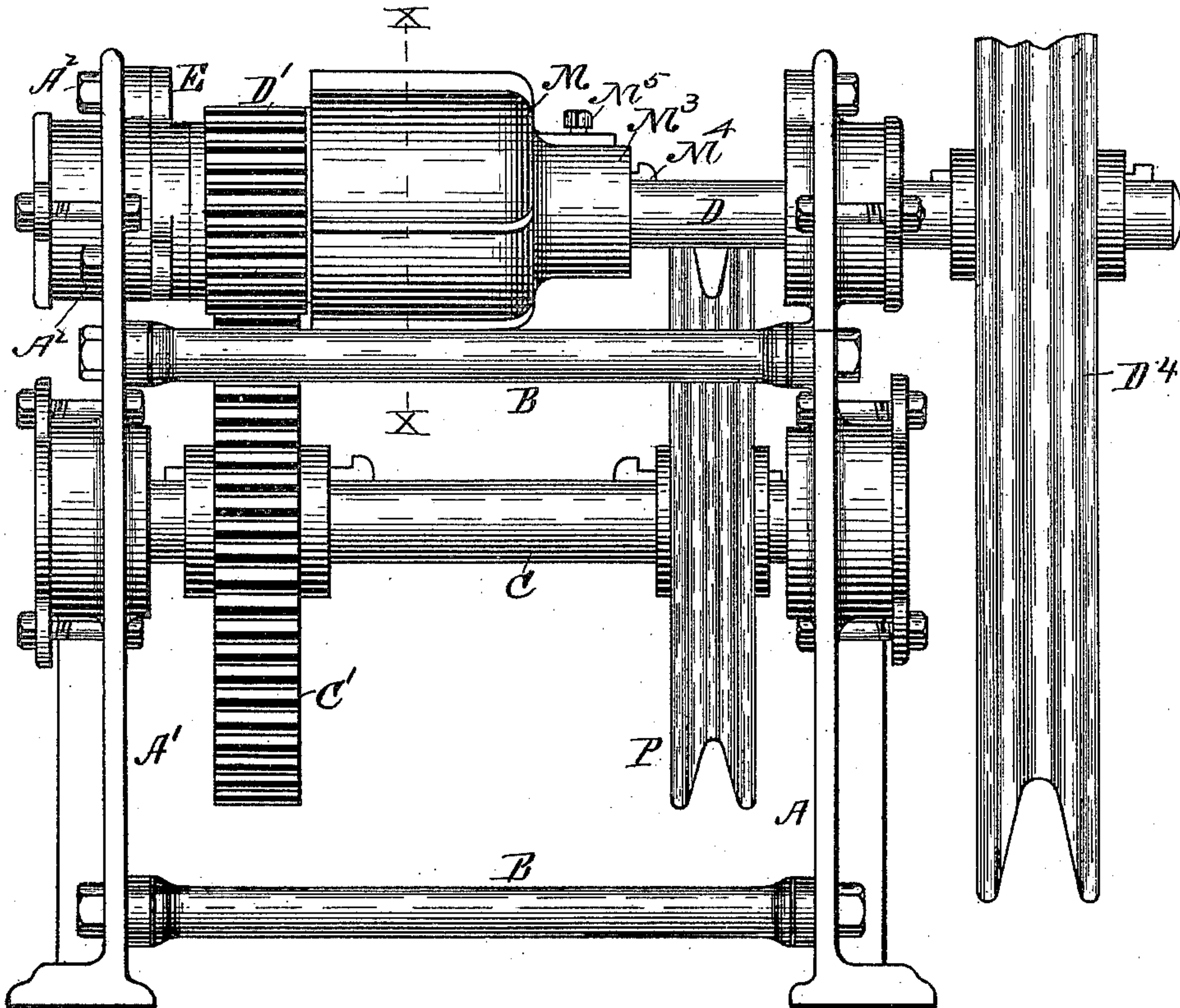
(No Model.)

2 Sheets—Sheet 1.

W. C. BAXTER.  
HOISTING APPARATUS.

No. 584,301.

Patented June 8, 1897.



WITNESSES

Frank G. Parker

Frank G. Hattie

FIG. 2.

INVENTOR

William C. Baxter

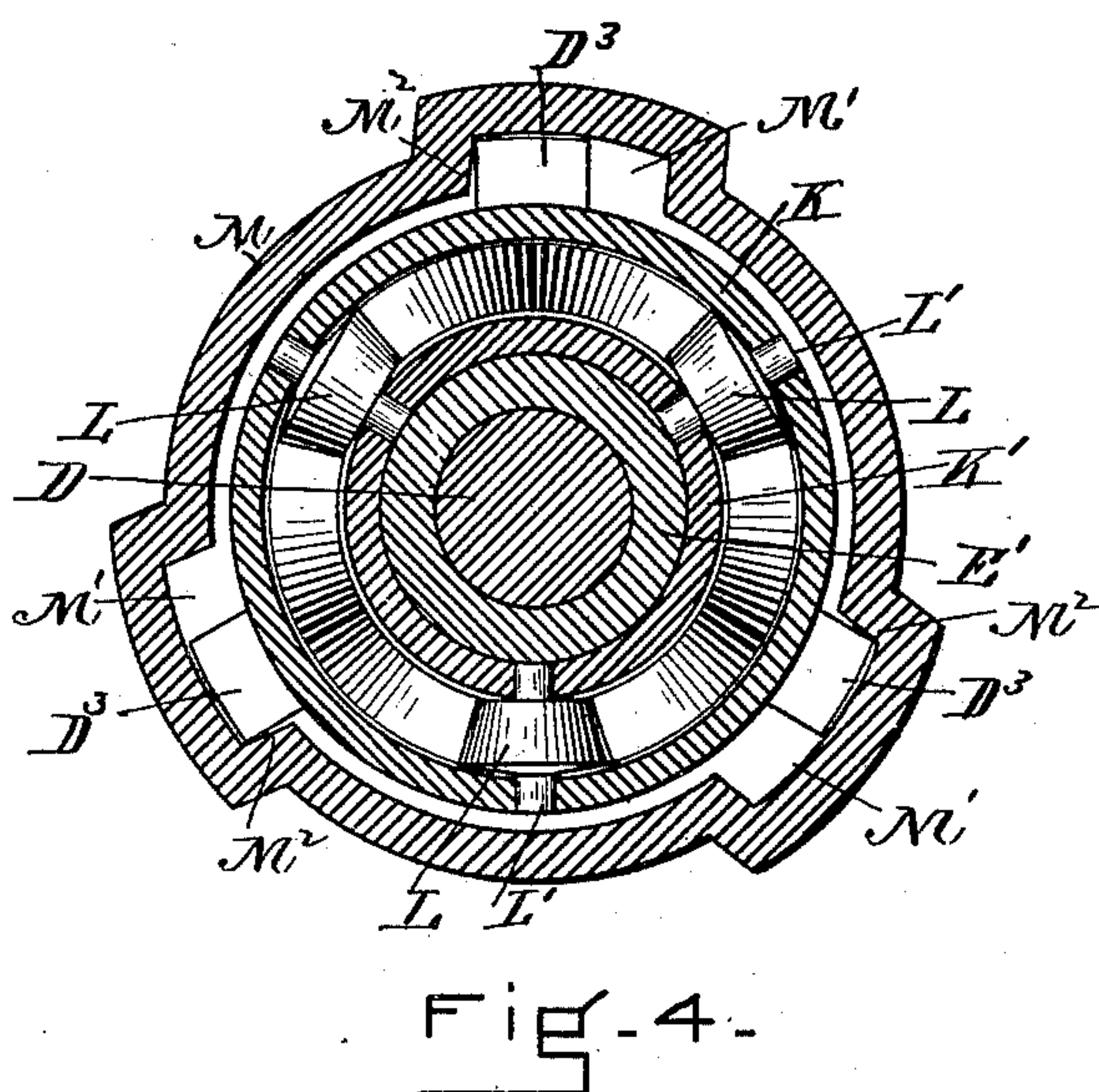
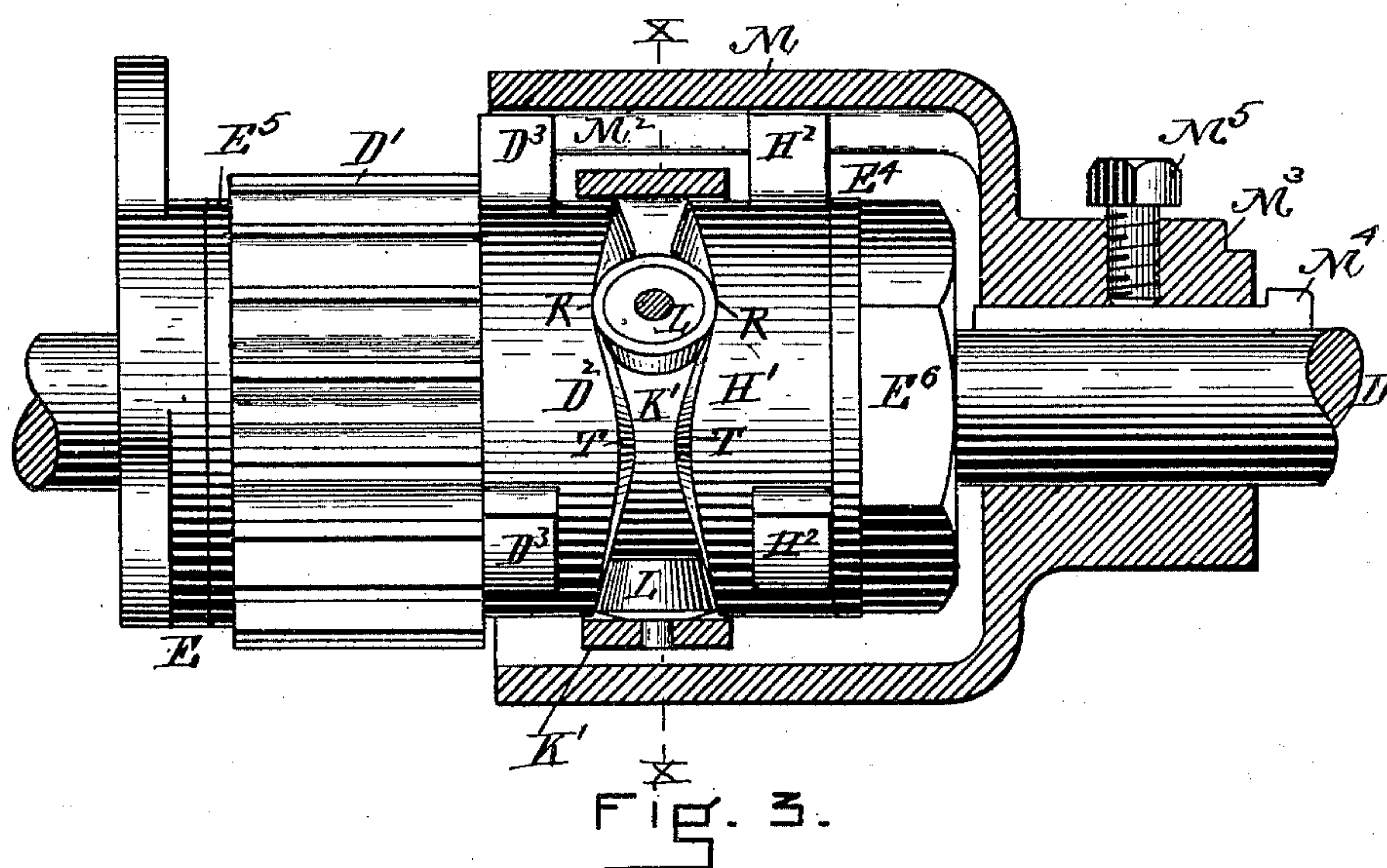
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Frank G. Hattie

INVENTOR

William C. Foster



# UNITED STATES PATENT OFFICE.

WILLIAM C. BAXTER, OF EAST BRIDGEWATER, MASSACHUSETTS, ASSIGNOR  
OF ONE-HALF TO FREDERICK C. MANN, OF SAME PLACE.

## HOISTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 584,301, dated June 8, 1897.

Application filed October 21, 1896. Serial No. 609,604. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM C. BAXTER, of East Bridgewater, in the county of Plymouth and State of Massachusetts, have invented a  
5 new and useful Improvement in Hoisting Apparatus, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to a device to be used  
10 in connection with a hoisting apparatus; and it consists in a mechanism which will act both as a clutch and as a friction-stop, the object being to provide a simple device by which the hoisting-drum may be operated or held in  
15 check at any position. This object I attain by the mechanism shown in the accompanying drawings, in which—

Figure 1 is an elevation showing one of my hoisting-machines complete. Fig. 2 is a vertical longitudinal section showing the construction of the clutch and friction device. Fig. 3 shows the same parts partly in section and partly in elevation. Fig. 4 is a cross-section taken on line *x x* of Figs. 1 and 3.

25 In the drawings, A A' B B represent the frame of the machine. The main or hoisting shaft C has a rope wheel or drum P, about which the hoisting rope or chain works.

C' is a spur-gear by means of which the  
30 hoisting-wheel P is made to rotate.

D' is a pinion-gear engaging with the spur-gear C' and made to rotate by the shaft D, which in turn is made to rotate by means of the rope-wheel D<sup>4</sup>.

35 My invention is embodied in that part of the machine that serves to connect the shaft D with the pinion-gear D', and may be described as follows: The shaft D passes through a fixed sleeve E E', the said sleeve being fastened to the frame by the bolts A<sup>2</sup> A<sup>2</sup>. (See Fig. 1.) A screw-thread E<sup>2</sup> is cut upon one  
40 end of the sleeve, as shown in Fig. 2, upon which the nut E<sup>6</sup> is secured. The pinion D' is journaled upon the sleeve E E' and has attached to it a crown-cam piece D<sup>2</sup>. (See Figs. 2, 3, and 4.) The crown-cam piece D<sup>2</sup> is firmly attached to the pinion D', but both are loose on the sleeve E E'. A second crown-cam H' is mounted loosely upon the sleeve E E'. The  
45 two crown-cam pieces D<sup>2</sup> and H' form between

them an annular groove of varying width, as shown in Fig. 3. In this groove I place a number of coned rollers L L L. The number of rollers may be varied to suit the size and other conditions of the device. The widths  
55 of the groove between the faces of the crown-cams should be sufficient in the widest places R R to allow of perfect freedom of motion of the coned rollers L; but in their narrowest places T T there is not room for the rollers,  
60 and any tendency of the rollers L L to move from the wide to the narrow places will tend to force the crown-cam pieces apart, and as the said pieces are held from spreading by the collars E<sup>4</sup> and E<sup>5</sup> it is obvious that the  
65 effort to spread or push apart the crown-cams D<sup>2</sup> and H' will cause a friction to be brought onto the inner faces at the fixed ends (in this case the washers E<sup>4</sup> and E<sup>5</sup>) of the fixed sleeve E E' (see Figs. 2 and 3) and thus resist the  
70 rotation of the pinion D', which is attached to the crown-cam D<sup>2</sup>.

The coned rollers L are held relatively in place by the rings K and K' and by the pins or axles L' L'. The rings K and K' and the axles  
75 L' L' form a "spider," which is free to move around the sleeve E'.

The crown-cams D<sup>2</sup> and H' are provided with lugs, respectively, D<sup>3</sup> D<sup>3</sup> D<sup>3</sup> and H<sup>2</sup> H<sup>2</sup> H<sup>2</sup>, which lugs may engage with shoulders M<sup>2</sup> M<sup>2</sup>  
80 M<sup>2</sup>, formed in recesses M' M' made in the hood M. (See Figs. 3 and 4.) The hood M is made fast to the shaft D by means of the key M<sup>4</sup> and set-screw M<sup>5</sup> in the hub M<sup>3</sup>.

As the recesses M' M' M' in the hood M are  
85 considerably wider than the lugs D<sup>3</sup> or H<sup>2</sup>, it is evident that the two crown-cams D<sup>2</sup> and H' may have a small relative motion about their common axes, but it is also evident that any such relative motion will at once cause a clos-  
90 ing together of the walls of the groove between the crown-cams, so that the rollers L L will by reaction force their connected parts hard against the fixed washers E<sup>4</sup> and E<sup>5</sup>, thus preventing the pinion D' from rotating and  
95 through it and the spur-gear C' and shaft C hold the hoisting drum or wheel P in place.

The arrangement of the crown-cams and their lugs D<sup>3</sup> D<sup>3</sup> and H<sup>2</sup> H<sup>2</sup> are such that when the lugs D<sup>3</sup> and H<sup>2</sup> are in line—that is, resting  
100



against the shoulders  $M^2$  of the hood—then there will be no strain to force the crown-cams apart and there will be no friction on the fixed washers  $E^4$   $E^5$ , so that the pinion  $D'$  and the  
5 other parts can freely rotate.

The working of the device is as follows: A load placed on the wheel  $P$  will give motion to the pinion  $D'$ , and this will cause the crown-cams  $D^2$  to start to rotate, but as the crown-  
10 cams  $H'$  stand still the rollers  $L$   $L$  will act as wedges and force the cams apart, so as to bring friction onto the parts of the sleeve  $E$   $E'$ , and thus stop the rotation of the apparatus and hold the load in suspension. To raise  
15 the load, the operator has only to draw on a rope (not shown) attached to the wheel  $D^4$ , and this will cause the hood  $M$  to rotate and bring one of the shoulders of the recesses  $M'$  in contact with the lugs  $D^3$   $H^2$  and force them  
20 into line, thus providing free spaces between the crown-cams for the rollers and remove the tendency to cause friction, as has been explained. Now by a continued strain on the rope-wheel  $D^4$  the load on the wheel  $P$  can be  
25 raised. To lower the load, the wheel  $D^4$  is turned in the opposite direction, and as soon as the lugs  $D^3$   $H^2$  are brought into line the friction on the parts of the sleeve  $E$   $E'$  is removed. It follows from the manner in which  
30 the groove between the crown-cams is formed

that the device will act equally well in either direction.

I claim—

In a hoisting device the combination of a working pinion having a crown-cam attached, 35 said crown-cam having lugs and adapted to act with rollers attached to a spider, said rollers acting between the said crown-cam and a second crown-cam also having lugs, the second crown-cam and spider; with a sleeve upon 40 which the said cams are journaled and having parts against which the said cams may exert friction, when forced apart by said rollers, an operating-shaft passing through said sleeve and provided with a hood having re- 45 cesses adapted to loosely engage with the above-mentioned lugs on the said crown-cams and to control their motion so that the said rollers between them may or may not act to force them apart and thus check the motion 50 of the apparatus, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 17th day of 55 October, A. D. 1896.

WILLIAM C. BAXTER.

Witnesses:

FRANK G. PARKER,  
FRANK G. HATTIE.