

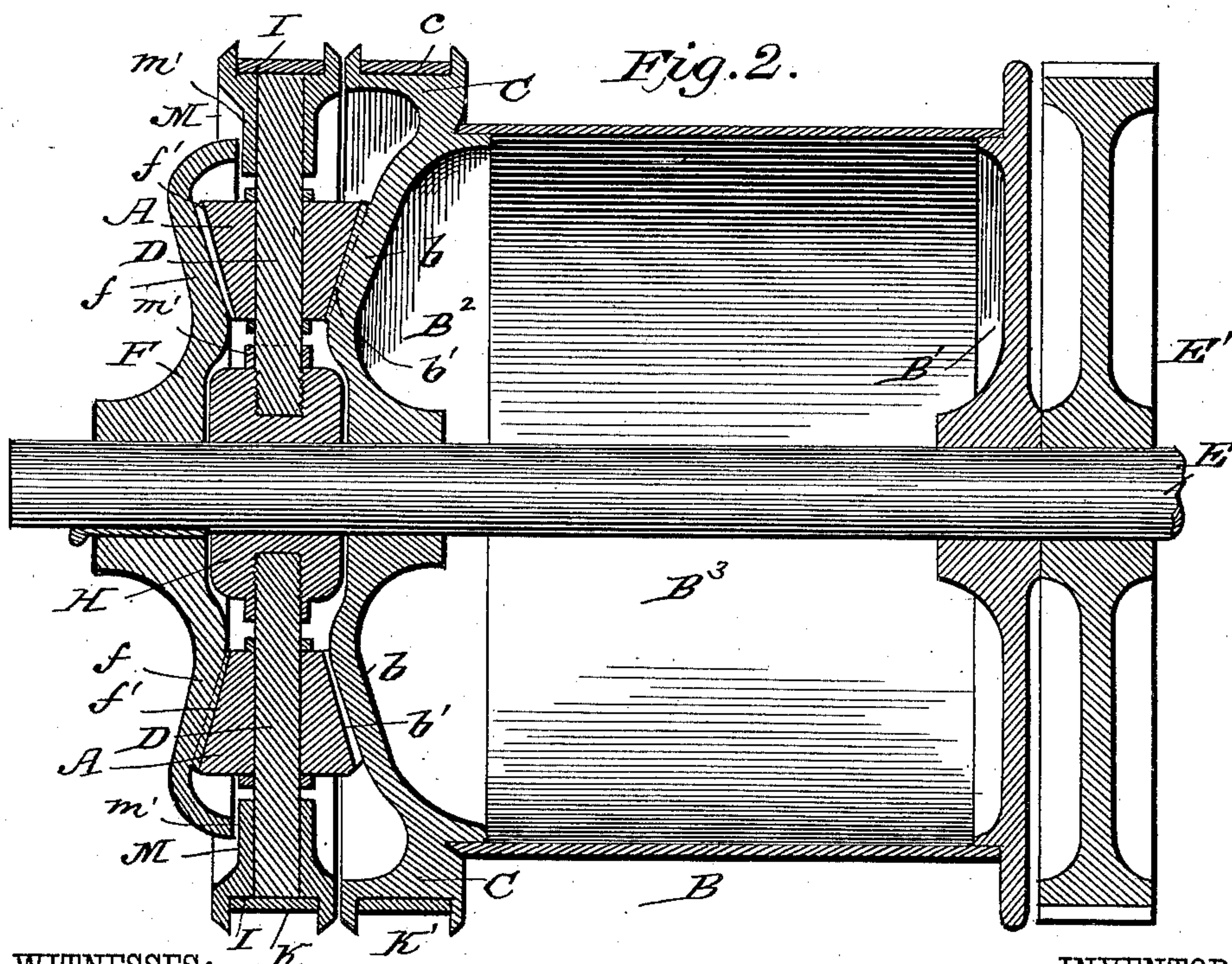
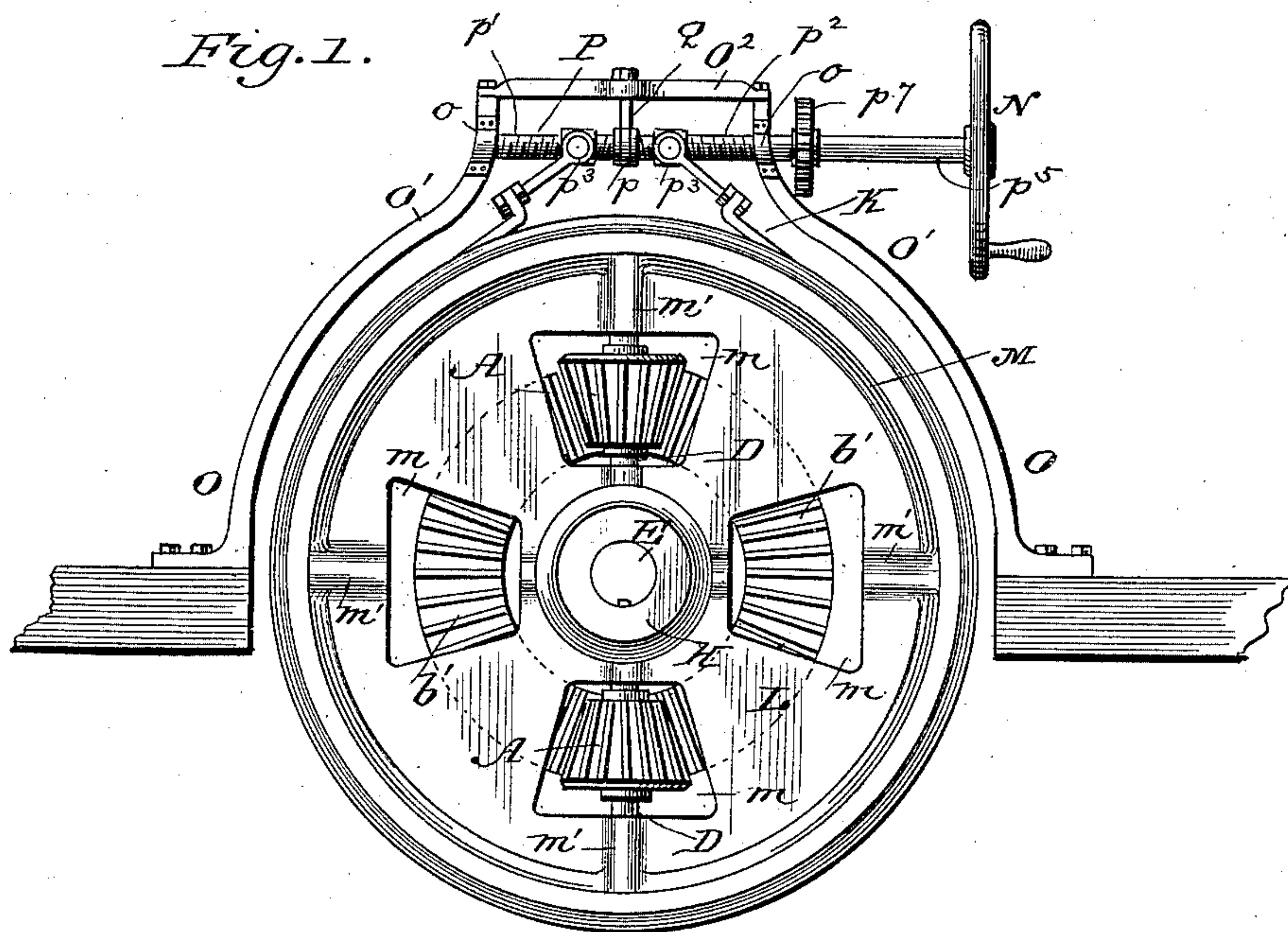
(No Model.)

2 Sheets—Sheet 1.

T. W. LEMIEUX.  
HOISTING MACHINE.

No. 401,841.

Patented Apr. 23, 1889.



WITNESSES:

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Jas. A. Chapman  
Fred G. Dieterich

INVENTOR:

INVENTOR:  
Timothy W. Lemieux  
BY *Maan Le*

ATTORNEYS.

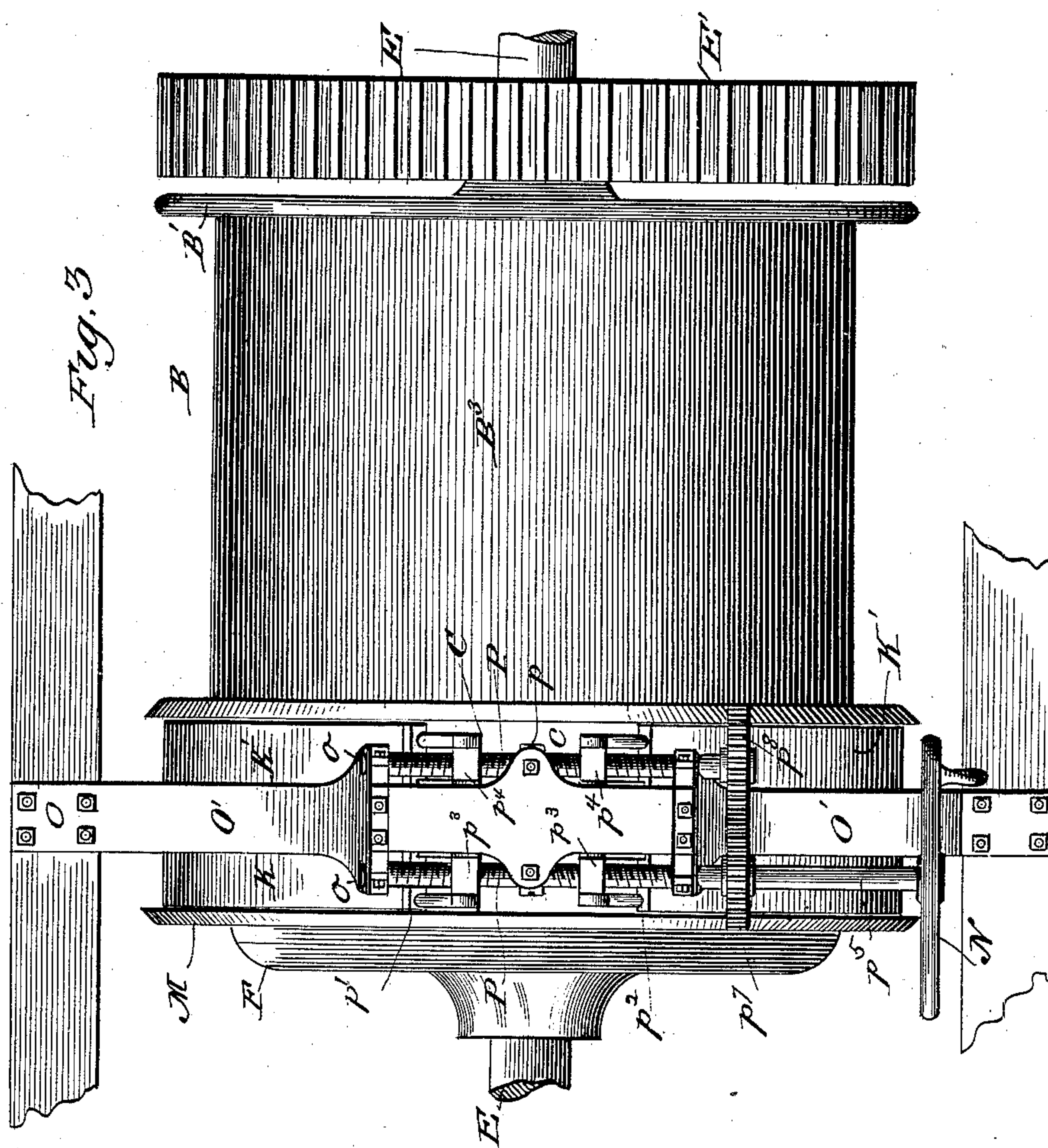
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WITNESSES:

Jos. A. Ryan  
Fred G. Dietrich

INVENTOR:

Timothy W. Lemieux  
BY *Man L*

ATTORNEYS.



# UNITED STATES PATENT OFFICE.

TIMOTHY W. LEMIEUX, OF DULUTH, MINNESOTA.

## HOISTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 401,841, dated April 23, 1889.

Application filed October 12, 1888. Serial No. 287,961. (No model.)

*To all whom it may concern:*

Be it known that I, TIMOTHY W. LEMIEUX, residing at Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Hoisting-Machines, of which the following is a specification.

My invention relates to means for transmitting a reversible motion to machines which may be used for hoisting, conveying, or traction purposes; and it consists in certain combinations and peculiar construction of parts, as will be hereinafter fully described in the annexed specification, and particularly pointed out in the claims, reference being had to the accompanying drawings, in which—

Figure 1 is a side view of the improvement with the outer disk, F, removed. Fig. 2 is a longitudinal vertical section taken on line 2 2, Fig. 1, with the disk F in place; and Fig. 3 is a top view of the same.

Referring to the accompanying drawings, E denotes the power-shaft, which is mounted in suitable bearings, (not shown,) and is provided near one end with a drive-gear, E', which is geared with and operated by driving mechanism of any well-known construction. Upon the shaft E is loosely mounted the drum B, which consists of the heads B' B<sup>2</sup> and the cylinder B<sup>3</sup>, which is connected with the heads B' and B<sup>2</sup>, as shown. The head B<sup>2</sup> is formed with an extended portion forming a band-wheel, C, provided with a brake-band seat, c. The web portion of the head B<sup>2</sup> is inclined outwardly, as at b, and is provided on its outer face with a circumferential row of bevel gear-teeth, b', the purpose of which will presently appear.

Loosely mounted on the shaft E, and just to the outside of the head B<sup>2</sup>, is a pulley or disk, M, provided on its peripheral surface with a brake-band seat, I, and at its central portion with a hub, H. The body or web portion L of the pulley M is provided with a series of openings, m m, and with radial enlargements m', which enlargements, in connection with the hubs, form bearings for the radial fixed arms D D, of which arms the same number or less may be used as there are openings in the web L, only two arms being illustrated in the drawings.

Upon the radial arms D D are loosely

mounted bevel gear-pinions A A, which project through and to each side of the openings m m and engage with the cogged surface b of the head B<sup>2</sup>.

Mounted on the shaft E and keyed thereto is a disk, F, provided with an inwardly-inclined portion, f, provided upon its inner face with a circular cog-rim, f', which engages with the bevel-gears A, as clearly shown in Fig. 2 of the drawings.

O indicates a yoke secured to framing of the machine, which consists of the two side arms, O' O', which extend over the pulley M and the head B<sup>2</sup>, and the horizontal connecting-plate O<sup>2</sup>. Near their upper ends the arms O' are each provided with a pair of laterally-extending ears, o o, which form bearings for two screw-shafts, P P, which are each provided with a grooved collar, p p, with which engages a bail, Q, depending from the plate O<sup>2</sup>, which extends around the circumference of the grooved collar and prevents springing of the shaft P when the brake is applied. Each of the shafts P is provided with a right and left hand screw-section, p' p<sup>2</sup>, upon which are mounted the traveling boxes p<sup>3</sup> p<sup>4</sup>.

K denotes a brake-band, which embraces the pulley M, and has its ends connected to the sliding boxes p<sup>3</sup> p<sup>3</sup>, and K' denotes a similar band-brake, which embraces the band-wheel C, and has its ends connected to the sliding boxes p<sup>4</sup>, as shown. The shaft P is extended, as at p<sup>5</sup>, and is provided with a hand-wheel, N, and a gear-wheel, p<sup>7</sup>, which meshes with a similar gear-wheel, p<sup>8</sup>, on the shaft P'.

The operation of the device is as follows: When it is desired to wind up the cable or hoisting-rope upon the drum, the hand-wheel N is turned toward the right, which movement causes the band-brake to be applied to the pulley M and released from the band-wheel C. Power then being applied to the shaft E, it will carry with it in the same direction of rotation the disk F, which, engaging the bevel-gears A, which are held from revolving about the shaft by means of the band-brake K being applied and revolves said gears A, which, engaging with the geared surface of the head B<sup>2</sup>, will revolve it (the head) in a direction opposite to that of the shaft and wind up the hoisting-cable, as before stated.



When it is desired to permit the drum to unwind, the brake-band K is released from the wheel M, and, gradually applying the brake-band K' on the band-wheel C, the shaft E is then stopped from revolving and the disk F thereby held stationary. Now, as the hoisting-tackle unwinds from the drum it will revolve the drum, the head B<sup>2</sup> of which, engaging the bevel-gears A', will revolve them and at the same time carry the radial arms D D and pulley M with it about the shaft E, the bevel-gears A traveling upon the geared surface of the disk F, which, during the movement just described, remains in a stationary position with the shaft.

It will be observed that when the hand-wheel N is turned to the left it releases the band-brake K and at the same time applies the brake K' to the band-wheel C. These band-brakes are so adjusted in relation to each other that when the brake K is released from pulley M it will not at once apply the brake to the wheel C; but a further movement of the hand-wheel will be necessary to positively apply the brake to the wheel C. By this arrangement it will be seen that the speed of unwinding the drum may be readily regulated by the brake K' without interfering with the free operation of the wheel M. While I have shown and described bevel-gears and gear-surfaces to operate the several pulleys and disks, it is manifest that the same results may be obtained by arranging said parts for frictional contact.

From the foregoing description, taken in connection with the drawings, the operation and advantages of my improvement will be readily understood.

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

1. In a hoisting-machine, the combination, with the power-shaft, a drum loosely mounted thereon provided with a head having an annular brake-seat and a cogged surface on its outer face, and a disk having a cogged inner face fixedly secured upon the power-shaft, of a pulley loosely mounted on the said shaft between the drum-head and the fixed disk, said pulley provided with an annular brake-seat, cog-gears journaled in the web of the pulley M, adapted to engage the cogged surfaces of the drum-head and fixed disk, and brake mechanism, substantially as shown and described, for alternately braking the drum-head and loose pulley, as and for the purpose described.

2. The combination, with the shaft E, the drum B, and pulley M, loosely mounted on said shaft, said drum provided with a band-brake wheel, C, said pulley M provided with band-brake seat I', and the band-brakes K K', of the frame O, the screw-shafts P P, journaled in said frame, said shaft provided with right and left hand screw-sections  $p'$   $p^2$ , sliding boxes  $p^3$   $p^4$ , mounted on said screw-sections  $p'$   $p^2$ , the sliding boxes  $p^3$ , connected to the ends of the band-brake K, the boxes  $p^4$  being connected to the ends of the band-brake K', the pulley P, provided with a hand-wheel, N, and a gear-wheel,  $p^7$ , engaging a similar wheel,  $p^8$ , on shaft P', whereby the band-brakes may be alternately engaged and disengaged from operation with their respective hand-wheels, and means for revolving said drum B and the pulley M, substantially as shown and described.

TIMOTHY W. LEMIEUX.

Witnesses:

S. GEO. STEVENS,  
JAMES A. BOGGS.