(No Model.)

F. McMAHON.

HOISTING APPARATUS.

No. 403,546. Patented May 21, 1889.

Fig. 1.

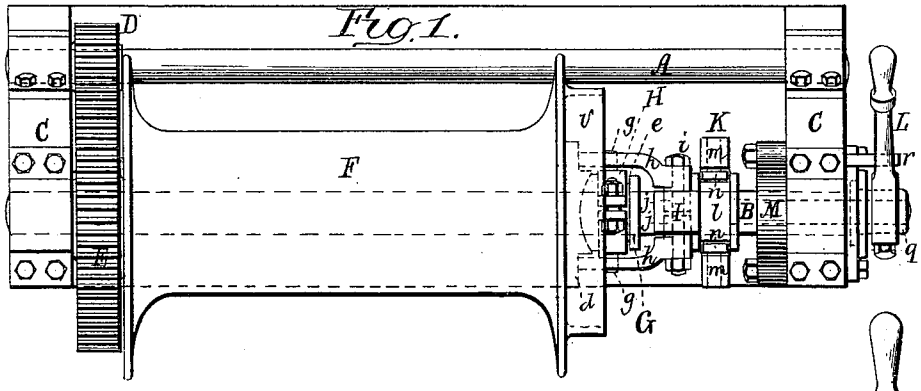


Fig. 6.

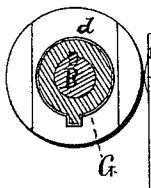


Fig. 2.

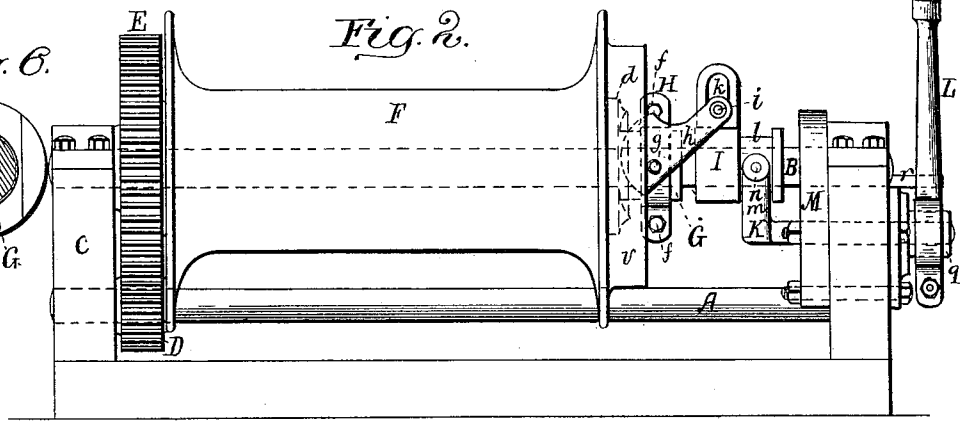


Fig. 5.

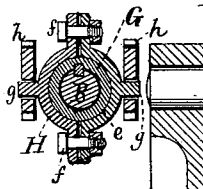


Fig. 3.

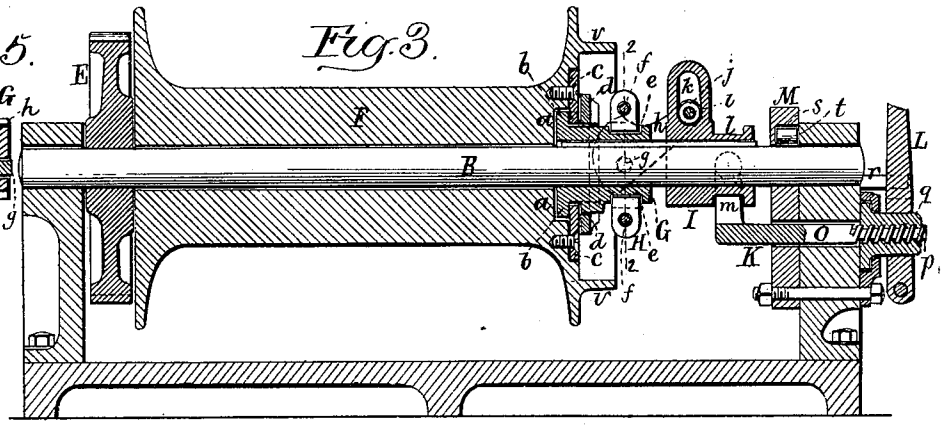


Fig. 7.

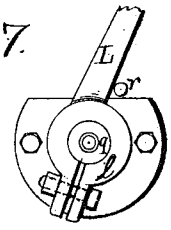
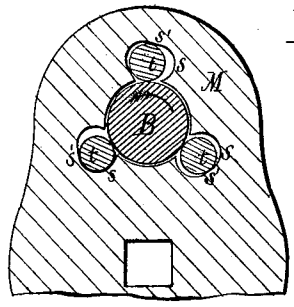


Fig. 4.



Witnesses.
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N. PETERS. Photo-Lithographer. Washington, D. C.

UNITED STATES PATENT OFFICE.

FRANCIS McMAHON, OF SOMERVILLE, ASSIGNOR OF ONE-HALF TO JOHN W. McMAHON, OF WEST ROXBURY, MASSACHUSETTS.

HOISTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 403,546, dated May 21, 1889.

Application filed February 2, 1889. Serial No. 298,486. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS McMAHON, a citizen of the United States, residing at Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Hoisting Apparatus; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

Figure 1 is a top view, Fig. 2 a side elevation, and Fig. 3 a longitudinal section, of that portion of a hoisting apparatus which is provided with my invention. Fig. 4 is a transverse section of the drum-shaft and the devices for holding it from turning in the direction indicated by the arrow. Fig. 5 is a transverse section on line 2 2 of Fig. 3. Fig. 6 is a transverse section of the drum-shaft and sleeve G, taken so as to show the connection of the annulus *d* to the said sleeve. Fig. 7 is an end view of the nut *q* and the plate which supports it on the standard, and also a part of the arm L.

The nature of my invention is defined in the claims hereinafter presented.

In the drawings, A denotes the crank-shaft, and B the drum-shaft, of the apparatus, both supported in bearings in the frame C. The shaft A has a spur-pinion, D, fixed to it and engaging with a gear, E, secured to the shaft B, by which the power applied to the crank-shaft is transmitted to the said shaft B.

F is the winding-drum supported on the shaft B and arranged to turn loosely thereon, one end of said drum being chambered at *a* to receive a flange, *b*, projecting from and forming part of a sleeve, G, which is splined to the drum-shaft so that it can be moved lengthwise thereon but shall revolve with it. An annulus, *c*, encircling the sleeve G rests in front of and bears against the outward face of the flange *b* and is fixed to the drum, as shown. Another annulus, *d*, encircling said sleeve is splined to it so as to revolve with it and with the drum-shaft, and is arranged in front of the outward face of the annulus *c*. The said sleeve G has an annular groove, *e*, in which is a clasp, H, made in halves confined to each other and in the groove *e* by bolts *f* and nuts screwed thereon. Each half of the clasp has a pivot, *g*, on each of which is fulcrumed a cammed lever, *h*, said levers bearing against the outward face of the annulus *d* and being connected at their outer ends by a bolt, *i*. The said outer ends of the levers have cylindrical projections *j*, which enter the slot *k* in an arm of a slide, I, splined to the drum-shaft and provided with an annular groove, *l*, as shown.

A forked slide, K, sustained in and arranged to move in the frame is provided in the prongs *m* of its fork with friction-rolls *n*, which enter the groove *l* and roll against the edges of said groove when the slide K is operated to move the slide I on the drum-shaft and facilitates the working of said slide I. The rolls *n* may, however, be dispensed with, if desired, and the slide worked by the prongs of the fork unprovided with friction-rolls.

The shank O of the slide K is prismatic, and is provided on its outer end with a coarse screw-thread, *p*, on which works a nut, *q*, so supported on the frame that by turning said nut the slide K will move the slide I and turn the levers *h* on their fulcra and cause them to force the annulus *d* and flange *b* against the opposite faces of the annulus *c* and lock the drum to the shaft B, or will move said levers so that the said annulus *d* and flange *b* shall release their grasp of the annulus *c* and allow the drum to revolve freely on the drum-shaft. The nut *q* is turned in its bearing by an arm, L, held by a clamp to said nut, and when said arm is moved into position to unlock the drum from the shaft B said arm rests against a stop, *r*, extending from the frame.

The shaft B passes through a thick plate, M, bolted to the frame, said plate having in it chambers *s*, in each of which is a cylindrical roll, *t*, which rests in contact with the periphery of the shaft. The chambers *s* are narrower in one end than in the other, and are so arranged in the plate that during the hoisting of a load, if at any time that the steam or

motive power is shut off the attendant neglects to apply the brake to the flange *v* of the drum to hold it from running back, the load on starting to descend will turn the shaft B in the plate, which will roll the rolls *t* into the narrow part of the chambers *s* and wedge them between the inclined part *s'* of said chambers and the shaft B and lock the shaft to said plate, thus acting automatically, as will be seen, to prevent the descent of the load.

From the description it will be seen that with my improvements the various parts move with but little friction and are very efficient in operation.

If preferred, the levers *h* can be pivoted directly to the sleeve G, and thus do away with the groove *e* in said sleeve and with the clasp H secured in said groove.

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

1. In a hoisting apparatus, the drum provided with the chamber *a*, and the annulus *c*, fixed to said drum, the sleeve G, provided with a flange arranged in the chamber *a* and splined to the drum-shaft, the annulus *d*, movable lengthwise on said sleeve and connected thereto by a spline, the clasp H, applied to the said sleeve and having pivots *g*, the levers *h*, fulcrumed on said pivots and at their outer ends arranged in the slot of slide I, the said slide splined to the drum-shaft, and the forked slide K, supported in the frame and having rolls *n* in the prongs of its fork to work in the groove *l* of the slide I and operated by a screw and nut, the latter worked by an arm, L, clamped to it, said mechanism being for clutching the drum of the apparatus to the drum-shaft, all being arranged and supported essentially as shown and set forth.

2. The combination of the drum-shaft adapted to be revolved by suitable mechanism, the drum chambered, as shown, the flanged sleeve G, connected to the drum by the annulus *c* fixed thereto, the annulus *d*, splined to the said sleeve, and the levers *h*, fulcrumed to the sleeve G and connected at their outer ends to the slot in the slide I, the latter operated longitudinally on the drum-shaft by a slide connected to a handle, L, essentially as shown, and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

FRANCIS McMAHON.

Witnesses:
S. N. PIPER,
J. W. McMAHON.