

(No Model.)

W. F. MURRAY.
HOISTING APPARATUS.

No. 579,719.

Patented Mar. 30, 1897.

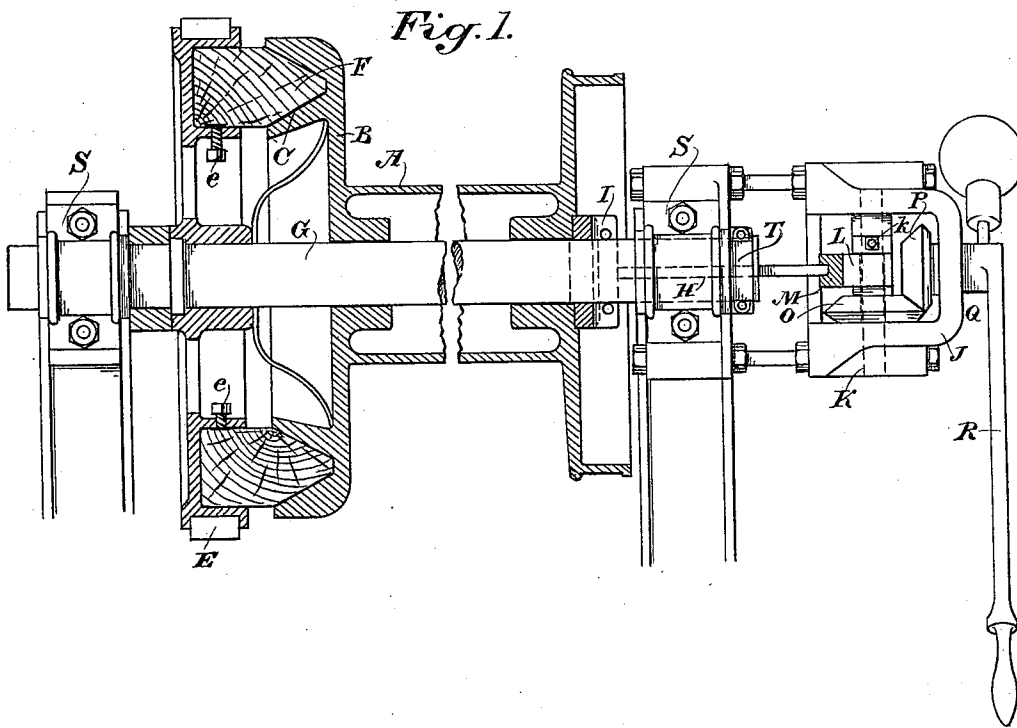


Fig. 2.

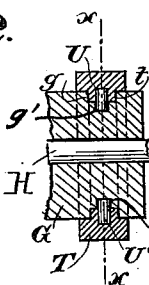


Fig. 3.

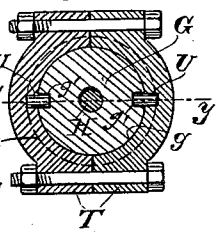
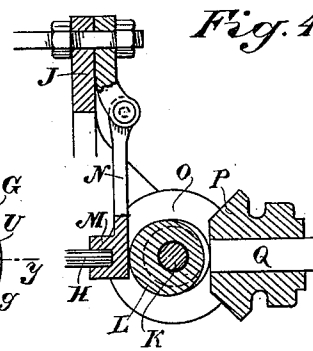


Fig. 4.



Witnesses,
G. H. Morse
H. F. Aschbeck

Inventor,
William F. Murray
By Dewey Ho. atty

UNITED STATES PATENT OFFICE.

WILLIAM F. MURRAY, OF SAN FRANCISCO, CALIFORNIA.

HOISTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 579,719, dated March 30, 1897.

Application filed November 4, 1896. Serial No. 611,057. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. MURRAY, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Hoisting Apparatus; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to that class of hoisting apparatus illustrated by Letters Patent of the United States No. 299,084, granted to me May 20, 1884; and it consists of the parts and the construction and combination of parts hereinafter described and claimed.

Referring to the accompanying drawings, Figure 1 is a side elevation and part longitudinal section of my apparatus. Fig. 2 is a section on line *yy* of Fig. 3, showing the manner of attaching collar T to shaft. Fig. 3 is a section on line *xx* of Fig. 2. Fig. 4 is a horizontal section through the mechanism for throwing the drum to frictional contact.

A is the rope-winding drum of a hoisting apparatus, with a flange B, adapted to receive the frictional contact from the gear-wheel E. This contact in my previous patent was attained by means of an iron frictional ring on the side of the gear-wheel and an annular frictional band of wood or like material in the chambered flange B of the drum. This wooden band, being channeled in a V shape to receive the metallic ring of the gear-wheel, was liable to and often did break in the base of its channel, leaving the side pieces free to drop out. My present improvement in this feature has for its object a construction of a frictional device which will not be open to this disadvantage, but which shall be held well in place and not liable to break under any circumstances. To these ends I secure in a groove or channel formed in the face of the gear-wheel an annular ring F of wood or like frictional material, said ring being preferably formed in segments and held in the groove in the gear-wheel in any suitable manner, as, for example, by means of the set-screws *e*. The projecting edge of this ring is tapered and is adapted to enter in a V-shaped groove C in the flange B of the drum, and as said flange is pressed upon the tapered edge of this frictional ring its V-shaped groove tends to clamp the wood of the ring

in such a manner as to avoid any tendency whatever to break it, and said ring is held firmly in the gear-wheel.

The drum A turns loosely upon the shaft G, to which the gear-wheel E is keyed, and said drum is not rotated unless the frictional surfaces are forced into contact. In order to do this, there is a small rod or stem H, which fits into a hole in the end of the shaft G and is connected with a transverse bar or plate I, which slides in slots in the shaft, so that when the stem is forced inward it presses the bar I against the drum-head, causing it to slide along the shaft G until the frictional surfaces are forced into contact sufficient to cause the drum to rotate, this construction being similar to that of my previous patent. In said previous patent the stem or rod H was operated by means of an eccentric or cam, which was mounted upon a shaft adapted to be rocked by means of a lever through the intervention of beveled gears, said cam or eccentric bearing against a box which engaged the end of the stem or rod H and was mounted upon a spring or swinging standard. In the present instance and in order to better distinguish my improvement in this regard from my previous arrangement, I have lettered these general parts with the same letters—viz., the cam or eccentric L, operating against the box M, which fits the end of the stem or rod H, and the swinging standard N, which carries said box.

O is one of the beveled gears, and P is the other fixed upon a short shaft Q and operated by a lever-arm R.

In the former arrangement the eccentric or cam was forged upon the rocking shaft which carried it, so that it was practically a part thereof, and the beveled gear O was independent of the eccentric or cam and was keyed upon the rocking shaft. The disadvantage of that construction was that on account of the immense pressure which was brought to bear through the lever R to rock the shaft it was a very difficult matter to key the beveled gear O firmly enough upon the shaft that it would not work loose, and, furthermore, the force was so great in the exigencies of the work to which this hoisting apparatus is usually put, as, for example, operating a pile-driver, that the rocking shaft, which carried

the beveled gear and the cam or eccentric, was liable to and frequently did break right in the middle. To obviate both these difficulties, I have made my present improvement in this respect.

5 The eccentric or cam L and the gear O are now formed in one integral piece, as is shown, and they are mounted freely upon the shaft, which here consists of a cross-pin K, supported in the frame J, and said pin is supported in said frame in such a manner that it does not rock, and is firmly held from rocking by any suitable means, as, for example, by a set-screw *k*, dropped down through the box of the frame J. Thus this pin K is a fixed one and simply serves as an axis about which the eccentric or cam and the beveled gear O rock together. The motion which is thus transmitted is through these two parts rocking on the pin, and consequently the difficulty of keying the beveled gear to a rocking shaft is overcome, and at the same time the force is not so great as to cause the pin to break; also the parts may be more readily removed and replaced than formerly.

25 The shaft G is carried in suitable end bearings S, and upon said shaft, just outside of the inner end bearing, is fitted a collar T, said collar being formed in two sections bolted together and having an internal circumferential tongue *t*, fitting in a circumferential groove *g* in the shaft. It is this collar which resists the thrust of the frictional contact of the drum and gear. It has always been a difficult matter to hold this collar tight to the shaft G, as the thrust is often received very suddenly and there is great wear.

By holding the collar to the shaft by means of the internal tongue and groove a very firm connection is had, but the collar must be prevented from turning on the shaft as well as being held thereto, and I have found that if

a pin be passed through the collar from the outside and into the shaft said pin is liable to work out, and thus loosen the collar. To prevent this, I use one or more concealed pins, (here designated by U and shown as being one in each section of the collar.) These pins fit in sockets made into the collar from the inside, which said sockets do not extend to the periphery of the collar. In the shaft are made sockets *g'* part way into the shaft. These pins are first fitted to the inside of the collar, and the parts of the collar are then fitted to the shaft so that their concealed pins fall into the sockets *g'* of the shaft, and thus hold the collar from rotating on the shaft, and said pins cannot get out in any way as long as the sections of the collar remain bolted together.

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

In a hoisting apparatus, the combination, of a winding-drum, a driving-gear with which it is forced into engagement, a shaft upon which the gear is fixed and the drum is slidable, and means for resisting the thrust of the engagement of the drum with the gear, consisting of a collar composed of two sections bolted together and each having an integral internal tongue adapted to fit an annular groove in the shaft, and concealed pins seated in the tongues and projecting inwardly, and adapted to enter sockets in the shaft whereby the collar is prevented from rotating on the shaft.

In witness whereof I have hereunto set my hand.

WILLIAM F. MURRAY.

Witnesses:

S. H. NOURSE,
JESSIE C. BRODIE.