(No Model.) 2 Sheets—Sheet 1.

A. DOBBIE.

HOISTING MACHINE.

No. 263,126. Patented Aug. 22, 1882.

Fig. 1.

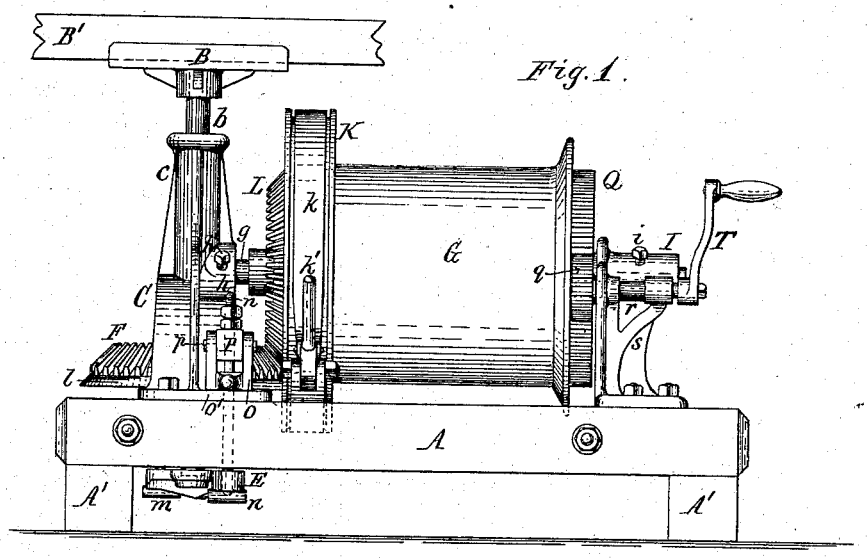
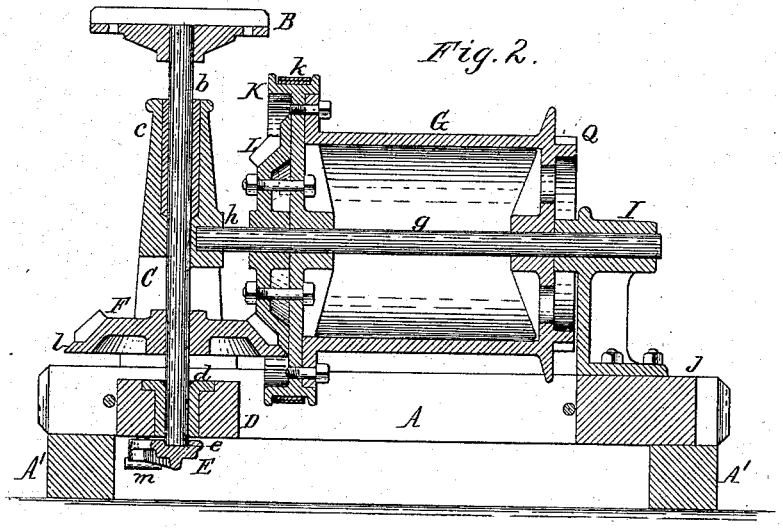


Fig. 2.



Witnesses.
Chas F. Geyer
Edw. J. Brady

A. Dobbie Inventor.
By Wilhelm & Bonner.
Attorneys.

(No Model.) 2 Sheets—Sheet 2.

A. DOBBIE.

HOISTING MACHINE.

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Fig. 3.

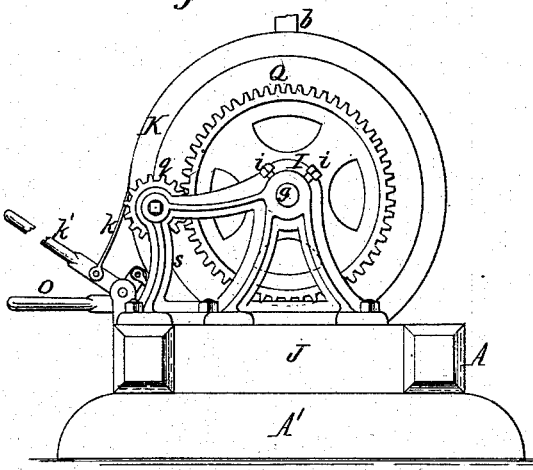


Fig. 4.

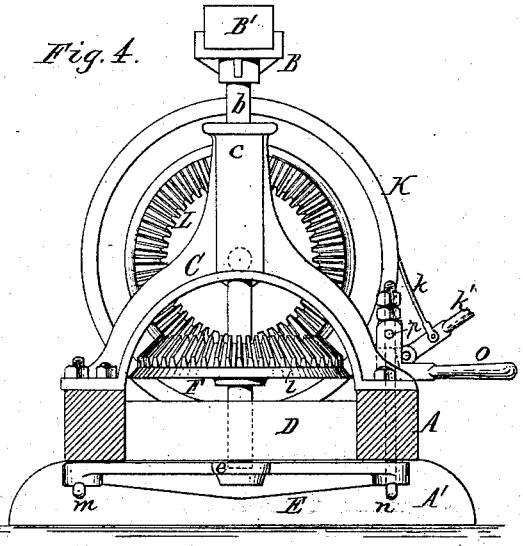


Fig. 7.

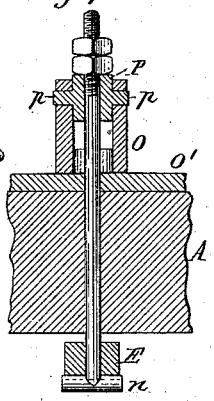


Fig. 8.

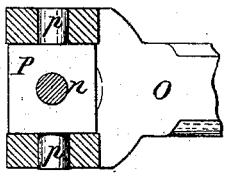


Fig. 5.

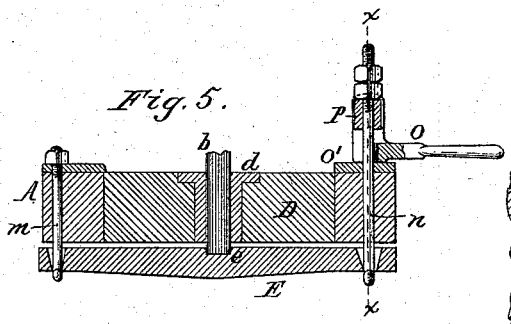


Fig. 9.

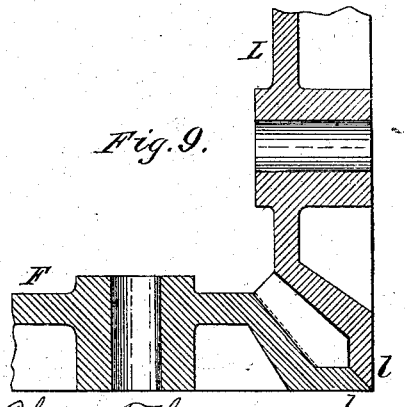
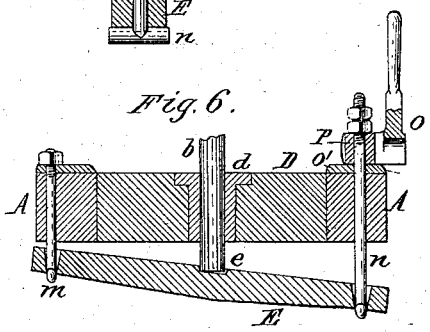


Fig. 6.



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Witnesses.

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UNITED STATES PATENT OFFICE.

ARCHIBALD DOBBIE, OF THOROLD, ONTARIO, CANADA.

HOISTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 263,126, dated August 22, 1882.

Application filed June 6, 1882. (No model.)

To all whom it may concern:

Be it known that I, ARCHIBALD DOBBIE, of Thorold, in the county of Welland and Province of Ontario, Canada, have invented new and useful Improvements in Hoisting-Machines, of which the following is a specification.

This invention relates to an improvement in that class of hoisting-machines which are employed for hoisting stones and other loads in building operations, and for various other purposes, and which consists essentially of a drum around which the rope or chain is wound, to which the load is attached, and which is provided with mechanism whereby the connection between the moving power and the drum can be broken when the load has been raised to the desired height, and with a brake by which the descent of the load can be controlled.

The object of my invention is to construct a simple and cheap hoisting-machine of this class, which is easily operated and controlled; and my invention consists of the peculiar construction of the mechanism whereby the moving power can be disconnected from the drum at desire, as will be hereinafter fully set forth.

In the accompanying drawings, consisting of two sheets, Figure 1 is an elevation of my improved hoisting-machine. Fig. 2 is a longitudinal vertical section thereof. Fig. 3 is an elevation of the rear end of the machine. Fig. 4 is an elevation of the driving-end of the machine. Fig. 5 is a sectional elevation of the mechanism whereby the vertical shaft of the machine is raised and lowered, said mechanism being shown in a raised position. Fig. 6 is a similar view of said mechanism in its lowest position. Fig. 7 is a vertical cross-section in line *x x*, Fig. 5, on an enlarged scale. Fig. 8 is a sectional top plan view of the lifting-lever on an enlarged scale. Fig. 9 is a fragmentary vertical section of the gear-wheels.

Like letters of reference refer to like parts in the several figures.

A A represent the longitudinal sills of the bed-frame, and A′ A′ cross-pieces on which the sills rest, these parts being suitably connected together by bolts, so as to form a rigid bed-frame for the machine.

b represents the vertical driving-shaft of the machine, provided at its upper end with a cross-head, B, to which are secured the sweeps B′, to which the draft-animals are attached when the machine is driven by animal power. The upper portion of the vertical shaft *b* turns in a bearing, *c*, which is formed on an arched standard, C, which extends across the bed-frame of the machine, and is secured with its feet to the sills A. The lower vertical portion of the shaft *b* turns in a bearing, *d*, secured in a rigid bridge-tree, D, which is attached to the sills A. The lower end of the vertical shaft *b* rests in a step-bearing, *e*, formed in a bridge-tree, E, arranged below the rigid bridge-tree D and made movable, so that it can be raised and lowered together with the shaft *b*, resting thereon.

F represents a bevel-wheel secured to the vertical shaft *b* between the legs of the arched standard C.

G represents the drum upon which the rope or chain is wound and by which the load is suspended, and *g* is the horizontal shaft or arbor upon which the drum rotates. The shaft *g* is supported at one end in a socket, *h*, formed in the upper portion of the arched standard C, in which it is secured by set-screws *h′* or other suitable means. The opposite end of the shaft *g* is secured in a bearing, I, by set-screws *i*. The bearing I rests upon a cross-piece, J, which is secured between the sills A.

K represents an annular brake rim or wheel secured to or formed on the driving end of the drum G, and *k* is a brake-band surrounding the brake-wheel K and operated by a suitable lever, *k′*, which is pivoted to the stationary frame of the machine.

L represents a bevel-wheel secured to the driving end of the drum G and adapted to mesh or gear with the bevel-wheel F on the shaft *b* when the latter is in its raised position, as represented in Figs. 1, 2, and 4.

l represents inclined annular faces or rims, arranged on the bevel-wheels F and L around the outer portions of the cogs or teeth thereof in such manner that when the two wheels are thrown into gear the inclined faces *l* thereof will run in contact with each other and prevent the outer faces of the teeth of one wheel from striking against the opposite wheel between the bases of the teeth thereof, as represented in Fig. 9. By this means excessive fric-

tion between the wheels is avoided, and the danger of breaking the teeth by throwing the wheels into gear is entirely obviated.

m represents a fixed T-bolt supporting one end of the movable bridge-tree E and secured in one of the sills A, the end of the bridge-tree being provided on its under side with a notch, which rests upon the T-head at the lower end of the bolt and rocks on the same.

n represents a movable T-bolt, attached to the opposite end of the bridge-tree E, and extending upwardly through the sill and through the foot of the standard C, above which it is provided with mechanism for raising and lowering it. This mechanism consists of an elbow or knee shaped lever, O, having its short arm connected by pivots *p* with a cross-head, P, which is attached to the upper end of the T-bolt *n*. The long arm of the lever O extends outward at right angles to the short arm, and terminates in a suitable handle, the inner portion of the long arm of the lever resting upon the foot or base plate O′ of the standard C. The lever O is arranged in close proximity to the brake-lever *k*′, so that the operator can conveniently handle either or both levers, as may be desired.

Q represents a gear-wheel or rim secured to the outer end of the drum G, and *q* is a pinion meshing in said wheel and mounted on the inner end of a horizontal shaft, *r*, which turns in bearings *s*, cast on or secured to the bearing I, and which is provided at its outer end with a hand-crank, T, whereby the pinion may be rotated.

Assuming the parts to be in the position represented in Figs. 1 to 4, the motion of the vertical driving-shaft *b* is transmitted to the drum G by the gear-wheels F and L, and the drum is rotated in a direction in which the rope is wound upon the drum, and the load is thereby raised. When the load has been elevated to the desired height the operator raises the outer end of the elbow-lever O, whereby said lever is turned on the pivots *p*, so as to withdraw the long arm of the lever from the support O′ on which it rests, thereby permitting the bolt *n* and the end of the bridge-tree E, attached thereto, to descend until the short arm of the lever comes in contact with the supporting-plate O′ and arrests the downward movement of the bolt *n* and bridge-tree E. The vertical shaft and the gear-wheel F, attached thereto, descend at the same time, whereby the wheel F becomes disengaged from the wheel L, thereby disconnecting the driving mechanism from the drum. The operator at the same time bears down on the brake-lever, and either supports or lowers the load by means of the brake, as may be desired. After the load has been lowered and the rope has been attached to another load to be raised the slack of the rope, if any, is taken up by turning the drum by means of the hand-crank T. The operator now depresses the long arm of the lever O, thereby raising the bolt *n* and the bridge-tree E and bringing the wheel F in engagement with the wheel L.

The employment of a mechanism for throwing the wheels F and L in and out of gear permits the driving mechanism to be disconnected from the drum without first arresting the motion of the motor, whereby the operation of elevating the load is quickly stopped at the desired point and without first backing the motor, as is necessary when clutch-couplings are employed for the purpose.

The heel or corner of the elbow-lever O, at the junction of the short and long arms of the lever on which it turns on the plate O′ in shifting it from one arm to the other, is preferably faced with steel to reduce wear and friction.

I claim as my invention—

1. In a hoisting-machine, the combination, with the drum G, provided with a gear-wheel, L, of the vertical driving-shaft *b*, provided with the gear-wheel F, and mechanism whereby the driving-shaft and the gear-wheel attached thereto can be raised and lowered, thereby throwing the gear-wheels in and out of gear, substantially as set forth.

2. The combination, with a drum, G, provided with a bevel-gear wheel, L, of a movable shaft, *b*, provided with a bevel-gear wheel, F, and inclined annular faces *l*, formed on said gear-wheels around the teeth thereof, whereby the faces of the teeth of one wheel are prevented from bearing against the opposite wheel, substantially as set forth.

3. The combination, with a drum, G, provided with a gear-wheel, L, of a vertical driving-shaft, *b*, provided with a gear-wheel, F, a movable bridge-tree, E, in which the lower end of the driving-shaft is supported, and mechanism whereby said bridge-tree can be raised and lowered, substantially as set forth.

4. The combination, with a drum, G, provided with a gear-wheel, L, of a vertical movable shaft, *b*, provided with a gear-wheel, F, a movable bridge-tree, E, supporting the lower end of said vertical shaft, and a bolt, *n*, and elbow-lever O, whereby said bridge-tree can be raised and lowered, substantially as set forth.

A. DOBBIE.

Witnesses:
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CHAS. F. GEYER.