(No Model.)

O. FLOHR.

HOISTING MACHINE.

No. 484,358. Patented Oct. 11, 1892.

Fig. 1

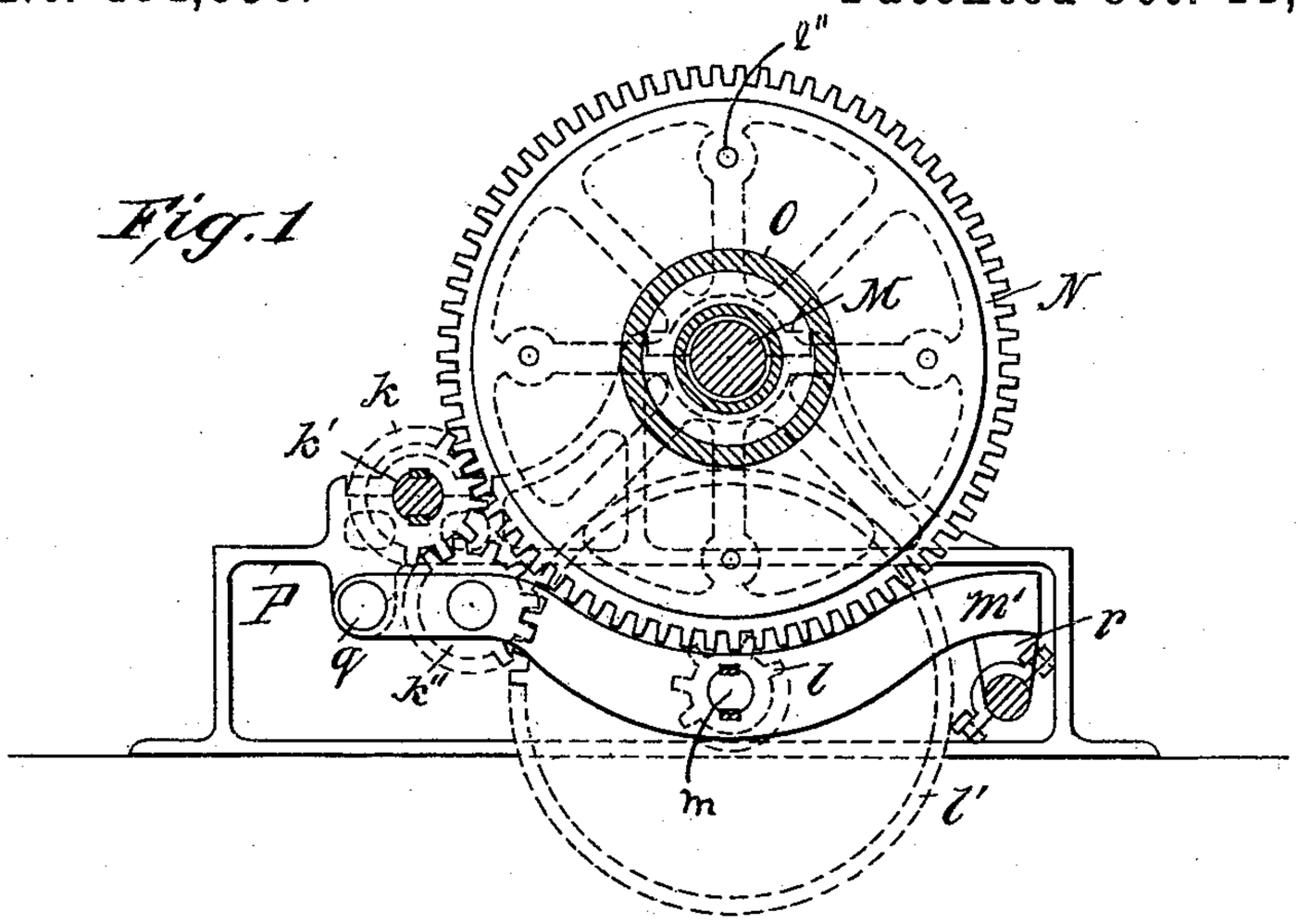
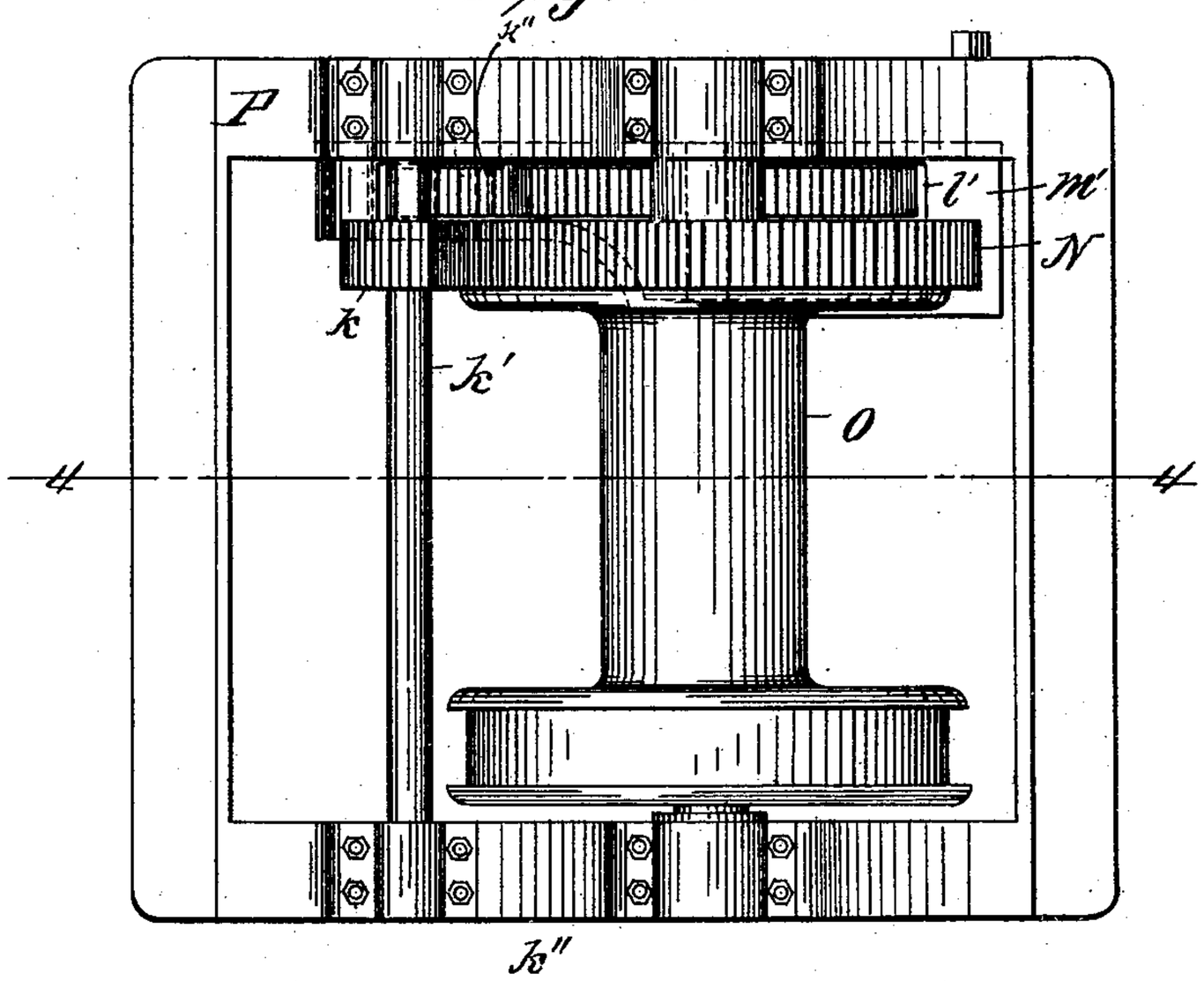


Fig. 2



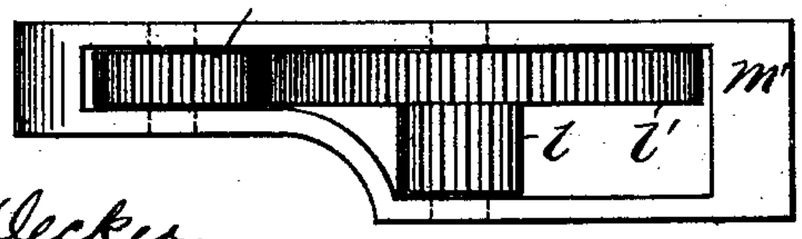


Fig. 3

WITNESSES:

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UNITED STATES PATENT OFFICE.

OTTO FLOHR, OF BUFFALO, NEW YORK.

HOISTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 484,358, dated October 11, 1892.

Application filed November 23, 1891. Serial No. 412,706. (No model.)

To all whom it may concern:

Be it known that I, OTTO FLOHR, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Hoisting-Machines, of which the following is a full, clear, and exact specification.

My invention relates to hoisting-engines; and its objects are to produce a machine which will do more work with a less amount of steam-pressure than other machines of this character now in use, and also to enable such machines to be easily operated and controlled. With these objects in view I will proceed to describe my improvements, reference being had to the accompanying drawings, in which—

Figure 1 is a central vertical sectional view of my single-drum hoisting-machine and multiplied gearing therefor, taken on line 1 1 of Fig. 2. Fig. 2 is a plan view of the same, and Fig. 3 is a plan in detail of the bracket containing the pinions and gear-wheel.

M represents the drum-shaft; N, the driving-gear connected thereto; O, the winding-drum mounted loosely thereon, and P the fixed framework of the engine.

In using the machine for hoisting purposes in single gear the driving-gear N is coupled direct with pinion *k*, slidably keyed on the engine-shaft *k'* and independent of pinions *k''*, *l*, and gear *l'*, receiving motion only from the pinion *k*. The drum O is connected to the driving-gear N by means of bolts *l''* and is rotated by the said gear N. The pinion *k* meshes with pinion *k''*, and the said pinion *k''* with the gear *l'*, which is keyed on the shaft *m* in the bracket *m'*. The pinion *l* is also keyed on the shaft *m*, close up to gear *l'*, and the pinion *l* in turn meshes with the driving-gear N. By the use of my improved gearing a greater power is obtained than by any other machine now in use. A swinging frame *m'* is loosely journaled on a pivot *q*, which is either cast integral with or firmly affixed to the engine-frame P. The outer end of the swinging frame *m'* is free and allowed to move vertically, using the pivot *q* as an axis. The said frame *m'* carries the pinions *k''* and *l* and gear *l'*, and is operated by a cam *r*, journaled in the frame P.

When using the machine with my improved multiple gearing, either for friction or hoisting purposes, the cam *r* enables the operator to throw the machine in or out of gear without stopping the engine.

What I claim, and desire to secure by Letters Patent, is—

1. The hoisting-machine, as described, comprising a suitable framework carrying the engine, a shaft mounted in brackets, a driving-gear secured to said shaft, and a winding-drum mounted loosely thereon and bolted to said driving-gear, the said gear adapted to mesh either with a pinion keyed to a shaft which is rotatably mounted in bearings in a swinging frame, the said frame being loosely journaled to the engine-frame, or with a pinion mounted on and keyed to the engine-shaft, said pinion adapted to mesh with another pinion journaled in one end of the swinging frame, and this pinion in turn meshing with a gear-wheel which is on the same shaft with the pinion which meshes with the driving-gear, and also a cam journaled in the engine-frame supporting the swinging frame and adapted to throw the pinion which meshes with the driving-wheel in or out of gear, substantially as shown and described.

2. In a hoisting-machine, the combination, with the drum-shaft and winding-drum loosely journaled thereon, the said shaft being mounted in brackets and adapted to rotate therein, a driving-shaft having a pinion slidably mounted or keyed thereto, the said pinion adapted to mesh with a pinion mounted in a swinging frame, a gear-wheel carried by said swinging frame and meshing with said last-mentioned pinion, and a pinion carried by the swinging frame fastened to said gear-wheel and adapted to mesh with the driving-gear on the drum-shaft, and means for connecting the driving-gear and winding-drum, substantially as described.

3. In a hoisting-machine, the combination, with the drum-shaft and winding-drum loosely journaled thereon, the said shaft mounted in brackets and adapted to rotate therein, of a driving-shaft having a pinion slidably mounted and keyed thereto, the said pinion adapted to mesh with a pinion mounted in a swinging frame, a gear-wheel carried by

said swinging frame and meshing with said last-mentioned pinion, and a pinion carried by said swinging frame fastened to said gear-wheel and adapted to mesh with the driving-gear on the drum-shaft, the said gear on the drum-shaft being provided with four equidistant holes for the reception of screw-bolts for rigidly securing the drum to said driving-gear, substantially as described.

4. In a hoisting-machine, the combination, with the driving and drum shafts and winding-drum mounted on said drum-shaft, of a swinging frame carrying the pinions k'' and l and gear l', said frame pivoted at one end to the machine-frame and adapted to move vertically, using its pivot as an axis, together with a cam journaled in the machine-frame for operating said swinging frame, substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand this 12th day of November, 1891.

OTTO FLOHR.

Witnesses:
MARK M. DECKER,
S. STRAUS.