

(No Model.)

E. H. & L. L. GRAVES & G. W. BROTTOR.
HOISTING MACHINE.

No. 282,979.

Patented Aug. 14, 1883.

Fig. 1.

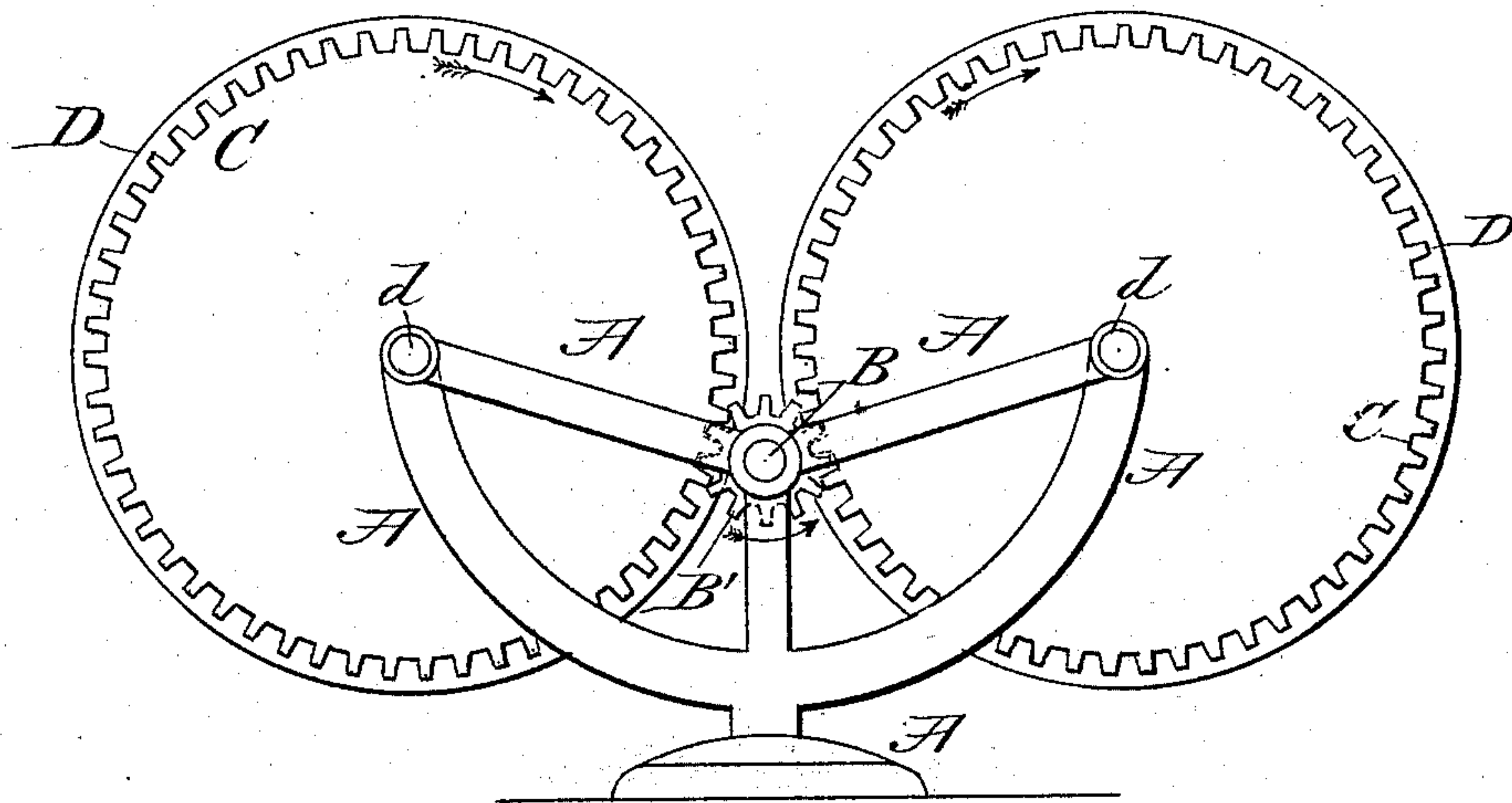


Fig. 2.

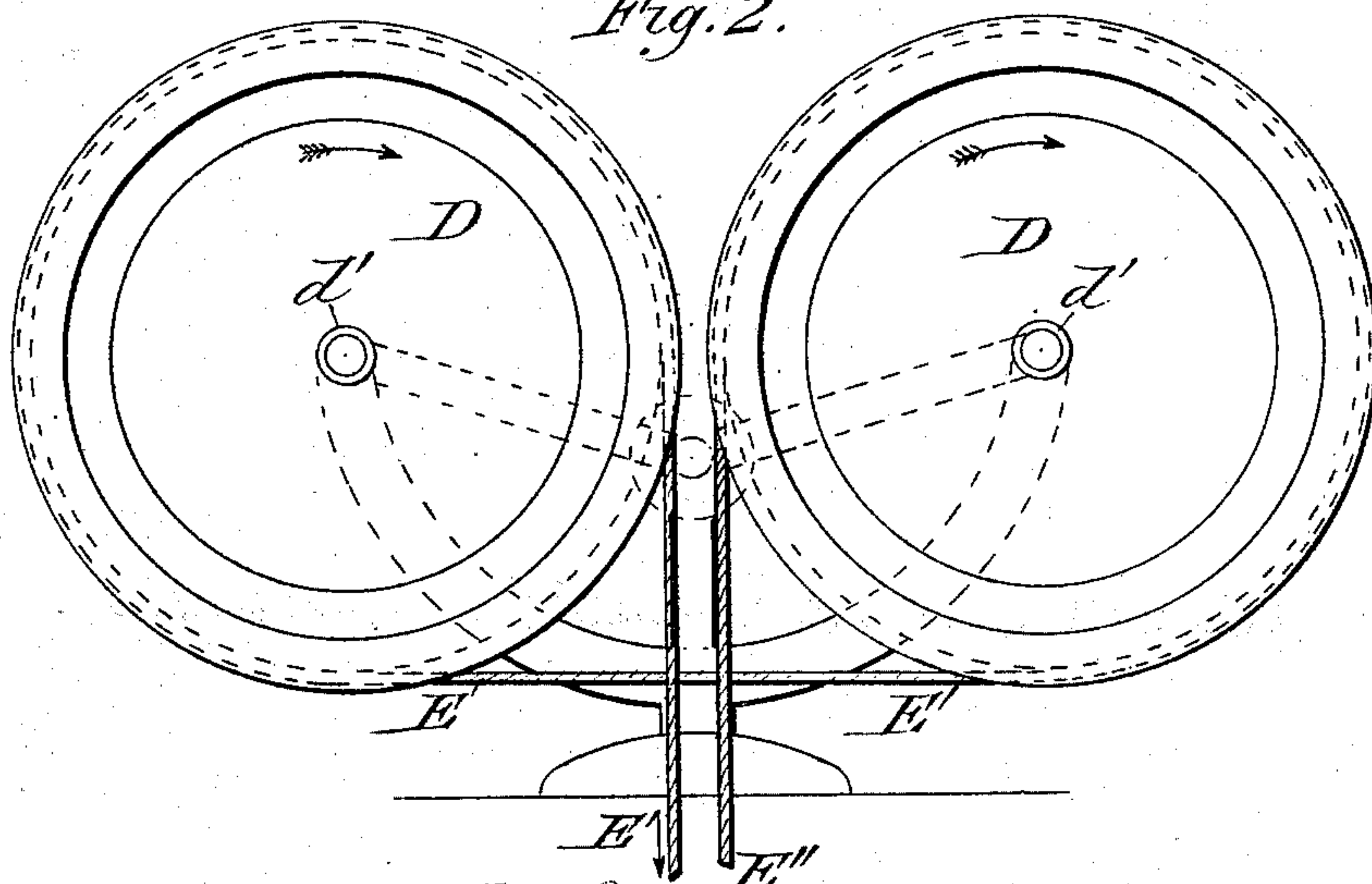
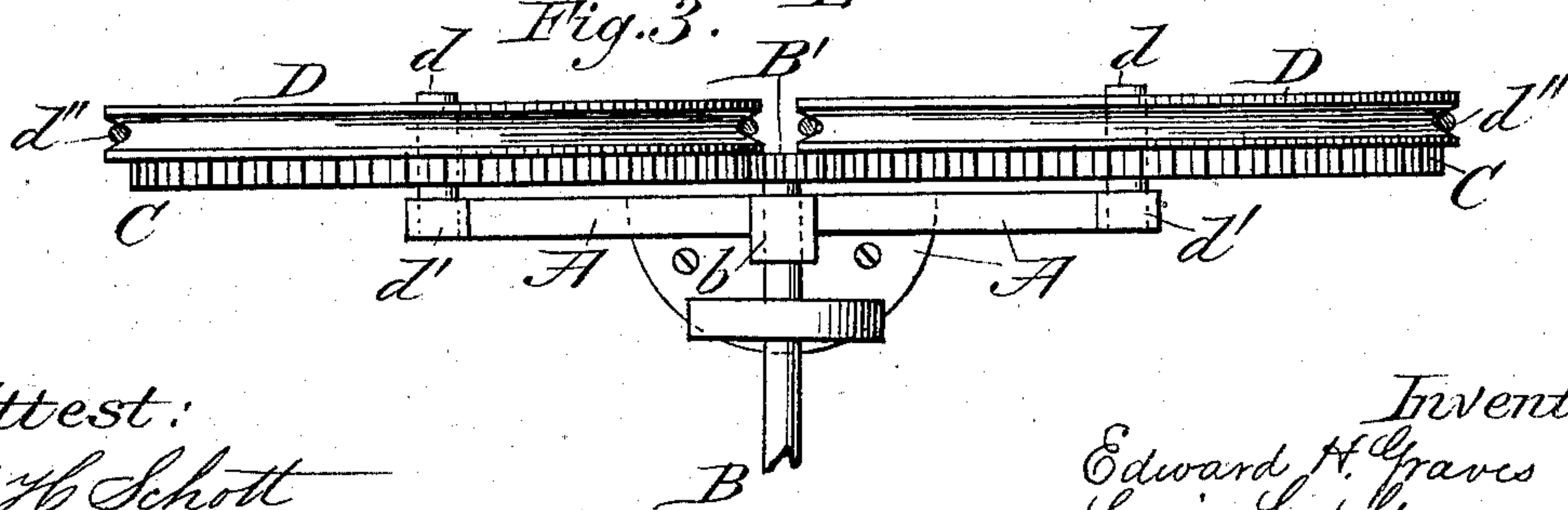


Fig. 3.



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UNITED STATES PATENT OFFICE.

EDWARD H. GRAVES, LOUIS L. GRAVES, AND GEORGE W. BROTTOR, OF
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HOISTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 282,979, dated August 14, 1883.

Application filed June 18, 1883. (No model.)

To all whom it may concern:

Be it known that we, EDWARD H. GRAVES, LOUIS L. GRAVES, and GEORGE BROTTOR, citizens of the United States, residing at Streator, in the county of La Salle and State of Illinois, have invented certain new and useful Improvements in Hoisting-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

Our invention relates to improvements in hoisting-machines, and it is especially adapted to be used for hoisting minerals from mines, the object being to increase the friction upon the hoisting rope or cable and prevent the slipping of the rope or cable upon the hoisting-drums around which the rope or cable goes; and it consists in the arrangement of the hoisting-drums with the hoisting rope or cable and the driving mechanism with relation to each, and the combination of the several parts that coact to effect the object of the arrangement and combination, as will be fully hereinafter described.

In the drawings, Figure 1 represents an upright side view of the machine with the driving-pinion gearing into gear-wheels on the hoisting-drums. Fig. 2 represents the opposite side, and Fig. 3 is a top or plan view of the same.

A represents the supports to the driving-pinion and the revolving winding-drums and their gear-wheels.

B is the driving-shaft, put in revolution by any convenient power, either direct or through belt and pulley, so as to revolve in one direction continually, or so as to reverse the motion when necessary.

B' is a toothed pinion on shaft B, and revolves with it, the teeth of which gear into gear-wheels C C, that are fast on the winding-drums D D, causing the drums to revolve in the direction of the arrows; or, if the driving-pinion is reversed in its revolution, then the drums D will revolve in the direction opposite to that indicated by the arrows.

d d' are short shafts, upon which the drums D are secured, and with which they revolve.

d' a' are bearings in which the journals of shafts d revolve. These bearings may be in the main supports A, or they may be in other

supports that can be adjusted if necessary. In the perimeter of each of the winding-drums is a groove, d'' , to receive the hoisting rope or cable E. The rope or cable E is placed around the drums D, as seen in Fig. 2—that is, it is placed horizontally in the grooves on the under side of the drums, then following the grooves around on the outer and opposite sides over the tops, then down in the grooves in the adjacent edges of the drums, to go thence down into the mine, well, pit, or wherever the thing to be hoisted is situated.

In a hoist constructed as above described, with the hoisting rope or cable placed around the drums as shown, one rope, E', being loaded, and the load descending, and the pinion B' gearing into gears C and controlling the movement of both drums D, the ascending rope E' of its own weight will be sufficient to prevent any slipping of the rope on the drum opposite the one upon which the load is sustained, because the rope or cable with the load has a frictional contact with about five parts of the six of the perimeter of the drum upon which the load bears, and as the rope or cable after leaving the loaded drum, or the drum in which the rope sustaining the load passes the perpendicular loaded rope at right angles, or nearly so, to go around the free or unloaded drum, and thence around it in frictional contact with five-sixths of its circumference, and all to be governed by the positive revolution of the toothed pinion controlling the motion of both drums, the frictional contact between the hoisting rope or cable and the winding-drums is greatly increased, and no slipping of the hoisting-rope will occur on either drum, even if the unloaded part of the rope or cable has no counter-weight to balance the load on the part of the rope or cable. This construction of and arrangement of parts in connection with the running of an endless rope or cable is also well adapted to be used for propelling cars on what is known as "cable railways," as it is evident that to adapt it to such use it is only necessary to place the driving-shaft B in an upright instead of a horizontal position, and changing the winding-drums and their gear-wheels to be horizontal instead of perpendicular, as the operation of all the parts will be the same, and the increase of friction is in

no way interfered with by the change of position, as the position of the device as a whole can be changed without changing its mode of operation or its construction, as to whether it
5 is to move a body perpendicularly or in a horizontal or in an inclined direction.

Having thus fully described our invention, what we claim, and desire to secure by Letters Patent, is—

10 1. In a hoisting-machine, to increase the friction upon the hoisting rope or cable and winding-drums, the combination of the intermediate driving-pinion, B', gearing into gear-wheels C C and controlling the movements
15 thereof, the winding and grooved drums D D, with the hoisting or draft rope or cable E, constructed and arranged to operate substantially in the manner and for the purpose described.

2. In a hoisting-machine, the combination

of the two drums D and the hoisting or draft 20 rope or cable E when placed around the drums in the manner and for the purpose described.

3. In a hoisting-machine such as above described, the combination of the intermediate 25 and driving pinion, B', with the gear-wheels C C and winding-drums D D, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

EDWARD H. GRAVES.
LOUIS L. GRAVES.
GEORGE W. BROTTOR.

Witnesses:

OSCAR B. RYON,
JOHN E. WILLIAMS.