

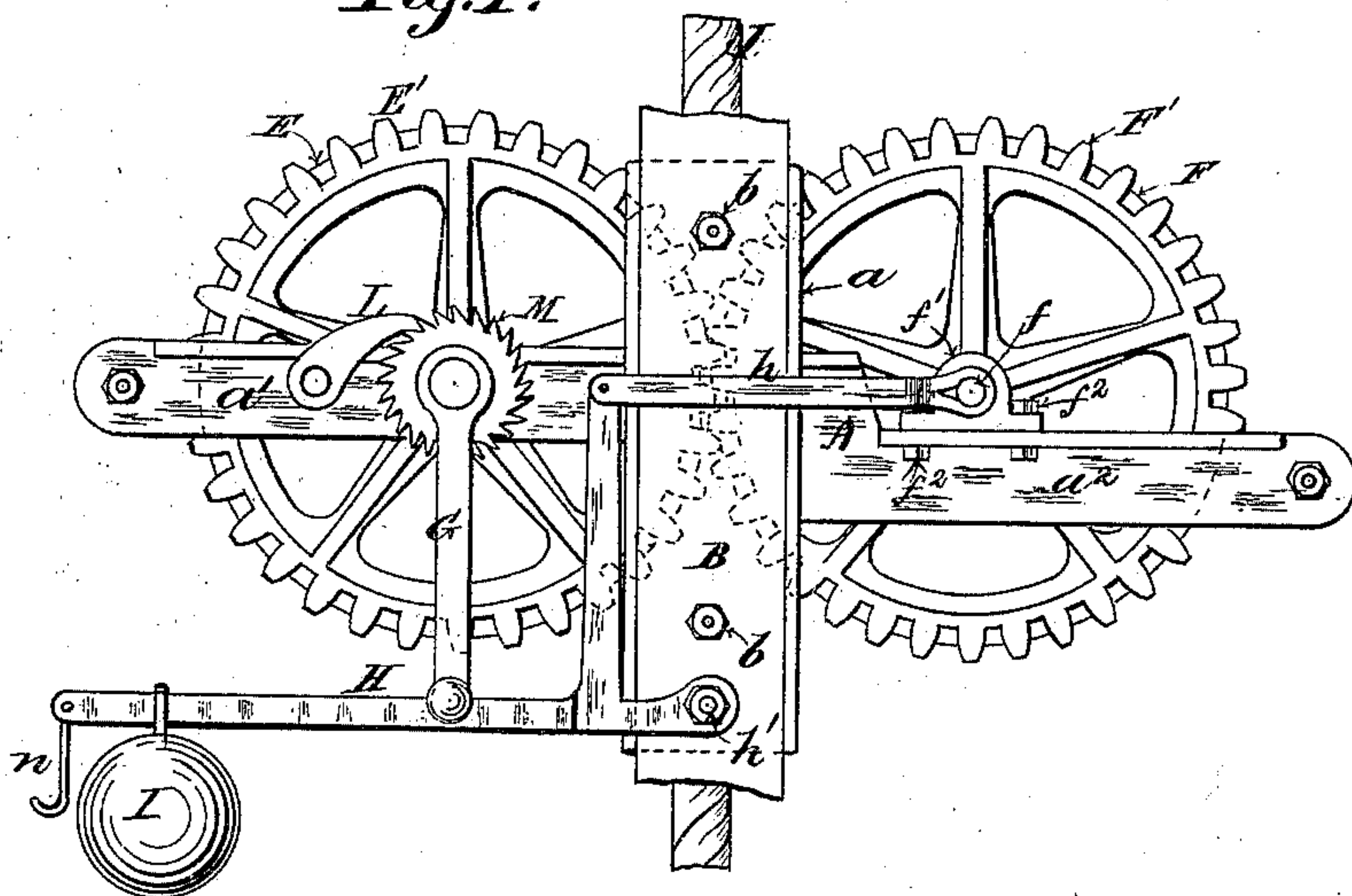
(No Model.)

J. S. EBERT.  
MECHANISM FOR OPERATING HOISTS.

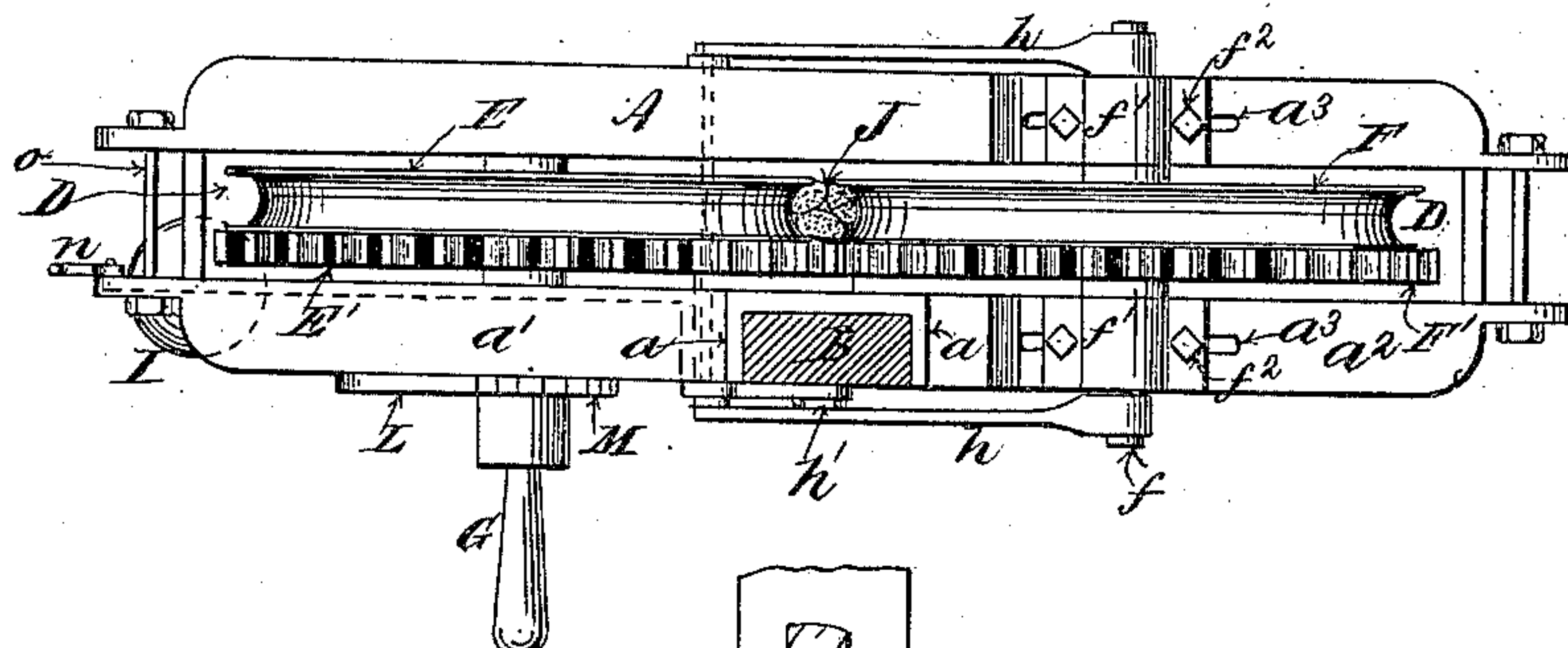
No. 409,737.

Patented Aug. 27, 1889.

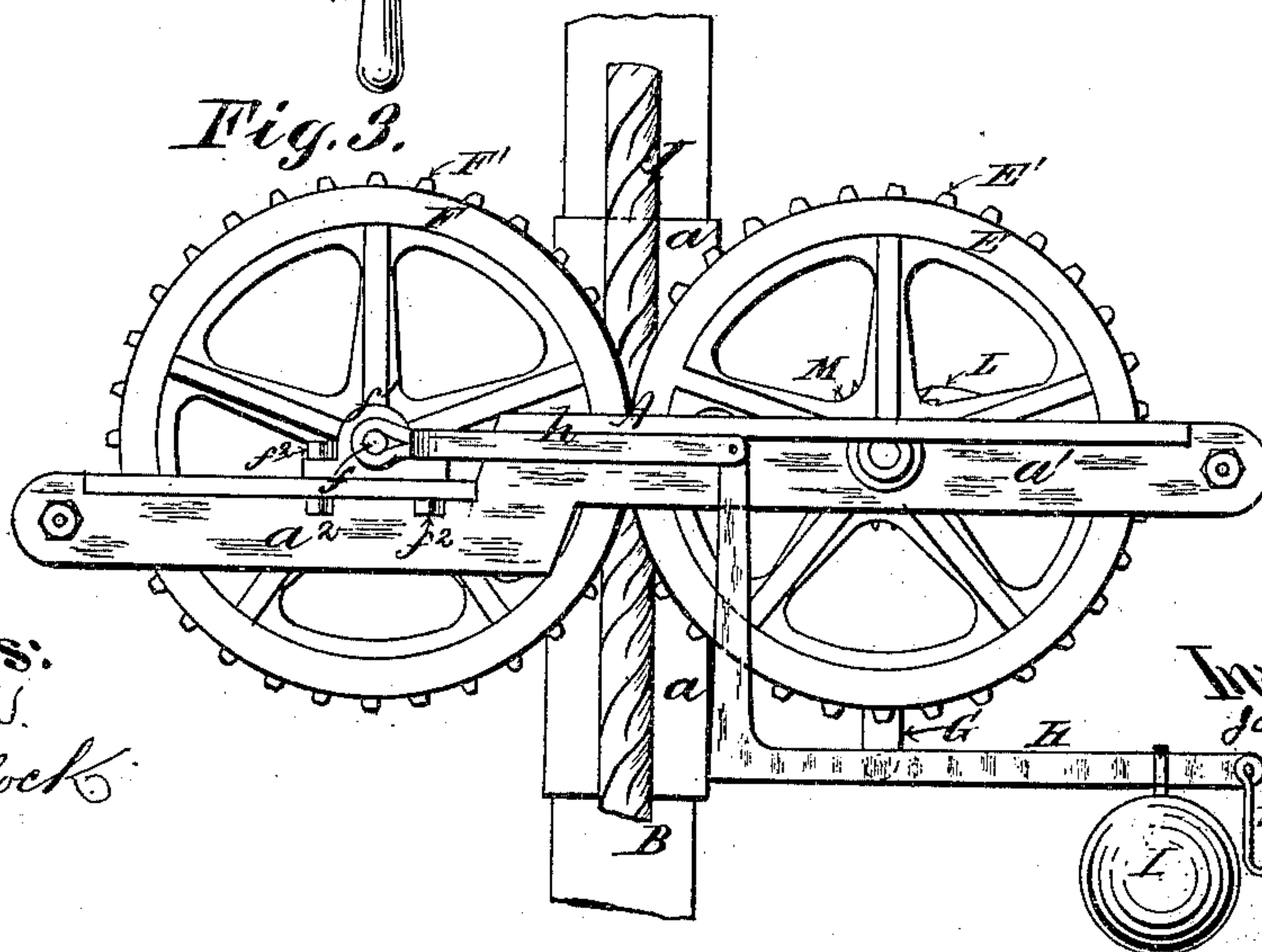
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



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# UNITED STATES PATENT OFFICE.

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## MECHANISM FOR OPERATING HOISTS.

SPECIFICATION forming part of Letters Patent No. 409,737, dated August 27, 1889.

Application filed March 22, 1888. Serial No. 268,141. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN S. EBERT, a citizen of the United States, residing in the city of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Mechanism for Operating Hoists, of which the following is a specification, sufficient to enable others skilled in the art to which the invention appertains to make and use the same.

My invention relates to the class of apparatus used for elevating or lowering articles through buildings or other situations, being applicable to all the ordinary forms of "hoists" at present in use.

The improvements are upon the actuating mechanism, and are designed to afford a convenient and effective arrangement for the employment of hand-power, although the apparatus may obviously be operated by steam or other power if preferred.

I dispense entirely with the necessity for the ordinary brake and permit of the load being positively sustained or suspended in any intermediate position by means which act automatically to prevent the unintentional descent of the load, while at the same time providing for the perfect regulation of speed of descent of the load under the control of the operator.

An important feature of my special construction of apparatus is that it can readily be applied to almost all forms of hoisting apparatus now in use, especially in the case of hoists for buildings, &c., in which the windlass-rope is at present adapted to be operated by hand. All that is necessary is to arrange the apparatus with relation to the windlass-rope in such manner that the friction-pulleys of the apparatus may be brought to bear upon or grip the said rope when desired.

One feature of my invention consists in the combination and arrangement of an automatic device for preventing retractile movement with two friction or grip wheels or pulleys, between which the windlass-rope passes, the said grip-wheels being relatively adjustable and engaging one with the other in such manner as to positively and simultaneously revolve together in opposite directions to operate the rope in either direction when power

is applied to a crank connected with one of said wheels.

As shown and described herein, the grip-wheels are respectively provided with gear-teeth, or with independently-formed spur-wheels attached to their axles, which mesh into each other, although it is obvious that, if preferred, friction-gears, or even elastic cross-belts, may be substituted therefor.

Another feature of my invention consists in the combination and arrangement with the two grip-wheels, relatively adjustable, as before mentioned, of a weighted lever or equivalent device connected with one of the grip-wheels in such manner as to tend constantly to force it toward the other grip-pulley, and thereby continuously pinch or compress the windlass-rope between the two. This lever also affords a convenient means for controlling by hand the descent of the weight, since by raising it more or less the pressure of the grip-wheels can be varied and the latter made to thus act in lieu of independent "brake" mechanism.

In the accompanying drawings I illustrate means for embodying my improvements in practical form.

Figure 1 is a front view of my improved actuating apparatus attached to a suitable upright or standard presumed to be arranged in proper relation to the hoist, and showing a portion of the windlass-rope in position between the grip-wheels. Fig. 2 is a top view of the parts shown in Fig. 1, and Fig. 3 a rear view of the same.

The frame A, upon which the actuating mechanism is mounted, is bolted or otherwise secured to a post or upright B, situated adjoining the vertical windlass-rope J.

As shown, the vertical flange or base-plate *a* is secured to the upright B by the bolts *b b*, and is formed with the transverse members *a' a'*, which project outward in either direction in substantially horizontal planes, although any other suitable or desired form of frame-work may be employed.

The frame A is slotted longitudinally, forming the elongated recess D, within which the sheaves E F rest.

The axis of the sheave E is mounted in stationary bearings formed in the transverse



member  $\alpha'$ , and is provided with a crank-handle G, which projects outward from the frame upon the front or right-hand side of the apparatus.

5 The axis  $f$  of the movable sheave F is mounted in bearings  $f' f''$ , which are attached to the member  $\alpha^2$  in such manner that they may be slid longitudinally thereon to a certain extent. This may be accomplished, as shown  
10 in the drawings, by forming elongated slots  $\alpha^3 \alpha^3$  in the side flanges of the member  $\alpha^2$ , through which slots the securing-bolts  $f^2 f^2$  pass, or in any other well-known or appropriate manner.

15 The sheave F with movable bearings is forced constantly toward the sheave E with fixed bearings by any suitable mechanism that may be adapted to the requirements of actual use. As shown, its axis  $f$  is connected  
20 by the links or straps  $h h$  to the lever H, pivoted to the frame or standard at  $h'$ , so that the weight I tends continually to draw the sheave F with slidable bearings toward the sheave with the fixed bearings E, and to there-  
25 by pinch the section of the windlass-rope J, introduced between them. By this arrangement a uniform even pressure is automatically maintained against the rope J and all irregularities of thickness in the latter are  
30 compensated for. By moving the weight I upon the lever H in the proper direction the degree of pressure to be exerted may also be regulated according to circumstances, while  
35 by raising the lever H slightly by hand the pressure upon the rope may be relaxed more or less, and the sheave F with the slidable bearings made to act as a "brake" during the descent of the weight, the rope J slipping  
40 more or less freely between the opposed surfaces of the sheaves E F in proportion as the movable one F is relieved of the restraint of the weight I.

It is to be understood that the rope J represents the rope ordinarily employed in con-  
45 nection with the windlass or winding-drum upon which the hoisting-rope proper is wound. During the descent of the load the rope J travels upward, and when it is desired to elevate the load the rope J must be pulled  
50 downward. This downward movement of the rope J against the resistance of the load I accomplish by means of the crank G, hereinbefore mentioned, by which the sheave E is rotated.

55 It is obvious that if the pressure exerted by the weight I is increased sufficiently the friction of the two sheaves E F' against the rope J might be relied upon entirely to rotate both of said wheels; but I prefer to provide each wheel E F with a cog or spur wheel  
60 E' F', the said wheels E' F' meshing into each other and transmitting the power applied to the crank G equally upon both sides of the rope J.

65 In order to prevent all unintentional retractile movement of the rope J under strain, I arrange a pawl-and-ratchet wheel L M in

connection with the crank G and fixed wheel E in such manner as to prevent the wheel from turning backward. By this means a  
70 positive automatic stop is also afforded by which the load will be held or suspended in any desired position. In practice this feature is of unusual importance, since it enables the operator to stop to rest when he may choose,  
75 relieving him of the necessity of continuously counterbalancing the load as heretofore. The user may thus at any stage of the operation when desirable leave the apparatus to attend  
80 to other matters, or suspend the load independently while performing some work upon it, such as cleaning or arranging it for shipment or storage, &c.

When it is desired to use the hoist in the ordinary way, or where two or more actuating  
85 apparatus are arranged upon different floors of a building in connection with the same hoist, the lever H is temporarily supported in a raised position. A convenient manner of providing for this is to arrange a hook  $n$  upon  
90 the lever H, said hook engaging with a cross-bar or projection  $o$  upon the member  $\alpha'$  of the frame. Of course the hook may be arranged upon the frame and to engage the lever; or any other equivalent means of sup-  
95 porting the lever substituted with like result.

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

1. In actuating mechanism for hoisting ap-  
100 paratus, the combination of the power-sheave E, having fixed bearings, the sheave F, with slidable bearings, the weighted lever H, arranged to press the said sheave F automati-  
105 cally toward the said power-sheave E, and the pawl L and ratchet M, arranged and operating substantially in the manner and for the purpose described.

2. In actuating mechanism for hoisting ap-  
110 paratus, the combination of the power-sheave E and gear-wheel E', having fixed bearings, the sheave F and gear-wheel F', having slidable bearings, the weighted lever H, arranged to press the said sheave F and gear F' to-  
115 ward the said power-sheave E and gear E', and the pawl L and ratchet M, the whole arranged and operating substantially in the manner and for the purpose described.

3. In actuating mechanism for hoisting ap-  
120 paratus, the combination of the power-sheave E and gear-wheel E', having fixed bearings, the sheave F and gear-wheel F', having slidable bearings, the weighted lever H, arranged to press the said sheave F and gear F' toward the said power-sheave E and gear  
125 E', the pawl L and ratchet M, and the hook  $n$ , the whole arranged and operating substantially in the manner and for the purpose set forth.

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Witnesses:

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