No. 649,137. Patented May 8, 1900.

M. MOUNT.

AUTOMATIC LOCK FOR HOISTING MECHANISM.

(Application filed Jan. 21, 1899.)

(No Model.)

Fig. I

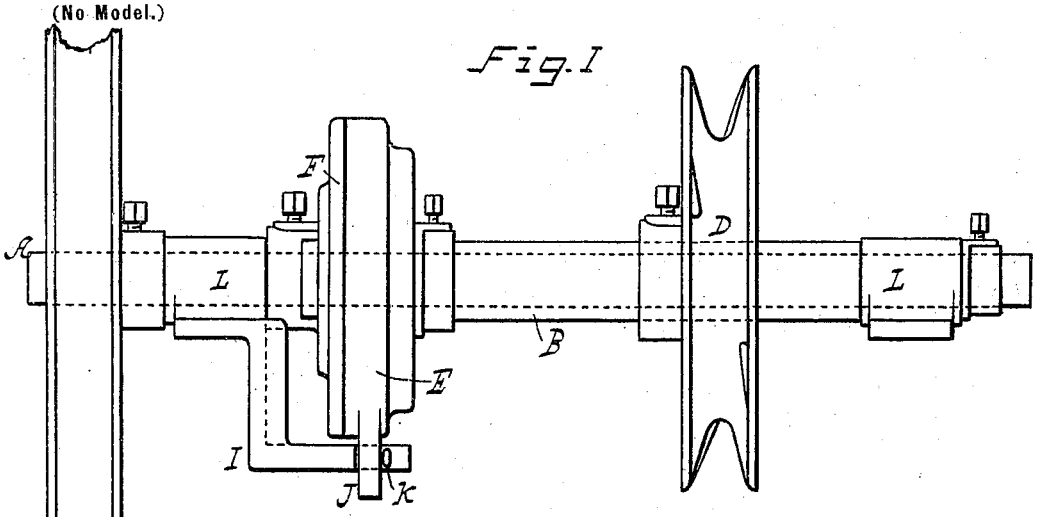



Fig. II

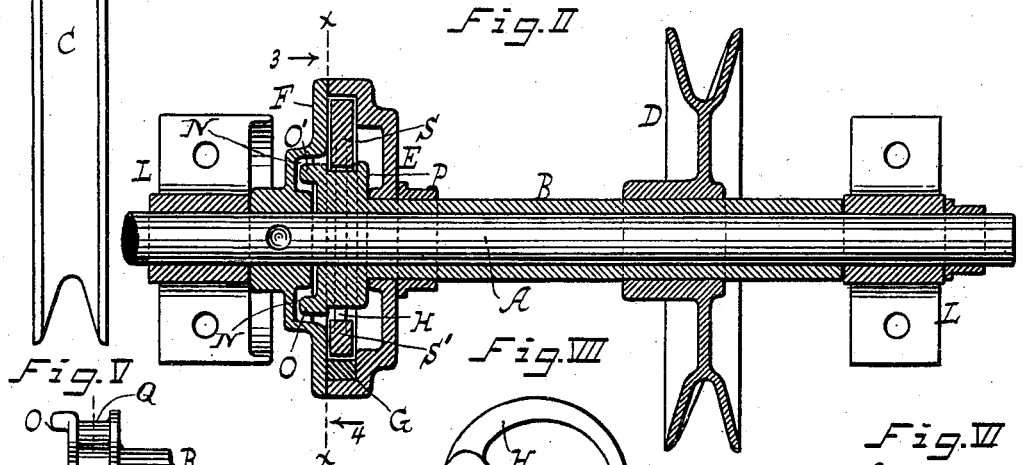



Fig. III

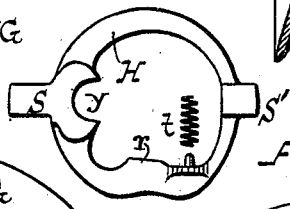



Fig. IV

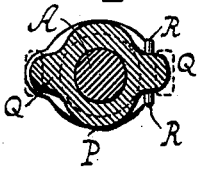
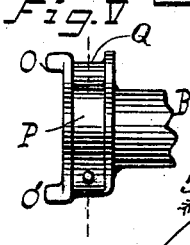



Fig. V



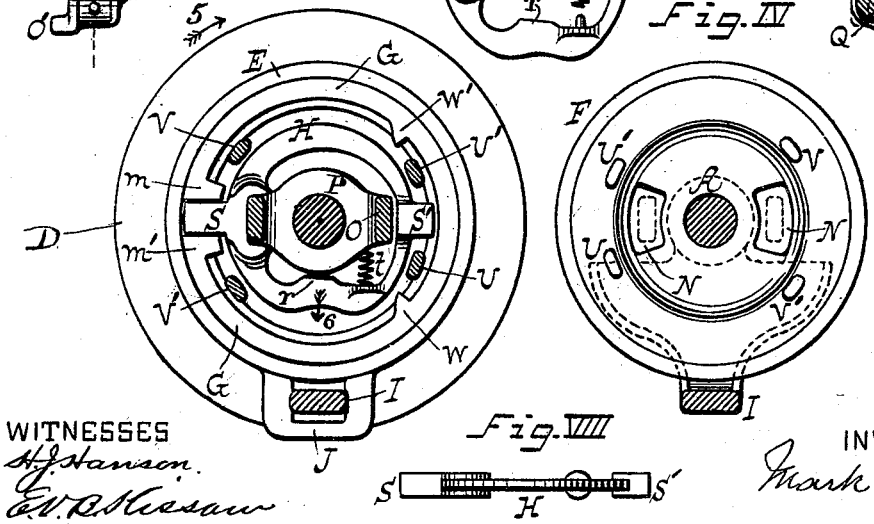




Fig. VI




WITNESSES

H. J. Hanson.

E. W. Bressau

INVENTOR

Mark Mount.

# UNITED STATES PATENT OFFICE.

MARK MOUNT, OF NEW YORK, N. Y.

## AUTOMATIC LOCK FOR HOISTING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 649,137, dated May 8, 1900.

Application filed January 21, 1899. Serial No. 702,976. (No model.)

*To all whom it may concern.*

Be it known that I, MARK MOUNT, a citizen of the United States, and a resident of New York, (Brooklyn,) in the county of Kings and State of New York, have invented certain new and useful Improvements in Automatic Locks for Hoisting Mechanism, of which the following is a specification.

The general principle of my invention is that of using the force of the weight being lifted to hold such weight at all times under control. To this end the load is suspended on a sleeve that is loose on the main shaft, which sleeve is combined with a friction device or clutch and a lever connection between such sleeve and clutch, the combination being such that the load being raised is made to operate the friction-clutch through the agency of the lever and the loose sleeve.

The invention is applicable to hoisting mechanism in general, and particularly to apparatus known as "dumb-waiters."

In the annexed drawings I have shown a contrivance which illustrates my invention, wherein—

Figure I is a side elevation of the apparatus. Fig. II represents a partial top view and horizontal section. Fig. III represents a cross-section on the line *x x*, looking in the direction of the arrow marked 3; Fig. IV, a like section on same line, looking in the direction of arrow marked 4. Fig. V represents a side view of a head on the sleeve. Fig. VI represents a cross-section of Fig. V. Fig. VII shows a side view of the lever used to connect the sleeve and friction-clutch.

A indicates the main shaft, journaled in suitable bearings L, and carries a sleeve B, which is loose on the main shaft.

C is the operative wheel, made fast on shaft A.

D indicates the hoist-wheel, made fast to the sleeve B, on which wheel the weight to be raised is suspended in the usual way.

E F are a lock-case and disk, jointly forming a receptacle in which are contained the clutch-fixtures for locking the hoist-wheel against the pull of the weight or load. The lock-case E encircles the sleeve B, the latter being free to turn therein. The disk F is secured to the main shaft and rotates with it, while E is held stationary by means of a loop J, which is engaged by a fixed bracket I, being secured against casual displacement laterally by a pin K, the parts E and F constituting a cover and box in which all clutch mechanism, including the lever, in inclosed and protected. The inner face of disk F, Fig. IV, has two cavities N, arranged diametrically opposite, and when the shaft A is turned they engage with lugs O O′ on the face of a head P, formed with or cast on the end of sleeve B, and thus the sleeve and hoist-wheel are revolved by and with the shaft. The disk F has projections U V, termed "tappets," whose purpose is to rotate the clutch-fixtures, as will appear.

Within the lock-case E is a friction device, whose function, in connection with the lock-case and a lever, also within the lock-case, is to constitute a friction-clutch for automatically holding in check the backward motion of the hoist-wheel to prevent the descent of the weight hoisted, as hereinafter described. The friction device I prefer to use consists of a ring G, normally running freely in the lock-case E. To adapt it to hold and let go of the lock-case, the ring is cut open, so as to be capable of expansion, and receives in the cleft the fulcrum end S of a lever H, which by a slight side strain expands the ring G. When thus expanded, friction is produced against the inner periphery of lock-case E, and such friction is automatically applied by the load itself, as suspended on the loose sleeve, the latter operating the lever. For this purpose the lever H has a notch *y* near its fulcrum, which is engaged by an ear Q on the sleeve, located just behind the lug O′ thereof.

When the fulcrum S of the lever is in alinement with the cleft in the ring G, the ring is free. With the load suspended on the left-hand side, looking at Fig. III, its constant tendency is to cause the sleeve-head to force the lever by a scarcely-perceptible movement out of its alinement in the direction indicated by the arrow 6 and so to pry open and expand the ring, a small push-spring *t* between the lever and the sleeve acting as auxiliary, and an opposite movement brings the lever into alinement again. To prevent the lever in such opposite movement from going beyond such alinement and there binding the ring fast, I

employ a limiting-stop, for which, to avoid extra parts, I form a protuberance *r* on the lever, adapted to abut against the side of head P, and which is also a means of adjusting the lever's motion, being filed away when assembling the parts until the proper amount of play is obtained. When the parts are in position, as indicated in Fig. III, the tendency of the spring *t* is to cause the lever H to maintain the ring G expanded enough to create a slight frictional resistance against the lock-case E.

To raise the load, the wheel C is operated to turn the shaft A and disk F in the hoisting direction indicated by the arrow 5. The ends of the cavities N N contact with the lugs O O′ of the sleeve-head, and the ring G being momentarily held stationary by the frictional resistance of spring *t*, as aforesaid, the ear Q of lug O brings the lever close against the sleeve-head P and into alinement, as indicated in Fig. III, allowing the ring to contract and free itself from the lock-case. At the same time the tappets U V′ contact with projections W *m*′ of ring G, and it and the lever H all go around together, while the load is raised through operation of the disk F acting on head P of sleeve B, carrying the hoist-wheel D. Whenever the hoisting stress on wheel C is relaxed, leaving the load to be supported against falling, the first action is of the spring *t*, which forces the lever H away from the sleeve-head, so that the fulcrum end will be brought into an inclined position with relation to the ends *m m*′ of the ring G, so as to expand it. At the same time the load will, through wheel D and sleeve B, tend to turn the head P in the opposite direction to that indicated by the arrow 5, causing the ear Q of the sleeve-head to force the lever in the expanding direction, compelling the ring G to hold fast to the case E and prevent the load from falling by action of its own weight, such hold of the ring increasing with the weight of the load.

To lower the load, the parts being in the position just described, the wheel C is operated to turn the shaft A and disk F in the direction opposite to that indicated by the arrow 5, when the disk F and shaft will first have a short lost motion within the sleeve B, since the recesses N N are longer than the lugs O O′ are wide. In this lost motion the projection U on the disk F, Fig. III, will contact with the outer end S′ of lever H, forcing it close against the sleeve-head, being the position of alinement and that in which the strain is taken off the lever, and the ring G allowed to contract and become released. The load would then drop were it not for the constant operation of the sleeve-head at the fulcrum end of the lever, thereby to throw on the friction of the ring G as a brake, which, however, is again immediately released by continued turning of wheel C and the action of tappet U of the disk F on the outer end of the lever H, as before explained.

It is desirable to provide for suspending the load from the right or left hand side of the hoist-wheel, according to choice and as circumstances require. To this end the lever H is made capable of removal and inversion, being adapted, with its associated parts, to be removed and reinserted in a reversed position, the spring *t* being then placed on the opposite side of head P, the same being furnished with a small pin R on either side to hold the spring. (See Fig. VI.) By this means the machine may be changed from right to left or left to right without any change in the construction of the parts.

The object of having duplicate tappets U and V′ on the disk F and projections W′ and *m*′ on ring G is to provide parts adapted to both the right and left hand positions of the lever H.

The above-described invention is valuable for hand-worked elevators and other purposes and is not confined to specific forms or details.

I claim as my invention—

1. The combination of the main shaft, the sleeve, and sleeve-head, the hoist-wheel fixed on the sleeve, the stationary lock-case, the split friction-ring therein, and the lever fulcrumed between the ends of the ring, and engaged by the sleeve, whereby the weight of the load operates to expand the ring against the lock-case and holds the load from falling.

2. The combination of the main shaft, the loose sleeve carrying the hoist-wheel and having a head P, a rotary disk F made fast to the shaft and engaging the sleeve-head, the stationary lock-case, friction-ring G therein and the lever H engaging said ring, said head being provided with ears Q engaging the lever and operating to release the ring from the lock-case when the shaft is revolved in one direction, the disk F being provided with means for actuating said lever to release said ring when the shaft is rotated in the opposite direction.

Signed at New York city, in the county of New York and State of New York, this 20th day of January, A. D. 1899.

MARK MOUNT.

Witnesses:
CHAS. WAHLERS,
H. J. HANSON.