(Model.) 2 Sheets—Sheet 1.

J. H. MOSS.

CLUTCH.

No. 496,693. Patented May 2, 1893.

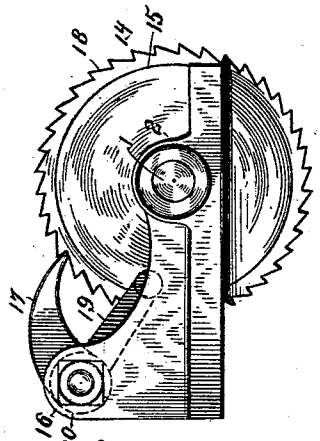

Fig 3

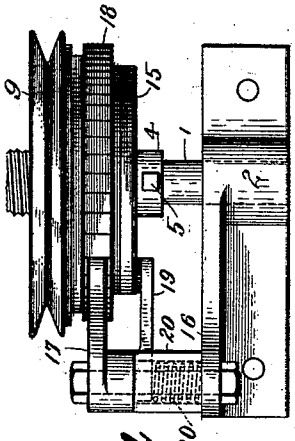

Fig 4

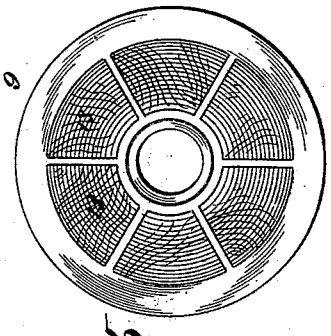

Fig 5

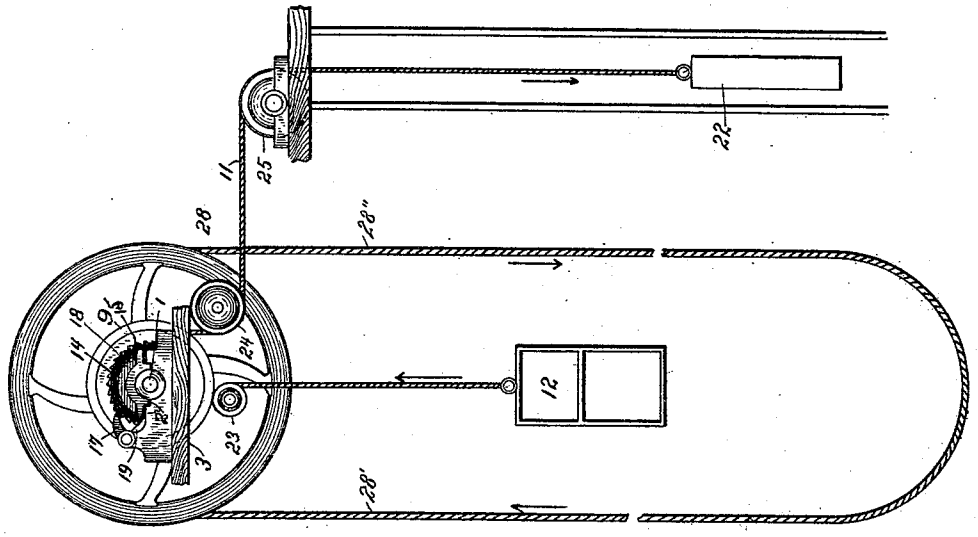

Fig 7

Attest;
C. C. Burdine
H. Hume Clendenin

Inventor;
John H. Moss
per DuBois & DuBois
Att'ys

(Model.) 2 Sheets—Sheet 2.

J. H. MOSS.

CLUTCH.

No. 496,693. Patented May 2, 1893.

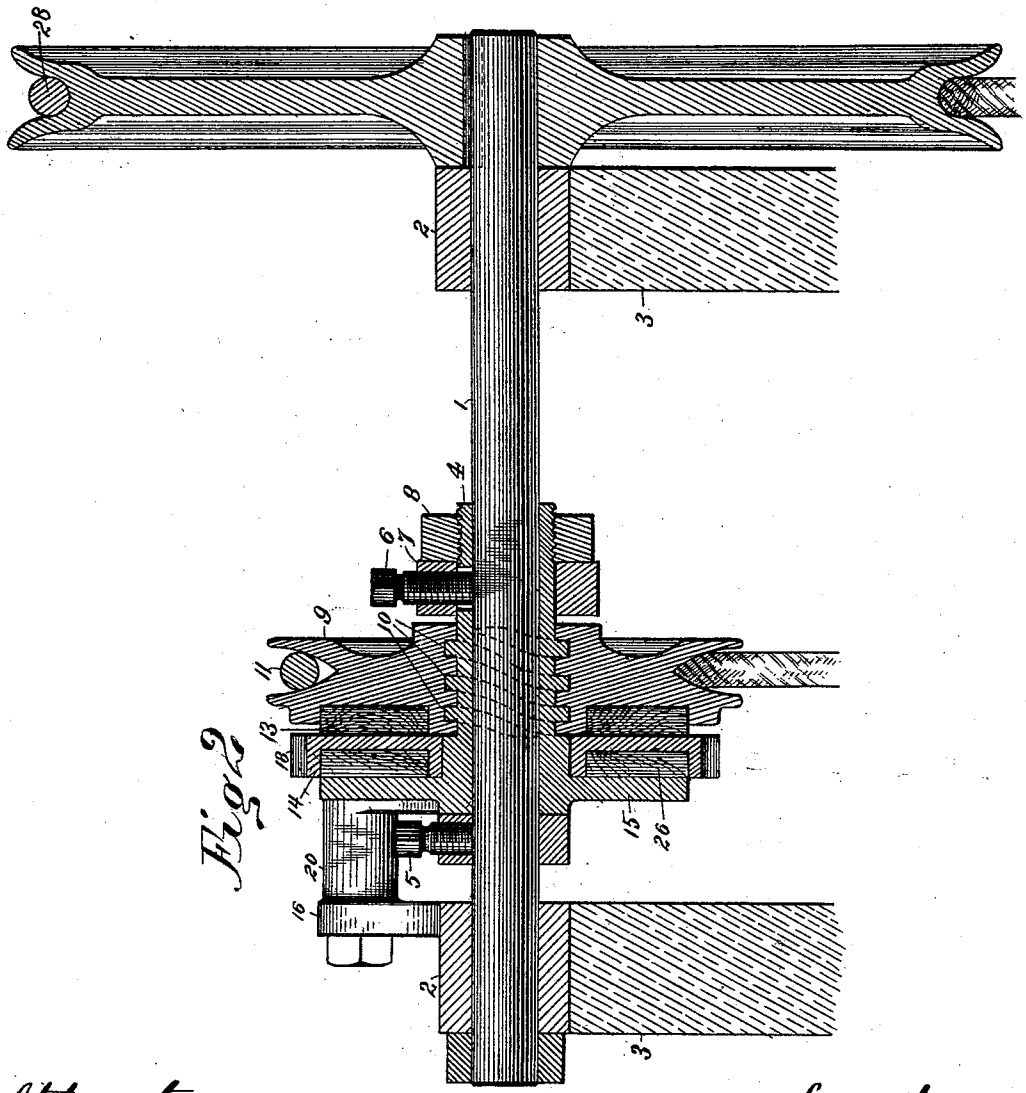

Fig. 2.

Attest;
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H. Hume Clendenin.

Inventor,
John H. Moss
per Dewey Boissel & Boissel
Attys.

UNITED STATES PATENT OFFICE.

JOHN H. MOSS, OF NEWBURG, NEW YORK.

CLUTCH.

SPECIFICATION forming part of Letters Patent No. 496,693, dated May 2, 1893.

Application filed March 22, 1892. Serial No. 425,962. (Model.)

To all whom it may concern:

Be it known that I, JOHN H. MOSS, a citizen of the United States, residing at Newburg, in the county of Orange and State of New York, have invented certain new and useful Improvements in Clutches; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention has reference to friction clutches in which a screw is employed to clamp a loose pulley.

The purpose of my improvements is to provide a simple, strong, cheap, and durable clutching mechanism especially applicable to dumb-waiters. And to this end my invention comprehends the peculiar features and combinations more fully described hereinafter and pointed out in the claims.

In the accompanying drawings: Figure 1 represents a side elevation of a dumb-waiter or elevator car to which my improvements are applied; Fig. 2, a transverse section through the clutching pulley; Fig. 3, a side elevation of the ratchet wheel and pawl; Fig. 4, a top view of the clutching pulley and ratchet mechanism; Fig. 5, a detail side view of the pulley.

The main shaft on which the clutching mechanism is mounted is designated by the reference figure 1 and rotates in bearings 2, resting on any suitable support such as 3 at the top well or other place where the mechanism may be employed.

A sleeve 4, is fixed on the shaft by set screws 5 and 6, located at the opposite ends of the sleeve. The set-screw 6 passes through a collar 7, which fits over the end of the sleeve, and this collar is further secured by a lock-nut 8 screwing into the end of the sleeve threaded to receive it. The object of this sleeve is to reduce the cost of manufacture and construction of my clutch, for the extra sleeve can be cast and then placed on the shaft, whereas if the sleeve is not used, the shaft would have to be turned down at a great expense. It also facilitates the adjustment of the rope over the center of the well by being slid along the shaft to the desired position. Mounted on the sleeve 4 is a sheave pulley 9, normally revolving with the main shaft 1, but rendered laterally movable thereon by screw threads 10, entering internal threads in the hub of the pulley. This pulley receives the rope 11 of the elevator car 12, and has sunk in its side wood friction shoes 13, which come in contact with a loose running ratchet wheel 14, and clamps it against the side of a rigid disk 15, cast integral with the sleeve 4. The side of this ratchet wheel which comes in contact with the disk, is provided with friction shoes 26, sunk in its sides like those on the pulley. Extending laterally from one of the bearings 2 is an arm 16, supporting a lateral pin 20, carrying a pawl 17, adapted to engage the teeth 18, of the ratchet wheel, and prevent the latter from backward movement when clamped against the disk 15. It will be readily seen that if it is desired to move the sleeve for the proper adjustment of the rope over the well, a longer or shorter pin 20, may be used, to throw the pawl 17 into engagement with the teeth 18 on the ratchet wheel.

In order to prevent the pawl from trailing over the ratchet teeth and making a disagreeable clicking noise, a device is employed to raise the pawl clear of the ratchet teeth during their forward movement and while the elevator car is ascending. This lifting device consists of an arm 19 fixed on the short shaft 20. The free end of this arm overlaps and comes in frictional contact with the vertical side of the disk, and is provided with a shoe 19′ of leather, or other suitable material to bear against the said disk and to produce more friction and always insure the lifting of the pawl. A coil spring 30 when the disk moves backward keeps the arm and hence the shoe constantly pressed against the side of the ratchet wheel. The main shaft is further provided with a large sheave pulley 29 for the reception of an endless hand rope 28, for starting and stopping the car in the manner to be presently described.

The car supporting rope 11, is provided with a counterbalance 22, preferably about ten pounds heavier than the car when empty. This rope passes over the pulleys 23 and 24, by means of which it is made to almost encircle the pulley and thereby obtain a better

hold. The rope then extends laterally and over an additional pulley 25, at the top of the well containing the counterbalance.

The preferred construction of my device having been set forth, I will now proceed to describe its operation.

We will assume that the car is empty and at the top of the well and it is desired to lower the same. The counterbalance being heavier than the empty car the pulley 9, will have to be rotated to the left, which is accomplished by pulling on the rope 28′. As the counterbalance is heavier than the empty car the car will remain at the top of the well until the pulley 9, travels over far enough to the right to engage the collar 7. As the pulley cannot travel farther it binds upon the collar, and a continued pull upon the rope 28′ causes the pulley to rotate with the threaded sleeve 4, which is in turn rigidly fastened to the shaft 1. Thus the car is lowered. Now, we will assume that the car is at the top of the well and loaded, the whole weighing more than the counterbalance, and it is desired to lower the same. The position of the pulley 9, in such a case as this, is against the friction plates of the ratchet wheel 14, and therefore the pulley cannot travel farther to the left. Now the operator pulls down upon the rope 28′ which revolves the shaft 1, and threaded sleeve 4, to the left. Such rotation will tend to move the pulley 9, to the right and away from the ratchet wheel; but as the car and its contents are so much heavier than the counterbalance, the pulley will revolve to the left also, thereby retaining substantially its first position. If the operator should cease pulling on the rope 28′, the pulley 9, would immediately bind against the friction shoes on the ratchet wheel, which will be stopped by the pawl, thereby stopping the downward movement of the car. Now we will suppose the car is at the bottom of the well and emptied of the load that it has just brought down, and it is desired to raise the car. The counterbalance is now heavier than the empty car and will cause the pulley 9, to travel on the threaded sleeve toward the collar 7. Here it will bind against said collar and will only be released by a downward pull on the rope 28″, which revolves the shaft, the threaded sleeve and the collar 7 to the right and as the pulley is in engagement with the collar it will be revolved therewith and the car thus raised. Now let us assume that the car is at the bottom of the well, but loaded and it is desired to raise the same, the car having formerly been lowered empty. As the weight of the car is now much greater than the counterbalance, the car will remain down until the pulley has traveled far enough to the left to engage the ratchet wheel 14, which will be caused by the revolution of the shaft, and sleeve 4 to the right. It now depends entirely on the friction plates on the ratchet wheel to hold the weight of the car, and as the pulley cannot travel farther to the left, the same must be turned to the right with the revolutions of the shaft and sleeve, thus raising the car.

I claim—

1. The combination of a shaft, a threaded part thereon, a pulley on said threaded part and having a correspondingly threaded hub, a ratchet wheel normally loose on said shaft, means for limiting the movement of the ratchet wheel and pulley as they are moved together parallel to the axis of the shaft in one direction, means for limiting the independent movement of the pulley in the opposite direction, means for engaging the pulley with the ratchet wheel, and a pawl for engaging the ratchet wheel, substantially as described.

2. The herein described clutch mechanism consisting of the combination with a shaft, of a sleeve mounted thereon and adapted to revolve with the shaft, a disk on said sleeve, a ratchet wheel and pulley mounted on the sleeve and provided with friction shoes adapted to bear against the disk and the ratchet wheel as the shaft is revolved, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN H. MOSS.

Witnesses:
CHAS. L. CHATTERTON,
GEORGE N. THORPE.