No. 658,990. Patented Oct. 2, 1900.

J. W. KINCAID.

MEANS FOR OPERATING DUMB WAITERS.

(Application filed Dec. 16, 1899.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.

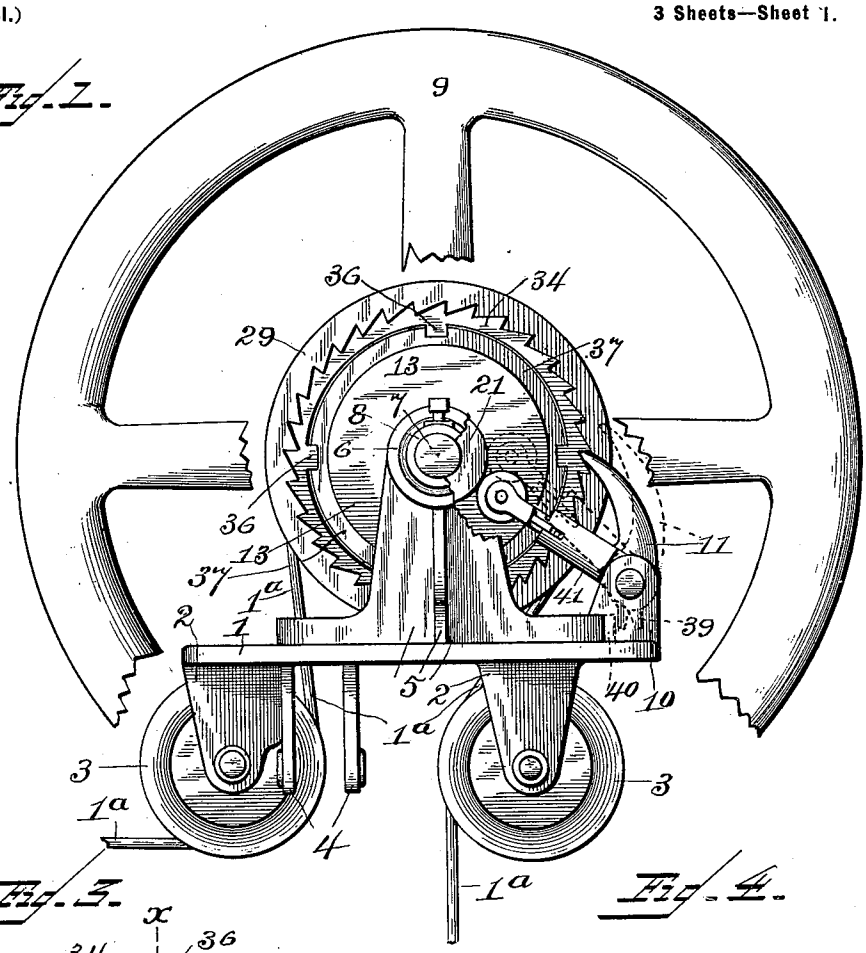


Fig. 3.

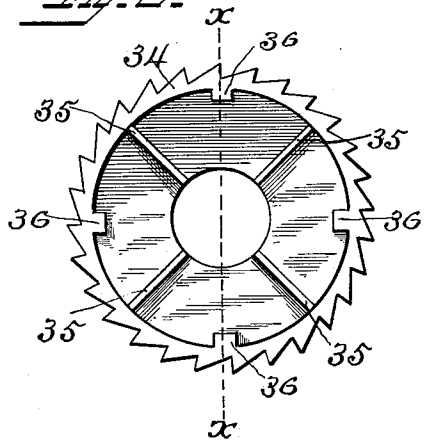
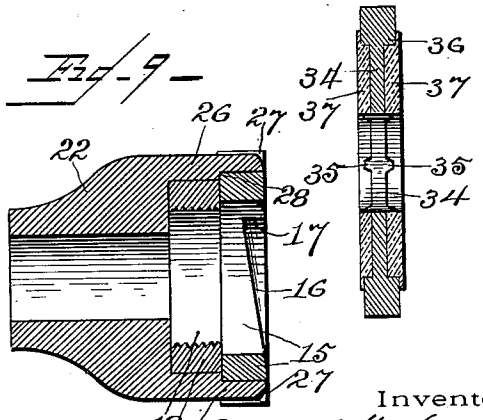


Fig. 4.



Witnesses.
Joseph Gregory
L. M. Grayson

Inventor.
Joseph W. Kincaid
By C. A. Peel
Attorney.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 658,990. Patented Oct. 2, 1900.

J. W. KINCAID.

MEANS FOR OPERATING DUMB WAITERS.

(Application filed Dec. 16, 1899.)

(No Model.) 3 Sheets—Sheet 2.

Fig. 2.

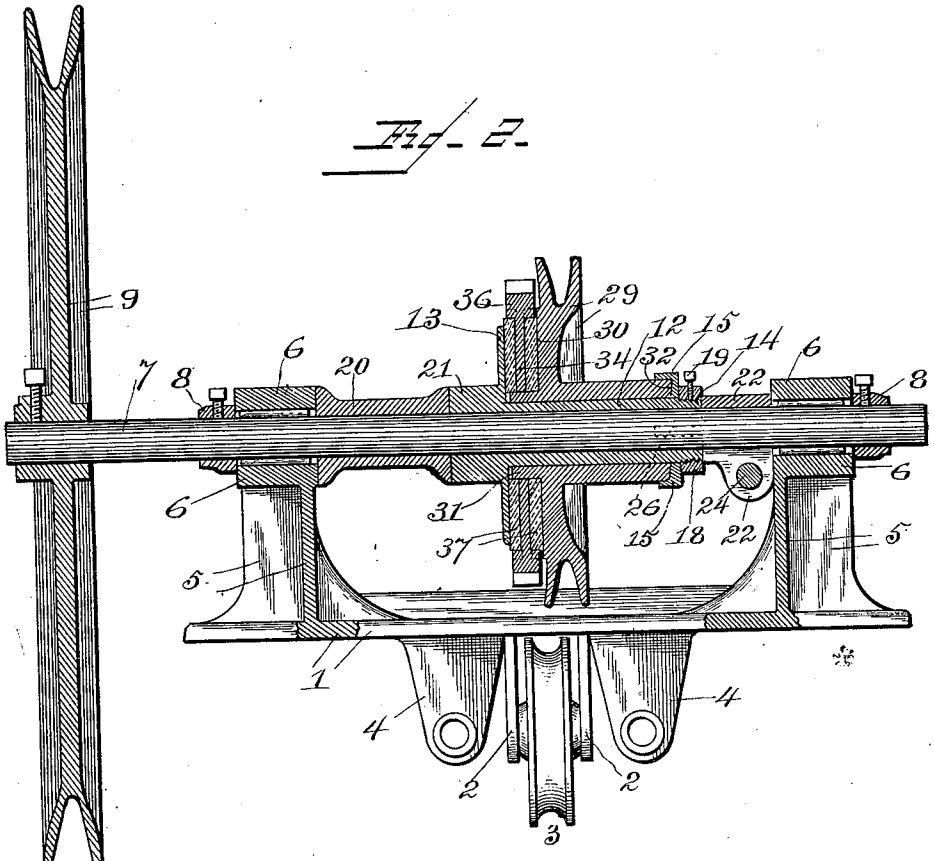
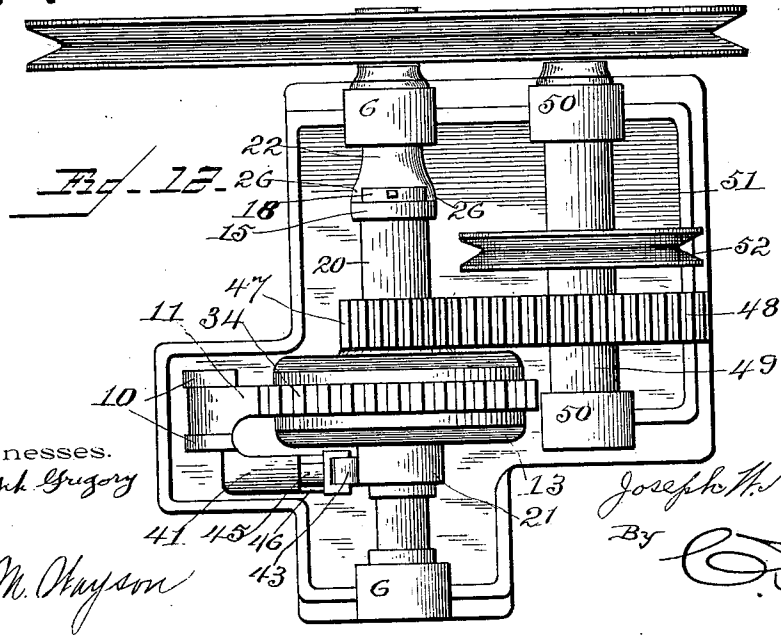


Fig. 1.



Witnesses.
Joseph Gregory
C. M. Thayson

Inventor.
Joseph W. Kincaid
By O. A. Bell
Attorney.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 658,990. Patented Oct. 2. 1900.

J. W. KINCAID.

MEANS FOR OPERATING DUMB WAITERS.

(Application filed Dec, 16, 1899.)

(No Model.) 3 Sheets—Sheet 3.

Fig. 5.

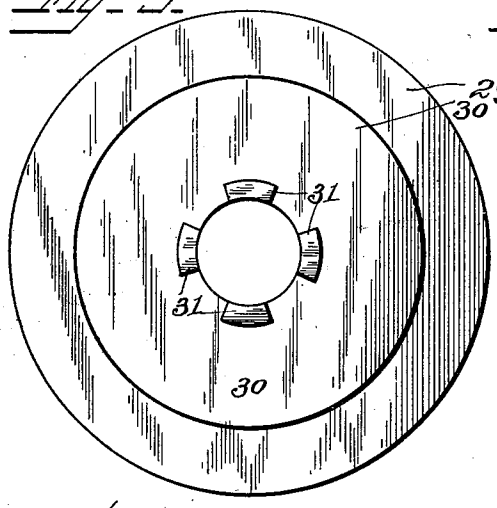


Fig. 6.

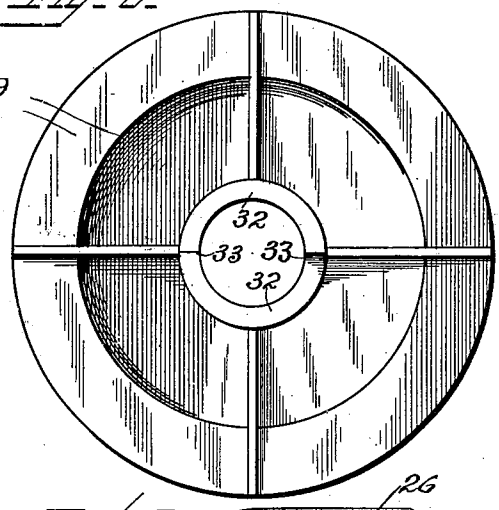


Fig. 7.

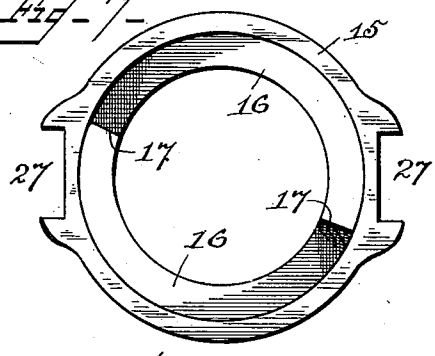


Fig. 8.

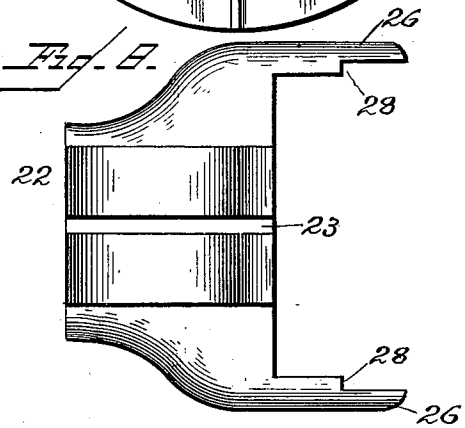


Fig. 10.

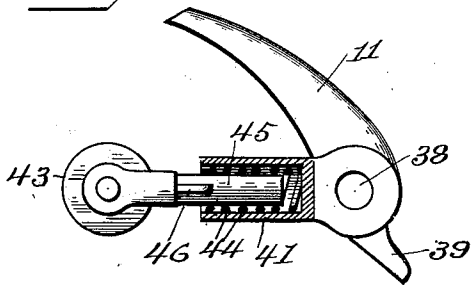
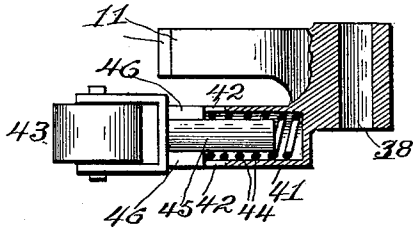


Fig. 11.



Witnesses.

Joseph Gregory

C. M. Grayson

Inventor.

Joseph H. Kincaid

By C. F. Pelz

Attorney.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOSEPH W. KINCAID, OF READING, PENNSYLVANIA, ASSIGNOR TO THE READING CRANE AND HOIST WORKS, OF SAME PLACE.

MEANS FOR OPERATING DUMB-WAITERS.

SPECIFICATION forming part of Letters Patent No. 658,990, dated October 2, 1900.

Application filed December 16, 1899. Serial No. 740,538. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH W. KINCAID, a citizen of the United States, residing at Reading, in the county of Berks and State of Pennsylvania, have invented certain new and useful Improvements in Means for Operating Dumb-Waiters, of which the following is a specification.

This invention relates to dumb-waiters, and particularly to a machine of improved novel construction and arrangement of parts for operating dumb-waiters.

One object of the invention is to provide a hoisting-machine for dumb-waiters comprising a simplified construction and arrangement of parts.

A further object of the invention is to provide a combined friction-brake and ratchet-wheel of novel and peculiar construction, special means for journaling the said wheel on the lift-sheave, special means for locking and unlocking the lift-sheave with the driving-shaft, and a peculiar pawl-controlling device operated by the machine to have the pawl engage and disengage the ratchet-wheel.

In the accompanying drawings, forming part of this application, Figure 1 is an end view of the machine, showing the movable position of the pawl in dotted lines with the hand rope-wheel partly broken away. Fig. 2 is a central longitudinal section of the machine. Fig. 3 is a side elevation of the combined ratchet and friction brake-wheel without the friction-disks. Fig. 4 is a cross-section on the line indicated by the dotted line *x x*, Fig. 3, with the friction-disks in place. Fig. 5 is an elevation of the inner side of the lift-sheave. Fig. 6 is a similar view of the opposite side of the lift-sheave. Fig. 7 is an enlarged elevation of the inner side of the clutch-ring. Fig. 8 is an elevation of the clamp enlarged. Fig. 9 is a longitudinal section of the clamp, nut, and clutch-ring assembled. Fig. 10 is a vertical section of the pawl and means for controlling it. Fig. 11 is a transverse section of the pawl and means for controlling it. Fig. 12 is a top view of a modification, showing the machine supplied with a gear and pinion.

The frame 1 of the machine has depending brackets 2, in which are journaled guide-sheaves 3 for a lift rope or cable 1^a, and like brackets 4 at right angles to the brackets 2, in which the sheaves may be journaled as desired. Standards 5, terminating in bearings 6, project upward from the frame 1, in which the driving-shaft 7 is journaled and held against longitudinal movement by set-screw collars 8, and on one end of the shaft is secured an ordinary hand rope-wheel 9. Said frame is provided with lugs 10, in which a pawl 11, hereinafter to be more fully described, is pivoted.

Loosely mounted on the shaft 7 is a sleeve 12, terminating at one end in a disk 13 and at the other end in a screw-thread 14, over which a clutch-ring 15, having inclined faces 16 and intervening shoulders 17 on its inner face, is loosely mounted. A nut 18, provided with a set-screw 19, engages the sleeve-screw 14 to hold the said ring on the sleeve, and a distance thimble or washer 20 fills the space between the hub 21 of the disk and one of the shaft-bearings 6, though this thimble may be omitted by casting the standards 5 close up to the disk. Between the screw end of the sleeve and the other shaft-bearing is secured upon the shaft a clamp 22, having a split or slot 23 and held fixed to the shaft 7 by a bolt 24 and nut 25. This clamp has inward projections, prongs, or forks 26, which engage notches 27 in the periphery of the clutch-ring 15 to couple the latter with the shaft 7, and the inner faces of the prongs or forks 26 are provided with a shoulder 28 to engage the outer face of the said ring and prevent its displacement, and the inner face of the clamp engages the nut 18 to keep the latter from slipping or turning off should the set-screw 19 become loose.

Loosely mounted on the sleeve 12 is the lift-sheave 29, having a friction-face 30 and a hub projecting from said face composed of a series of lugs or projections 31, a hub on the opposite side terminating in inclined faces 32, engaged by the inclined faces 16 of the clutch-ring when the machine is locked or braked, and intervening shoulders 33, engaged by the ring-shoulders 17 when the machine is unlocked.

Between the disk 13 and the face 30 is loosely mounted on the hub lugs or projec-

tions 31 the combined friction-brake and ratchet-wheel 34, having recessed faces provided with radial ribs 35 and lugs 36, flush with the periphery of the said wheel and extending into said recessed faces, which hold leather or other suitable friction disks 37 in the recessed faces. The said hub being composed of lugs with spaces between them instead of the usual solid hub reduces the weight of the lift-sheave. The lugs 36 and ribs 35 hold the disks 37 securely in the recessed faces of the wheel 34, so that there is no liability of the disks slipping or becoming displaced, as in the usual forms of attachment.

The pawl 11 has a bearing 38, an ear 39 to engage a projection 40 of the frame 1 to stop the backward movement of the pawl, and the pawl is provided with an integral barrel 41, having slots 42. The means for controlling the pawl consists of a roller 43, which engages the hub 21 of the disk 13, a spiral spring 44 in the barrel, and the roller shank or stem 45, working through the spring and having side cleats or projections 46 to engage the barrel-slots 42, which keeps the said stem from turning, and hence the said roller always square upon the hub 21, and forms a bearing for one end of the said spring, while the other end bears against the closed end of the barrel. When the pawl is holding the wheel 34, the roller 43 is carried down slightly by the turning of the hub 21; but when the wheel is not so held the roller and the pawl assume the positions shown in dotted lines, Fig. 1, thus permitting the said wheel to be revolved. It will therefore be observed that when the wheel is turned against the pawl the spring 44 is compressed by the said downward movement of the roller, and upon turning the wheel in the opposite direction the spring expands and presses the roller outward from the barrel, yet still in contact with the hub 21, thereby keeping the pawl out of engagement with the said wheel.

Referring to the modification shown in Fig. 12, the disk-sleeve has a pinion 47, which meshes with a gear 48 on a supplemental shaft 49, journaled in bearings 50 of a frame extension 51, and a lift-sheave 52 is secured on said shaft. Otherwise the machine is the same as that hereinbefore described.

The operation of the machine is as follows: In raising a load or dumb-waiter the hand-wheel is turned to the right, which turns the shoulders 33 into engagement with the shoulders 17, and the pawl holds the brake-wheel against movement, leaving the sleeve 12, lift-sheave, and shaft 7 free to be turned to the right by the continued movement of the hand-wheel in the same direction. Upon releasing the pull on the hand-wheel the weight of the load will turn the sheave back slightly, which disengages the said shoulders, and turns the inclined faces 16 and 32 upon each other, which makes the friction-face of the lift-sheave run hard against the friction-disk on one side of the brake-wheel and forces the other disk of said wheel against the sleeve-disk with such frictional contact as to form a lock or brake between said frictional parts that fixes the sheave against movement unless the hand-wheel is moved, thus locking or braking the machine to hold the load or dumb-waiter from dropping. The load or waiter may be continued to be raised by turning the wheel to the right, which puts the parts in the position first described. In lowering the hand-wheel is turned to the left, which displaces the pawl, leaving all the parts to be turned together.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a hoist, the combination, with the driving mechanism, of a clamp having prongs or forks provided with inner shoulders and secured to the shaft of said mechanism, and a clutch-ring loose upon said mechanism and engaged by the said forks and shoulders to couple the shaft with said mechanism.

2. In a hoist, the combination, with the shaft, the disk having a sleeve loose upon the shaft, and the lift-sheave loose upon the sleeve and having an inclined face at its end, of a clutch-ring held loose upon the sleeve in engagement with said end by a nut upon the sleeve, and a clamp secured to the shaft and having shouldered prongs engaging the said ring to couple the latter with the said shaft.

3. In a hoist, the combination, with the shaft, the disk having a sleeve terminating in a screw-thread and loose upon the shaft, the lift-sheave loose upon the sleeve and having a hub one end of which terminates in inclined faces and the other end in projections or lugs, and the brake-wheel loosely mounted on said lugs, of the clutch-ring, a nut on the screw end of the sleeve to hold loose upon the latter the said ring, and the clamp secured to the shaft and having forks engaging the ring to couple the latter with the shaft and with the sheave.

4. A friction-wheel having peripheral lugs, and radial ribs between the lugs, and friction-disks held between the ribs and lugs.

5. A friction-wheel having recessed faces, lugs flush with the periphery of the wheel and extending into the faces, radial ribs between the lugs upon said faces, and friction-disks held in the faces by the ribs and lugs.

6. The combination, with the shaft, the disk having a sleeve loose upon the shaft, the lift-sheave loose upon the sleeve and having a lug-hub, and the friction-brake ratchet-wheel loose upon the lug-hub, of the clutch-ring loosely secured on the said sleeve, the pronged clamp fixed to the shaft and engaging the ring to lock the latter and the sheave to the shaft, and the spring-controlled pawl operated by turning the sheave to have the pawl hold the friction-wheel while the shaft and its said locked parts are revolved.

7. The combination, with the shaft, the disk having a sleeve and a hub loose upon the

shaft, the lift-sheave loose upon the sleeve and having a hub with inclined faces and a lug-hub, and the friction-brake ratchet-wheel loose upon the lug-hub, of the clutch-ring secured loose upon the sleeve against the cam-hub, the clamp fixed to the shaft and having prongs engaging the said ring to lock the latter and the sheave to the shaft, and a pawl controlled by a spring-operated roller, the latter being worked by turning the sheave with its hub in engagement therewith to have the pawl engage and disengage the ratchet-wheel.

8. In a hoist the combination, with the driving mechanism, of a clutch-ring loose upon said mechanism and having peripheral notches, a clamp on said mechanism having prongs to engage said notches, and shoulders on the inner side of the prongs to engage the outer face of the said ring.

In witness whereof I hereunto set my hand in the presence of two witnesses.

JOSEPH W. KINCAID.

Witnesses:
GEO. A. HECKMAN,
WALTER B. CRAIG.