

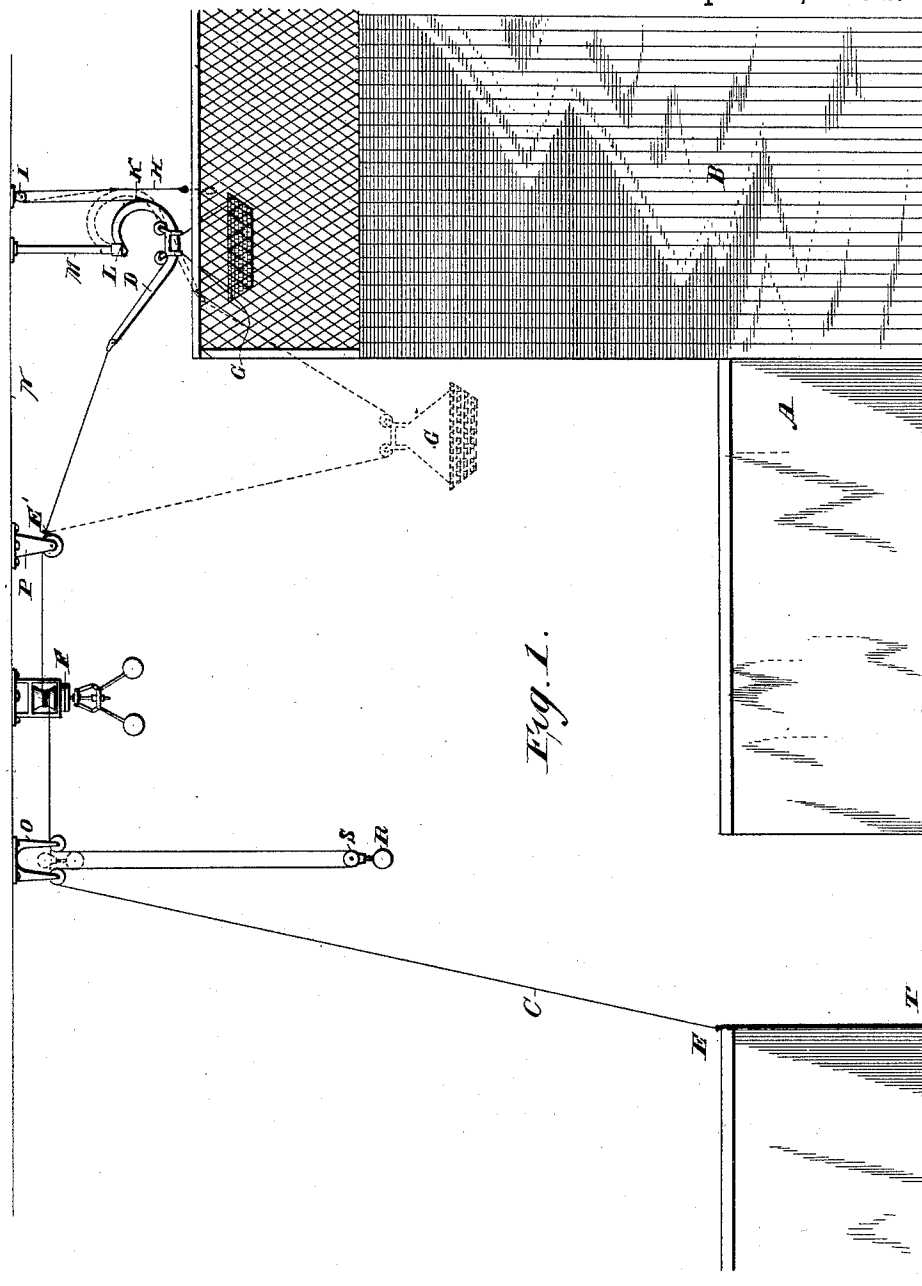
(No Model.)

4 Sheets—Sheet 1.

C. W. McCORMICK.
STORE SERVICE APPARATUS.

No. 482,646.

Patented Sept. 13, 1892.



Witnesses

Louis F. Julihn.
Eric F. Julihn.

Inventor

C. W. McCormick.

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Attorneys

(No Model.)

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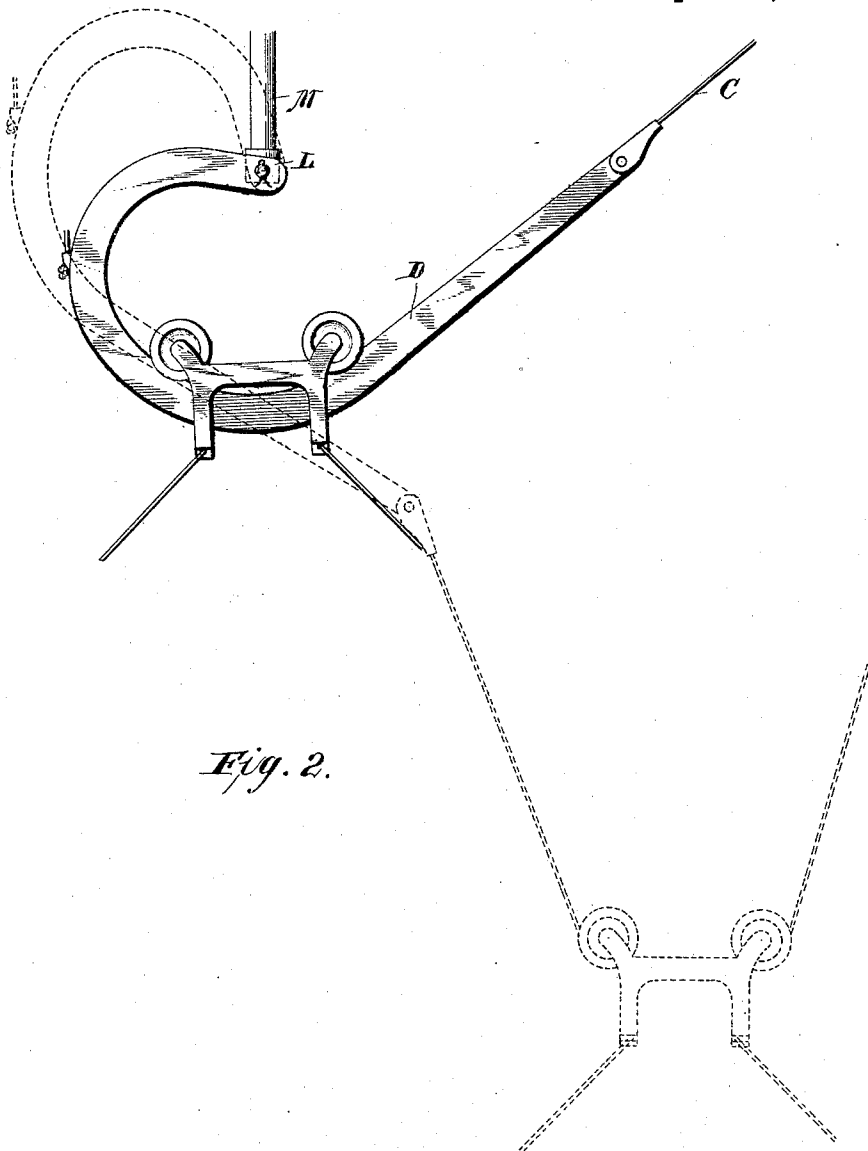


Fig. 2.

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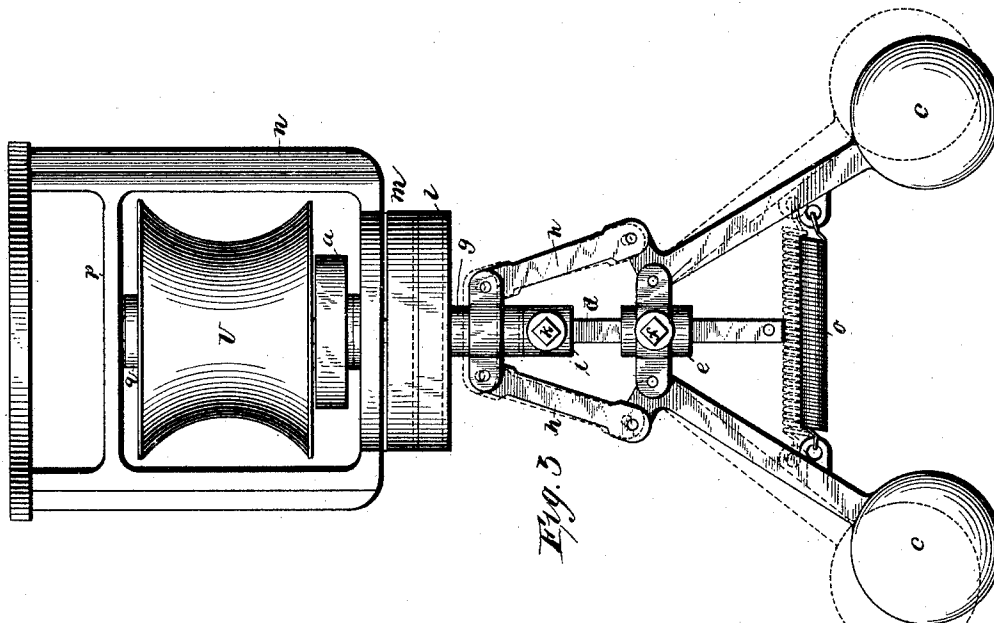
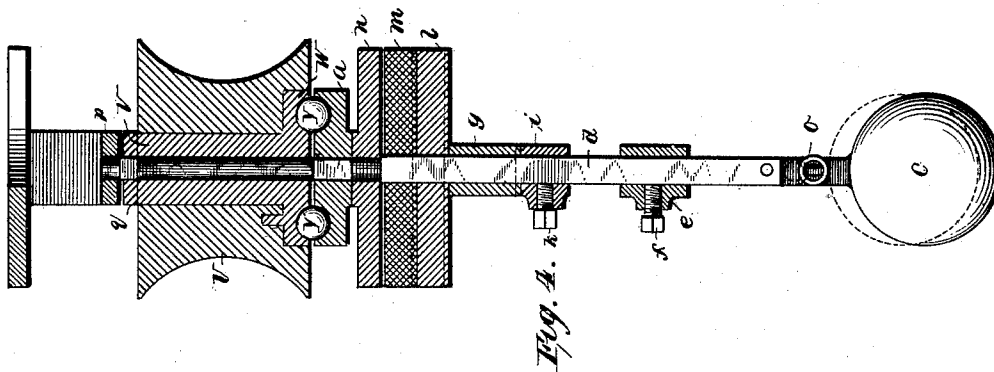
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4 Sheets—Sheet 4.

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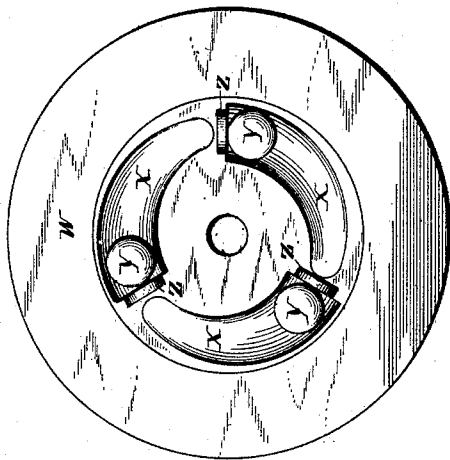


Fig. 5.

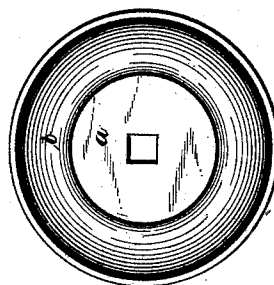


Fig. 6.

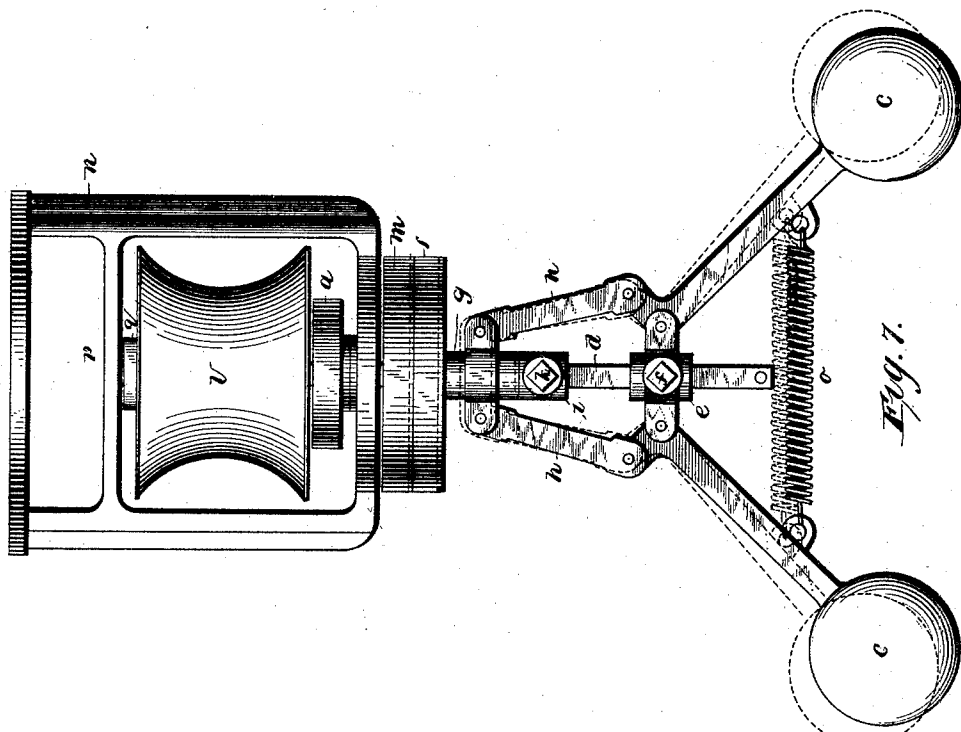


Fig. 7.

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UNITED STATES PATENT OFFICE.

CHARLES W. MCCORMICK, OF EMPORIA, KANSAS.

STORE-SERVICE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 482,646, dated September 13, 1892.

Application filed September 22, 1891. Serial No. 406,507. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. MCCORMICK, of Emporia, county of Lyon, and State of Kansas, have invented certain new and useful Improvements in Store-Service Apparatus, of which the following is a specification, reference being had to the accompanying drawings.

The object of my invention is to provide an elevating and lowering apparatus to be used for conveying goods from a position below to one above, or vice versa, and to gradually stop and automatically secure and hold the receptacle of the goods in place above.

I also provide improved governor mechanism for automatically regulating the speed of lowering, so that whether lightly or heavily loaded the basket will descend with substantially the same velocity.

In the accompanying drawings, Figure 1 is a diagrammatical view showing the application of my apparatus substantially as it is in practice. Fig. 2 is a partial view of my apparatus drawn on a larger scale for better illustration of the details. Fig. 3 is an elevation of governor mechanism which I employ to automatically regulate the lowering of a receptacle for goods. Fig. 4 is a vertical central section of the same on the line 4 4 of Fig. 3. Fig. 5 illustrates details of the governor mechanism and shows two grooved surfaces in adjacent faces of metal parts with balls forming a friction-clutch. Fig. 6 is a vertical section on the line 6 6 of Fig. 5. Fig. 7 is similar to Fig. 4, but shows the spring-tension of the governor-balls differently adjusted.

Referring now to the letters on the drawings, A indicates in Fig. 1 a lower counter, and B an elevated desk, and in this figure my apparatus is shown as adapted to raise and lower goods in a basket from one of these points to the other.

C indicates the elevating and lowering cord, which is secured at one end to what I will call a "hook" D, and at the other end it is fixed, as at E, to any convenient point.

E' is a knot to stop the pull of the end on the hook.

F indicates the governor mechanism, and G the basket to be raised and lowered.

H indicates a pull-cord which passes over a pulley I and is fastened at one end to the hook

at K. The hook is pivoted at L to a hanger M, which may be secured to the ceiling N, from which also depends the governor mechanism and the pulley-frames O and P. The hook D is shaped much like an ordinary fish-hook or a figure 6, and is shaped and suspended so that when the basket is elevated the free end of the hook will be raised to form an incline, down which the basket will travel until it passes the center of gravity of the hook. The weight of the basket and its contents will then tend to swing the free end of the hook upward. This will cause the basket to be safely suspended from the hook by the action of gravity. The curve or loop of the hook near its pivot serves to gradually check the movement of the basket, and it will ride to place on the hook therefore gradually without injurious jar or shock. The hook is composed of metal, and it is therefore not liable to wear like cords which have heretofore been used to stop and hold baskets in place, and which always cause more or less shock and sudden tension and injurious wear, so that the cords soon give out. By the use of my device I get all the yielding necessary by pivoting a pendent inflexible hook instead of using a flexible cord, which, as above stated, causes too much of a jar upon the basket and soon gives out. Besides this, by using a suspended yielding and inflexible hook I am able to dispense with all traps, gates, or other devices which have heretofore been necessary in order to enable the basket to pass the hanger or support, and my basket therefore rides as freely to place upon the hook as upon the cord itself. Furthermore, in my device there is no jump made by the basket from a solid portion of the track onto a cord, which is always objectionable; but my basket moves gradually and smoothly to place.

R indicates a counterbalance-weight suspended upon a loop of the cord by means of a pulley S. This counterbalance-weight is employed merely to take up the slack in the end of the cord nearest the fastening. In Fig. 1 the dotted lines and the full lines plainly indicate the operation of this counterbalance-weight. Were it not employed there would be, whenever the basket was elevated, a large amount of slack cord resting upon the counter or on the floor and under foot, as at T, Fig. 1. This in practice proves

very inconvenient, and hence my counter-balance is useful in keeping the slack cord out of the way.

Referring to my improved governor mechanism, it will be observed that the cord is wound two or three times around the pulley U, so that the pulley is positively rotated every time the basket is either raised or lowered. If no governor mechanism were employed, the basket when weighted considerably would drop with almost the velocity of a weight falling freely through the air and would stop with a jerk and result eventually in breaking the cord. It would be liable, also, to strike persons below and otherwise do injury. I provide the pulley U with a metal boxing V, provided with a flange W, having inclined grooves X for the reception of balls Y. At the deep end of each groove is provided a push-lug Z, which carries each ball around with the motion of the pulley in one direction when the balls are inactive.

a indicates a disk having an annular groove *b*, forming an even track for the balls, and it is secured to the governor-spindle. When the cord is operated in the direction for lowering, the motion of the pulley U causes the balls, by means of the inclined grooves X, to strain the flange W and the disk *a* apart, thus acting as a friction-clutch to engage the disk *a* with the flange W and cause the governor mechanism to rotate with the pulley. This governor mechanism is, in part, of ordinary construction, consisting of two pivoted weights *c*, connected to a spindle *d* by the ordinary lever mechanism. Usually, however, in governor mechanism it is desirable that the operation of the weights under centrifugal force shall move the spindle; but in the present instance I arrange so that the spindle shall not be moved, but shall always remain fixed.

e represents an adjustable cross-head that is in practice always fixed in some adjusted position to the spindle by means of a set-screw *f*. It forms the pivots of the arms of the weights, whereby as they separate under the impulse of centrifugal force they raise the movable cross-head *g* through the instrumentality of the pivoted links *h*.

i indicates an adjustable stop, which may be secured firmly to the spindle at any desired point by means of the set-screw *k*. This stop serves to limit the downward movement of the cross-head *g* and the fall of the weights toward the perpendicular.

l indicates a push-plate loose upon the spindle, upon which is mounted a brake-pad *m*, also loose upon the spindle, and which may be composed of felt, leather, or other suitable somewhat-yielding substance. This brake-pad bears, whenever the weights apply the brake by elevating the push-plate, against the under side of the frame *n*, which is secured in any suitable way to the ceiling.

I employ a coiled spring *o*, secured to the

weight-arms at each end and tending to draw them together, which aids the force of gravity in resisting the action of centrifugal force operating upon the weights. By means of this spring and the adjustable cross-head *e* the action of the weights can be regulated with great nicety, so that they will act either under a slight or a considerable velocity of rotation of the governor-spindle, as may be desired. This adjustment, together with the clutch mechanism by means of which the pulley U is engaged with the governor mechanism and the use of a yielding brake-pad to prevent too sudden action of the brake, enables me to automatically control the lowering of the basket with great nicety, always preventing too great rapidity and the injurious consequences incident to it. The spring *o* might be applied so as to tend to press the weights apart. The weights in each case being greater than the tension of the spring, the principle would be the same.

In order to prevent the clutch mechanism from jamming the pulley U against the upper spindle bearing or cross-piece *p*, I provide a collar *q*, which I secure to a spindle out of contact with said cross-piece in any suitable manner. The result is that when the clutch mechanism operates to lift the pulley and thrust it against the collar the engagement of the pulley and collar itself tends to clutch the pulley and spindle together and supplements the action of the ball-clutch mechanism. While the pulley is being compressed and the clutching action to engage the pulley and spindle so that they shall rotate together is exerted, there is no additional friction at the upper end of the spindle to interfere with its rotation and the proper action of the governor mechanism.

What I claim is—

1. In a store-service apparatus for raising and lowering goods, the combination of the cord C, the pendent fish-hook-shaped hook D, connected to one end thereof and pivoted at L, the pull-cord H, and the counterbalance-weight R, substantially as set forth.

2. The combination, with the cord C, of the pulley U, provided with a metal boxing V, having a flange W and inclined grooves X and push-lugs Z, with the annular-grooved disk *a*, the governor-spindle, and the fixed collar *q*, secured to the spindle, substantially as set forth.

3. The combination, with the governor mechanism, of the adjustable cross-head *e*, the adjustable stop *i*, and the spring *o*, substantially as set forth.

In testimony of all which I have hereunto subscribed my name.

CHARLES W. McCORMICK.

Witnesses:

F. K. GUSTIN,
F. E. TOBEY.