No. 696,268. Patented Mar. 25, 1902.

H. A. POOL.

DUMB WAITER.

(Application filed Nov. 2, 1901.)

(No Model.) 2 Sheets—Sheet 1.

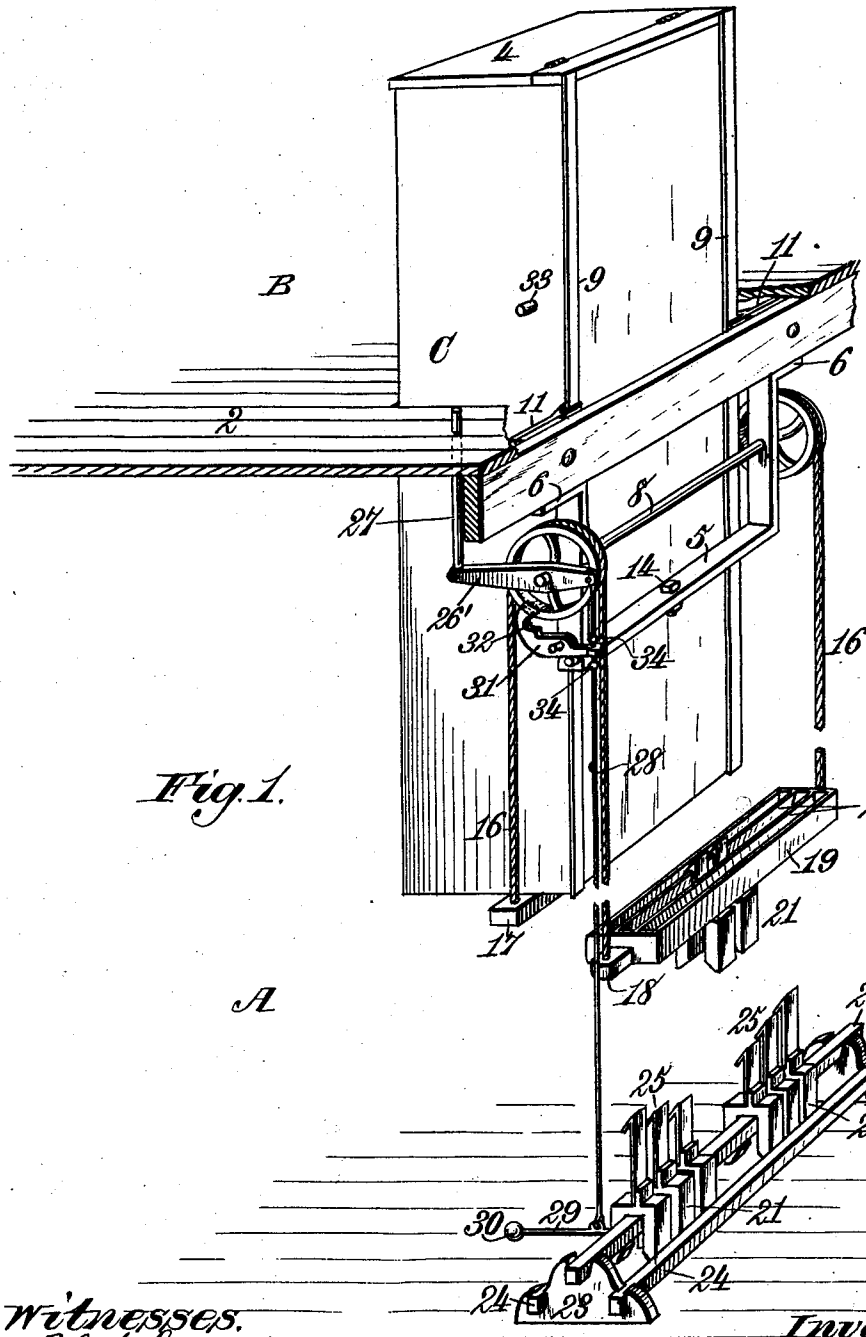

Fig. 1.

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Fig. 2.

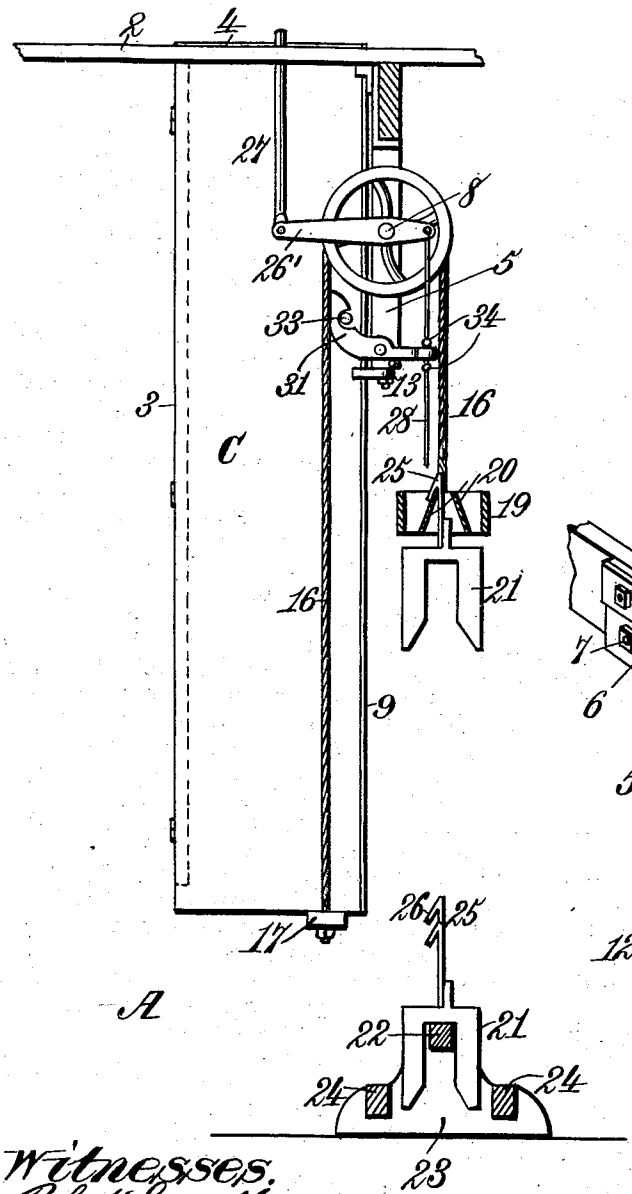


Fig. 3.

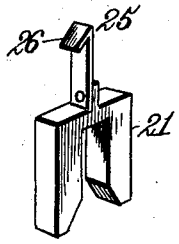
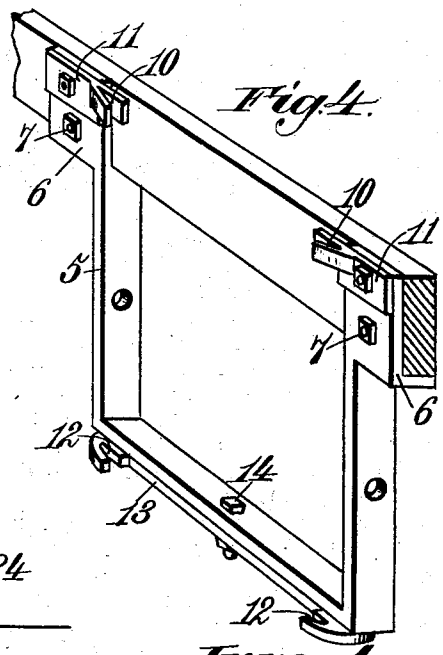


Fig. 4.



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UNITED STATES PATENT OFFICE.

HARLEY A. POOL, OF LIMA, OHIO.

DUMB-WAITER.

SPECIFICATION forming part of Letters Patent No. 696,268, dated March 25, 1902.

Application filed November 2, 1901. Serial No. 80,947. (No model.)

To all whom it may concern:

Be it known that I, HARLEY A. POOL, a citizen of the United States, residing at Lima, in the county of Allen and State of Ohio, have invented new and useful Improvements in Dumb-Waiters, of which the following is a specification.

This invention relates to dumb-waiters, and more especially to counterbalancing means therefor, and I desire to state at this point that I employ the term "dumb-waiter" in its broad sense to include devices of a similar nature—such, for example, as elevators.

The invention includes as one of its more important features counterbalancing means and means under the control of an operator or attendant for effecting a variation in the counterbalancing-weight in accordance with the load to be controlled.

In the present case when the dumb-waiter, which is in the nature of a cupboard, is down its upper edge will be substantially flush with the floor of an upper compartment, and a weight is connected to the dumb-waiter of a mass sufficient to elevate said dumb-waiter when a latch holding the same is tripped. When the dumb-waiter is raised, it can be filled with edibles or the like, and by suitable mechanism, one simple form of which will be hereinafter described, additional weight can be applied, and this can be easily varied so as to overbalance the loaded dumb-waiter, so that when the latter is caused to descend by being pushed down by an attendant and latched in its lowermost position it will be caused to rise at once when the latch is tripped, by virtue of the excessive weight applied.

One use of the improved device is as a depository for foods, which can be placed in the combined cupboard and dumb-waiter and the latter lowered subsequently into a lower apartment, as the cellar, for example, and in practice the receptacle may be provided with an ice-chamber and shelving to any extent, as the internal construction of the same forms no part of my invention.

The invention includes other objects and advantages, which with the foregoing will be set forth at length in the following description, while the novelty thereof will be covered in the claims annexed to said description; and said invention I have shown in one convenient form thereof in detail in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a perspective view of a dumb-waiter combined with my improved counterbalancing means. Fig. 2 is a central vertical sectional elevation of the same. Fig. 3 is a perspective detail of a weight. Fig. 4 is a similar view of a hanger.

Like characters refer to like parts throughout the several views.

In the drawings the letter A designates a lower apartment, which may be a cellar, while the letter B denotes an upper compartment, which may be a kitchen, the floor 2 separating the same.

The dumb-waiter or elevator, which is adapted to travel vertically between these two rooms, is designated in a general way by C, and it is of suitable form and size and has a hinged door, as 3, at its front by which access may be had to the interior thereof, such interior in practice being suitably shelved or provided with compartments to contain different kinds of articles, and the door 3 will be made as high as possible. The dumb-waiter C has a hinged top or lid, as 4, which is covered with suitable material and the upper surface of which when the dumb-waiter is down is flush with that of the floor 2, so that no obstruction is present in the latter. The dumb-waiter is positively hoisted, the mechanism for doing this including a hanger, as 5, approximately of rectangular **U** form, the side pieces of which have angular heads, as 6, at their upper ends to fit a floor-joist, the hanger being fastened rigidly in place by suitable means, as the bolts 7, passing through the angular heads 6 and floor-joist, respectively, it being seen that said hanger 5 is located under the floor 2, so as not to be visible from above. The vertical side bars of the hanger 5 sustain the horizontal shaft 8, the purpose of which will be hereinafter described.

On the back of the dumb-waiter are arranged the parallel beads or bars 9, extending the complete height thereof and which fit in notches 10 in the guide-brackets 11, fas-

tened suitably to the heads 6, the bars fitting in somewhat similar notches 12, formed in enlargements at the end of the bar 13, through which the bolt 14 on the horizontal portion of the hanger 5 passes centrally, it being understood that the bar 13 adjusts itself to the ribs or beads 9 as the dumb-waiter goes up and down.

The transverse shaft 8 extends laterally beyond the side pieces of the hanger 5, the extended portions carrying the sheave-wheels freely rotative thereon. Said wheels receive the ropes or cables 16, one end of each being suitably secured to the projecting ends of a bar 17 on the under side of the dumb-waiter, while the opposite ends are connected to lugs or ears, as 18, on the weight 19. Said weight 19 is shown as being of box-like form, and it is of a mass sufficient to overbalance the empty dumb-waiter or cupboard, so that when a latch which holds the dumb-waiter down is tripped the weight 19, by falling, will raise said dumb-waiter, which is caused to ascend through an opening in the floor 2 a distance sufficient to permit the opening of the door 3 and consequent loading of the elevator, the weight 19 when the dumb-waiter is up resting on a suitable frame, so that additional weight can be applied to the weight 19 sufficient to overbalance the load in the dumb-waiter, so that when the latter is lowered it can be elevated without manual application thereto by the weight 19 plus the additional weight placed on the same, as will hereinafter appear. The weight 19, which may be termed the "main" one, for it is adapted to carry auxiliary or pick-up weights, is of rectangular form, it having inside the same the walls 20, extending longitudinally thereof and in parallelism and converging toward their upper edges. This forms, in effect, spaces at opposite sides of the walls to be filled in with suitable material, so as to be sure that the empty dumb-waiter is overbalanced.

In connection with the main weight 19 I provide a plurality of auxiliary weights, as 21, the bodies of which are centrally slotted from their lower edges to a suitable height, so as to straddle or embrace the rock-shaft 22, the fit between the several weights and the rock-shaft being a free one. The rock-shaft is supported at or near its ends in notches formed in the upper sides of the bearings 23, connected at suitable points by the tie-bars 24, the connected bearings 23 constituting a suitable supporting-frame for the main weight 19 when the latter is at the limit of its descending movement. The auxiliary weights 21 have projections on their upper sides, to which the shanks of hooks, as 25, are suitably secured, the hooks being in superposed planes, and it will be seen that said hooks are beveled, as at 26, the beveled faces facing inward.

It will be assumed that the main weight 19 is falling, so as to raise the empty cupboard. When said main weight has nearly reached the limit of its descending movement, the beveled faces of the hooks 25 will be caused to engage the inner wall 20, and as the weight descends it causes the weights to successively tilt rearward and then forward in accordance with the heights or lengths of said hooks, the latter being, when the weight 19 finally rests on the bearings 23, disposed in the path of the inner wall 20.

The shaft 8 freely carries at its outer end the rock-arm 26′, to which the lower end of the treadle or push-rod 27 is pivoted, the rod extending upward through a hole in the floor, so as to be easily reached by a user of the dumb-waiter. To the opposite end of the rock arm or lever 26′ the wire or rod 28 is pivoted, it being similarly united at its lower end to the arm 29, which projects from the rock-shaft 22 and which carries an operating-weight 30 at its extreme outer end.

A latch is shown at 31, it being pivoted on one of the side bars of the hanger 5, and it has a notch or recess, as 32, to receive a projection, as 33, on one side of the dumb-waiter C when the same is down, the tail of the latch being disposed between projections, as 34, on the connecting rod or wire 28. With the dumb-waiter C empty and down it is held in this position by the latch 31 engaging the catch or projection 33, and the main weight 19 will be up. When the treadle 27 is depressed, the rod 28 will be pulled upwardly through the intermediate rock-arm 26′, thereby throwing the latch 31 off the projection 33 and releasing the dumb-waiter, and hence the main weight 19, so that the latter can drop to elevate the former, this motion continuing until the main weight 19 rests on the bearings 23, at which time the dumb-waiter will have passed through the floor. As the main weight descends the hooks will successively enter the slot or space between the walls 20 until all the hooks are above the upper edge and in the path of the inner wall 20. As the dumb-waiter is filled and when its weight exceeds that of the main weight 19 the dumb-waiter will descend slowly, thereby raising the main weight 19 until the inner wall 20 strikes the lowermost hook 25. Then if the weight of the dumb-waiter and its contents exceeds that of the main weight 19 and the added auxiliary weight the dumb-waiter will further descend until the ascending main weight comes against the hook of another auxiliary weight. It will be assumed at this point that the dumb-waiter is loaded. The attendant will therefore push the rod 27 downward, so that the shaft 22, which is shown as being square in cross-section, through the intermediate connections will be rocked rearwardly, so as to swing the hooks of those weights which are not suspended from the inner wall out of the path of said wall. The operator or attendant then forces the filled dumb-waiter downward through the

floor 2 and until the projection 33 can be engaged by the latch 31, so as to hold said dumb-waiter down with its upper surface in line with the floor and with the main weight 19 and the auxiliary weight or weights 21 picked up thereby in the air. The loaded dumb-waiter is therefore lighter than the combined main weight 19 and auxiliary weight or weights 21, so that as soon as the latch is tripped said main weight and auxiliary weight or weights carried thereby can descend, so as to raise said dumb-waiter until the main weight 19 and auxiliary weights are returned to their initial positions.

Having described the invention, what I claim is—

1. A dumb-waiter combined with a rising and falling main weight, a plurality of auxiliary weights arranged to be successively applied to the main weight, and a shiftable support for said auxiliary weights.

2. A dumb-waiter combined with a weight-carrying device connected with the dumb-waiter for ascending and descending movements, and a plurality of weights having means to be successively engaged by said weight-carrying device on the ascending movement of the latter.

3. A dumb-waiter combined with a weight-carrying device connected with the dumb-waiter for ascending and descending movements, a plurality of weights having projections disposed in superposed planes and adapted to engage said weight-carrying device, and a shiftable support for said weights.

4. A dumb-waiter combined with a rising and falling main weight, an auxiliary weight arranged to be taken up by the main weight, and a shiftable support for the auxiliary weight.

5. A dumb-waiter combined with a weight-carrying device connected with the dumb-waiter for ascending and descending movements, and a plurality of weights having hooks disposed in superposed planes and adapted to engage said weight-carrying device.

6. A dumb-waiter combined with a weight-carrying device adapted to ascend and descend in opposition to said dumb-waiter, a rock-shaft, a slotted weight supported by said rock-shaft and having a hook arranged to normally engage the weight-carrying device, and means for operating said rock-shaft.

7. A dumb-waiter combined with a weight-carrying device adapted to ascend and descend in opposition to said dumb-waiter, a latch for holding the dumb-waiter in one of its positions, a weight adapted to be lifted by said weight-carrying device, a shiftable support for said weight, and means controlled by an operator for shifting said support and for also tripping said latch.

8. A dumb-waiter combined with a main counterbalancing-weight therefor, a latch for holding said dumb-waiter down, means for tripping said latch, and a plurality of auxiliary weights arranged to be successively engaged by the main weight during the ascending movement thereof.

9. A dumb-waiter combined with a weight-carrying device adapted to ascend and descend in unison with the dumb-waiter and having a pair of walls which converge toward the top of said weight-carrying device, a plurality of weights having hooks disposed in superposed planes, and a shiftable support for said weights.

10. A dumb-waiter combined with a weight-carrying device adapted to move in opposition to the dumb-waiter, a plurality of weights arranged to be successively taken up by said weight-carrying device, a shiftable support for said weights, a device adapted for actuation by an attendant, and a connection between said last-mentioned device and said shiftable support.

11. A dumb-waiter combined with a main weight therefor, a plurality of auxiliary weights arranged to be successively taken up by the main weight, and a shiftable support for the auxiliary weights.

12. A dumb-waiter, a shaft carrying sheave-wheels, ropes on the wheels connected with the dumb-waiter, a main weight supported by the ropes, a plurality of auxiliary weights arranged to be taken up automatically and successively by the main weight, and a support for the main weight having means to carry the auxiliary weights.

13. A dumb-waiter, a shaft carrying sheave-wheels, ropes on the wheels connected with the dumb-waiter, a main weight supported by the ropes, a plurality of auxiliary weights arranged to be taken up automatically and successively by the main weights, a support for the main weight having means to carry the auxiliary weights, a treadle, and a connection between said treadle and auxiliary-weight-carrying means.

14. A dumb-waiter combined with a main weight arranged to move in opposition to said dumb-waiter, a support for the main weight, an auxiliary weight arranged to be taken up by the main weight, and shiftable means on said support for carrying said auxiliary weight.

15. A dumb-waiter combined with a main weight arranged to move in opposition to said dumb-waiter, a support for the main weight said support having a rock-shaft, and an auxiliary weight removably carried by said rock-shaft and arranged to be taken up by the main weight.

16. A dumb-waiter combined with a main weight arranged to move in opposition to said dumb-waiter, a support for the said main weight and having a squared rock-shaft, a plurality of slotted auxiliary weights removably sustained by said rock-shaft and having hooks disposed in superposed planes, and means for operating said rock-shaft.

17. A dumb-waiter combined with a weight-carrying device connected with the dumb-waiter for ascending and descending movements, and a plurality of weights arranged to be automatically and successively lifted by said weight-carrying device on the ascending movement thereof.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

HARLEY A. POOL.

Witnesses:
PHILIP ROEDER,
FRED G. E. DUFRESNE.