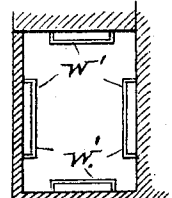
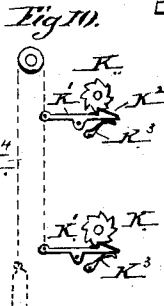
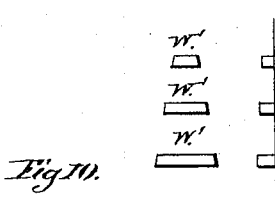
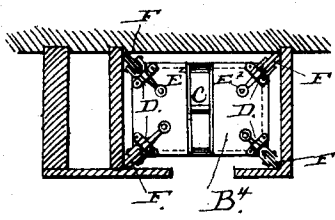
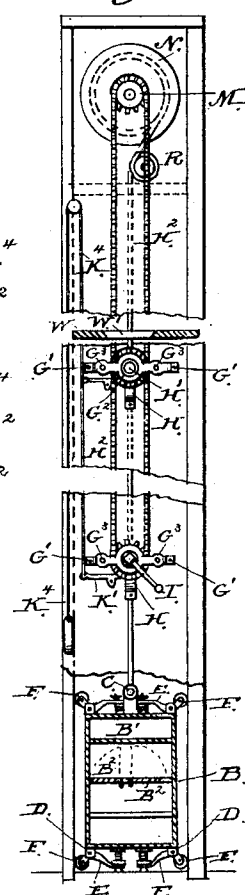
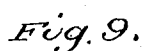
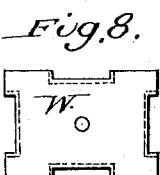
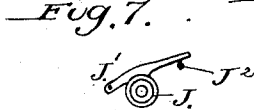
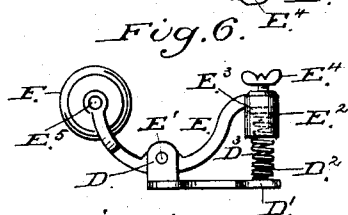
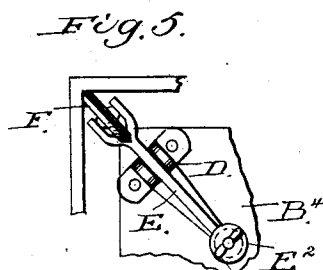


W. B. MOYER.
DUMB WAITER.

Patented Apr. 21, 1885.



Witnesses;
J W Fowler
H B Applewhite

Inventor;
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by Thos P. Finney
his Atty.

UNITED STATES PATENT OFFICE.

WELLINGTON B. MOYER, OF READING, PENNSYLVANIA.

DUMB-WAITER.

SPECIFICATION forming part of Letters Patent No. 316,050, dated April 21, 1885.

Application filed February 12, 1885. (No model.)

To all whom it may concern:

Be it known that I, WELLINGTON B. MOYER, a citizen of the United States, residing at the city of Reading, county of Berks, State of Pennsylvania, have invented a new and useful Improvement in Dumb-Waiters, of which the following is a specification.

This improvement is applicable to both dumb-waiters and hand-hoists for dwellings, factories, &c.

The object of the improvement is to furnish a complete hoist or dumb-waiter, of simple construction, that will not be affected by the distortion of the well, from settlement of the building, or the warping of the material from which the well-casing is made, the waiter or cage accommodating itself to all such changes and inequalities, and without undue friction will ascend or descend within the well at the will of the operator.

Wells as usually arranged for dumb-waiters are started from the basement and terminate in the dining-room above the same. In my improvement the well, if desired, may extend from the basement up through all the floors of the building, and may be operated from any floor independently.

The drawings accompanying this specification show very fully my several improvements, like letters of reference indicating like parts.

Figure 1 represents a front elevation of the well, with counter-weight box and cage or dumb-waiter, partly in section. Fig. 2 is a side elevation of the same, also partly in section. Fig. 3 represents a top plan of the cage or waiter. Fig. 4 is a sectional plan of the well, showing the cover-ledges as placed in the same; Fig. 5, an enlarged top view of the anti-friction elastic guide placed upon the corners of the cage or waiter and rolling in contact with the interior corner of the well; Fig. 6, a corresponding elevation of the guide; Fig. 7, the brake to control the descent of the cage or waiter when its weight preponderates over the counter-weight; Fig. 8, a plan of one of the cover-plates; Fig. 9, a series of cover-supporting ledges; Fig. 10, an elevation of the ratchet, pawls, and cord connection with retaining-spring.

A represents the well; A', a division forming a box for the counter-balance; A², outside

casing; B, dumb-waiter or cage; B', plain fixed shelves; B², a folding shelf; B³, hoisting-batten on top of waiter; B⁴, top of waiter; B⁵, bottom of same; C, hoisting ring or eye; D, bracket for the spring-guide; D', spring-seat; D², spring retainer-pin; D³, spring; E, bifurcated arm for spring-guide; E', fulcrum; E², spring case; E³, loose seat for spring; E⁴, adjusting-screw; E⁵, pin for guide-wheel; F, guide-wheel; G, hand-hoisting device, frame, or crab; G', securing-screws; G², bearing for sprocket-wheel shaft; G³, bearings for retainer roller shafts; H, sprocket-wheel; H', sprocket-wheel shaft; H², sprocket-chain; I, crank for operating the hoist; J, brake-wheel; J', brake-lever; J², brake-pins; K, ratchet; K', ratchet-pawl; K², elastic cover to same; K³, spring; K⁴, actuating-cord (or head); L, drum or shaft; L', loose collar secured by a set-screw; M, upper sprocket-wheel; N, main drum; P, counterbalance-drum; Q, thimbles let into the sides of the well for bearings; R, central guide-sheave; R', bracket for same; R², a support for bracket; S, waiter or cage lifting rope; T, counterbalance-rope; T', counter-balance; U, basement; V, floors; W, covers; W', ledges to support the covers.

The construction of the well and waiter or cage is of the usual form, except that I give somewhat more play within the well for the cage or waiter, instead of the fixed inelastic guide-wheels, usually attached to the cage or waiter, and the use of which requires great nicety of construction in the well to prevent undue friction and unsteadiness of movement of the cage or waiter therein.

I make use of the elastic guide-wheels shown in detail in Figs. 5 and 6, in which it will be noticed that the arm or lever in the bifurcated end of which the guide-wheel is supported has at its opposite end a cup-recess adapted to retain a spring, a loose disk within the cup, and a thumb-screw upon the back.

The bracket in which the lever is fulcrumed has an extension to the rear, with a spring-seat and pin coinciding with the cup-recess of the arm when in place; preferably a strong steel spiral spring is set over the pin and upon the bracket-seat. The arm-cup disk is then laid upon the spring, the arm-cup placed over the disk and spring, and the arm dropped within

the bracket-jaws, and by its fulcrum-pin connected therewith, the thumb-screw being withdrawn from the inner face of the cup.

To apply the guides, the waiter or cage is supported within the well at a suitable height for the purpose, care being taken to have the same at equal distances from and parallel with the walls of the well. The completed bracket, with its guide-wheel, is then placed with its center longitudinal line coincident with diagonal lines previously drawn from corner to corner on the opposite ends of the waiter or cage, and pushed toward the corner of the well until the guide-wheel contacts therewith, when it is secured in place. This being done at the eight corners, (top and bottom,) the cage may then be let down upon its support at the base of the well.

The hoisting device usually adapted, particularly for dwelling-house dumb-waiters, is a rope running generally on each side of the waiter or cage within the well. The clearance being small, it is a difficult and tiresome operation to manipulate the ropes and raise the waiter or cage, and is on that account not adapted to be used for more than a single floor-rise. In place thereof I make use of a sprocket-wheel of small size—say about eight inches in diameter—mounted within a crab or three-leg frame, in which bearings are provided for the sprocket-wheel shaft, and for retaining roller-shafts, one each side of the sprocket-wheel. The sprocket and roller shafts all work at their inner ends in thimbles let into the casing of the well, the sprocket-shaft extending through the casing and having a thin disk with a periphery of about one inch in width secured thereon within the well, to act as a brake in cases where an unusual preponderance of the cage or waiter over the counterbalance occurs. A light wooden lever is arranged in close proximity to the periphery of the disk, and is retained in that position by a pin. The outer end of the sprocket-shaft is adapted to fit a crank, which may be permanently or removably attached thereto. The sprocket-shaft has also secured upon it between the wheel and casing a ratchet-wheel; a dog or pawl is arranged in contact therewith, retained in place by a spring, and where more than one floor is passed by the cage has a wire cord attached to each pawl, enabling the operator upon every floor to release all the pawls above and below it, and thus control the descent of the cage from that point. These hoisting devices are placed in the exterior of the well-casing at a suitable height from the floor—say thirty inches—within each room where it is desired to have control of the cage or waiter. The usual drum or head shaft is arranged in the well above the highest point it is intended the cage or waiter shall reach in its ascent, and is run in thimbles or bearings let into the sides of the same. The shaft is provided with a hoisting-drum central to the well, and with a counterbalance-drum central to the box, and upon the outer end a sprock-

et-wheel corresponding with that on the hoisting device beneath the hoisting-drum, and secured to a suitable support placed in the well is a guide-pulley; a counter weight or balance is provided of very nearly the weight of the cage or waiter. All being prepared, the hoisting-rope is secured to its drum with about two turns of the same upon the hoisting-drum. The balance of the rope is then dropped over the guide-pulley down the well and secured to the eye of the waiter or cage, the endless sprocket-chain having been placed over the end sprockets and in contact with the several intermediate sprockets, the retaining-rollers keeping the chain in gear with the wheels. The waiter or cage is now by the use of the crank raised to the highest point it is to attain and is held in position by the ratchet and pawl. The counterbalance-rope is then secured to its drum with a couple of extra turns, dropped down the box-well and secured to the counter-balance (which is elevated at least one foot above the bottom of the well to allow for stretch, &c.) Pulling upon the cord or pressing upon the tail of the pawl will release the apparatus and the cage is held in equilibrium. Should the cage preponderate, the descent may be controlled by the crank turned in the reverse direction, or a slight pressure upon the brake (released from the pin for that purpose) will let it down without risk and with ease. The cage is now raised to the largest section of the well, if it should be found to be unequally constructed, and while in that position the thumb-screws at the ends of the guide-wheel levers are screwed into contact with the loose disks in the spring cup-recesses and continued until the guide-wheel touches the corner of the well. When this is done to all, the wheels will, as the cage rises or falls, move in and out as elevations or depressions are passed, and thus retain the cage central to the well and ride steadily in either direction.

To prevent the annoying noise of the pawl dropping into the ratchet, I construct the same with an elastic cushion at the head where it contacts with the ratchet-teeth. Thus the operation becomes noiseless. The folding shelf will be found to be a great convenience, as thereby articles too large for admission upon the usual shelves are easily carried by throwing back the shelf, as indicated by the dotted lines.

To prevent currents of air up the well when the cage is at rest at the base of the same, I introduce covers at each landing, which are supported by beveled ledges graduated in length and thickness in a reducing ratio from the first to each subsequent landing above the same, the covers being cut out to fit the same. Posts are secured to the cage, upon which, as the cage ascends, the covers are successively received, and in the descent are left each at its proper point upon its ledges.

Having shown my improvements, its construction and use, I desire to secure by Letters Patent the following claims thereon:

1. As an improvement in the construction of dumb-waiters and hoists for dwelling-houses, &c., a hand-hoisting device consisting, essentially, of the following elements: a frame or three-legged crab having bearings therein for a sprocket and retaining-roller shafts, a sprocket-shaft provided with a sprocket-wheel and ratchet within the frame, and a brake disk and crank exterior to the frame, two retaining-rollers on opposite sides of the sprocket-wheel, in combination with the well-case, and a dog or pawl secured thereto, as and for the purpose set forth.

2. As an improvement upon the usual dumb-waiter-drum shaft, a sprocket-wheel or its equivalent secured to the end of the same exterior to the casing of the well, and in combination with the lowest floor hoisting device, and the intermediate duplications of the same upon the several floors above by a sprocket-chain or its equivalent, with the ratchet-pawls in contact with the ratchets controlled independently and in unison from each separate landing for the cage, substantially as and for the purpose specified.

3. The combination of the several hand-hoisting devices, as shown and described, the

ratchet-wheels, pawls with their cord, the sprocket-chain, drum-shaft, hoisting-rope, cage or waiter, and counter-balance, substantially as and for the purpose set forth.

4. The elastic spring-guide consisting, essentially, of the following elements: a bracket in which the guide-roller lever is fulcrumed having an extension provided with a spring-seat and pin therein, a guide-roller arm bifurcated to receive the roller journaled therein, the arm extended rearward from its fulcrum and provided with a cup-recess to receive an elastic spring having a loose disk therein upon which a thumb-screw impinges, and the spring set upon the pin and entered within the recess and retained in contact by combination with the dumb-waiter or cage and the corners of the well, as and for the purpose set forth.

5. In combination with a dumb-waiter, and for the purpose described, a shelf provided with hinges or their equivalent, whereby one-half or more of the same may be turned out of the way, as set forth.

WELLINGTON B. MOYER.

Witnesses:

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