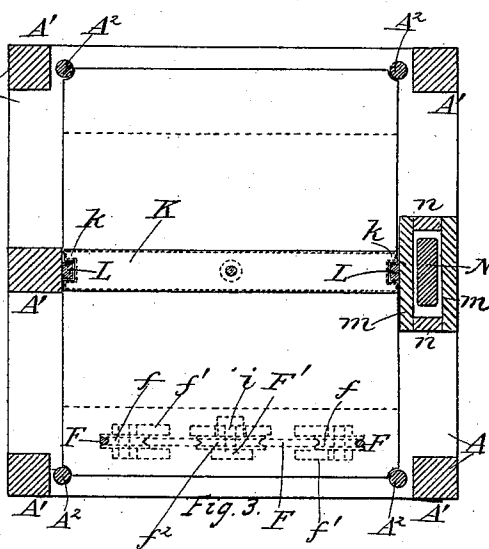
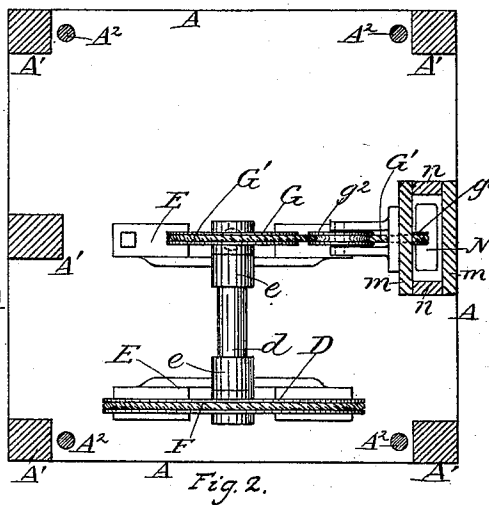
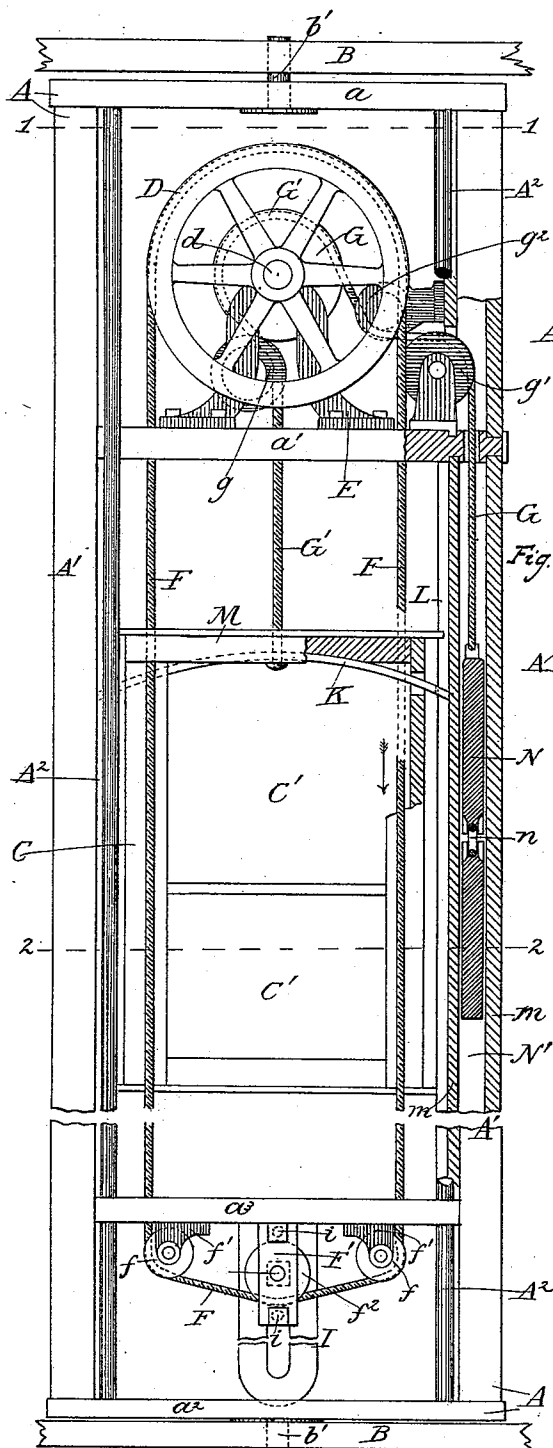


(No Model.)

J. J. KELLY.
DUMB WAITER.

No. 495,114.

Patented Apr. 11, 1893.



Witnesses. *Chas. J. Kelly*
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UNITED STATES PATENT OFFICE.

JAMES J. KELLY, OF ALBANY, NEW YORK.

DUMB-WAITER.

SPECIFICATION forming part of Letters Patent No. 495,114, dated April 11, 1893.

Application filed February 18, 1892. Serial No. 421,943. (No model.)

To all whom it may concern:

Be it known that I, JAMES J. KELLY, a citizen of the United States, residing at Albany, in the county of Albany and State of New York, have invented certain new and useful Improvements in Dumb-Waiters; and I do hereby 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.

My invention relates to improvements in dumb waiters, and it consists in the combination of devices hereinafter described in the specification and specifically set forth in the claim.

The object of my invention is to provide in a dumb waiter, having with a cupboard which is guided by suitable ways and provided with a counterbalancing weight connected with it by a rope running over a suitable pulley, a brake mechanism, consisting of a cross bar fixed to the upper end of the cupboard, and provided on its lower side with a longitudinal concave form seat and an elastic brake piece, hereinafter fully described, arranged in line with the ways which guide the cupboard in its vertical movements, and so held by the rope connecting the cupboard with its counterbalancing weight, that when it is broken, the said brake piece will tend to straighten itself and cause its ends to engage with the ways guiding the said cupboard, and hold the cupboard from falling with great rapidity to the bottom of the shaft of the dumb waiter. I attain this object by the means illustrated in the accompanying drawings forming a part of this specification, in which:—

Figure 1 is a sectional elevation illustrating the improvements in this invention. Fig. 2 is a plan view taken at line 1 in Fig. 1. Fig. 3 is a sectional view taken at line 2 in Fig. 1.

The same letters of reference refer to similar parts throughout the several views.

In the drawings A A represent the frame of a dumb-waiter, which frame is made with any suitable form of construction, preferably of wood, or wood and iron combined; it may be fixed stationary in reference to the floors B B' or be made disconnected and separate from said floors and mounted on vertical pivots b' b', having suitable bearings in the floors

B B' or adjuncts fixed to the same, so as to be capable of being revolved in either direction about the axis of said pivots. The drawings show this frame to be made with a square form, yet it may be made with a circular form and be closed about by any suitable solid or open work casing, not shown, if preferred, in which case suitable openings are provided in such inclosing casing as may be necessary for access to the cupboard of this dumb-waiter. This frame A A is shown to be composed of posts A' A', top head a platform a' bottom head a² and lower platform a³ and the binding rods A² A² which operate to hold this frame together. When this frame is to be revolving in its character the pivots b' b' passing the entire length of the frame and through the top and bottom heads a and a², are employed to hold this frame in place in the building between the floors or adjuncts fixed in the building so that it may be revolved on its axis in either direction at will. The frame A A may be made with such a length of vertical extension as may be necessary to communicate by means of the cupboard of this dumb-waiter, from the lower story, room or hall from which access is to be had to it, to the highest story, room or hall from which access also is to be had to the same.

C is a cupboard of any suitable form of construction, having its frame preferably of wood or light iron work, or both combined, and with one or more compartments C' as may be preferred, and is preferably guided in its vertical movements throughout the entire length of way of the frame A as by any suitable stationary vertical pieces of the same or by the binding rods A² A² as shown in the drawings.

D is the hoisting wheel mounted on suitable shaft d supported in bearings e e connected with brackets or standards E E secured to the platform a² of the frame. This hoisting wheel has in its periphery a V shaped groove which is preferably lined with rubber or other yielding material, and receives the hoisting rope F.

Mounted on a suitable shaft, as shaft d to which the hoisting wheel D is secured, is the friction pulley G which operates with the lifting rope G'. Although this friction pulley G may be speeded as to its revolutions in relation to those of the hoisting wheel D, by means

of suitable gears intermediate between the shaft d and another shaft carrying a friction pulley similar to the friction pulley G ; yet for general uses this friction pulley G is preferably secured to shaft d as shown. This friction pulley G is provided with a V shaped groove preferably lined with rubber or other suitable material. The lifting rope G' connects with cupboard C with the counterbalancing weight N and is made to tightly hug the friction pulley G by means of the tightening pulley g , arranged between the suspended cupboard C and the friction pulley G , and the pulleys g' g^2 arranged between the said friction pulley and the suspended weight N . The tightening pulley g not only co-operates with pulleys g' g^2 and the gravity of the suspended cupboard and counterbalancing weight to cause the lifting rope to tightly hold with the said friction pulley, but also operates to guide the cupboard holding portion of the said rope, in its vertical run in a line coincident with the line of the center of the said cupboard. The pulley g' operates to guide the counterbalancing weight holding portion of the said rope in its vertical run in a line of the vertical axis of the weight. The pulley g^2 operates to hold the bent portion of the lifting rope between the friction pulley and pulley g' tight in the groove of the former at a line below a horizontal line drawn through the axis of the said friction pulley.

The hoisting rope F is endless and after passing over the hoisting wheel D , both its side portions pass vertically downward through suitable perforations made in platform a' , and the heads of the shelvings of the cupboard and through the lower platform a^3 to over pulleys f f secured by suitable pintles and brackets f' f' preferably to the lower side of the platform a^3 . This hoisting rope F is provided with a tightening pulley which may be arranged between the pulleys f f so as to take out the slack of the hoisting rope when it occurs by reason of the stretching of the same. This tightening device or pulley f^2 is shown to be secured to a suitable check piece F' which is adjustably secured to a slotted bracket I by suitable set bolts i i , the said slotted bracket I being suitably secured to the lower platform a^3 of the frame A A . The rope F may have bearing against the lower side of pulley f^2 as shown to tighten against said rope, in which case its check piece F' will be moved downwardly and secured; but when the rope has bearing against the upper side of said pulley, the latter will be tightened against the rope when its check piece F' is moved upwardly and secured.

K is an elastic brake piece, made preferably of tempered steel and straight when in its original form before being secured in place, and is of a length, when straightened out, a little greater than the length of extension distance between the braking surfaces of the vertical ways L L , Figs. 1 and 3. This brake piece is shown in Fig. 1 to have a curved form. In

this curved form of the said brake its ends k k are out of contact with the braking surfaces of the said ways L , but when the piece is straightened out the said ends k k will bear hard against the said surfaces of the said ways. The middle portion of the cross bar M of the upper head of the cupboard is made concave in its lower side as shown in Fig. 1, and the draft of the lifting rope G' , against the lower side of the brake piece after passing from above through the said cross bar M and the perforation made at the middle of length of said brake piece, operates to give to the said brake piece the bent form shown, and so shorten it between its ends k k that the said piece may move in either direction between the ways L L without binding with the same. So long as the rope G' holds securely with the cupboard from below the lower side of this brake piece, the said piece will retain its bent form, but when from any cause the said rope ceases to have a secure holding with the cupboard through the said brake piece, the elastic element of said piece at once operates to permit it to assume a straightened out form in which its ends k k will have pressure against the faces of the vertical ways L L and the cupboard will be suspended within the frame from said straightened out brake piece with the bite of the ends k k of said brake piece increased by the weight of the cupboard and its contents.

Although the counterbalancing weight N may consist of a single piece of any form, yet I prefer to employ a weight of rectangular form and having a thickness of only about one inch more or less, and composed of two or more sections or pieces connected together by a suitable link n . This form of weight, shown in Figs. 1 and 3, occupies but little room on account of its small thickness, and by reason of its extension of width it is held by the sides m m of the weight box N' from turning and thereby prevents the rope becoming untwisted. The weight box N' extends from the lower end of the frame A to the upper platform a' and access may be had to the interior of said box or to the weight within by a removable panel provided in said box; or if preferred, one or both sides n n of said box may be omitted wholly or in part.

When an operator draws down on the left hand side of the hoisting rope in direction of arrow 1, Fig. 1, the hoisting wheel will through its shaft operate the friction pulley G and cause it to elevate the weight N and pay out the cupboard end portion of rope G' when the cupboard will descend; but when the opposite side of the said hoisting rope is moved in direction of arrow 2, a reversed operation is had and the cupboard will be elevated.

By my above described improvements, the dumb-waiter together with its adjuncts and frame may be turned horizontally, at will, in either direction so that a single dumb-waiter may be made available for service for communicating with several rooms having their

openings to the cupboard variously located; the cupboard will in all cases be held suspended within its frame and free from liability of falling should a break of the rope G' occur; the hoisting rope may be kept tightened on the hoisting wheel for best condition for ease of operation of the said wheel and the friction mechanism; the bite of the friction pulley on the lifting rope is made to occur on more than one half of its grooved periphery, and the respective end portions of the said rope are truly guided in lines coincident with the lines of the vertical axis of both the cupboard and counterbalancing weight.

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

In a dumb waiter, the combination with the frame A, vertically moving cupboard working within said frame, friction pulley G mounted on a shaft working in bearings in the upper end of said frame, counterbalancing weight N and vertical ways L L secured to the opposite sides of said frame, of the cross bar M secured to the upper end of said cup-

board and in line with said ways, and provided in its lower side with a longitudinal concave form of seat, the elastic brake piece K as described, and rope G' passing over said friction pulley G and secured by one end to said counterbalancing weight, and its opposite end passing through perforations made central in said cross-bar and said brake piece and secured against the lower side of the latter so that said brake piece will be held curved and shortened in its length between its ends k k when seated against the concave seat in said cross bar by the draft of the said weight on said brake piece, through said rope G', and when said rope is broken the brake piece will tend to straighten itself, and thereby cause its ends k k to engage with said ways, substantially as and for the purposes set forth.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

JAMES J. KELLY.

Witnesses:

CHARLES SELKIRK,
A. SELKIRK, Jr.