C. A. STURM.

ELEVATOR.

APPLICATION FILED JAN. 10, 1912.

1,038,020.

Patented Sept. 10, 1912.

2 SHEETS—SHEET 1.

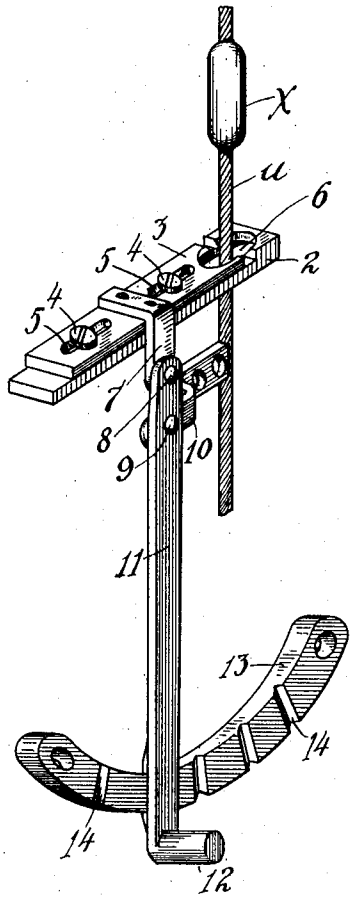


Fig. 3.

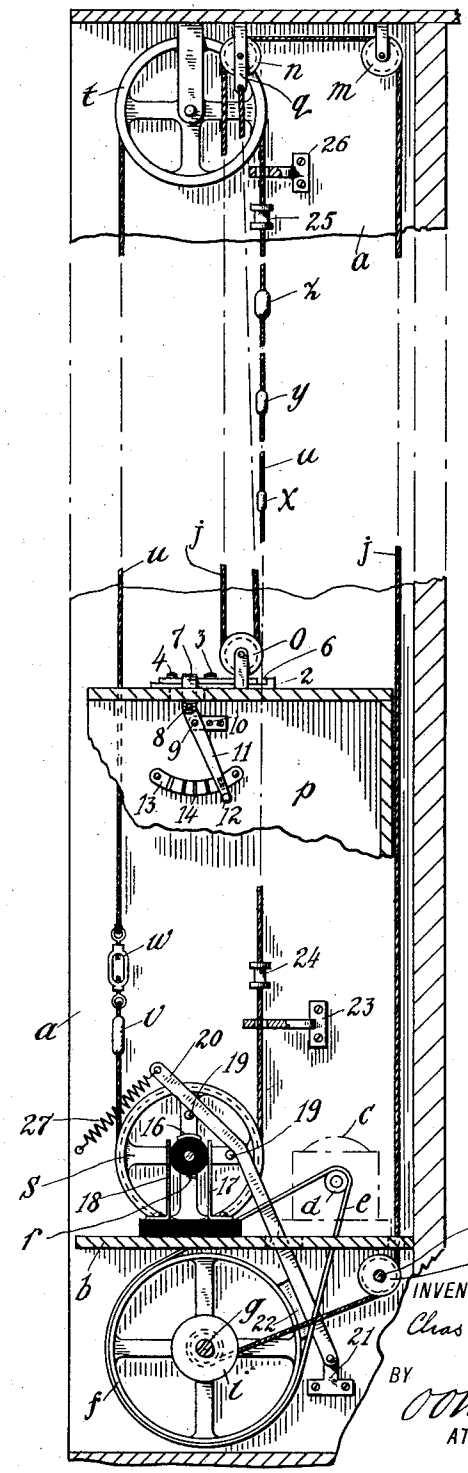


Fig. 1.

WITNESSES:

K. F. Doughty.

Irene Moore

INVENTOR

Chas. A. Sturm

BY

O. Martin.

ATTORNEY

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

C. A. STURM.

ELEVATOR.

APPLICATION FILED JAN. 10, 1912.

1,038,020.

Patented Sept. 10, 1912.

2 SHEETS—SHEET 2.

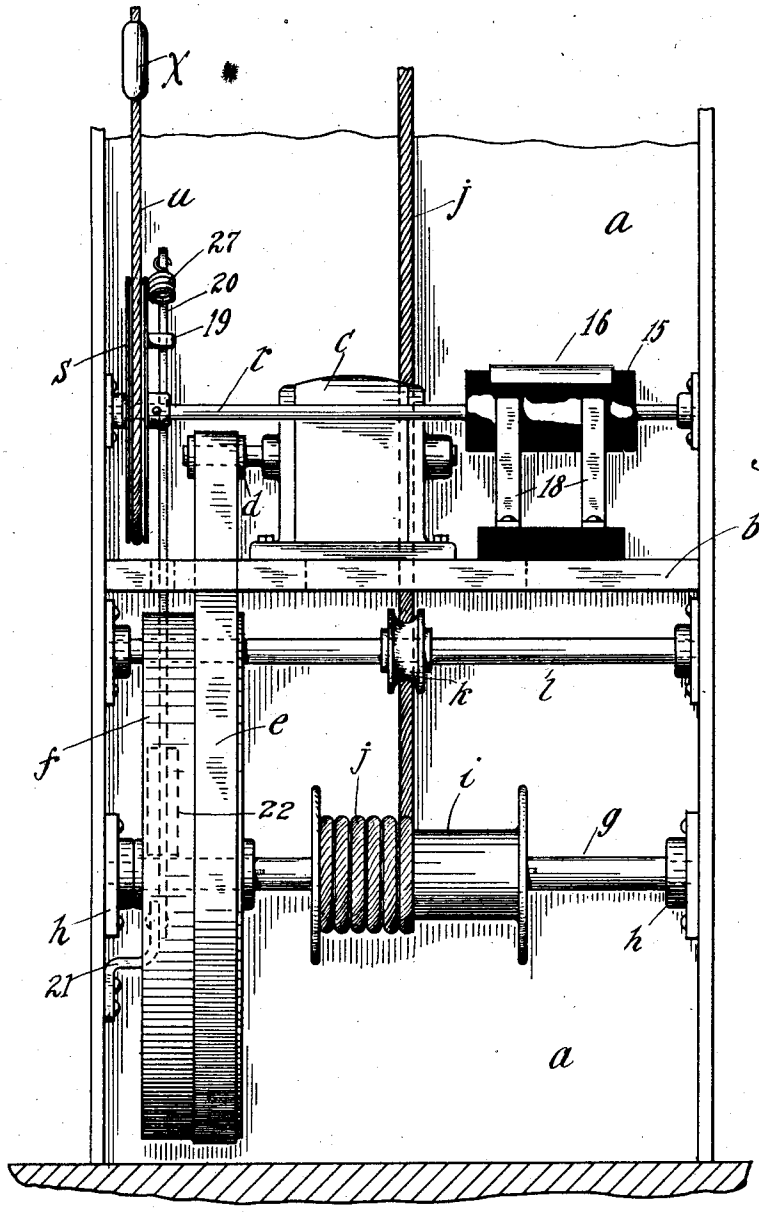


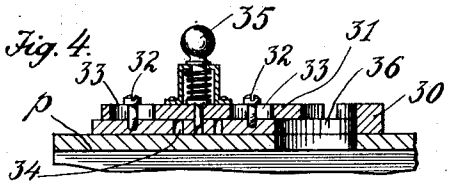
Fig. 2.

WITNESSES:

K. F. Doughty

Irene Moore.

Fig. 4.



INVENTOR

Charles A. Sturm.

BY

J. Martin.

ATTORNEY

UNITED STATES PATENT OFFICE.

CHARLES A. STURM, OF PORTLAND, OREGON.

ELEVATOR.

1,038,020. Specification of Letters Patent. Patented Sept. 10, 1912.

Application filed January 10, 1912. Serial No. 670,500.

To all whom it may concern:

Be it known that I, CHARLES A. STURM, a citizen of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented certain new and useful Improvements in Elevators, of which the following is a specification.

My invention relates to an elevator or dumbwaiter and has particular reference to a dumbwaiter driven by an electric motor and provided with selective stopping means.

The general object of my invention is to provide a machine of this class of great simplicity and reliability, in order that the danger of the machine getting out of order may be virtually eliminated.

A further object is to suspend in the path of travel of the cage, a series of stops, corresponding in number to the number of floors in the building served by the dumbwaiter, and operatively connected to throw the motor switch. To operate in conjunction with these stops, I provide an adjustable socket mechanism fixed on the cage, and adapted to engage only the stop at the floor at which the dumbwaiter is required.

These and the further objects of my invention are better understood by having reference to the following description and the appended drawings in which:

Figure 1 shows in side elevation the general outline of a dumbwaiter mechanism embodying my invention, Fig. 2 is a front elevation of the hoisting mechanism, Fig. 3 is an enlarged view of the stop selector, and Fig. 4 shows a modified form of stop selector.

The dumbwaiter may be mounted in a well *a*, in which is secured a platform *b*, and on the latter is fixed an electric motor *c* provided with a small pulley *d* and by belt *e* connected with a large pulley *f*. The latter is rigid on shaft *g*, which journals in suitable standards *h*, and on shaft *g* is fixed a flanged drum *i* carrying hoisting cable *j*. This cable winds over a grooved idler *k* slidably journaled on a rod *l*, and it extends vertically from said idler to a pulley *m*, journaled at the top of the well. From pulley *m* the cable winds over a second pulley *n*, similarly mounted, and continues downward around a pulley *o* of cage *p*, from which is extends upward and terminates on the hanger bracket *q* of pulley *n*.

It is well known to those versed in the art that, in order to properly reduce the speed of travel of the cage, a worm drive is usually resorted to, but as worm-gearing is expensive to install and maintain, the hoisting mechanism thus described is a decided improvement. In a suitable standard of platform *b* is journaled a switch shaft *r* on which is fixed a pulley *s*. A second pulley *t* is hung from the top of the well directly above pulley *s*. An endless cable *u* is suspended on said pulleys and provided with a hand knob *v*. To keep the cable under proper tension a turn buckle *w* may conveniently be introduced. A series of cylindrical sleeves *x*, *y*, *z* are fixed on the inner stretch of said cable, one for each floor of the building, and it is noticed that the lower sleeve *x* is the smallest in diameter, sleeve *y* somewhat larger, and the upper sleeve *z* the largest.

On the cage is fixed the adjustable socket mechanism comprising a stationary plate 2 and a slide 3 which is mounted on said plate by screws 4 extending through elongated perforations 5 of the slide. By referring to Fig. 3 it is readily seen how the plate and slide are formed at one end with a socket-like perforation 6, through which cable *u* passes. On slide 3 is fixed an angle piece 7 which by stud 8 is journaled on the short end of a lever 11. Said lever is by stud 9 journaled on a fixed support 10 of the cage side-wall. The lower extremity of lever 11 is provided with a finger piece 12 and has a V-shaped inner edge adapted to lodge in notches 14 of a fixed segment 13. Lever 11 is made of metal sufficiently flexible to permit the operator to slide said lever along from notch to notch, thereby increasing and decreasing the size of socket perforation 6. When therefore the cage travels up or down the socket mechanism will skip any sleeve small enough to pass through, but will pick up a sleeve that is too large. On switch shaft *r* is fixed an insulated drum 15 carrying a contact plate 16. Two sets of contact springs 17, 18 bear against the periphery of said drum and are located diametrically opposite as shown in Fig. 1. Said contact springs are in any well known manner electrically connected with motor *c* to start said motor in forward or reverse direction. Integral with the spokes of pulley *s* are a pair of projections 19 positioned in close proximity to brake lever 20, which journals in a fixed bracket 21, and is provided with a shoe 22 engaging the periphery of driving pulley *f*.

In Fig. 1 the dumbwaiter is shown stopped at an intermediate point, and it is desired, for instance, to raise the cage to the floor controlled by stop *z*. The operator positions lever 11 as shown in the drawing, and to facilitate the setting of said lever, notches 14 may be numbered to correspond with the floor stops, whereupon he raises hand-knob *v* until limit collar 24 of cable *u* strikes bracket 23. In doing this he causes pulley *s* to rotate, and as the latter carries switch drum 15 along, contact plate 16 rotates until it strikes contact springs 17 and thus closes a circuit to start the motor. Simultaneously projection 19 of pulley *s* picks up brake lever 20 whereby brake shoe 22 is lifted clear of pulley *f*. The cage now rises and stops *x*, *y*, being too small, pass through socket 6. Stop *z*, however, is picked up by said socket and caused to rise with the cage until the return rotation of the switch-shaft breaks the motor circuit and the brake, aided by a strong spring 27, engages pulley *f*. To start the motor in the reverse direction, hand-knob *v* is pulled down until upper limit collar 25 of the cable strikes fixed bracket 26, during which motion a circuit is closed on contact springs 18, and the cage descends until lower limit collar 24 is picked up by socket 6 and carried along, until the circuit is broken and the brake set.

In Fig. 4 I show a modified form of socket mechanism. A plate 30 is fixed on top of cage *p*, and on this is mounted a slide 31 by screws 32, which seat in elongated perforations 33 of the slide. Plate 30 is made with a series of perforations 34, adapted to receive a spring-held plunger 35 of the slide. Socket perforation 36 is identical with socket 6 already described. By means of plunger 35 the slide is set to correspond with the desired floor stop.

I claim:

1. In an elevator, the combination of a traveling cage, a motor, a switch-drum, and a brake-mechanism; with manually operated means for oscillating said switch-drum to start said motor in forward or reverse direction; a series of stops of increasing size fixed on said manually-operated means; a socket mechanism mounted on said cage in the path of said stops; means for adjusting said socket-mechanism to engage the stop corresponding to the floor at which the elevator is required, whereby said stop is carried along by the cage until the switch is oscillated to break the circuit and set the brake; upper and lower limit stops on said manually operated means, said stops being large enough to engage said socket-mechanism at any adjustment; and stationary stops coöperating with said limit stops to check the motion of the switch, when the latter is thrown by hand to start the motor.

2. In an elevator, the combination of a traveling cage, a motor, a switch-drum, and a brake-mechanism; with a pulley rigid on the switch-shaft, a pulley at the top of the elevator well, and an endless cable hung on said pulleys; a series of stops of increasing size rigid on said cable; a socket-mechanism mounted on the cage and encompassing said cable; means for adjusting said socket-mechanism to engage the stop corresponding to the floor at which the elevator is required, whereby the said stop is carried along by the cage until the switch is oscillated to break the circuit and set the brake; upper and lower limit stops on said cable, large enough to engage the socket-mechanism at any adjustment; and stationary stops coöperating with said limit stops to check the motion of the switch, when the latter is thrown by hand to start the motor.

3. In an elevator, the combination of a traveling cage, a motor, a switch-drum, and a brake-mechanism; with a pulley rigid on the switch-shaft, a pulley at the top of the elevator well, and an endless cable hung on said pulleys; a series of stops of increasing size rigid on said cable; a socket-mechanism mounted on the cage and encompassing the cable; means for adjusting said socket-mechanism to engage the stop corresponding to the floor at which the elevator is required, whereby the said stop is carried along by the cage until the switch is oscillated to break the circuit and set the brake; upper and lower limit stops on said cable, large enough to engage the socket-mechanism at any adjustment; said adjusting means comprising, a stationary member, a slidable member, said members forming the jaws of the socket, a handle for shifting said sliding member to increase or decrease the size of the socket, and means coöperating with said handle for retaining said sliding member in set position; and stationary upper and lower stops coöperating with said limit stops to check the motion of the switch, when the latter is thrown by hand to start the motor.

In testimony whereof I have hereunto affixed my signature in the presence of two witnesses.

CHARLES A. STURM.

Witnesses:
C. C. Abbot,
C. W. Hills.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."