H. GUMPEL.

MULTIPLE EFFECT ELEVATOR.

APPLICATION FILED APR. 1, 1912.

1,199,174.

Patented Sept. 26, 1916.

2 SHEETS—SHEET 1.

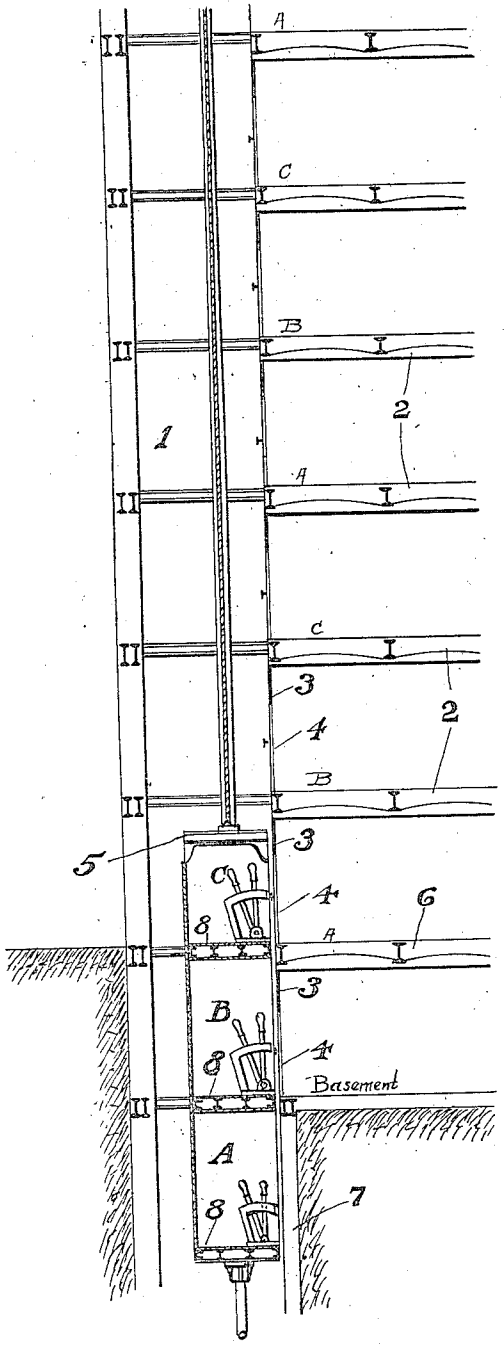


Fig. 1.

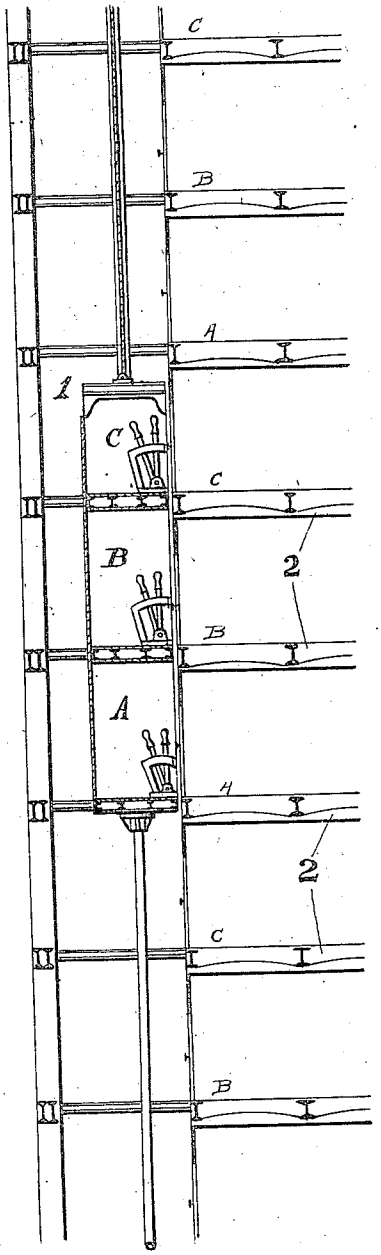


Fig. 2.

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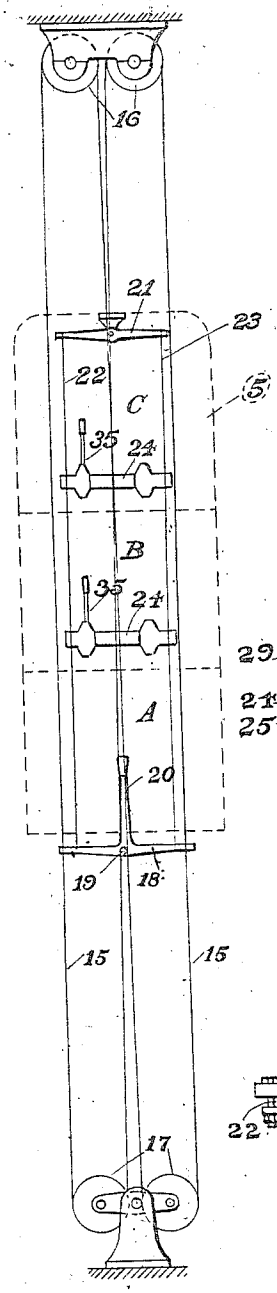


Fig. 3.

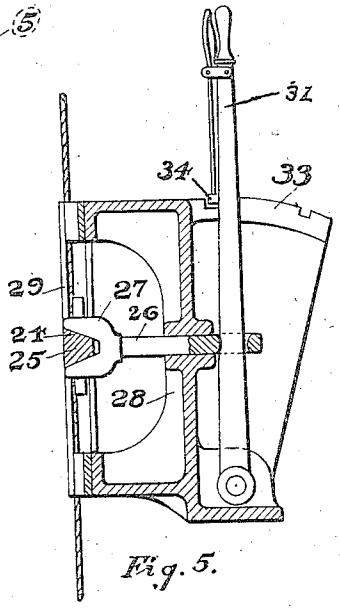


Fig. 5.

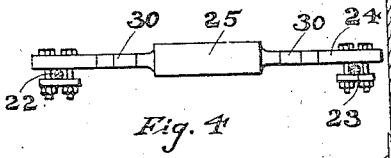


Fig. 4.

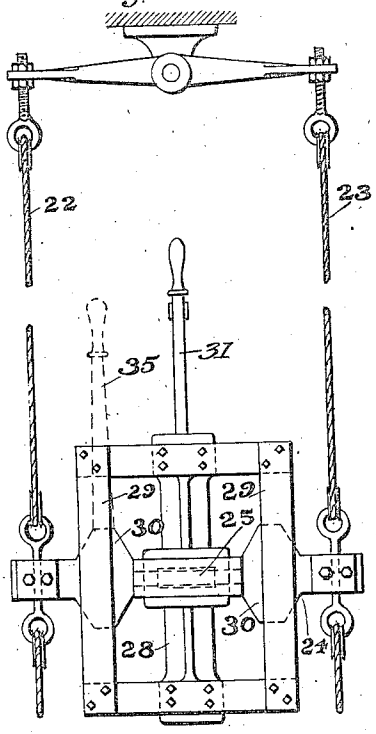


Fig. 7.

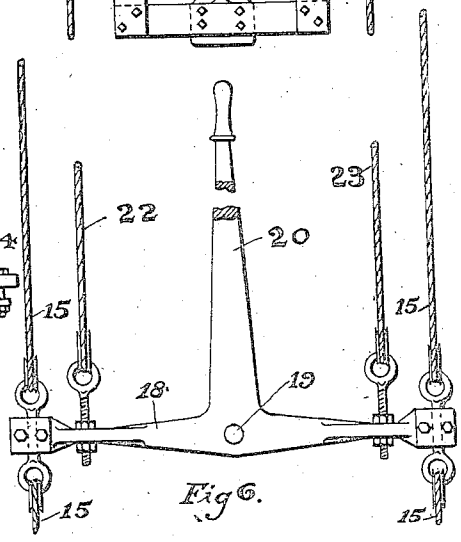


Fig. 6.

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UNITED STATES PATENT OFFICE.

HERMANN GUMPEL, OF CHICAGO, ILLINOIS.

MULTIPLE-EFFECT ELEVATOR.

1,199,174. Specification of Letters Patent. Patented Sept. 26, 1916.

Application filed April 1, 1912. Serial No. 687,698.

To all whom it may concern:

Be it known that I, HERMANN GUMPEL, a citizen of Lübeck, one of the States of the German Empire, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Multiple-Effect Elevators, of which the following is a description.

My invention relates to means for carrying passengers or freight to the upper floors of high buildings.

The object of my invention is to provide a safe, economical and highly efficient device of the kind described, especially adapted for transporting passengers in high office buildings or the like where it is necessary to handle the greatest number of passengers in the shortest possible time with absolute safety and without unduly crowding or hurrying passengers in entering or leaving the elevator cage.

To this end my invention consists in the novel construction, arrangement and combination of parts herein shown and described, and more particularly pointed out in the claims.

In the accompanying drawings wherein like or similar reference characters indicate like or corresponding parts, Figure 1 is a transverse section through the lower portion of the elevator well and adjacent landings in a building with the elevator cage in position to land a portion of its occupants at this landing for the main floor of the building. Fig. 2 is a similar view of a more elevated portion of the building, with the elevator cage in position for simultaneously discharging and receiving passengers at each of its floors. Fig. 3 is a diagrammatic view of a simple form of operating mechanism for my device. Figs. 4, 5, 6, and 7 are details of a simple form of controlling mechanism applicable for operating the mechanism shown in Fig. 3.

In the drawings 1 is an elevator well or shaft with the adjacent landings or floors 2—2 which it is desired to serve with my improved elevator. In constructing the building I preferably arrange the floors in a plurality of series, the heights between the several landings or floors constituting each series accurately corresponding, that is, while the distance between the several landings constituting a series may vary to any desired extent, the distance between the corresponding landings of the several series must be substantially the same. The number of landings A—B—C— forming each series, is selected with the view of giving the most efficient and rapid service possible consistent with convenient and absolutely safe operation.

The elevator well is preferably inclosed in the usual or any preferred manner by partitions 3—3 each landing having a door 4—4 or other closure arranged to permit access to the elevator cage in the usual or any desired manner. The elevator cage 5 is arranged to operate in the well 1 in substantially the usual manner except that the well is extended downward below the main floor 6 or the landing where the elevator cage is usually loaded and unloaded as at 7 and the cage 5 is provided with a plurality of floors 8 corresponding in number and spacing to the number and spacings of the landings in each series, so that, the uppermost floor of the elevator cage 5 may be brought into loading position at the floor 6. When the cage 5 is positioned in the proper relation to any series of landings the several floors A—B—C— of the elevator cage will accurately aline with the landings A—B—C— so that passengers may be simultaneously discharged and received from each floor in a series and it will only be necessary to stop the elevator cage once for each series of floors.

In case it is desired to go from one floor to another in the same series a convenient stair-way or a small supplemental elevator may be provided, as it is clear that with the possible exception of the uppermost floors in a building my improved elevator may be employed to land a passenger within one floor of any desired landing where the number of floors in the cage does not exceed three which I have found to be a very desirable size for most purposes.

The usual or any desired form of operating means may be provided for moving the cage 5 in the well 1 and for temporarily holding the same in position to prevent the entrance or exit of passengers. Suitable mechanism is also provided preferably upon the cage to control said operating mechanism. Obviously where suitable mechanism is provided for operating and closing the doors 4 one person may, by the exercise of suitable care, control the movements of the cage especially in case only two floors are provided in the cage, and in such a case a

single set of controlling mechanism located in the compartment which it is desired the operator shall occupy is sufficient. In practice it has been found that where the highest efficiency is desired as well as the highest degree of safety, a principal or head operator should be employed in one compartment of the cage to control the movements of the car and an assistant operator in each of the other compartments to open and close the doors 4 and attend to the safety and direction of the passengers.

Where it is desired I preferably provide coöperation controlling mechanism so arranged that when the cage is brought to rest and held in position the operator on each floor may lock the controlling mechanism against operation until he again releases the same so that if desired the controlling mechanism may be positively locked during the entire period it would be possible for passengers to be either entering or leaving the cage 5. In the drawings Figs. 3 to 6 inclusive, for the purpose of illustration, I have shown a simple form of controlling mechanism suitable for the ordinary forms of passenger elevators, in which 15 is a controlling rope or cable passing around the sheaves 16 and 17 at the top and bottom of the elevator well. A lever 18 is pivotally mounted upon the cage 5 as at 19 and a handle 20 projects into the cage in position to be conveniently operated by a person in the lower compartment A— of the cage, the cable 15 controlling the elevator operating mechanism in the usual or any desired manner. A lever 21 is pivotally mounted in the upper part of the cage directly in line with the lever 18 and the ends of the levers 18 and 21 are connected by suitable bands or ties 22 and 23 rigidly attached to each.

A plurality of bars 24 one for each compartment of the cage, except the operator's compartment, are also preferably provided and rigidly attached at their ends to the bands or ties 22 and 23 respectively.

Any suitable means are provided in the compartment to engage the bars 24 when the controlling mechanism is centralized or in position to hold the cage against movement in the well, and prevent the movement of the controlling mechanism until the bars 24 are both released.

In the form shown the walls of the central portion 25 of the bars 24 converge toward the interior of the cage and a part 26 having a jaw 27 adapted to engage the part 25 is provided and slidably mounted upon a suitable frame 28, so that the jaw may be readily engaged or disengaged from the part 25. In the form shown the opening in the frame 28 through which the part 26 slides is elongated or otherwise suitably formed to prevent any rotation of the part 26 or movement of the bar when engaged thereby. Suitable ways or guides 29 are provided upon the frame 28 to engage the bars 24 as at 30 to prevent lateral movement of the bars 24 when the jaws 27 are engaged or disengaged and a lever 31 or other suitable means is attached to the frame and engages the part 26 to control its position. A quadrant 33 may also be provided upon the frame 28 and a suitable pawl 34 upon the lever to prevent accidental engagement or disengagement of the parts.

If it is desired to provide means for manually operating the controlling mechanism in each compartment a lever 35 may be provided upon each bar 24 for this purpose, obviously however, the controlling mechanism herein shown and described is only applicable for certain forms of operating mechanisms and is shown merely for the purpose of more accurately describing my improvement, which must of course be modified in its construction to suit the conditions peculiar to each installation.

Having thus described my improvement it is therefore obvious that various modifications may be made in my improvement without departing from the spirit of my invention as specified in the appended claims, hence I do not wish to be understood as limiting myself to the exact form or construction shown.

What I claim as new and desire to secure by Letters Patent is: —

1. In a device of the kind described, an elevator well having a plurality of series of landings, in combination with a movable cage positioned in said well provided with a plurality of floors one for each landing in a series, the distance between said floors corresponding to the distance between the respective landings, operating mechanism for moving said cage in said well and for temporarily holding said cage in any desired position, and a plurality of interlocking means for each floor of said cage adapted to control said operating mechanism.

2. In a device of the kind described, an elevator well having a plurality of series of substantially uniformly spaced landings with substantially a single floor space between adjacent series, in combination with a movable cage positioned in said well provided with a plurality of floors one for each landing in a series, the distance between said floors corresponding to the distance between the respective landings, operating mechanism for moving said cage in said well and for temporarily holding said cage in any desired position, and a plurality of interlocking means upon the cage for controlling said operating mechanism.

3. In a device of the kind described, an elevator well having a plurality of series of landings, in combination with a movable cage positioned in said well provided with

a plurality of floors one for each landing in a series, the distance between said floors corresponding to the distance between the respective landings, operating mechanism for moving said cage in said well and for temporarily holding said cage in any desired position, and means for controlling said operating mechanism, and a plurality of independent means upon said cage for locking said controlling mechanism when said cage is being held in position.

4. In a device of the kind described, an elevator well having a plurality of series of landings, in combination with a movable cage positioned in said well provided with a plurality of floors one for each landing in a series, the distance between said floors corresponding to the distance between the respective landings, operating mechanism for moving said cage in said well and for temporarily holding said cage in any desired position, a plurality of coöperating means upon the cage one for each floor of said cage adapted to control said operating mechanism and independent means upon each floor of said cage for locking said controlling means when said cage is being held in position.

5. In a device of the kind described, an elevator well having a plurality of series of substantially uniformly spaced landings, in combination with a movable cage positioned in said well provided with a plurality of floors one for each landing in a series, the distance between said floors corresponding to the distance between the respective landings, operating mechanism for moving said cage in said well and for temporarily holding said cage in any desired position, and means for each floor of said cage adapted to control said operating mechanism, and independent means upon said cage for locking each of said controlling means when said cage is being held in position.

In testimony whereof, I have hereunto signed by name in the presence of two subscribing witnesses.

HERMANN GUMPEL.

Witnesses:
BLANCHE CHALMERS,
BURTON H. HILLS.