(No Model.) 3 Sheets—Sheet 1.

C. DANNENBERG.

APPARATUS FOR DISTRIBUTING LETTERS IN BUILDINGS.

No. 457,527. Patented Aug. 11, 1891.

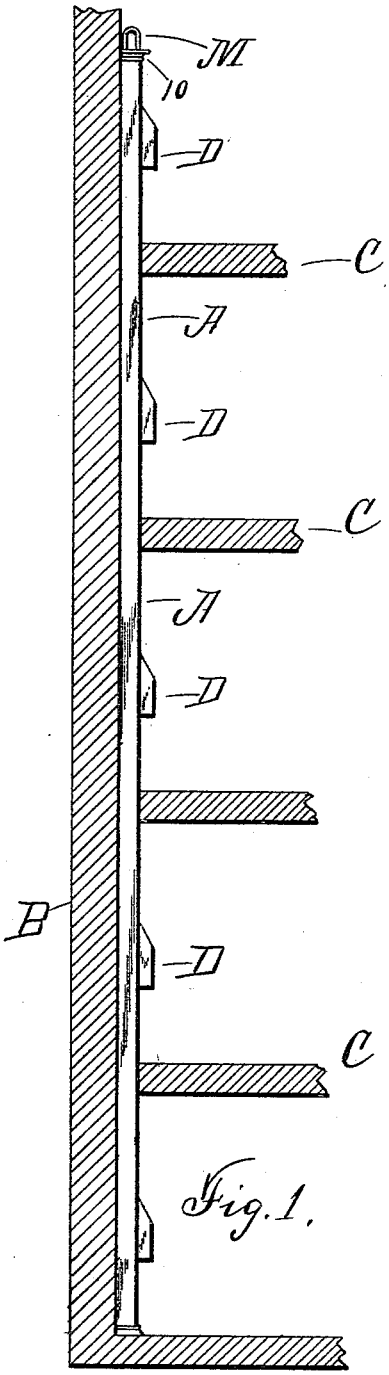

Fig. 1.

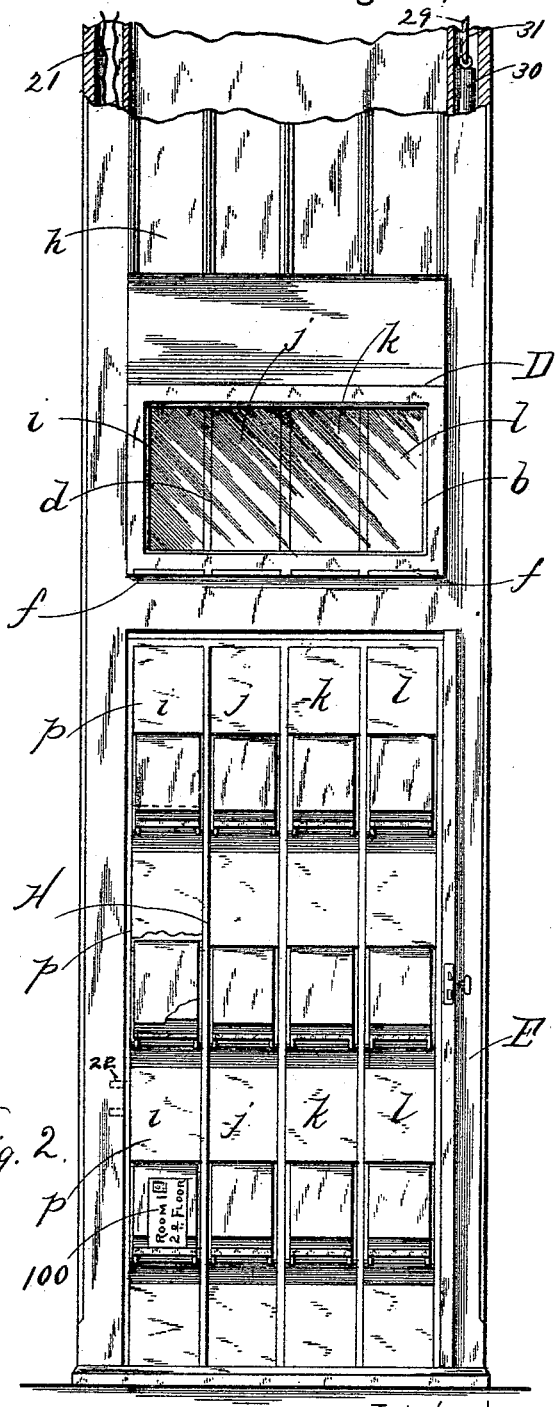

Fig. 2.

WITNESSES

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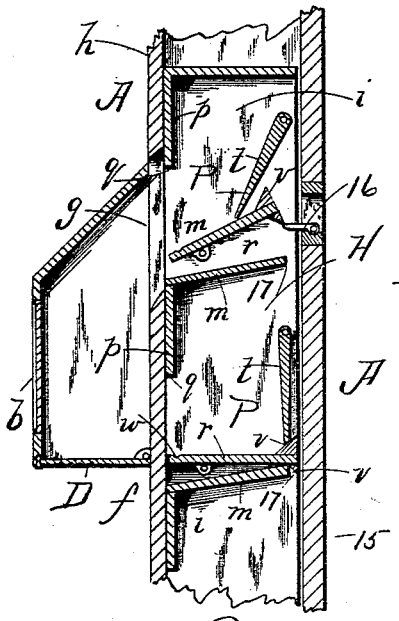

Fig. 3.

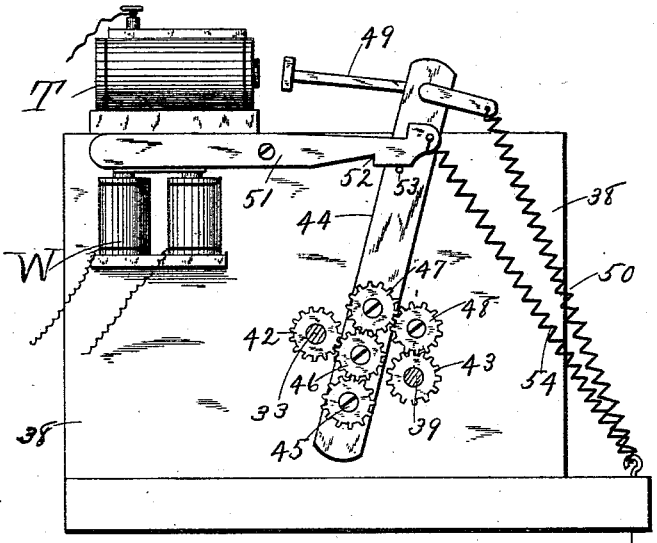

Fig. 6.

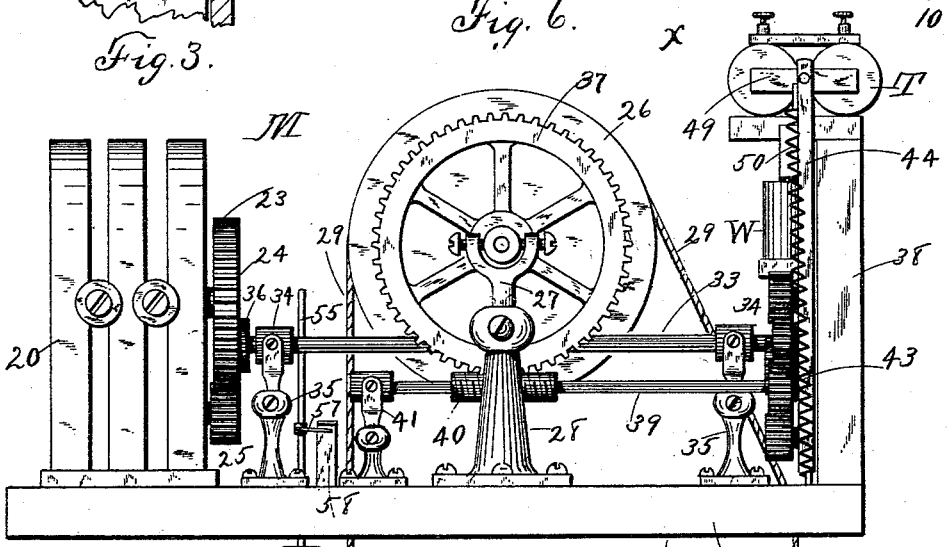

Fig. 5.

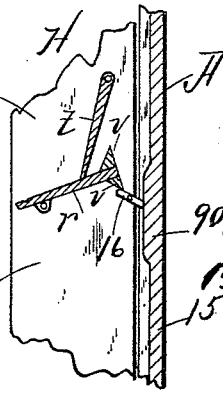

Fig. 4.

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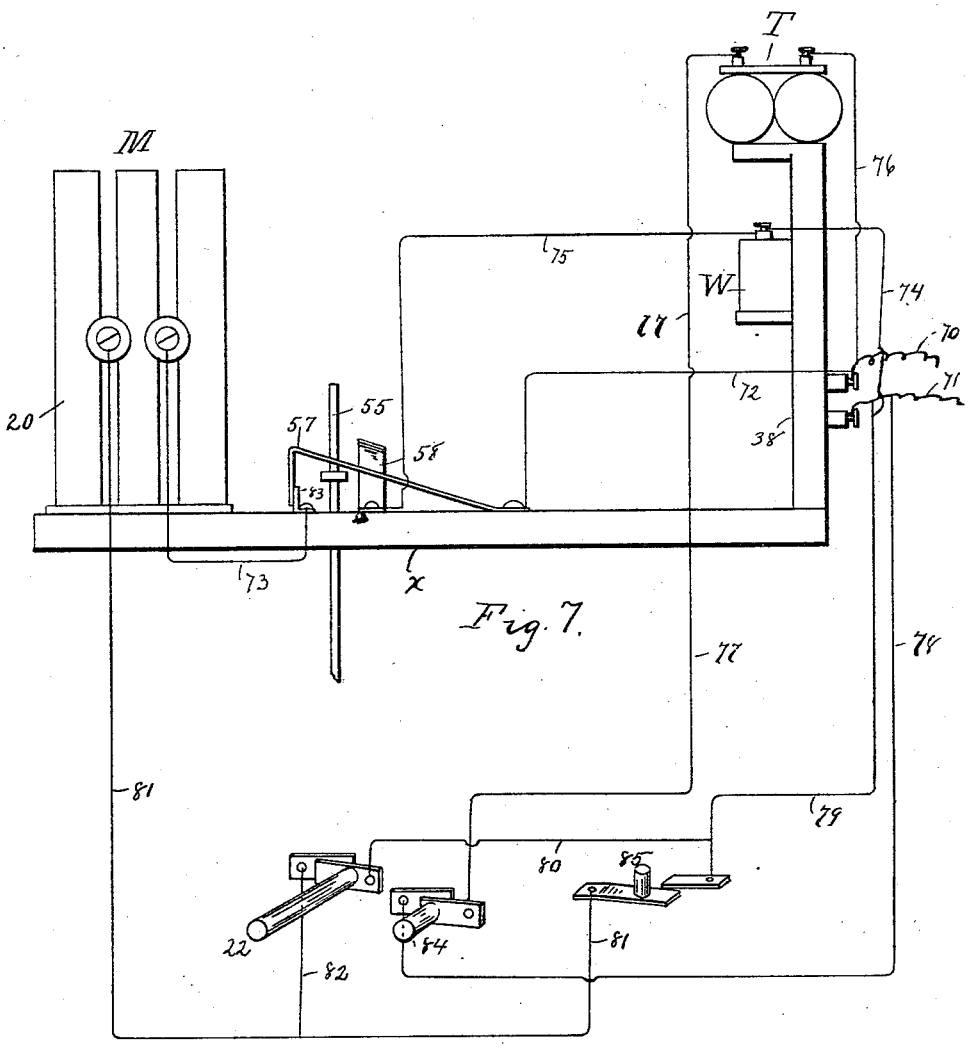

Fig. 7.

WITNESSES
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UNITED STATES PATENT OFFICE.

CHARLES DANNENBERG, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF TWO-FIFTHS TO HENRY M. BILLINGS, OF SAME PLACE.

APPARATUS FOR DISTRIBUTING LETTERS IN BUILDINGS.

SPECIFICATION forming part of Letters Patent No. 457,527, dated August 11, 1891.

Application filed October 13, 1890. Serial No. 367,909. (No model.)

To all whom it may concern:

Be it known that I, CHARLES DANNENBERG, of Boston, in the county of Suffolk, State of Massachusetts, have invented certain new and useful Improvements in Automatic Letter and Parcel Distributer for Buildings, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a sectional elevation representing the stories of a building and showing the shaft or well of my improvement in position; Fig. 2, a front elevation of the well, the door at the base being represented as open to show the car; Fig. 3, a vertical transverse section, showing a compartment of the car with its parts in the position assumed when ejecting the load into one of the receivers; Fig. 4, a sectional elevation showing a modification in the arrangement of the ejecting mechanism; Fig. 5, an elevation of the motor, and Fig. 6 a vertical transverse section on line $x\,x$ in Fig. 5, parts being shown in elevation looking to the right from said line. Fig. 7 is a diagram representing the electric circuits in connection with the apparatus.

Like letters and figures of reference indicate corresponding parts in the different figures of the drawings.

My invention relates especially to a device for automatically distributing mail and other articles at the various stories of a building; and it consists in certain novel features hereinafter fully set forth and claimed, the object being to produce a simpler, cheaper, and more effective device of this character than is now in ordinary use.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following explanation.

In the drawings, A represents the well or shaft, which is arranged vertically against the inner face of the building-wall B, or other suitable position, and passes through the floors C thereof. At each story a receiver D is secured to the face of the shaft and is provided with a glass front *b*. Said receivers may be divided into any desired number of compartments *i j k l* by partitions *d*, each having a hinged door *f* at its bottom to discharge the contents. Suitable openings *g* (see Fig. 3) are formed in the front wall *h* of the shaft and lead into each compartment. At the lower story of the building a door E opens into the shaft.

The car H (shown in front elevation in Fig. 2) is fitted to slide vertically in the shaft. Said car is divided by partitions into compartments *i j k l*, corresponding in number to all the compartments in the various receivers D. The bottom *m* (see Fig. 3) of each compartment of the car, forming the top of the next compartment beneath, is inclined outwardly. The car has no back partition, and its front wall *p* is open at *q* in each compartment to register with the corresponding opening *g* in the shaft. An ejector P is arranged in each car-compartment *i j k l* and comprises two plates *r t*. The plate *r* is arranged horizontally in the compartment and is pivoted to swing vertically therein, its forward edge playing in the mouth *q*. The inner edge is provided on its upper and lower faces with vertically-beveled bosses *v*, which serve as a counter-balance to hold said plate in a horizontal position. The under boss *v* normally rests in engagement with the inner edge of the compartment-bottom *m*. The face of the plate near its front edge is grooved at *w* to act as a stop for preventing the contents from slipping forward until the bottom is tilted. The companion ejector-plate *t* is disposed in a vertical position and is pivoted by its upper end near the inner edge of the car-compartment, its lower or free end resting on the upper boss *v* of the plate *r*. At intervals in the rear wall 15 of the shaft the trips 16 are pivoted opposite the openings *g* for the receivers. Said trips project into the path of the car in position to engage the under boss *v* of the plate *r* of a car-compartment corresponding to such receiver as said car descends. The inner edges of the compartment-bottoms are cut away at 17 to clear the trips.

The car may be actuated in the shaft by any suitable device. I preferably employ an electric motor M and connecting mechanism

mounted on the top 10 of the shaft. The motor-magnets 20 are disposed in an electric current, and wires 21, Fig. 2, run therefrom down through the shaft-casing at one side to the door at the bottom, where a push-button 22 is interposed. The motor may be of any suitable form, its rotary armature-shaft 23 bearing a gear 24, which meshes with an intermediate gear 25. (See Fig. 5.) A pulley 26 is mounted by swiveled bearings 27 on standards 28 on the shaft-top 10. A cord 29 passing over said pulley has one end secured to the car H, its opposite end being provided with a counterbalance-weight 30, (see Fig. 2,) which slides in a track 31 at the side of the shaft opposite the wires 21. A horizontal shaft 33 is mounted by swiveled bearings 34 on standards 35 on the shaft-top 10, said shaft bearing a pinion 36, at one end meshing with the intermediate motor-gear 25. A large gear 37 is mounted on the shaft of the pulley 26. A vertical plate 38 is arranged on the top 10 at right angles to the shaft 33. A worm-shaft 39, provided with a worm 40, meshing with the gear 37, is mounted by a swiveled bearing 41 at one end, the opposite end being journaled on said plate. The shafts 33 and 39, respectively, bear pinions 42 and 43 (see Fig. 6) adjacent to said plate. A lever 44 is pivoted to the plate 38 between said pinions and bears three gears 45, 46, and 47, meshing in series, the gear 46 being at the pivot-point and adapted to alternately mesh with the pinions 42 and 43 as the lever is moved. A gear 48 is journaled on the plate 38 in position to connect the gear 47 and pinion 43. On the top of the plate 38 an electro-magnet T is disposed. An armature 49 therefor is secured to the top of the lever 44. A coiled spring 50, connecting said lever with the base 10, tends to hold said armature away from the magnet-poles. An electro-magnet W is secured to the inner face of the plate 38. A lever 51 is pivoted to said plate, one end thereof forming an armature for the magnet W. The opposite end is provided with a notch 52, adapted to take on a stud 53 on the lever 44 and lock it against the action of the spring 50. A spring 54 connects the lever 51 with the base 10, holding it in engagement with said stud. A rod 55 is fitted to slide vertically in the base 10, and is provided with a head 56 in position to be engaged by the car H when it has ascended. Said rod has an arm 57, adapted to engage a contact-plate 58. The magnet W is in the motor-circuit, and the magnet T adapted to be automatically closed therein, as hereinafter described. A push-button 85 is disposed at the bottom of the shaft, upon which the car rests when not in use, and separates its members. 70 and 71 represent wires leading from a dynamo or other source of supply, 79 the wire from generator-wire 71 to one member of the push-button 85, and 81 the wire connecting the other member with the motor M. A push-button 22 at the bottom of the shaft has one of its members connected by wire 82 with the wire 81, leading to one pole of motor M, and its opposite member is connected by wire 80 with the wire 79, leading to the generator-wire 71. A push-button 84 is also disposed at the bottom of the shaft, one of its members being connected by wire 78 with the generator-wire 71 and its opposite members by wire 77 with the pole of magnet T, being connected by wire 76 with the generator-wire 70. The other pole of motor M is connected by wire 73 with the contact 83, which is normally engaged by spring-contact 57. A wire 72 connects the spring 57 with the generator-wire 70. A contact 58 is in position to be engaged by spring 57 when pushed upward by plunger 55 and head 56. A wire 75 connects the contact 58 with the magnet W, said magnet being connected with wire 79 by wire 74.

In the use of my improvement the operator disposes the letters 100 or other articles in the car-compartment *i*, *j*, *k*, or *l* corresponding to the receiver D or receiver-compartment for which they are designed. The car being at the bottom of the shaft in contact with the stud of push-button 85, the contact-plates thereof are thereby held apart. The push-button 84 is then pushed, closing the circuit by wires 71, 78, 77, 76, and 70, charging magnet T, which causes the shifting of the gear-lever 44 into position to start. The push-button 22 is then moved, closing the circuit by wires 71 79 80 82 81 to motor M, thence by 73 to contact 83, spring-contact 57, wires 72 70 to street wires or generator, thus completing the circuit and charging the motor M. The motor T, being also charged, acts on the armature 49, drawing the gear-lever 44 over. The main shaft 33, being rotated, actuates the worm-shaft geared thereto and drives the pulley 26, drawing the car H to the top of the chute. As the lever 44 is drawn forward by the magnet, the latch 52 catches on its stud 53 and holds it in this position. As soon as the car starts, the button 85 is released from its weight and its two members come in contact and close the motor-circuit, which remains closed when the operator releases button 22 and during the passage of the car. When the car reaches the top of the chute, it strikes the head 56 of the rod 55, driving said rod upward and its spring 57 into engagement with the contact-plate 58, momentarily closing the circuit in magnet W by wires 71 79 74 to magnet W, wires 75, 58, 57, 72, and 70. This movement is arranged to break the circuit of the magnet T and close that of the magnet W, which acts on the latch-armature 51, drawing it downward and releasing the lever 44. The spring 50 at once draws said lever outward into the position shown in Fig. 6, and meshing the gears 42 to 48, so that the movement of the shafts 33 and 39 is reversed, rotating the pulley 26 in the opposite direction and causing the car to descend. When the car descends out of contact with the head 56, the spring 57 is relieved from the action of the rod 55. The spring

then separates from stud 58, whereby the branch circuit through the magnet is broken, and immediately resumes contact with the stud 83, whereby the motor-circuit is closed. When the car arrives at the bottom, it again strikes the push-button 85, whereby the motor-circuit through the magnet is broken and the motor stopped. On the downward course of the car the under bosses *v* of the ejector-plates *r* engage the trips 16 when opposite the receiver-mouths *g*, and are tilted thereby, as shown in Fig. 3, causing the ejector-plate *t* to swing forward and project the contents of the compartment through said mouth into the receiver. The trips are so arranged in the shaft-wall opposite the several receivers that they will engage and actuate only the ejector corresponding to said receiver.

I do not confine myself to delivering the contents of the car on its downward course, as the ejectors may be operated on the ascent of the car, if desired. In Fig. 4 a pawl 16 is shown pivoted to the car under the ejector-plate *r*, in position to engage a boss 90 on the shaft-wall 15 and tilt said plate on the upward course of the car.

Having thus explained my invention, what I claim is—

1. In a letter-distributer, the combination of a car having a letter-compartment provided with a discharge-opening at one side, an ejector disposed therein, consisting of a horizontally-pivoted plate adapted to be tilted by a projection in the carway, and a vertically-pivoted plate disposed within said compartment at the side opposite the discharge-opening, and having its free end resting on the lifting end of the companion plate, substantially as described.

2. The car, in combination with the motor M, shafts 33 and 39, actuating the pulley 26, the electro-magnets T W and spring-pulled latching-armatures geared to said shafts, and mechanism for automatically breaking the circuit in one magnet and closing it in the companion magnet, whereby the armatures may be moved to reverse said pulley as the car reaches the top of the shaft, substantially as described.

3. The combination of an electro-motor, a worm-shaft, a pulley-shaft geared to said worm, an electro-magnet in the motor-circuit, a spring-pulled armature therefor bearing gears connecting pinions on the motor and worm-shaft, a second electro-magnet, a pivoted hook-shaped armature therefor, and mechanism for breaking the circuit in the first magnet and closing that of the second magnet, whereby the geared armature may be moved to reverse said worm-shaft, substantially as described.

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Witnesses:
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BENJ. W. PECK.