(No Model.)

H. FLECKL.

PNEUMATIC MAIL COLLECTOR.

No. 559,693. Patented May 5, 1896.

Fig. 1

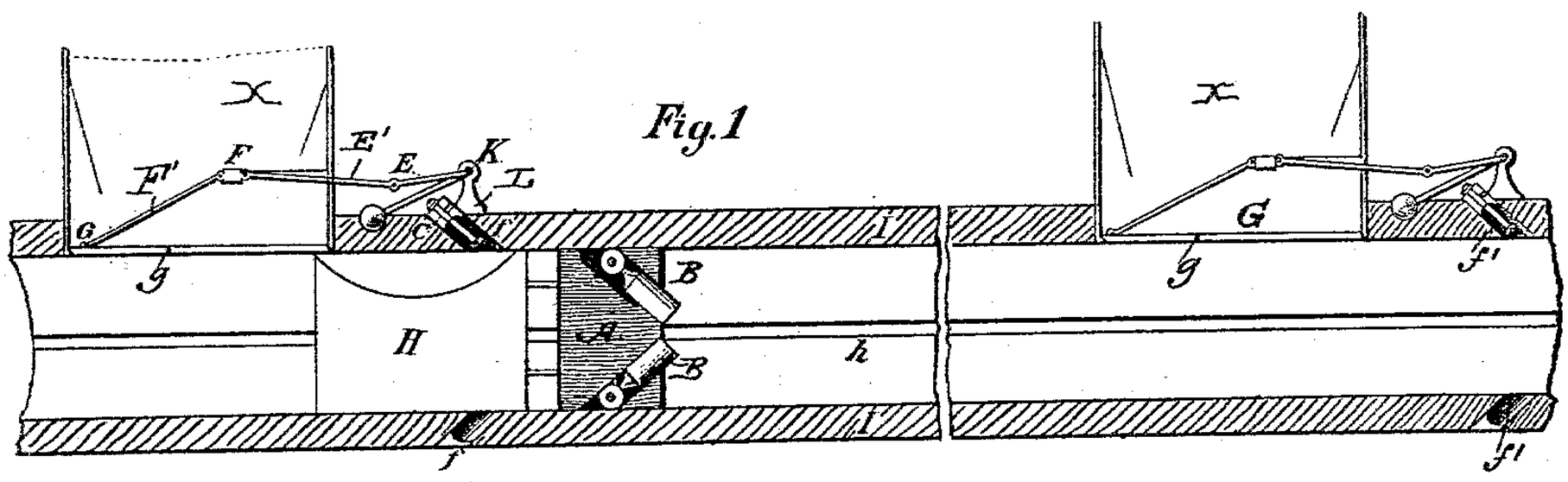


Fig. 2

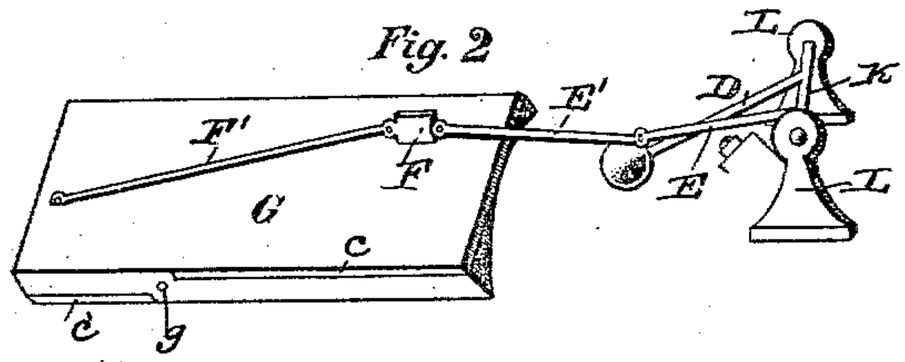


Fig. 3

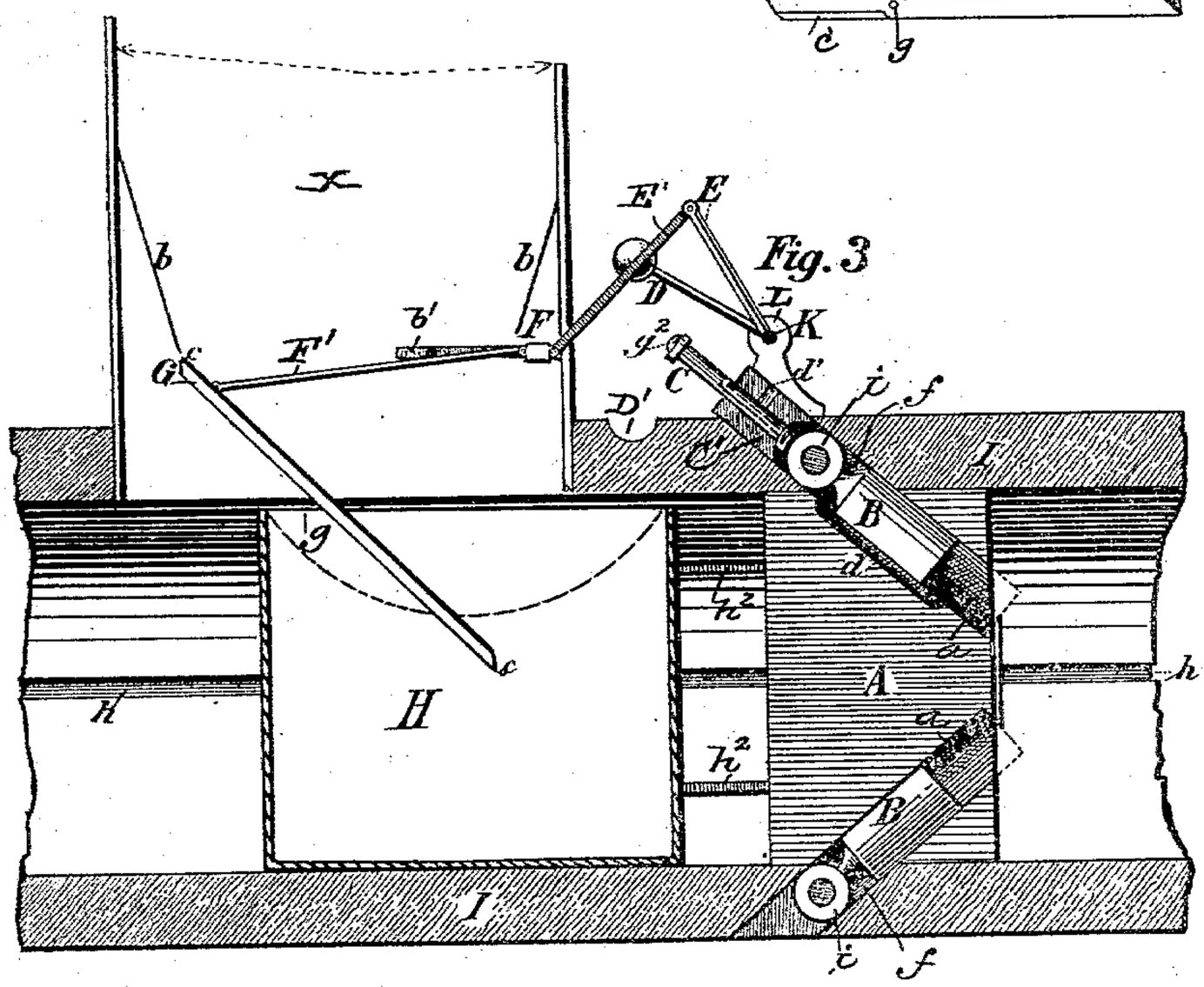


Fig. 5

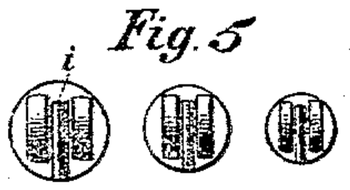
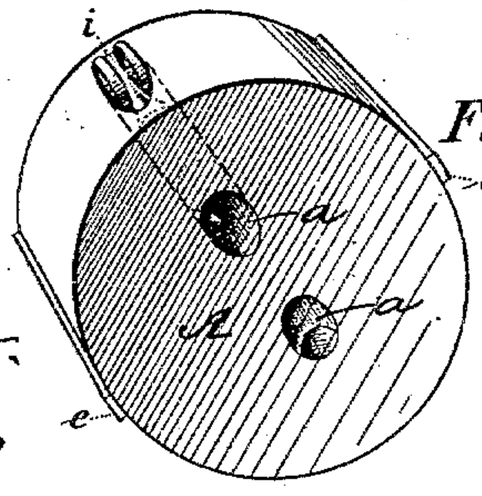


Fig. 4.



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HANS FLECKL, OF CHICAGO, ILLINOIS.

PNEUMATIC MAIL-COLLECTOR.

SPECIFICATION forming part of Letters Patent No. 559,693, dated May 5, 1896.

Application filed October 2, 1895. Serial No. 564,460. (No model.)

To all whom it may concern:

Be it known that I, HANS FLECKL, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Pneumatic Mail-Collectors, of which the following is a specification.

The object of my invention is to provide a means for collecting from a central point the mail deposited in boxes at various mailing-points about the city in a rapid, certain, and practical way, without the use of a large corps of collectors for performing the service. It is an improvement in that form of pneumatic mail-collectors in which a car driven by an air-pressure is propelled through an underground tube and is made to automatically gather the mail-matter deposited in the boxes; and my invention consists in the peculiar construction and arrangement of the various parts operating upon this system, which I will now describe more fully with reference to the drawings, in which—

Figure 1 is a vertical longitudinal section taken through the underground tube and also through two mail-boxes. Fig. 2 is a perspective view of the devices for working the bottom of the mail-box. Fig. 3 is a vertical section, enlarged, and showing the traveling piston and car in the act of dumping the mail-box. Fig. 4 is a perspective view of the traveling piston, and Fig. 5 is a side view of the different-sized rollers carried by the pistons of smaller and varying size within the traveling piston.

In the drawings, Fig. 3, A is a traveling piston fitting with an air-tight joint within a tube I and adapted to traverse a certain district through said underground tube from the pressure of compressed air acting against one side of the same. To this piston is attached, through arms b^2 b^2, a light car H, of leather or other suitable material, which is adapted to receive the mail-matter gathered from the boxes. This car is open at the top and in its general shape conforms to the shape of the tube I.

The piston A has (see Fig. 4) two longitudinal ribs *e e*, diametrically opposite each other, which fit into longitudinal grooves *h* on the inner periphery of the tube I and serve to guide the piston and car and prevent them from rotating or turning axially.

In the piston A are formed two cylindrical bores *a a*, arranged at an angle of about forty-five degrees to the longitudinal axis of the tube. These cylindrical openings diverge toward the car and contain smaller supplemental pistons B B′, fitting with an air-tight joint and bearing each upon its outer ends a pair of rollers *i*, adapted to come in contact with the inner walls of the tube. In the inner walls of the tube are formed receiving-cavities *f f′*, (see Fig. 1,) corresponding in size and angular position to the cylindrical bores *a* of the traveling piston. Just beside these cavities *f f′* (see Fig. 1) in the tube are arranged the mail-boxes X, into which the mail-matter is deposited and is received upon a tilting bottom G, which is capable of being deflected, as in Fig. 3, to open the mail-box into the tube and dump the letters, &c., from the mail-box into the car or receiver H. This tilting bottom is fulcrumed at *g* in the bottom of the mail-box and has a soft-rubber packing or other cushion along its margin at *c*, so as to cause it to shut with an air-tight joint between the mail-box and the tube I.

To tilt the bottom G of the mail-box, a rod F′ is jointed to the same and connects with a sliding block F, moving upon a horizontal guide *b′* on the side of the mail-box, and the sliding block is in turn connected to a rod E′, which outside the mail-box is connected to an arm E, rigidly attached to a rock-shaft K, journaled in bearings L. This rock-shaft has also a rigid and weighted arm D, whose weighted end gravitates to and is normally contained in a seat D′ in the top of the tube.

Within the upper end of the cylindrical bore *f* on the tube there is a tightly-fitting plug C′, having a central hole through which slides a stem C, having a soft-rubber cushion g^2 at its end, and having its lower half hollow and provided with an opening through its side, so as to alternately open into the outer air when in one position and register with a port *d′* in the plug C′ when in the other position, and whose lower end is always open and in communication with the cylindrical bore *f*.

The action of the piston A in dumping the mail-box is as follows: When the piston travels in the tube, the small pistons B B′ and rollers *i* are forced inwardly by the contact of the tube, as in Fig. 1; but when a piston

A arrives at a mail-box, as in Fig. 3, the pressure of air on the small pistons B B′ forces them outwardly, causing the rollers *i* to enter the chambers *f* in the tube, and the ends of the pistons B strike the sliding stem C and force it upwardly, and its cushioned end g^2, striking the weighted arm D, throws it upwardly, as in Fig. 3, and this motion rocks shaft K, raises the arm E and rod E′, and in pulling back the slide F causes rod F′ to tilt the bottom G of the mail-box and dump the mail into the carrier H. To safely guide the mail-matter down, inclined flaps *b b* are arranged on the sides of the mail-box. When the weighted arm D drops back to its seat D′, it drives the stem C inward, and in bringing down the arm E and rod E′ shuts the bottom G again, and as the joint between the arm E and rod E′ drops below a straight line, as in Figs. 1 and 2, it will be seen that it makes a locking-joint for the bottom that prevents it from rising from the pressure of compressed air within the tube until it is again unlocked and opened by the pistons, as heretofore described. When the piston A arrives at its mail-box and its small pistons B have been forced out to dump the mail, the compressed air behind the piston A is allowed to escape around piston B by a port *d* and the passage through the hollow stem C.

In carrying out my system there is a separate piston A for each mail-box, and the small pistons B B′ and chamber *f* in the tube are of different size for each mail-box. The mail-box most remote on the route has the largest chambers *f*, and its piston A has the largest supplemental pistons B. The next remote mail-box has its chamber *f′*, Fig. 1, of a smaller size, and its piston A has supplemental pistons B B′ of a corresponding smaller size, and the nearest mail-box has these parts the smallest of all. In collecting the mail the piston A for the most remote mail-box is sent out first, and as its rollers *i* are larger than any of the intervening chambers *f′* they pass over the same and only stop at the remote box, whose chambers *f* correspond to the size of its pistons and rollers and receive them. The piston A with next smaller pistons and rollers B and *i* is then sent out and collects from the next box, and so on. When the collecting-cars have been thus sent to all the boxes, a suction is created at the central station in the tube I, and the pistons A and mail-cars H are successively drawn back again to the central station with the mail.

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

1. A pneumatic carrier consisting of a piston with supplemental pistons in it with rollers bearing against and combined with a pneumatic tube having receiving-cavities in it to fit the supplemental pistons of the carrier substantially as shown and described.

2. The combination of a pneumatic tube having longitudinal guides and receiving-cavities at stations along its length, and a traveling piston controlled against rotation by said guides, and provided with supplemental angularly-arranged pistons adapted to be received into the corresponding cavities of the tube to stop the traveling piston substantially as and for the purpose described.

3. The combination of a pneumatic tube having stations along its route and receiving-cavities in its inner walls of a size differing for different stations and largest at the most remote station, and a set of traveling pistons having supplemental pistons of a graduated size to fit the varying sizes of the cavities in the pneumatic tube substantially as and for the purpose described.

4. The pneumatic mail-collector comprising the mail-box with tilting bottom, the communicating pneumatic tube with receiving-cavities *f f′* a traveling piston with receiving-car and supplemental pistons adapted to be received into the cavities *f f′* of the tube to stop the car, and a tilting mechanism for transmitting the impact of the traveling piston to the tilting bottom of the mail-box substantially as and for the purpose described.

5. The combination with the mail-box having a tilting bottom, a pneumatic tube opening into the same, a traveling piston, means for stopping it at the mail-box, and a tilting mechanism for the bottom arranged to positively lock the bottom of the mail-box against the internal pressure of the tube substantially as and for the purpose described.

6. The combination of the tube I with guide-groove *h* and cavities *f f′*, the piston A with chambers *a* and pistons B B′ having rollers at their ends, the car H connected to the piston A, the sliding stem C, rock-shaft K with weighted arm D, and arm E, rod E′. slide F, connecting-rod F′, and the mail-box with tilting air-tight bottom substantially as and for the purpose described.

HANS FLECKL.

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