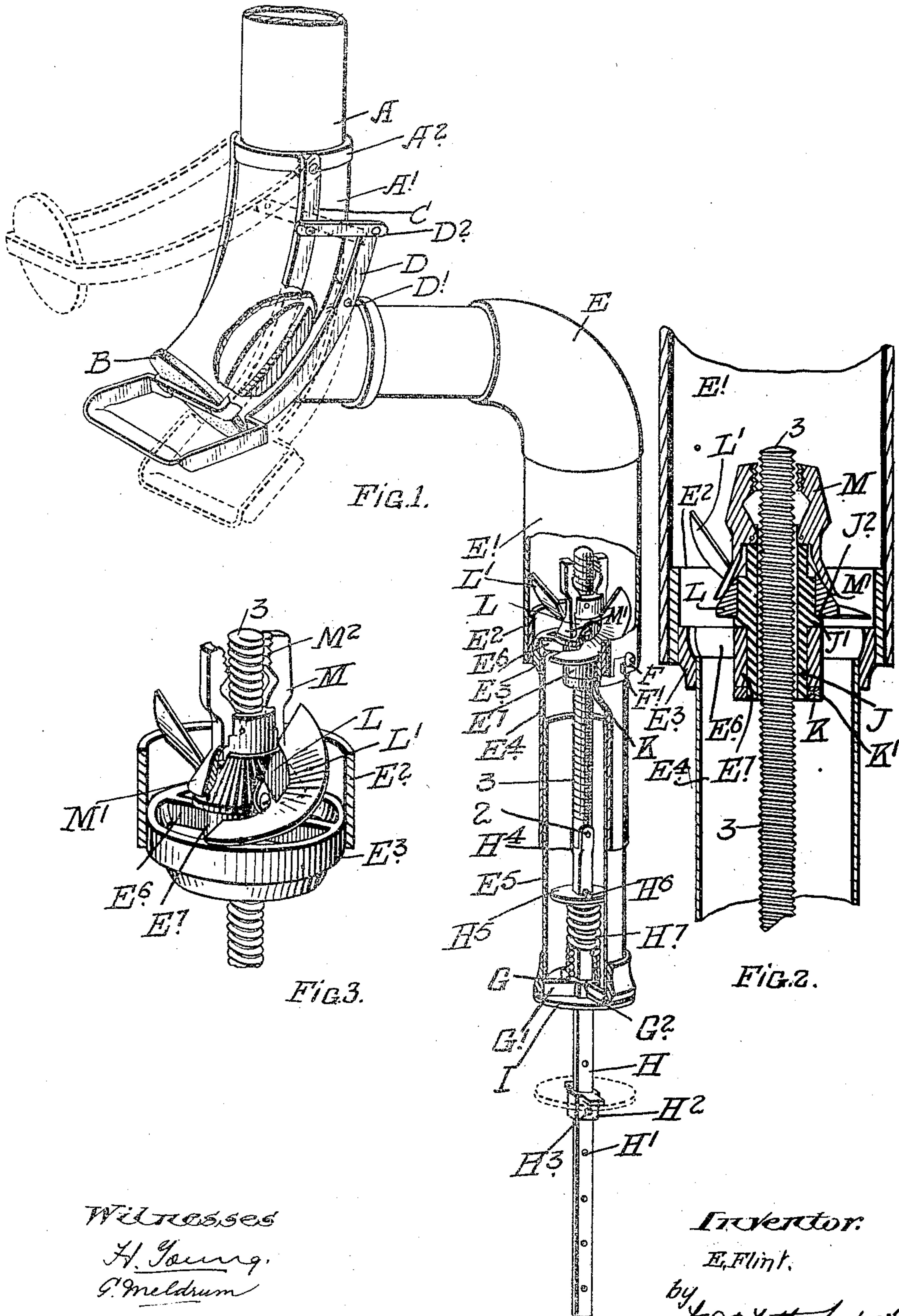


No. 886,489.

PATENTED MAY 5, 1908.

E. FLINT.
AUTOMATIC SHUT-OFF FOR PNEUMATIC TUBES.
APPLICATION FILED APR. 23, 1907.



Witnesses
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UNITED STATES PATENT OFFICE.

EDGAR FLINT, OF TORONTO, ONTARIO, CANADA.

AUTOMATIC SHUT-OFF FOR PNEUMATIC TUBES.

No. 886,489.

Specification of Letters Patent.

Patented May 5, 1908.

Application filed April 23, 1907. Serial No. 369,834.

To all whom it may concern:

Be it known that I, EDGAR FLINT, of the city of Toronto, in the county of York, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Automatic Shut-Offs for Pneumatic Tubes, of which the following is the specification.

My invention relates to improvements in automatic shutoffs for pneumatic tubes, and the object of the invention is to devise a means, whereby when the door is opened by the cashier or salesman to insert each carrier it will automatically close without any further attention of the cashier, and yet when open will effect an opening of the tube to the atmosphere in proximity to the door during the period that the box is traveling, which opening will be gradually automatically closed without any attention of the cashier or salesman and thereby effect a saving of time of the cashier or salesman formerly necessary to open the door to insert the box and to close the door after the box has been received at the salesman's end or vice versa.

At the present time it is customary to allow the door to remain open, which necessitates the drawing of the air by vacuum through the tubes continuously. This necessitates continuous power, which it is my object to avoid and only use the power during the period that the box is traveling from the cashier to the salesman or vice versa.

My invention consists essentially of a tube having the door end constructed preferably on an arc having an opening at the end thereof, a door suitably hinged and designed to close the opening, a branch tube extending from the arc-shaped portion of the tube in the form of an elbow having a vertically depending portion provided with an opening at the bottom and an automatic means located in the vertically disposed portion of the elbow for opening the bottom of such vertically disposed portion immediately the door is opened and for closing the same gradually immediately the door is closed and during the period that the box is traveling, the parts being arranged and constructed in detail as hereinafter more particularly explained.

Figure 1, is a perspective view showing one end of a pneumatic tube in which the door for the insertion of the box is located, showing the parts involved in my invention. Fig. 2, is an enlarged vertical section through the vertically disposed portion of the elbow

forming part of my invention. Fig. 3, is an enlarged perspective detail.

In the drawings like letters of reference indicate corresponding parts in each figure.

A is the end of a pneumatic tube for the transmission of a cash carrier box. In my invention the end is preferably arc-shaped at A' and is provided with a collar A² and an opening at the end of the arc-shaped end, which is normally closed by a door B, which is suspended on the straddle arms C pivotally connected to the collar A².

D is a crooked arm designed to be used for opening the door, such crooked arm being pivoted at D' intermediate of its length and connected by a link D² to the arm C. By throwing the arm D into the position shown in dotted lines the door B may be readily opened.

E is an elbow extending from the arc-shaped end A' at a point in proximity to the door B and behind it, and E' is the vertically disposed portion of the elbow.

The vertically disposed portion E' of the elbow E is provided at the bottom with an internal collar E² having a reduction sleeve E³ located within the same. Within the reduction sleeve is secured one end of the telescopic tube E⁴ E⁵, which is detachably connected to the tube E' and collar E² by a screw pin F fitting into a bayonet F' made in the lower end of the collar E².

G is a collar secured at the lower end of the portion E³ of the telescopic tube and provided with a spider G' having a central hole G² through which extends the bar H having a series of holes H' and an adjustable clip H² is secured on the bar by a pin H³ running through one of these holes as will be seen the bar H is of angular cross section, and hole G² is of similar shape, so that said bar is prevented from rotating. The upper end of the bar H is provided with a jaw H⁴ in which is held by a pin 2 the lower reduced end of the screw spindle 3.

H⁵ is a disk through which the bar H extends and H⁶ is a pin extending above this disk to prevent it moving upwardly on the bar, and H⁷ is a spiral spring encircling the bar H and extending between the plate H⁶ and the spider G' the part H⁶ acts as a bearing for the spring. This spring H serves as a bumper or cushion spring as will hereinafter appear.

I is a disk located on the bar and having a suitable washer thereon, so that it will fit

hermetically the end of the collar G'. The collar E³ is formed with a spider E⁶ and central hub E⁷ in which is secured the sleeve J, which is provided with a shoulder J' whereby it is supported upon the hub E⁷. The sleeve J is prevented from vertical displacement by means of a collar K fastened to the sleeve by a set screw K'. The sleeve J is also provided with a shoulder J² above the shoulder J' upon which fits the collar L, which carries the convolute wings L'. The collar L is tapered as indicated.

M are arms pivoted in notches at the top of the sleeve J and provided with tails M', which contact with the tapered collar L. The arms M are provided with thread sections M², which are designed to engage with the screw spindle 3 as will hereinafter appear.

Having now described the principal parts involved in my invention, I shall briefly describe its operation. In order to start a box when both the door B and disk I are closed I open the door and place the box or carrier within it and then shut it again. Immediately the door B is opened the disk I drops into the position shown in dotted lines in Fig. 1, upon the clip stop H², the vacuum being removed. The suction now through the tube produced from any suitable source of power draws the carrier or box onward to its destination and at the same time causes the wings L' attached to the collar L and forming a fan to rotate rapidly. The convolute wings L' are so set that when they rotate they cause the collar L to rise practically instantaneously and thereby cause the threaded sections of the ends of the arms M to engage with the screw spindle 3, thereby practically forming a nut, which will gradually raise the spindle 3 as the arms rotate until the disk I carried by the clip stop H² reaches its seat at the bottom of the collar G' at which period the box or carrier inserted into the door B will have reached its destination. In order to insert another box the operation is merely repeated with the same results.

It will be, of course, readily understood that the length of tube in which the box or carrier has to travel varies, and, therefore, it is necessary to provide means for closing the disk I in a greater or shorter length of time, so that the air will not be shut off altogether until the box has reached its destination; I may effect this in three ways, by lengthening the screw 3, adjusting the clip H², and adjusting the telescopic tube E⁴ E⁵. It will be seen from this description that instead, as has been formerly the case, of allowing the door to remain completely open during the whole travel of the box and in fact during the whole period that the system is working the cashier or salesman may immediately allow the door to close and need take no more care of it. The disk I, however, is gradually

drawn to the closed position, which it finally reaches when the box has reached its destination, the travel of the disk being regulated to a nicety in the manner hereinbefore described.

It will thus be seen that the power required in my system will be only during the period that the box or cash carriers are traveling and not continuously throughout every branch tube of the system, which is an important desideratum for the reason that the amount of power required will be reduced to a minimum.

It will also be seen in my invention that as soon as the disk I closes the suction stops, and, therefore, the collar L will drop being no longer impelled by the suction and consequently the arms M will recede from their contact with the screw spindle, which will, therefore, drop into the normal position shown in the drawing, the spring H' serving to receive the concussion of the drop of the bar and act as a buffer. Of course, the disk I remains closed being held there by the suction within the tubular elbow and the bar I fits the hole practically hermetically.

What I claim as my invention is:

1. In a pneumatic despatch tube system, the combination with a despatch tube having a carrier entrance and a closure therefor, of a branch tube arranged to deliver air to the despatch tube to provide for the transmission of the carrier, a closure for such branch tube, a threaded rod supporting such closure and movable longitudinally of the branch tube but held from rotation relatively thereto, and means in said branch tube actuated by the flow of air therethrough to engage and move the rod to apply the closure to the branch tube.

2. In a pneumatic despatch tube system, the combination with the despatch tube having a carrier entrance and a closure therefor, of a branch tube extending from the despatch tube and arranged to deliver air to the same to provide for the transmission of the carrier, a disk designed to close the end of the tube, a collar having a spider located at the lower end of the vertically disposed portion of the tube, a bar passing through a central opening in the spider and disk, a stop on the bar, a screw spindle connected to the upper end of the bar, a collar secured in the tube and provided with a spider having a central hub provided with an opening, a sleeve secured within the opening in the hub and provided with a central opening through which the screw freely extends and a tapered rotatable collar supported on the sleeve and provided with convolute wings forming a fan, arms pivoted on the sleeve and provided with thread sections at the upper end and tails extending over the taper of the collar at the lower end as and for the purpose specified.

3. In a device of the class described, the

combination with the tubular elbow having the vertically disposed portion and the disk adapted in its raised position to close the lower end of the vertical portion, a collar having
5 a spider located at the lower end of the vertically disposed portion, a bar passing through a central opening in the spider and disk, a stop on the bar below the disk on which said disk is adapted to rest when in
10 inoperative position, means for gradually raising the bar and the disk when resting on the stop, and holes in the bar for adjusting the stop as and for the purpose specified.

4. In a device of the class described, the combination with the tubular elbow having 15 the vertically disposed portion formed telescopically, of a disk for closing the lower portion and means extending through the disk and operated from the interior of the vertically disposed portion for raising the disk as 20 and for the purpose specified.

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Witnesses:

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