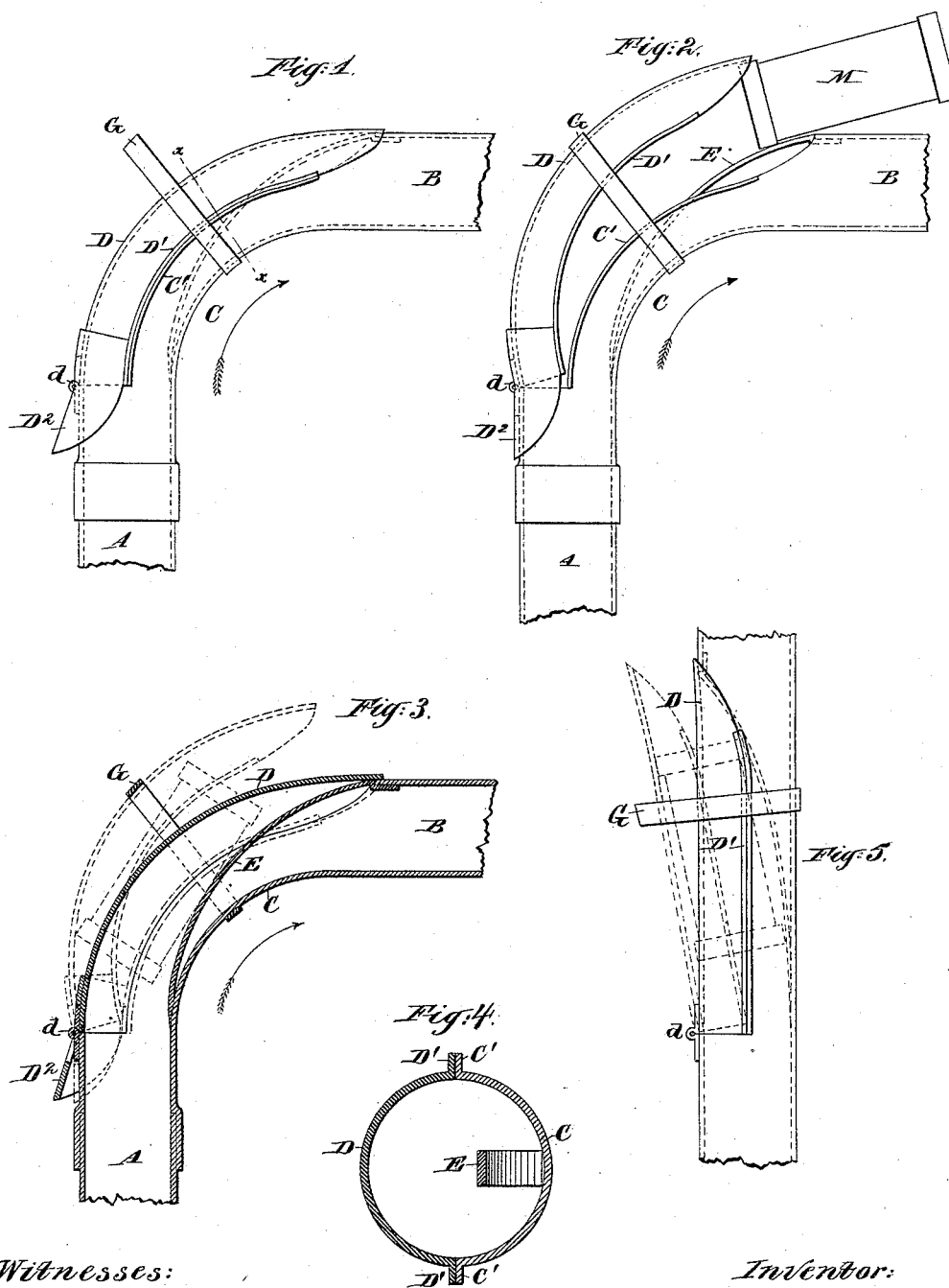


(No Model.)

E. D. LEAYCRAFT.  
PNEUMATIC DISPATCH APPARATUS.

No. 417,828.

Patented Dec. 24, 1889.



Witnesses:

Charles R. Searle,  
H. J. Johnston.

Inventor:

Edwin D. Leaycraft  
by his attorney  
James D. Newkirk

# UNITED STATES PATENT OFFICE.

EDWIN D. LEAYCRAFT, OF JERSEY CITY, NEW JERSEY.

## PNEUMATIC DISPATCH APPARATUS.

SPECIFICATION forming part of Letters Patent No. 417,828, dated December 24, 1889.

Application filed February 6, 1889. Serial No. 298,915. (No model.)

### *To all whom it may concern:*

Be it known that I, EDWIN D. LEAYCRAFT, of Jersey City, in the county of Hudson and State of New Jersey, have invented a certain new and useful Improvement in Pneumatic Dispatch Apparatus, of which the following is a specification.

The improvement relates to the provisions for ejecting the carrier at the end of its route. The carrier, being liable in the varying exigencies of business to be loaded with varying freights and to traverse with varying speeds, involves difficulties in its extraction from the tube, which the ordinary apparatus but imperfectly overcomes. It has long been successfully practiced to cause the impact of the rapidly-moving carrier to open a self-closing valve or series of valves against the pressure of the external air, and thus allow the carrier to emerge from the tube, and it has long been practiced to extinguish the motion remaining in the carrier after its passage through such section by causing it to traverse in a curved path within a frame provided for the purpose. I have discovered that a curved path may be prepared for the carrier in the tube, and the air allowed to traverse smoothly around the curve, and that the carrier by the forward motion will open a large section forming a portion of the exterior of the curve and be ejected smoothly and certainly with all loads and at all velocities, or when from any cause it is stopped only partially ejected it will be held in the wedge-like opening, and may be easily extracted by the attendant, after which the section will automatically close and the apparatus be again instantly ready for further service.

The following is a description of what I consider the best means of carrying out the invention.

The accompanying drawings form a part of this specification.

Figure 1 is a side elevation. Fig. 2 is a similar view showing the carrier in the act of being ejected. Fig. 3 is a corresponding vertical section. Fig. 4 is on a larger scale. It is a section on the line *xx* in Fig. 1. Fig. 5 is an elevation showing a modification.

Similar letters of reference indicate corresponding parts in all the figures where they occur.

A and B are straight portions, and C is a curved portion of a tube of the proper size and having the proper smooth interior to be traversed by the carrier. A portion—about half of the outer part of C—is cut away, the edge of the metal remaining being flanged outward, as indicated by C'. A separately-formed piece D, constituting a section or valve, having a corresponding flange D' along its edge and hinged to the other parts at *d*, is adapted to cover this aperture, and when closed to form therewith a smooth continuous curved tube.

E is a smoothly-finished bar of steel or other suitable material curved, as shown, and riveted or otherwise rigidly secured, extending obliquely across the tube C within or under the section D. The contour of its interior edge is unimportant. Its exterior edge may be parallel or approximately parallel to the valve D when the latter is in a half-opened position.

G is a stop arranged to arrest the movement of the valve in such position that its curved interior will strongly deflect the carrier and arrest its movement.

The air flows strongly through the tube in the direction of the arrows, the motion being induced in any ordinary or suitable way by a pump (not shown) connected to the part B. When by any ordinary or suitable device the more or less loaded carrier M is introduced at a distant portion of the apparatus, it moves rapidly through the part A and enters and commences to traverse the curved portion of the tube, impelled both by the greater pressure of the air behind than before it, and also by its momentum. In being deflected from its straight course into a curved path it acts strongly against the inner surface in a direction tending to open the section. Its efficiency in opening the section is greatly increased by the way E. If the velocity is high and the carrier is heavily loaded, so that there is much *vis viva* or momentum in the carrier, it will open the section at an early period of the movement and allow a strong inward flow of air through the portion of the aperture in advance of it. This rapidly reduces the impelling force, but leaves it always sufficient to complete or nearly complete its ejection. If the apparatus is properly ad-

justed, it will under such conditions swing the section open to the extent allowed by the stop G, traverse the curved interior, and be strongly deflected to the right and pass out with a moderate velocity, allowing the section to instantly close by its weight and in obedience to the pressure induced by the active inward flow of air. If, on the contrary, the motion is slow and the carrier is lightly loaded, so that there is much less *vis viva*, it will be more easily deflected; but it will even then open the section with the aid of the inclined way E. The carrier, forced forward by the continued pressure of the air behind it, will insinuate itself wedgewise between the movable section D and the way E and will wedge it open. Under these conditions the carrier is liable to stop without being fully ejected; but it is easy for the attendant, when this occurs, to complete the ejection of the carrier by hand.

Modifications may be made without departing from the principle or sacrificing the advantages of the invention. The length of the carrier may be increased or diminished. There may be two or even more of the ways E. It is important that there be one or more efficient means of aiding the carrier to open the section by a wedge-like movement. There may be a spring of gentle force tending to hold the section D closed. Such may be especially of service where the apparatus is so mounted that gravity tends to hold it open rather than closed. Ordinarily the inward flow of the air will shut the section and hold it tightly closed without any aid.

The stop G may be supplemented by a stop formed by an extension of the valve beyond the hinge *d*, as indicated by D<sup>2</sup> in Fig. 1. Such a stop may serve in place of the stop G, if desired in any case.

There may be a cushion of any suitable yielding nature to receive the carrier on its emergence from the system.

Fig. 5 shows a modification in which a similar hinged section is arranged to be opened by the motion of the carrier. A bar corresponding to the bar E in the other figures extends obliquely across the tube under the aperture, and when the rapidly-moving carrier comes to this part of the tube it is deflected upward by the bar and is ejected, the section opening by the action of the carrier in a manner closely similar to that shown in the other drawings. I prefer the arrangement shown in the preceding figures.

I claim as my invention—

1. In pneumatic dispatch-tubes, a curved portion C, having in its outer or full side a movable portion D, capable of opening outward, substantially as shown, in combination with a carrier M, traversing said tube and arranged to press outwardly against such movable portion, all substantially as herein specified.

2. In pneumatic apparatus for transmitting money or parcels, the inclined way E, in combination with the hinged section D *d* and the curved tube C, arranged for joint operation as herein specified.

3. In pneumatic dispatch apparatus, the pipes A B and curved portion C connecting them, having a long opening in the latter adjacent to the pipe A, the curved section D, hinged at *d*, the way E, extending obliquely across the pipe C, and the stop G, all combined and arranged to serve as herein specified.

In testimony whereof I have hereunto set my hand at New York city, this 28th day of January, 1889, in the presence of two subscribing witnesses.

EDWIN D. LEAYCRAFT.

Witnesses:

CHARLES R. SEARLE,  
H. A. JOHNSTONE.