(No Model.)

C. A. LIEB.

SWITCH FOR PNEUMATIC TUBES.

No. 398,836. Patented Mar. 5, 1889.

Fig. 1.

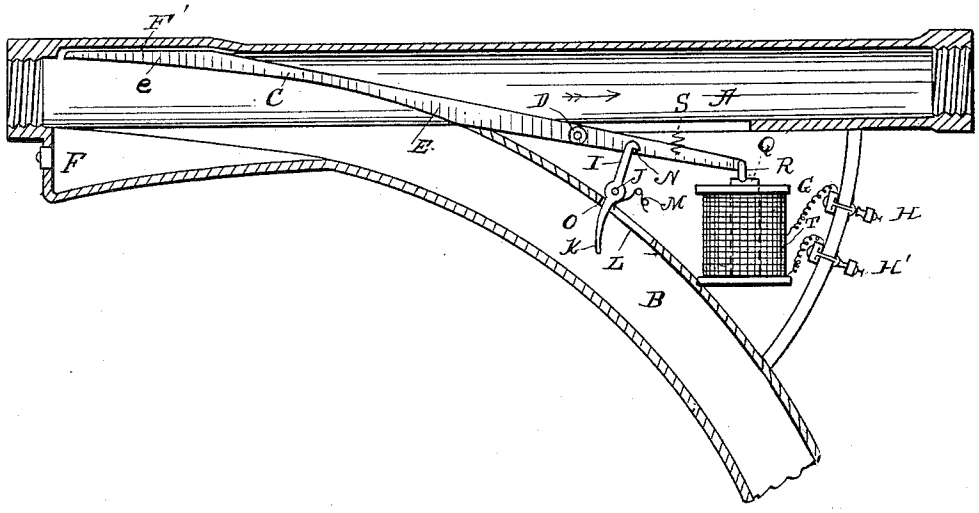
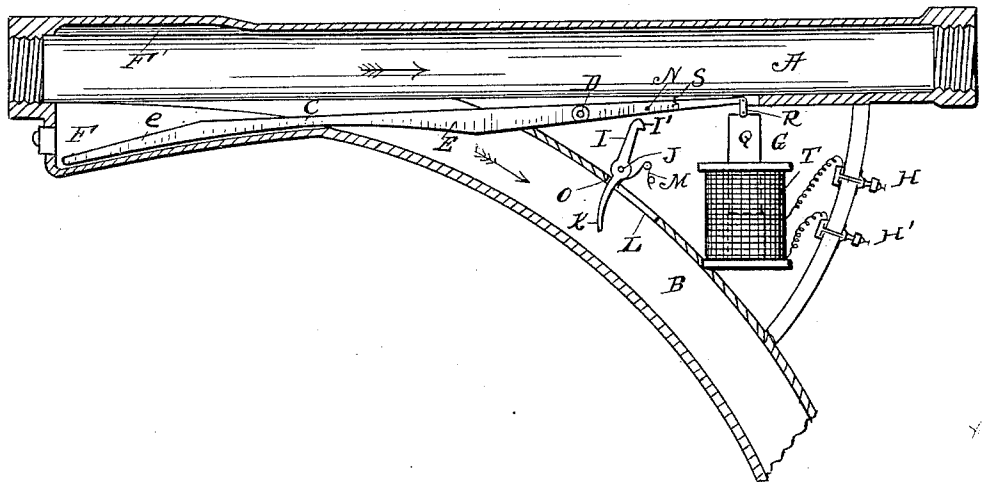


Fig. 2.



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UNITED STATES PATENT OFFICE.

CHARLES A. LIEB, OF NEW YORK, N. Y.

SWITCH FOR PNEUMATIC TUBES.

SPECIFICATION forming part of Letters Patent No. 398,836, dated March 5, 1889.

Application filed November 23, 1888. Serial No. 291,644. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. LIEB, a citizen of the United States, and a resident of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Switches for Pneumatic Tubes, of which the following is a specification.

My invention relates to improvements in pneumatic tubes of the class in which the carrier is deflected from one tube into a branch tube by means of an electrically-operated switch. Such an apparatus is described and illustrated in the patent granted to Henry Clay, dated November 4, 1884, and numbered 307,437.

More particularly described, my invention relates to the construction and method of operation of the switch in conjunction with the main-line tube and the branch tube, whereby I secure, as I believe, greater simplicity, durability, and accuracy in operation than by any other form of switch heretofore known.

In the drawings the same reference-letters indicate the same parts in both of the figures.

Figure 1 illustrates a longitudinal section of the parts, the switch being in the position in which the main-line tube is closed, whereby the carrier will be deflected into the branch tube. Fig. 2 illustrates a like view, the main-line tube being open.

A is one of the main-line tubes.

B is one of the branch tubes.

C is the switch. It is pivoted at D to any suitable part of the tubes near their junction, or to some other support placed adjacent thereto.

The forward end, E, of the switch enters, by preference, but not necessarily, a recess, F, made in the wall of the main tube, there being a corresponding recess, F′, on the opposite side of the tube, into which the same end of the switch enters when it is thrown over for the purpose of deflecting the carrier into the branch tube.

G is a solenoid. H H′ are the binding-posts for the electric wires thereof.

I is a latch pivoted at J. The rear end of the latch, K, passes through a slot, L, in the branch tube B, and enters the interior thereof in the path of the carrier.

M is a spring which normally holds the latch in such position as to properly engage with a pin, N, which projects from the side of the switch near its rear end. The end O of the slot L acts as a stop to limit the action of the spring M on the latch.

Q is the armature of the solenoid. It is connected, by a suitable link, R, or its equivalent, to the rear end of the switch. S is a spring which normally tends to draw the switch out from the main-line tube and to retain it in the position shown in Fig. 2.

T is the helix of the solenoid.

The operation is as follows: When the operator desires to send a carrier through the branch tube B, he by a proper manipulation of the electrical appliances forming part of the apparatus, and now well understood, magnetizes the solenoid G. This instantly draws the armature Q inwardly, which in turn swings the switch E over to the opposite side of the main-line tube A, as shown in Fig. 1. The pin N, impinging on the cam-like face of the latch I, presses it aside until the point of its hook I′ has passed the pin. The hook then, by the action of the spring M, locks over the pin, and the switch is thus held across the tube A. The operator then puts the carrier into the receiving-cock, which may be of any preferred construction, they being now well understood, and by a proper manipulation thereof subjects the carrier to the action of the air-current passing through the tubes. The carrier, being forced through the tube A, is turned from it into the branch tube B by the switch E, and as it passes the inwardly-projecting end K of the latch it strikes it and forces it aside out of its way, the end of the latch passing upwardly into the slot L. Thereby the hook of the latch is disengaged from the pin N on the switch, and the spring S then at once returns the switch to its open position, (seen in Fig. 2,) thus leaving both tubes in their proper normal condition.

If preferred, the end *e* of the switch may be so heavy relative to the other end thereof that the spring S will not be necessary for the retraction of the switch, gravity alone being sufficient; but it will frequently occur that the apparatus cannot be conveniently placed in such manner that gravity can be

availed of for this purpose—as, for instance, when for lack of space the switch mechanism has to be placed horizontally, or, in other words, on its side or at an angle. I therefore prefer the spring in combination, and even where it can be and is placed vertically the spring renders the operation more positive, and is therefore desirable.

I do not limit myself to the details of construction. They may be considerably varied without departing from the spirit of my invention.

I claim—

1. The combination, with a main tube and a branch tube, of a pivoted switch, a solenoid, substantially as set forth, and a latch which holds the switch in its position as set until the carrier passes the switch, one end of which latch enters the branch pipe in the path of the carrier, substantially as set forth.

2. The combination, with a main-line tube and a branch tube, of a switch operated by a solenoid provided with a spring for its retraction, and a latch constructed and arranged to hold the switch in its closed position, and which is released by the passage of the carrier past it, substantially as set forth.

3. The combination, with a main-line tube and a branch tube, of a pivoted switch, one end whereof is within the main-line tube and the other end whereof is connected to the core of a solenoid, and a spring-actuated latch constructed and arranged to hold the switch in its position, as set forth, one end whereof lies within the branch tube and in the path of the carrier, substantially as and for the purposes set forth.

Signed at New York, in the county of New York and State of New York, this 20th day of November, A. D. 1888.

CHAS. A. LIEB.

Witnesses:

PHILLIPS ABBOTT,

WILLIAM ECK.