(No Model.)

F. F. FRANCESCHINI.

CORNET.

No. 300,590. Patented June 17, 1884.

Fig. 1.

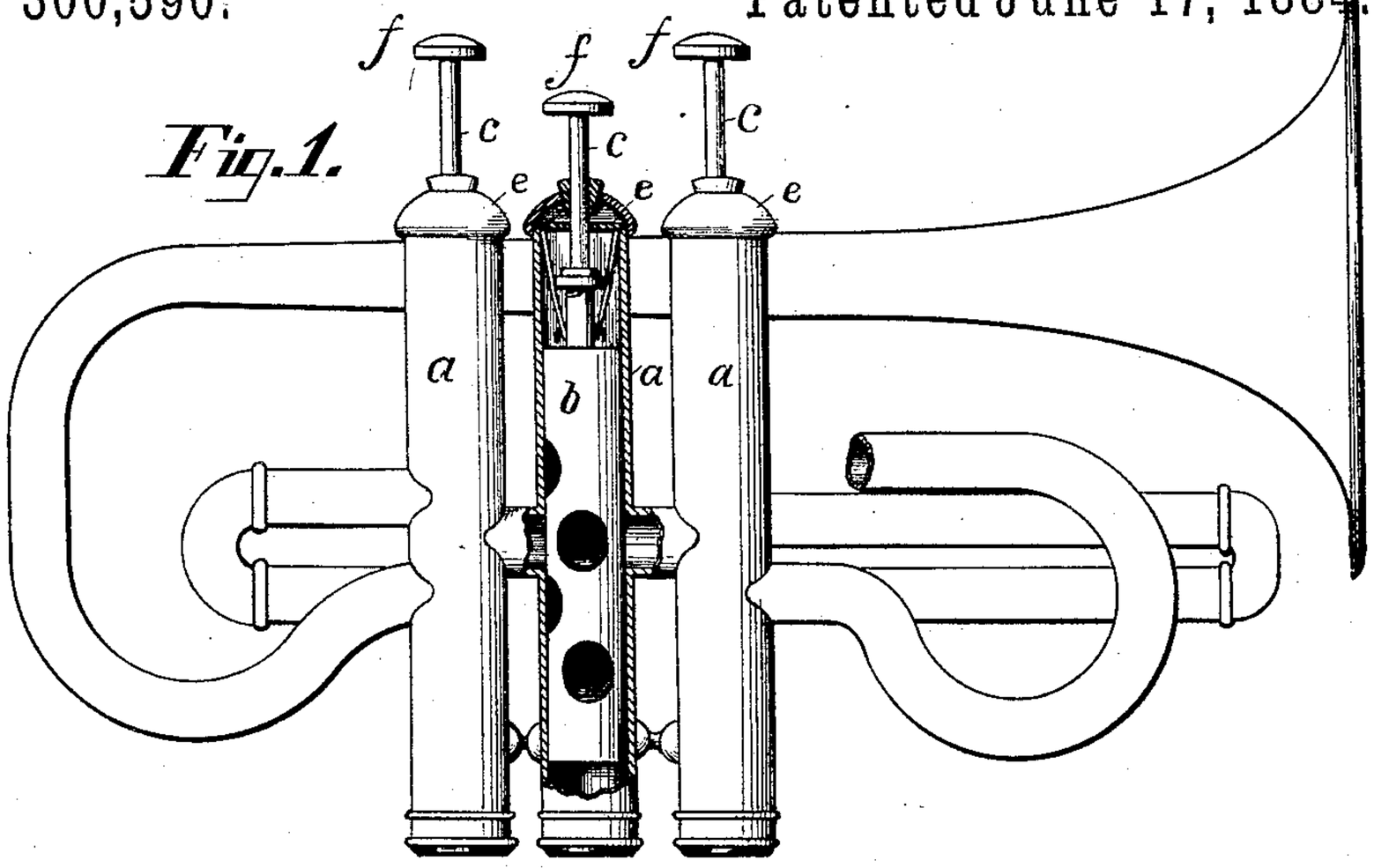


Fig. 2.

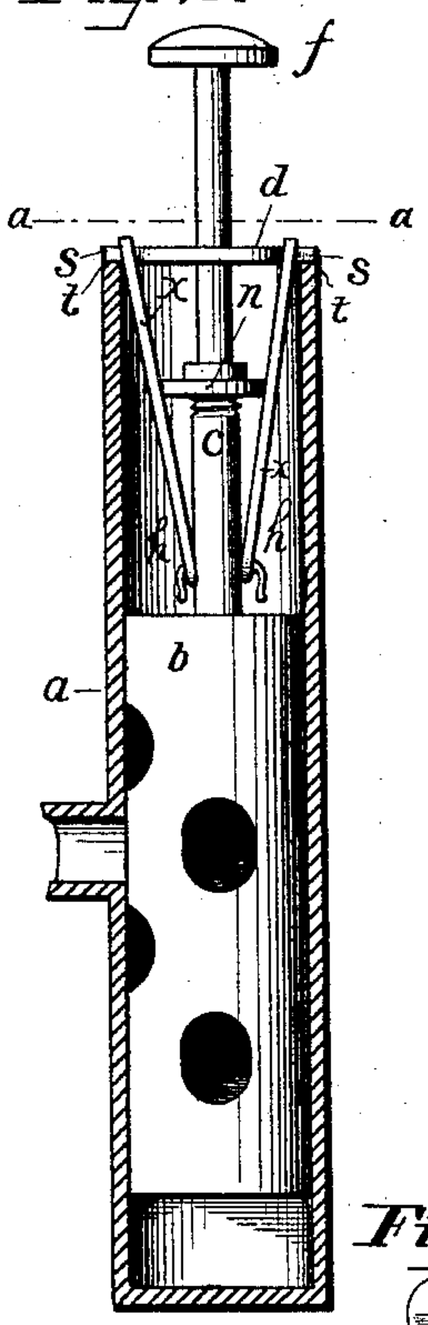


Fig. 4.

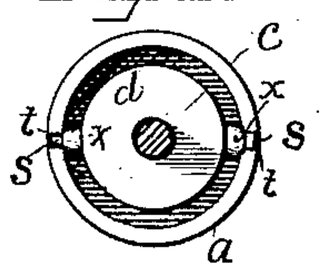


Fig. 5.

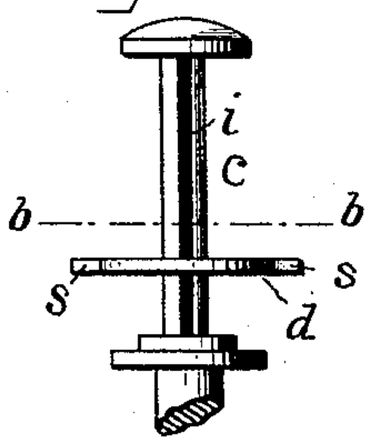


Fig. 6.

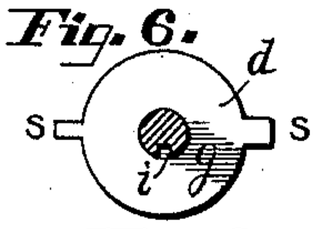


Fig. 3.

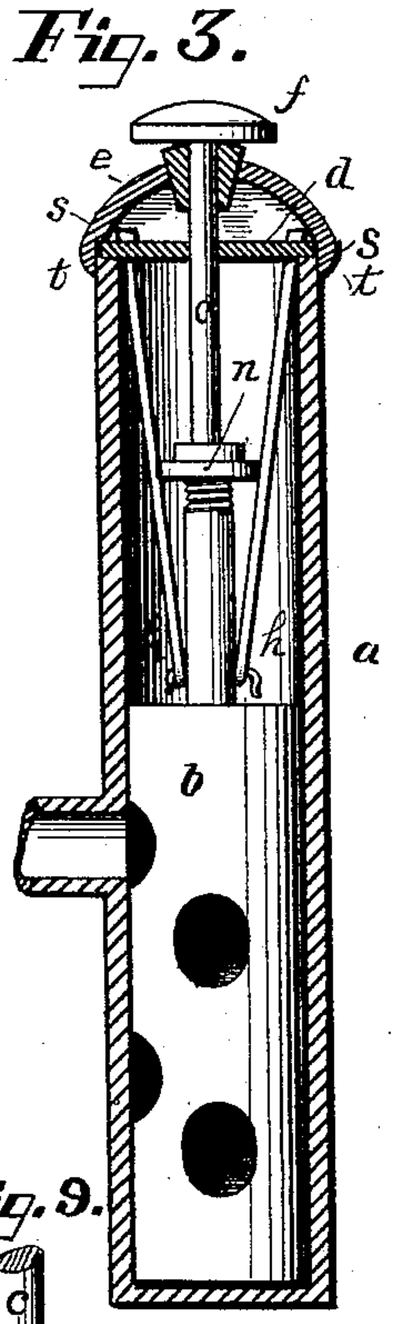


Fig. 10.

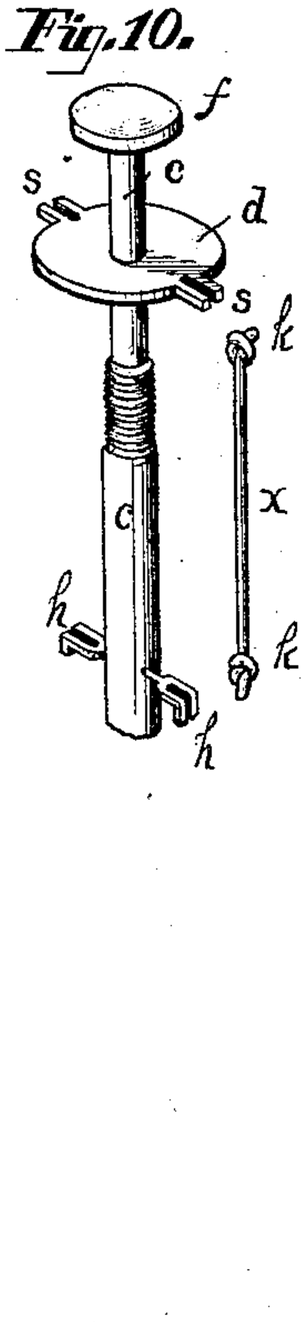


Fig. 7.

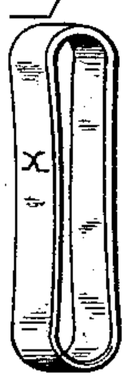


Fig. 8.

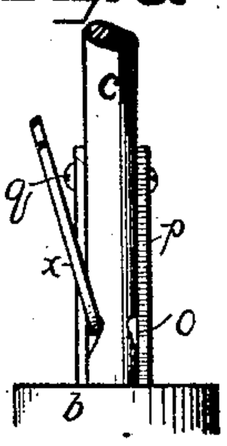
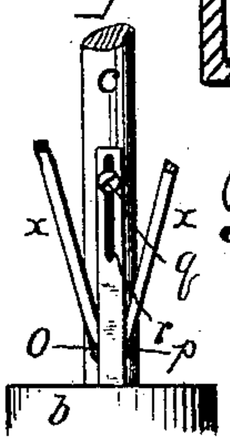


Fig. 9.



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per Joshua Pusey, Atty

UNITED STATES PATENT OFFICE.

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CORNET.

SPECIFICATION forming part of Letters Patent No. 300,590, dated June 17, 1884.

Application filed November 21, 1883. (No model.)

To all whom it may concern:

Be it known that I, FRANK F. FRANCESCHINI, a citizen of the United States, residing at the city and county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Cornets-a-Piston, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention has reference to that class of musical wind-instruments, of which the cornet-a-piston is a type, having reciprocating piston-valves; and it relates, specifically, to improvements in mechanism for elevating the valve-pistons upon removal of the pressure of the fingers upon the stops or buttons.

Figure 1 of the annexed drawings is an elevation of a cornet provided with my improvements, the front of the central one of the three valve-chambers being removed, thereby revealing the invention as applied therein, the piston being depressed to about one-half its full stroke. Fig. 2 is an enlarged vertical section through one of the valve-chambers detached, the piston being at somewhat less than half-stroke. Fig. 3 is a like section showing the piston and valve at the full limit of the downstroke. Fig. 4 is a section on line *a a*, Fig. 2. Fig. 5 is a detail of piston-rod and plate, through which the rod moves up and down, showing the means for preventing the piston and valve from rotating. Fig. 6 is a section on line *b b*, Fig. 5. Fig. 7 represents simply one of the endless rubber bands. Figs. 8 and 9 are views showing a modification of the means for securing the rubber bands to the piston-rod. Fig. 10 is a perspective view of the piston-rod with the top plate, through which it moves, detached, showing a modification of the invention.

As a practical musician, familiar with the usual construction of the class of instruments to which my present invention is applicable, I have observed that the ordinary metallic spiral compression-springs contained in the valve-chambers of the instruments for the purpose of retracting the pistons and valves soon become rusty and foul from the moisture of the breath, and are then apt to stick and lose their sensitiveness. They are also liable, comparatively soon, when much used to sudden breakage. In addition to this, the mechanism or devices requisite to be used in connection with such spiral springs involves considerable friction, which of course prevents the valves from responding as freely and quickly as is desirable to the pressure of the fingers upon the buttons of the piston-rods, and when such pressure is removed. These are defects of no little moment, especially in rapid playing, and which this my invention, which I shall now proceed to describe, is designed to remedy.

Referring to the drawings, in the several figures of which the same or corresponding parts are designated by the same letters where they appear, *a* is the valve-chamber or case; *b*, the valve; *c*, the piston-rod connected thereto; *d*, the plate through which the piston-rod reciprocates, which plate is sustained by the top or rim of the valve-case; *e*, the cap of case *a* and *f* the buttons on the tops of the rods.

In the preferred form of the invention I employ for the retracting-springs endless bands of india-rubber, X, such as shown by Fig. 7. The upper end of each of these bands (two being preferred, as shown) is looped over a stud, *s*, projecting from the edge of a detachable plate, *d*, which studs rest in sockets *t* in the top edge of the case *a*. The other or lower end of said elastic band is looped over a hook, *h*, fixed in the side of the piston-rod for that purpose. An interior lug or projection, *g*, of plate *d*, in conjunction with a vertical slot, *i*, Figs. 5 and 6, and with the studs of plate *d* resting in the sockets of the case, serve to keep the piston-rod and valve from rotating.

The mode of operation of the device is quite obvious, and is generally similar to that of those heretofore in use. The piston-rods and valve are depressed by the pressure of the fingers upon the buttons *f*, and when the pressure is released the spring-bands instantly raise the rods until stopped by the usual nuts, *n*, thereon. I find, however, by actual experience, that a much improved result is effected by my invention. The play of the piston-rods is now free and easy, and so continues regardless of moisture, until the rubber bands wear out, which they only do from the effects of the frequent expansion and contraction. When that occurs, however, it requires but a moment to replace the broken band with another of any desired size or tension.

Figs. 8 and 9 show other means of securing the elastic bands to the piston-rod. This consists in making notches *o* in the side of the latter for the reception of the bands, which are held in place by means of sliding plates *p*, that are fastened to the rod with screws *q* passing through longitudinal slots *r* in said plates. By loosening the screws the latter may be slid back, so as to uncover the slots, and then replaced after the bands have been inserted, as shown.

A modification of the invention is represented in Fig. 10, in which a rubber cord, *x*, is employed as a retractor in lieu of the endless band. This cord has knots or enlargements *k* at each end thereof, while the studs *s* of plate *d* are notched, as are also the hooks *h* of the piston-rod, as clearly seen in said figure.

The mode of applying the cord is obvious, it being inserted in the notches and stretched a little, so as to be taut, and is retained in place by the knots impinging against the sides of the notches.

I have omitted to state that the studs *s* of plate *d* and their corresponding sockets on the top of the case *a* are made, preferably, of different widths, (see Figs. 4 and 6,) so as to insure the insertion of the valve in proper position within its case.

It may also be observed that by the construction described I am enabled to use a lighter piston-rod than is required in connection with the instruments using metallic spiral springs. I also have a less number of frictional parts or points, and my india-rubber springs are lighter than the metallic ones, advantages of no mean importance in an instrument of this character.

Having thus described my invention, I claim as new and useful and wish to secure by Letters Patent—

1. The improvement in cornets-a-piston and similar musical instruments, consisting in the combination, with the valve, piston-rod, and case, of the lateral elastic band or bands, the upper end of which is secured to a fixed support and the lower end thereof to the piston-rod, all constructed and adapted to operate substantially as and for the purpose set forth.

2. The combination of the retracting-spring, the piston-rod and attached valve, the case, and the plate *d*, said rod and plate being respectively provided with means, substantially as shown, for securing said spring, all constructed and adapted to operate substantially as and for the purpose stated.

3. The combination of case *a*, valve *b*, rod *c*, provided with hooks *h*, plate *d*, provided with studs *s*, the cap *f*, and springs *x*, substantially as and for the purpose described.

4. The combination of the piston-rod having the hooks *h* or their equivalent, and the longitudinal slot *i*, the case *a*, and the plate *d*, provided with the lug *g*, fitting into slot *i*, and with the studs *s*, adapted to fit into the notches on the top of case *a*, all constructed and adapted to be used substantially as and for the purpose specified.

In testimony whereof I have hereunto affixed my signature this 8th day of November, A. D. 1883.

FRANK F. FRANCESCHINI.

Witnesses:
JOHN NOLAN,
ANDREW ZANE, Jr.