

United States Patent Office.

LOUIS SCHREIBER, OF NEW YORK, N. Y.

Letters Patent No. 64,582, dated May 7, 1867.

IMPROVEMENT IN CORNETS, &c.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, LOUIS SCHREIBER, of the city, county, and State of New York, have invented, certain new and useful improvements in Cornets and like musical instruments; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side elevation of a cornet on my improved plan.

Figure 2, a top view.

Figure 3, a longitudinal vertical section at the line A *a* of fig. 2.

Figure 4, a cross-vertical section at the line B *b* of fig. 3.

Figure 5, a cross-vertical section through the water-valve case and valve.

Figure 6, a longitudinal section thereof at the line C *c*.

Figure 7, a separate view of the stop for arresting the turning of the valves.

The figures 3, 4, 5, 6, and 7 are drawn on a larger scale than figures 1 and 2.

The same letters indicate like parts in all the figures.

There are four features which are essential in the construction of that class of musical instruments to which my said invention relates, and to which comparatively little attention has heretofore been given by instrument-makers, viz:

First, the construction of the instrument with a view to enable the performer to hold and control the instrument without fatigue, and to operate the keys with facility for the performance of rapid passages, and to control the pressure of the mouth-piece against the lips, on which the modulation of the tones so much depends.

Second, so making the apparatus connected with the valves as that they shall be, and continue to be, airtight, as the tones of the instrument are materially injured by the slightest leak, and, as closely connected therewith, the rendering of the movement of the keys as nearly noiseless as possible.

Third, the proper discharge of the sound of the instrument into the air, so that it shall properly mingle with the sound of other instruments, and so as not either to dominate over them or be dominated over by them; and

Fourth, providing ample and easy means for the discharge of water from the instrument.

My said invention is directed to the improvement of this class of instruments in each and every of the particulars above pointed out.

The mouth-piece tube *a*, and that part of the main tube of the instrument which may be termed the tone-valve tube *b*, are parallel, and so placed that when the instrument is held by the performer they will be horizontal, or nearly so. Both of these parts, at their forward end, that is, farthest from the mouth-piece, are bent to about a right angle by gentle curves, sudden and sharp turns being objectionable. The lower vertical ends of both of these parts are parallel, and formed to receive the tuning-pump *c*, the lower curved part of which is formed with a cylindrical enlargement or valve-case *d* for the reception of the water-valve. The two parts of this tuning-pump communicate from opposite sides with the inside cylindrical bore of the valve-case and near the upper part thereof, and, below, there is another aperture, *e*, in the case, leading to a receptacle, *f*, having an opening at the side for the free escape of water. The water-valve *g* is formed of a cylindrical block with a journal at each end, one of which journals is fitted to turn in a box in the closed end of the valve-case, and the other is fitted to turn in and extends through a central hole in a cap-plate, *h*, which fits with a close joint against, to close the open end of the valve-case where it is secured and held in place by a ring, *i*, tapped on to the end of the valve-case. One end of the valve is formed with an annular recess, and in this recess there is a projecting pin, *j*, and to the inner face of the cap-plate *h* is secured a segment, *k*, with a thin piece of vulcanized India rubber interposed, the ends of which project slightly beyond the ends of the segment to form stops for the pin *j* on the valve to strike against and limit the movements of the valve as it is rotated in one direction when being opened by the key *l*, and in the opposite direction when being closed by the tension of a spring, *m*, on the rocking arbor of the key. The cylindrical body of the valve is cut out on opposite sides and in directions at right angles with its axis of rotation, forming two ways, *n* and *o*. When the valve is in the position in which the spring will hold it the way *n* will establish a free and full communication for the passage of the wind from the mouth-piece to the body of the instrument, but when it is turned by the key to the position represented by

by dotted lines (see fig. 5) it closes the passage leading to the body of the instrument, and the way *n* establishes a communication between the mouth-piece tube and the receptacle *f*, while the other way *o* in like manner establishes a communication between the part of the instrument beyond the valve with the said receptacle. Thus constructed, water will be readily discharged from the instrument. The water, instead of being driven into all parts of the instrument, must accumulate in the lower part of the tuning-pump, because the force of the wind is not sufficient to drive it up the vertical part of the main pipe beyond the valve, and as by the opening of the valve wind is prevented from travelling beyond the valve, it follows that all water between the mouth-piece and the valve will be instantly driven out by the force of the wind into the receptacle *f*, whilst any water which may have been carried beyond the valve will be discharged by gravity, the current of wind by which it had been carried being cut off by the valve. This presents a more ready and efficient means for the discharge of water than any heretofore known. The main tube of the instrument extends in a circle, *p*, from the front end of what I have termed the tone-valve tube back to and by the side of the place of starting, then it extends down at an inclination for a short distance, and then by a reversed curve, *q*, it extends upward, forming the bell *r*, to throw the issuing sound in an upward direction. By the form thus given to the instrument its weight mainly rests on the shoulder of the performer, who is enabled to hold it with ease by the left hand, the weight mainly resting on his shoulder, so as to readily control the pressure of the mouth-piece against the lips to enable him to modulate the tones. The instrument, being thus sustained by the shoulder, and controlled by the left hand in an easy position, the right hand is left free for the fingering of the keys, which are by the general structure of the instrument brought to a convenient position. Heretofore, in the construction of instruments of this class, the cases for the tone-valves have been made of several pieces of sheet metal brazed or soldered together, and therefore very liable to leak. The slightest leak, it is well known, renders the instrument comparatively worthless. I avoid the said defect by making each valve-case of one single piece of metal without joints of any kind. Each valve-case *s* is bored out from one end of the required diameter and depth for the reception of the valve, and the closed end is formed with a recess for the reception of the end journal of the valve. Four tangential holes are then bored to extend to the inside, forming two short branch tubes *t t* in line the one with the other, and the other two forming like branch tubes *u u* below, parallel the one with the other and at right angles with the two *t t*. The said holes are bored of about the same diameter as the tone-valve tube. The inside of the case having been formed as described, the outside is worked to a form corresponding with the inside, leaving the metal of a uniform thickness, and the open end of the case is threaded to receive a flanged ring, *v*, which encloses the cap-plate *w* of the open end of the case, as already described in connection with the construction of the water-valve, the said cap-plates being provided in like manner with an India-rubber stop to stop the motions of the valves without noise. The four branch tubes *t t* and *u u* thus formed, become short tubes of the required diameter, the two *t t* being properly united, as represented, to form parts of the tone-valve tube *b*, and the other two, *u u*, in like manner connected with the tone crooks *x*. The tone-valves *y* are fitted to the inside of the cases in the same manner as the water-valve already described, and, like that valve, are formed with two ways *z z*, one on each side of and at right angles with the axis. In their cross-section, taken in the plane of the axis of the valve, these ways are segments of circles corresponding with the bore of the tone-valve tube *b* and the tone-crooks, and when the valves are in the position held by the keys at rest one of the ways of each of the valves will correspond with the bore of the tone-valve tube *b* so that the wind will pass through as if the whole were one continuous tube; but when any one of the keys *a'* is depressed the corresponding valve is turned a quarter revolution; the ways will be thereby brought at right angles with the tone-valve tube *b* so that the wind from the mouth-piece will pass through one of the ways *z*, down one of the branches of the tone-crook, up the other branch, and through the other way, *z*, to and through the main pipe of the instrument. The keys *a'*, for operating the valves, are mounted on a fulcrum-pin, *b'*, and are held in the required position to keep the valves open by the tension of helical springs *c'*. The outer end of each key-lever is formed with a straight stem, *d'*, at about a right angle with the axis of the valve, and each stem is connected with the arbor *e'* of the valve, which projects beyond the cap-plate of the valve-cases by means of a cord, *f'*, which is wound once around and attached to the arbor of the valve, and secured by the ends to the opposite ends of the stem. In this way the keys operate the valves with ease and without noise.

What I claim as my invention, and desire to secure by Letters Patent, is—

The form given to the instrument, as herein described, by means of which the sound is discharged from the bell in an upward direction, whilst the weight of the instrument can rest on the shoulder of the performer, whilst the part to be held by the left hand, and the keys, are in front in positions which will enable the performer to have an easy control thereof, as described.

I also claim the rotating water-valve and its case in combination with and located at the lower part of the curved pipe between the mouth-piece tube and the tone-valve tube, as and for the purpose described.

And I also claim the India-rubber segment stops attached to the inner face of the cap-plate of the valve-cases, in combination with the rotating valves, as and for the purposes described.

LOUIS SCHREIBER.

Witnesses:

WM. H. BISHOP,
ANDREW DE LACY.