

(Model.)

2 Sheets—Sheet 1.

E. DUPONT.

Cornet.

No. 239,231.

Patented March 22, 1881.

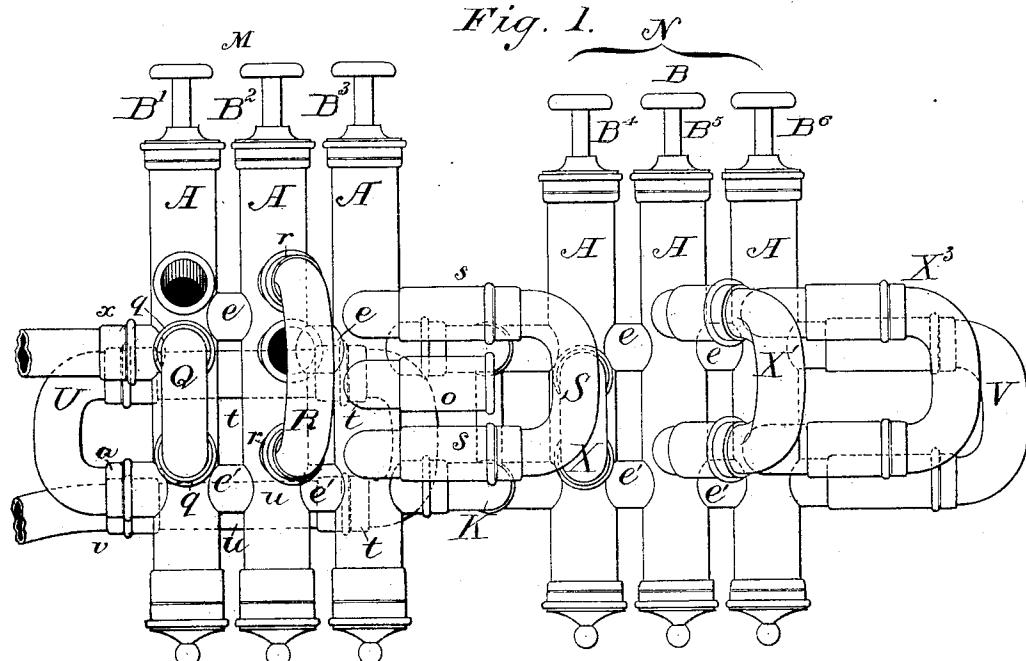
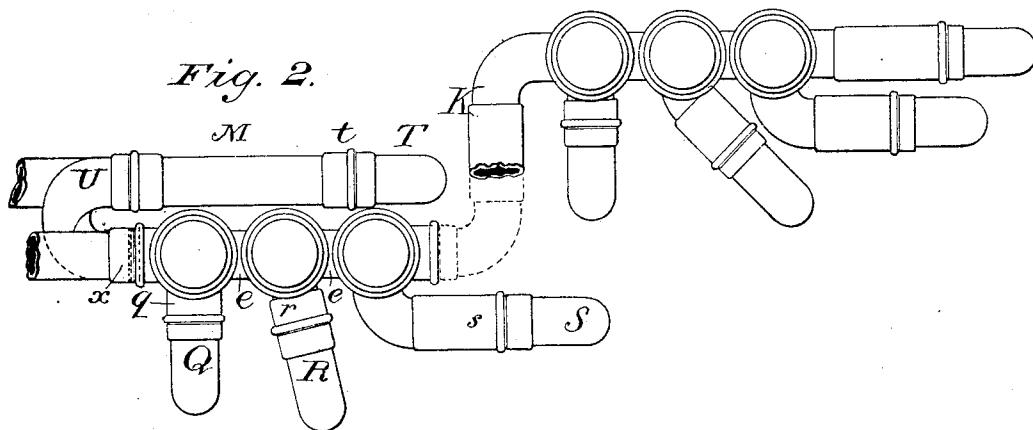


Fig. 3.



WITNESSES

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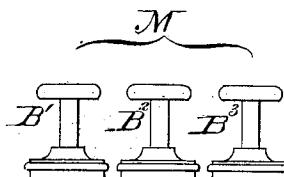


Fig. 4.

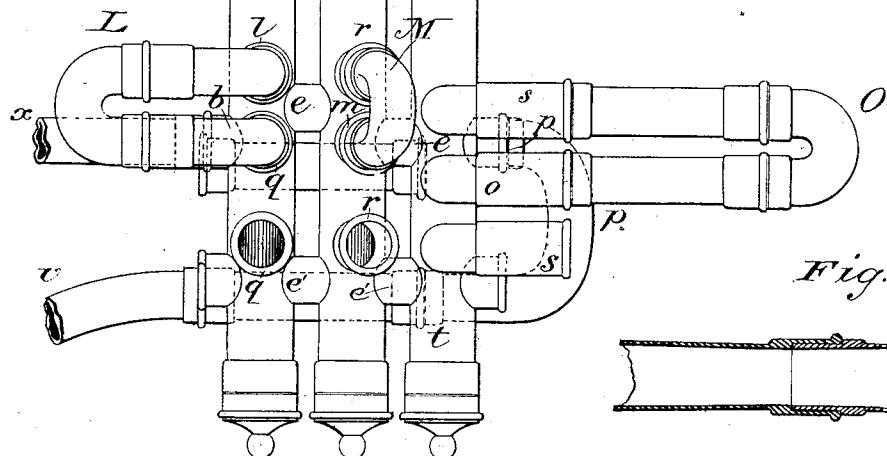


Fig. 7.

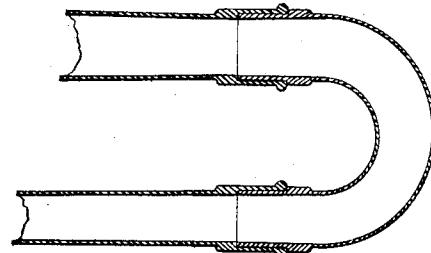


Fig. 5.

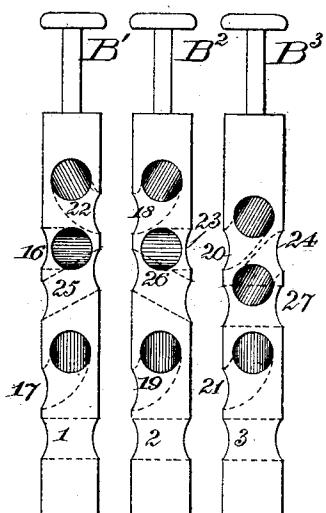
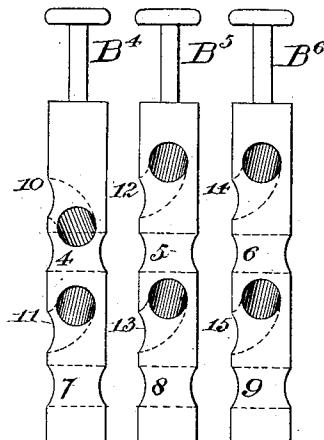


Fig. 6.



WITNESSES

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UNITED STATES PATENT OFFICE.

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CORNET.

SPECIFICATION forming part of Letters Patent No. 239,231, dated March 22, 1881.

Application filed September 14, 1880. (Model.)

To all whom it may concern:

Be it known that I, EUGENE DUPONT, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Cornets; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates to cornets and like wind-instruments; and it consists, first, in combining in one instrument a three-valve instrument having the old mode of fingering and dependent valves with a six-valve instrument having independent valves, so that the same instrument, by a reduction and change of parts, 15 can be modified from a six-valve instrument with new mode of fingering, like the Sax horn's, to a three-valve of the ordinary or old mode of fingering.

The six-valve instruments of Adolphe Sax 20 include, as one of the leading features, the six independent keys, only one of which can be used at a time. This construction produced a true and correct note, justness and purity of tone, and afforded facility in the execution of the 25 most difficult passages of music. These qualities made the instruments soon celebrated and brought them into use among the leading orchestras; but notwithstanding these good qualities the instruments have failed to come into 30 common use, principally because they involved a wholly new mode of fingering, and were therefore opposed to the habits of musicians, and could not be played at all without practice.

35 My object has been to overcome this objection, and to furnish an instrument which can be used either as a three-valve instrument with the old and well known mode of fingering or as a six valve with the new mode, without 40 impairing the usefulness of either form.

In describing this part of my invention I refer to the accompanying drawings, in which—

Figure 1 represents a side elevation of the 45 complete six-valve instrument. Figs. 2 and 3 represent the valves, connecting-pipes, and slides of the two instruments combined, Fig. 2 representing the part convertible into a three-valve instrument; and Fig. 3 the remaining part, both in plan view. Fig. 4 represents the valves and connections of the 50 convertible part of the instrument when adapted

for use as a three-valve instrument. Fig. 5 shows the pumps of the valves of Fig. 4. Fig. 6 represents the pumps of Fig. 3. Fig. 7 shows a side elevation of a slide formed with the conic 55 or taper bore and exterior cylindrical shape.

In these drawings, Fig. 1, the first part of the instrument, or that which is capable of adaptation to either mode of fingering, or of use alone as a valve-horn, is indicated at M. 60 To this part are attached the mouth-piece and the bell, the former at the open end of the pipe marked *x* and the latter at that marked *v*.

The general principle, it will be understood, 65 of the six-valve instrument requires the open notes to be the lowest, and that each pump of the valves, when down, shortens the instrument a semitone, it being exactly the opposite in this respect to the old instrument, in which the depression of the pump lengthens the instrument to the same extent. It is therefore necessary that the first part of the instrument, as indicated above, should be adapted to both modes of playing.

The second part (marked N, in Fig. 1) is 70 simply detached from the first when the instrument is changed from six to three valves, and requires that its valves should be adapted only to the new mode—namely, that in which the instrument is shortened when the valves 75 are down.

The essential construction of the part M will be understood by reference to Figs. 1, 2, 4, and 5. In Figs. 1 and 2, *x* represents the pipe which admits the wind to the first valve, A. If 80 the pump *B'*, Fig. 4, be up, the wind-passage will be directly through the opening *b* into pump *B'*, and thence through passage 25 in the piston, Fig. 5, and the connection-pipe *e* through the passage 26 of the second valve 85 to the passage 27 of the third valve, and so on through the instrument, passing directly through the pumps and valves. The passage is in like manner through the openings 4, 5, and 6 in the valves of part N, Fig. 6, and the 90 return through the bend V, openings 9, 8, and 7, and pipes *e'* to the first part of the instrument, and thence, by way of the direct passages 3 2 1 and the connecting-pipes *e'*, to the bell. The openings in the pumps for the wind-pas- 100 sages, when said pumps are up, are therefore all directly through from front to rear, and this is

true whether the instrument be used with the first part separate or with the two together; but by the modification of the instrument herein-after described, the first or interchangeable part of the instrument may be varied to operate either in the old or new system.

Referring to Figs. 2 and 5 for illustration of the instrument when adapted to the new system and to be used with six valves, the arrangement of the slides and the connection of the parts are as follows: On the first valve is placed a slide, Q, which fits upon short pipes $q q$ on the side of the valve. On the second valve a slide, R, is placed, fitting upon short pipes $r r$ on the side of said second valve, and upon the third valve is placed a slide, S, upon longer pipes $s s$. The second part, N, of the six-valve instrument is then connected to the first by the pipes K, and the tuning-slides T and U are placed on the pipes $t u$, respectively.

The parts of the instrument being thus arranged, the operation will be as follows: All the pumps of the first part of the instrument being up, the wind-passage, as above described, will be directly through the valves, and connecting-pipes $e e'$ and the bends V U T to the bell, the entire length of the instrument. When pump B' , Figs. 1 and 5, is down, the wind-passage from the pipe x is through the laterally-bent orifice 16 in B' into the slide Q, thence back through the laterally-bent passage 17 to the bend or slide U. This cuts off all the rest of the instrument behind the first valve. When the pump B^2 is down the passage is through the opening 18, bend R, and opening 19, and into the return pipes and openings e' , U, and T. When B^3 is down the passage is through opening 20, bend S, and opening 21, in each case cutting off all in rear.

The pumps B^4 , B^5 , and B^6 , Fig. 6, belonging to the second part, N, operate to induce air in bends $X X' X^3$, respectively, in the same manner as the first series in respect to the new mode of fingering and the six-valve instrument. When the pumps are up the wind-passage is directly through them by the passages 4 5 6 9 8 7 and the bend V. When the pump B^4 is down the two valves in rear are cut off, and the passage is through orifice 10, bend X, and orifice 11, back through the lower connecting-pipe between the two parts. When pump B^5 is down the wind-passage is through 12, X' , and 13, and back by pipe K e' , &c., as before, and only one valve is cut off. When B^6 is down the rear bend, V, is cut off, and the wind-passage is through 14 X^3 15 and lower direct pipes, as before. The operation throughout the six valves is therefore the same, and the depression of each pump of the series cuts off the part of the instrument behind it. Obviously all the valves under this arrangement work independently, and only one is to be depressed at a time.

To adjust the instrument for three valves and the old system of fingering, the second part, N, containing the last three valves, is to

be removed and all the slide-valves and tuning-slides taken out. The slide L of the first valve in set M is then put in place on the short pipes $l q$, Fig. 4, the slide M of the second valve is placed on the short pipes $r m$, and the slide O of the third valve on the short pipes $s o$. The tuning-slide P is placed in the pipe p in the rear of the third valve, and in the pipe $7 t$, and is used as the tuning-slide. These changes, as is the case with those before described, will leave pipes open, but without impairing the utility of the instrument, as the openings in the pumps are so arranged as to prevent any escape of air therefrom. When arranged as last described the upper set of orifices in the pumps is brought into play. When the pumps are all up, the air-passage, as before indicated, is through all the direct channels of the valves and the pumps to the pipe P and the bell. Depression of the first pump, however, will bring the bent orifice 16 thereof to register with the lower part of the slide L, and the wind-passage is thence into slide L, pipe l' , and through orifice 22 to connecting-pipe e , and so on through the instrument. The effect simply is to throw in the slide L. In the same manner the depression of pump B^2 will bring orifice 18 to register with the connecting-pipe between the first and second valves, and the passage will be by orifice 18, bend M, and orifice 23, now registering with the next connecting-pipe, and the bend M is brought in. Depression of B^3 causes orifice 20 to register with preceding connecting-pipe e , and the passage is through O and back through orifice 24, to the bend P. When the pumps are up, the passage is manifestly through orifices 25 26 27, and the pumps may operate independently or together, in accordance with the old system.

Hitherto the bent portions of this class of wind-instruments have been made by filling the tube with some soft metal, easily fusible, as lead, and then bending them. This leaves the outside of the bend thinner than the inside and the interior surface rough, both of which are serious objections. To remedy these I use the following process, on which I intend to make application for Letters Patent: I make a mold of any part of the instrument of the exact form of the part required. Into this I pour stearine, gutta-percha, or any other suitable material, easily fusible. When cold this is taken out and coated with plumbago or like substance. I then place it in a bath and subject it to the ordinary action of a galvanic battery to coat it with any required metal thick enough for use. I then warm the bending and melt out the material on which it was formed. This leaves the part of uniform thickness and perfectly smooth.

Having thus fully described my invention, I claim—

A combined wind-instrument consisting of a three-valve part with described valves, wind-passages, and interchangeable tubings, where-

by it is adapted either to the new or old mode of fingering, in combination with a second part having valves adapted to new mode of fingering alone, said parts, when united, forming a six-valve instrument adapted to said new mode, substantially as described.

5 In testimony whereof I have signed my

name to this specification in the presence of two subscribing witnesses.

EUGENE DUPONT.

Witnesses:

HENRY D. FIELD,
A. L. R. VAN DEN BERGHEN.