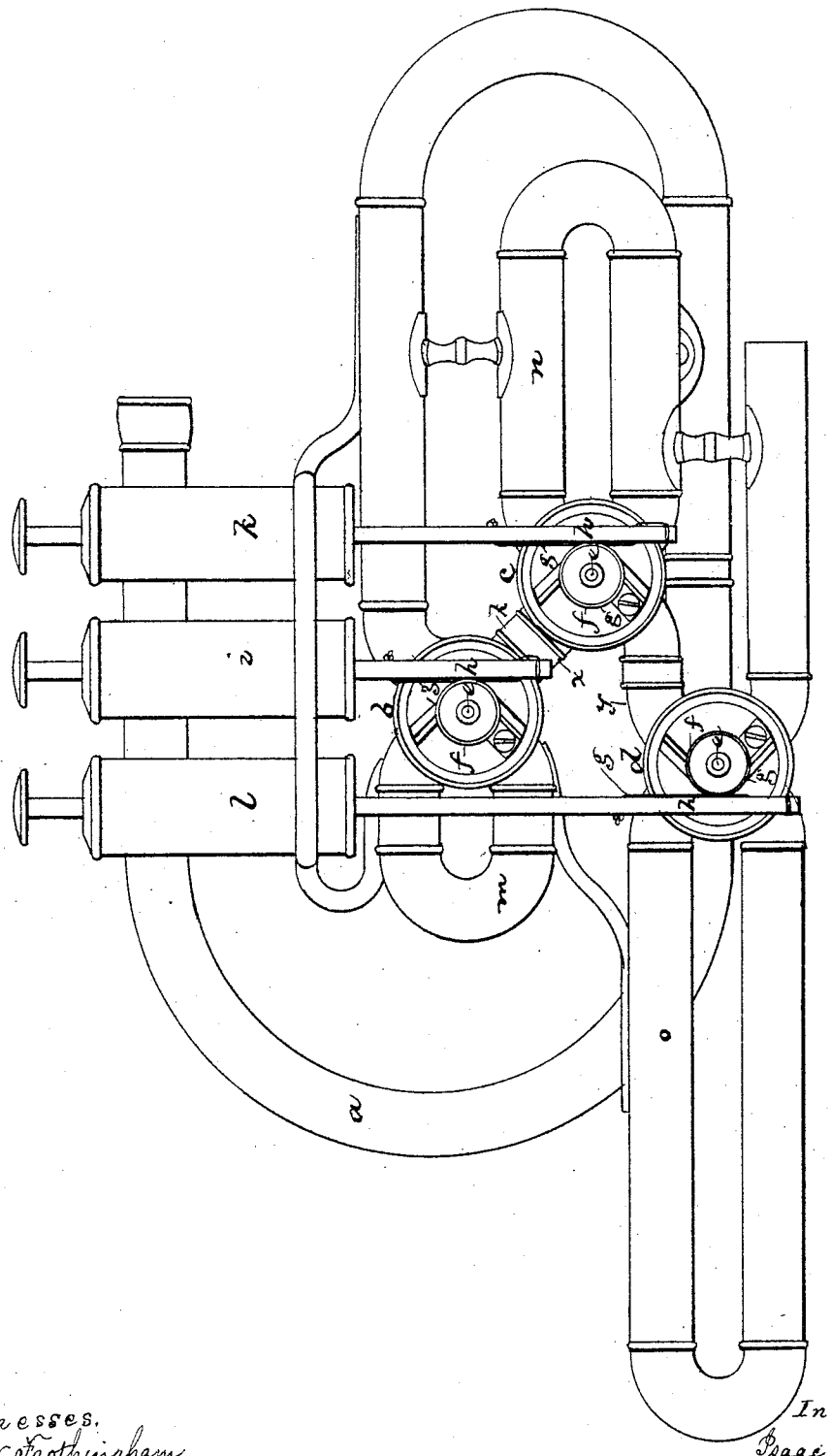
I. FISKE.

Musical Wind Instruments.

No. 138,389. Patented April 29, 1873.



Witnesses.
M. W. Frothingham.
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Inventor
Isaac Fiske,
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UNITED STATES PATENT OFFICE.

ISAAC FISKE, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN MUSICAL WIND-INSTRUMENTS.

Specification forming part of Letters Patent No. **138,389**, dated April 29, 1873; application filed March 15, 1873.

To all whom it may concern:

Be it known that I, ISAAC FISKE, of Worcester, in the county of Worcester and State of Massachusetts, have invented an Improvement in Cornets and similar Musical Instruments; and I do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

United States Letters Patent No. 74,331, dated February 11, 1868, have been granted to me for certain improvements in the valvular mechanism of cornets and similar musical instruments; and my present invention relates particularly to instruments embracing such mechanism, and to the arrangement of the valve-cylinders in connection with the method of operating the valves. The particular purpose of my present arrangement of the valves, in connection with the crooks or bends of the pipe, is to reduce and simplify the crooks in the wind-passages from valve to valve, to enable the instrument to be more easily played upon, and to obtain purer and more certain tones.

In my invention valves similar to what are shown in my patent No. 74,331, may be used, and I connect each valve-stem to the piston-rod, by which it is actuated, by a flexible connection, which is fastened to and winds around the stem or sleeve, and has its two ends fastened to the piston-rod, so that the movement of the piston in one direction by the finger of the musician, and in the other direction by a spring in the piston-cylinder, insures the respective or opposite movements of the valve, this connection between the valve-stem and piston-rod being substantially that shown in my patent No. 59,204 of 1866, and in my patent No. 74,331.

Instead of arranging the valve-cylinders in line, as shown in each of said patents, I place the first valve-cylinder as near to the the pistons as is practicable, or as near as the tube leading to the cylinder will permit; the second valve-cylinder as near to the first as the connecting-tube and the piston will permit; and the third valve-cylinder with a similar reference to the first two cylinders and the piston which operates it; the short crooks of the respective valve-cylinders being in the respective planes of such cylinders, and by projecting in opposite directions therefrom, being brought into compact position, and into such relation as to the connections from cylinder to cylinder that there are in fact no crooks between adjacent cylinders except for the valve-tones, and a correspondingly-less number for the valve-tones.

My invention consists in such arrangement of the valve-cylinders and valves, when the valves are connected to and operated by the piston-rods by means of flexible connections fixed to the rods and winding around the valve stems or sleeves.

The drawing represents in side view an instrument or part of an instrument embodying my improved construction, the mouth-piece and bell not being shown.

a denotes the main pipe; *b*, *c*, and *d*, the valve-cylinders, each of which cylinders is preferably provided with a valve similar to what is shown in my said patent No. 74,331. The valve-stem *e* of each cylinder has fixed to it a sleeve, *f*, rotative movement of which turns the valve, and around each sleeve passes a cord or other flexible material, *g*, the opposite ends of which, extending in opposite directions, pass through and are fastened to the rod *h* of the piston. *i*, *k*, and *l* denote the piston-cylinders for the respective valves, each cylinder having the piston-rod *h* passing through it, the rod being thrown down by the finger of the musician, to change the valve connected to it from open-tone position to valve-tone position, and being thrown back by the stress of a suitable spring to carry the valve back to open-tone position when the finger is withdrawn or releases its pressure. The first valve-cylinder *b* is placed under its piston-cylinder *i*, the next valve-cylinder *c* lower than the cylinder *b*, and at one side thereof, for its connection with its piston-rod *h*, while the third valve-cylinder *d* is placed on the opposite side of the cylinder *b*, and lower than the cylinder *c*, the direct connection being made between the cylinders *b* and *c* by the short tube *x*, and between the cylinders *c* and *d* by the short tube *y*. For the valve-tones the connection is made between

the valve-cylinders *b c* through the short crook *m*, between the valve-cylinders *c d* through the crook *n*, and between the valve-cylinder *d* and the bell through the crook *o*, all these crooks being in one plane and extending in opposite directions horizontally from the respective cylinders.

The lesser number of sharp turns required for the passage of the wind through the instrument will be obvious by examination of the patents referred to.

In practice it is found that a large number of short crooks, or crooks of small diameter, through which the wind has to be forced, impairs the quality, volume, and power of the tone; and if the valve-cylinders are brought so closely together, the connecting-crooks are more abrupt than if there be greater space between the valve-cylinders with intervening straight lengths of pipe.

In my old construction (which has a better arrangement of the wind-passages than is to be found in any previous construction) there are six sudden reversions of the wind for the open tones, while in my present construction there are but two, and in the old arrangement the wind passes through six crooks, each in the opposite direction from the one preceding it, while in the present construction there are but three. In the valve-tones the differences in favor of the new construction are even greater than for the open tones, the new arrangement making in effect open tones for both positions of the valves, there being no perceptible difference between them, and the arrangement making a nearly perfect scale.

I claim—

The relative arrangement of the valve-cylinders, having valves and valve-pistons connected, as described, with the crooks and connections for producing the open and valve tones, substantially as specified.

ISAAC FISKE.

Witnesses:

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