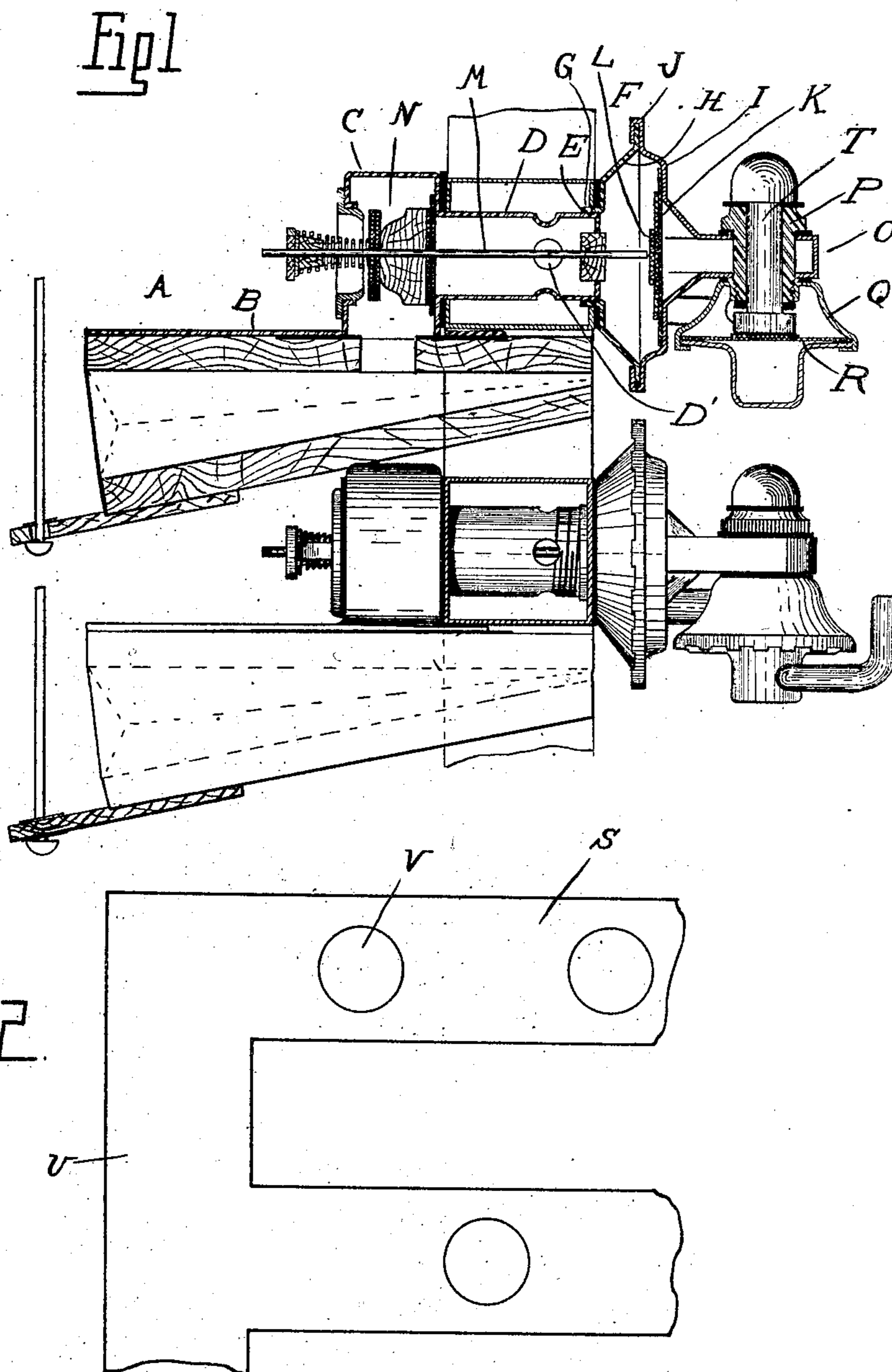


No. 894,546.

PATENTED JULY 28, 1908.

E. A. STEEL.
PNEUMATIC ACTION FOR MUSICAL INSTRUMENTS.
APPLICATION FILED SEPT. 14, 1907.



WITNESSES
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UNITED STATES PATENT OFFICE.

EDWARD A. STEEL, OF DETROIT, MICHIGAN, ASSIGNOR TO THE FARRAND COMPANY, OF
DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

PNEUMATIC-ACTION FOR MUSICAL INSTRUMENTS.

No. 894,546.

Specification of Letters Patent.

Patented July 28, 1908.

Application filed September 14, 1907. Serial No. 392,917.

To all whom it may concern:

Be it known that I, EDWARD A. STEEL, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Pneumatic-Actions for Instruments, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to pneumatic actions for self-playing musical instruments, and more particularly to that type known as metallic actions.

The invention consists in certain features of construction as hereinafter set forth.

In the drawings—Figure 1 is a vertical section partly in cross section of a portion of the action; and Fig. 2 is a front elevation of the metallic wind chest.

In the constructions of metallic actions for self-playing pianos, it is of the utmost importance to arrange the parts as compactly as possible, so as to avoid increasing the size of the outer case. With metallic actions heretofore constructed, it has been usual to form a metallic wind chest, which is arranged in a vertical plane, near the front of the case, with the power pneumatics arranged in rear thereof, and the primary and secondary pneumatics at the front. This requires a depth of case equal to the length of the power pneumatics plus the thickness of the wind chest and the space necessary for their primary and secondary pouches. With the present construction, I have condensed the arrangement of parts and diminished the total width of the action by substituting for the single metallic chest a tubular chest and by arranging the power pneumatics to extend between the tubes.

As shown A are the power pneumatics. Each of these is provided with a metallic plate B, which has struck up therefrom a portion C constituting the valve cell controlling the said pneumatics. Projecting laterally from this cell C is a tubular shank D which at its outer end is threaded at E for engagement with the cell F of the secondary pneumatic. This cell has an internally threaded nipple G for engaging the shank D, and is formed of two cupped disks H and I, having peripheral flanges J for securing them together.

K is a flexible diaphragm extending across the member I, and having a disk L

thereon, for bearing against the valve rod M for the valve N in the cell C.

O is an extension of the member I, which is transversely apertured for receiving the sleeve P, which is apertured for communication with the chamber in the extension O. This sleeve P is threaded for engagement with the cell Q for the primary pneumatic, which is similar in construction to the secondary pneumatic cell F, and is provided with a diaphragm R for operating the stem T of the primary valve. The arrangement is such that the primary, secondary and power pneumatics are all mechanically connected to each other.

The wind chest to which the pneumatics are connected comprises a series of parallel horizontally extending tubes S, which are spaced from each other, and at their ends are connected with headers U. These tubes S have alined apertures V in the front and rear walls thereof through which the tubular shanks D may be passed, said shanks having apertures D' therein through which air communication is established with the tube S. The valve cell C is arranged on one side of the tube S, and the cell F for the secondary pneumatic is upon the opposite side of said tube, while the power pneumatic A extends beneath the tube. Thus the total width of the action is less than where the power pneumatics are arranged upon one side of the chest, and furthermore the width of the chest may be increased without increasing the total width of the action.

What I claim as my invention is:

1. A pneumatic action comprising a metallic wind chest consisting of parallel spaced tubes and a connecting end header, power pneumatics extending between said tubes and projecting beyond one side thereof, valve cells connected with said power pneumatics, and projecting upward therefrom beside said tubes, tubular shanks on said valve cells extending through said tubes and communicating with the interior thereof and valve operating pneumatics connected with said shanks upon the opposite side of said tubes.

2. A pneumatic action comprising a metallic wind chest consisting of a plurality of parallel spaced tubes, of a connecting end header, said tubes being provided with alined apertures in the front and rear walls thereof, power pneumatics extending between said tubes and projecting beyond one side thereof.

having valve cells projecting upward there-
from intermediate the ends thereof, tubular
shanks projecting laterally from said valve
cells and extending through said aligned aper-
5 tures in the tubes of the chest, and pneu-
matics connected with said shanks upon the
opposite sides of said tubes from said cells.

In testimony whereof I affix my signature
in presence of two witnesses.

EDWARD A. STEEL.

Witnesses:

NELLIE KINSELLA,
JAMES P. BARRY.