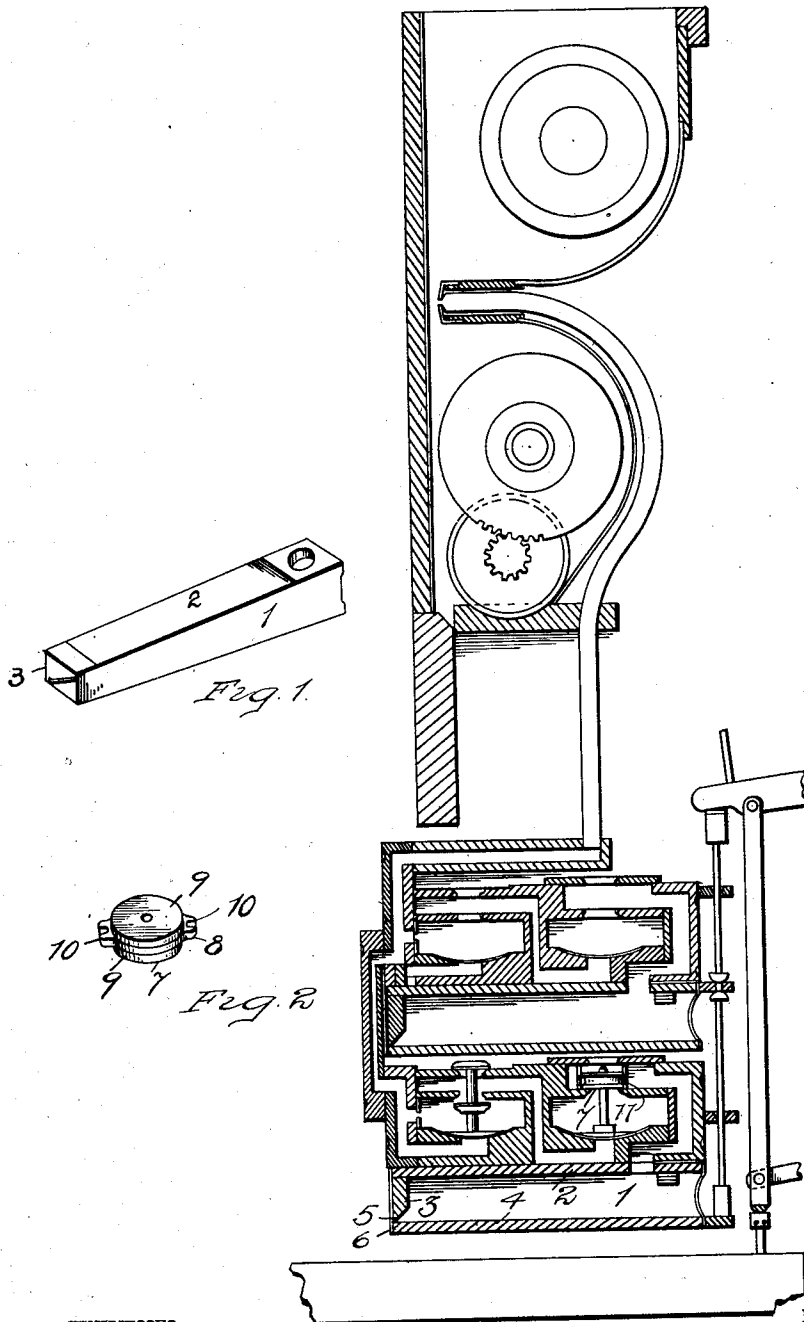


J. COURVILLE.  
PNEUMATIC PIANO PLAYER.  
APPLICATION FILED JAN. 9, 1908.

1,003,237.

Patented Sept. 12, 1911.



WITNESSES  
Clarence E. Day.  
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Fig. 5

Joseph Courville

By

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# UNITED STATES PATENT OFFICE.

JOSEPH COURVILLE, OF DETROIT, MICHIGAN.

PNEUMATIC PIANO-PLAYER.

1,003,237.

Specification of Letters Patent.

Patented Sept. 12, 1911.

Application filed January 9, 1908. Serial No. 409,900.

*To all whom it may concern:*

Be it known that I, JOSEPH COURVILLE, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Pneumatic Piano-Players, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to pneumatic piano players; it has for its object an improved form of bellows to be used in direct connection with the hammer action of the piano, and an improved valve used in connection with said bellows.

In the drawings:—Figure 1, is a perspective of the improved bellows. Fig. 2, is a perspective of the valve. Fig. 3, shows the location of the bellows, and shows the bellows itself in longitudinal section.

The bellows differs from the ordinary bellows in being prismatic in its distended condition rather than wedge shaped, thus exposing the two flexible sides 1, of much larger surface area than the sides of a wedge shaped bellows, and thereby producing a quicker and stronger action. The bellows is made with two substantially parallel boards 2 and 4, of stiff inflexible material, an end board 3 of inflexible material, and a collapsing member 1 of flexible material, which extends around the sides between the boards 2 and 4. The end board 3 which holds the hinged end of the movable side 4, is provided with a knife edge 5 along the hinge line, and the hinge 6, made of flexible cloth like material, is external to the inflexible wall parts of the bellows, but permits the action in collapsing with a facility equal to that when the two bounding wall parts 4 and 2 are brought together at an angle. In the same structure is used a valve 7, adapted to act as a closure for two oppositely dis-

posed ports in the opposite walls of an air-chamber. This valve is constructed with a durable disk or core 8, preferably of vulcanized fiber or similar material with a cushioning material 9, secured to each face. Guide rods 11 are attached to the opposite walls of the chamber at the edges of said ports. The disk 8 is provided with ears 10 having slots adapted to engage around the guide rods 11. It is obvious that the guide rods being anchored at both ends are quite free from liability of getting out of alignment, and that the slot engaging means allows freedom of motion, and avoids binding which would stop the valve.

What I claim is:—

In a pneumatically operated musical instrument, the combination of a valve casing having two oppositely disposed ports, guide rods anchored at both ends and extending from the casing adjacent one port to the casing adjacent the other port, a single puppet valve, comprising a flat disk core of vulcanized fiber or other light material, the said core having at its rim ears provided with slots progressively increasing in breadth from the inward end to the outward end, the latter end being open, the said ears, thereby, adapted to engage about the guide rods with small friction and without cramping, cushioning material on each face of the core, a stem depended from said valve and an air-controlled diaphragm adapted to actuate the stem and reciprocate the valve on the guide rods between the two ports, whereby a single disk puppet valve of light construction, guided with precision and without cramping is adapted to alternately open one port and close another port, and conversely, substantially as described.

In testimony whereof, I, sign this specification in the presence of two witnesses.

JOSEPH COURVILLE.

Witnesses:

MAY E. KOTT,

ALICIA TOWNSEND.