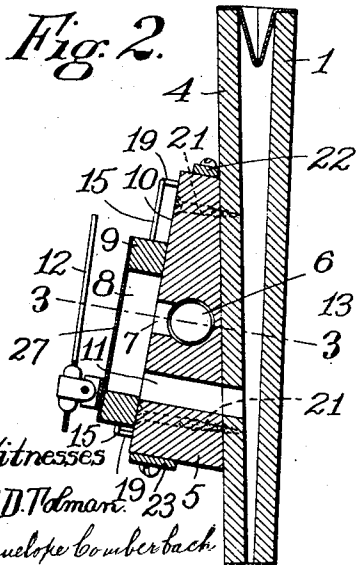
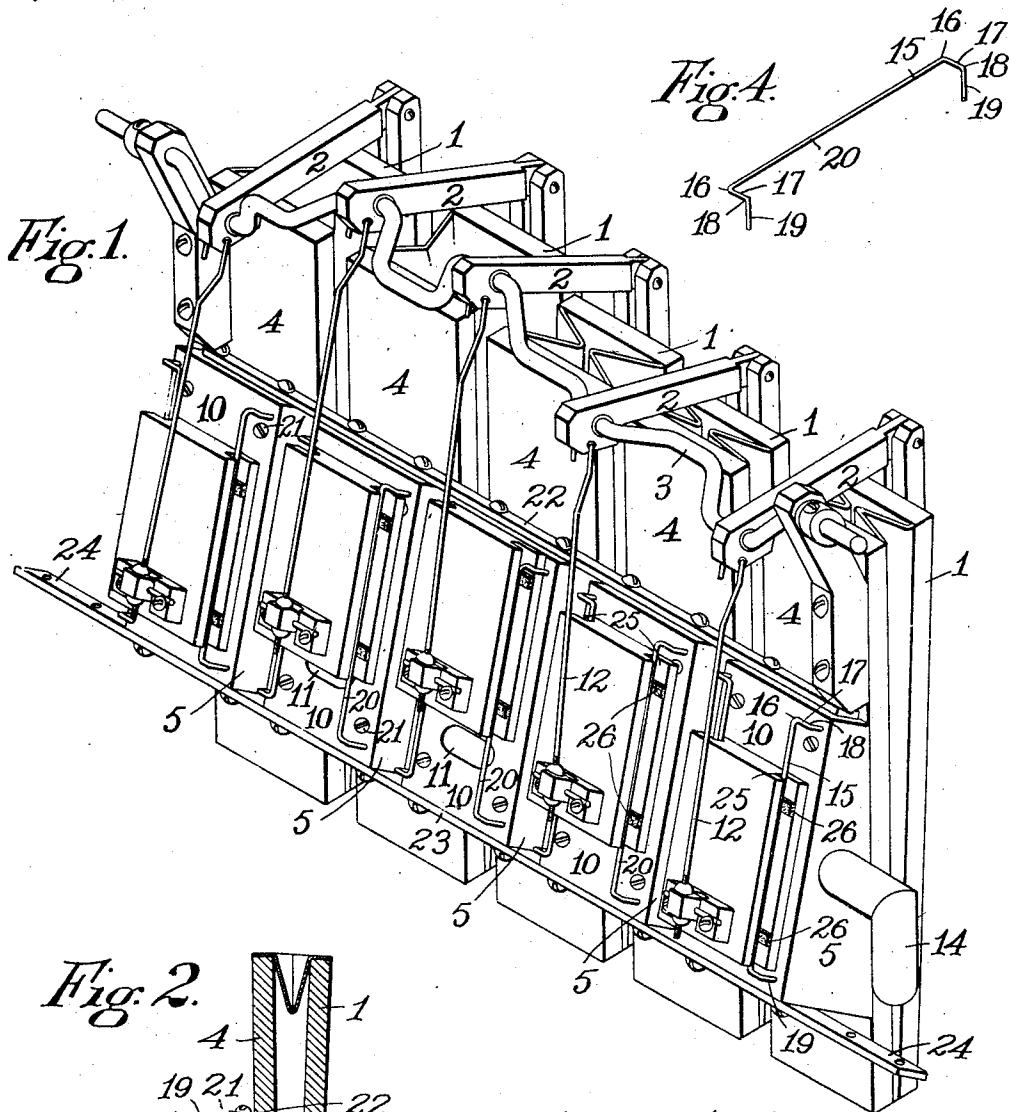


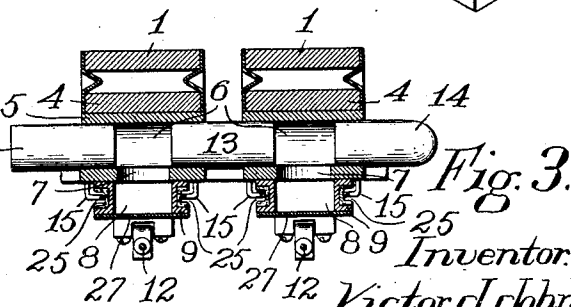
V. J. JOHNSON.
PNEUMATIC MOTOR.
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1,037,775.

Patented Sept. 3, 1912.



Witnesses
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PNEUMATIC MOTOR.

1,037,775.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, VICTOR J. JOHNSON, a citizen of the United States, residing at Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented a new and useful Improvement in Pneumatic Motors, of which the following is a specification, accompanied by drawings forming a part of the same.

My invention relates to that class of pneumatic motors which are employed to move a perforated music sheet over the tracker bar of a piano player, and it comprises a plurality of motor bellows, each provided with a controlling valve mechanism operatively connected with a single crank shaft.

My invention has for its object to render a motor of this class more efficient in operation, to simplify its construction, and especially to render each individual unit separable. This object I accomplish by the construction and arrangement of parts as hereinafter set forth and pointed out in the annexed claims.

Referring to the accompanying drawings, Figure 1 is a perspective view of a motor embodying my present invention and consisting of an assemblage, in the present instance, of five separable units. Fig. 2 is a longitudinal section through one of the units. Fig. 3 is a transverse section through two of the connected units on the plane of the broken line 3—3, Fig. 2. Fig. 4 is a perspective view of one of the valve guides.

Similar reference characters refer to similar parts in the different figures.

My improved pneumatic motor comprises a series of motor bellows 1, in the present instance 5 in number, each operatively connected by a link 2, with a common crank shaft 3. Upon the stationary leaf 4 of each motor bellows I mount a separate channel board 5 having a transverse air channel 6, provided at the center of the channel board with an opening 7 communicating with a recess 8 in the under side of a sliding valve 9, sliding upon and in contact with the valve face 10 of the channel board 5. The channel board 5 is also provided with an air passage 11 leading to the motor bellows 1. The sliding valves 9 are connected by the valve rods 12 with the links 2, whereby a sliding movement is imparted to the valves as the crank shaft 3 rotates. As the valves 9 move downward the air passages 7 and 11 of each channel board communicate with

the recess 8, thereby establishing a communication between the interior of the motor bellows 1 and the transverse air channel 6, as shown in Fig. 2. In this position of the valve the air tension or pressure in the motor bellows will correspond with that in the air channels 6. As the valves 9 are moved upwardly the air passage 11 is uncovered, causing the air tension in the motor bellows to correspond with the atmosphere.

The transverse channels 6 of each channel board are connected by short removable pipes 13 having an air tight connection with each of the channel boards, thereby forming a continuous air channel connecting the several channel boards.

The channel board at one end of the motor is provided with a pipe 14 leading to a bellows or other means by which air may be exhausted from the air channels 6.

Mounted upon the channel boards are metal guides 15, one of which is shown detached in perspective view in Fig. 4. These guides are each formed from a single piece of steel wire bent at right angles at each end at 16 to form an offset portion 17, and again bent at right angles at 18 to form a leg 19 which is inserted in the channel board. The straight sections 20 are inclosed in longitudinal grooves in the sides of the valves 9 and the offset sections 17 allow the valves to be removed from the ways by disconnecting them from the valve rods 12.

Each of the channel boards is attached to the stationary leaf of its motor bellows by screws 21. The several units are connected in operative relation to each other by means of metal bars 22 and 23 extending across and attached to the ends of the channel boards 5. For convenience of supporting the motor in position the lower metal bar 23 may be extended forming overhanging ends 24 which may be attached to the rigid framework of the instrument.

The guide ways, or straight sections 20 engage the grooves 25 in the opposite longitudinal sides of the valve which are preferably packed with small pieces of felt 26. The grooves 25 allow sufficient width of surface on the outer side of the valve to allow a flexible cover 27 to be glued thereto.

I claim,

1. In a pneumatic motor, a bellows, a block having an air channel communicating with said bellows and provided with a valve seat, a slidable valve on said valve seat hav-

ing longitudinal grooves in its sides, and a pair of metal guide ways for said valve consisting of a pair of wires engaging said grooves and bent at their ends to form offset legs held in said valve seat.

2. In a pneumatic motor, an assemblage of separable units, each comprising a motor bellows and a detachable channel block, and detachable pipes communicating with the channels of adjacent channel blocks.

3. In a pneumatic motor, an assemblage of separable units, each comprising a motor bellows and a channel block, detachable air pipes between the channels of adjacent blocks, and connecting bars attached to said channel blocks.

4. In a pneumatic motor, a valve seat, a valve slidable thereon, and metal ways for

said valve, each consisting of a single piece of wire with a straight central section forming longitudinal guideways and having near their ends two right angled bends forming legs offset from the plane of the guideway and adapted to be held in said valve seat.

5. In a pneumatic motor, a valve seat and a guideway for a slidable valve thereon, consisting of a single piece of wire having a straight central section, with two right angled bends parallel with the plane of the valve seat and two right angled bends at right angles to the plane of the valve seat and having its ends held in the valve seat.

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Witnesses:

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