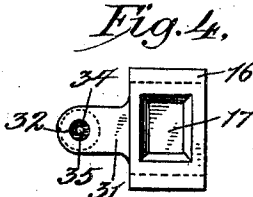
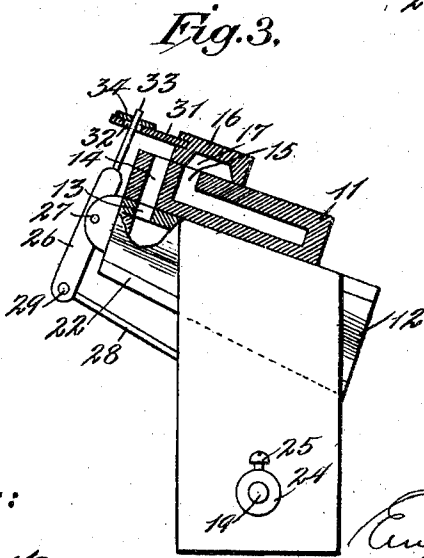
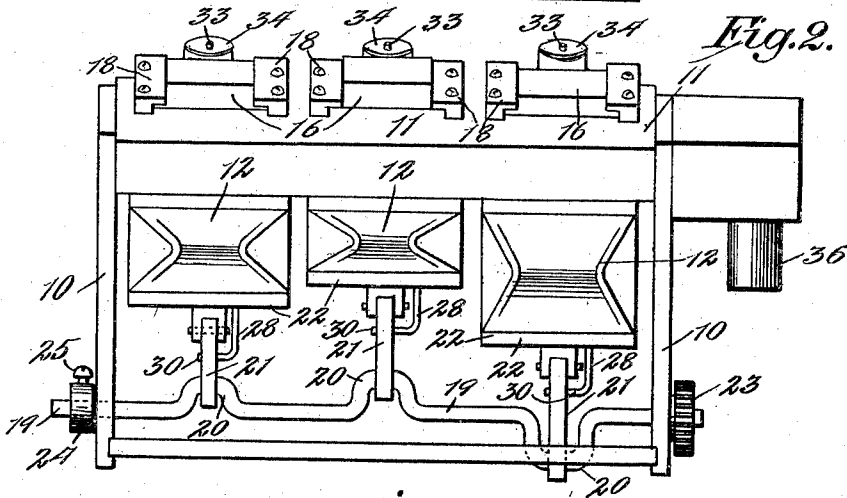
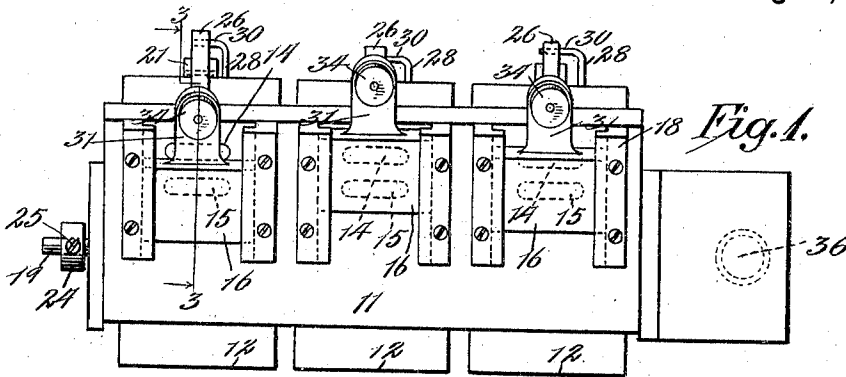


E. T. TURNEY.
PNEUMATIC MOTOR.
APPLICATION FILED NOV. 27, 1907.

967,271.

Patented Aug. 16, 1910.



Witnesses:
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Atty

UNITED STATES PATENT OFFICE.

EUGENE T. TURNEY, OF ROCK ISLAND, ILLINOIS, ASSIGNOR TO ARTISTA PIANO PLAYER COMPANY, OF MILAN, ILLINOIS, A CORPORATION OF ILLINOIS.

PNEUMATIC MOTOR.

967,271.

Specification of Letters Patent. Patented Aug. 16, 1910.

Application filed November 27, 1907. Serial No. 404,026.

To all whom it may concern:

Be it known that I, EUGENE T. TURNEY, a citizen of the United States, residing at Rock Island, county of Rock Island, and State of Illinois, have invented certain new and useful Improvements in Pneumatic Motors, of which the following is a specification.

This invention relates to improvements in pneumatic motors, particularly adapted for use in playing attachments for musical instruments for advancing or re-winding the music sheet or record, and the primary object of the invention is to provide an improved device of this character which will be simple, cheap and durable in construction and effective and efficient in operation.

To the attainment of these ends and the accomplishment of other new and useful objects as will appear, the invention consists in the features of novelty in the construction, combination and arrangement of the several parts hereinafter more fully described and claimed and shown in the accompanying drawing, illustrating an exemplification of the invention, and in which—

Figure 1 is a top plan view of an improved motor of this character, constructed in accordance with the principles of this invention. Fig. 2 is a front elevation of Fig. 1. Fig. 3 is a detail sectional view on line 3—3 of Fig. 1 and partly in elevation. Fig. 4 is a bottom plan view of one of the valves.

Referring more particularly to the drawing and in the present exemplification of the invention the numeral 10 designates a suitable frame which preferably supports an air suction chest or chamber 11 adjacent the upper end thereof, and secured to and supported by the bottom of the chest are a plurality of bellows or pneumatic punches 12, each of which is provided with an aperture 13 adjacent the smaller end thereof which communicates with an aperture 14 extending through one of the walls of the chest 11 in the rear of the air compartment therein, and the chest 11 is provided with an aperture 15 which extends through the upper face thereof and communicates with the air compartment in the chest, the apertures 14 and 15 being located in close proximity to each other. A suitable slide valve 16, provided with a recess 17 in the lower face thereof, is adapted to cover these apertures and is movable in suitable guides or ways 18 which are

secured to the upper face of the chest 11, and said guides serve as means for preventing the displacement of the valve.

Journalled in the frame work 10 and below the pneumatics 12 is a shaft 19 which is provided with a plurality of cranked portions 20 arranged at an angle with relation to each other, and suitable links 21 are pivotally and respectively connected by one extremity to one of the cranked portions 20, and pivotally attached by their free extremity to the movable member 22 of the pneumatic and adjacent the large end thereof. These links 21 are of substantially the same length and the cranks 20 are so arranged that when the bellows or pneumatics are inflated or exhausted they will transmit a steady and continuous rotation to the shaft 19, which latter is provided with a suitable gear 23 adapted to mesh with any suitable mechanism, and said shaft may be held from displacement longitudinally by means of the gear 23 on one end thereof, and a suitable collar or sleeve 24 on the other end thereof, which collar or sleeve may be held against displacement by means of a suitable screw or bolt 25.

An arm 26 is pivotally supported intermediate its ends, as at 27, adjacent the smaller end of the bellows or pneumatics, and a link 28 is pivotally connected by one extremity, as at 29, to one end of the arm 26 and by its other extremity as at 30, to the respective link 21 at a point remote from the point of connection of the latter with the crank. The valve 16 is preferably provided with a projecting portion 31 extending beyond the side thereof and which is provided with an aperture 32 adjacent its free extremity, through which the reduced free extremity 33 of the arm 26 projects.

A suitable flexible member 34, such as leather or the like, is secured to the projection 31 so as to extend across the aperture 32 therein and is itself provided with an aperture 35 of a diameter slightly smaller than the diameter of the reduced extremity 33 of the arm 26, so that when the extremity 33 is projected through the aperture 32 in the projection 31, it is forced through the aperture 35 in the flexible member 34. The aperture 32 in the projection 31, being of a somewhat larger diameter than the diameter of the extremity 33 of the arm 26, will permit the extremity to move loosely in the

aperture 32 to operate the slide valve 16 and the flexible member 34, tightly gripping the extremity 33, will form a tight connection to prevent the joint from becoming loose and will yield to permit a proper movement of the extremity 33 of the arm to operate the valve 16 in its guides or ways 18. When the valve 16 is in the position shown in Fig. 3 of the drawing the aperture 14 through the wall of the chest 11 which communicates with the pneumatic or bellows 12 will be open to the atmosphere to permit the air to enter the bellows or pneumatic to expand the same and while the air is being drawn from the chest 11. As the shaft 19 is rotated by the action of the remaining pneumatics or bellows, the link 28 will rock the arm 26 about its point of pivotal support 27 to move the valve 16 into such a position that the recess 17 therein will cover the apertures 14 and 15 to form a connection between the bellows or pneumatic 12 and the air chest 11, as shown in Fig. 1, so that the suction created by exhausting the air from the chest 11 will collapse the bellows or pneumatic 12. After one of the bellows or pneumatics has been collapsed, the continued rotation of the shaft 19 through the medium of one of the other bellows or pneumatics will move the slide valve 16 back to the position shown in Fig. 3 of the drawing to permit the bellows or pneumatic to have communication with the atmosphere through the aperture 14 and the rotation of the shaft 19 will draw the movable member 22 of the respective bellows or pneumatic downwardly through the medium of the link 21 and crank 20 to expand the pneumatic. This operation takes place successively in the various pneumatics, thereby imparting a continuous rotation to the shaft 19.

The chest 11 may be exhausted in any desired or suitable manner, preferably through a tube or pipe 36 connected to any suitable exhaust mechanism not necessary to illustrate. The suction created in the chest 11 also serves to hold the valve 16 seated and with the parts thus assembled and connected, a very compact arrangement of the parts, as well as a communication at all times between one of the pneumatics and the outside air, is assured, and the positive operation of these parts within the smallest possible area of space will be obtained.

In order that the invention might be fully understood by those skilled in the art, the details of the foregoing embodiment have been thus specifically described, but

What I claim as new and desire to secure by Letters Patent is—

1. In a pneumatic motor, the combination of

a pneumatic pouch embodying a fixed member and a member disposed oppositely thereto and pivotally connected therewith, a wind chest mounted on the fixed member and in communication with said pouch, a slide valve in said wind chest provided with a perforated extension, a lever fulcrumed intermediately of its ends adjacent the pivotal connection between said members, said lever being provided with one extremity projecting through said apertured extension with play, a crank shaft, a link connecting said crank shaft with said movable member, and a second link connecting the other end of said lever with the first said link.

2. In a pneumatic motor, the combination with a pneumatic pouch and a wind chest therefor, of a slide valve in said wind chest, said valve having a rigid projection provided with an aperture, an oscillatory lever provided with an extremity engaging said aperture with play, and means for flexibly connecting said extremity of the lever to said apertured projection.

3. In a pneumatic motor, the combination with a pneumatic pouch, and a wind chest therefor, of a slide valve in said wind chest, said valve having a rigid projection provided with an aperture, an oscillatory lever provided with a reduced extremity projecting through said aperture, and a flexible member fitting tightly about said reduced extremity and secured to said valve projection contiguously to the edges of said aperture.

4. In a pneumatic motor, the combination of a plurality of pneumatic pouches, each comprising a fixed and movable member pivotally connected at one end, a crank shaft disposed contiguously to said movable members, links connecting said movable members to said crank shaft, a slide valve for each pouch, said valve being provided with a perforated projection, an oscillatory lever mounted on the end of each pouch and having a reduced portion extending through the perforated projection, a flexible closure for the perforation in the projection on said valve, said closure being provided with a perforation adapting it to fit tightly about said reduced portion of the oscillatory lever, and means for operably connecting said oscillatory lever to said crank shaft.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 23rd day of November A. D. 1907.

EUGENE T. TURNEY.

Witnesses:

C. A. LÜTT,

A. D. WALKER.