N. D. HOSLEY.

SPEED CONTROL MECHANISM FOR AIR MOTORS.

APPLICATION FILED FEB. 10, 1909.

929,593. Patented July 27, 1909.

Fig. 1.

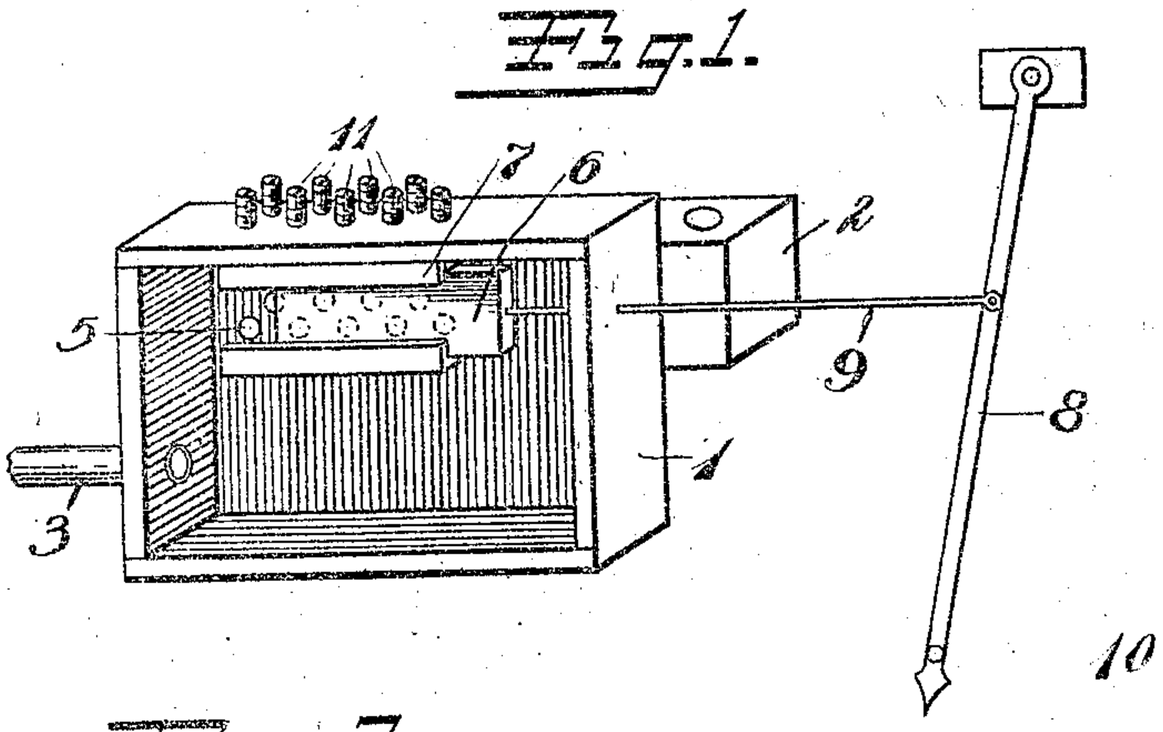


Fig. 2.

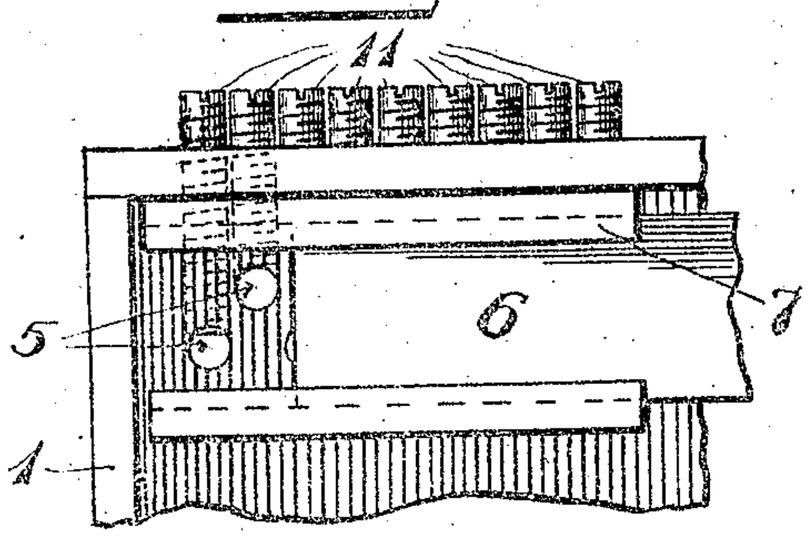


Fig. 3.

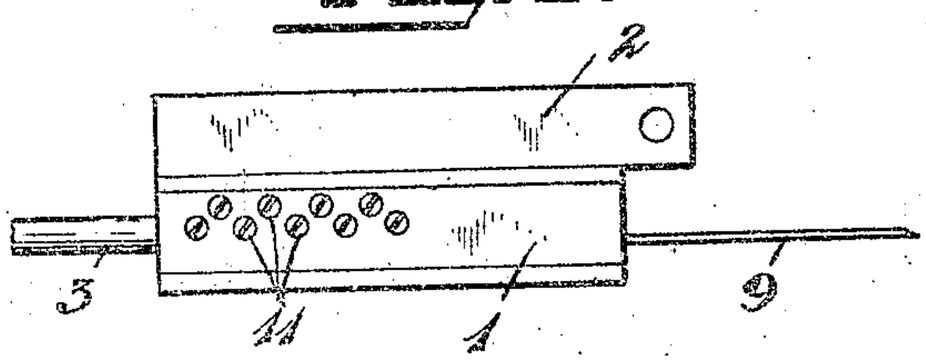
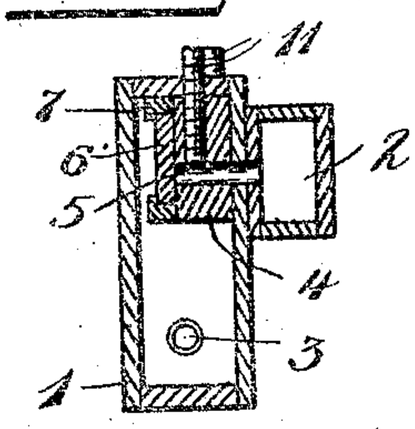


Fig. 4.



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UNITED STATES PATENT OFFICE.

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SPEED-CONTROL MECHANISM FOR AIR-MOTORS.

No. 929,593. Specification of Letters Patent. Patented July 27, 1909.

Application filed February 10, 1909. Serial No. 477,110.

To all whom it may concern:

Be it known that I, NELSON D. HOSLEY, a citizen of the United States, residing at Meriden, county of New Haven, State of Connecticut, have invented certain new and useful Improvements in Speed-Control Mechanism for Air-Motors, of which the following is a full, clear, and exact description.

My invention relates to speed control mechanism for air motors, and is particularly though not exclusively concerned with mechanism of this character which is adapted for use with the air motors of auto-pneumatic music playing instruments.

In constructions heretofore employed for this purpose, such control has been effected by means of a so-called speed control box, connected with the air motor, and having an exhaust exit controlled by a so-called metronome valve. This valve usually consists of a slot of graduated width in one wall of the speed box over which the slide plate adjustably controlled by the metronome lever is mounted. While such valve mechanism is adequate and efficient for ordinary purposes of control, it is found that this construction does not admit of the very fine gradations in speed essential to the effective and correct rendering of the tempo of music by auto-pneumatic music playing instruments, for, by reason of variations in the size of the slot caused by contraction or expansion of the walls of the speed control box, and to imperfect adjustment of the slide plate, the speed permitted by a given adjustment of the metronome lever does not always correspond exactly with the tempo indicated upon the scale over which said metronome lever travels.

My invention aims to overcome these difficulties by providing in connection with a metronome valve, adjusting means whereby the exhaust opening due to a given adjustment of the valve may be regulated to the finest possible degree, in order that the speed of the motor may at all times correspond precisely with the gradations indicated on the metronome scale.

A further object of the invention is to so construct said adjusting means that the area of the valve opening may be regulated independently for each tempo desired.

With these and other objects in view, the invention consists in the construction and arrangement of parts, a preferred embodiment of which is illustrated in the accompanying drawings, in which:

Figure 1 is a perspective view of a speed control box of an auto-pneumatic music playing instrument showing the connection of the metronome lever therewith. Fig. 2 is an enlarged view of certain parts illustrated in Fig. 1. Fig. 3 is a plan view of the parts shown in Fig. 1, and Fig. 4 is a vertical sectional view taken transversely of the speed box and through the valve and regulating means therefore.

The embodiment of my invention herein selected for illustration comprises the speed box 1, which may be of usual form, carrying at its rear the exhaust chamber 2 and having also a connection 3 leading to the air motor. Upon the rear wall of the box is mounted a block or plate 4 having a plurality of valve openings 5 which communicate with the exhaust chamber 2. Over the openings 5 is slidably mounted the valve plate 6 carried by suitable guides 7, which plate is connected with the usual metronome lever 8 by a rod 9.

10 indicates a metronome scale over which the metronome lever is arranged to be manually adjusted by the operator.

Each of the valve openings 5 may, if desired, be of slightly greater area than that necessary to permit of the required speed of the motor, and said valve openings are arranged to be successively opened by movement of the valve plate 6 to the right, as shown in Fig. 1, so that as a greater number of valve openings are uncovered, the speed of the motor will be increased. In order to regulate the area of said valve openings, and to compensate for any variations which may take place therein, each of said openings is controlled by an adjustable screw plug 11, which may be adjusted across the corresponding opening and diminish or increase the area thereof, as desired. In the construction herein illustrated, the valve opening 5 to the left, Fig. 1, is of a size or area approximately to produce the tempo "adagio" in the playing instrument. The next opening above and to the right, when uncovered in addition to the first opening permits in conjunction with the first opening, of a speed to produce the tempo "andantino", and each successive opening to the right in conjunction with those previously uncovered permits of the speed corresponding to the tempos "andante", "moderato", etc. In

case the tempo produced by the uncovering of a given opening or openings does not correspond precisely with that indicated by the position of the tempo lever 8 over the tempo scale 10, the corresponding valve opening 5 may be reduced or increased in area to bring the tempo to the desired point by means of adjusting one or the other of the regulating screws 11. It will be seen therefore that the adjustment of the valve openings may be made independently for any given speed or tempo and that the regulation of the speed may be carried to the finest possible degree.

While I have herein described a particular embodiment of my invention, it is to be understood that the same may be varied in details and relative arrangement of parts without departing from the spirit or scope thereof.

What I claim is:

1. A speed control mechanism for air motors comprising a valve opening, a sliding member adjustable over said opening, and means to vary the area of said opening at different points throughout its extent.

2. A speed control mechanism for air motors comprising a valve, having a plurality of openings, a sliding member adjustably mounted over said openings, and means for independently varying the area of each of said openings.

3. A speed control mechanism for autopneumatic music playing instruments comprising a speed box, a motor connection therewith, an exhaust chamber, a valve interposed between said speed box and exhaust chamber, a sliding member controlling said valve opening, a metronome lever for controlling said sliding member, and means to vary the area of the valve opening at different points throughout its extent.

4. A speed control mechanism for autopneumatic music playing instruments comprising a speed control box, a motor connection communicating therewith, an exhaust chamber, a valve interposed between said box and exhaust chamber and comprising a plurality of valve openings, a sliding member adjustably mounted over said openings, a metronome lever controlling said sliding member, and means for independently varying the area of said valve openings.

5. A speed control mechanism for autopneumatic music playing instruments comprising a speed control box, a motor connection communicating therewith, an exhaust chamber, a valve interposed between said box and said chamber and comprising a plurality of valve openings, a sliding member adjustably mounted over said valve openings, and means for independently varying the area of each of said valve openings.

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