No. 869,414. PATENTED OCT. 29, 1907.

G. P. BRAND.

PNEUMATIC MOTOR FOR USE IN AUTOMATIC MUSICAL PLAYERS.

APPLICATION FILED MAR. 4, 1907.

2 SHEETS—SHEET 1.

Fig. 1.

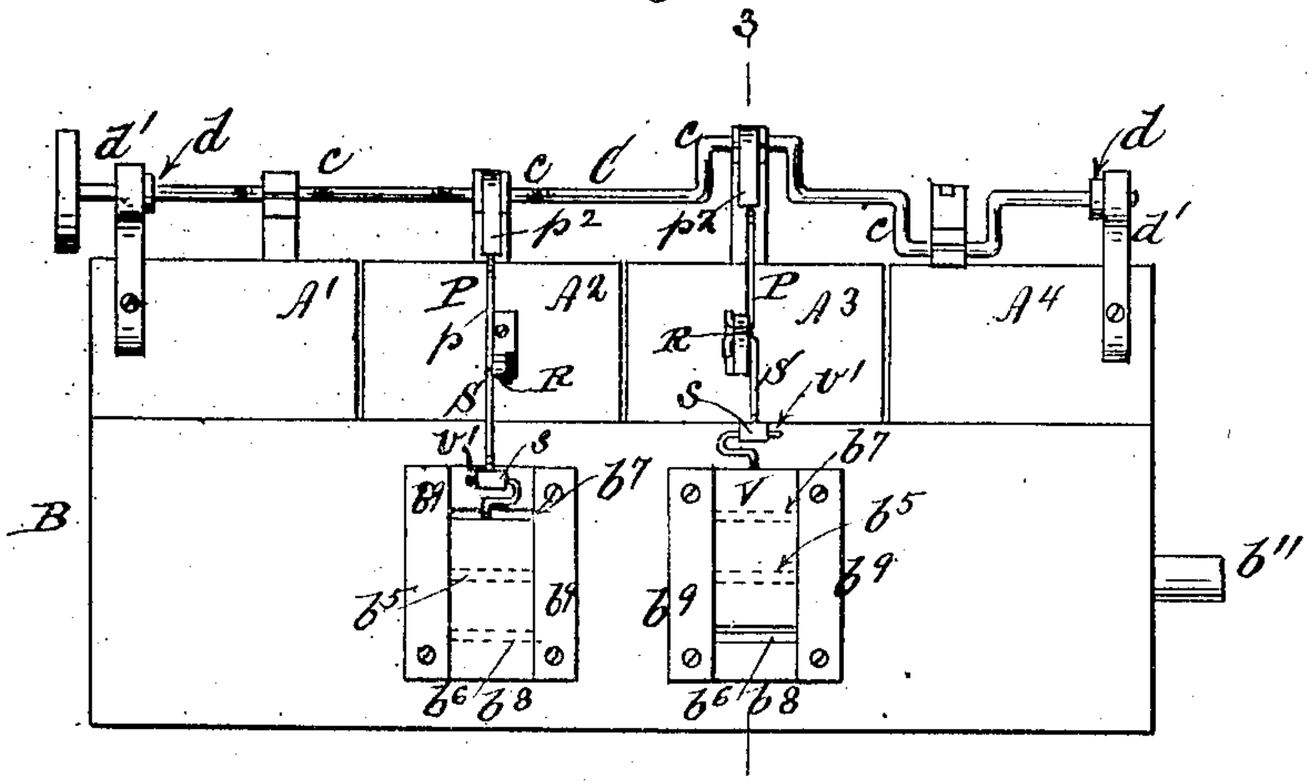

Fig. 2.

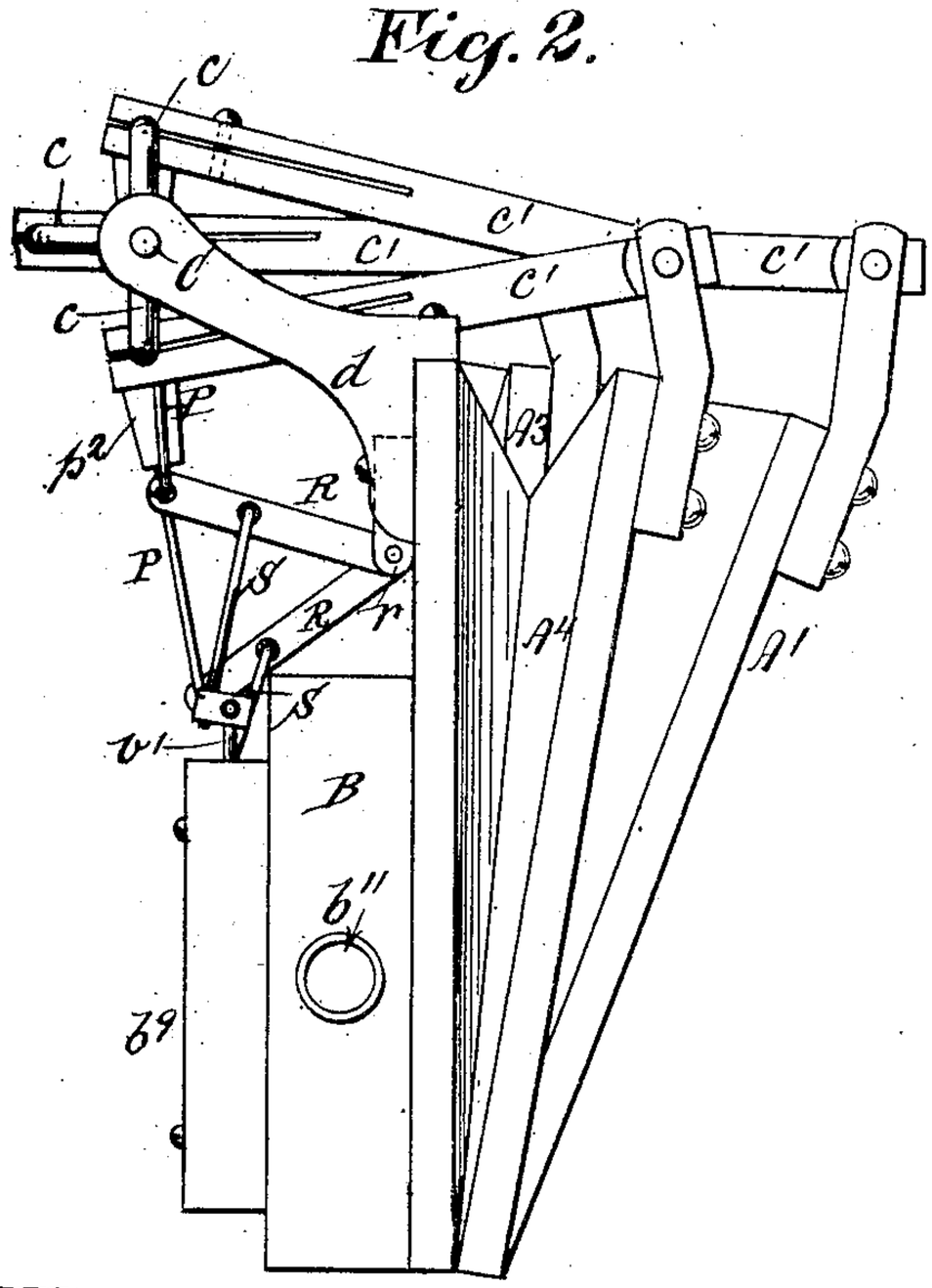

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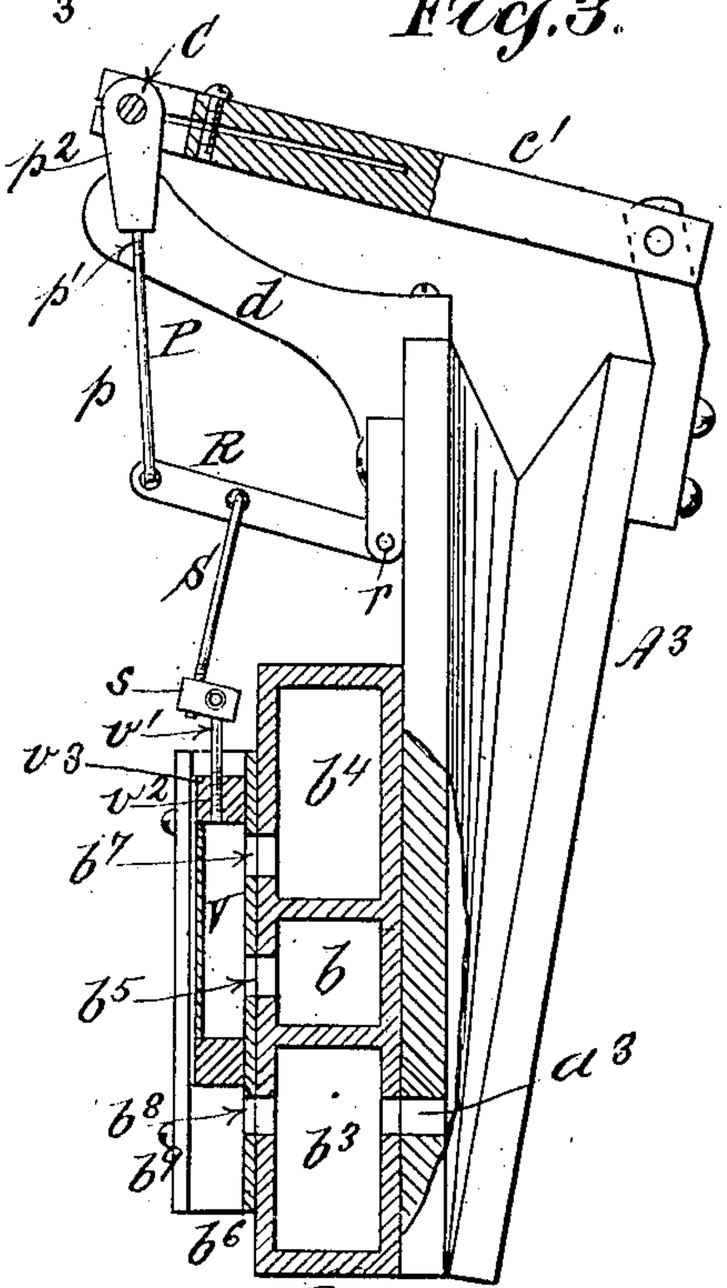
Fig. 3.



Witnesses:
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Jas. A. Wilson

Inventor:
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Geo. Wm. Wall

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2 SHEETS—SHEET 2.

Fig. 4.

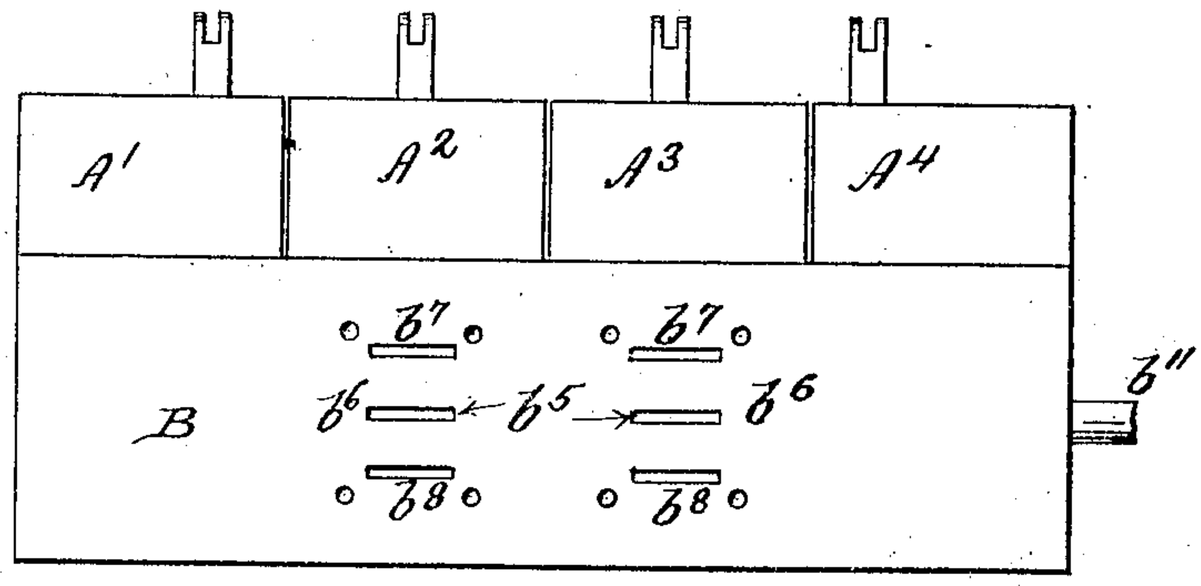
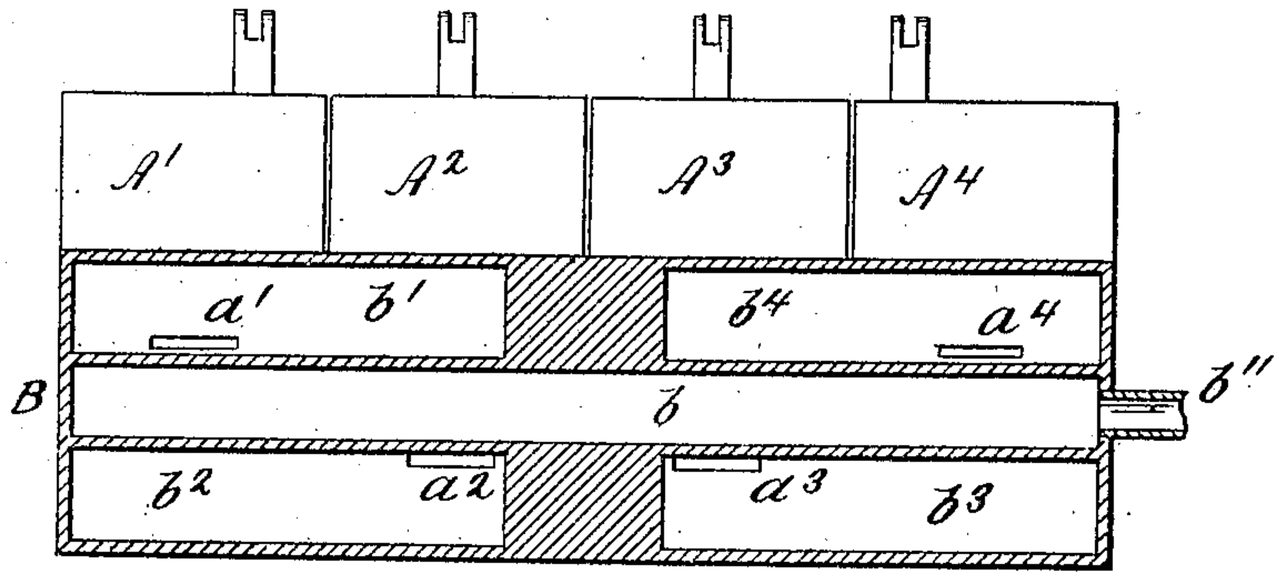


Fig. 5.



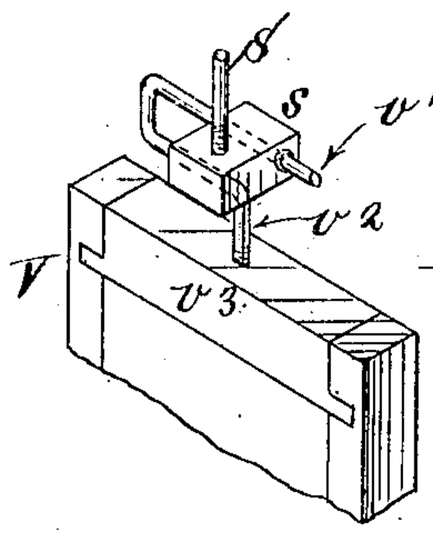


Fig. 6.

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UNITED STATES PATENT OFFICE.

GEORGE P. BRAND, OF NEW YORK, N. Y.

PNEUMATIC MOTOR FOR USE IN AUTOMATIC MUSICAL PLAYERS.

No. 869,414. Specification of Letters Patent. Patented Oct. 29, 1907.

Application filed March 4, 1907. Serial No. 360,414.

To all whom it may concern:

Be it known that I, GEORGE P. BRAND, a citizen of the United States, residing in the city of New York, borough of Bronx, county and State of New York, have invented certain new and useful Improvements in Pneumatic Motors for use in Automatic Musical Players, of which the following is a specification.

My improvements relate to pneumatic motors actuated primarily by the withdrawal of air therefrom by reason of their connection indirectly by valve controlled ports with tension or exhaust mechanism, the device being applicable to the feeding of music sheets to the tracker bar of automatic players, or for analogous uses in which a light, compact, easy running motor is desirable.

My invention is designed to effect a reduction in the stroke of the valves, to render their thrust more direct and in substantial alinement therewith, and to provide for the accurate adjustment of the valves with relation to the ports,—a distinguishing feature of the construction being the introduction of an intermediate reducing and centralizing lever and wrist connection between each crank pitman and its valve substantially as hereinafter set forth, whereby all lateral strain on the valves is practically eliminated and the frictional resistance reduced to the minimum.

In the accompanying drawings, Figure 1, is a front elevation of my improved motor; Fig. 2, an end elevation of the same upon a larger scale; Fig. 3, is a section upon the same scale as Fig. 2, taken upon plane of line 3—3—Fig. 1; Fig. 4, is an elevation, and Fig. 5, a longitudinal section of the port block; Fig. 6, is a detail in isometrical perspective of the wrist connection.

B is the port block formed with the central longitudinal exhaust passage b, which is connected by a suitable conduit b'', either directly or indirectly with exhaust mechanism in any suitable or well known manner. To the back of the port block B are connected a plurality of pneumatics, preferably four in number, A', A^2, A^3, A^4, in the drawings.

The pneumatics A', A^2, A^3, A^4, communicate respectively through ports a', a^2, a^3, a^4, with the chambers b', b^2, b^3, b^4, in the port block B. The central ports b^5, in the valve seats b^6, open into the exhaust passage b'', the upper ports b^7, into the chambers b', b^4, and the lower ports b^8, into the chambers b^2, b^3. Thus the reciprocation of the valves V puts each pneumatic alternately in communication with the exhaust passage b''.

Mounted in suitable bearings d, d, on fixed parts, as on brackets d', d', secured to the stationary members of the pneumatics A', and A^4, is a crank shaft C formed with cranks c, with which engage driving rods c', pivotally connected with the movable members of the pneumatics A', A^2, A^3, A^4, in the usual manner. The radius of the crank motion is made proportionate to the size and capacity of the pneumatics so as to allow their movable members full scope or play during inflation and deflation, thus affording the maximum of power for a motor of a given size. In order to attain this maximum power with a minimum extent of valve motion, and at the same time eliminate lateral strain and frictional resistance in so far as is possible, I do not connect the slide valves V directly with their respective crank pitmen as heretofore, but in each case interpose between the pitman P and the wrist v', of each particular valve V a reducing lever R, and a connecting rod S and wrist blocks s, as will be understood more particularly by reference to Fig. 3. The reducing lever R is of the second order being pivoted at one end to a stationary part as at r, and pivotally connected at the other end to the pitman P, while intermediate between these points the connection rod S is pivotally attached to said reducing lever R the point of this latter connection being approximately in the plane of motion of the valve V. By this means the reciprocating thrust of the valve may be materially reduced as compared with the thrust of the actuating crank c, on the power shaft C, while lateral strain upon the valve is practically eliminated.

General and accurate adjustment with relation to the stroke of the parts is attained by making the pitman P, adjustable in length, the wrist block s, adjustable upon the connecting rod S, and the wrist v', adjustable on the valve V. Thus the upper end p', of the pitman rod p, is threaded and adjustable within the wrist p^2, of said pitman P; the lower end of the connecting rod S is threaded and adjustable within the wrist block s; and the stem v^2, of the wrist v', is threaded and adjustable within the side frame v^3, of the valve V. By this diversity of adjustment great delicacy may be attained in setting and regulating the valve upon its seat and with relation to the ports, at the same time reducing frictional resistance by avoiding lateral strain upon the valve, so that it runs lightly and freely upon its seat and between the latter and the opposed side caps or flanges b^9.

What I claim as my invention and desire to secure by Letters Patent is,

In a pneumatic motor of the character designated, motion transmitting mechanism interposed between a crank on the power shaft and a reciprocating valve, controlling ports to pneumatics, consisting of a pitman pivotally connected to the crank and to a reducing lever, said reducing lever fulcrumed on a stationary part, and a connection rod pivotally connected with the valve and also pivotally connected with the reducing lever between the fulcrum of the latter and its point of connection with the crank pitman, for the purpose described.

GEORGE P. BRAND.

Witnesses:
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GEO. WM. MIATT.