No. 886,347. PATENTED MAY 5, 1908.

J. H. CHASE.

GOVERNING MECHANISM FOR PNEUMATIC PIANO OR ORGAN PLAYERS.

APPLICATION FILED JAN. 18, 1905.

2 SHEETS—SHEET 1.

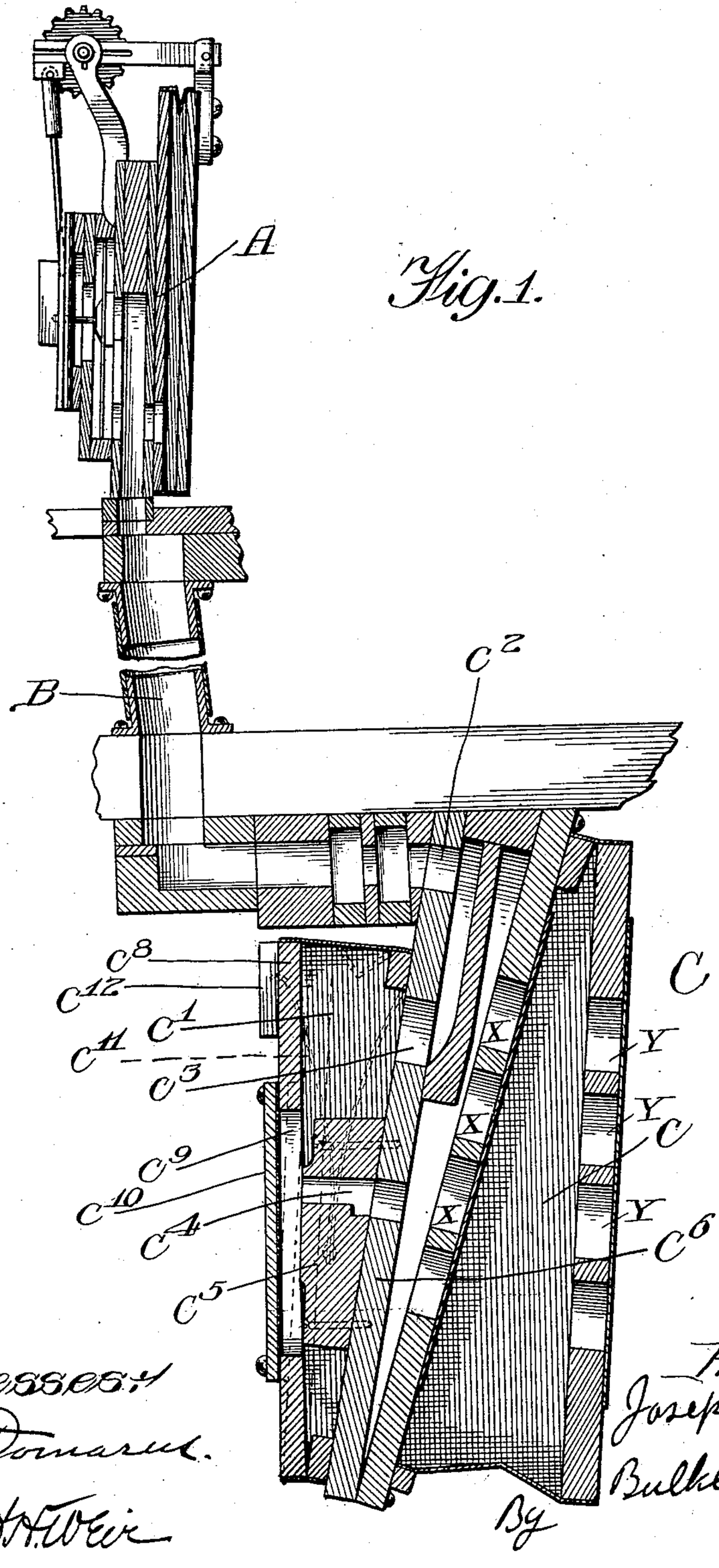

Fig. 1.

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2 SHEETS—SHEET 2.

Fig. 2

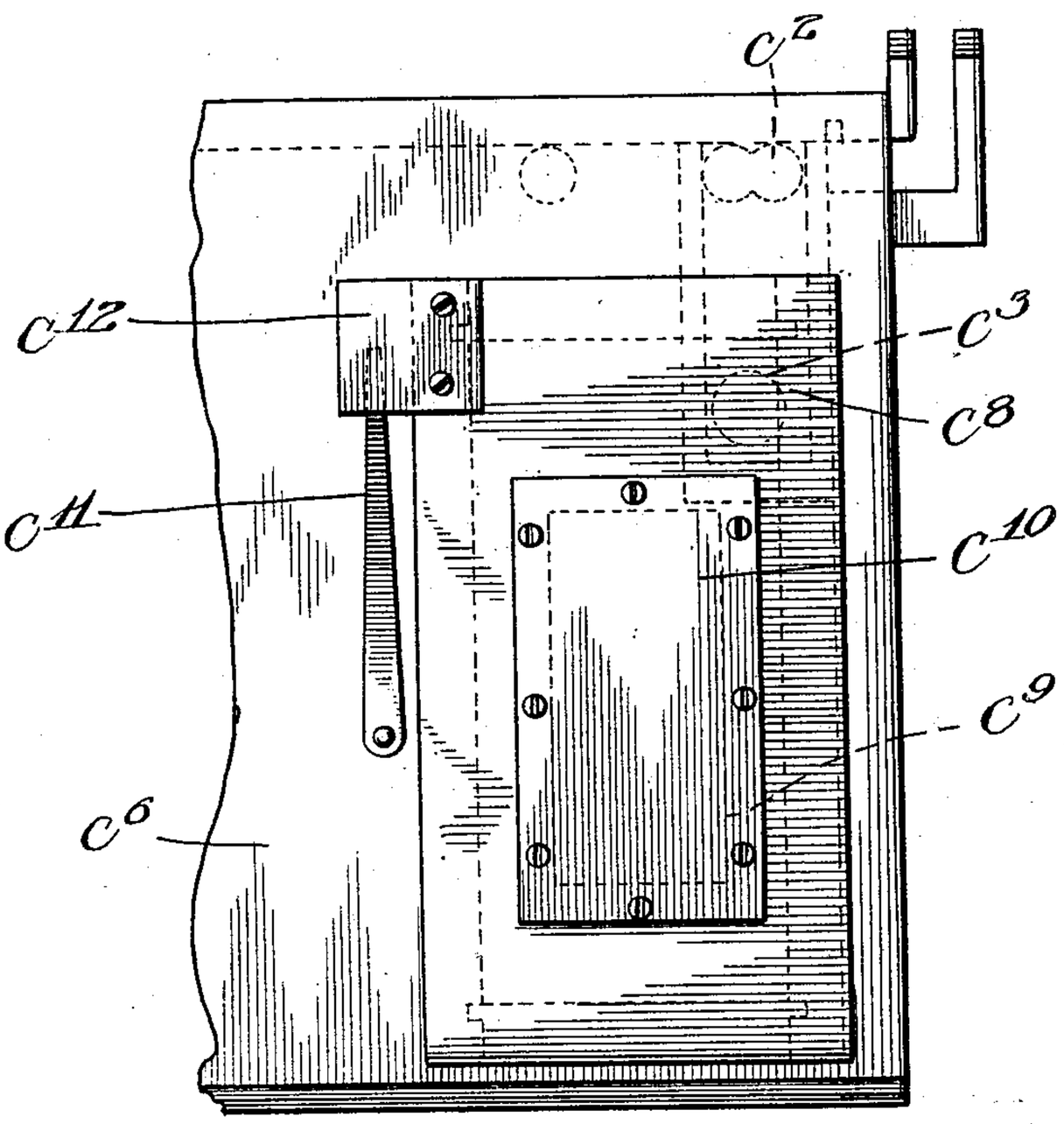
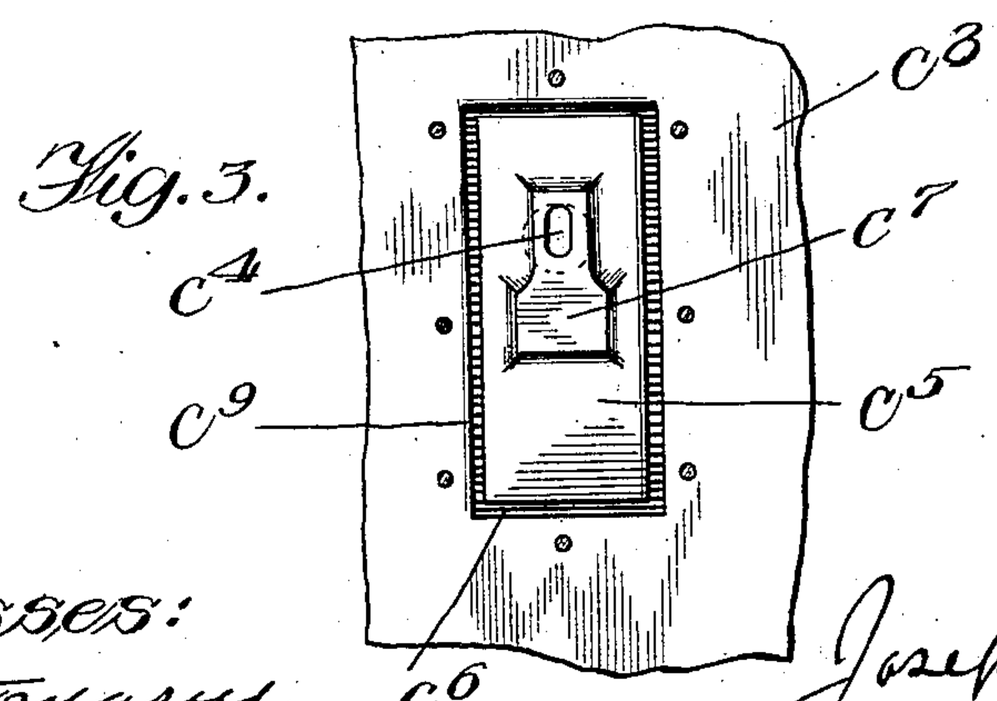


Fig. 3.



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GOVERNING MECHANISM FOR PNEUMATIC PIANO OR ORGAN PLAYERS.

No. 886,347. Specification of Letters Patent. Patented May 5, 1908.

Application filed January 18, 1905. Serial No. 241,544.

To all whom it may concern:

Be it known that I, JOSEPH H. CHASE, a citizen of the United States of America, and resident of Chicago, Cook county, Illinois, have invented a certain new and useful Improvement in Governing Mechanism for Pneumatic Piano or Organ Players, of which the following is a specification.

My invention relates to piano or organ players,—that is to say, players of that well-known character in which pneumatic devices are employed for actuating the fingers which press the keys of the piano or organ, and which said fingers are operated in accordance with the character of the perforations in a sheet or long strip of perforated music, as it is commonly called. In an instrument of this character, it is obvious that the pneumatic apparatus for actuating the fingers, and for driving the rolls upon which the perforated music is mounted, must be given an even and uniform motion; and it is particularly desired that the pneumatic motor employed for operating the music rolls be caused to operate at a uniform speed. For this reason, governors of various kinds and descriptions are employed for controlling the pneumatic apparatus; and my present invention contemplates an improved governor or speed controlling arrangement for piano or organ players of the foregoing general character.

Generally stated, the object of my invention is to effectively govern the action and speed of the pneumatic apparatus without the necessity of employing either auxiliary valves or levers in the windways or channels, or elsewhere, for this purpose, and to simply make use of the under or inner side of the movable board of the exhaust bellows, or other windway, as a means for acting on a raised block, or other similar device, in which is an opening for the passage of the air exhausted from the apparatus, the said movable board thereby serving as the valve, and without any intervening devices or mechanism whatever.

It is also an object, of course, to provide certain details and features of improvement tending to increase the general efficiency and serviceability of a governing-arrangement of this particular character.

To the foregoing and other useful ends, my invention consists in matters as hereinafter set forth and claimed.

In the accompanying drawings, Figure 1 is a vertical section of a governing-arrangement embodying the principles of my invention. Fig. 2 is a view of the outer surface of the movable wall of the exhausting bellows or apparatus. Fig. 3 is a face view of the raised block within the collapsible air-chamber, and which serves as a valve-seat.

It will be readily understood that the general construction of the player may be of any suitable known or approved character. In Fig. 1, the motor A, for example, may be of any known or suitable character. As will be readily understood, this motor is operated by exhausting the air from it in the usual well-known manner. The air exhausted from said motor is conducted downwardly through a flue or windway B, and thence to the air exhausting apparatus C. It will be observed that the said air exhausting apparatus comprises an exhaust bellows c having communication with a collapsible exhaust or air chamber c^1; and it will also be seen that the air from the motor is exhausted into this collapsible chamber by way of the passages c^2 and c^3. The passage c^4, by way of which the air is exhausted from the chamber c^1, is formed partly in a block or raised member c^5 secured to the inner or stationary bellows board c^6. The outer end or surface c^7 of the said block is adapted, as will hereinafter more fully appear, to serve as a valve-seat. As shown, the movable wall c^8 of the said collapsible air-chamber is provided with a large central opening c^9, which is covered by a padded cover or closure c^{10}. The padding may be secured by applying felt or other material to the inner surface of the said closure c^{10}. A properly tensioned spring c^{11} is introduced between a lug c^{12} carried by the movable walls c^8 and the wall c^6. The tension of this spring can be regulated in such manner that its power or strength is sufficient to expand the air chamber c^1 unless the exhaust action is so violent, or of such a character, as to permit the external or atmospheric pressure to collapse such chamber. While the exhaust apparatus or bellows c is being operated, the air flows downwardly from the motor through the passage c^2 and c^3, and thence into the collapsible air chamber c^1; and if the exhaust action is sufficiently strong, this chamber c^1 then collapses. When the padded board or cover c^{10} engages the flat outer surface c^7 of the block c^5, the passage c^4 is thereby closed, and

the air cannot then continue to flow from the chamber c^1 into the bellows c. In this way, the movable board c^8 acts as a governing valve or cut-off for regulating the exhaust action, and for preserving a uniform speed on the part of the said motor; it being obvious that as soon as the exhaust action becomes too strong, and of a character to probably run the motor faster than is necessary or desirable, the exhausting apparatus is automatically cut off or disconnected, so to speak, from the motor. Immediately upon the entrance of more or less air into the chamber c^1 from the motor, however, and before the motor materially reduces its speed, the valve arrangement, consisting of the movable board c^8 and the valve-seat c^7, is automatically opened, and the motor is again in communication with the exhaust apparatus. In this way, the movable board of the collapsible air chamber serves, as stated, as the valve for automatically opening and closing communication between the motor and the exhaust apparatus. Furthermore, this desired governing action will, as it will be seen, be obtained without the use of any auxiliary valves or levers in the windways or channels or elsewhere; and in this way, the desired governing action is obtained with a comparatively simple, yet effective, construction and arrangement. The block c^5 having its face adapted to serve as a valve-seat, is preferably made removable for convenience in fitting and adjusting, as the proper incline of its outer face is not always accurately determined before assembling; and it can always be refitted afterwards if necessary. As explained, the tension of the spring c^{11} can be varied or adjusted so as to give the motor the desired speed.

The collapsible pneumatic has a double function, so to speak, inasmuch as it not only constitutes a part of the windway leading from the motor to the means for exhausting the air therefrom, but also serves as a valve, and for thereby regulating or automatically governing the flow and passage of air through said windway.

It will be seen that the rear exhausting bellows c has its back wall hinged above, and that the front or governor bellows c^1 has its front wall hinged below. As shown, the valved passages X communicate with the passage c^4, and the valved passages Y on the back board of the bellows c communicate with the atmosphere. Thus, when the bellows c is collapsed, the air is exhausted therefrom into the atmosphere, and then when it is expanded, the air is exhausted or drawn from the bellows c^1 into the bellows c.

What I claim as my invention is:

In a device of the class specified, the combination of a governor bellows, a removable block of wood within said bellows, an outlet passage leading through said block, an extended flat surface surrounding said passage on the face of the block, a padded cover carried by the movable wall of the bellows adapted to directly seat on said flat surface to close said passage, and an inlet passage for said bellows.

Signed by me this 13th day of Jan. 1905.

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