A. ANDERSON.

STOPPING DEVICE FOR PLAYER MOTORS.

APPLICATION FILED JUNE 27, 1910.

1,011,552.

Patented Dec. 12, 1911.

2 SHEETS—SHEET 1.

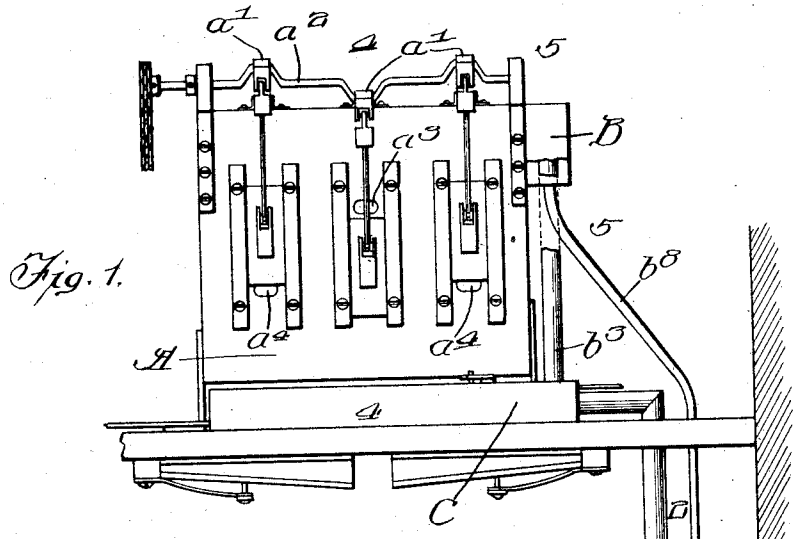

Fig. 1.

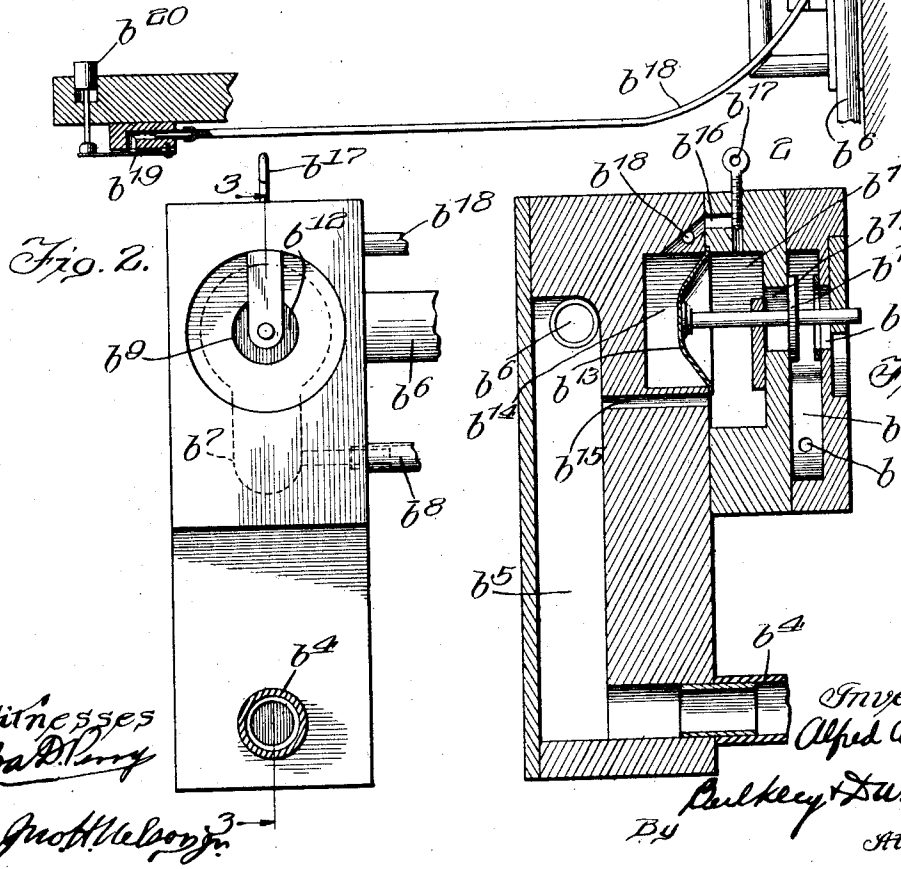

Fig. 2.

Fig. 3.

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2 SHEETS—SHEET 2.

Fig. 4.

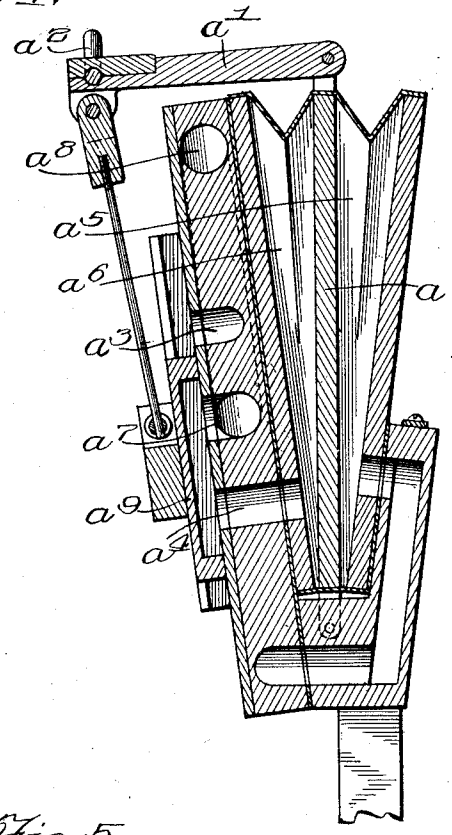
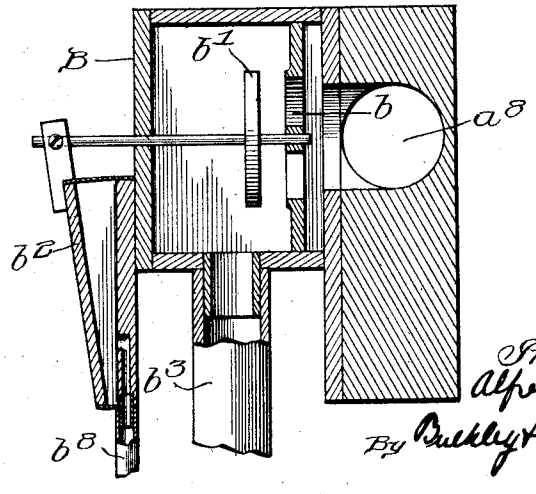


Fig. 5.



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UNITED STATES PATENT OFFICE.

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STOPPING DEVICE FOR PLAYER-MOTORS.

1,011,552. Specification of Letters Patent. Patented Dec. 12, 1911.

Application filed June 27, 1910. Serial No. 569,021.

To all whom it may concern:

Be it known that I, ALFRED ANDERSON, a citizen of the United States of America, and resident of Chicago, Cook county, Illinois, have invented a certain new and useful Improvement in Stopping Devices for Player-Motors, of which the following is a specification.

My invention relates to piano players or player pianos of that general class in which a pneumatic motor is employed for propelling or operating the perforated sheet music. In instruments of this kind it is old and common to provide a device for controlling the speed of said motor. Such a device is ordinarily called a tempo regulator. Such a device is operative to vary the volume of air, and if adjusted far enough it will, of course, entirely shut off the air, so that the motor will stop. It is possible, therefore, to use the tempo regulator to stop the motor, and to thereby effect a pause in the music. Obviously, though, the main function and purpose of the tempo regulator is to vary the time, and the stopping of the music is a mere incident and not its primary purpose. Consequently, the music cannot always be stopped promptly and effectively by the tempo regulator, and the desired musical effect cannot sometimes be satisfactorily obtained in this way.

The object of my invention is, therefore, to provide a stopping device which is separate and distinct from the said tempo regulator, and one which will be more responsive than the latter, whereby the motor may be stopped instantly, and an abrupt stop or pause in the music more effectively produced.

My invention contemplates, therefore, the provision of a push-button or similar device at the front of the instrument, which is distinct and separate from the usual tempo lever, and which controls the pneumatically-operated valve device by which the exhaust apparatus is cut off from the motor to produce a stop or pause in the music.

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

In the accompanying drawings—Figure 1 is a front elevation of a player motor equipped with a stopping device embodying the principles of my invention. Fig. 2 is an enlarged section on line 2—2 in Fig. 1, being in the nature of a side elevation of the said stopping device. Fig. 3 is a section on line 3—3 in Fig. 2. Fig. 4 is a section on line 4—4 in Fig. 1. Fig. 5 is an enlarged section on line 5—5 in Fig. 1.

As thus illustrated, the motor A may be of any suitable, known or approved construction. It comprises three sets of bellows, with a slide valve for each set. Each set of bellows has a movable middle wall a which is connected by a pitman a' with the crank shaft a^2. The ports a^3 and a^4 connect respectively with the bellows chambers a^5 and a^6. The middle port a^7 connects with the general exhaust passage a^8. The chambered slide valve a^9 is operated by the crank shaft, in the usual manner, to control the said ports, and to thereby alternately admit and exhaust the air to and from the said bellows chambers. As the exact construction of the motor is unimportant, no further description thereof is necessary.

A valve box B is mounted at one end of the motor and has communication by an opening b with the exhaust passage a^8. This opening b is controlled by a valve b', which latter is operated by a small bellows or pneumatic b^2. The exhaust pipe b^3 connects the interior of the box B with the tempo regulator C, which latter may be of any suitable or desired construction. Another pipe b^4 connects the said tempo regulator with the lower end of a box or chamber b^5, the upper end of which latter is connected by a pipe b^6 with the exhaust or pumping apparatus of the player. It will be understood that the said exhaust or pumping apparatus, which is not shown, may also be of any suitable or desired construction. The chamber b^7, which is adjacent the chamber b^5, is connected by a pipe b^8 with the small bellows or pneumatic b^2, and communicated with the atmosphere through the opening b^9 whereby the interior of the said bellows or pneumatic is normally in communication with the atmospheric pressure, and is normally expanded to keep the valve b' normally open. A chamber b^{10} is situated between the chambers b^5 and b^7 and has an opening b^{11} that extends to the latter chamber, which opening is normally closed by the valve b^{12}. The said valve is operated by a flexible diaphragm b^{13} that separates the chamber b^{10} from the chamber b^{14}. A passage b^{15} connects the chamber b^5

with the chamber b^{10}, whereby the latter is always subject to the exhaust action. A passage b^{16} connects the chamber b^{10} with the chamber b^{14}, and is controlled by a screw b^{17} which acts as a valve. Normally, therefore, during the operation of the player, the pressure is equalized at opposite sides of the diaphragm b^{13}, so that the opening b^{11} remains closed by the valve b^{12}, and the opening b^{9} remains open. The passage b^{16} is connected by a pipe b^{18} with the normally closed valve b^{19}, which latter is located at the front of the instrument. A push-button b^{20} is provided for opening the said valve b^{19} to admit atmospheric pressure to the pipe b^{18}. The air thus suddenly admitted to the pipe rushes into the chamber b^{14} and thereby causes the diaphragm b^{13} to operate the valve b^{12}, thus opening the opening b^{11} and closing the opening b^{9}, whereby the chamber b^{7} is placed in communication with the chamber b^{10}, and with the exhaust or vacuum chamber b^{5}, through the medium of the passage b^{15}. This, of course, results in the connection of the pipe b^{8} with the pipe b^{6}, which latter is connected with the exhaust or pumping apparatus. The exhaust or suction being thus instantaneously communicated to the small bellows b^{2}, the latter contracts and closes the valve b', thus interrupting the flow of air from the motor—that is to say, completely and instantly cutting off the motor from the exhaust or pumping apparatus. The valve b^{12} is in the nature of a primary that controls the pneumatic b^{2} that operates the shut-off valve b' to start and stop the motor. In this way the button b^{20} can be touched lightly to instantly stop the motor and thus effect an abrupt stop or pause in the music. This, of course, is in addition to the control exercised over the motor by the tempo regulator C, which latter may be of any suitable construction. The stopping of the motor by the tempo regulator is of necessity more or less a gradual one, especially so if the tempo be fast, as in such case a considerable movement of the tempo lever will be necessary before the air could be entirely shut off and the motor brought to a stand still. My improved stopping device is, therefore, auxiliary to the tempo regulator and is only employed to produce an abrupt stop or pause in the music, and to effect a control which is not possible by the tempo regulator. Musicians and those skilled in the art will at once recognize the value and importance of my invention in this respect.

What I claim as my invention is:

1. In a player, the combination of a pneumatically operated motor, a tempo regulator for controlling the speed of said motor, and a device for interrupting the air and thereby stopping the motor to produce an abrupt pause in the music.

2. In a player, the combination of a motor, a tempo regulator for controlling the speed of said motor, and a pneumatically-controlled valve device for stopping said motor to produce an abrupt pause in the music.

3. In a player, the combination of a pneumatic motor for propelling the perforated music, and a pneumatically-controlled valve device for interrupting the air and thereby stopping said motor in accordance with the desired musical effect, said valve being in the connection between the motor and the exhaust or pumping bellows of the player.

4. In a player, the combination of a pneumatic motor, a valve for interrupting the air and thereby stopping said motor, pneumatically-operated means for actuating said valve, and a pneumatically-controlled valve device governing said means, whereby said first-mentioned valve may be controlled at will in accordance with the desired musical effect, said valve being in the connection between the motor and the exhaust or pumping bellows of the player.

5. In a player, the combination of a pneumatic motor, a valve for interrupting the air and thereby stopping said motor, a bellows for operating said valve, and a pneumatically-controlled valve device for governing said bellows in accordance with the desired musical effect, said valve being in the connection between the motor and the exhaust or pumping bellows of the player.

6. In a player, the combination of a motor, means by which the motor is operated by air pressure, a tempo regulator for controlling the speed of said motor, a push-button, and means by which the actuation of the push-button interrupts the air and thereby stops the motor to produce an abrupt pause in the music.

7. In a player, the combination of a motor for propelling the music, a shut-off valve therefor, a pneumatic for operating said shut-off valve, a primary for controlling said pneumatic, and means for admitting pressure to the primary, to cause the operation of said shut-off valve, and to thereby abruptly stop the music.

8. In a player, the combination of a motor for propelling the music, a shut-off valve therefor, a pneumatic for operating said valve, a primary valve mechanism controlling said pneumatic, an air-admission valve for controlling communication between said mechanism and the atmosphere, and means for opening said admission valve to close the shut-off valve, and to thereby abruptly stop the music.

9. In a player, a motor, a shut-off valve therefor, a pneumatic for operating said shut-off valve, a primary for controlling the pneumatic, means for admitting pressure to the primary to cause the operation of

said shut-off valve, and means for governing the speed of said motor.

10. In a player, the combination of a motor, a shut-off valve therefor, a pneumatic for operating said valve, a primary valve mechanism controlling said pneumatic, an air-admission valve for controlling the communication between said mechanism and the atmosphere, means for opening said admission valve, and means for governing the speed of said motor.

11. In a player, the combination of a pneumatic motor provided with a tempo regulator for governing the speed thereof, to insure the proper or desired tempo for the music, and mechanism independent of the governing means for controlling the motor.

12. In a player, the combination of a pneumatic motor for propelling the music, mechanism controlled by atmospheric pressure for stopping said motor, and a tempo regulator therefor.

Signed by me at Chicago, Illinois, this 23 day of June, 1910.

ALFRED ANDERSON.

Witnesses:
C. F. REEPS,
F. G. BARTELS.