J. LEISCH.

POWER PNEUMATIC FOR PLAYER PIANOS.

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1,036,656.

Patented Aug. 27, 1912.

Fig. 1

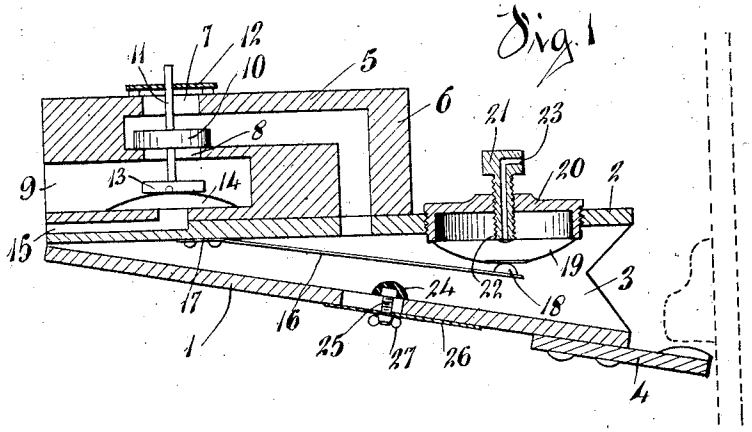


Fig. 2

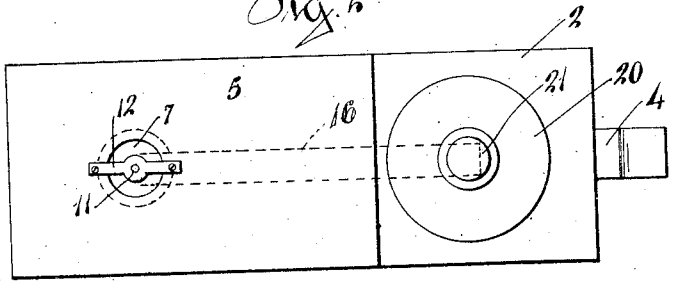


Fig. 3

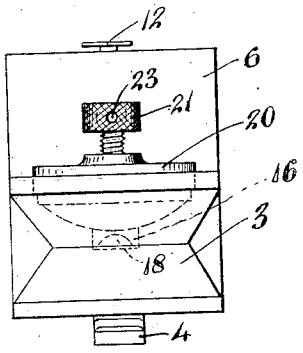
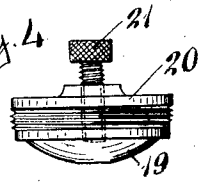


Fig. 4



Witnesses

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UNITED STATES PATENT OFFICE.

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POWER-PNEUMATIC FOR PLAYER-PIANOS.

1,036,656. Specification of Letters Patent. Patented Aug. 27, 1912.

Application filed January 2, 1912. Serial No. 669,047.

To all whom it may concern:

Be it known that I, JOSEPH LEISCH, a citizen of the United States, and a resident of Tryon, in the county of Polk and State of North Carolina, have invented certain new and useful Improvements in Power-Pneumatics for Player-Pianos, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification.

The object of my invention is to provide a construction of pneumatic for player pianos with which tonal effects may be obtained approximating those produced by the finger of the operator in manipulating the keys, and it consists of that certain novel construction and arrangement of parts to be hereinafter particularly pointed out and claimed, whereby the action of the pneumatic may be checked by a resilient cushion adapted to operate differentially in proportion to the pressure. When the pressure applied to the pneumatic is strong, the resilient resistance within the pneumatic to check and stop the movable member is correspondingly increased, and when the pressure is diminished, the resistance is diminished in like proportion.

In the drawing, Figure 1 is a central longitudinal section of my improved construction. Fig. 2 is a plan view. Fig. 3 is an end elevation. Fig. 4 is a side elevation of the pneumatic cushion.

The pneumatic of the usual bellows type is made up of the movable member 1 and the fixed member 2, with bellows fold 3 of the usual construction, and the movable member 1 of the pneumatic is provided with an extension plate 4 arranged to contact with and actuate the sticker of the piano action.

Mounted on the fixed member 2 of the pneumatic is the valve box 5, provided with the passageway 6 from inside the pneumatic with ports 7 and 8, the one opening to the outer air and the other opening into the vacuum chamber 9. The ports 7 and 8 are controlled by the valve 10 with the stem 11 which projects upwardly through the port 7 and through a guide plate 12, and at its lower end projects into the vacuum chamber, and is provided with a disk 13 resting upon the pouch 14, which covers the end of the passage 15 extending to the primary valve structure or to the tracker board.

The construction above described is the ordinary and usual construction, and it will be understood that when the passage 15 is opened through the tracker board in the usual way, the pouch 14 will be inflated, which will raise the valve 10, closing the air port 7 and opening the port 8, and thus subjecting the pneumatic to suction to actuate the movable member of the pneumatic, and thus to raise the sticker of the piano action.

Mounted inside the pneumatic is a strip of spring metal 16, suitably secured by screws or otherwise near the inner end of the fixed member of the pneumatic at 17. The free end of this spring is preferably provided with a felt washer 18, and this free end bears against the central portion of a pouch 19. This pouch of leather or other suitable material is secured across and closes the lower end of a cap 20 which is screw-threaded, or otherwise secured in the fixed member 2 of the pneumatic near its outer end. This cap 20 is provided with a screw-threaded set screw 21, centrally mounted in the cap, with its inner end 22 projecting towards the pouch 19. This set screw is hollow, or provided with a passageway 23, so that the interior of the cap is open to the air.

For the movable member of the pneumatic, I provide the cushion 24 of felt or other suitable material, located underneath and in line with the spring plate 16. This cushion is arranged for longitudinal adjustment in any desired way. As illustrated, the cushion 24 is mounted on the screw 25, which projects through a narrow slot in the movable member of the pneumatic with the slot fully protected and covered for all adjustments by the cover plate 26. The screw 25 is provided with the winged nut 27 for holding the cushion 24 in any desired position of adjustment within the limits of the length of the slot.

The operation of the pneumatic will be obvious. The spring plate 16 forms the stop for the cushion 24 in the movement of the movable member of the pneumatic, and the outer end of this spring plate is provided with the air cushion formed by the pouch 19. When the pneumatic is actuated, the spring plate is raised by contact therewith of the cushion 24 until the end of the spring or its felt washer 18 comes in contact with the projecting end of the set screw 21. When the spring meets with this resistance, any further upward movement of the movable mem-

ber will flex the spring 16. The set screw 21 is adjusted for the desired movement of the spring 16, and a variation in the resilient action of the spring 16 is obtained by longitudinal adjustment of the striking cushion 24. The action of the penumatic can therefore be regulated and adjusted with great delicacy. With very light suction and for pianissimo effects, the air cushion formed by the pouch 19 will serve as sufficient stop, and as the suction is increased, the resiliency of the spring plate 16 will be brought into play. It will be evident that when strong pressure or suction is applied to the pneumatic, both the air cushion and the resiliency of the spring 16 will be brought into play, and that where the pressure applied is light, the air cushion alone will serve as sufficient stop. In this way, a differential action for the pneumatic is provided dependent upon the pressures applied.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In a power pneumatic for player pianos comprising two members, a stop therefor comprising a strip of resilient metal secured at one end within the pneumatic to one member thereof, and a pneumatic cushion against which the free end of the spring engages, and a contact projection on the other member to contact with said spring, whereby a resilient check and stop is provided for the pneumatic.

2. In a power pneumatic for player pianos comprising two members, a stop therefor comprising a strip of resilient metal secured at one end within the pneumatic to one member thereof, and a pneumatic cushion against which the free end of the spring engages, and a washer on the other member to contact with said spring intermediate the cushion and point of attachment of the spring, whereby a resilient check and stop is provided for the pneumatic.

3. In a power pneumatic for player pianos comprising two members, a stop therefor comprising a strip of resilient metal secured at one end within the pneumatic to one member thereof, and a pneumatic cushion against which the free end of the spring engages, said cushion comprising a hollow cap with a pouch covering one end and a set screw to regulate the play of the pouch, with an opening therethrough to permit the introduction of air within said cap, and a washer on the other member to contact with said spring intermediate the cushion and point of attachment of the spring, whereby a resilient check and stop is provided for the pneumatic.

4. In a power pneumatic for player pianos comprising two members, a stop therefor comprising a strip of resilient metal secured at one end within the pneumatic to one member thereof, and a pneumatic cushion against which the free end of the spring engages, a washer on the other member to contact with said spring intermediate the cushion and point of attachment of the spring, with means for adjusting the position of said washer lengthwise of the pneumatic to vary the point of contact, whereby a resilient check and stop is provided for the pneumatic.

5. In a power pneumatic for player pianos comprising two members, a stop therefor comprising a strip of resilient metal secured at one end within the pneumatic to one member thereof, and a pneumatic cushion against which the free end of the spring engages, said cushion comprising a hollow cap with a pouch covering one end and a set screw to regulate the play of the pouch, with an opening therethrough to permit the introduction of air within said cap, and a washer on the other member to contact with said spring intermediate the cushion and point of attachment of the spring, with means for adjusting the position of said washer lengthwise of the pneumatic, whereby a resilient check and stop is provided for the pneumatic.

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