

1,048,486.

Patented Dec. 31, 1912.

2 SHEETS—SHEET 2.

Fig - 2 -

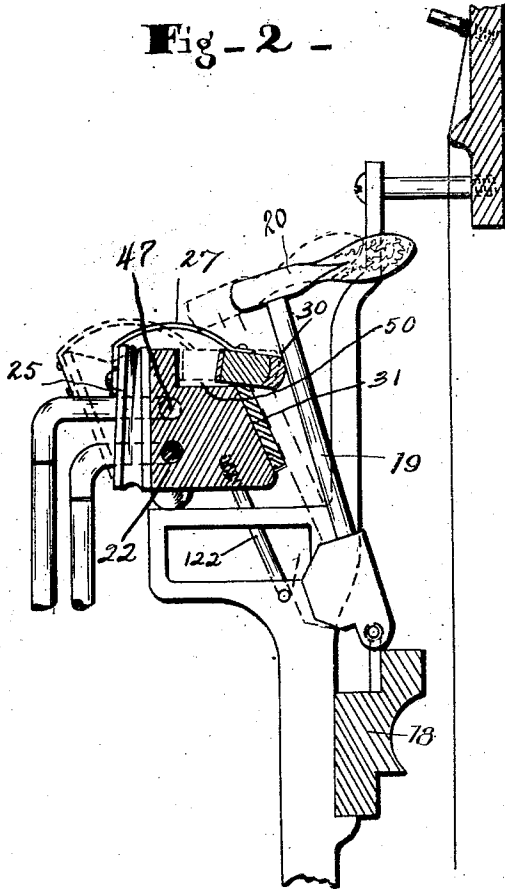


Fig - 3 -

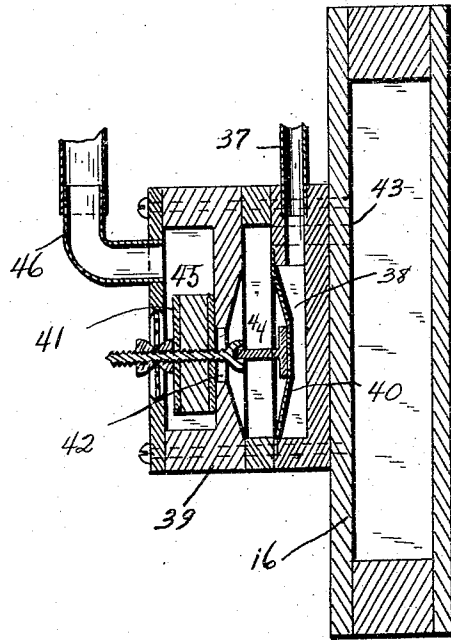
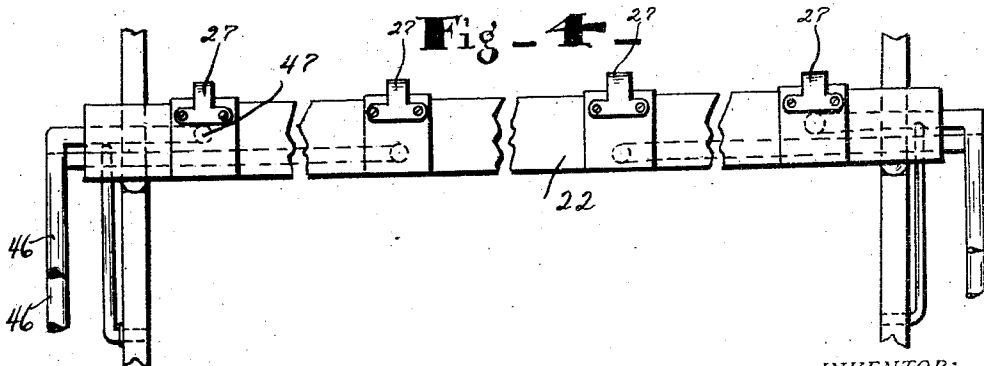


Fig - 4 -



WITNESSES:

L. H. Boink
O. W. McLaughlin

INVENTOR:
William G. Betz

BY
W. H. Fockwood
 ATTORNEY.

UNITED STATES PATENT OFFICE.

WILLIAM G. BETZ, OF CHICAGO HEIGHTS, ILLINOIS, ASSIGNOR TO STEGER & SONS
PIANO MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION.

PNEUMATIC PIANO.

Specification of Letters Patent. Patented Dec. 31, 1912.

1,048,486.

Application filed March 13, 1911. Serial No. 614,236.

To all whom it may concern:

Be it known that I, WILLIAM G. BETZ, a citizen of the United States, and a resident of Chicago Heights, county of Cook, and State of Illinois, have invented a certain useful Pneumatic Piano; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings.

The object of this invention is to provide a practical accentuating device for pneumatic pianos.

The chief feature consists in providing the regular hammer rest rail of the piano action with individual air chambers which are provided with power pneumatics secured to the regular hammer rest rail and operated through a valve in connection with the main air chamber of the suction bellows. Said power pneumatics through a bracket arm and a secondary hammer rest rail thereon push the piano hammer closer to the piano string so as to shorten the stroke of the hammer and produce a softer tonal effect.

The nature of this invention will be understood from the accompanying drawings and the following description and claims.

In the drawings Figure 1 is a vertical central section through a pneumatic piano equipped with said improvement. Fig. 2 is a portion of the upper part of Fig. 1 with some of the parts thereof in altered position. Fig. 3 is a central vertical section through the main air chamber and the valve mechanism associated therewith. Fig. 4 is an elevation of a part of the mechanism viewed from the line 4-4 of Fig. 1, and the same is broken away at different places as shown.

There is shown in the drawings a pneumatic piano with a case 10, key bed 11, ordinary finger keys 12, pedal 13, bellows 14, pedal connection 15 between the bellows and pedal for actuating the bellows, and a main suction chamber 16. There is also an action bracket 17, a rail 18 thereon, hammer shanks 19, hammers 20, strings 21 and a hammer rest rail 22 movably mounted on pivot rods 22 so as to be operated in the usual way. All of these parts are old and constitute no part of this invention and are shown merely to explain the nature of this invention, and they may be modified as desired. The pneumatic means for actuating the piano are not shown, but may be any known construction.

To the regular hammer rest rail there are

secured various power pneumatics 25, there being only four, however, shown herein in Fig. 4, and each one is adapted to actuate a group of hammers, say one-fourth of the total number in the piano. To the movable portion 26 of the power pneumatic 25 an arm 27 is secured and the rear end of said arm carries a secondary hammer rest rail 28. It is individual because it engages only a group of hammer shanks. It is provided on its engaging surface with a felt cushion 30 similar to the cushion 31 on the main hammer rest rail. Each power pneumatic 25 is actuated as follows:

There is a button 35 in the front part of the piano in the key bed which depresses a spring valve plate 36 and opens the end of an air tube 37 that enters a pouch chamber 38 in a valve box 39 which is secured to the main suction chamber 16, as shown in Fig. 3. The incoming air actuates a pouch 40 which in turn actuates a valve 41 and opens a port 42. Then the suction in the chamber 16 exhausts air through the port 43 leading from said suction chamber 16 and suction chamber 44 in the valve box 39 and then through the port 42, valve chamber 45, tube 46 which extends longitudinally into the end of the hammer rest rail 22 and from the air chamber 47 therein which is in communication with the power pneumatic 25. This collapses said power pneumatic and moves it to the position shown in Fig. 2, and thus the hammers are moved from the position shown in Fig. 1 to the position shown in Fig. 2. When the button 35 is released the parts resume their normal position.

As shown in Fig. 4 there are four of the tubes 46, one for each power pneumatic 25. Two of them enter one end of the hammer rest rail 22 and two enter the other end thereof. Of course, the invention is not limited to any particular number of these tubes 46 or power pneumatics 25, nor to pneumatically actuated hammer rest rails of any particular length. It is observed that the main hammer rest rail 22 has a recess 50 in its upper rear corner in which the secondary hammer rest rail 28 normally lies so as to cooperate with the main hammer rest rail in constituting a total hammer rest rail adapted to be operated by the usual pianissimo pedal actuated means, which latter, however, is not herein shown. There is, of course, one valve box 39 for each power

pneumatic. Hence, in the device herein shown there are four of such valve boxes and each valve box is controlled by a separate button 35 and tube 37.

5 I claim as my invention:

1. In a piano, the combination with hammers and shanks and a main hammer rest rail arranged to engage the hammer shanks, of a power pneumatic secured to said hammer rest rail, means for actuating said power pneumatic, and a secondary hammer rest rail actuated by said power pneumatic and adapted to engage the hammer shanks.
2. In a piano, the combination with a main hammer rest rail, of a power pneumatic secured to said hammer rest rail, means for actuating said power pneumatic, an arm extending from the movable portion of said power pneumatic rearwardly over said power pneumatic and main hammer rest rail, and a secondary hammer rest rail secured to the rear end of said arm.
3. In a piano, the combination of hammers and shanks and a main hammer rest rail arranged to engage the hammer shanks provided with a suction chamber therein, a power pneumatic secured to said hammer rest rail and in communication with said suction chamber, means for exhausting air from said suction chamber, and a secondary hammer rest rail actuated by said power pneumatic and adapted to engage the hammer shanks.
4. In a piano, the combination with a main hammer rest rail with a rear beveled surface and with a recess in the upper rear corner thereof, of a power pneumatic secured to said main hammer rest rail, a secondary hammer rest rail normally lying in said recess to cooperate with the main hammer rest rail in forming a total hammer rest rail, and means connecting said secondary hammer rest rail and the power pneumatic whereby it is actuated.
5. In a piano, the combination with a

hammer shank and a main hammer rest rail adapted to engage said hammer shanks, of a power pneumatic secured to said main hammer rest rail, a secondary hammer rest rail actuated by said power pneumatic and adapted to engage said hammer shank, a main suction chamber, a communication between the power pneumatic and the main suction chamber, a valve for controlling said communication, and means adapted to be actuated by the operator for controlling said valve.

6. In a piano, the combination with hammers, hammer shanks and a main hammer rest rail adapted to engage said hammer shanks, of a plurality of power pneumatics secured to said hammer rest rail, a secondary hammer rest rail adapted to be actuated by each power pneumatic and to engage the shanks of a portion of the hammers in the piano, and individual means for operating each of said power pneumatics.

7. In a piano, the combination with hammers, hammer shanks and a main hammer rest rail therefor with longitudinal suction chambers therein, of a plurality of power pneumatics secured to said hammer rest rail, a secondary hammer rest rail adapted to be actuated by each power pneumatic and to affect only a portion of the hammers in the piano, a main suction chamber, a valve mechanism secured thereto for each power pneumatic, a tube extending from each valve mechanism to the end of the main hammer rest rail and into communication with its corresponding suction chamber and power pneumatic, and means for separately controlling each of said valve mechanisms.

In witness whereof, I have hereunto affixed my signature in the presence of the witnesses herein named.

WILLIAM G. BETZ.

Witnesses:

G. H. BOINK,
O. M. McLAUGHLIN.