

W. G. BETZ.
 HAMMER RAIL CONSTRUCTION FOR PNEUMATIC PIANOS.
 APPLICATION FILED JUNE 12, 1911.

1,037,584.

Patented Sept. 3, 1912.

2 SHEETS—SHEET 1.

Fig - 1 -

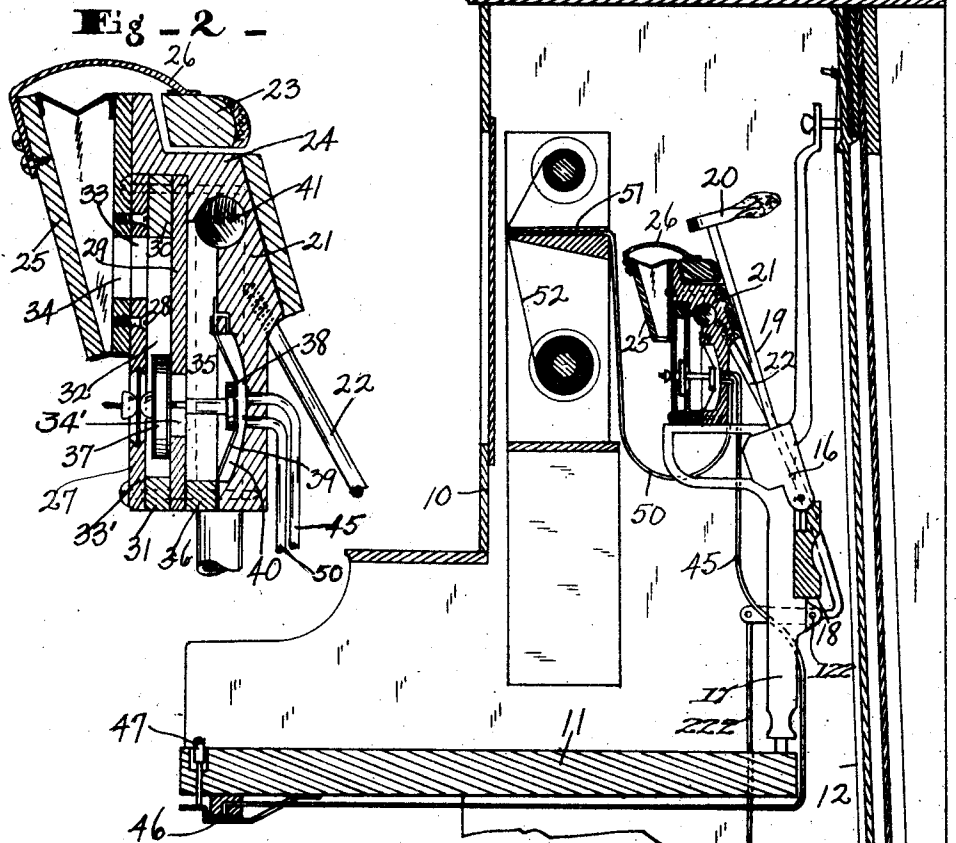


Fig - 2 -

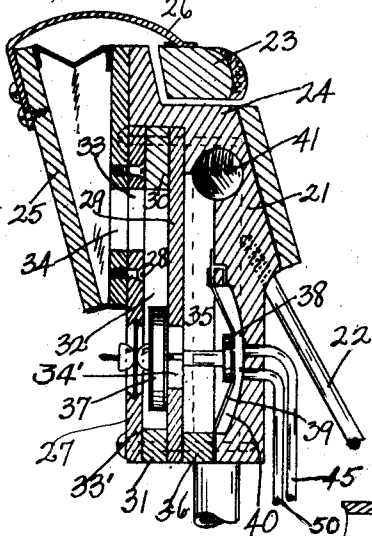
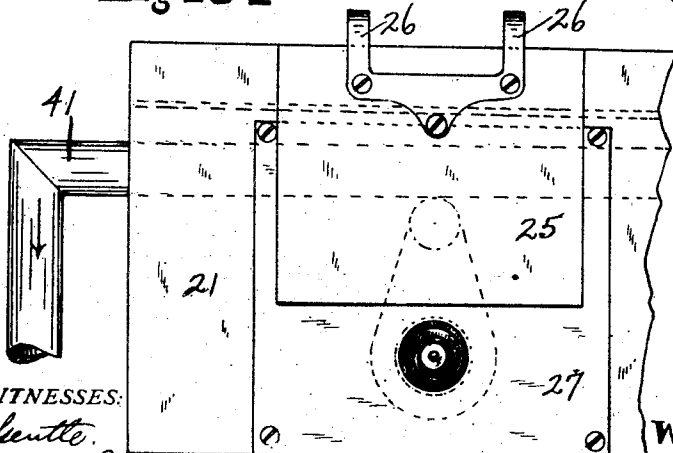


Fig - 3 -



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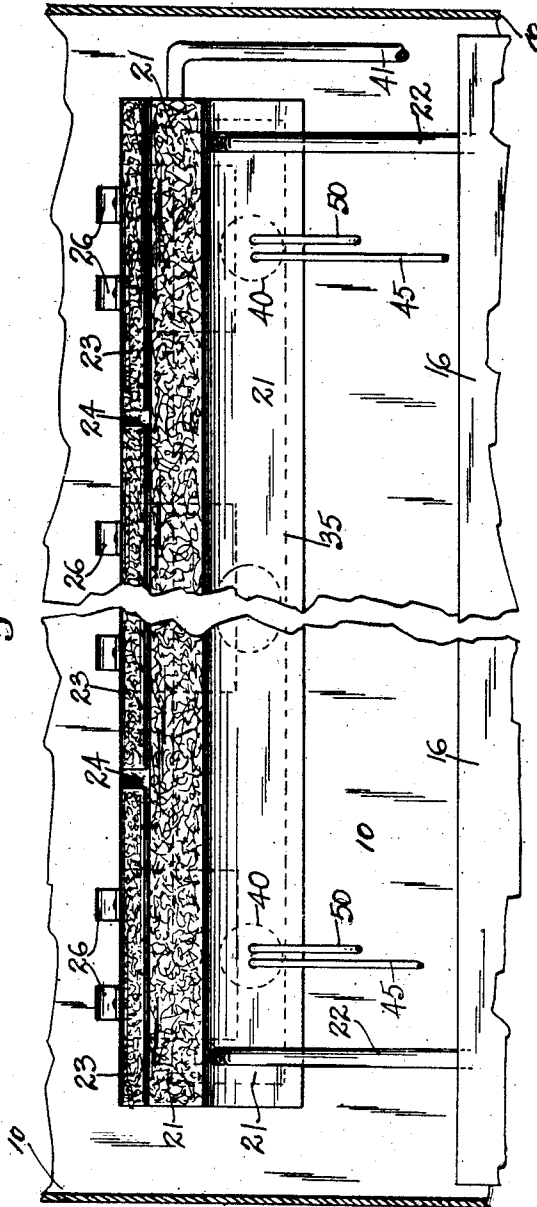
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2 SHEETS—SHEET 2.

Fig. 4--



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UNITED STATES PATENT OFFICE.

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

HAMMER-RAIL CONSTRUCTION FOR PNEUMATIC PIANOS.

1,037,584.

Specification of Letters Patent.

Patented Sept. 3, 1912

Application filed June 12, 1911. Serial No. 632,585.

To all whom it may concern:

Be it known that I, WILLIAM G. BETZ, a citizen of the United States, and resident of Chicago Heights, county of Cook, and State of Illinois, have invented a certain useful Hammer-Rail Construction for Pneumatic Pianos; 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 improve the construction of pneumatic pianos so far as the accentuating devices thereof are concerned, the same being an improvement over the construction shown in a prior application filed by me March 13, 1911, Serial No. 614,236.

The chief feature of my present invention consists in mounting both power pneumatics and valves for controlling the same on or in connection with the ordinary pedal actuated hammer rest rail for the purpose of operating a suitable number of pneumatically actuated hammer rest rails which are associated with the ordinary pedal actuated hammer rest rail.

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

In the drawings, Figure 1 is a central vertical section through a portion of a player piano. Fig. 2 is a transverse vertical section through the hammer rest rails and associated parts, drawn on a larger scale than in Fig. 1. Fig. 3 is a front elevation of what appears in Fig. 2 at the left-hand end of the piano, the remainder being broken away. Fig. 4 is a vertical section through a portion of the casing and showing the hammer rest rails and associated parts in rear elevation, parts being broken away.

In the drawings there is shown a pneumatic piano with a case 10, key bed 11, and strings 12. There is an action bracket 17, a rail 18 thereon, hammer shanks 19, hammers 20 and the usual hammer rest rail 21 movably mounted on pivot rods 22 so as to be operated in the usual way. All of the foregoing parts are old and constitute no part of this invention and may be modified as desired. The pedal means for actuating the piano is not shown but may be any known construction.

In connection with the regular hammer

rest rail 21 there may be secured any number of secondary or pneumatically actuated hammer rest rails 23 as desired. The preferable number is four, although only one is herein shown. They are located in a recess 24 in the upper right-hand corner of the main hammer rest rail. Each secondary or pneumatic hammer rest rail 23 is adapted to engage a number of hammer shanks 19. To the main hammer rest rail 21 there is a power pneumatic 25 secured for each pneumatic hammer rest rail 23. The movable forward member of each power pneumatic has secured on its upper end a pair of arms 26 which extend rearwardly and are secured to the secondary or pneumatically actuated hammer rest rail 23 for supporting and moving the same. These power pneumatics are secured to the plate 27 by screws 28. The plate 27 is a part of the valve casing, said casing consisting of the plate 27, a parallel plate 29 and spacers 30 and 31 for separating them to form the valve chamber 32, which is in communication with the power pneumatic through a port 33 in the plate 27 and port 34 in the stationary member of the power pneumatic. The valve casing is secured to the hammer rest rail 21 by long screws 33', and a spacer 36 lies between the valve casing and the lower part of the main hammer rest rail so as to form the main suction chamber 35 which has a port 34' leading to the valve chamber 32. This port is controlled by the valve 37, which has a stem 38 secured to the pouch 39 which separates the suction chamber 40 from the suction chamber 35. The suction chamber 35 is in communication with the air passageway 41 which extends longitudinally through the main hammer rest rail 21 and through a suitable air exhausting means common in pneumatic pianos but not here shown. Hence, when the valve 37 is unseated, air will be exhausted from the power pneumatic 25 and it will actuate the secondary or pneumatic hammer rest rail 23.

The valve for each power pneumatic is actuated by air pressure coming in through the tube 45, which extends down under the key bed in position convenient for manual control where it is closed by a spring valve 46 secured to the underside of the key bed, and said valve is depressed and opened by a push rod 47 with a button on the upper end of it, said push rod being vertically mounted

in the key bed. This valve mechanism is substantially the same as shown in my former application. The valve 37 is also actuated by air pressure coming in through the tube 50 which leads from the pouch chamber 40 to the tracker bar 51 over which a perforated music sheet 52 is moved. In that perforated music sheet suitable special perforations are provided, as shown in my former applications, so that air will be admitted into the tube 50 and the secondary or pneumatic hammer rest rail operated when desired. This music sheet control of the secondary or pneumatic hammer rest rail, however, is arbitrary so far as the operator of the piano is concerned. The tube 45 and valve mechanism 46 is arranged to enable any operator of the piano to exercise his individual control of the pneumatic hammer rest rails if he so desires.

Thus it is seen that in this invention I have brought together in compact form in combination with the regular hammer rest rail, the secondary or pneumatic hammer rest rails, the power pneumatics for operating the same and the valve mechanism for controlling said power pneumatics, instead of having the valve mechanism remotely located, as shown in my former application.

The hammer rest rail 21 is actuated by the rods 22 which, at their lower ends are in the form of bell crank levers and are pivoted at 122 to a part of the bracket 17 and the inwardly extending end of said bell crank lever 22 is actuated by the elevation of the rod or link 222.

I claim as my invention:

1. In a piano, the combination with hammers and a main hammer rest rail engaging said hammers, of a secondary hammer rest rail, a power pneumatic on the main hammer rest rail for actuating said secondary

hammer rest rail independently of the main hammer rest rail, and a valve mechanism for controlling said power pneumatic. 45

2. In a piano, hammers a main hammer rest rail engaging said hammers provided with an exhaust air passageway, a valve mechanism secured to said hammer rest rail in communication with said exhaust air passageway, a power pneumatic secured to said valve mechanism and controlled thereby, and a secondary hammer rest rail actuated by said power pneumatic. 50

3. In a piano, hammers a main hammer rest rail engaging said hammers provided with an exhaust air passageway, a valve mechanism secured to said hammer rest rail in communication with said exhaust air passageway, a power pneumatic secured to said valve mechanism and controlled thereby, a secondary hammer rest rail actuated by said power pneumatic, a tube extending from the main hammer rest rail and in communication with the valve mechanism, and means for controlling the admission of air to said tube. 65

4. In a piano, the combination with hammers and a main hammer rest rail engaging said hammers, of a secondary hammer rest rail arranged in sections, a power pneumatic for actuating each section of said hammer rest rail, and a valve mechanism for controlling said power pneumatic, said power pneumatic and valve mechanism being secured to the main hammer rest rail. 70

In witness whereof I have hereunto affixed my signature in the presence of the witnesses herein named. 75

WILLIAM G. BETZ.

Witnesses:

ESTHER AKERJELM,
BLANCHE HAYES.