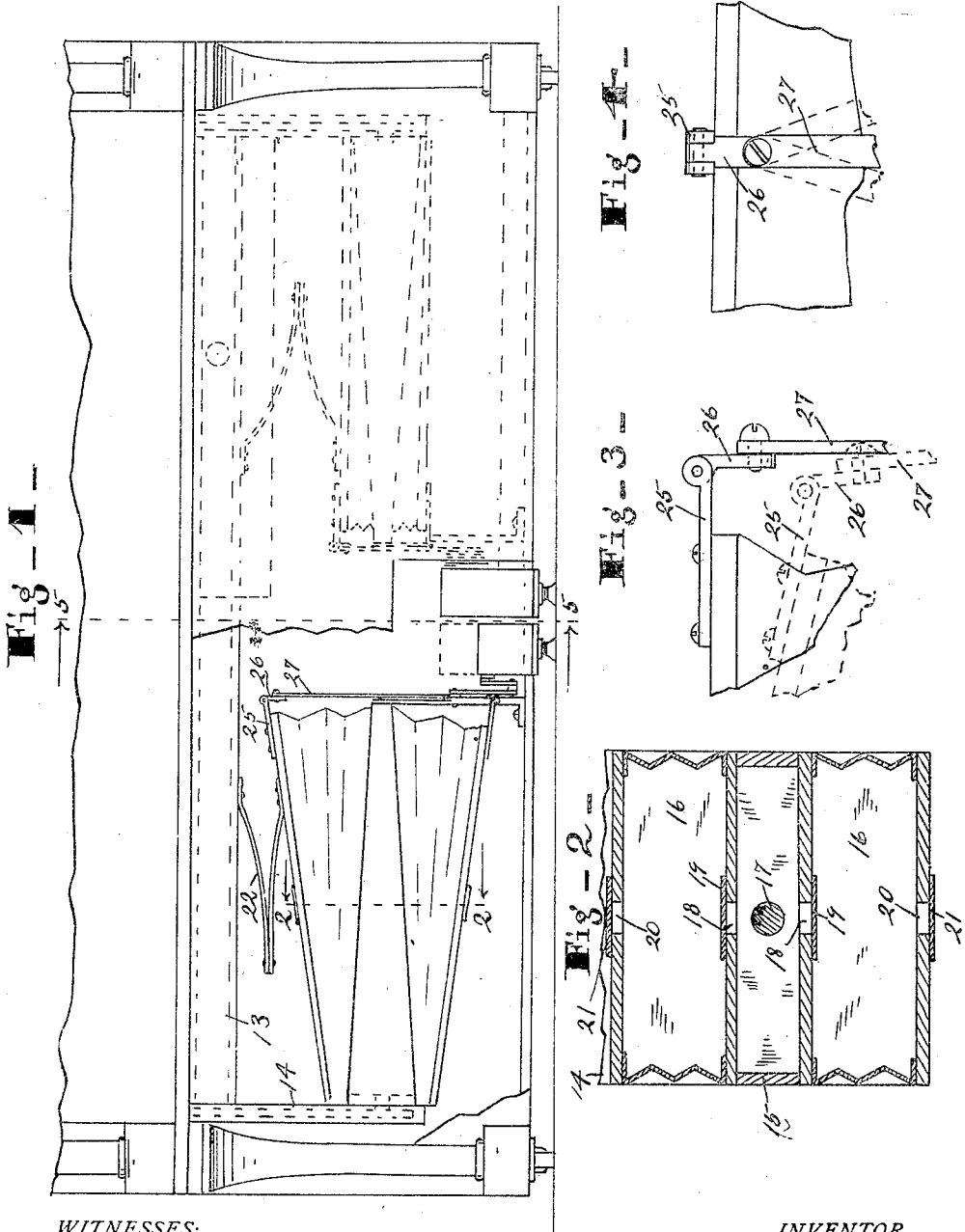


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BELLOWS MECHANISM FOR PNEUMATIC PIANOS.  
APPLICATION FILED AUG. 15, 1910.

1,012,316.

Patented Dec. 19, 1911.  
2 SHEETS—SHEET 1.



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Fig - 6 -

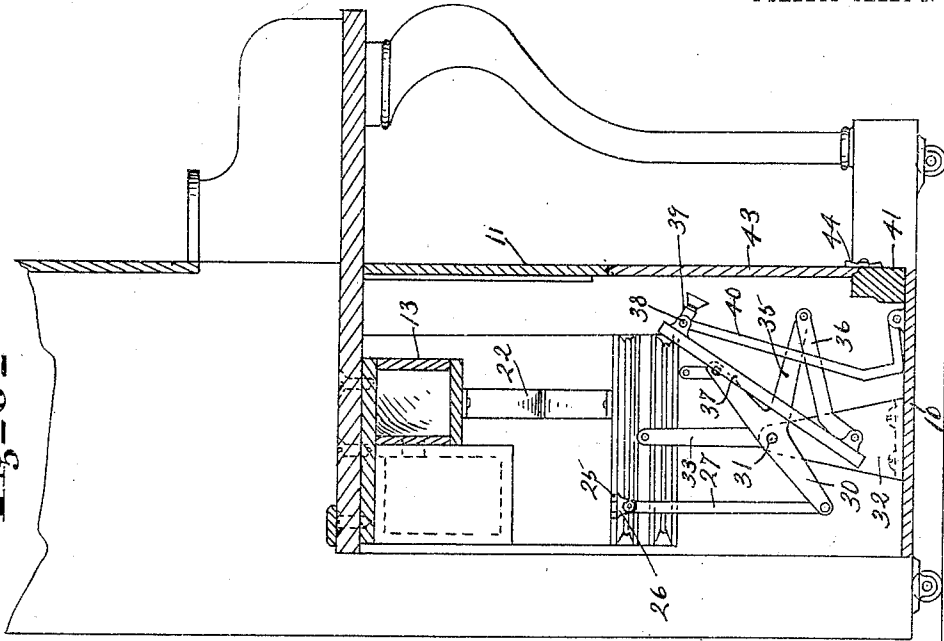
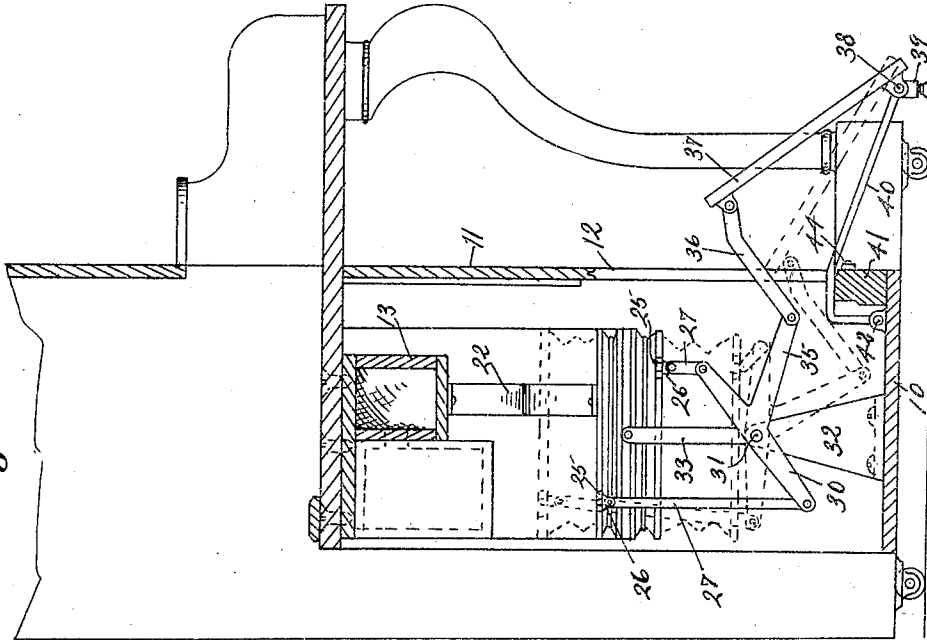


Fig - 5 -



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# UNITED STATES PATENT OFFICE.

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

BELLOWS MECHANISM FOR PNEUMATIC PIANOS.

1,012,316.

Specification of Letters Patent.

Patented Dec. 19, 1911.

Application filed August 15, 1910. Serial No. 577,180.

*To all whom it may concern:*

Be it known that I, WILLIAM G. BETZ, of Steger, county of Cook, and State of Illinois, have invented a certain useful Bellows Mechanism 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.

10 The object of this invention is to improve the construction of pneumatic player pianos, particularly with reference to the means for creating the suction or air exhaust necessary for the operation of the instrument.

15 One feature of the invention relates to the provision of a plurality of bellows having in common a single intermediate chamber for the movement of the air from the instrument to the bellows.

20 Another feature of the invention relates to the pedal mechanism for operating the plurality of bellows simultaneously but oppositely, that is, so that it will collapse one bellows while it expands the other bellows, and thus maintain a steady exhaust of air.

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

30 In the drawings Figure 1 is a front elevation of the lower portion of the piano with the front plate partially broken away and showing one pair of bellows in elevation and expanded, and the collapsed position of the other pair of bellows being indicated by dotted lines. Fig. 2 is a section on the line 2-2 of Fig. 1. Figs. 3 and 4 are detail drawings of part of the connection between the bellows and pedals. Fig. 5 is a transverse section on the line 5-5 of Fig. 1, through the portion of the piano showing the bellows and pedal mechanism in condition for use, a part of the piano being broken away. Fig. 6 is the same showing the pedal mechanism folded into the piano and out of the way.

35 In the piano, 10 represents the bottom of the casing and 11 the front plate of the lower portion with the pedal opening 12 therein. There is an exhaust air chamber 13 with a conduit 14 extending down to an air chamber 15 intermediate the two bellows 16. The compartment 15 tapers from the conduit 14 and they are in communication through the port 17. There is a bellows above and a bellows below this com-

partment and they are in communication therewith through the ports 18, which are closed by valves 19. The outlet ports 20 from the bellows are closed by valves 21, the arrangement being such that when the bellows are collapsed the air will be forced out to the open air through the ports 20, and when expanded they will draw air from the exhaust chamber 13 through the passages 14 and 15 and the ports 18. The bellows are alternately collapsed and expanded by a pedal mechanism, and are returned to their normal position by springs 22, which are connected to the underside of the exhaust chamber 13 and to the upper side of the bellows. This construction of bellows doubles the air exhausting capacity of the single bellows, and yet they do not occupy much more space than the single bellows and are as easily located in the piano, and if one bellows fails to operate satisfactorily, the other bellows will be sufficient to do the work with substantial satisfaction.

40 The means for operating the bellows is indicated in Figs. 3, 4, 5 and 6. A bar 25 is secured to the movable end of each bellows and to it an arm 26 is pivoted so as to hang down, and a connecting bar 27 is pivoted to said arm at its upper end. The connecting bar 27 for the upper bellows is comparatively long and that for the lower bellows comparatively short, and the short bar 27 is located on the side next to the pedal opening 12, and both bars 27 are pivoted to the opposite ends of a rocking lever 30 fulcrumed at 31 on a stand 32 which is secured to the bottom 10 of the casing and has an upwardly extending bar 33 that is secured to the chamber 15 between the bellows of each pair. That bar holds the outer end of said chamber 15, while its inner end is held in position by the part 14, and thus said chamber 15 is held in fixed position. Thus, when the lever 30 is actuated, it simultaneously operates the bellows but in opposite directions, one bellows being collapsed while the other is expanded. The rocking lever 30 is actuated by an arm 35, which is connected by a connecting bar 36 to the upper rear portion of a pedal 37, which is fulcrumed at 38 near its lower edge on the stand 39, which is adapted to rest on the floor. There are two sets of bellows and two pedals and a bar 40 is pivotally connected to the fulcrum

38 intermediate the two pedals and it runs  
 over the lower front bar 41 of the casing  
 and is turned down at its inner end and  
 pivoted to and between a pair of ears 42  
 5 that are secured to the bottom 10 of the  
 casing. This pedal arrangement is such,  
 therefore, that it can be folded in from the  
 position shown in Fig. 5 to that shown in  
 Fig. 6, through the pedal opening 12 and  
 10 out of the way when the pneumatic portion  
 of the instrument is not in use and the  
 pedal opening can be temporarily closed by  
 a door 43, and thus the instrument will have  
 the appearance of an ordinary piano. The  
 15 door 43 has a button 44 to hold one end in  
 place and cleats to hold the other end in  
 engagement with the front plate 11 of the  
 casing. The actuated position of the parts  
 of the pedal mechanism while in use is indi-  
 20 cated in Fig. 5 by dotted lines, and the  
 result is that each pedal operates the two  
 bellows simultaneously by rocking the  
 lever 30.

I claim as my invention:

25 1. A pneumatic piano including an ex-  
 haust chamber, a fixed casing with a cham-  
 ber in communication with the exhaust  
 chamber, a bellows on each side of said

casing and having valve controlled com-  
 munication with the chamber therein, a 30  
 spring for normally collapsing said bellows,  
 and a pedal actuated means for simultane-  
 ously expanding both bellows.

2. A pneumatic piano including a hori-  
 zontal exhaust chamber, a horizontal casing 35  
 below the exhaust chamber and communi-  
 cating therewith, bellows below and above  
 said casing and having valve controlled  
 communication therewith, a spring between  
 and acting against the upper bellows and 40  
 the exhaust chamber to collapse said upper  
 bellows, a rocking lever pivotally mounted  
 in connection with said fixed casing, con-  
 necting bars between the ends of the lever  
 and the two bellows, and a pedal for actuat- 45  
 ing the lever, whereby the pedal acting  
 through the lever mechanism will expand  
 the two bellows and the spring acting there-  
 through will collapse the same.

In witness whereof, I have hereunto affixed 50  
 my signature in the presence of the wit-  
 nesses herein named.

WILLIAM G. BETZ.

Witnesses:

C. W. BOYNTON,  
 J. A. ROHE.