

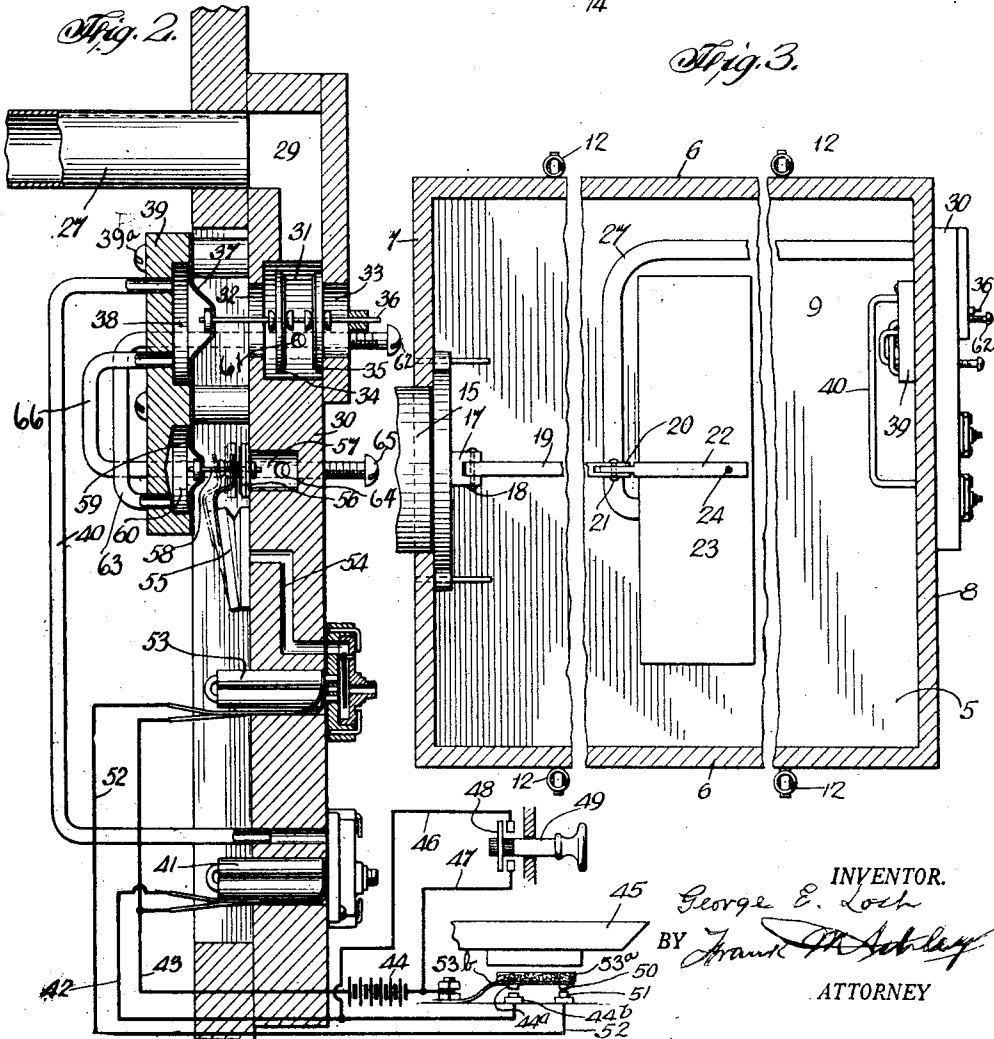
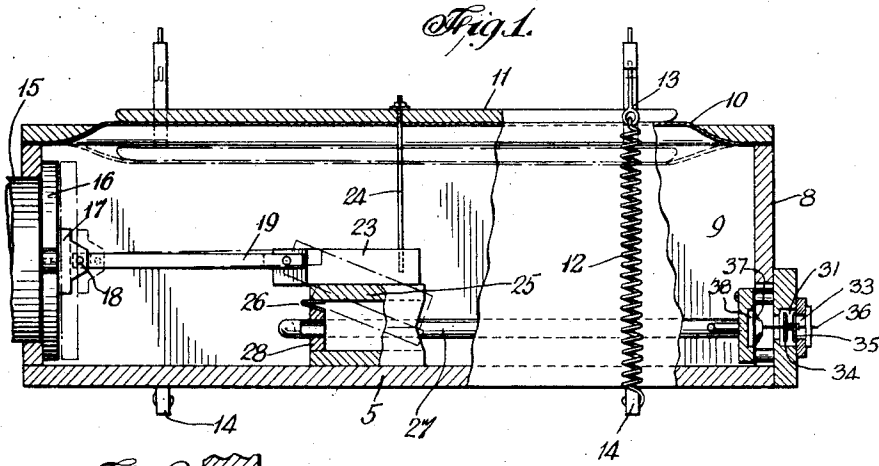
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ORGAN MECHANISM

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ORGAN MECHANISM.

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This invention relates to a tremulant and pressure accent producing mechanism for pipe organs and more particularly to a novel and improved means for mechanically vibrating the flexible member of an air chest by another pneumatic and alternately exhausting and inflating the said pneumatic to increase the pressure on the flexible member and thus produce a tremulant in the tone of the organ pipes.

One of the objects of my invention is to provide a mechanically operated pneumatic or bellows constructed and arranged with relation to an organ bellows, reservoir or air chest, either inside or outside, to temporarily increase the pressure of the wind in said reservoir or air chest to produce an accent in the tone of the pipes.

Another object of my invention is to produce a mechanically operated tremulant producing mechanism associated with the main organ bellows, reservoir or air chest including provision for intermittently inflating and deflating an accenting pneumatic.

A further object of my invention is to provide a tremulant and pressure accent producing mechanism, preferably arranged within a pneumatic or air chest and having provision for continuously or intermittently deflating and inflating an accenting pneumatic to produce an accent in the tone effect of the pipes.

To enable others skilled in the art to more fully comprehend the underlying features of my invention that they may embody the same in the practical application and advantages to produce the required results, drawings depicting a preferred form thereof have been annexed hereto in which

Fig. 1 is a vertical sectional view through the wind chest showing the secondary pneumatic.

Fig. 2 is an enlarged, sectional view showing the mechanism for controlling the accenting pneumatic.

Fig. 3 is a top plan of the wind chest showing the accenting pneumatic.

Referring now to the drawing, 5 designates the bottom, 6 the sides and 7, 8 the ends of a main air chest 9 which is provided with a flexible diaphragm 10 and top 11. The diaphragm and top are expanded by wind pressure in the chest against the resistance of coil or tension springs 12 connected to eye bolts 13 and lower bars 14 or in any other well known manner as practiced in the art.

Air pressure is supplied to the air chest 9 through a main conduit 15 by means of a silent motor operated blower, (not shown), the air pressure being controlled by the main valve 16 within said chest. As the wind is released from the chest, the valve 16 becomes unseated from the full line to the dotted line position, see Fig. 1, permitting the air to enter as rapidly as it is exhausted.

Connected to the valve 16 is a bracket 17 to which is pivotally secured as at 18, the lever 19. The free, bifurcated end 20 of said lever is in turn pivotally connected at 21 to a bar 22 fastened to the top of an accenting pneumatic 23 which is capable of upward and downward movement with the flexible diaphragm 10 and top 11, being connected therewith by the vertical rod 24 as shown by said Fig. 1 of the drawing.

The accenting pneumatic comprises a bellows 25 here shown and illustrated within the air chest 9, the movable member or element of said bellows being connected as at 26 for oscillation as the air pressure is increased or decreased. The main air chest 9 is in communication with the bellows by means of a pipe or conduit 27 passing through a wall 28. The opposite end of the conduit 27 leads to an air passage 29 which is under the control of a valve or pallet mechanism, further to be described.

By the term accenting pneumatic as referred to in my invention is that portion of the mechanism wherein a pneumatic is mechanically connected to the vibratable member of the air chest reservoir, or pressure regulator and arranged so that the inflation or deflation of said pneumatic adds to or subtracts from the compressive force which the said vibratable member exerts on the air within the air chest.

For convenience, I have shown the mechanism for controlling the air leading to the bellows 25 located at one end of the air chest but it will be recognized and understood that it may be positioned at any desired exterior point to perform its functions. The said mechanism in this instance, comprises a block 30 having a main air chamber 31 with the outlet openings 32, 33 controlled by pallets or valves 34, 35 on the pallet stem or rod 36. The pallet stem is adapted to be operated by a flexible diaphragm 37 which forms a chamber 38 with one face of a block or plate 39 held by suitable fastening elements

such as the screws 39^a to the said block 30. A pipe 40 passing through the block or plate 39 to the chamber 38 extends through the block 30 and its exit opening is controlled by an organ magnet 41 through conductors 42, 43 in circuit with a battery 44, contacts 44^a, 44^b by means of a key or key board 45. Branch conductors 46, 47 are also provided leading to suitable contacts for cooperation with the contact plate 48 of a tremolo draw stop 49, independent of the key or key board.

The key or key board 45 is also adapted to close contacts 50, 51 in advance of or independent of contacts 44^a, 44^b depending upon the pressure applied, being under the control of the organist, said circuit including a conductor 52 leading to a second organ magnet 53. The key or key board engages a felt pad or strip 53^a on the spring leaf 53^b to close one or both contacts as the pressure is applied which may be by hand or foot.

The magnet 53 controls an outlet passage 54 leading to a small bellows 55. The pallet or valve 56 of the small air chamber 57 and pallet stem 58 are actuated by a diaphragm 59 of a second chamber 60. The bellows 55 may close the pallet 56 and prevent its motion but it cannot open it. The chamber 31 is provided with a bleed aperture 61 controlled by an adjustable throttle screw 62 and is in communication with the chamber 60 by a branch conduit 63. The chamber 57 is also provided with a similar bleed aperture 64 controlled by a throttle screw 65 which is in communication with the chamber 38 by a conduit 66. This mechanism, when magnet 41 alone is energized, will result in producing an oscillating motion to valve stem 36, thus alternately deflating and inflating the accent pneumatic and produce a tremulant effect in the organ. When both magnets 41 and 53 are energized, chamber 38 is continuously exhausted actuating pallet stem 36 so as to continuously deflate the accenting pneumatic and causing an increase in pressure delivered to the pipes and accent in the tone.

It will thus be seen that what has been produced is broadly a mechanically operated tremulant and pressure accent in pipe organs wherein the top of the reservoir is vibrated by means of another pneumatic by alternately exhausting and inflating the second pneumatic so as to alternately increase and decrease the pressure on the top of the reservoir producing the effect in the tone of the pipes known as the tremulant. In so far as I am aware, tremulants have been heretofore constructed by means of an apparatus located outside of the reservoir which usually exhausts a small quantity of air and then ceases exhausting and then exhausts again by pulsations. This produces a pulsating pressure in the reservoir. The accenting pneumatic here shown is mounted in the air reservoir or air chest immediately below the

center of the movable top and is so connected to the inlet valve of the reservoir that the said valve functions in the normal way when the tremulant is not in use but when the accenting pneumatic is exhausted, it produces a pull on the top of the reservoir which temporarily increases the pressure. When the pneumatic is re-inflated, the pressure returns to the original condition. A single exhaust is required of this pneumatic to produce the pressure accent which is an effect not produced in the present types of pipe organs.

The valve or pallet mechanism here shown is operable electrically and it may be operated on the pendulum principle. In other words, the valve and pallet mechanism is operated by two coupled, mutually reversing primary valves, but it may be operated by mechanically making and breaking the circuit to the magnet, operating the tremulant by the pendulum or other means. Whether one system or the other is employed which operates the pallets and exhausts the accenting pneumatic in the bellows causing the pressure to be increased until the pressure accent device is released, the effect produced is the same. By this means, an organist may accent the first beat of the measure producing rhythm in the organ if he desires, or the accenting of any particular note could be produced. By oscillating or varying the pressure on the key, there is produced a tremulant of such a period of vibration as the organist at the moment desires. In other words, there is an alternating inflation and exhaust cycle produced by the mechanical means shown which affects the bellows of the main air chest thus producing the tremulant. While I have shown and described the accenting pneumatic as being in communication with the air-chest, it is not absolutely necessary that it be so since the valve mechanism for said pneumatic may be separately enclosed and supplied with air from another source, such as a pipe leading to the inlet valve, or some other air-chest in the organ.

First assume the tremulant stop is not working. When additional force is supplied, the battery current is supplied through the contacts or closing points 44^a, 44^b, also contacts 50, 51 to the magnets 41 and 53. The magnet 53 being energized will connect the passage or channel 54 and pneumatic or bellows 55 to the atmosphere and cause the pneumatic 55 to collapse. The pneumatic 55 is more powerful than the diaphragm 59 and thus maintains or holds the valve 56 shut, regardless of whether the chamber 60 is exhausted. The energizing of magnet 41 exhausts the chamber 38 and causes the outlet or port 32 to be closed and the outlet or port 33 to be opened. This operation exhausts accent pneumatic 23 producing additional tension on the connected rod 24 which added to the normal tension on the springs 12 causes

an increased compression of the air in the air chest and giving a constant increase of power. In operation it is not necessary for the accent pneumatic to actually collapse but merely to create a force which when transmitted to the moving member or top 11, causes an increase of pressure in the reservoir. When the pressure is restored to the accent pneumatic through the reverse travel of diaphragm 37, openings or ports 32, 33, the tension on the rod 34 is released and the additional strain on the top member 11 being removed, the pressure of the airchest is restored to normal. The second touch under the key may be used to either get a sudden accent as may be desired or by having a rhythmic succession of accents to provide a tremulant of such a period of vibration as may be desired by the organist at that particular moment.

When the contact points 44^a and 44^b, are opened so that current is no longer supplied to magnets 41 and 53, the chambers 38 and 54 will be again supplied with air from the magnets 53 and 41, and pneumatic 55 having the same pressure of air inside and outside of it will not have any force in either direction. The chamber 38, being filled with air the diaphragm will have equal force on both sides and the pressure of the air against the port 32 will move the valve to an open position and 33 to a closed position which will supply air to the accent pneumatic through passage 27 and 29, thereby restoring the original condition of the accent pneumatic and releasing the surplus pressure from the springs 12.

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

1. An organ tremolo of the class described comprising an air chest having a flexible member, an accenting pneumatic for actuating said member, said pneumatic effecting the increased or decreased compressive force of the internal air pressure within the air chest, and means for controlling the movement of said flexible member through the accenting pneumatic.

2. An organ tremolo of the class described comprising an air chest having a vibratable member, an accenting pneumatic for controlling the movement of said member, said pneumatic effecting the increased or decreased compressive force of the internal air pressure within the air chest, and means for varying the pressure on said member through the accenting pneumatic.

3. An organ tremolo of the class described comprising an air chest having a vibratable member, an accenting pneumatic located within and in communication with the air chest, said pneumatic effecting the increased or decreased compressive force of the internal air pressure within the air chest, means connecting said member with the accenting pneu-

matic for simultaneous operation therewith and means for varying the internal pressure of the pneumatic to correspondingly fluctuate the vibratable member.

4. An organ tremolo of the class described comprising an air chest having a vibratable member, an accenting pneumatic for controlling the movement of said member, said pneumatic effecting the increased or decreased compressive force of the internal air pressure within the air chest, and means for intermittently inflating and deflating the accenting pneumatic and correspondingly vary the movement of the accenting pneumatic.

5. An organ tremolo of the class described comprising an air chest having a vibratable member, an accenting pneumatic connected for movement with said member, said pneumatic effecting the increased or decreased compressive force of the internal air pressure within the air chest, and means for varying the pressure within the air chest through the accenting pneumatic whereby there is transmitted to the said member a continuous or intermittent force.

6. An organ tremolo of the class described comprising an air chest having a vibratable member, a valve for said chest, an accenting pneumatic operable upon the movement of the valve and means for continuously or intermittently varying the pressure within the air chest through the accenting pneumatic whereby said member may be operated, said pneumatic effecting the increased or decreased compressive force of the internal air pressure within the air chest.

7. An organ tremolo of the class described comprising an air chest having a vibratable member, an inlet valve for said chest, an accenting pneumatic in communication with said chest, said pneumatic effecting the increased or decreased compressive force of the internal air pressure within the air chest, and mechanically controlled means for deflating and inflating said pneumatic whereby said member may be continuously or intermittently vibrated.

8. An organ tremolo of the class described comprising an air chest having a vibratable member, an inlet valve for said chest, an accenting pneumatic connected for operation with said member, said pneumatic effecting the increased or decreased compressive force of the internal air pressure within the air chest, and a valve controlled inflating and deflating mechanism associated with the accenting pneumatic whereby said member may be continuously or intermittently operated.

9. An organ tremolo of the class described comprising an air chest having a vibratable member, an inlet valve for said chest, an accenting pneumatic in communication with said air chest through an air conduit and

connected for operation with the said vibratable member, the opposite end of said conduit being in communication with a pressure releasing valve mechanism whereby
5 said accenting pneumatic and member may be continuously or intermittently operated.

10 10. An organ tremolo of the class described comprising an air chest having a vibratable member, an inlet valve for said chest, an accenting pneumatic connected for operation with said vibratable member and said inlet valve, said connection leading to a pressure releasing valve mechanism whereby
15 said accenting pneumatic and vibratable member may be continuously or intermittently operated, said pneumatic effecting the increased or decreased compressive force of the internal air pressure within the air chest.

20 11. An organ tremolo of the class described comprising an air chest having a vibratable member, an inlet valve for said chest, an accenting pneumatic in communication with the air chest through a conduit
25 and connected for operation with said vibratable member and said inlet valve, said conduit leading to a valve controlled outlet, said pneumatic effecting the increased or decreased compressive force of the internal air pressure within the air chest, and means for controlling the movement of said valve controlled outlet whereby said accenting pneumatic and its connected member may be continuously or intermittently operated.

able member and said inlet valve, said conduit leading to a valve controlled outlet, said pneumatic effecting the increased or decreased compressive force of the internal air pressure within the air chest, and means for
30 controlling the movement of said valve controlled outlet whereby said accenting pneumatic and its connected member may be continuously or intermittently operated.

12. An organ tremolo of the class described comprising an air chest, having a
35 vibratable member, an inlet valve for said chest, an accenting pneumatic in direct communication with the air chest through a conduit and connected for simultaneous operation with the vibratable member, said conduit leading to an air outlet, pallet mechanism controlling said outlet and automatic
40 means for varying the internal pressure of the pneumatic by means of the pallet mechanism to correspondingly fluctuate the vibratable member.

In testimony whereof I have affixed my signature.

GEORGE E. LOSH.