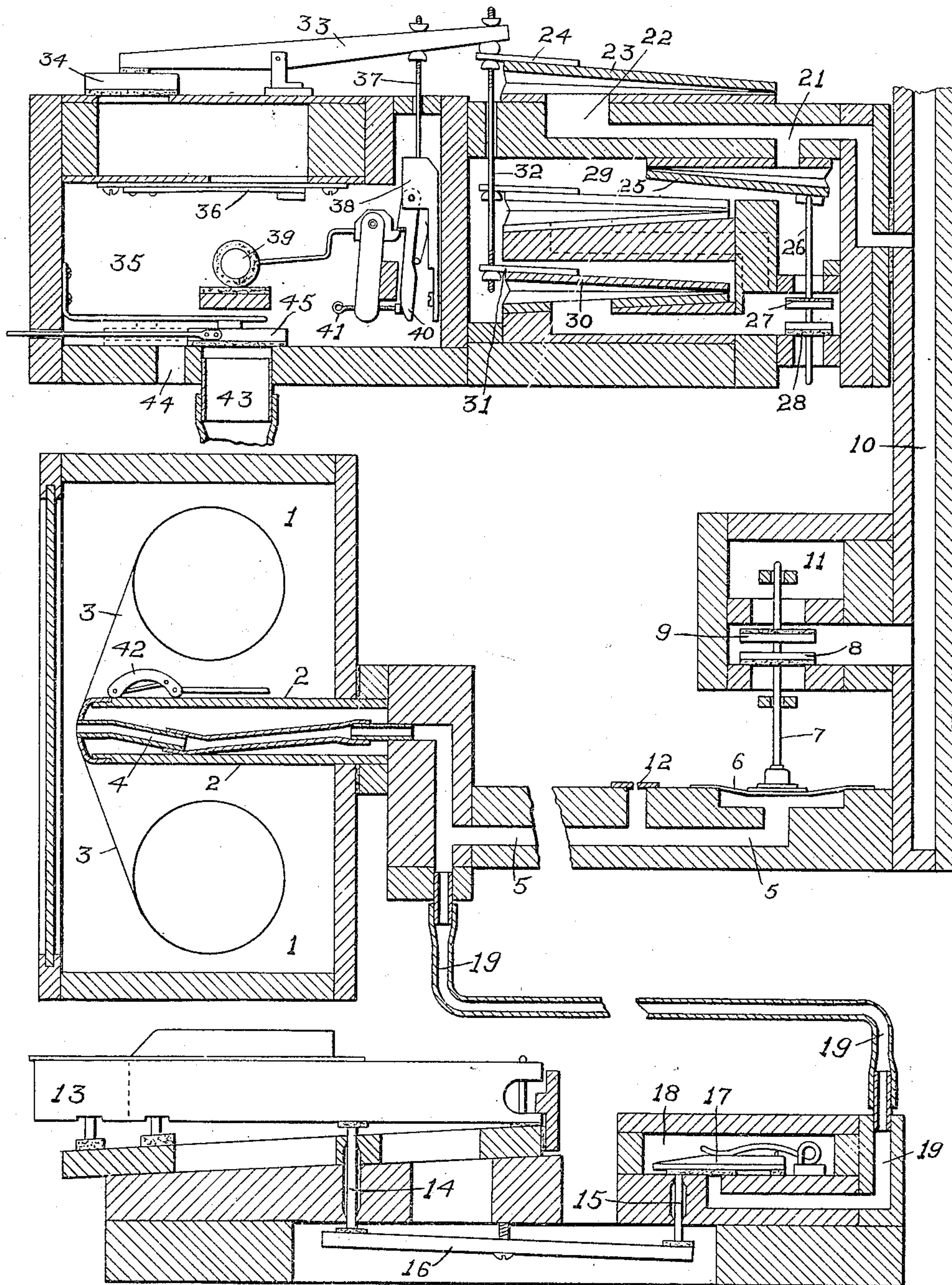


No. 891,551.

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G. B. KELLY.
REED MECHANISM FOR SELF PLAYING INSTRUMENTS.
APPLICATION FILED SEPT. 27, 1906.



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REED MECHANISM FOR SELF-PLAYING INSTRUMENTS.

No. 891,551.

Specification of Letters Patent.

Patented June 23, 1908.

Application filed September 27, 1906. Serial No. 336,431.

To all whom it may concern:

Be it known that I, GEORGE B. KELLY, a citizen of the United States, and a resident of Boston, Massachusetts, have invented
5 certain new and useful Improvements in Reed Mechanism for Self-Playing Instruments, of which the following is a specification.

It has been found advantageous to combine with a reed and the pneumatic connections for sounding the reed, a percussion device for striking the reed when it is to be sounded.

The present invention provides pneumatic
15 means for accomplishing the proper operation of the percussion device and the operation of the reed valve for sounding the reed.

The invention also provides two pneumatics positively connected to the percussion device and to the reed valve for operating them with means for alternatively energizing such pneumatics.

The invention further provides means for operating the percussion device to vibrate
25 the reed independently of the usual vibration caused by an air current.

Further objects of the invention will appear in the specification and will be pointed out in the claims.

I will describe my invention as applied to a reed organ operated by pneumatic pressure above that of atmosphere.

The drawing represents diagrammatically and in transverse vertical section a reed
35 mechanism embodying my invention.

1 designates a pressure chamber, in which is mounted a tracker 2 and suitable means for moving thereover a perforated music sheet 3. Each duct 4 in the tracker 2 leads
40 by a passage 5 to a pneumatic diaphragm 6 having a stem 7 which is common to it and to valves 8 and 9, which operate to alternately open a passage 10 to pressure from a chamber 11 or to atmosphere. A leak hole
45 12 is provided in the passage 5, as shown.

For manually playing the instrument I provide a bank of keys 13 operating through rods 14 and 15 and a lever 16 to raise a valve 17 located in a pressure chamber 18, which
50 communicates by a passage 19 with the passage 5 above-named. It is clear that the depression of a key 13 will admit pressure

from the chamber 18 to raise the diaphragm 6, with the result already described.

The passage 10 leads, through a passage 55 21, to a vertical passage 22, above and communicating with which is a pneumatic bellows 23 having a finger 24. Also connected with the passage 21 is an intermediate bellows 25 acting through a stem 26 to move
60 the valves 27, 28, which alternatively admit pressure from a chamber 29 or atmospheric air to a bellows 30 located in the chamber 29 and provided with a finger 31.

The fingers 24 and 31 of the pneumatics 23 65 and 30 respectively are connected by a rod 32, which is also connected to a lever 33, at the other end of which is a reed valve 34 operative when raised to exhaust pressure from a reed chest 35, through a passage or
70 reed cell beneath which is a reed 36. Also secured to the lever 33 is a rod 37, which passes through a wall of the chamber 35 and is connected to a carrier 38, on which is
75 mounted a jack 40 which actuates a hammer 39 for striking the reed 36. The escapement of the jack and the regulating screw 41 by which the escape is adjusted are so well known as to require no explanation. It is also understood that the several rods 15, 32
80 and 37 are provided, as usual, with means for the prevention of leakage from the pressure chambers into which they lead, and that a well known form of duct cover 42 may be employed to cover the ducts 4 when the
85 instrument is being manually played.

In a wall of the reed chamber 35 is a passage 43 connected to a wind chest or source of air pressure, not shown, and a passage 44 opening to atmosphere. These are closed
90 alternatively by a slide valve 45, which may be operated manually or otherwise, as desired.

The operation of the device is as follows: Air being admitted to the passage 5 either
95 automatically through a perforation in the music sheet 3 or manually by depressing a key 13 as described, the valves 8 and 9 are raised from the position shown so as to shut off the passage 10 from communication with
100 the pressure chamber 11 and to permit the exhaustion of the chamber 22 to atmosphere. This acts directly to exhaust the pressure from the bellows 23, and indirectly through

the collapse of the bellows 25 and consequent raising of the valves 27 and 28 to positively collapse the bellows 30. The collapse of the pneumatic or bellows 30 acts to raise the reed valve 34, thus sounding the reed 36, and also to depress the jack 38, whereby the hammer 39 is caused to strike the reed. When the pressure is cut off from the passage 5 it will exhaust through the hole 12 and the diaphragm 6, and valves 8 and 9 will resume the position shown in the drawing. The positive distention of the pneumatic 23 will then act to close the reed valve 34 and thus to stop the vibration of the reed.

15 In my device the pneumatic 23 takes the place of the usual spring for closing the reed valve. As the pneumatic 23 becomes neutral when the pressure is exhausted from within it, it offers no resistance, as does the spring, to the action of the actuating pneumatic 30. When again distended by the movement of the valves 8 and 9, it promptly closes the reed valve and distends the pneumatic 30, the latter then being neutral by reason of the pressure both within the pneumatic itself and in the chamber 29 in which it is placed.

When it is desired to produce a "pizzicato" or harp-like effect the valve 45 is moved to the position shown in full lines in the drawing. This cuts off the pressure from the reed chamber 35 and opens it to atmosphere. It is evident that in this case the particular bank of reeds represented will be sounded only by the hammers 39, the valve 34 lifting idly. This effect may be produced during the normal operation of the instrument, the other banks of reeds, not shown, being vibrated by the air pressure, as usual.

40 What I claim is:

1. A reed mechanism comprising a reed chest, a reed in said chest, a reed valve, a pressure chamber, a pneumatic in said chamber for opening said reed valve, and a second pneumatic exterior of said chamber for closing said reed valve, both said pneumatics being distended except when the reed valve is closed.

2. A reed mechanism comprising a reed chest, a reed in said chest, a reed valve, an actuating pneumatic subject to pressure on its exterior for opening said reed valve, a second pneumatic subject to an interior pressure for closing said valve, and connections for simultaneously collapsing and simultaneously distending them.

3. A reed mechanism comprising a reed chest, a reed in said chest, a reed valve, an actuating pneumatic subject to pressure on its exterior for opening said reed valve, a second pneumatic subject to interior pressure for closing said valve, connections for simultaneously collapsing and simultane-

ously distending them, and a pneumatically actuated valve for controlling both said pneumatics.

4. A reed mechanism comprising a reed chest, a reed in said chest, a reed valve, a pressure chamber, a pneumatic in said chamber for opening said reed valve, a second pneumatic exterior of said chamber for seating said reed valve, a valve for exhausting said first-named pneumatic to atmosphere, an intermediate pneumatic for controlling said last-named valve, and means for simultaneously exhausting said reed-seating pneumatic and said intermediate pneumatic, for the purposes set forth.

5. A reed mechanism comprising a reed chest, a plurality of reeds in said chest, a valve for each of said reeds, a percussion device in said chest for each of said reeds, a second wind chest independent of said reed chest as to pressure, pneumatics connected to said second wind chest, one for each of said valves, and positive connections between each of said pneumatics and one of said valves and one of said percussion devices for actuating them simultaneously, and means for cutting off air pressure in said reed chest.

6. In combination, a reed, a reed valve and percussion device for the reed, two pneumatics connected to the valve and percussion device for actuating them respectively in opposite directions, another pneumatic having a common pneumatic connection with one of the first said pneumatics, and valves and connections controlled by the third said pneumatic for actuating the other of the first said pneumatics.

7. In combination, a reed, a reed valve, a pair of pneumatics connected to operate the reed valve, a pressure chamber 29 containing one of the said operating pneumatics, a valve-controlled passageway leading to one of the pneumatics, a third pneumatic connected to the same passageway and valves and passages controlled thereby for controlling the other of said operating pneumatics.

8. In combination, a reed, a reed valve, a pair of pneumatics connected to operate the reed valve, a pressure chamber 29 containing one of the said operating pneumatics, a valve-controlled passage leading to and controlling one of the pneumatics, a third pneumatic which is contained in the said chamber and connected with the said passage, and pneumatic connections and valves for controlling the other of the said operating pneumatics, the last said valves being actuated by the said third pneumatic.

9. In combination, a reed chest, a reed, a reed valve, a percussion device for the reed, another chest, a pneumatic contained in said

chest and connected to operate the said reed
valve and the said percussion device, a pneu-
matic exterior to the said chests and also
connected to operate the reed valve and per-
5 cussion device, valves and passages for ac-
tuating or controlling the said pneumatics
and a valve for controlling the admission of
wind to the reed chest.

In testimony whereof I have signed this
specification in the presence of two sub- 10
scribing witnesses.

GEORGE B. KELLY.

Witnesses:

A. W. SPENCE,
D. C. HEIRS.