

No. 760,115.

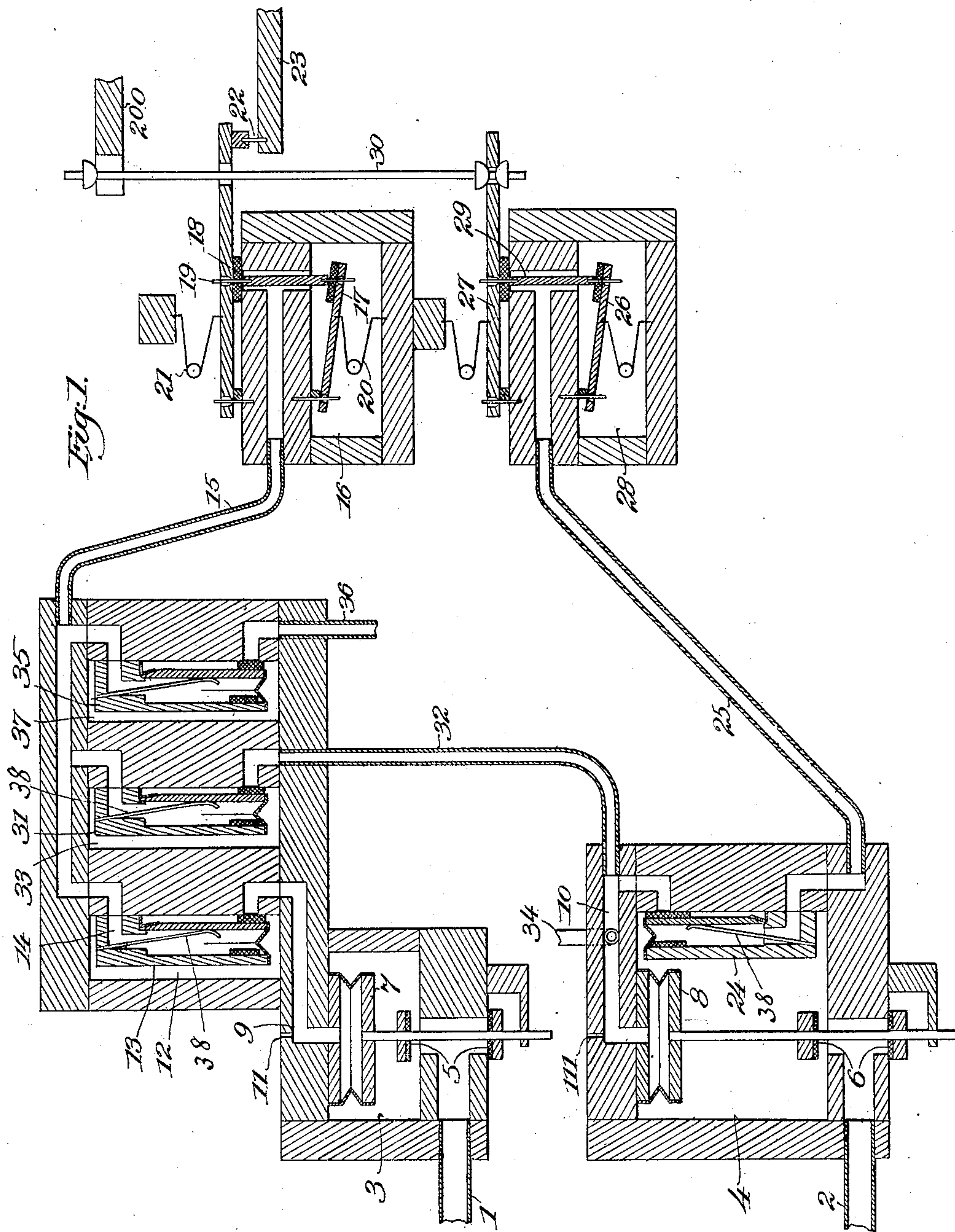
PATENTED MAY 17, 1904.

W. E. HASKELL.
PNEUMATIC COUPLER FOR PIPE OR REED ORGANS.

APPLICATION FILED AUG. 21, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:

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Fred O. Fish

Inventor:
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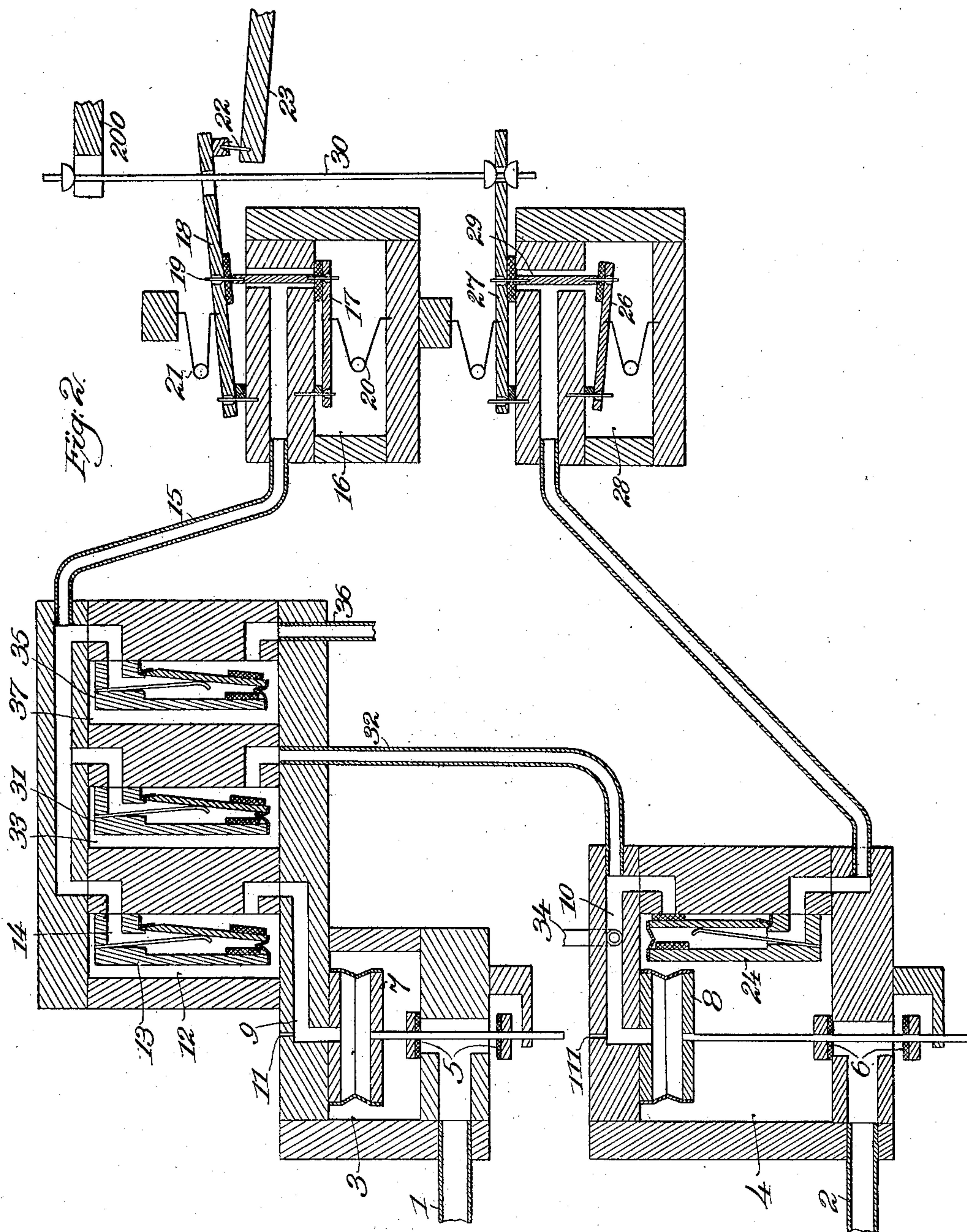
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NO MODEL.

2 SHEETS—SHEET 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

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PNEUMATIC-COUPLER FOR PIPE OR REED ORGANS.

SPECIFICATION forming part of Letters Patent No. 760,115, dated May 17, 1904.

Application filed August 21, 1903. Serial No. 170,305. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. HASKELL, a citizen of the United States, residing at Brattleboro, in the State of Vermont, have invented certain new and useful Improvements in Pneumatic-Couplers for Pipe or Reed Organs; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of the present invention is to provide a pneumatic-coupler for pipe or reed organs of improved and simplified construction and mode of operation.

With this object in view my invention consists in the devices, combinations, and arrangements hereinafter described and claimed, the advantages of which will be obvious to those skilled in the art from the following description.

In the drawings accompanying this application I have illustrated my invention as embodied in an organ in which the various wind chests or chambers are supplied with air under pressure; but it is to be understood that my invention is not limited to this type of organ, but is equally capable of embodiment in an organ in which the wind chests or chambers are partially exhausted of air.

It is also to be understood that my invention may be embodied in an automatic organ, the automatically-operating mechanical devices of such an organ being the equivalents, so far as the present invention is concerned, of the manually-operated keys of the organ illustrated in the drawings.

An organ embodying my invention is provided with channels, hereinafter referred to as "sounding-channels," in which the air-pressure is varied to cause the sounding devices connected therewith to speak, with wind chests or chambers in which a constant pressure is maintained, hereinafter referred to as "constant-pressure" chambers, and with valves for controlling the pressure in the sounding-channels.

In accordance with my invention a pneumatic located in a constant-pressure chamber

is provided for actuating the valve of a sounding-channel, and a channel is provided connecting with said pneumatic, in which the air-pressure is varied in order to cause the pneumatic to actuate the valve, this channel being hereinafter referred to as a "variable-pressure" channel. For varying the pressure in this channel the channel is provided with two or more ports, which are governed by separate valves. Suitable connections are provided whereby one of these valves is operated whenever the key corresponding to the sounding-channel is depressed. Each of the other ports is governed by a pneumatic-coupler valve located in a stop-controlled chest and suitably connected to a key corresponding to another sounding-channel and controlling, through suitable connections, the valve of said channel. Upon the depression of a key connected to a pneumatic-coupler valve, therefore, the valve of the sounding-channel corresponding to that key is actuated and also the valve of the first-mentioned sounding-channel in case the stop of the stop-controlled chest has been drawn. For reasons which will be obvious to those skilled in the art from the description of the preferred form of my invention the variable-pressure channel is preferably provided with a permanent vent, by means of which the air in the channel is maintained at atmospheric pressure when the valves governing the ports of the channel are in their normal position. Also, preferably, each port which is governed by a pneumatic-valve in a stop-controlled chamber connects the stop-controlled chamber and the variable-pressure channel, as such an arrangement, besides possessing the advantages of compactness and simplicity, allows for a simple construction of pneumatic-valve.

In the preferred form of the invention hereinafter specifically described a pneumatic located in a constant-pressure chamber is provided for actuating the valve of each sounding-channel and a variable-pressure channel is provided for each pneumatic. Each of these variable-pressure channels is provided with a port which is governed by a pneumatic-valve lo-

cated in a constant-pressure chamber. These valves are connected to key-controlled channels corresponding to the sounding-channels. The pneumatic-coupler valves are also connected with the key-controlled channels, so that the valve of a sounding-channel is actuated in the same manner whether it is actuated from the corresponding key-controlled channel through a pneumatic-valve in a constant-pressure chamber or from a key-controlled channel corresponding to another sounding-channel through a pneumatic-coupler valve.

The various features of my invention will be clearly understood from the accompanying drawings, in which—

Figure 1 is a sectional view illustrating somewhat diagrammatically a portion of an organ embodying a preferred form of the same, the view showing the connections between the valves of two sounding-channels, belonging, respectively, to the swell and great organ and their corresponding keys, together with the pneumatic coupler for causing the valves to be actuated simultaneously upon a depression of the key of the great organ; and Fig. 2 is a view similar to Fig. 1, showing the positions which the valves and pneumatics assume when the key of the great organ is depressed after the coupler-stop has been drawn.

Referring to the drawings, 1 is a sounding-channel of a great organ, and 2 a sounding-channel of the swell-organ, these channels leading to well-known or suitable devices (not shown) which control the admission of air to the pipes or reeds. The channel 1 is provided with two ports, one of which opens into a constant-pressure chamber 3 and the other of which opens into the atmosphere. The channel 2 is provided with two similar ports which communicate with the atmosphere and with a constant-pressure chamber 4. A double valve 5 governs the ports of channel 1, and a similar double valve 6 governs the ports of channel 2. The double valve 5 is actuated by means of a pneumatic 7, located in the constant-pressure chamber 3, and the double valve 6 is actuated by means of a similar pneumatic 8, located in the constant-pressure chamber 4. Communicating with the pneumatics 7 and 8, respectively, are channels 9 and 10, the pressure of the air in which is varied in order to actuate the pneumatics and which may therefore be conveniently termed "variable-pressure channels." These channels are provided with permanent vents 11 and 111, respectively. The channel 9 is also provided with a port opening into a constant-pressure chamber 12, which port is governed by a pneumatic-valve 13, located in the chamber 12 and communicating, by means of a channel 14, with a key-controlled channel 15. The channel 15 is provided with two ports, one of which communicates with the atmosphere and the other with the key-chest 16 of the great organ. These ports are governed by valve-levers 17 and 18, connected

by a sticker 19, which hold the levers separated, so that when one port is closed the other port is open. The levers 17 and 18 are acted upon, respectively, by springs 20 and 21, which tend to move the levers in a direction to close the ports, the normal position of the levers being that illustrated in Fig. 1, in which the port communicating with the atmosphere is closed and the port communicating with the chest 16 is open. The lever 18 is connected, by means of a sticker 22, to a key 23 of the great organ, so that when the key is depressed the lever 18 is raised against the tension of the spring 21.

The connections between the channel 10 and the key 200 of the swell-organ are substantially the same as the connections above described between the channel 9 and the key 23 of the great organ and comprise the pneumatic-valve 24, located in the chamber 4 and connecting with a key-controlled channel 25, spring-pressed valve-levers 26 and 27, governing ports of the channel 25, communicating with the key-chest 28 of the swell-organ and with the atmosphere, a sticker 29, connecting the levers 26 and 27, and a tracker 30, connecting the valve-lever 27 and the key 200.

Briefly stated, the operation of the devices so far described is as follows, it being understood that the chambers 3, 4, and 12 and the chests 16 and 28 are supplied with air under pressure: When the key of the great organ is depressed, the air in channel 15 is allowed to exhaust into the atmosphere, the pneumatic-valve 13 is actuated by the pressure in the chamber 12, and air under pressure is admitted into channel 9. The pressure within and without the pneumatic 7 is thus equalized, and the movable board of the pneumatic drops by gravity, thereby actuating the valve 5 to close the port of sounding-channel 1, which communicates with the chamber 3, and open the port which communicates with the atmosphere. In the same manner when the key of the swell-organ is depressed the air in channel 25 exhausts into the atmosphere, the pneumatic 24 is actuated by the pressure in the chamber 4 to open the port of channel 10 and admit air under pressure into the channel, and the bottom board of pneumatic 8 is allowed to drop to actuate the valve 6. As soon as either key is released air under pressure is admitted into the corresponding key-controlled channel, the pneumatic-valve connected therewith is actuated to close the port of the variable-pressure channel governed by the valve, and the pneumatic connected to the variable-pressure channel is actuated to close the port of the sounding-channel communicating with the atmosphere and open the port communicating with the constant-pressure chamber, the compressed air in the variable-pressure channel escaping through the permanent vent.

It will be noted that the pneumatic 8 will be actuated whenever air under pressure is

admitted to the channel 10 whether this is accomplished by actuating the pneumatic-valve 24 or by any other suitable means. In order to cause the pneumatic 8 to be actuated simultaneously with the pneumatic 7 upon a depression of the key 23 of the great organ, I accordingly provide a pneumatic-valve 31, connecting with the channel 15 and governing the port of a channel 32, leading from the channel 10. The valve 31 is located in a stop-controlled chest 33, and the port of the channel 32 opens into this stop-chest. When the stop of chest 33 is drawn, air under pressure is admitted into the chest, and thereafter when the key 23 of the great organ is depressed the valve 31 is actuated to open the port of channel 32 and admit air under pressure from the chamber 33 into the channel 10. The valve 31 is actuated simultaneously with the valve 13 in the constant-pressure chamber 12, and thus the pneumatics 7 and 8 are caused to actuate the valves 5 and 6 simultaneously. This operation will be clearly understood from an inspection of Fig. 2, which illustrates the valves and pneumatics in the positions which they assume when the key of the great organ is depressed. When the stop of the chest 33 is not drawn, the air in the chest is at atmospheric pressure, and accordingly the valve 31 is not actuated when the key 23 is depressed, and the valve 6 of sounding-channel 2 remains in the position indicated in Fig. 1 until the key of the swell-organ is depressed. It will be noted that a depression of the key of the swell-organ causes an actuation of the valve 6 whether the stop of chest 33 is drawn or not, air under pressure being admitted to the channel 10 from the constant-pressure chamber 4 by the actuation of the pneumatic-valve 24.

As illustrated in the drawings, the pneumatic-valves 13, 24, and 31 are similar in construction, each comprising a channeled base secured to the wall of the chamber or chest in which the valve is located, a stationary board extending from the base parallel with the wall of the chamber or chest and a movable board pivotally mounted upon the base and extending between the stationary board and the wall of the chamber or chest. The movable board is provided with a valve-pad, of felt or other suitable material, which acts to close the port opening into the chamber when the pneumatic-valve is distended. In order to allow the valves to be placed in any desired position and to render them quick and certain in their action, each valve is provided with a spring 38, consisting of a wire secured at one end to the base and resting at the other end against the inner side of the movable board. This spring acts to distend the valve as soon as the internal and external pressures are equalized and also holds the valve distended against any back pressure in the chan-

nel controlled by the valve, this function of the spring being particularly valuable in the pneumatic-coupler valve 31, in which the spring overbalances any pressure in the chamber 10 in excess of that in the channel 15. This pneumatic-valve in and of itself embodies novel and valuable features of invention; but I make no claim for the same in this application, as this valve forms the subject-matter of a separate application filed August 21, 1903, Serial No. 170,304, it being understood that so far as the present invention is concerned any suitable form of pneumatically-operated valve may be used.

It will be evident that any desired number of coupler-valves may be connected to a single key-controlled channel and arranged to control the valves of sounding-channels either in different sections of the organ or in the same section. It will also be evident that a variable-pressure channel may be provided with any desired number of ports governed by pneumatic-coupler valves connected to different key-controlled channels, so that the valve of a single channel may be controlled from any one of a number of keys. Thus in the drawings I have illustrated a channel 34, similar to the channel 32, leading from the channel 10, and a second pneumatic-coupler valve 35, connecting with the channel 15 and governing the port of a channel 36, opening into a stop-controlled chest 37, in which the coupler-valve is located. The channel 36 leads to the variable-pressure channel of another pneumatic (not shown) similar to the pneumatic 8, and the channel 34 leads to a pneumatic-coupler valve similar to those illustrated, connected to another key-controlled channel.

It will be understood that the constructions and arrangements illustrated in the drawings and herein specifically described embody my invention in its preferred form only and that except as defined in the claims my invention is not limited to the constructions and arrangements illustrated, but may be otherwise embodied without departing from the spirit thereof.

Having thus described my invention, I claim as new and desire to secure by Letters Patent of the United States—

1. An organ, having, in combination, sounding-channels, corresponding key-controlled channels, sounding-channel valves, constant-pressure chambers, a valve-actuating pneumatic for each sounding-channel located in a constant-pressure chamber, a variable-pressure channel connecting with each pneumatic, a pneumatic-valve located in a constant-pressure chamber and connecting with each key-controlled channel and governing a port in the variable-pressure channel of the valve-actuating pneumatic of the corresponding sounding-channel, a stop-controlled chest, and a pneumatic-valve therein connecting with a

key-controlled channel and governing a port in the variable-pressure channel of the valve-actuating pneumatic of a sounding-channel corresponding to another key-controlled channel.

2. An organ, having, in combination, sounding-channels, corresponding key-controlled channels, sounding-channel valves, constant-pressure chambers, a valve-actuating pneumatic for each sounding-channel located in a constant-pressure chamber, a variable-pressure channel connecting with each pneumatic, a pneumatic-valve located in a constant-pressure chamber and connecting with each key-controlled channel and governing a port in the variable-pressure channel of the valve-actuating pneumatic of the corresponding sounding-channel, a stop-controlled chest and a pneumatic-valve therein connecting with a key-controlled channel and governing a port connecting the stop-controlled chest with the variable-pressure channel of the valve-actuating pneumatic of a sounding-channel corresponding to another key-controlled channel.

3. An organ, having, in combination, sounding-channels, corresponding key-controlled channels, sounding-channel valves, constant-pressure chambers, a valve-actuating pneumatic for each sounding-channel located in a constant-pressure chamber, a variable-pressure channel connecting with each pneumatic provided with a permanent vent, a pneumatic-valve located in a constant-pressure chamber connecting with each key-controlled channel and governing a port in the variable-pressure channel of the valve-actuating pneumatic of the corresponding sounding-channel, a stop-controlled chest and a pneumatic-valve therein connecting with a key-controlled channel and governing a port in the variable-pressure channel of the valve-actuating pneumatic of a sounding-channel corresponding to another key-controlled channel.

4. An organ, having, in combination, sounding-channels, sounding-channel valves, constant-pressure chambers, a valve-actuating pneumatic located in a constant-pressure chamber, a variable-pressure channel connecting with said pneumatic provided with a plurality of ports, a stop-controlled chest, and a key-controlled pneumatic-valve for one of said ports located in said stop-controlled chest, said pneumatic-valve, by its movements when a

corresponding key is moved, controlling the air-pressure in said variable-pressure channel.

5. An organ, having, in combination, sounding-channels, key-controlled channels, sounding-channel valves, constant-pressure chambers, a valve-actuating pneumatic located in a constant-pressure chamber, a variable-pressure channel connecting with said pneumatic, a stop-controlled chest and a pneumatic-valve therein connecting with a key-controlled channel and governing a port connecting said stop-controlled chest and said variable-pressure channel.

6. An organ, having, in combination, sounding-channels, key-controlled channels, sounding-channel valves, constant-pressure chambers, a valve-actuating pneumatic located in a constant-pressure chamber, a variable-pressure channel connecting with said pneumatic provided with a permanent vent opening into the outer air, a stop-controlled chest and a pneumatic-valve in said stop-controlled chest, connecting with a key-controlled channel and governing a port in said variable-pressure channel.

7. An organ, having, in combination, sounding-channels, key-controlled channels, sounding-channel valves, constant-pressure chambers, a valve-actuating pneumatic located in a constant-pressure chamber, a variable-pressure channel connecting with said pneumatic, a stop-controlled chest, a pneumatic-valve therein connecting with a key-controlled channel and governing a port in the variable-pressure channel and a spring acting on said valve to overbalance the pressure in the variable-pressure channel.

8. An organ, having, in combination, sounding-channels, sounding-channel valves, constant-pressure chambers, a valve-actuating pneumatic located in a constant-pressure chamber, a channel connecting with said pneumatic, a stop-controlled chest and a key-controlled pneumatic-valve therein which by its movements when a corresponding key is moved, controls the air-pressure in said channel.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

WILLIAM E. HASKELL.

Witnesses:

H. F. C. TÖDT,
C. N. MORAN.