(No Model.) 3 Sheets—Sheet 1.

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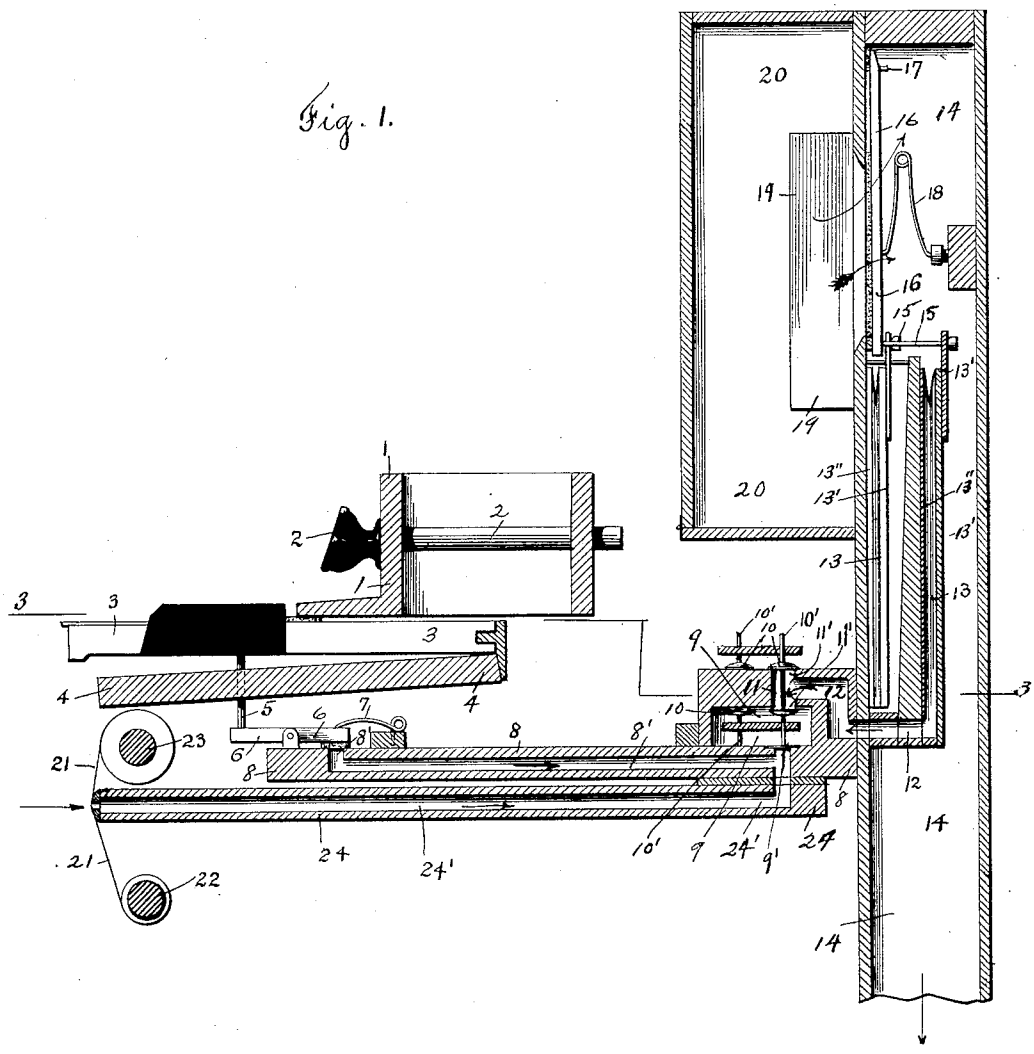
ORGAN.

No. 531,831. Patented Jan. 1, 1895.

Fig. 1.



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(No Model.) 3 Sheets—Sheet 2.

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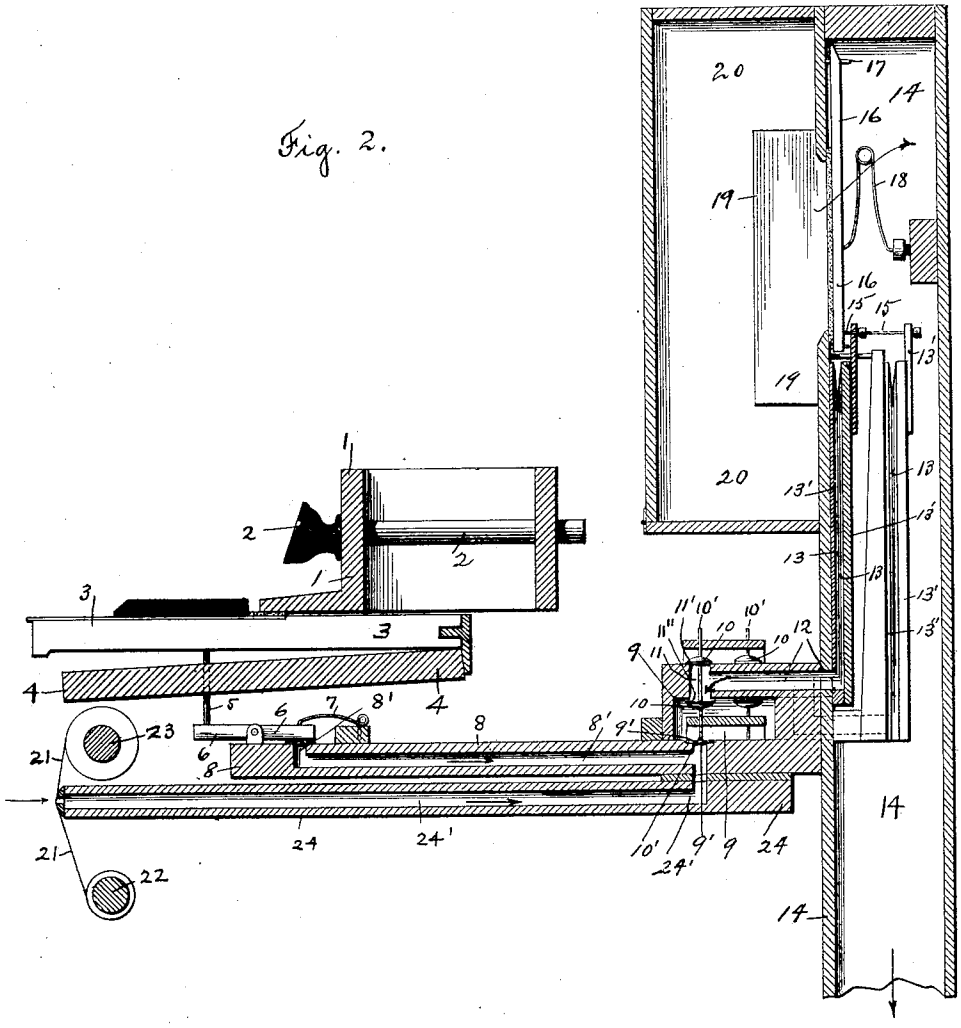
Fig. 2.



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(No Model.) 3 Sheets—Sheet 3.

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ORGAN.

No. 531,831. Patented Jan. 1, 1895.

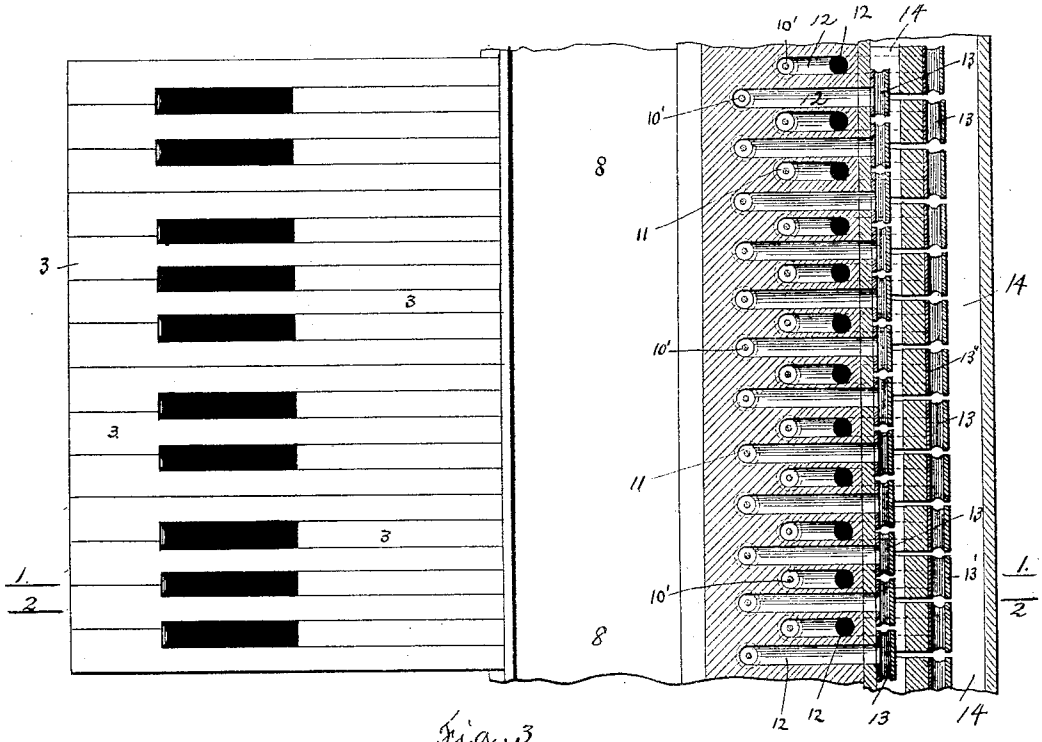

Fig. 3.

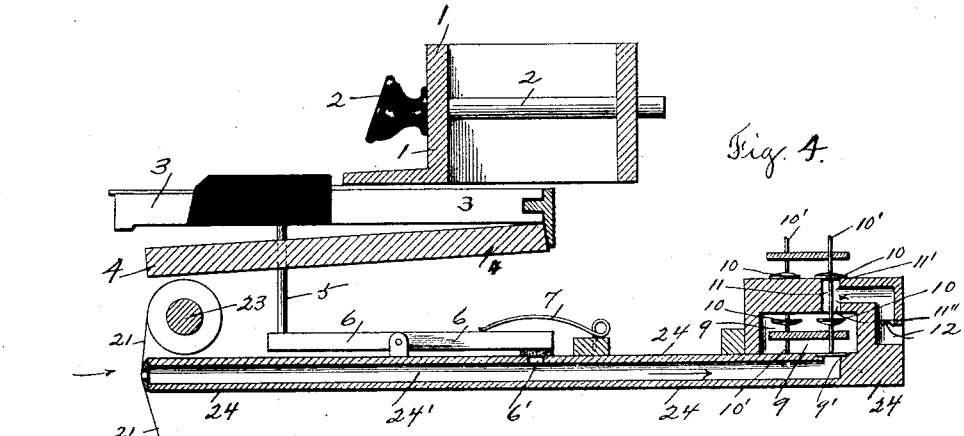

Fig. 4.

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UNITED STATES PATENT OFFICE.

THEODORE P. BROWN AND ANDREW H. HAMMOND, OF WORCESTER, MASSACHUSETTS.

ORGAN.

SPECIFICATION forming part of Letters Patent No. 531,831, dated January 1, 1895.

Application filed June 21, 1894. Serial No. 515,215. (No model.)

To all whom it may concern:

Be it known that we, THEODORE P. BROWN and ANDREW H. HAMMOND, citizens of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have jointly invented certain new and useful Improvements in Organs; and we do hereby declare that the following is a full, clear, and exact description thereof, which, in connection with the drawings making a part of this specification, will enable others skilled in the art to which our invention belongs to make and use the same.

Our invention relates to organs, and more particularly to that class of reed organs provided with an attachment, by means of which the action of the reeds is controlled by perforated music sheets, which are unwound from one roller, and wound onto another roller, in the well known way, so that operating the suction bellows will cause the organ to be played automatically.

The object of our invention is to improve upon the construction of organs of the class above referred to, and our invention consists in certain novel features of construction and arrangement of some of the parts of the organ, and more particularly in combining with the wind-chest, two or more series of pneumatic bellows, located within the wind-chest, the bellows of one of the series being longer than those of the other so that the openings leading therefrom to the primary box will be below the openings of the other series, and also in combining the channel board and tracker board in one single board, which answers for both the key levers and the perforated music sheet, as will be hereinafter fully described.

It has been found in practice, in organs of the class above referred to, that the pneumatic bellows, as ordinarily constructed, are not powerful enough to successfully operate the reed valves, without extending the scale of the reed board beyond that of the key-board, the reed valves being operated by radiating out with a spider-like connection from the key-board to the valves, or pneumatic bellows. In order to overcome this faulty construction, and increase the size of said pneumatic bellows, we arrange said bellows in two or more rows, one row in front of, or over the other, and preferably staggering, and locate said bellows within the wind-chest, so that the same will be under the tension of the air in the wind-chest all the time. By this construction we provide for pneumatic bellows of almost twice the size and power, without increasing the length of space occupied by the same.

We have shown in the drawings the wind-chest located at the back of the organ, but it may be located under the manual key-board, if preferred.

Referring to the drawings: Figure 1 is a central vertical section, through a portion of a reed organ, taken at a point indicated by line 1, 1, Fig. 3, sufficient to illustrate the nature of our improvements applied thereto. Fig. 2 corresponds to Fig. 1, but indicates a section, taken on line 2, 2, Fig. 3, and Fig. 3 is a sectional plan view, on line 3, 3, Fig. 1, and Fig. 4 shows a modified construction, with the channel board 8, shown in Figs. 1 and 2, dispensed with.

In the accompanying drawings, 1 is the name-board, in which the stop pull bars 2 are mounted in the ordinary way.

3 are the keys, 4 the key-board frame, and 5 the tracker-pin which extends to, and engages the valve lever 6, which is provided with a spring 7, and extends over the mouth of the opening 8′ in the channel board 8. Said opening 8′ leads to the primary box 9, and the opening into said primary box is covered by a valve 9′ which controls the puppet valve 10, provided with a stem 10′, of the ordinary construction. Said puppet valve 10 also controls the openings 11′ and 11″ into the puppet box, or chamber 11, which openings connect with the channel or opening 12 leading to the pneumatic bellows 13, which is located within the wind-chest 14. The movable leaf 13′ of said pneumatic bellows 13 is connected by a headed pin 15, with one end of the reed valve 16. The other end of the reed valve 16 is pivoted on a pin 17, and a spring 18 operates to keep said reed valve closed, except when opened by the pneumatic bellows. The reed, not shown, is supported in the tube board 19, located within the speaking chamber 20.

It will be understood that for each key there is a pneumatic bellows, which controls the action of the reed valve. The pneumatic bellows are in this instance arranged in an upright position, in two parallel rows, one row in front of the other, so that the two rows of bellows are located in two different vertical planes, relatively to each other, and the bellows in one row are arranged staggering, or alternately to the bellows in the other row. All the bellows are preferably of the same width, and the outer row is longer than the inner row, so that the openings leading into the outer row will extend below the inner row of bellows, as shown in Fig. 1.

The pneumatic bellows consist of a stationary leaf 13″, and a movable leaf 13′, in the ordinary way. The primary box 9 is connected with the wind-chest 14, which is connected with the suction bellows, not shown. Said bellows are in constant operation when the organ is played, causing the air to be drawn out of the primary box, to produce a tendency to a vacuum therein, so that when a key is depressed to open, through the tracker pin 5, the valve lever 6, the air through the opening or channel 8′ in the channel board 8, will act to raise the primary valve 9′, between said opening 8′, and the primary box 9, and also raise the puppet valve 10, through the stem 10′ thereof resting on said valve 9′, to allow the air from without to be drawn into the upper open end 11′ of the puppet box or chamber 11, and through the opening or channel 12, into one of the pneumatic bellows, by the movement of the movable leaf thereof, which leaf is under the suction of the main suction bellows. The expansion of the pneumatic bellows opens the reed valve connected therewith, to cause the reed to sound.

When the key is released, the valve lever 6 is closed by the spring 7, to close the opening 8′ in the channel board 8, and the primary valve 9′ consequently drops, and lowers the puppet valve 10, through the stem 10′, to close the upper open end 11′ of the puppet box or chamber 11, and open the lower open end 11″ leading into the primary box 9, as shown in Figs. 1 and 2.

The primary box 9 being under suction from the main suction bellows, through the wind-chest 14, with which said primary box is connected, and the movable leaf of the pneumatic bellows being also under suction, the air passes out from said bellows through the opening 12, into the primary box and the wind-chest, and causes the collapse of said bellows, thus closing the reed valve connected therewith, all in the usual way.

The above description and construction of parts applies to the organ when it is desired to play the same by the manual operation of the keys.

When it is desired to have the organ operate automatically, the perforated music sheet attachment is employed, consisting of a perforated music sheet 21, wound upon a roll 22, and adapted to be unwound from said roll onto a second roll 23, both rolls arranged under the key frame, and the paper tracker-board 24 arranged in a horizontal position under the channel board 8, as shown in Figs. 1 and 2. Said tracker-board 24 is provided with a series of openings or channels 24′ therein, over the ends of which the perforated music sheet 21 is adapted to pass as the sheet music is wound, or unwound on the rolls 22 and 23. Said openings or channels 24′ lead directly to the pneumatic action.

The operation of the organ, when used in connection with the perforated music sheet attachment, is automatic, and the keys remain stationary. The main suction bellows cause the air to be drawn through the openings or channels 24′ in the tracker-board 24, according as the perforated parts of the music sheet 21 are presented to the open ends thereof, and operate the reeds, through the pneumatic action, as above described in connection with the manual operation of the keys.

The advantages of our improved construction of organs will be readily appreciated by those skilled in the art.

We provide for large pneumatic bellows, to operate the reed valves, without any extension of the scale, or radiation from the key-board, and we arrange said pneumatic bellows in the wind-chest, in two parallel rows, one row in front of the other, so that said two rows extend in different planes, and occupy only the same length of space in the wind chest, that a single row would. We also arrange the perforated music sheet attachment so as to secure more direct channels to the pneumatic action.

It will be observed, that our organ, by means of the perforated sheet music attachment, may be operated automatically by operating the suction bellows, and may also be operated manually by the keys.

It will be understood that the details of construction of our organ may be varied somewhat if desired. For example, the channel board 8 shown in Figs. 1 and 2, may be dispensed with and the valve lever 6 extend over an opening 6′, leading directly into the opening or channel 24′, in the tracker-board 24, as shown in Fig. 4.

This construction simplifies the construction of the organ, and reduces somewhat the expense thereof, a single channel or tracker-board answering for both the key levers and the perforated music sheet.

We claim—

1. In an automatic organ, the combination, with the pneumatic action, of a tracker board provided with channels communicating with the primary box, said board being further provided with openings in its upper surface which communicate with the channels in the board intermediate their length, a valve seated upon the board for each opening, the free end of which is adapted to control said

opening, and means for operating the valves, substantially as set forth.

2. In an automatic organ, the combination, with the wind chest, of two or more rows of pneumatic bellows located therein, the outer row of the bellows being longer than the inner row so that the opening leading from the outer row to the primary box will extend below the inner row, and means for operating the instrument, substantially as set forth.

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