

No. 744,662.

PATENTED NOV. 17, 1903.

W. D. WOOD.  
RELIEF VALVE.  
APPLICATION FILED AUG. 7, 1901.

NO MODEL.

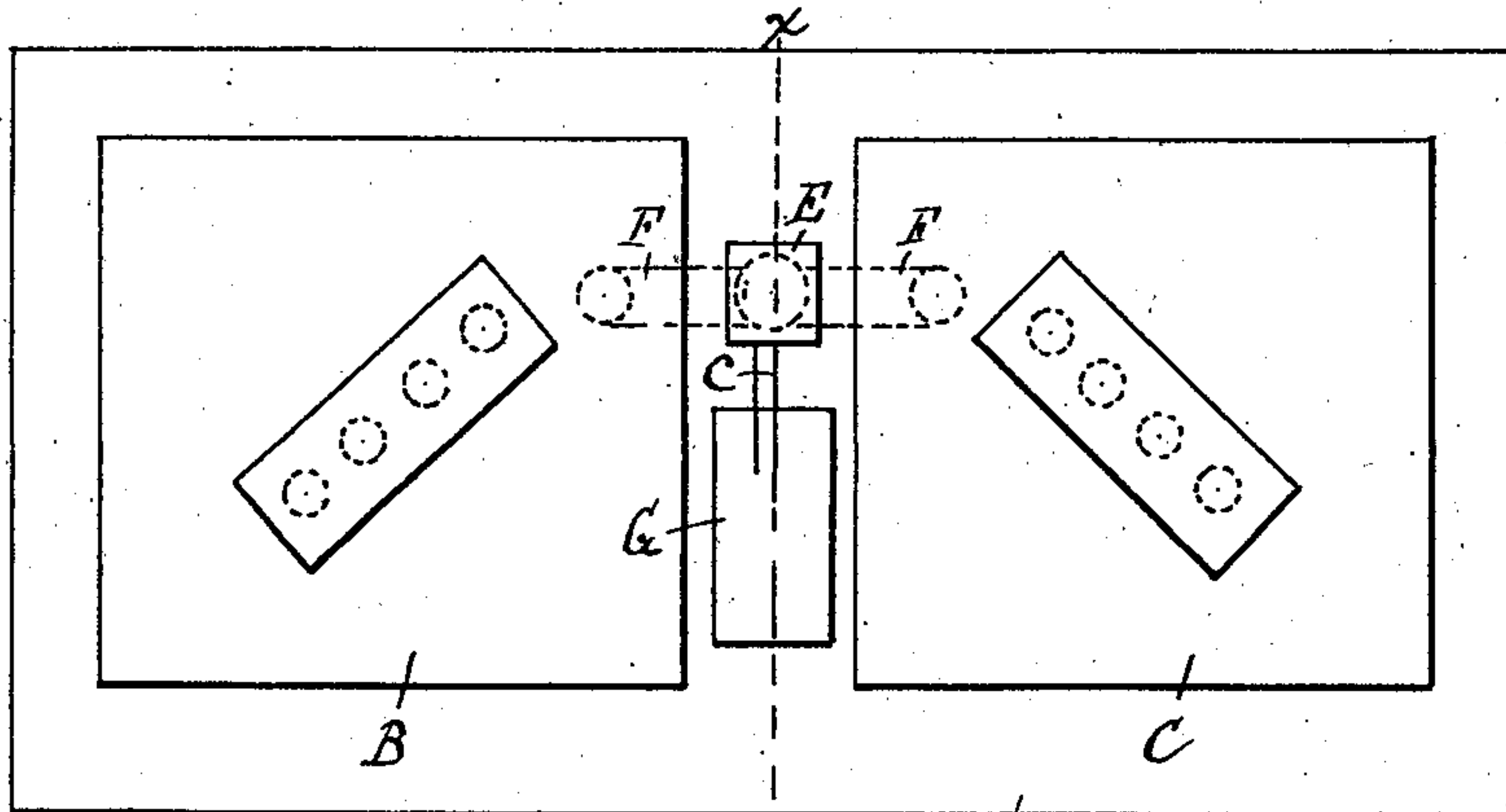


Fig. 1.

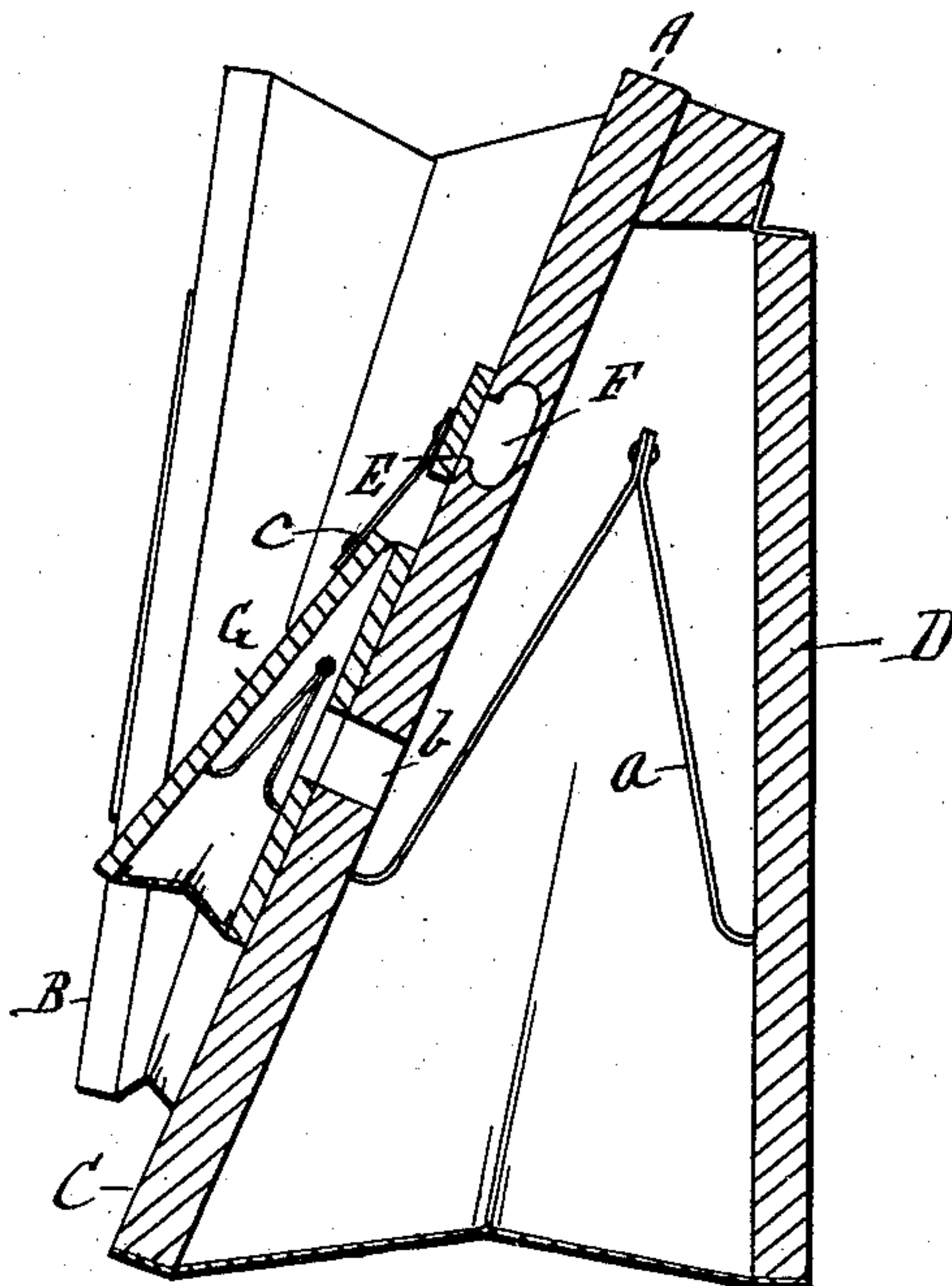


Fig. 2.

WITNESSES.

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# UNITED STATES PATENT OFFICE.

WILLIAM D. WOOD, OF LONDON, ENGLAND, ASSIGNOR TO FARRAND ORGAN COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

## RELIEF-VALVE.

SPECIFICATION forming part of Letters Patent No. 744,662, dated November 17, 1903.

Application filed August 7, 1901. Serial No. 71,245. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM D. WOOD, a citizen of the United States, residing at London, England, have invented certain new and useful Improvements in Relief-Valves, of which the following is a specification, reference being had therein to the accompanying drawings.

It is the especial object of the invention to obtain a construction of relief-valve for pumping-bellows which is operated by the air-pressure developed in place of being operated by the movement of the bellows, as in prior constructions.

To this end the invention consists in the peculiar construction of a valve provided with a pneumatic-motor for actuating the same, whereby the increase of pressure beyond a certain point will cause the opening of the valve.

The invention further consists in the peculiar arrangement of said motor and valve in relation to the pumping-bellows, as more fully hereinafter set forth.

In the drawings, Figure 1 is a front elevation of the wind-pumping bellows to which the improvements are applied. Fig. 2 is a cross-section thereof on line *x x*.

As shown in the drawings, the bellows is of ordinary construction, comprising the inclined stationary board A, upon the front face of which are arranged two pumping-bellows B and C and upon the rear face a store-bellows D. The latter is provided with a spring *a*, which governs the pressure developed within the bellows.

E is the relief-valve, which is adapted to normally close the port F, connecting with the interior of the bellows. This port is preferably arranged to connect with the pumping-bellows B and C in place of connecting with the store-bellows D, as is more common.

G is a pneumatic-motor for actuating the valve E and opening the port F. This motor is arranged to be held from operation until the actuating pressure reaches a certain point, which is the maximum pressure desired to be developed by the bellows. Thus whenever the

pressure developed by the pumping-bellows reaches this point the relief-valve will be opened, which will establish a direct connection between the bellows B and C and the external atmosphere, preventing further pumping from the bellows D. It is to be understood that the pneumatic-motor will not ordinarily be operated until the store-bellows D has been partially or almost completely collapsed, so that the increased tension of the spring *a* will cause the development of a greater differential air-pressure on the pneumatic.

The valve E and pneumatic G may be placed in any suitable position; but a convenient arrangement is to mount them upon the board A in the space between the store-bellows B and C. This is shown in the drawings, in which the pneumatic G is of the ordinary bellows form and is directly connected by a port *b* in the board A with the space within the bellows D.

*c* is an arm connected to the movable board of the bellows and extending beyond the hinged edge thereof. The free end of this arm is connected with the valve E and is adapted when the pneumatic G is collapsed to swing outward to uncover the port F.

The device as above described is adapted to be used either in connection with foot-operated wind musical instruments, such as cabinet-organs, or self-playing attachments for musical instruments having pneumatic-actions. For the latter use it is especially applicable, as other attachments with which said instruments are provided may interfere with the complete collapsing of the store-bellows ordinarily necessary to operate relief-valves. With the construction described the valve is opened whenever pressure reaches a certain point regardless of the position of the store-bellows.

What I claim as my invention is—

The combination with a store-bellows and a pair of pumping-bellows mounted upon the stationary board of said store-bellows, of a valve normally closing a direct atmospheric

connection with each of said pumping-bellows, and a pneumatic-motor arranged between said pumping-bellows and having an air connection with said store-bellows, said  
5 pneumatic-motor being connected to said valve whereby an abnormal air-pressure will open said direct atmospheric connection.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM D. WOOD.

Witnesses:

M. B. O'DOGHERTY,  
H. C. SMITH.