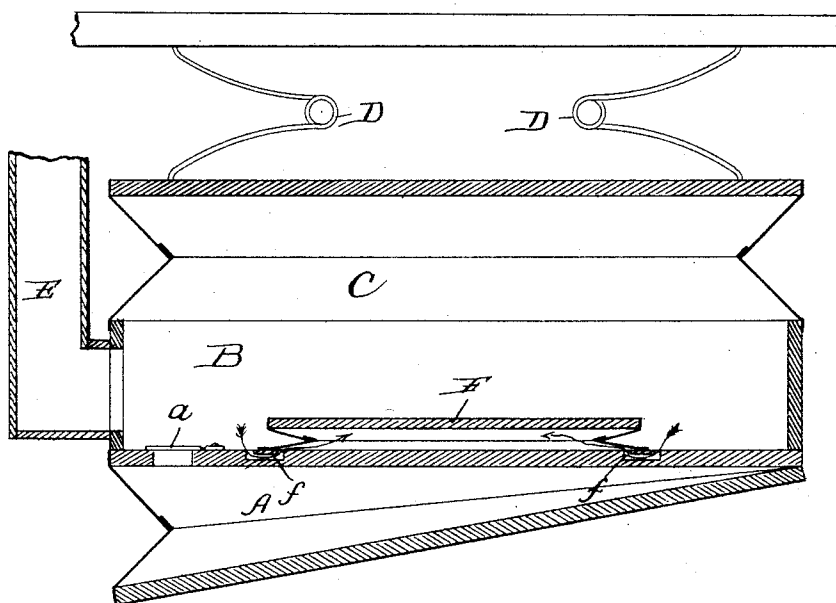


(No Model.)

F. W. HEDGELAND.
BELLOWS FOR ORGANS.

No. 470,241.

Patented Mar. 8, 1892.



Witnesses:
Lew. E. Curtis
A. W. Munday

Inventor:
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UNITED STATES PATENT OFFICE.

FREDERICK W. HEDGELAND, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE
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BELLOWS FOR ORGANS.

SPECIFICATION forming part of Letters Patent No. 470,241, dated March 8, 1892.

Application filed November 20, 1891. Serial No. 412,472. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK W. HEDGELAND, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Bellows for Organs, of which the following is a specification.

This invention is designed to render the air-pressure in organs even and regular and to prevent such variations therein as are liable to affect unfavorably the pitch or the quality of the tone.

In the use of organs there are times when the wind is exhausted so rapidly as to affect the sound given out—as, for instance, when the player desires a sudden fortissimo effect and strikes a full chord or succession of chords quickly with all the power of the instrument. This reduces the wind-pressure so quickly as to detract very often from the quality of succeeding tones. The tone is also affected unfavorably by the blowing if the latter is done in an unsteady or jerky manner or too rapidly, the pulsations caused by the blowing being rendered perceptible in the playing. These evils are of course not so manifest in organs which have bellows of large capacity as in those which use bellows of small relative capacity, and my invention is intended more especially for use in the latter class of instruments.

The object of the invention is accomplished by the following construction: I place inside the bellows an interior variable air-chamber, preferably in the form of a smaller bellows, and which I call the "concussion-bellows," and connect the interior of the latter with the interior of the bellows by appropriate air-passages, so that whatever pressure may be created in the bellows will be carried into the chamber. The outer surface or top of the latter is also subject to the pressure which may be present in the bellows, and consequently the pressure inside and outside the variable chamber is nearly equal. I find that a variable chamber thus located in the bellows and receiving the air-pressure both inside and outside serves as a means of preventing what are termed "concussions" due to the causes I have stated. The air-pressure also is by its

use rendered so even and steady as to prevent the tone from being affected by excessive pressure upon the one hand or by sudden decrease of pressure upon the other or by the pulsations of the blowing apparatus. I account for this result as follows: The variable chamber expands when the pressure outside of it is suddenly reduced to a material extent before the air within it can flow out and restore an equilibrium between the pressure in and that outside the chamber. This expansion compensates in part at least for the loss of pressure in the bellows, so that the sudden drawing off of the air does not result in such a diminution of the pressure as to be harmful in any way. In cases where the bellows are filled very quickly, so as to raise the pressure rapidly, as is the case where the blowing is very rapid or jerky, the sudden pressure thus created finds relief not only by venting in the ordinary manner, but also by a compression or reduction of the variable chamber—that is to say, the pressure upon the chamber being greater than that within it at the instant the sudden increase of pressure is created, the chamber collapses more or less and gives room for the air within the bellows and outside of the chamber to expand, and thus prevents any concussion or shock. While it is true that a substantial equilibrium of pressure will ordinarily be maintained between the inside and outside of the variable chamber, the air-passages leading to the interior of the chamber being always open, yet I find by use of the invention that when rapid changes occur in the pressure in the bellows the variable chamber either expands or contracts before the equilibrium can take place and serves its purpose of avoiding the concussions and shocks which would otherwise be caused—in fact, the concussion chamber or bellows is continually in action and feels every impulse of blowing and also every change in the pressure due to the consumption of the wind.

The nature of the invention is fully disclosed in the accompanying drawing, which shows a vertical section of an organ-bellows provided with my invention.

In said drawing, A represents one of the feeders of the bellows; B, the well, or, as it is

termed by some, the "trunk-band;" C, the expandible air-reservoir, and D the springs for creating pressure. All these parts are found in an ordinary bellows. The air is admitted 5 from the feeder through a valve or valves *a*, and it passes from the bellows to the pipes through the wind-trunk E.

My variable concussion chamber or bellows is shown at F. It is located in the well, so as 10 to be acted upon constantly by the air in the bellows, and a suitable number of passages *f* open from the interior of the bellows into the interior of the concussion-chamber, as shown. These passages are always open, so that there 15 is a substantial equilibrium of pressure between the inside and the outside of the concussion-chamber. The chamber must expand and contract freely, so as to be sensitive to the frequent changes in the pressure in the 20 bellows, and I find that good results are obtained when the concussion-chamber has an outside surface receiving the air-pressure equal to one-half of the area of the bellows. The operation of this concussion chamber or 25 bellows I have already fully explained and do not need to repeat. By its use it is a com-

paratively easy matter to maintain such an even pressure in the bellows under all circumstances as to avoid the difficulties mentioned in the fore part of this specification. 30

I claim—

1. The combination, with an organ-bellows, of a separate expanding and contracting concussion-chamber, substantially as set forth.

2. The combination, with an organ-bellows, 35 of a separate expanding and contracting concussion-chamber located within the bellows, substantially as set forth.

3. The combination, with an organ-bellows, 40 of a separate expanding and contracting concussion-chamber located within the bellows and connected with the interior thereof by air-passages, substantially as set forth.

4. The combination, with an organ-bellows, 45 of a smaller separate bellows located within the organ-bellows and serving as a concussion-chamber, substantially as set forth.

FREDERICK W. HEDGELAND.

Witnesses:

EDW. S. EVARTS,
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