C. W. DUNN, Sr.
Bellows.

No. 199,042. Patented Jan. 8, 1878.

Fig. 1

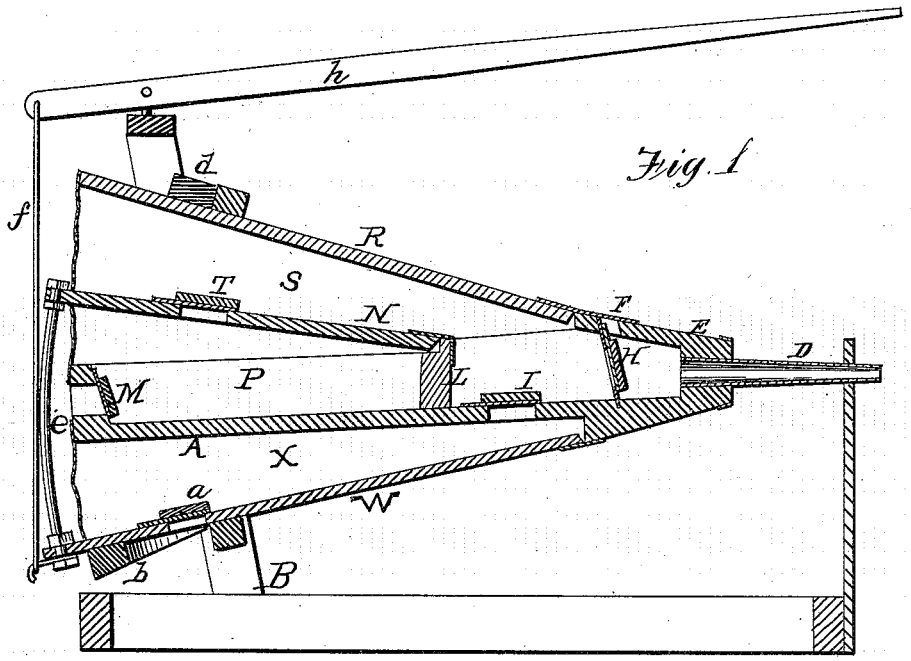
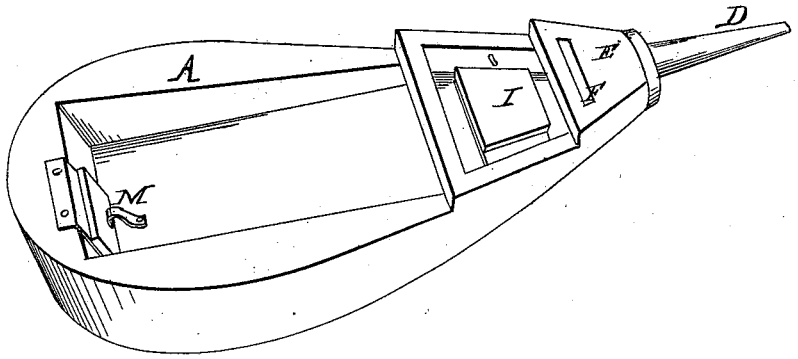


Fig. 2



Witnesses;
Chas. C. Gill
W. B. Magruder.

Inventor
Chas. W. Dunn Sr.
By his Attys.
Cox and Cox

UNITED STATES PATENT OFFICE.

CHARLES W. DUNN, SR., OF QUINCY, ILLINOIS.

IMPROVEMENT IN BELLOWS.

Specification forming part of Letters Patent No. **199,042**, dated January 8, 1878; application filed June 14, 1877.

To all whom it may concern:

Be it known that I, CHARLES W. DUNN, Sr., of Quincy, in the county of Adams and State of Illinois, have invented a new and useful Improvement in Bellows, of which the following is a specification, reference being had to the accompanying drawings.

The invention relates to an improvement in bellows, as will be hereinafter more fully described, the object being to furnish a bellows which will give a continuous blast when operated, and also to furnish a means whereby the gas and hot air of the furnace are excluded from the said bellows when at rest.

In the accompanying drawings, Figure 1 is a central vertical longitudinal section of a device embodying the elements of the invention. Fig. 2 is a perspective view of the board A of same.

In the accompanying drawings, A represents the main middle board, which is rigidly secured to the bellows-frame B, and is provided on its front end with the pipe D, through which the blast issues. In rear of the pipe D the upper portion of the board A is covered for a portion of its length by the block E, provided with the transverse slot F, in which is placed the damper H, which can be inserted or removed, when desired, without injury to the bellows, the purpose of the same being to effectually prevent the induction of hot air or gas from the furnace through the pipe D.

The base of the board A, in rear of the damper H, is furnished with the valve I, the purpose of which will be hereinafter mentioned, and immediately in rear thereof is secured the cross-bar or standard L, the upper edge of which is flush with the upper portion of the board A in front of it. In the rear vertical edge of the board A is constructed the valve M, the function of which will be set forth hereinafter.

The board N is suitably hinged to the upper rear edge of the cross-bar L, and extends rearward a distance about equal to that of the board A, from which it is properly separated, forming an air-chamber, P.

To the rear edge of the block E is hinged the uppermost board R of the bellows; and it is placed a suitable distance above the board N, to form the air-chamber S, which may be connected with the chamber P by the valve T, constructed in the board N, as shown.

The board W is similar to the board R, and is secured below the board A, being suitably separated therefrom to furnish the air-chamber X, which receives air by means of the valve *a* formed in the board W.

The boards R and W may be respectively provided with weights *d* and *b*, to assist in effecting a proper operation of the bellows.

The rear edges of the boards N W are connected by the rigid bar *e*, so as to insure to them a simultaneous movement. To the rear end of the board W is secured the lower end of the draw-rod *f*, the upper end of same being connected with the ordinary lever *h*, which is employed to operate the device.

Now, it is obvious that when the front end of the lever *h* is depressed, and the rear ends of the boards N W thereby elevated, the air in the chambers X S will be forced through the valve I, damper H, and blast-pipe D to the furnace. At the same time, a vacuum being produced in the chamber P, the valve M opens, allowing air to enter the said chamber. The upward movement of the lever *h*, which immediately follows the depression, forces the air confined in the chamber P through the valve T into the chamber S, whence it passes through the damper H and pipe D to the furnace. Thus it is manifest that as air escapes through the pipe D at every stroke of the lever *h*, whether in its elevation or depression, a continuous blast is effected.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The board A, provided on its rear vertical edge with the valve M, in combination with the board N, hinged to the standard L, and furnished with a valve, T, on its upper surface, whereby the chamber P is formed, substantially as expressed.

2. In a bellows, the block E, provided with transverse slot F, in which the adjustable damper H is placed, substantially as set forth.

3. In a bellows, the combination of the boards A N R W with the valves I M T *a*,

whereby suitable air-chambers are formed and a continuous blast effected, substantially as specified.

4. In a bellows, an automatic removable adjustable damper, for preventing the induction of hot air or gas from the furnace, substantially as shown and described.

In testimony that I claim the foregoing improvement in bellows, as above described, I have hereunto set my hand this 5th day of June, 1877.

CHARLES W. DUNN, SR.

Witnesses:
THOMAS WHITE,
HENRY WILSON.