J. BAYLISS.

Bellows.

No. 166,244. Patented Aug. 3, 1875.

Fig. 1.

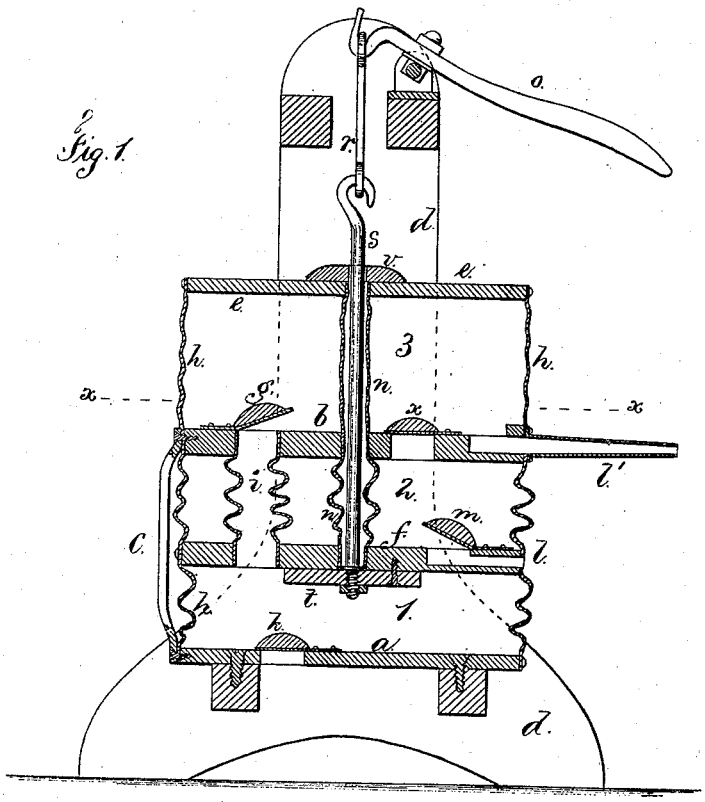
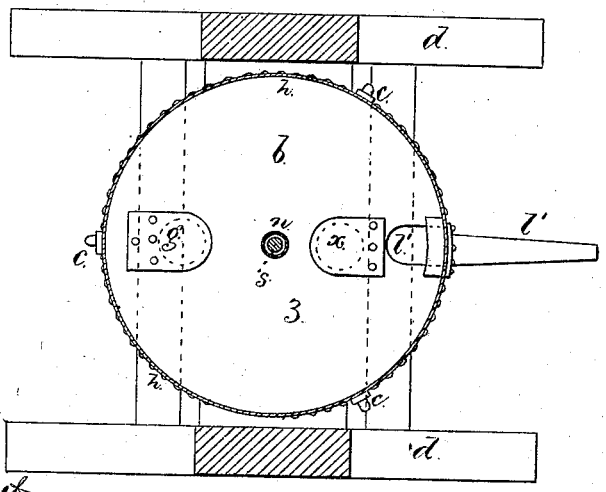


Fig. 2.



Witnesses

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JOHN BAYLISS, OF NEW YORK, N. Y.

IMPROVEMENT IN BELLOWS.

Specification forming part of Letters Patent No. **166,244**, dated August 3, 1875; application filed October 26, 1874.

To all whom it may concern:

Be it known that I, JOHN BAYLISS, of the city and State of New York, have invented an Improvement in Bellows, of which the following is a specification:

Two of the followers are stationary, the intermediate follower is raised and lowered, and the upper follower forms the top of the wind-chest. These followers are connected by the flexible material forming the case or bag. One inlet for air is at the bottom of the lower follower, the other at the edge of the intermediate follower, and there is a tube passing through the second air-chamber to convey the air to the third chamber.

The bellows of this general character that have heretofore been made have had a semicircular weighted bow-lever connected at the two ends with the moving follower, and swinging on fulcrum-studs, and to this bow the power is applied, but the movement is very limited.

I avoid these objections by attaching the weight to the moving follower itself inside the bellows, and connecting the power to the follower by a vertical rod or rods acted upon by a lever above the bellows, so that the moving follower is carried up and down vertically, which greatly increases the efficiency of the bellows, and prevents unnecessary wear.

In the drawing, Figure 1 is a vertical section of the bellows, and Fig. 2 is a sectional plan of the same at the line *x x*.

The diaphragms or followers *a b* are stationary, and preferably held together by bars *c*, extending from one to the other, and either one or both may be sustained within the frame *d*. The follower *f* is moved vertically between the diaphragm-followers *a* and *b*, as hereafter specified, and the follower *e* forms the top of the wind-chest, and may be weighted to give the required pressure to the blast. The flexible case *h* is cylindrical, and preferably of leather. It is attached, as usual, to the edges of the respective followers, and it is of sufficient length between *a* and *b* to allow the follower *f* to be moved up and down freely. There is an inlet and valve, *k*, through the follower, *a*, and a side inlet, *l*, and valve, *m*, at the follower *f*. A tube, *i*, of leather or similar flexible material, reaches from the follower *f* to the follower *b*, above which is a valve, *g*, and the discharge pipe or nozzle at *l'* completes the operative parts of the bellows proper. As the follower *f* is raised bodily the valve *k* opens and air passes into the chamber 1. As the follower descends the air in the chamber 1 is forced through the tube *i* into the chamber or wind-chest 3, raising the follower *e*. At the same time air is drawn in through *l* into the chamber 2, and this air in 2 is expelled by the outlet and valve *x* into 3 as the follower *f* rises. Thus the bellows is double-acting and continuous in its blast, and the operation is uniform, and both as to the blast and the power required. The follower *f* may be raised and lowered by a yoke, the side pieces of which connect outside the bellows, and pass up to the lever above, but I prefer the devices shown, consisting of the lever *o*, link *r*, and rod *s*. This rod *s* passes freely through the followers or diaphragms *b* and *e*, and at the bottom end it is connected with the weight *t* that is fastened to the follower *f*. The openings in *f b e* are large enough to receive the flexible tube *n* that renders the parts air-tight and allows the rod *s* to move freely. A guide-collar, *v*, upon the top *e* of the wind-chest 3, serves to guide the parts and retain them in their proper relative position. There may also be a guide-thimble inserted within the tube *n* at the diaphragm or follower *b*. By this construction the bellows is rendered very compact and efficient, and the weight *t* aids in determining the pressure of the blast, because it carries the follower *f* down and raises the lever *o* only as fast as the air escapes through *i* as forced by the weight *t*.

I claim as my invention—

1. In a cylindrical bellows containing the diaphragms or followers *a b f e*, valves *k m g*, tube *i*, and lateral inlet *l*, the weight *t* attached directly to the diaphragm *f*, inside the bellows, and the actuating rod or rods passing from such diaphragm to a lever above such bellows, substantially as set forth.

2. In a cylindrical bellows the follower *f*, weighted and moving between the diaphragms or followers *a* and *b*, in combination with the central actuating-rod *s* and flexible tube *n*, substantially as set forth.

Signed by me this 20th day of October, A. D. 1874.

JOHN BAYLISS.

Witnesses:

GEO. T. PINCKNEY,

CHAS. H. SMITH.