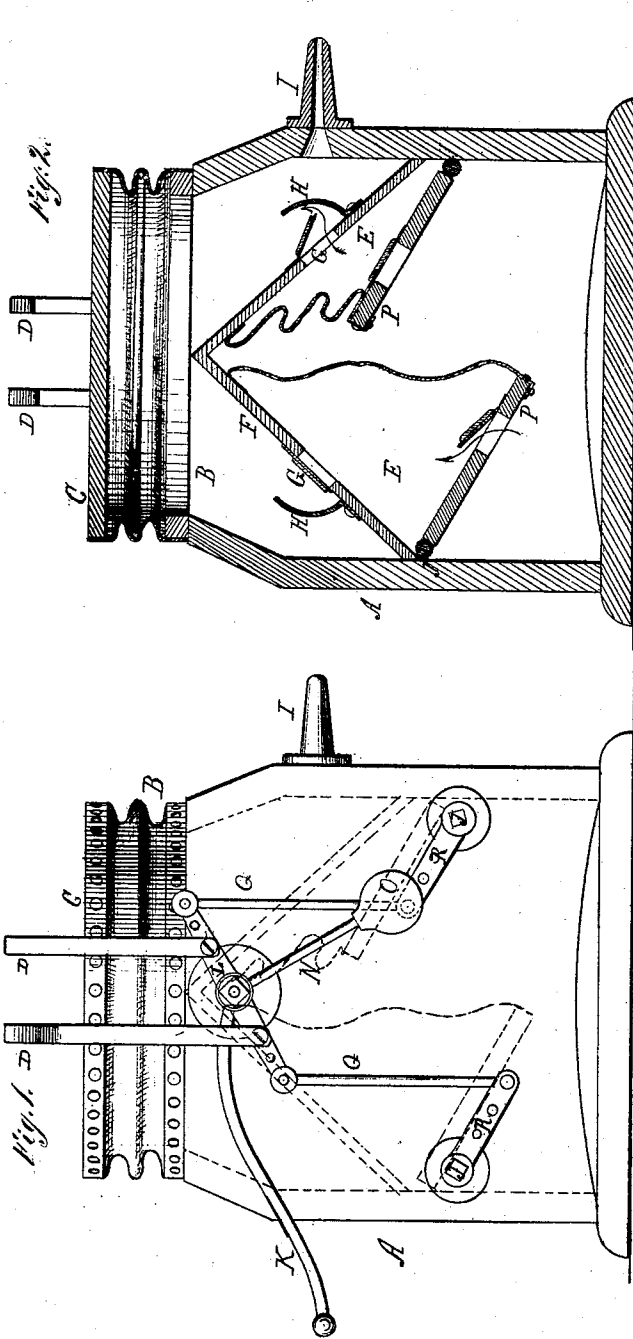


Cory & Webb,

Bellows.

No. 103,720.

Patented May 31, 1870.



Witnesses:
C. Wahlers
E. F. Kautenhuber

Inventors:
John F. Cory
Henry C. Webb
By, Nathaniel & Howard
their attys

United States Patent Office.

JOHN F. CORY AND HENRY C. WEBB, OF BROOKLYN, E. D., NEW YORK.

Letters Patent No. 103,720, dated May 31, 1870.

IMPROVEMENT IN BLACKSMITHS' BELLOWS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that we, JOHN F. CORY and HENRY C. WEBB, of Brooklyn, E. D., in the county of Kings and State of New York, have invented a new and useful Improvement in Blacksmiths' Bellows; and we do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which drawing—

Figure 1 is an elevation of this invention.

Figure 2 is a vertical section of the same.

Similar letters indicate corresponding parts.

This invention relates to bellows for forges; and

It consists, among other things, in an arrangement of compensating spring stops or weights, which are brought down and made to bear on the top of the reservoir or air-chest at the times when the pump-levers are making their return strokes, so as to keep up a steady blast at all periods of the working of the pumps.

It also consists in a counterpoise attached to the axis of the lever by which the bellows is operated, so that the return movement of the lever is facilitated, and the labor of the attendant lessened; also, in the arrangement of deflectors within the air-chest or reservoir, for the purpose of deflecting the currents of air and preventing them from going directly from the inlet-valves to the place or places of discharge; also, in a novel arrangement of levers whereby the bellows is operated; also, in arranging the bellows-boards upon shafts, on which they operate, instead of hinging them, as is now done.

In the drawing—

The letter A designates a box or case, which contains the apparatus and furnishes bearings for the levers by which it is operated.

The letter B designates an air-chest or reservoir, which rises through the top of the box, and which is provided with flexible sides, so that it can fold down toward the box when the supply of air falls off, and it has a solid top, C, which receives the pressure of the spring stops D, hereinafter described.

The air-chest is supplied with air by means of two independent pumps or bellows, E E, arranged on the bottom F of the air-chest, inside of the box A, and having flexible sides and valves for receiving and discharging air into the air-chest, as usual.

The valves G G, through which the air enters the air-chest from the pumps, are provided with deflectors H H, by means of which we prevent the currents of air from going directly from the valve-openings to the nozzle I.

When no such deflector is used, the air, as it enters the air-chest, rushes from the valve to the nozzle, and

produces a varying and irregular blast, but, by means of our deflectors, we cause the air, as it enters, to pass into the remoter parts of the air-chest, and we obtain a greater compression of air, whereby a more regular and uniform blast is maintained than is had by the old method of construction.

We arrange the deflectors in any convenient manner, so as to interpose them between the valves and the nozzle or nozzles, and compel the air to pass first into those parts of the air-chest which are remote from the nozzle.

Over the top of the air-chest we arrange spring stops or weights, D D, one for each pump or bellows, which stops are attached to and move with the pump-lever or cross-beam L, in such a manner that the springs or weights come into operation at the end of each stroke alternately, or when the actuating-lever K is up or down, and when one pump is full and the other is empty, and, at the moment of rest, when neither pump is blowing, the moment the lever K is moved, on the turn to ascend or descend, the pressure or weight is taken off. The object of this is to put a greater pressure on the air-chest or chamber at the exact time when there is no air being discharged from the pumps, thereby compressing the air in the air-chamber from above, and compensating for the loss of the pressure of the pumps from below, and producing a steady and continuous blast.

The spring stops D D are attached to the arms of the cross-beam, at such distances from its center of motion as is necessary to insure their action on the air-chest or chamber, as above described. The spring stops D consist, in this instance, of elastic metallic bars, which extend from the cross-beam above or over the air-chest.

We do not confine ourselves to the arrangement of spring stops here shown, but we claim the right to modify the same in any manner, so long as they derive their motion from the return-stroke of the pumps or bellows; neither do we confine ourselves to spring stops or arms, as we can use weights for the same purpose. This feature of our invention assists, in an important degree, in maintaining a steady, uniform blast.

The apparatus is operated through a lever, K, fastened to the fulcrum of a cross-beam, L.

The counterpoise weight O is fixed, by means of the arm N, on the center of the lever or cross-beam L, so that, at the end of the first stroke, it will bring one of the bellows-boards P down, and, by its momentum, swing beyond the center, and assist the opposite board P to rise, which, in turn, it will also help to descend, and *vice versa*, thereby making the stroke of the bellows uniform, and assisting the operation by means of its momentum.

The ends of the cross-beam L are connected, by the rods Q Q, to crank-arms R R, which are fixed, respectively, upon the shafts or centers J J, upon which the bellows-boards P P turn, and these connections are made adjustable by means of holes in the crank-arms R and in the cross-beam L, which holes are arranged so that the length of the stroke at the end of the lever K may be shortened or lengthened, to suit tall or short men or boys, without losing power.

In operating our apparatus, the power is applied by hand or otherwise to the cross-beam L, and, by its vibration, the pumps or bellows E E are worked in alternation, independently of each other, and the air-chest is constantly supplied with air.

The bellows or pump-boards are mounted upon shafts or axes J J, about which they turn, and upon the ends of said shafts we fix the cranks R, by which the bellows or pumps are operated.

The object of fixing the bellows-boards on shafts is, first, to avoid the use of leather hinges, which are constantly wearing out from the shortness of the bend; and, secondly, to discharge the whole contents of each chamber at each stroke, by working from a fixed center, thereby preventing the oscillating motion or "blowing down" at the hinge, as in other bellows.

What we claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the air-chest B of a blacksmith's bellows, of stops D, applied and operating substantially as described.

2. The counterpoise O, in combination with the cross-beam L and pumps or bellows E E, substantially as described.

3. The deflector H, in combination with the inlet-valves of the air-chest, when arranged relatively with the nozzle I, substantially as and for the purpose described.

4. The arrangement and combination, in a blacksmith's bellows, of the lever K, cross-beam L, counterpoise arm and weight N O, rods Q, and crank-arms R, with the shafts J J of the independent pumps or bellows E E, substantially as described.

This specification signed by us this 25th day of April, 1870.

JOHN F. CORY.
HENRY C. WEBB.

Witnesses:
W. HAUFF,
C. WAHLERS.