

(No Model.)

A. M. WICKENBERG.  
BELLOWS.

No. 546,370.

Patented Sept. 17, 1895.

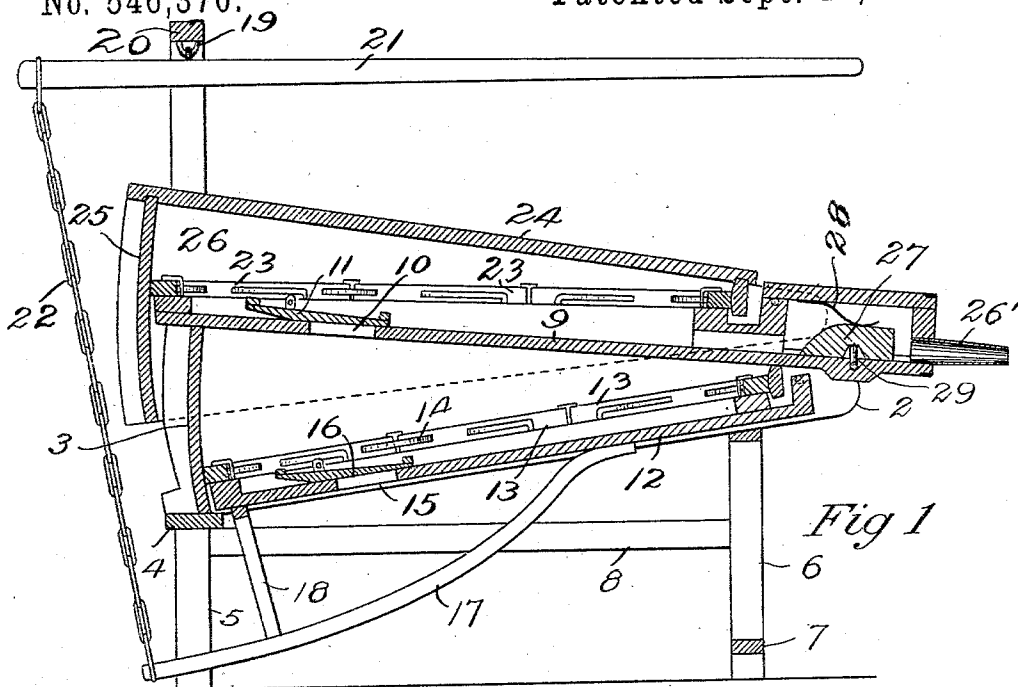


Fig 1

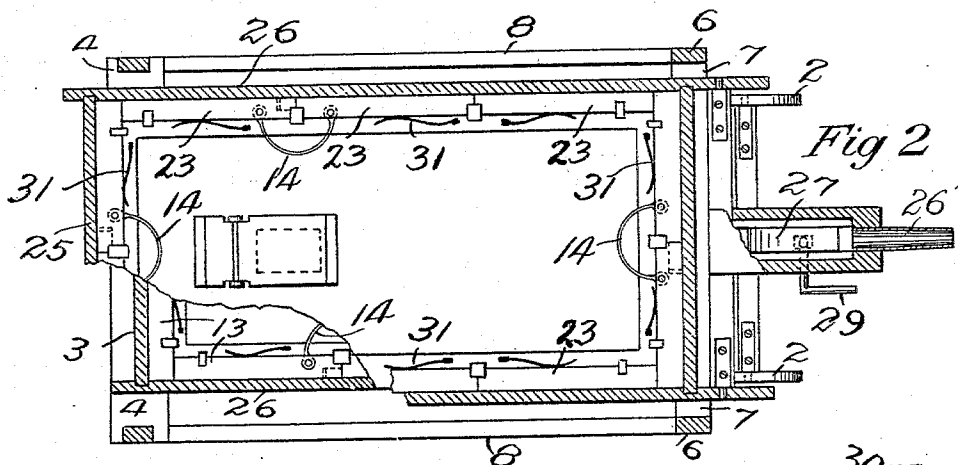


Fig 2

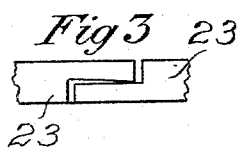


Fig 3

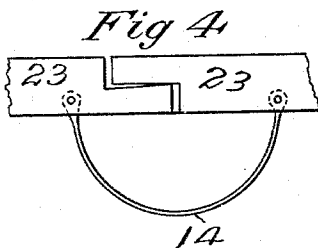


Fig 4

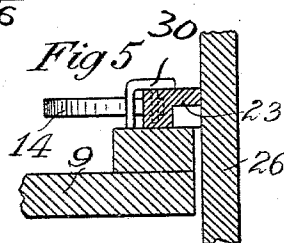


Fig 5

Witnesses  
Richard Paul,  
W. E. Corley.

Inventor  
Alfred M. Wickenberg,  
per Paul Otway  
Attorneys.

# UNITED STATES PATENT OFFICE.

ALFRED M. WICKENBERG, OF MINNEAPOLIS, MINNESOTA.

## BELLOWS.

SPECIFICATION forming part of Letters Patent No. 546,370, dated September 17, 1895.

Application filed April 22, 1895. Serial No. 546,591. (No model.)

*To all whom it may concern:*

Be it known that I, ALFRED M. WICKENBERG, of the city of Minneapolis, county of Hennepin, State of Minnesota, have invented certain new and useful Improvements in Bellows, of which the following is a specification.

My invention relates to bellows, and particularly to that class used in connection with blacksmith-forges; and the primary object of my invention is to provide a bellows which will maintain a continuous blast of air upon the fire while the bellows-lever is being operated and for a period of time after the lever has been released by the operator.

A further object is to provide a telescopic bellows in which the flexible leather portion between the top and bottom of the ordinary bellows is done away with, and in which are arranged a series of packing-strips or blocks, which serve to prevent the air from escaping around the edges of the movable portion of the bellows.

My invention consists, generally, in various details of construction and in combinations, all as hereinafter described, and particularly pointed out in the claims.

My invention will be more readily understood by reference to the accompanying drawings, forming part of this specification, and in which—

Figure 1 is a vertical longitudinal section of a bellows embodying my invention. Fig. 2 is a horizontal section showing the method of arranging the packing-strips upon the stationary portion. Figs. 3 and 4 are details showing the manner of fitting the ends of the packing-strips together and the springs connecting said strips. Fig. 5 is a sectional view showing the method of holding the packing-strips together and the clamp or hook which holds them in position.

In the drawings, 2 represents the tapering sides of the fixed portion of the bellows, and 3 the slightly-curved end portion, which connects the sides 2 and rests upon the plate or strip 4, which is in turn supported by the standard 5. The opposite end of the bellows is supported by the standard 6, connected by suitable cross-bars 7, and connected to the standard 5 by the bar 8. The upper part of the fixed portion is formed by the part or top 9, having an opening 10, on the upper side of

which is pivoted the valve 11. The lower side of the fixed portion is open and is adapted to receive a movable portion 12, pivoted at one end to a fixed portion, and provided upon its upper surface and extending around its edges are a series of strips or blocks 13, having their ends loosely fitted together and connected by springs 14, as shown in Fig. 4. These springs tend to hold the longitudinal edge of the packing strips or blocks in close contact with the sides 2 and the end 3 of the fixed portion of the bellows, thereby preventing any escape of air around the edge of the movable part 12. The part 12 is also provided with an opening 15, above which is pivoted a valve 16, and provided on its under surface with a curved bar or arm 17, and the brace 18 is provided extending from near the outer end of said bar to the free end of the part 12. Extending above the bellows is a standard 19, provided with a cross-arm 20, on the under side of which is suspended a long lever 21, and the chain or cord 22 connects one end of said lever with the outer end of the arm 17, so that when the opposite or free end of the lever 21 is pressed down, the part 12 will be raised up on its hinges or pivots and within the fixed portion of the bellows. Above the valve 11 in the top of the fixed portion, I provide another series of packing strips or blocks 23, joined together in the same manner as the blocks carried by the portion 12 and held against the sides and end of the movable portion arranged above the stationary part of the bellows, as shown in Fig. 1. This movable part is pivoted at one end to the fixed portion and comprises the top 24, the end 25, and sides 26. The sides and end are in close contact with the packing-strips carried by the fixed portion and prevent the escape of air between said strips and the sides and edges of said movable portion. At the smaller end of the fixed portion I provide a nozzle 26', and a passage is provided leading from the space within the upper movable portion to said nozzle. A valve is arranged in said passage by means of which the passage of air through the nozzle may be regulated or shut off altogether. The valve consists of a sliding block 27, held in position by the spring 28, and operated from the outside by a crank 29, which extends out through the wall of the

passage. Suitable hooks 30 are arranged at the intersection of the blocks 23, which, with the springs 31, tend to hold the blocks or strips in position. If desired, I may use simple strips of rubber or leather, having their longitudinal edge secured to the fixed portion of the bellows and fitting closely within the movable portion, so as to prevent the escape of air from the chamber. Similar strips may also be provided on the movable part 12.

The operation of the bellows is as follows: When the lever 21 is pressed down, the pivoted portion 12 will be raised up within the fixed portion, compressing the air therein, forcing the valve 11 open, and forcing air up into the space within the pivoted portion in the upper part of the bellows. As the lever 21 is lowered to return to its normal position, the part 12 will drop, the valve 16 will open, allowing the space above the movable portion 12 to fill with air again, so that when the lever 21 is again depressed, the air will again be forced into the chamber above the fixed portion, as before. This process may be continued until the movable portion is raised to its highest point and the chamber entirely filled with air. The weight of the upper movable portion will then cause a continuous current of air to flow out through the nozzle 26' all the time that the lever 21 is being operated, and until such time after the operation has ceased as the air has entirely passed out of the chamber or has been reduced to normal atmospheric pressure.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A bellows, provided with an air chamber comprising the sides 2, the top 9 provided with a suitable opening, the valve 10 for closing said opening, the curved part 3 forming one end of said chamber, the pivoted part 12 forming the bottom of said chamber, and arranged to move up and down therein, said part 12 being provided with a suitable opening, a valve for closing said opening, the packing strips carried by said part 12, springs for holding said packing strips in close contact with the walls of said chamber, and a second chamber arranged above said fixed portion and provided with a suitable outlet, for the purpose set forth.

2. A bellows, comprising a fixed and a pivoted portion, forming the primary chamber, a second pivoted portion arranged above said

fixed portion, and forming a secondary chamber communicating with said first named or primary chamber, said fixed portion being provided with a series of packing strips, means for holding said strips in close contact with the walls of said second pivoted portion, and said fixed portion being also provided with a suitable passage forming the outlet to said secondary chamber, and means for closing said passage, substantially as described.

3. A bellows having a primary chamber, comprising a fixed portion, the pivoted portion forming the bottom of said chamber, said portion being provided with packing strips in close contact with the walls of said chamber, a valve for admitting air to said chamber, a second pivoted portion arranged above said primary chamber, forming with said fixed portion a secondary chamber, said fixed portion being provided with a passage leading to said secondary chamber, said fixed portion being provided on its upper surface with a series of packing strips or blocks, means for holding the same in close contact with the walls of said second pivoted portion, said fixed portion being provided with an outlet leading from the space beneath said second pivoted portion, and a sliding valve for closing said outlet or passage, substantially as described.

4. A bellows having a primary chamber, comprising a fixed and a pivoted portion forming the bottom of said chamber and adapted to compress the air within said fixed portion, said fixed portion being provided with an opening, the valve for closing said opening, the lever for raising said pivoted portion to compress the air within said fixed portion, a second pivoted portion arranged above said fixed portion, forming therewith a secondary chamber communicating with said primary chamber, a valve for closing the passage between said chambers, suitable packing arranged upon the upper surface of said fixed portion and in close contact with the walls of said second pivoted portion, whereby the escape of air from said secondary chamber is prevented, and said fixed portion being provided with a passage leading from said secondary chamber, substantially as described.

In testimony whereof I have hereunto set my hand this 15th day of April, A. D. 1895.

ALFRED M. WICKENBERG.

In presence of—

F. S. LYON,  
RICHARD PAUL.