

UNITED STATES PATENT OFFICE.

GEORGE W. LORD, OF BOSTON, MASSACHUSETTS.

DRAFT OR AIR FORCING DEVICE.

SPECIFICATION forming part of Letters Patent No. 449,486, dated March 31, 1891.

Application filed October 13, 1890. Serial No. 367,944. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. LORD, a citizen of the United States, and a resident of Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Draft or Air Forcing Devices, of which the following, taken in connection with the accompanying drawings, is a specification.

10. This invention relates to improvements in draft or air forcing devices particularly designed for the purpose of producing an increased draft in boiler or other furnaces, &c.

The invention is also useful for the purpose of drying wool or other materials, as well as for ventilating purposes where it is desired to keep up a circulation of fresh air in halls, rooms, or buildings of any kind.

In apparatus of this type, wherein the air-conducting pipe is provided with a flaring mouth and an adjustable funnel-shaped or conical cap, it is desirable that the latter be capable of even and accurate adjustment and when adjusted that it be incapable of accidental movement in any direction. To accomplish this by novel, simple, and economical devices is the object of my invention; and to such end it consists in the features of construction and the combination or arrangement of parts hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 represents a central longitudinal section of a boiler-furnace and smoke-stack provided with my improved draft or air forcing device. Fig. 2 represents a detail top plan of the head or injector, and Fig. 3 represents a central longitudinal section on the line X X shown in Fig. 2.

40 Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

In Fig. 1, A represents a steam-boiler or heating apparatus of any suitable form or construction, having fire-pot or furnace A', tubes A'' A'', grate A³, and ash-pit A⁴, as usual.

50 B represents the smoke-stack or chimney, as usual, through which the heated products pass from the furnace of the boiler. Within such chimney I locate an air-forcing pipe C,

through which air is forced by means of a rotary blower D, air-pump, or equivalent air-forcing device. The upper end of the said pipe C terminates at a suitable distance below the upper end of the smoke-stack B, and it is there provided with a head or injector of a novel construction, more particularly shown in detail in Figs. 2 and 3. The said injector consists of a circular pipe E, the lower end of which is secured to the upper open end of the air-pipe C, and having its upper end provided with an outwardly-flaring annular lip or mouth E', as shown in Fig. 3.

Centrally within the pipe E and rigidly connected therewith by radial arms is arranged a non-rotary or immovable spindle *e*, the upper end *e'* of which is screw-threaded, as shown in Fig. 3. On the spindle *e* is longitudinally adjustable the conical or inverted funnel-shaped cap F, adapted to be rotated on the immovable spindle, and the taper of which is preferably made inclined toward the mouth E', that is less acute relative to the spindle *e* than the inclined mouth E', as shown in Fig. 3.

In practice I form with or attach to the axially-rotating funnel or cap F a nut *f*, adapted to receive the screw-threaded portion *e'* of the spindle *e*, by which arrangement the position of said funnel can be adjusted relative to the flaring mouth E' simply by turning it to the right or left, according to the size of the discharge-opening H desired between the upper edge of the mouth E' and the curved side of the funnel F. After the funnel has been adjusted, as above described, it is evenly secured relative to the mouth E', so as to provide a uniform annular discharge all around between the mouth E' and cup F, and this is done by means of regulating-screws F' F', screwed through the side of the cup F and pressing against the flaring mouth E', as shown in Figs. 2 and 3. After the cup F has been adjusted in position relative to the mouth E', as above described, it is locked immovably in position by a check or thumb nut F², which comes to rest against a part of the funnel-shaped or conical cap F. By this arrangement the size of the annular discharge-opening H can be regulated and adjusted with the greatest degree of nicety, according to the

pressure and amount of air desired to be forced out from the injector into the smoke-stack, ventilating or air-circulating pipe.

5 If the device is to be used for drying purposes, hot air may be forced out through the injector without departing from the essence or my invention. The air being forced out in an inclined annular direction against the interior of the smoke-stack or pipe B produces
10 a partial vacuum in the latter below the injector, by which an induced current and upward draft is produced at a very slight expenditure of power. It is not requisite that the pipe C should be arranged entirely within
15 the smoke-stack B, as it may be arranged outside of the latter and connected at its upper end to the injector within the smoke-stack, as shown in dotted lines in Fig. 1.

20 Having thus fully described the nature, construction, and operation of my invention, I wish to secure by Letters Patent, and claim—

In an air-draft apparatus, the combination, with air-forcing mechanism and an air-con-

ducting pipe connected therewith and having a flaring delivery-mouth, of an immovable 25 screw-spindle rigidly connected with the air-conducting pipe and rising through its flaring delivery-mouth, an axially-rotating funnel-shaped or conical cap having a screw-nut engaging the screw-spindle, whereby the rotation 30 of the cap causes it to move vertically in the flaring mouth, a series of regulating-screws engaging the cap and the flaring delivery-mouth for evenly adjusting the former relatively to the latter, and a nut engaging the 35 screw-spindle above and bearing against the top of the cap to lock the latter after adjustment, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of 40 two subscribing witnesses, on this 9th day of October, A. D. 1890.

GEORGE W. LORD.

Witnesses:

ALBAN ANDRÉN,
ALICE A. PERKINS.