

(No Model.)

J. B. DAVIDS.

MEANS FOR PROMOTING COMBUSTION IN FURNACES.

No. 530,299.

Patented Dec. 4, 1894.

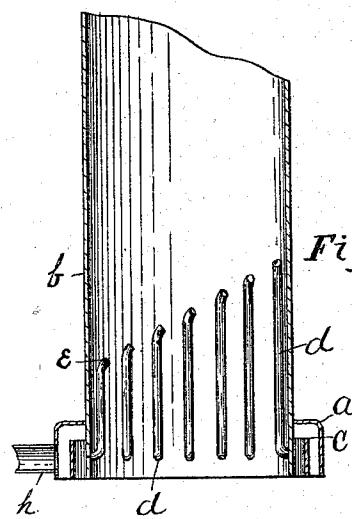


Fig. 1.

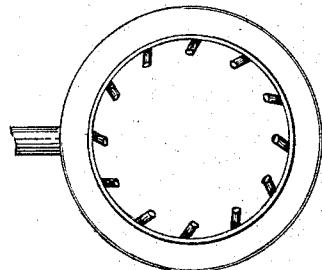


Fig. 2.

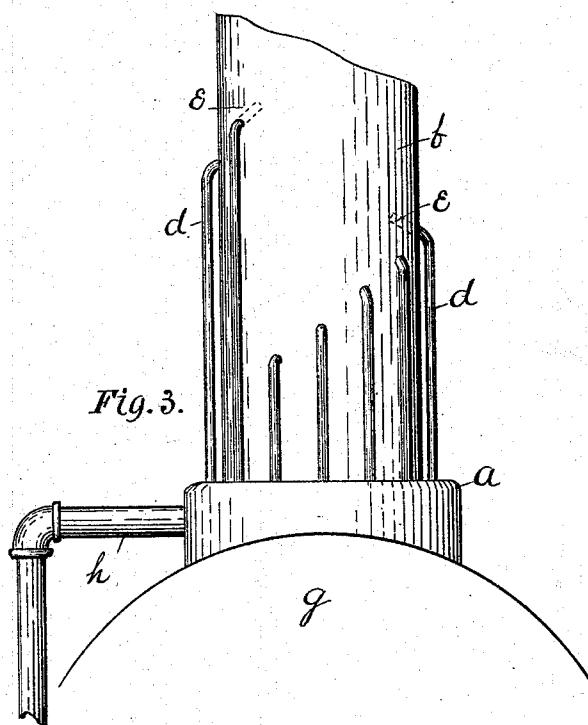


Fig. 3.

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UNITED STATES PATENT OFFICE.

JOHN B. DAVIDS, OF NORTH DARTMOUTH, MASSACHUSETTS, ASSIGNOR TO
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MEANS FOR PROMOTING COMBUSTION IN FURNACES.

SPECIFICATION forming part of Letters Patent No. 530,299, dated December 4, 1894.

Application filed April 19, 1894. Serial No. 508,090. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. DAVIDS, a citizen of the United States, residing at North Dartmouth, in the county of Bristol and State 5 of Massachusetts, have invented certain new and useful Improvements in Means for Promoting Combustion in Furnaces, of which the following is a specification, reference being had to the accompanying drawings, in 10 which—

Figure 1, is a view in perpendicular section of a portion of a smoke stack, fitted with my improvement. Fig. 2, is a top view of a smokestack, provided with my improvements, 15 and Fig. 3, is an elevation of a smoke stack, provided with my improvements.

Similar letters of reference indicate like parts in the several views.

The object of my invention is to provide 20 improved means for increasing the draft in furnaces, and it consists in introducing air under pressure, into the smoke stack, through a series of tubes, whose orifices open into said stack at varying heights from its base, and 25 arranged in such a manner that the blast from the shortest tube, will be assisted or accelerated by that from the next longer tube, and the blast from that, by the next, and so on throughout the series.

30 *b*, represents the smoke stack, and *a*, represents an air tight, annular chamber, surrounding the base of the same.

d, *d*, represent a series of tubes, having 35 their bottom ends secured in the wall of the chamber *a*, and extending upward to varying heights, with their orifices opening into the interior of the stack. These tubes are preferably arranged as shown, commencing with the shortest, and constantly increasing in 40 length, until the full circle of the stack is completed. The tops *e*, of these tubes, are preferably inclined slightly inward, and also in the direction of their increasing length, in order that the blast from the shortest tube 45 may be taken up and accelerated by the blast from the next longer, and that, by the next longer, and so on throughout the series, giving a whirling motion to the column of air within the stack, which greatly assists the up- 50 ward draft.

h, represents a pipe, provided with a valve, connecting the annular chamber *a*, with a reservoir containing air under pressure.

In Figs. 1, and 2, the tubes *d*, *d*, are represented as extending upward, inside of the 55 smoke stack; in which case, the partition *c*, which serves to distribute the air from the pipe *h*, equally to all the tubes *d*, is secured to the bottom of the chamber and extends nearly to the top of the same. 60

In Fig. 3, the tubes *d*, *d*, are represented as being secured in the top of the chamber *a*, and extending upward, outside of the smoke stack to the desired height, and then entering the same, as shown by the dotted lines. 65 In this case, the partition in the chamber *a*, is horizontal and extends inward, from the outside wall of said chamber.

When it is desired to increase the draft in the stack and thereby promote the combustion of the fuel in the furnace, the valve in the pipe *h*, is opened, and the compressed air allowed to flow into the chamber *a*, and through the tubes *d*, *d*, into the stack. As the cool air issues in a blast from the tubes, 70 it is at once expanded by the hot air from below, and rushes with accelerated speed from the top of the stack, thus causing a partial vacuum below, which the air under the fire box, rushes through the fire to fill, and thereby 75 promotes the rapid combustion of the fuel, and increases the effective force of the fire. 80

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

1. In combination with a smoke stack, having a chamber surrounding its base, a series of tubes connecting said chamber with the interior of said stack and extending upward, their tops terminating in a helical line, and 90 inclining slightly toward the center of the stack and in the direction of their increasing length; and means for forcing air through said tubes, all as shown and for the purpose described. 95

2. In combination with a smoke stack, a series of tubes extending upward from a point near the base of said stack, their tops terminating in a helical line, and opening into said stack; and means for forcing air through 100 said tubes, all as shown and for the purpose described.

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Witnesses:

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