M. M. SNIDER.

Air Distributing Pipes for Furnaces.

No. 205,431. Patented June 25, 1878.

Fig. 1

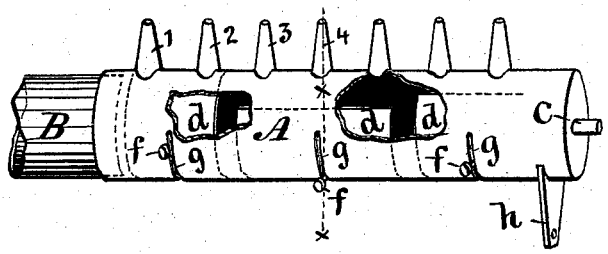


Fig. 2

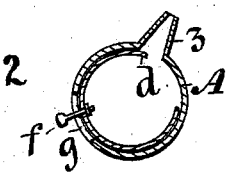
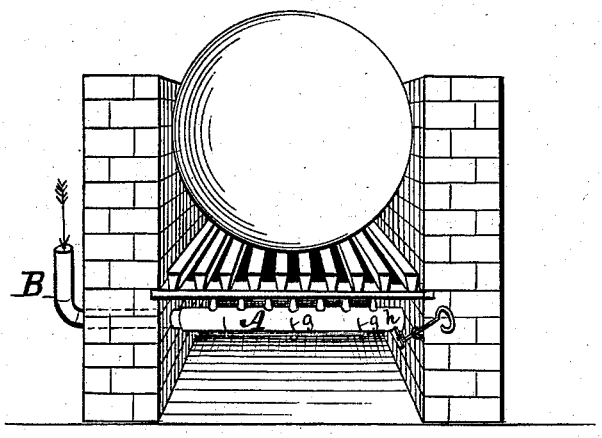


Fig. 3



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UNITED STATES PATENT OFFICE.

MORRIS M. SNIDER, OF AMES, IOWA.

IMPROVEMENT IN AIR-DISTRIBUTING PIPES FOR FURNACES.

Specification forming part of Letters Patent No. **205,431**, dated June 25, 1878; application filed November 15, 1877.

To all whom it may concern:

Be it known that I, MORRIS M. SNIDER, of Ames, in the county of Story and State of Iowa, have invented an Improved Air-Distributing Pipe for Furnaces, of which the following is a specification:

My invention relates to that class of devices applied under a furnace-grate to conduct and distribute air to the furnace-fire, to promote the combustion of carbonaceous fuel.

Heretofore various forms of pipe having sliding registers, pipes having tubes, branches, and nozzles, and pipes revolving in or around stationary pipes, have been used to distribute, regulate, and direct a blast to a furnace-fire. My object is to effect all the advantages contemplated by those various devices by means of a single revolving pipe; and my invention consists in simply mounting a pipe having a crank and a series of nozzles and adjustable dampers, and operating it as hereinafter fully set forth.

Figure 1 of my drawing is a perspective view of my air-distributer. Fig. 2 is a transverse view through the line *x x* of Fig. 1. Fig. 3 is a perspective view of a furnace having my improvement attached. Together they illustrate the construction, application, and operation of my complete invention.

A represents a tube, pipe, or cylinder corresponding in length with the width of the grate under which it is to be placed. It may be cast-iron or sheet metal, and vary in diameter as desired. It is open at one end, to admit the end of a conducting-tube, B, which forms a bearing around which the cylinder can revolve. Its opposite end is closed, and has a pivot or gudgeon, *c*, projecting from the center, and designed to rest and revolve in a suitable bearing fixed to the furnace-wall.

1 2 3 4 represent a series of tapering nozzles formed integral with the cylinder A, or rigidly attached in any suitable way. They correspond in number with the number of bars in the grate, and may vary in configuration and length, as desired.

d d represent a series of dampers or cut-offs, by means of which the admission and passage of air through the nozzles are regulated. They conform in shape with the cylinder A, and have handles *f* rigidly attached, to extend outward through transverse slots *g*.

h represents a crank rigidly attached to the revolving air-distributing cylinder or pipe A, by means of which it is readily revolved on its bearings.

m represents a rod or lever flexibly connected with the crank *h*, and extending outside of the furnace-walls, to be conveniently seized by the operator in adjusting the air-distributer.

In the practical operation of my invention, when fuel has been placed on top of the furnace-grate and fire started, and a supply of oxygen is required to promote the combustion of the carbon, I force air, by means of a fan-blower, or superheated steam, by means of steam-pressure, into the distributing-cylinder, and from thence distribute it to the fire by conducting it upward through the nozzles *d* and discharging it between the grate-bars.

I am aware that distributing-tubes of various forms have been applied to a furnace, and that various devices have been invented to control and regulate the distribution of air to suit the varying conditions of the fire in different parts of the combustion-chamber; but I claim that my novel manner of accomplishing the results contemplated is greatly advantageous. By simply moving the handle *f*, projecting through the slots *g* in the cylinder A, I can regulate the admission of air into the nozzles. At times the blast should be concentrated to one side of the furnace or to the center, and, by means of my series of independent dampers *d*, I can readily close the nozzles under any portion of the grate where the fire does not require to be fed with oxygen and open the nozzles under that portion that does require it; and, by simply seizing the lever attached to the crank *h*, I can revolve the cylinder A and change the angle of the nozzles *d* relative to the grate-bars, and thus change the direction of the blast and apply it to the front, center, or rear portions of the grate and combustion-chamber, as may be required by the varying conditions of the fire.

A simple, cheap, durable, and efficient blower

for furnaces is thus provided, that can be readily applied and operated to completely control and direct a blast of air, vapor, or gas to reach any or all portions of a furnace-fire, as required, to prevent the waste of any of the valuable products of combustion, and to avoid the annoyance and labor so frequently occasioned by soot and smoke in a furnace.

I claim as my invention—

The distributing-cylinder A, having a series of nozzles, 1 2 3, a series of dampers, *d f g*, a crank-lever, *h m*, and a pivot or gudgeon, *c*, on its closed end, and the conveying-tube B, when arranged and combined in a furnace, substantially as shown and described, to distribute air, vapor, or gas, to promote the combustion of carbonaceous fuel.

MORRIS M. SNIDER.

Witnesses:
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