(No Model.)

G. R. JARMAN.

FURNACE FEEDING DEVICE.

No. 574,331. Patented Dec. 29, 1896.

Fig. 1.

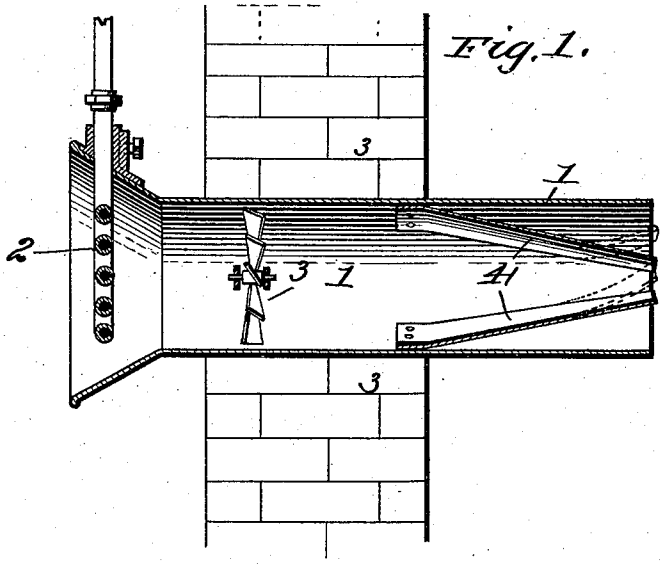


Fig. 2.

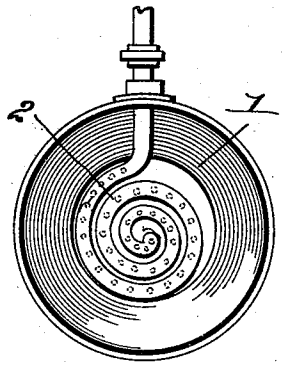


Fig. 3.

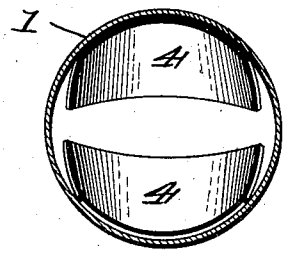


Fig. 4.

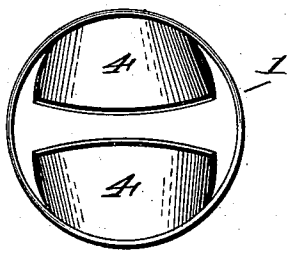


Fig. 5.

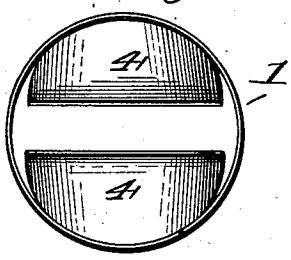
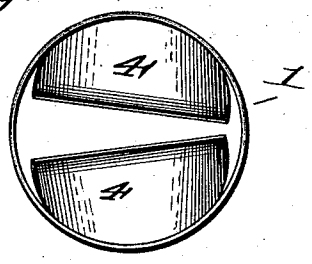


Fig. 6.



Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE R. JARMAN, OF RICHMOND, VIRGINIA, ASSIGNOR TO GEORGE A. LATHROP, JR., OF SAME PLACE.

FURNACE-FEEDING DEVICE.

SPECIFICATION forming part of Letters Patent No. 574,331, dated December 29, 1896.

Application filed April 2, 1896. Serial No. 585,974. (No model.)

To all whom it may concern:

Be it known that I, GEORGE R. JARMAN, a citizen of the United States, residing at Richmond, in the county of Henrico and State of Virginia, have invented certain new and useful Improvements in Furnace-Feeding Devices, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to improvements upon that class of injector devices adapted to feed blasts of highly-heated commingled air and steam under the grates of furnaces, to improve combustion, regulate the draft, irrespective of the length of the chimney, and keep the grate-bars cool and prevent the formation of clinkers.

The special objects of the present improvements, briefly, are to more thoroughly commingle the air and steam and to provide a nozzle which shall be variable as to size and shape as well as in direction, whereby the entire under grate-surface may be subjected to the blasts in the desired quantities, irrespective of the size and shape of grate and ash-pit and the character of coal used, as more fully hereinafter set forth.

In the drawings, Figure 1 is a vertical longitudinal section of the device mounted in the masonry wall of a furnace below the grate thereof; Fig. 2, a front view thereof; Fig. 3, a vertical cross-section, and Figs. 4, 5, and 6 detail end views showing some of the various shapes into which the nozzle-plates are adapted to be bent.

Referring to the drawings by numerals, 1 is a horizontal cylindrical casing set in the furnace and open at both ends, and set in the front end of this cylinder is a suitable vertical steam coil or spiral 2, which is perforated at intervals on its inner side, so as to direct numerous small jets of steam into the cylinder. Mounted in the cylinder beyond the steam-coil is a small wind-wheel 3, adapted to freely revolve when subjected to a draft. Within the cylinder, near its inner end, are a pair of thin metal nozzle-plates 4, these plates being attached at their inner ends, respectively, to the upper and lower sides of the cylinder and their converging inner ends being free of the cylinder and terminating at or near the inner end thereof.

The operation of the device is obvious.

The numerous jets of steam passing through the cylinder create a suction which draws in the air, and the two, partially commingled, strike the wind-wheel and cause the same to rapidly rotate. The rapid rotation of the wheel serves to break up the streams of steam and thoroughly commingle the air and steam, so that the blast as it issues from the nozzle-plates will be perfectly homogeneous as well as highly heated, thereby greatly promoting combustion and keeping the grate cool.

An essential feature is the nozzle formed by the nozzle-plates, which are made of thin malleable metal and are free at their inner converging ends. The object in making these plates of malleable metal and leaving their inner ends free is to permit the nozzle-opening to be varied in shape to suit the exigencies of each case, as shown in the various views. The nozzle-plates may be readily bent and twisted by means of suitable tools. In this way the blasts from the several devices used on each furnace may be directed to the desired portions of the grate-surface in the desired quantities, irrespective of the shape and size of the fire-box and the position of the injectors, whereby the whole of the grate-surface may be subjected to the action of the blasts; and when only one of the devices is employed in a furnace the nozzle may be shaped to best suit the style and size of grate and fire-box, the steam-pressure at command, and the character of fuel used. This variable nozzle therefore facilitates the even and thorough consumption of the fuel, whatever kind be used, and is therefore a very important feature of my device.

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

A furnace-feeding device consisting of an open-ended tube, a steam-jet at the front end

of the tube, adapted to inject a jet of steam through the tube and draw air therethrough, and a pair of nozzle-plates inclosed within the tube at its inner end, these nozzle-plates being arranged one above the other and being secured to the tube at their forward ends and converging toward their rear, free ends, said nozzle-plates being malleable to adapt them to be permanently flexed transversely and longitudinally.

In testimony whereof I affix my signature in presence of two witnesses.

GEO. R. JARMAN.

Witnesses:
C. D. DAVIS,
ALEX. S. STEUART.