(No Model.)

S. L. MILLER.

SAWDUST BURNER.

No. 421,744. Patented Feb. 18, 1890.

Fig. 2.

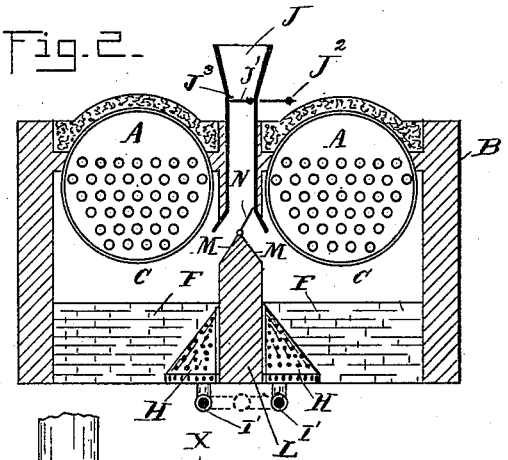


Fig. 5.

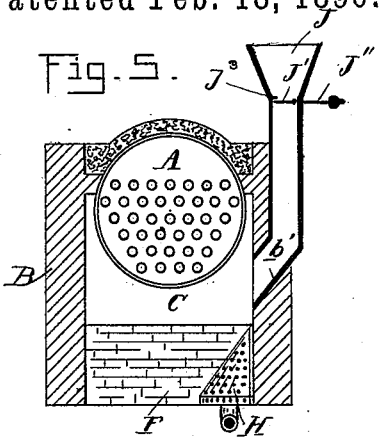


Fig. 1.

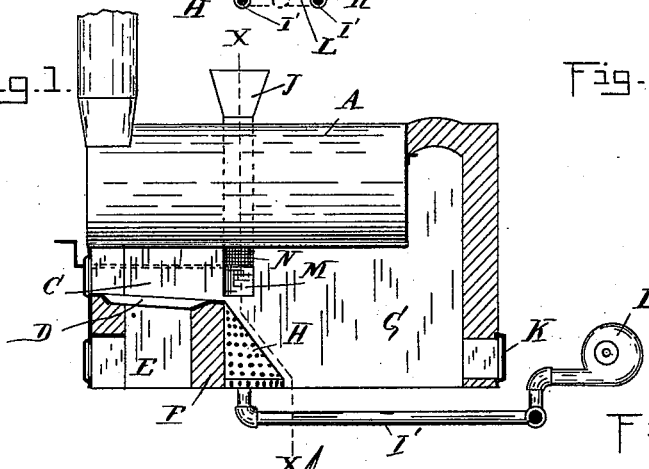


Fig. 6.

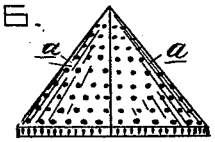


Fig. 4.

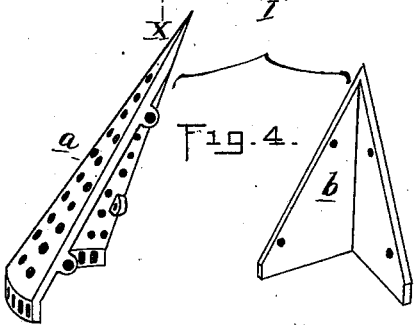
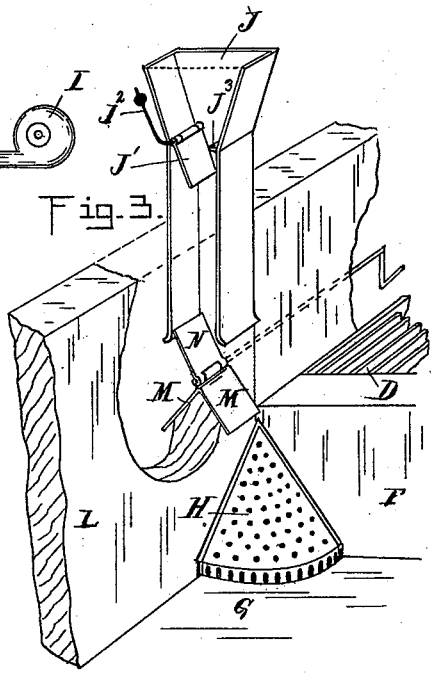


Fig. 3.



Witnesses

Geo. A. Gregg

Chas. McBreaty

Inventor

Samuel Latty Miller

By Thos. S. Sprague & Son

Atty's

UNITED STATES PATENT OFFICE.

SAMUEL LATTY MILLER, OF ITHACA, ASSIGNOR OF ONE-THIRD TO CALVIN A. SMITH, OF ST. LOUIS, MICHIGAN.

SAWDUST-BURNER.

SPECIFICATION forming part of Letters Patent No. 421,744, dated February 18, 1890.

Application filed June 12, 1889. Serial No. 314,056. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL LATTY MILLER, a citizen of the United States, residing at Ithaca, in the county of Gratiot and State of Michigan, have invented certain new and useful Improvements in Sawdust-Burners, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to new and useful improvements in furnaces, especially designed for burning sawdust; and the invention consists in the peculiar construction, in combination with a steam-generator and furnace, of a blast apparatus discharging into a nozzle or distributing-head, and of a feed device, whereby the sawdust in being fed to the fire is distributed in a stream over the entire surface of the perforated head, all as more fully hereinafter described.

In the drawings which accompany this specification, Figure 1 is a diagram side elevation of a double steam-generator to which my invention is applied. Fig. 2 is a vertical central section thereof on line *x x* in Fig. 1. Fig. 3 is a perspective view of my feeding device and distributing-head. Fig. 4 is a detached perspective view showing the construction of the distributing-head. Fig. 5 is a similar cross-section to Fig. 2, showing my invention as applied to a single steam-generator. Fig. 6 is a modified form of the distributing-head.

A is a steam-generator of the ordinary return-flue description, suitably set in the walls B, having under the forward end thereof a combustion-chamber C, grates D, and ash-pit E. At the rear end of the grates I preferably construct a division-wall F, forming the sawdust combustion-chamber G. In one of the corners of this chamber, as shown in Fig. 3, I place my distributing-head H, which is in the shape of a sector of a cone, and consisting, as shown in Fig. 4, of the perforated front *a* and the back E, the two being suitably connected together by means of bolts or otherwise.

I is a blower, connected by means of a pipe I′ to the under side of the distributing-head H, all so arranged that when the blower is put in operation a blast of air will enter at the base of the distributing-head and be passed out through the apertures in the part *a*.

J is a supply-tube provided with a suitable check-valve J′, which is preferably held by the weighted lever J^2 in its normal position against the abutment J^3, thus closing the aperture and preventing any escape of the products of combustion. If sawdust be introduced into the tube, it will overbalance the weighted arm and open the valve, as shown in Fig. 2. The lower end of this supply-tube has the incline *b′* preferably arranged in line with the incline of the distributing-head H, so that in feeding the sawdust down into the furnace it will be distributed in an even stream over all the parts of the distributing-head, gradually enlarging toward the bottom.

The parts being thus constructed and arranged, they are intended to operate as follows: In order to put the device in operation, I preferably construct a fire in the grates D and begin feeding the sawdust through the supply-tube J. The sawdust will soon ignite and the fire upon the grates may be allowed to go out. The blower I being put in operation will supply a constant draft through the distributing-head. As the sawdust collects at the bottom, it is evident that a greater volume of air will be required at this point than at the top, where it is fed in, and it is evident that with the shape of the distributing-head used air will be supplied in proper proportion to the location of the sawdust and thus make an even fire at all points. To clean out the ashes I provide a suitable ash-door K.

In case two steam-generators are located beside each other, in order to feed them from a common spout I preferably arrange the spout directly over the division-wall L, a double incline M being provided thereon, and a swinging valve N, which may be operated by a suitable handle carried to the outside, all so arranged that the sawdust may be fed to either of the furnaces, or to both, as desired. In this arrangement I preferably connect the supply-tube into the distributing-heads in both furnaces.

The construction of my device is based upon the well-known principle that when a quan-

tity of loose particles are delivered in a stream they naturally assume the shape of a cone, and I therefore construct my distributing-head of a corresponding shape to effect an even distribution of blast to all the parts of the mass. Where there is a double steam-generator without an interdividing wall, I secure two of the parts *a a* together, as in Fig. 6, to form a perfect half-sector of a cone, locating the supply-tube directly over the apex thereof.

In practice it has been found that with a burner of this kind the sawdust will be evenly and entirely consumed, and at the same time giving the most beneficial result from the head.

What I claim as my invention is—

1. In a sawdust-burner, the combination, with the furnace-chamber, of the distributer-head therein, the valved supply-pipe having an inclined portion above the apex of the distributer-head, and the blower leading to the distributer-head, substantially as described.

2. The herein-described distributer-head, consisting of the conical perforated front portion and the angular rear portion adapted to be secured to the front portion, substantially as described.

3. In a sawdust-burner, the combination of the distributer-heads, the blower for forcing air into said heads, the double inclines arranged above the distributer for guiding the material thereto, the swinging valve above said incline, and the valved supply-pipe for feeding the material, substantially as described.

4. In a sawdust-burner, the combination of the distributer-head, the supply-pipe having its outlet inclined and above the apex of the distributer-head, the valve in the supply-pipe and the abutment or stop for limiting the movement of the valve, and the blower leading to the distributer-head, substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses, this 6th day of March, 1889.

SAMUEL LATTY MILLER.

Witnesses:
N. C. R. SALTER,
JAMES L. CLARK.