Oct. 8, 1935. T. LOMBARDI 2,016,928

ASH SPRAYING DEVICE

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Fig. 1.

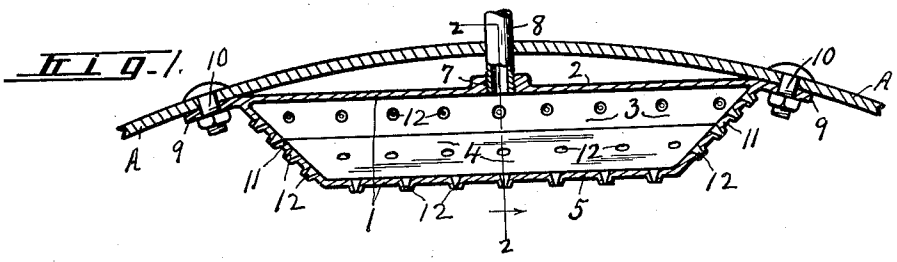


Fig. 2.

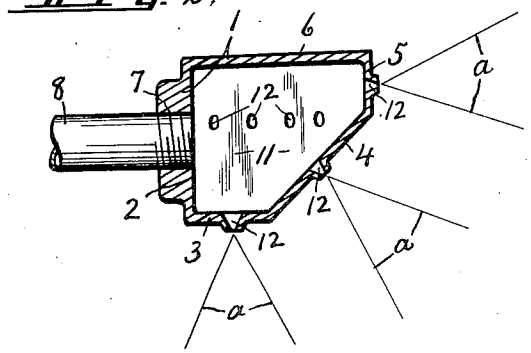
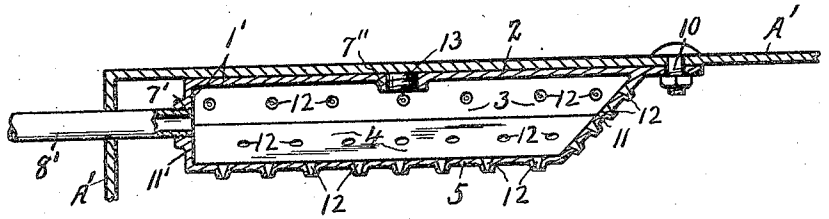


Fig. 3.



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ASH SPRAYING DEVICE

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1 Claim. (Cl. 299—141)

This invention relates to an ash spraying device adapted to be installed upon one of the upright walls of the ash box of a furnace or boiler to project inwardly therefrom for moistening the ashes and thus preventing the escape of the ash dust into the ambient atmosphere.

Certain devices for this purpose have heretofore been proposed but so far as I am aware, none of them have been capable of distributing the water from a single distributing head over the entire horizontal area of the ash box without obstructing the passage of the ash through the grates into the ash box or interfering more or less with the removal of the ashes.

The main object, therefore, of the present invention is to provide an elongated and relatively narrow distributing head, preferably of pentagonal cross section, adapted to be installed upon or closely adjacent to one of the upright sides of the ash box beyond the area of the grate to project inwardly therefrom in which one of the inner walls is disposed in an upwardly and inwardly inclined plane and is provided with outlet openings arranged to direct the outflowing water downwardly and inwardly across practically the entire area of the ash box.

Another object is to provide one or more of the remaining inner lengthwise sides of the distributing head with outlet openings arranged to spray the water inwardly in different directions from that produced by the apertures in the upwardly and inwardly inclined wall.

In other words, I have sought to provide a relatively long and narrow distributing head with a plurality of substantially flat sides arranged at different angles relatively to each other and each provided with one or more rows of restricted apertures for discharging the water at different angles upon the ashes within and over practically the entire horizontal area of the ash box.

Other objects and uses relating to specific parts of the device will be brought out in the following description.

In the drawing:—

Figure 1 is a horizontal sectional view of one form of my improved distributing head, upwardly and inwardly inclined perforated bottom portion, and laterally inclined end walls together with a vertical inner wall and a horizontal bottom wall, all of said walls being provided with restricted outlet openings for spraying the water into the ash pit.

Figure 2 is an enlarged transverse vertical sectional view taken in the plane of line 2—2, Figure 1.

Figure 3 is a horizontal sectional view of a modified form of distributing head in that the inlet pipe from the source of supply is connected to one end of the head.

This distributing head is adapted to be secured to one of the upright side walls of the ash box of a furnace or boiler at one side of the grate (not shown) to project inwardly therefrom. The upright side wall of the ash box may be circular, as shown at A in Figure 1, or rectangular, as shown at A' in Figure 3, and as shown in Figures 1 and 2, the distributing head as 1 is substantially straight and elongated horizontally and is preferably pentagonal in cross section, as shown more clearly in Figure 2 in that it comprises an outer upright wall 2, a relatively narrow bottom wall 3, an upwardly and inwardly inclined bottom wall 4, an upright inner wall 5 and a top wall 6, all of said walls being substantially flat.

The outer wall 2 is provided with a central inlet opening 7 adapted to be connected by a pipe 8 to any available source of water supply. The opposite ends of the outer upright wall 2 are provided with extensions forming flanges 9 which are provided with bolt openings for receiving clamping bolts 10 by which the distributing head may be secured to the upright wall A to assist the pipe 8 in supporting the distributing head in a fixed horizontal operative position in a plane below and at one side of the usual fuel-supporting grate, not shown.

This distributing head 1, as shown in Figures 1 and 2, is provided with opposite inwardly converging end walls 11 rigidly united to the adjacent ends of the remaining walls and preferably located equal distances from the inlet pipe 8, as shown in Figure 1.

Each of the lengthwise walls 3, 4 and 5 and end walls 11 is provided with a series of inwardly tapered relatively small apertures 12 for spraying the water inwardly in different directions over practically the entire horizontal area of the ash box as indicated by the inwardly diverging lines *a* in Figure 2.

Aside from the inlet opening 7, the outer upright wall and top horizontal wall 6 are preferably imperforate so that the entire body of water entering the distributing head may be evenly distributed through the openings 12 of the remaining walls to the interior of the ash box.

The bottom wall 2 of the head is relatively narrow and disposed in a horizontal plane parallel with the top wall 6, while the inner wall 5 is also relatively narrow and disposed in a vertical plane parallel with the outer wall 2.

The inner wall 4 is relatively wider than the walls 3 and 5 and is disposed in an upwardly and inwardly inclined plane connecting the walls 3 and 5 and also connected to the end walls 11, it being understood that all of the walls of the distributing head will be rigidly united to form water-tight joints.

The outlet openings 12 in the inner upright walls 5 are preferably horizontal and arranged to spray the water inwardly in all directions about the axis of each opening.

The openings 12 in the bottom wall 3 are disposed vertically for spraying the water downwardly and laterally in all directions about the vertical axis of each opening.

The openings 12 in the upwardly and inwardly inclined wall 4 are disposed at substantially right angles to the plane of said wall to spray the water inwardly and downwardly in all directions about the axes of the several openings.

The distributing heads preferably extend forwardly and rearwardly from the front side of the ash pit and when mounted upon the upright circular wall as A, the rear wall 2 extends across a portion of the arc of said upright wall, as shown in Figure 1.

The distributor shown in Figure 3 is adapted to be mounted upon the inner face of the upright wall as A' of a rectangular ash pit and is of the same cross sectional form as that shown in Figures 1 and 2, but the front end as 11' thereof is preferably provided with an inlet 7' adapted to be connected by a pipe 8' to a source of water supply. Otherwise, the construction is quite similar to that shown in Figure 1.

If desired, the rear wall of the distributing head shown in Figure 3 may be provided with an inlet opening 7'' normally closed by a plug 13 but adapted to be connected to a source of water supply in which case the inlet pipe 8' might be removed and the opening 7' plugged.

The water supply pipe 8 or 8' may be provided with any suitable valve for controlling the flow of water therethrough to the distributing head but when the valve is opened, the water entering the distributing head is free to pass through all of the apertures 12 in each of the walls, 3, 4 and 5 and in view of the fact that the apertures in the several walls are arranged at different angles, it is evident that the water will be sprayed inwardly over practically the entire horizontal area of the ash pit without in any way interfering with the free precipitation of the ashes from the grate into the ash box and also without in any way interfering with the removal of the ashes from said box.

In Figure 2 I have shown the direction of flow of the water spray from the head through the several openings 12 in the bottom wall 3, inclined wall 4 and upright wall 5, and it will be noted that the spray through the apertures in the bottom wall passes downwardly and spreads out over a considerable area of the ashes while the openings in the inclined wall 4 allow the spray to spread out over a relatively large area adjoining that covered by the spray through the openings 12, while the spray through the openings in the upright inner wall 5 will cover a still larger area of the ashes not covered by the spray through the openings in the walls 3 and 4.

When the end walls 11 are inwardly convergent, as shown in Figure 1, the length of the distributing head from front to rear may be somewhat shortened for the reason that the jets of water issuing through the apertures 12 in said end walls will be distributed forwardly and rearwardly covering the ashes in the front and rear parts of the ash pit.

When the construction shown in Figure 3 is used, the distributing head may be brought close to the front wall of the ash box while the rear perforated wall 11 will cause an even distribution of the water spray over the rear portion of the ash box.

It will now be understood that this distributing head may be installed in a comparatively small space within and closely adjacent to one side of the ash box beyond the marginal edges of the grate and close to the front, if desired, and that when the water is turned on it will be distributed through said head over practically the entire horizontal area of the ash box without the aid of other distributing means.

What I claim is:

An ash spraying device for the ash pits of furnaces and boilers comprising a substantially straight elongated integrally formed hollow shell, said shell being pentagonal in cross section and having a back and a top wall disposed substantially at right angles to each other, front and bottom walls disposed respectively adjacent and at right angles to said top and back walls, and a diagonally disposed wall joining said front and said bottom wall, at least one of the end walls of said shell being inclined inwardly with respect to the back wall, a plurality of water spraying jets disposed in said front, bottom, inclined front and inclined end walls for spraying water in divergent paths forwardly and downwardly over the entire ash pit area, means for connecting a source of water supply to said shell and means formed integrally with said back wall for supporting said shell from the side wall of an ash pit.

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