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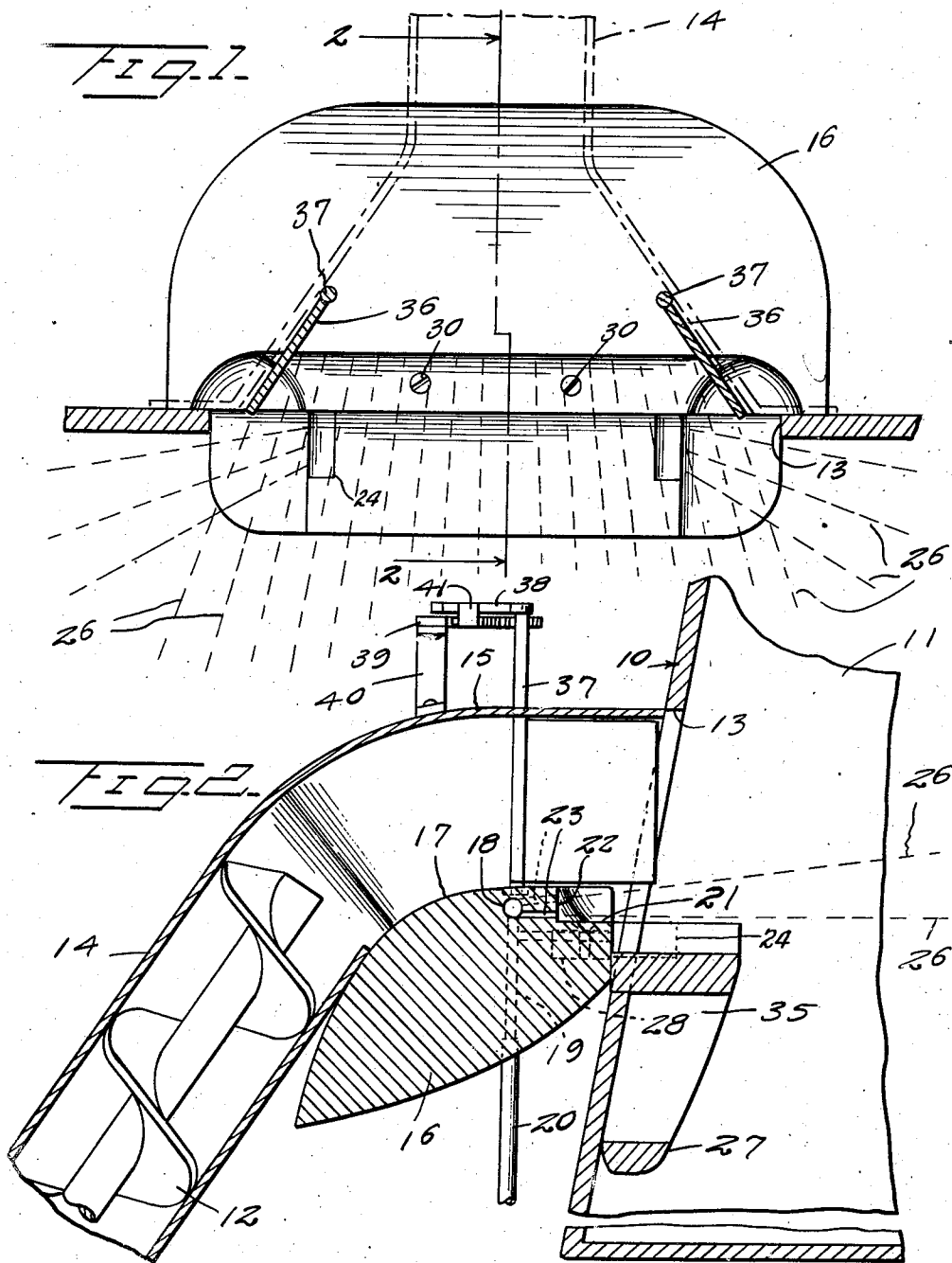
S. B. YATES

2,408,358

DISTRIBUTOR FOR STOKERS

Filed May 7, 1945

2 Sheets-Sheet 1



INVENTOR.

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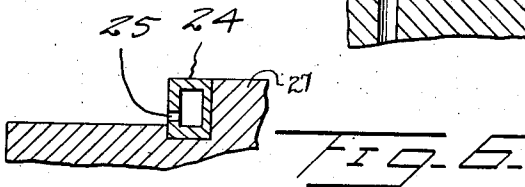
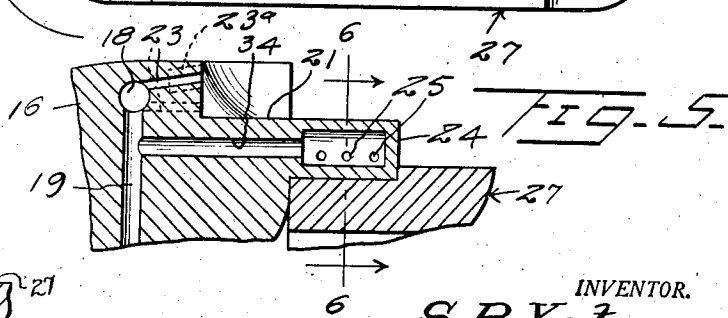
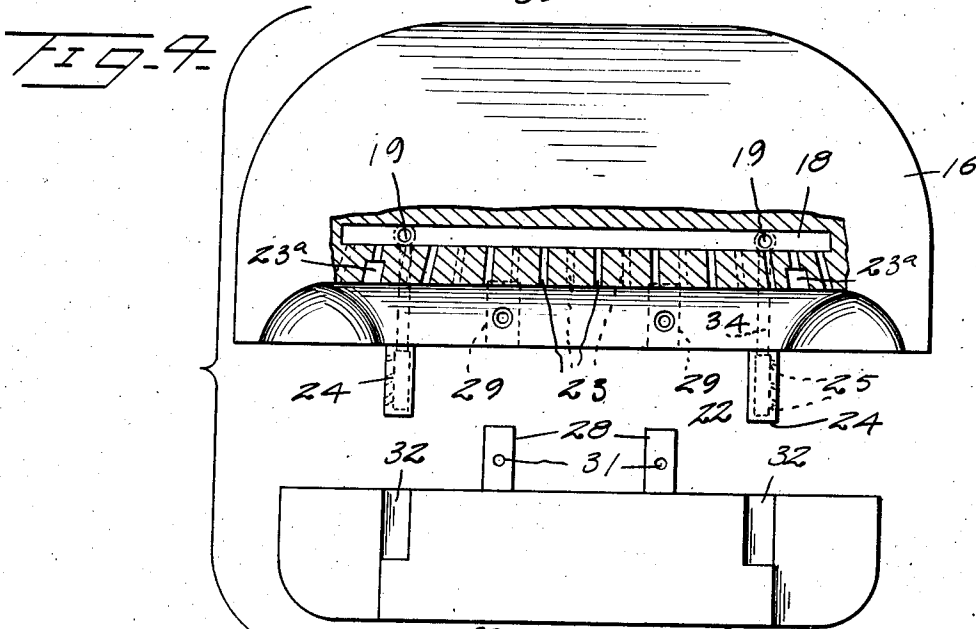
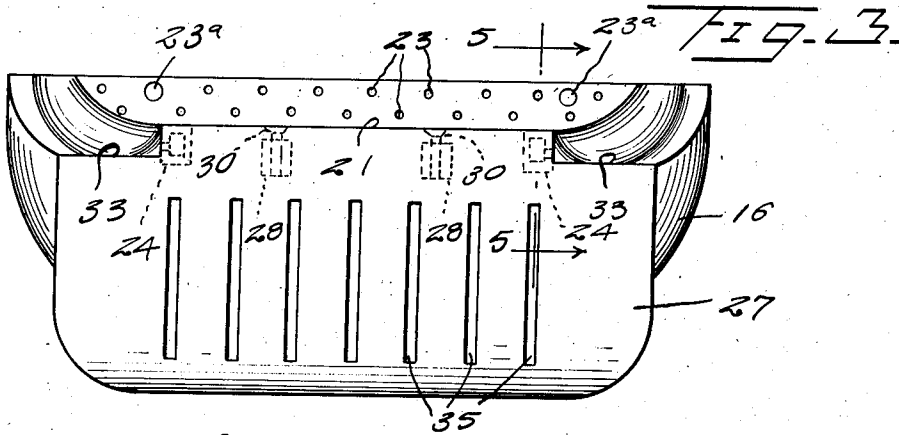
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DISTRIBUTOR FOR STOKERS

Filed May 7, 1945

2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,408,358

DISTRIBUTOR FOR STOKERS

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Application May 7, 1945, Serial No. 592,358

2 Claims. (Cl. 110—105.5)

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This invention relates to automatic stokers and to an improved jet assembly for distributing the coal to all parts of the fire box.

An object of this invention is to provide an improved distributor for coal stokers which is adapted to evenly distribute the coal about the fire box and particularly the rear portion of the fire box so that the maximum heat may be obtained within the fire box.

Another object of this invention is to provide an improved distributor assembly including a coal guiding plate which is formed with a plurality of steam jets, and a second plate removably secured to the first plate and adapted to be positioned within the fire box, the second plate being formed with means for dissipating the heat so that the second plate will be maintained relatively cool.

A further object of this invention is to provide in a distributor construction of this kind an improved coal guiding means whereby the inwardly moving coal may be guided over the distributor plate in a manner to provide for the even distribution of the coal in the fire box.

To the foregoing objects and others which may hereinafter more fully appear, the invention consists of the novel construction, combination and arrangement of parts, as will be more specifically referred to and illustrated in the accompanying drawings, but it is to be understood that changes, variations and modifications may be resorted to which fall within the scope of the invention as claimed.

In the drawings:

Figure 1 is a fragmentary horizontal section of a fire box having a distributor mounted in the fire door opening thereof constructed according to an embodiment of this invention,

Figure 2 is a fragmentary sectional view taken on the line 2—2 of Figure 1.

Figure 3 is an inner end elevation of the distributor construction,

Figure 4 is an exploded plan view partly broken away and in section of the distributor assembly,

Figure 5 is a fragmentary sectional view taken on the line 5—5 of Figure 3, and

Figure 6 is a fragmentary sectional view taken on the line 6—6 of Figure 5.

Referring to the drawings, the numeral 10 designates generally the rear wall of a fire box 11. The wall 10 is formed with a feed opening 13 through which the coal is adapted to be discharged into the fire box or chamber 11. A screw conveyor 12, which is rotatably mounted in a housing 14, is adapted to feed the coal to the

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fire box, the conveyor 12 and associated parts being of a conventional construction and here shown as an illustration of a feeding means combined with the improved distributor assembly. The conveyor housing 14 is provided with an enlarged forward housing member 15 which is adapted to be secured about the opening 12.

A distributor plate 16 extends from the conveyor 12 and is secured in any suitable manner to the outer side of the wall 10. The plate 16 is formed with a convex upper surface 17 over which the coal is adapted to pass. The plate 16 is also formed with a steam manifold 18 extending horizontally across the upper portion of the plate 16 at a point below the upper surface thereof and the manifold 18 is in communication with a pair of vertically disposed openings or bores 19 extending downwardly and with which a pair of steam conducting pipes 20 are adapted to be connected.

The plate 16 is formed at its inner portion with a ledge 21 disposed below the upper surface of the plate and the ledge 21 forms at its rear portion a vertically disposed shoulder 22. The plate 16 is provided with a plurality of jet openings 23 communicating with the manifold 18 and opening inwardly toward the fire box 11 so that steam will be ejected in the same direction of the movement of the coal over the upper surface 17 of the plate 16. The openings 23, as shown in Figure 4, are disposed on an angle to the line of travel of the coal over the plate 16 being of forwardly divergent relation to each other, so as to spread the coal out as the coal is being forced forwardly into the fire box 11. A pair of sidewise directing nozzle members 24 are carried by the forward or inner end of the plate 16 and are provided with lateral jet openings 25 which, as shown in the dot and dash lines 26 in Figure 1, are adapted to direct the coal laterally of the line of movement thereof so that the rear portion of the fire box adjacent the wall 10 will have coal deposited therein.

A coal guiding plate 27 is detachably secured to the plate 16 and is positioned within the fire box or chamber 11. The plate 27 includes a pair of rearwardly extending supporting lugs 28 which are adapted to engage in a pair of sockets 29 formed in the plate 16. The lugs 28 are detachably secured in the sockets 29 by means of pins 30 which are extended through the plate 16 and through openings 31 formed in the lugs 28. The securing members 30 are adapted to be flush with the guiding surface 21 formed at the forward portion of the plate 16. The upper portion of the

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plate 27 is formed with a pair of recesses 32 within which the nozzle members 24 are adapted to engage and the plate 27 is also formed with ledges 33, which are slightly below the jet openings 25, so that the steam ejected through the openings 25 may be discharged over the ledge 23 and move some of the coal laterally of the line of travel of the main body of coal. The nozzles 24 as shown in Figure 5 communicate with the vertical steam passages 19 through horizontal passages 34. The plate 27 is provided with a plurality of vertically disposed and horizontally spaced apart slots 35, as shown more clearly in Figure 3, so as to provide a means for dissipating the heat communicated to the plate 27 within the fire box.

In order to provide a means whereby the coal passing over the plate 16 may be guided in its movement thereover, I have provided a pair of guiding plates 36 which, as shown in Figure 1, may be disposed in forwardly divergent relation. The guiding plates 36 are carried by vertical shafts 37 extending through the housing extension 15 and having a lever or arm 38 secured to the upper end thereof. The arm 38 is adapted to swing over a toothed quadrant 39 supported by supporting means 40 from the housing extension 19. A spring-pressed lever locking means 41 is carried by the lever 38 so that the guiding blades or plates 36 may be disposed in any selected angular relation with respect to each other or to the line of travel of the coal.

In the use and operation of this device the coal is elevated by rotation of the elevating screw 12 and is forced forwardly through the housing extension 15 over the guiding plate 16. As the coal passes over the upper surface 17 of the guiding plate 16, this coal will come into contact with the forwardly ejected steam discharged from the jet openings 23. As the coal passes over the ledge 21, it will drop downwardly onto the ledge 21 and in dropping down the coal will come into contact with the streams of steam which will thereupon force the coal forwardly and into the interior of the fire box. The jet openings 23 are disposed in forwardly divergent relation, as shown in Figure 1, so that the coal will be spread out over the interior of the fire box. As the outer portions of the coal stream pass over the nozzle members 24, the jets carried by the nozzle members 24 will force the coal to be discharged laterally of the main stream of coal in order that the rear portion of the fire box will be covered with coal and so that the entire surface of the grates in the fire box will be covered with coal.

As shown in Figure 4 at least two of the jets 23 are arranged as low pressure or bell jets, being designated 23^a and positioned rearwardly of the lateral nozzles 24 so that the coal will be delivered to nozzles in a manner such that the coal may be turned in its movement and delivered laterally into the firebox. The larger delivery openings of the jets 23^a provide for a reduction in the steam

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pressure at the point of delivery and the consequent slower movement of the coal which is delivered to the nozzles 24.

What I claim is:

1. In a stoker, a coal distributing means for mounting in the feeding opening of a firebox, said means comprising a coal guiding plate formed with a horizontally disposed steam passage parallel with the forward edge of said plate and having a plurality of main jet openings in the forward edge communicating with said passage, a pair of oppositely disposed nozzles projecting forwardly from said plate and disposed forwardly of said main jet openings, said nozzles being disposed below said main jet openings and laterally of the outermost of said main jet openings, said nozzles being formed with a pair of jet openings arranged so as to project a substantial portion of the fuel at substantially right angles to the movement of fuel effected by the fluid discharged from said main jet openings whereby fuel will be discharged into the firebox adjacent the front wall thereof, a coal guiding member depending from the forward end of said plate and engaging the adjacent wall of the firebox, a pair of rearwardly extending arms carried by said guiding member, said plate having a pair of sockets in which said arms removably engage, a pair of locking members for locking said arms in said sockets, said guiding member being formed with recesses within which said nozzles engage whereby the upper surfaces of said nozzles will be substantially flush with the upper surface of said guiding member.

2. In a stoker, a coal distributing means for mounting in the feeding opening of a firebox, said means comprising a coal guiding plate formed with a horizontally disposed steam passage parallel with the forward edge of said plate and having a plurality of main jet openings in the forward edge communicating with said passage, a pair of oppositely disposed nozzles projecting forwardly from said plate and disposed forwardly of said main jet openings, said nozzles being disposed below said main jet openings and laterally of the outermost of said main jet openings, said nozzles being formed with a pair of jet openings arranged so as to project a substantial portion of the fuel at substantially right angles to the movement of fuel effected by the fluid discharged from said main jet openings whereby fuel will be discharged into the firebox adjacent the front wall thereof, a coal guiding member depending from the forward end of said plate and engaging the adjacent wall of the firebox, a rearward extension carried by said guiding member, and means forming part of said plate for engagement with said extension and whereby said guiding member and said plate are detachably held together with each other, said guiding member being formed to receive said nozzles.

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