H. F. SMITH.

FUEL DISTRIBUTOR.

APPLICATION FILED FEB. 25, 1918.

1,425,145.

Patented Aug. 8, 1922.

2 SHEETS—SHEET 1.

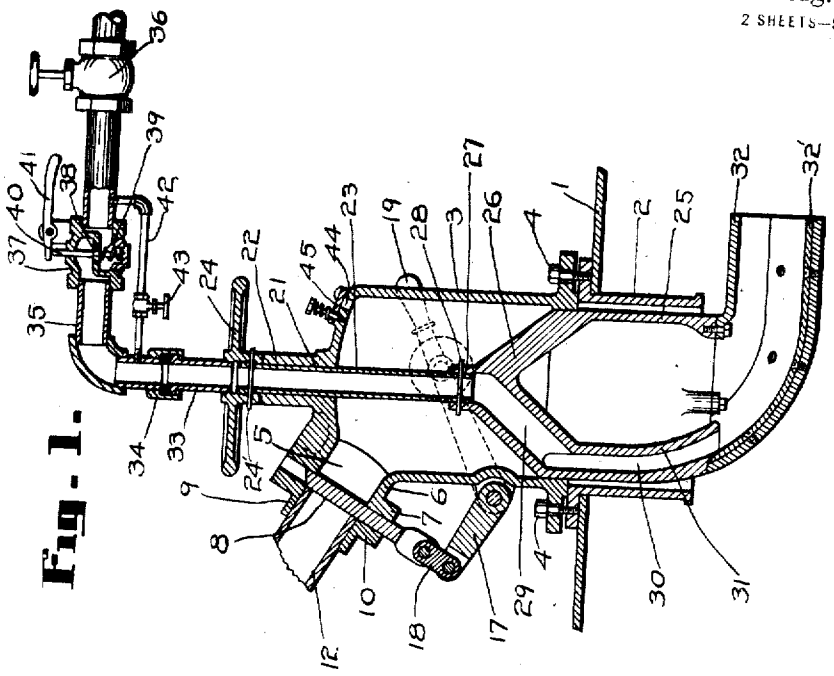


Fig. 1.

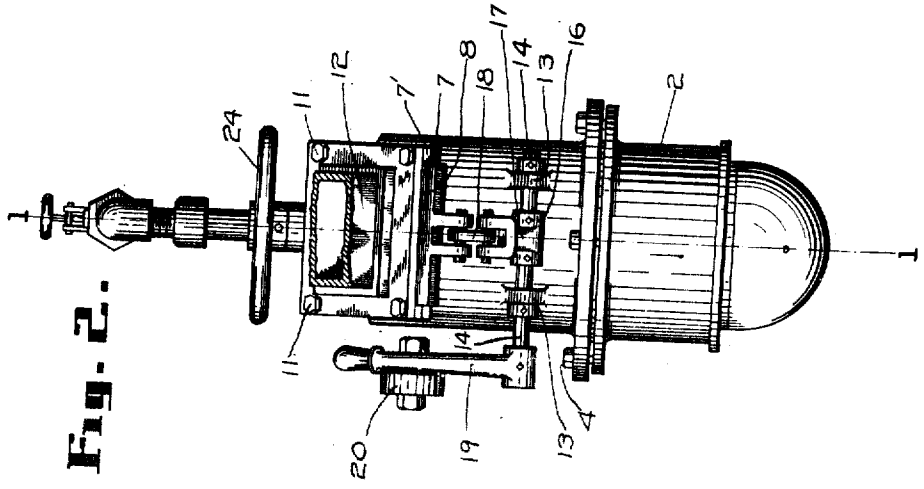


Fig. 2.

Witnesses,
Edwin James.

Inventor,
Harry F. Smith

By Kerr, Page, Cooper & Hayward.
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2 SHEETS—SHEET 2.

Fig. 4.

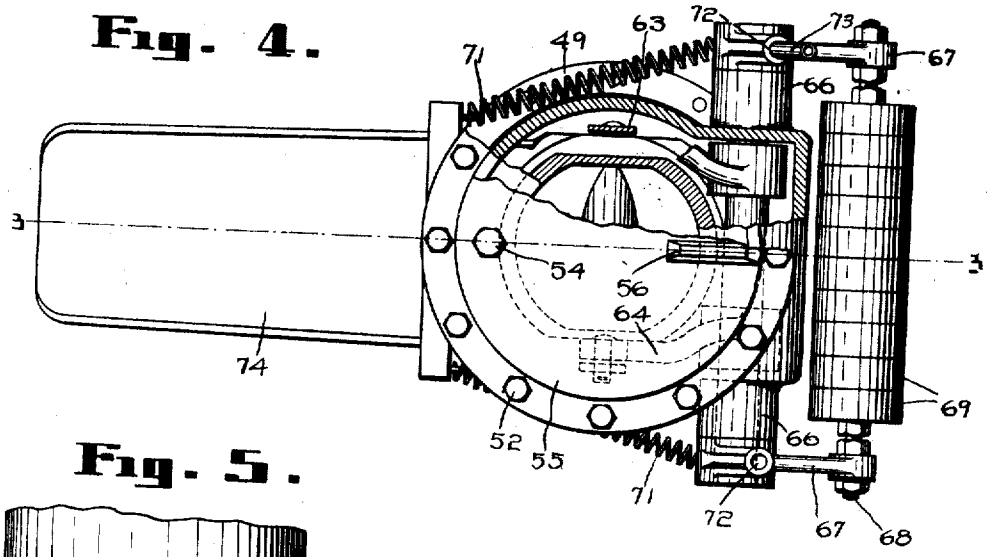


Fig. 5.

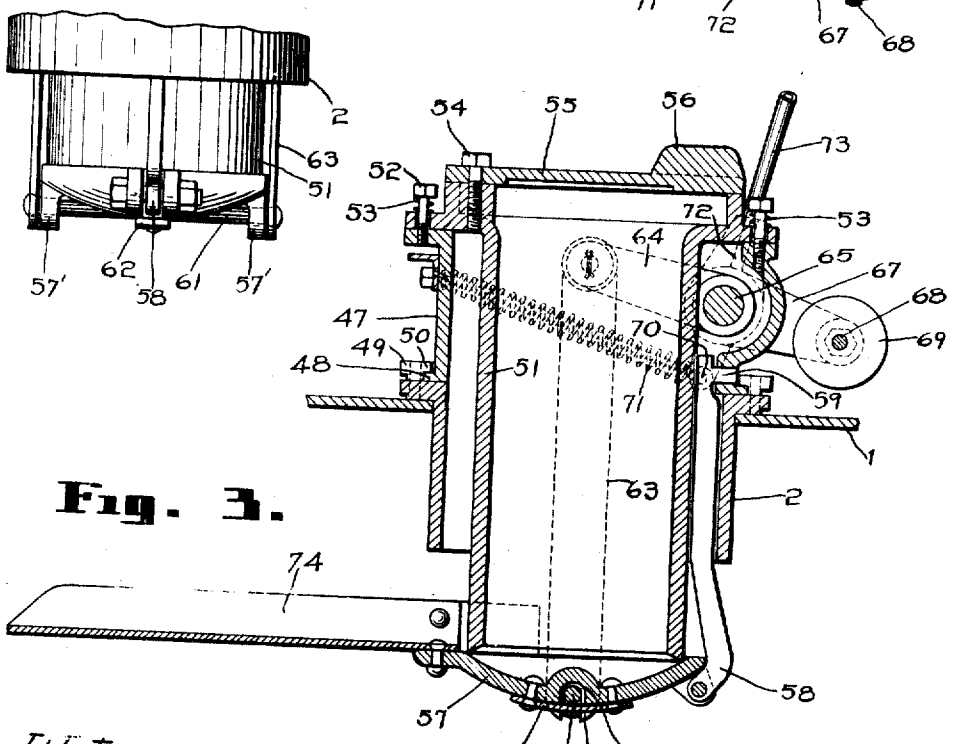


Fig. 3.

Witnesses.
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Inventor.
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UNITED STATES PATENT OFFICE.

HARRY F. SMITH, OF LEXINGTON, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE GAS RESEARCH COMPANY, OF DAYTON, OHIO, A CORPORATION OF OHIO.

FUEL DISTRIBUTOR.

1,425,145. Specification of Letters Patent. Patented Aug. 8, 1922.

Application filed February 25, 1918. Serial No. 219,069.

To all whom it may concern:

Be it known that I, HARRY F. SMITH, a citizen of the United States of America, residing at Lexington, Richland County, Ohio, have invented certain new and useful Improvements in Fuel Distributors, of which the following is a full, clear, and exact description.

This invention relates to fuel distributing mechanism, and more particularly to a fuel distributing device for use in connection with a gas producer, or furnace, and adapted to supply fuel to any desired part of the fuel bed.

It is very difficult to maintain the fuel bed in a gas producer, or furnace, in such condition that there is uniform resistance to draft therethrough; but failure to maintain such uniform resistance causes a very appreciable loss of efficiency. Especially is this true in the gas producer, in which probably no other factor has a greater influence upon the character of gas generated than the condition of the fuel bed. Numerous mechanical devices have been devised for the purpose of securing a uniform distribution of fuel. These mechanical devices when used in connection with an ordinary furnace, such as a boiler furnace, undoubtedly yield results far superior to those attendant upon manual stoking, especially where the furnace is of large size, and in many adaptations mechanical stokers of the character heretofore in use are efficient and satisfactory.

In gas producers, however, the problem of fuel distribution is not one of uniformity of consistency of the fuel bed, but rather one of uniformity of resistance to draft therethrough. In other words the problem is to secure uniformity of combustion regardless of variations in the consistency of the fuel bed. Obviously merely distributing fuel in such manner as to maintain a constant or uniform thickness thereof throughout the fuel bed is inadequate for securing most effective operation of a producer, since a fuel bed may have uniform thickness or consistency throughout, and, because of variations in the character of the constituent fuel, have some parts thereof consumed at a relatively faster rate than other parts. Because of the desirability of securing this uniformity of combustion throughout the fuel bed it has been heretofore the common producer practice to continually bar the fire in order to thicken the fuel bed where combustion is progressing too rapidly, and to thin out the fuel bed where combustion is taking place too slowly. To be successful in thus controlling the rate of combustion throughout the fuel bed entails a great deal of labor.

Any completely effective fuel distributing mechanism for use with a gas producer must necessarily be supplemented by barring unless that distributing mechanism is of such character that the fuel may be "spotted." In other words, in order for a fuel distributing mechanism for use in connection with a gas producer to be thoroughly effective it must be capable of not only distributing the fuel generally over the fuel bed, but, also, of distributing the fuel in such wise as to deposit any desired quantity thereof in any desired spot of the fuel bed. By the use of such distributing mechanism it will be possible to supply extra fuel to those portions of the fuel bed in which combustion is progressing too rapidly in order to dampen, or slow down, such combustion by adding an extra thickness of fuel to increase the resistance to draft through such portions of the fuel bed, and to not add fuel to those portions of the fuel bed where combustion is being retarded because of the relatively greater resistance to draft therethrough. The use of such a distributing mechanism will practically eliminate the necessity for barring the fuel bed, and will permit of preventing the formation of channels or chimneys therethrough. In addition it will also facilitate the prevention of the very undesirable "wall action" inasmuch as it is easily possible to bank fuel along the walls of the generating chamber to thus prevent the formation of the free spaces between the edges of the fuel bed and the wall of the generator chamber which permit the ready upward flow of air therethrough.

The principal object of this invention, therefore, is to provide a simple, inexpensive and substantial fuel distributing mechanism which may be applied to any gas producer, or furnace, which is extremely simple in operation, and thoroughly effective for distributing fuel to any or all parts of the fuel bed.

Another object of the invention is to provide fuel feeding apparatus which is so constructed as to prevent leakage of air or gas

therethrough, into, or out of, the generating chamber of the producer or furnace with which it is associated.

I have illustrated a preferred embodiment of my invention, along with a modification thereof, in the accompanying drawing in which:

Fig. 1 is a sectional view, along the line 1—1 of Fig. 2, of a preferred embodiment of the invention, in which a pressure fluid is used for distributing the fuel;

Fig. 2 is an elevational view of the device shown in Fig. 1;

Fig. 3 is a sectional view, along the line 3—3 of Fig. 4, of a modified form of my device, having manual means for distributing the fuel;

Fig. 4 is a plan view of the apparatus illustrated in Fig. 3, parts thereof being broken away in order to more clearly illustrate the mechanical details of construction, and

Fig. 5 is a fragmentary elevational view of the lower part of the apparatus illustrated in Figs. 3 and 4 showing details of construction.

In the drawing, in which like characters of reference designate like parts throughout the several views thereof, 1 designates the top of the shell of a producer, or furnace, of any conventional construction. The entire producer or furnace is not shown inasmuch as the structure thereof forms no part of the present invention, the fuel distributing mechanism disclosed herein being adapted for use in connection with any producer or furnace. Passing through the top of the shell 1 and rigidly secured thereto is a hollow cylindrical member 2 which extends a substantial distance into the furnace.

Mounted upon the outer end of the cylindrical member 2 is a hollow cylindrical member 3, the free end of which is closed off, the cavity therein forming a continuation of the passage through the member 2. The member 3 is rigidly but detachably secured to the cylindrical member 2 by means of stud bolts 4, or some similar means, so that if desired it may be disconnected from the cylindrical member 2 and bodily removed along with the other parts of the mechanism carried thereby.

Opening through the wall of the cylindrical member 3, to one side and at the top thereof, is a port 5, which may be of any desired shape. Surrounding this port is a flange 6 formed integral with the wall of the member 3 and constituting an extension thereof. The outer end of this extension is flanged as at 7, the free face of the flange being properly finished to form a seat for the gate valve 8. Rigidly attached to the flange 7, and held spaced therefrom by means of fillers 7′, is a sleeve 9, having a flange 10 thereon similar to the flange 7. The free face of the flange 10 is also finished to form a contacting surface for the valve 8. When in properly assembled position the sleeve 9 and the extension 6 are so positioned relative to each other that the finished faces of the flanges 7 and 10 are arranged parallel, and are held in definitely spaced relation by means of the fillers 7′ and stud bolts 11. The distance between the flanges 7 and 10 is such that the valve 8, which is adapted to slide therebetween, has snug contact therewith, but may be readily moved across the faces of the flanges to open or close the port 5 in order to permit, or shut off, passage of material therethrough. Connected to the free end of the sleeve 9 is a conveyor pipe 12 leading from a hopper, or any other source of supply, and adapted to furnish a continuous supply of fuel so that upon movement of the valve 8 to open the port 5 a charge of such fuel will pass into the interior of the cylindrical member 3.

Rigidly attached to the outer surface of the cylindrical member 3 near the bottom thereof are two lugs 13 having aligned passages therethrough. Rotatably mounted in these passages is a shaft 14, the lugs 13 being so positioned that the axis of the shaft 14 lies in a plane parallel to the plane of movement of valve 8. Mounted upon the shaft 14 and held rigidly in place thereon, upon opposite sides of the lugs 13, by means of set screws, are two collars adapted to retain the shaft 14 in proper longitudinal adjustment relative to the lugs 13 and the valve 8. Mounted upon the shaft 14 intermediate the lugs 13 and rigidly connected to such shaft, as by means of set screws, so as to turn therewith is a sleeve 16 carrying thereon an arm 17, the free end of which is connected to the free end of the valve 8 by means of a link 18. This connection between the arm 17 and the valve 8 is so arranged that rotation of the shaft 14 will cause a corresponding movement of the arm 17 to bring about inward or outward movement of the valve 8 to open or close the port 5. For thus rotating the shaft 14, a lever 19 is rigidly connected to the free end thereof. This lever is so connected to the shaft 14 that when released it will tend to move downwardly and thus rotate the shaft 14 to cause closing movement of the valve 8. In order to increase the moment of rotation tending to thus close the valve the weight 20 is attached to the lever so that maintenance of the valve 8 in closed position may be insured. The lever 19, the shaft 14, and the arm 17, being rigidly connected, constitute in effect a bell crank lever. And since the link 18 is pivotally connected to both the arm 17 and the valve 8, it is obvious that swinging the lever about the axis of the shaft 14 will result in ready movement of the valve 8.

Opening through the center of the closed end of the member 3 is a port 21. Surrounding this port 21 is an integral extension 22, the location of the port and extension being such that the passage therethrough is co-axial with the cylindrical member 3 and the cylindrical member 2. Rotatably mounted within the passage through the extension 22 and the port 21 is a pipe 23, the upper end of which is attached to the hub of the wheel 24 and is restrained from rotative movement relative thereto by the pin 24'. The lower surface of the hub of the wheel 24 co-operates with the upper and free end of the extension 22, the contacting surfaces of these two members being properly machined, or smoothed in any other desired manner, to permit ready sliding of one surface over the other. Rigidly attached to the lower end of the pipe 23 is a fuel receiving and distributing member 25. The body of the member 25 is mounted within the cylindrical members 2 and 3, and is arranged co-axially therewith so as to readily revolve within those members. Attached to the upper end of the member 25 is a spider 26 terminating in a hollow tube or extension 27 adapted to receive the threaded end of the pipe 23 therein, a pin 28 being passed therethrough for preventing relative rotative movement of the pipe 23 and member 28 after they are connected together. The arm of the spider 26 has a passage 29 leading therethrough, which passage is connected at one end to the passage through the extension 27, and thus to the passage through the pipe 23. The other end of the passage 29 is connected to a passage 30 formed in an extension 31 of the spider, which extends sufficiently far down the wall of the member 25 to bring the open end thereof in alignment with the lowet open end of the member 25. The lower portion, or spout, 32 of the member 25 is arranged substantially at right angles to the upper part thereof, the free end of such lower portion extending a substantial distance beyond the outer surface of the upper part of the member 25. It is evident from the above construction that any fuel admitted through the port 5 into the cylindrical member 3 will pass downwardly through the spider 26 into the member 25, and will come to rest there, the length of the off-set portion 32 being greater than the distance required to permit of the fuel assuming its normal angle of repose. In other words the off-set portion 32 extends a sufficient distance to retain the fuel therein after such fuel has been admitted to the member 25. Mounted within the member 32 and covering the lower half thereof is a steel plate or lining member 32'. This lining need not necessarily be of steel, but should be of some material capable of withstanding sudden temperature variations. In actual practice the member 32 is made of cast iron and because of its position adjacent the fuel bed becomes highly heated. It has been found that when condensed moisture drips from the passage 30 on to this highly heated metal fracture thereof frequently results. By using the steel plate 32' this trouble is avoided. In actual practice the member 32 is made separable from the member 25, being rigidly attached thereto by means of bolts. This is to facilitate repairs in case the member 32 cracks or becomes defective in any way.

Connected to the upper end of the hub of the wheel 24 is a pipe 33 which is connected by means of the swivel joint 34 to the pipe 35. This swivel joint may be of any desired construction, that shown being of conventional design. The type of swivel joint used forms no part of this invention. Located in the pipe 35 is a valve 36 of any desired construction for completely cutting off or admitting a fluid under pressure to that part of the pipe adjacent the distributing mechanism. I prefer to use steam as the pressure fluid, but, of course, air or other pressure fluid may be used if desired. This valve is not intended as a regulating valve, but merely as a cut off, it being in actual practice either wide open or completely closed so as to admit of a full supply of pressure fluid to the pipe, for use in operating the distributing mechanism, or to completely cut off the supply of such pressure fluid when the device is not to be operated. Located in the steam pipe 35 between the valve 36 and the distributing device is a controlling valve 37 for admitting any desired amount of pressure fluid to the distributing device for any desired length of time. I have found that the most satisfactory type of valve to use in this particular place is such an one as disclosed, which is substantially identical with the conventional type of whistle valve. As shown, this valve comprises a downwardly opening valve plug 38 adapted to open against the pressure fluid in the pipe 35, and normally retained against its seat by the spring 39. Attached to the upper end of the valve and extending through the casing thereof is a stem 40. Pivotally attached to the valve casing is an operating handle or rocker arm 41, one end of which co-operates with the free end of the valve stem 40, so that upon proper manipulation thereof the valve will be opened a desired amount.

In actual operation the valve 36 is always open so that a supply of pressure fluid is available at all times. When it is desired to introduce fuel into the producer or fire box, the operating handle 19 is actuated to move the valve 8 into such position as to permit the inflow of fuel through the pipe 12 and port 5 into the cylindrical member 3, and so into the receiving member 25. The

wheel 24 is now rotated so as to point the off-set end of the receiving-distributing member 25 toward the part of the fuel bed requiring replenishing. Having properly positioned the receiving-distributing member 32, the valve 37 is actuated to admit blasts of pressure fluid through the pipes 33, 23 and the passage 29 and 30 to force or eject the fuel from the member 25 through the off-set portion 32. It is evident that by properly regulating the amount of pressure fluid admitted through the valve 37 the fuel may be forced out of the member 25 with more or less velocity as desired so that it will be shot a greater or less distance across the fuel bed, and may thus be distributed to any desired part of such fuel bed. It is quite obvious that by rotating the wheel 24, the off-set extension may be directed toward any desired part of the fuel bed, and that by properly regulating the supply of pressure fluid admitted through the valve 37, the fuel may be forced any desired distance from the end of the off-set extension 32 to be thus supplied to any desired spot of the fuel bed. In actual practice it has been found that by the use of this apparatus fuel may be placed within a few inches of any spot in the fuel bed decided on as needing an extra amount of fuel, and it has been found further that, especially where used in connection with a producer, the resistance of the fuel bed to draft can be kept much more uniform than has ever been the case heretofore, and this with much less barring than has been heretofore necessary.

Leading from the steam pipe 35 between the valve 36 and the valve 37, is a small tube 42, the opposite end of which opens into the pipe 35 between the valve 37 and the distributing mechanism. Located in this tube 42 is a small cock 43 adapted to control the flow of the pressure fluid therethrough. The purpose of this tube is to provide a continuous supply of pressure fluid to the distributing device so that if any leakage of air occurs through the various joints thereof, such air will be so completely saturated with the pressure fluid as to prevent undesirable burning within the producer chamber. It is obvious that the presence of a continuous supply of pressure fluid within the fuel feeding member will also tend to prevent the leakage of air through the joints of the device and the inflow of air from the conveyor pipe 12, when the valve 8 is opened. It is also perfectly obvious that, in those cases where there would be a tendency for the generated gas to accumulate within the fuel feeding member and escape therefrom into the atmosphere, by leakage through the joints, or through the opening 5 when the valve 8 is opened, the continuous supply of steam prevents such transfer of gas through the device.

Opening through the closed end of the cylindrical member 3 is a poke hole 44 normally closed by means of a spring pressed cover 45. The purpose of this poke hole is to permit access to the interior of the distributing device so that if for any reason fuel should become clogged therein it would be possible to insert a bar to eliminate such clogging.

In the modified form of structure disclosed in Figs. 3, 4 and 5, I have illustrated a device in which manual means are provided for distributing the fuel. This modification of my invention is also adapted for use in connection with any gas producer or furnace. In this modified form of apparatus, as in the form shown in Fig. 1, there is rigidly attached to the shell 1 of the producer, or furnace, a cylindrical member 2 which extends a substantial distance thereinto.

Rotatably mounted upon the outer end of the cylindrical member 2 is a cylindrical member 47, having an outstanding flange 48 around the lower end thereof. The member 47 is retained in place with reference to the cylindrical member 2 by means of a retaining ring 49, having a flange 50 co-operating with the flange 48 adapted to retain that member in position and still permit of ready rotation thereof. Carried by the member 47, and adapted to rotate therein is a cylindrical member 51 of sufficient length to extend through the cylindrical member 2 into the chamber 1 and terminate a substantial distance below the lower free end of the member 2. The member 51 is attached to the member 47 by means of a plurality of bolts 52. Surrounding each of the bolts 52 and located between the head thereof and the upper surface of the member 51 is a spring 53. By means of these bolts, which pass through the member 51 and are rigidly attached to the member 47, these two members are caused to rotate together. By using the springs 53 limited longitudinal movement of the two members relative to each other is permitted. Attached to the upper end of the member 51 by means of the pivot bolt 54 is a top 55 adapted to swing around said bolt to cover or uncover the passage through the member 51. Carried by the top 55 is a lug 56 to facilitate opening and closing of said top.

Normally closing the lower open end of the member 51 is a dish shaped closure 57 pivoted at one side to a supporting member 58, the upper end of which is attached to the member 47. As shown this member 58 is attached to the cylindrical member 47 by means of an integral extension 59, which passes through a co-operating passage in

the wall of the member 47. It is obvious, however, that any other desired means for attaching the member 58 may be used, it being merely necessary that this member be so attached to the rotatable member 47 that the dish shaped closure 57 will rotate therewith. Rigidly attached to the closure 57 is a troughlike extension 74 through which any fuel in the cylindrical member 51 slides when the closure 57 is open.

Lying in the groove 60 formed in the lower face of the closure 57 and in the supporting lugs 57', carried on opposite sides of the lower face of the closure, is a bar 61, held in place in the groove by means of the cover plate 62, which is rigidly attached to the closure member. Pivotally attached to the opposite ends of the bar 61 are two connecting rods 63, each of which extends upwardly alongside the member 51, and has its upper end attached to the free end of one of the arms 64. The arms 64 are rigidly attached to the opposite ends of the bar 65, which is rotatably mounted in bearings 66 provided therefor in the cylindrical member 47. The arms 64 are attached to the bar 65 within the space formed between the member 51 and the member 47, and are so shaped as to lie wholly within that space and still be capable of swinging with the bar 65 about its axis. Rigidly attached to opposite ends of the bar 65 outside the cylindrical member 47 are two arms 67, the outer ends of which are connected by means of a rod 68 carrying thereon a plurality of weights 69. Each of the arms 67 carries adjacent its place of attachment to the bar 65, an extension 70, having a spring 71 attached to the free end thereof, the opposite end of this spring being attached to a stationary part of the member 47. The mode of attachment of the spring 71 is such that this spring normally tends to supplement the action of the weight 69. Also attached to the arms 67 adjacent their place of attachment to the bar 65 are sockets 72 adapted to receive an operating handle 73 for rotating the bar 65 about its axis.

From the above description it is obvious that upon movement of the operating handle 73, against the action of the weight and springs, there will result a downward movement of the connecting rod 63 with an ensuing swinging of the closure member about its point of pivotal connection with the member 58 to open the lower end of the cylindrical member 52, thus allowing any fuel therein to slide out in the troughlike extension 74, which, as stated above, is rigidly attached to the closure member 57. Movement of the operating arm in the other direction will result in a reverse movement of the connecting rod 63 to swing the closure member toward the open end of the cylindrical member 51. Such movement of the closure member will result in an upward movement of the troughlike extension 74, and since such movement, aided by the action of the weight and the springs 71, will be comparatively rapid, the fuel contained in such troughlike member will have its direction of travel changed so as to impart thereto as it leaves the troughlike member a more or less flattened out trajectory, the trajectory being dependent upon the movement of the troughlike member 74. Thus by varying the rate of movement of the trough 74, it is possible to throw the fuel to any part of the fuel bed desired. And since the member 47 is rotatably mounted, the troughlike member, which is carried by and rotates with the member 47, can be pointed so that the fuel will be thrown in any desired direction.

The necessity for the springs 53 surrounding the bolts 52 is apparent from the above description. It is obvious that for imparting sufficient velocity to the fuel to throw it to the more extreme parts of the fuel bed, a very rapid upward movement of the closure 57 and troughlike member 74 is necessary. In the course of this rapid upward movement this member 57 will come forcibly into contact with the cooperating ends of the cylindrical member 51. By providing the springs 53 a considerable part of the shock resulting from such contact will be taken care of so that serious damage to the apparatus will not result.

Fuel is fed to this distributing apparatus in any desired manner as by means of a conveying pipe leading off from coal bunkers of any suitable type located at a convenient place. The lower end of this conveyor pipe should terminate above the distributing apparatus in such position that fuel issuing therefrom will pass into the cylindrical member 51, when the top 55 thereof is open, and will collect in such cylindrical member, being retained therein by means of closure 57 which is normally held in closed position by the weight 69 and springs 71.

While the form of apparatus last described is effective, it involves considerably more labor than the form disclosed in Figs. 1 and 2 described above, and in addition is not so effective for controlling the distribution of the fuel as the pressure fluid operated device. The form of apparatus illustrated in Figs. 1 and 2 lends itself to a very nice control of fuel distribution. Not only is it possible by the use of this apparatus to closely control the direction in which the fuel is distributed, but also the distance to which the fuel is shot from the apparatus. Obviously with the distributing member 32 pointed in any desired direction, it is possible by merely varying the duration and intensity of the expelling blasts of pressure fluid, to shoot the fuel therefrom entirely across the fuel bed or to push it gently from

the end thereof, so that it will drop directly below the distributing apparatus. And it has been found in practice that with this particular device fuel may be placed directly in any desired spot of the fuel bed. This pressure fluid type of distributor has been tried out in connection with gas producers of large size. And by its use it has been found not only possible to secure a fuel bed of more uniform resistance than could be secured before its use, but to secure these improved results with a direct and substantial saving in the labor involved.

While I have described my invention as designed and especially adapted for use in connection with gas producers, in which the condition of the fuel bed is of supreme importance, it is obviously capable of use in many other adaptations, and can in fact be used with slight mechanical modifications in connection with any type of furnace or fire box. My invention, therefore, is not limited to the precise structural details set forth, but is co-extensive in scope with the definition thereof set out in the appended claims.

What I claim as new is:

1. In a device for distributing the fuel in a combustion chamber, fuel receiving-distributing means extending into said chamber and having a laterally directed discharge opening therein; and means associated with said receiving-distributing means for throwing the fuel through the said discharge opening to any desired distance therefrom; said receiving-distributing means being rotatably mounted and constructed for positioning to distribute fuel in any desired radial direction, the construction being such that fuel may be distributed to any desired part of the fuel bed within said chamber without being at the same time distributed to other parts of the fuel bed.

2. In a device for distributing fuel in a combustion chamber, fuel receiving-distributing means extending into said chamber, and having a laterally directed discharge opening therein; and fluid pressure means associated with said distributing means for forcing the fuel through said discharge opening to any desired distance therefrom; said receiving-distributing means being rotatably mounted, and constructed for positioning to distribute fuel in any desired radial direction, the construction being such that fuel may be distributed to any desired part of the fuel bed within the chamber without being at the same time distributed to other parts of the fuel bed.

3. In a device for distributing fuel in a combustion chamber, a fuel receiving-distributing member extending within the chamber, and terminating in a laterally directed discharge portion; means for positioning said distributing member with the discharge portion arranged in any desired radial direction; and means associated with said receiving-distributing member for forcing fuel through said discharge portion to and desired distance therefrom; the construction being such that the fuel may be spotted.

4. In a device for distributing fuel in a combustion chamber; fuel distributing means rotatably mounted and terminating in a laterally directed spout located within the chamber; said means being adapted for positioning with the spout pointing in any desired radial direction; and means for forcing fuel from the spout to any desired distance.

5. In a device for distributing fuel in a combustion chamber; fuel receiving-distributing means, said means being rotatably mounted and having a laterally directed discharge portion extending within said chamber; and fluid pressure means associated with said receiving-distributing means adapted to control the distribution of fuel therefrom, the device being adapted to throw fuel in any predetermined radial direction to any desired distance.

6. In a device for distributing fuel in a combustion chamber; a hollow member upon the outside of the combustion chamber, having a fuel inlet pipe opening thereinto; a pipe rotatably mounted in the outer end of said hollow member, said pipe being connected outside the hollow member to a source of fluid under pressure, the connection being such as to permit of rotation of the pipe; a receiving-distributing member carried by the other end of said pipe, said receiving-distributing member extending into the chamber and having a laterally directed discharge opening; means for rotating the said pipe; and means for admitting fluid under pressure through said pipe to said receiving-distributing member.

7. In a device for distributing fuel in a gas producer; fuel distributing means, said means being rotatably mounted and extending within said chamber; fluid pressure means associated with the distributing means for controlling the distribution of fuel therefrom; and means associated with the distributing means and the fluid pressure means, for continuously supplying pressure fluid to the distributing means.

8. In a device for distributing fuel in a gas producer; fuel distributing means, said distributing means having a laterally directed discharge opening and being rotatably mounted and extending within said chamber; means associated with the distributing means and adapted to admit steam under pressure to said distributing means to cause a distribution of fuel therefrom, said means comprising a valve controlled de-

livery passage, adapted to supply pressure steam when said valve is open; and other means adapted to supply steam to the distributing means when said valve is closed.

9. In an apparatus for feeding fuel to a gas producer, or the like, a fuel feeding member, a housing therefor; means for supplying fuel to said feeding member, for introduction into said producer; and means for supplying steam, or similar pressure fluid, to the apparatus, said means being constructed to so supply the steam as to fill the fuel feeding member, to prevent the transfer of air or gas through said housing.

10. In apparatus for feeding fuel to a gas producer, or the like, a fuel feeding member, a housing therefor; means for supplying fuel to said fuel feeding member for introduction into the producer; and a pipe connecting the interior of the housing to a source of supply of steam, or analogous pressure fluid, the construction being such that steam is introduced through said pipe in such manner as to prevent the transfer of air through said housing into the producer or of gas from the producer into the air.

11. In apparatus for feeding fuel to a gas producer, or the like, a fuel feeding member; means for supplying fuel to said fuel feeding member, means cooperating with said fuel feeding member for causing the introduction of fuel from said fuel feeding member into the producer; and means for supplying steam, or similar pressure fluid, to the fuel feeding member to form a blanket of steam within said fuel feeding member, to at all times prevent the transfer of air or gas into said fuel feeding member.

12. In apparatus for feeding fuel to a gas producer, or the like, a housing connected with the combustion chamber of the producer into which the fuel is to be fed, a fuel feeding member within said housing; means for supplying fuel to said fuel feeding member, means cooperating with said fuel feeding member for causing the introduction of fuel from said fuel feeding member into the combustion chamber of the producer; and means for supplying steam, or other similar pressure fluid, constructed to introduce steam to the fuel feeding member as the fuel therein is introduced into the combustion chamber, to fill the space within said feeding member to form a blanket of pressure fluid therein to prevent transfer of air or gas into said fuel feeding member as the fuel passes therefrom into the combustion chamber.

In testimony whereof I affix my signature.

HARRY F. SMITH.

Certificate of Correction.

It is hereby certified that in Letters Patent No. 1,425,145, granted August 8, 1922, upon the application of Harry F. Smith, of Lexington, Ohio, for an improvement in "Fuel Distributors," errors appear in the printed specification requiring correction as follows: Page 2, line 52, after the word "thereby" insert the sentence *The members 2 and 3, together, are, for purposes of description, termed a housing.;* page 6, line 71, claim 3, for the word "and" read *any;* and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 26th day of September, A. D., 1922.

[SEAL.] WM. A. KINNAN,

Acting Commissioner of Patents.