Oct. 31, 1944. W. M. FULTON 2,361,836

STOKER

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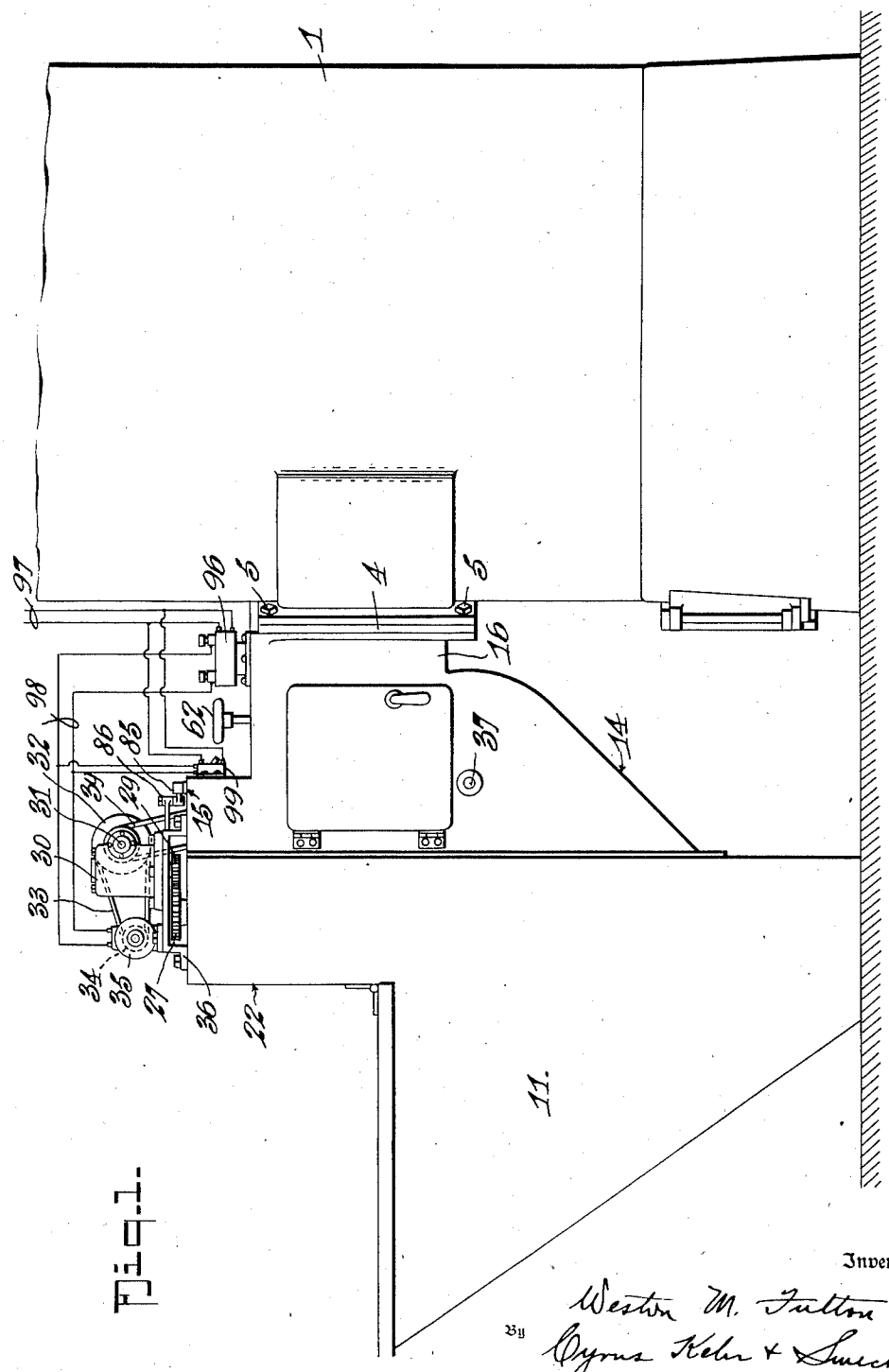


Fig. 1.

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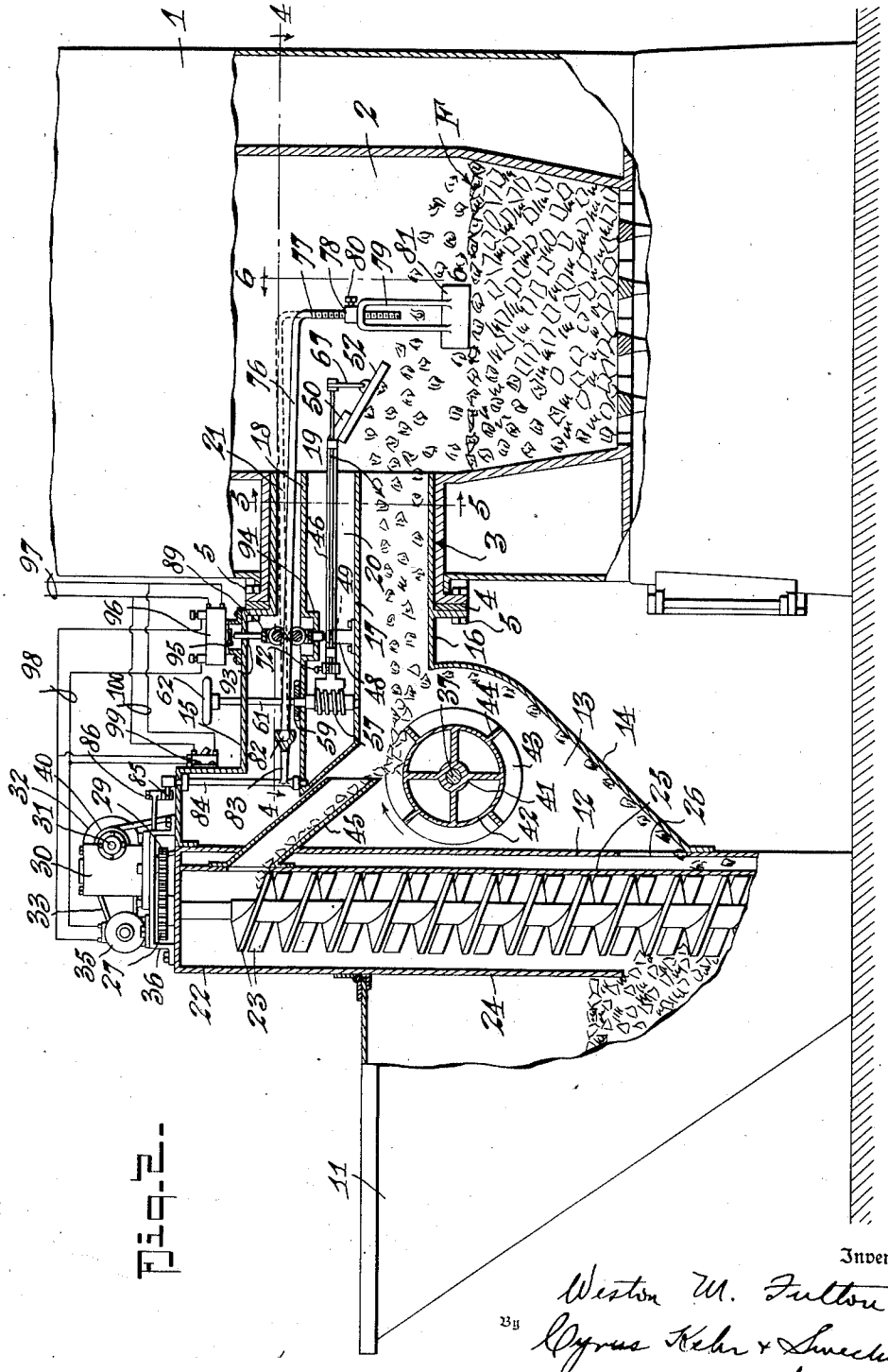


Fig. 2.

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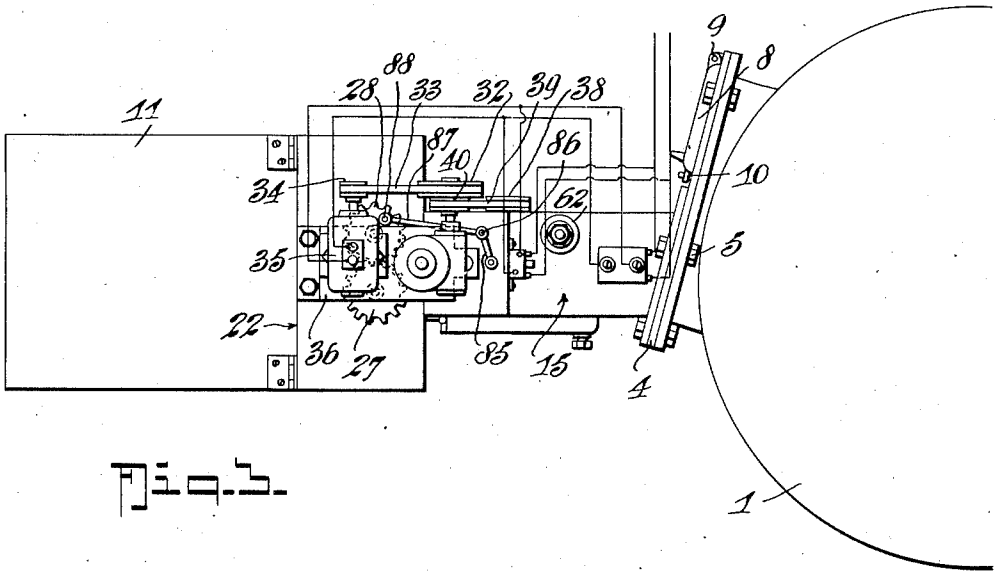


Fig. 3.

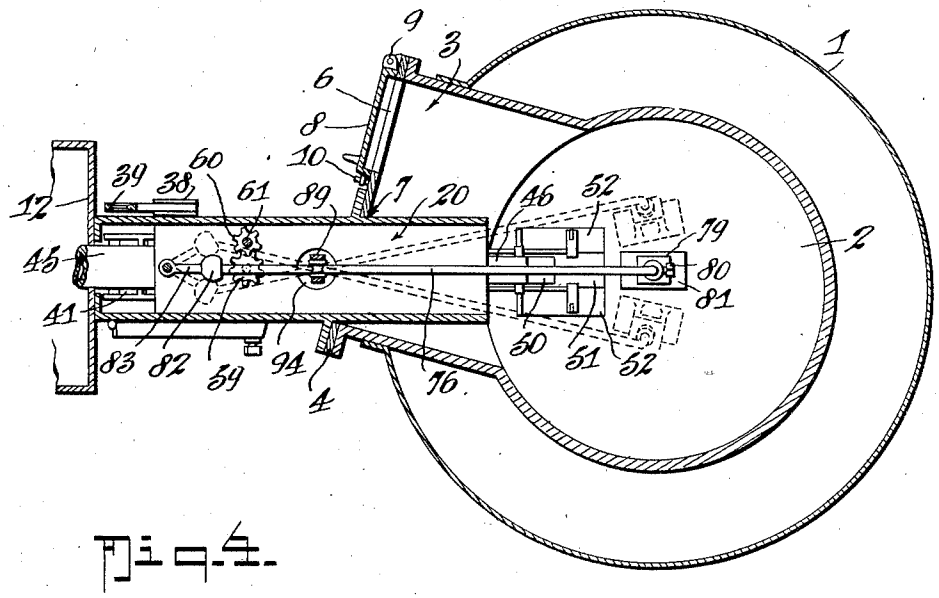


Fig. 4.

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STOKER

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Fig. 5.

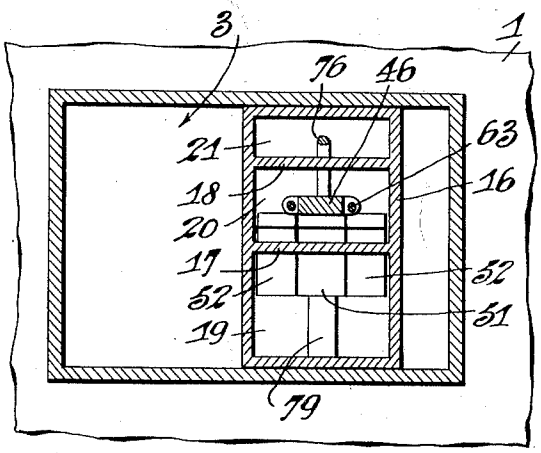


Fig. 6.

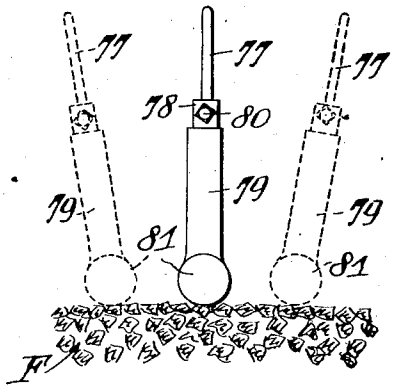


Fig. 7.

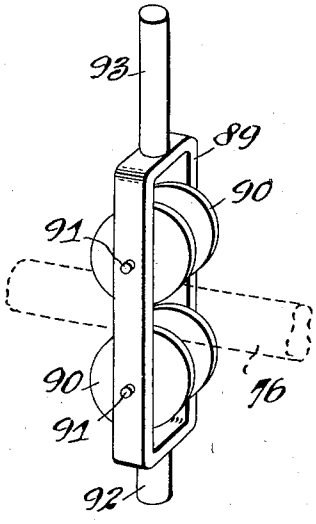
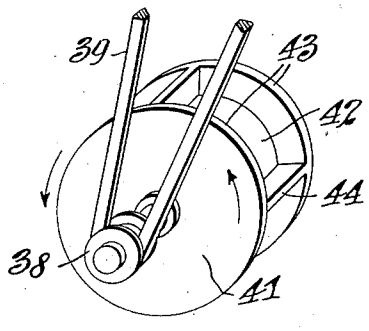


Fig. 8.



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Fig. 9.

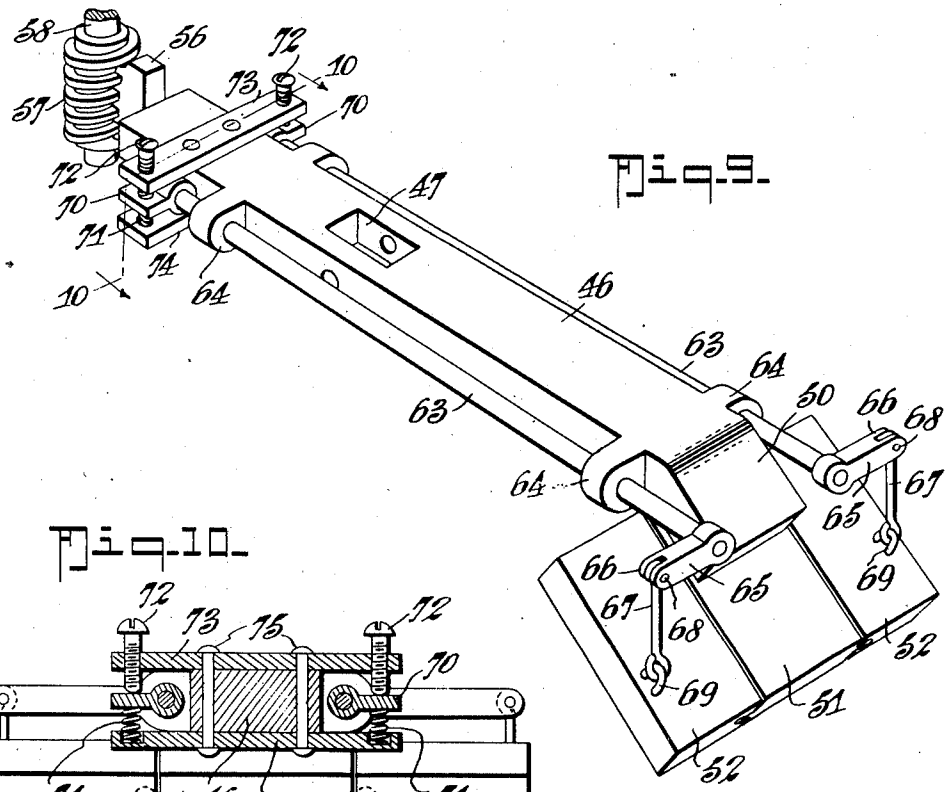


Fig. 10.

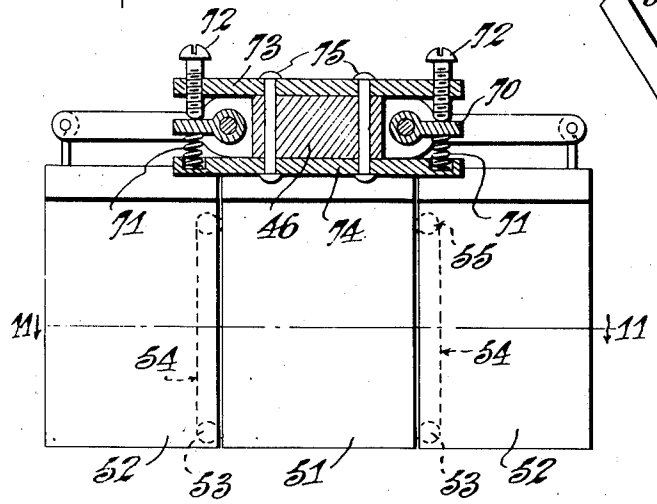
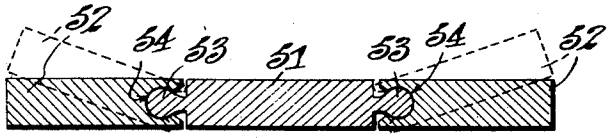


Fig. 11.



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Patented Oct. 31, 1944 2,361,836

UNITED STATES PATENT OFFICE

2,361,836

STOKER

Weston M. Fulton, Knoxville, Tenn., assignor to W. J. Savage Company, Inc., Knoxville, Tenn., a corporation of Tennessee

Application October 4, 1940, Serial No 359,794

17 Claims. (Cl. 110—101)

This invention relates to an improvement in stokers, and more particularly to stokers of the general type set forth in my prior application, Ser. No. 224,394, filed August 11, 1938.

Experience has demonstrated the fact that where fuel is fed directly on top of the fuel bed in a heater, it is difficult to obtain a fuel bed having a fairly level top surface. For instance, some stokers proposed heretofore cause the fuel to pile up in the center of the fuel bed, thus making the bed much thicker in its central portion than it is around the periphery thereof.

Furthermore, the largest and most immediate demand for stokers of this type, is for use in heating plants that have employed hand firing heretofore, but a stoker to supply this demand, must be adaptable to a wide variety of heaters. In many heaters, the fire-bowl is located at a considerable distance back of the fire door which makes it necessary to convey the fuel a substantial distance in the heater after it has been delivered at the fire door.

Various mechanical devices have been proposed heretofore for accomplishing this purpose, but they have possessed objectionable characteristics. For instance, high pressure steam has been suggested to blow the fuel from the fire door entrance into the fire box. To be fairly successful, this method would require a source of high pressure steam, which is seldom if ever available in house heating plants, because, where steam is used as the heating medium, very low pressure of one or two pounds is used, and where hot water or hot air is used, steam is not available at all. A rotating wheel having radially extending blades used to throw the fuel into the fire box by the "undershot" method requires the fuel to pass below the axis of rotation and this results in clogging the feeder due to the downward forcing of the fuel against the bottom of the feed trough thus allowing lumps to be caught between the descending blades of the wheel and the feed trough. If the rotation of the wheel be reversed so as to feed the fuel in an "overshot" manner, then some of the fuel is wasted, gathers in the bottom of the fuel trough and finally causes clogging.

The object of this invention is to improve the construction of the stoker of the class described, in which the objections heretofore encountered in connection with ballistic fuel feeders are completely obviated permitting the practical utilization of this type of stoker, and yet in a construction which can be manufactured economically and used practically, and in which provision is made for securing an even distribution of the fuel over the fuel bed during feeding thereof into the heater.

This object is accomplished by the provision of a practical structure as hereinafter described, a preferred embodiment of which, together with modifications thereof, are illustrated in the accompanying drawings, in which:

Fig. 1 is a side elevation of the preferred form of the invention shown applied to a conventional form of heater;

Fig. 2 is a partial vertical sectional view therethrough, with parts in elevation;

Fig. 3 is a top plan view thereof;

Fig. 4 is a horizontal sectional view therethrough, on the line 4—4 of Fig. 2;

Fig. 5 is a detail vertical cross section on the line 5—5 of Fig. 2;

Fig. 6 is a detail elevation of the fuel leveling bar, taken on the line 6—6 of Fig. 2;

Fig. 7 is a perspective view of the leveling rod supporting and guiding device, detached;

Fig. 8 is a perspective view of a ballistic fuel injector, detached;

Fig. 9 is a perspective view of the fuel deflecting mechanism and its adjusting means, detached;

Fig. 10 is a transverse sectional view therethrough on the line 10—10 of Fig. 9; and

Fig. 11 is a similar view on the line 11—11 of Fig. 10.

The invention is shown in connection with a heater designated generally by the numeral 1, which may be of any conventional form to which it may be desired to feed fuel by a stoker, such as a house heating furnace of the boiler or other type as desired. The furnace 1 is shown as having the usual combustion chamber 2 therein adapted to contain a fuel bed F to which fuel may be fed as desired through the usual opening 3 normally controlled by a fire door.

When the invention is applied to a heater of the type already in use, the usual fire door is removed from over the opening 3, and is replaced by a frame 4 (Figs. 3 and 4), which is secured to the heater by bolts 5. The frame 4 has two separate openings therein 6 and 7, which are arranged in side by side relation, and the opening 6 is covered by a small-sized fire door 8 hinged to the frame 4 at 9 and provided with a latch 10 to hold the same closed. Upon opening the door 8, access may be had to the interior of the fire chamber 2 through the opening 6. The opening 7 is adapted to receive the fuel feeding mechanism, as hereinafter described.

Referring to Figs. 1 and 2, a fuel hopper 11 is

arranged in front of the heater 1, of a size to contain a predetermined quantity of fuel to supply the heater for a substantial period of time. The hopper 11 has a back wall 12 behind which is provided an enlarged compartment 13 formed between a bottom wall 14 and a top wall 15. A tubular extension 16 projects from the compartment 13 through the opening 7 substantially to the combustion chamber 2 of the heater, as shown in Figs. 2 and 4. The tubular extension 16 is secured to the heater by means of the bolts 5.

This tubular extension 16 is shown in Fig. 5 as rectangular in cross section and has partitions 17 and 18 dividing the same into three superposed passageways 19, 20 and 21, respectively, the purpose of which will be hereinafter described.

The hopper 11 has an upward extension 22 adjacent the back thereof within which are mounted interfitting twin screws 23, constituting a conveyor and constructed substantially as set forth in my prior patent on Feeder, No. 2,173,414, granted September 19, 1939. A baffle plate 24 extends downward in the hopper 11 in front of the twin-screw conveyor to keep the major portion of the body of fuel in the hopper, away from interference with the rotation of the conveyor screws, while allowing the fuel to be fed thereto adjacent the bottom thereof. A retention plate 25 extends vertically along the back of the conveyor 23, and is spaced from the back wall 12 of the hopper a sufficient distance to allow fuel to fall back between the retention plate and the back wall, through an opening 26 in the latter, if it should fail to be injected into the fire chamber of the heater as hereinafter described. This fuel return means is claimed in a copending application for Fuel feeders, Ser. No. 398,501, filed June 17, 1941.

The upper ends of the twin screws 23 have gears 27 and 28 fixed thereon and intermeshing with each other. A drive gear 29 meshes with the gears 27 and 28, and is fixed on the slow speed shaft of a speed reducer designated generally by the numeral 30, this being of any well-known construction. The speed reducer 30 has a high speed drive shaft 31 which is driven by a pulley 32 thereon, connected with a belt 33 that extends to a pulley 34 mounted on the armature shaft of an electric motor 35. The electric motor 35 and speed reducer 30 are mounted on a bracket 36 secured upon the upper end of the hopper extension 22 and upon the top 15 of the compartment 13, which bracket 36 also extends over the gears 27 and 28.

Journaled in opposite sides of compartment 13 is a shaft 37 having a pulley 38 thereon connected by a belt 39 with a pulley 40 mounted on the high speed shaft 31 of the speed reducer 30, to impart a high speed rotation to the shaft 37 upon the operation of the electric motor 35.

Mounted on the shaft 37 is a fuel-injecting wheel designated generally by the numeral 41 and shown in detail in Fig. 8. The wheel 41 is constructed with an annular drum 42 with outwardly projecting annular flanges 43 thereon and having blades 44 extending transversely between the flanges 43 radially of the drum and cooperating with the flanges to form buckets or pockets therebetween.

The fuel-injecting wheel 41 is mounted in the compartment 13 beneath the lower end of a chute 45, which chute extends substantially to a point approximately directly over the center of the wheel 41, so as to deliver fuel to the top thereof, the upper end of the chute 45 being connected with the retention plate 25 at the upper end of the screw conveyor 23 to receive fuel therefrom. The fuel-injecting wheel 41 is arranged adjacent the forward end of the passageway 19, but spaced therefrom.

Thus, when the fuel is elevated from the hopper 11 by the twin screw conveyor 23 into the upper end of the chute 45, it is discharged directly onto the rotating wheel 41. The fuel drops into the pockets or buckets formed in the periphery of the wheel between the blades 44, and due to the high speed of rotation of the wheel, these blades exert a strong force on the fuel to throw it tangentially from the wheel 41 through the passageway 19 into the combustion chamber 2 of the heater, as shown in Fig. 2. As will be evident therein, by imparting to the wheel 41, the proper speed of rotation and by adjusting the chute 45 to discharge the fuel onto the wheel at the proper point, the fuel can be thrown directly through the compartment 19 into the combustion chamber of the heater.

Heretofore, the ballistic type of feeders proposed have been objectionable because if fuel particles should fall onto the upper edges of the rotating blades, these particles would not have as much force imparted to them as if they had fallen in front of a blade so as to receive the full force thereof. This would allow the particles to drop around the wheel and finally fill up the space between the wheel and its enclosing housing, thus resulting in a clogging of the wheel which interferes with its proper rotation.

However, I have overcome this objection by placing the forward edge of the wheel 41 sufficiently far from the open end of the passageway 19, as well as from the inclined wall 14 of the compartment 13, to provide a liberal space therebetween so that all waste fuel which would not have sufficient force imparted thereto by the rotating blades, to inject the same through the passageway 19 into the combustion chamber of the heater, would have freedom for return movement along the inclined wall 14, thence through the opening 26 into the hopper. The waste fuel thus discharged into the hopper 11 is allowed to fall between the back wall of the hopper and the retention plate 25 to a point where it is picked up again by the conveyor 23 along with the other fuel thus elevated during the feeding operation. As pointed out above, the baffle 24 prevents the fuel from rising up around the bottom of the conveyor 23 sufficiently high so that it would prevent the free discharge of the returned fuel through the opening 26 into the hopper. Furthermore, the action of the twin screws is such as to keep the fuel level very low at the opening 26, so as to accommodate this return fuel.

Located in passageway 20 is mechanism for causing the fuel to be deflected uniformly over the fuel bed F, as it is injected through the passageway 19 into the combustion chamber. This mechanism is shown in Figs. 2, 9, 10 and 11.

An arm 46 extends lengthwise through the passageway 20 having an opening 47 therein receiving an upstanding support 48 (Fig. 2) mounted on the partition 17, upon which support the arm 46 is pivotally mounted at 49.

The arm 46 extends from the passageway 20 into the combustion chamber of the heater and has its forward end portion inclined downward at 50. Rigidly fixed to this inclined portion 50 is a baffle 51, to the opposite edges of which are hinged side baffles 52. The hinged connection between the baffles 51 and 52 may be formed in any

well-known manner, such for instance, as by cylindrical keys 53 integral with the fixed baffle 51 at opposite edges thereof and loosely received in concave grooves 54 formed in the inner edges of the side baffles 52. This permits the side baffles 52 to be swung upward relative to the fixed baffle 51, as shown in dotted lines in Fig. 11. The keys 53 and grooves 54 terminate at points spaced from the upper ends of the side baffles 52 to provide abutments 55 thereon which will limit downward sliding movement of the side baffles 52 relative to the fixed baffle 51.

The arm 46 being pivotally supported at 49, is capable of vertical swinging movement for bodily adjusting the baffles 51—52 in the combustion chamber 2 of the heater. To provide for this adjusting movement of the arm 46 on its pivot 49, the backward end of said arm is provided with a rack segment 56 meshing with a worm 57 which is supported on a vertical shaft 58, the lower end of which is journaled in partition 17, as shown in Fig. 2, while the upper end thereof is journaled in partition 18 and projects thereabove sufficiently to receive a gear 59 fixed thereon. As shown in Fig. 4, the gear 59 meshes with a gear 60 mounted on a shaft 61, having its lower end journaled in the partition 18 and its upper end portion journaled in the cover 15. A hand wheel 62 is fixed on the upper end of the shaft 61 for manual turning thereof. Rotation of the hand wheel 62 operates the worm 57 to move the rack 56 and thereby tilt the arm 46 up or down on its pivot 49 to obtain the necessary bodily vertical adjustment of the baffles 51—52.

Provision is made also for obtaining angular adjustment of the side baffles 52 relative to the fixed baffle 51 by means of shafts 63 which are journaled in lugs 64 shown as formed integral with opposite edges of the arm 46. The forward ends of the shafts 63 have fixed thereon arms 65, the free ends of which are bifurcated at 66 and support links 67 pivoted thereto in the bifurcations at 68. The lower ends of the links 67 are pivotally connected with the side baffles 52 by lugs 69 rigidly fixed to said side baffles.

At their opposite ends, the shafts 63 have fixed thereon laterally extending arms 70, each of which is interposed between a coiled spring 71 and an adjusting screw 72, as shown in Fig. 10. The springs 71 and adjusting screws 72 are carried by cross members 73 and 74, respectively, which are riveted or otherwise fixed to the arm 46 at 75.

By means of this construction, the side baffles 52 may be adjusted to any desired angle relative to the fixed baffle 51 to deflect the fuel laterally of the fuel bed in the combustion chamber 2 of the heater. On turning the screw 72, so as to push downward on the arms 70, imparts a like movement to the arms 65, swinging the baffles 52 downward. Upon turning the screws 72 in the opposite direction, the springs 71 force the arms 70 upward and raise the pivoted baffles 52 relative to the fixed baffle 51 substantially as indicated in dotted lines in Fig. 11.

By these respective adjustments of the baffles both bodily by tilting movement of the arm 46, and relative to each other by turning movement of the shafts 63, dual adjustability is obtained for deflecting the injected fuel over the surface of the fuel bed F in the combustion chamber 2 of the heater.

Provision is made also for controlling the thickness of the fuel bed F in the combustion chamber 2 of the heater, which is claimed, nevertheless, in a companion application for Fuel feeding mechanism, Ser. No. 398,500, filed June 17, 1941. This controlling means acts by means of a rod 76 which extends lengthwise through passageway 21, as shown in Figs. 2, 4 and 5, projecting therefrom into the combustion chamber 2 of the heater. The forward end of the rod 76 in the combustion chamber is down-turned at 77 and screw-threaded, receiving the hub portion 78 of a stirrup 79 thereon which stirrup is adjustably connected with the down-turned end 77 for relative vertical adjustment and is adapted to be locked in place thereon by a set screw 80. The lower end of the stirrup 79 carries a feeler in the form of a round bar 81 integral therewith in position to contact the surface of the fuel in the heater and to ride thereon.

The opposite end of the rod 76 has a ball and socket connection 82 with a lever arm 83 on a shaft 84. The lower end of the shaft 84 is journaled in the partition 18, while the upper end thereof extends through the top 15 and has rigidly mounted thereon a crank 85. Pivotally connected at 86 with the outer end of the crank 85 (Fig. 3) is a link 87 which is pivotally connected at 88 with the gear 28. Thus, rotation of the gear 28 causes reciprocating movement of the link 87 oscillating the crank 85 and thereby imparting oscillatory movement to the lever arm 83, thus swinging said lever arm and the inner end of the rod 76 as shown in dotted lines in Fig. 4.

To provide for the lateral oscillatory movement of the rod 76 upon the operation of the shaft 84, said rod is supported intermediate its ends in a guiding device shown in detail in Fig. 7. This guiding device is formed of a frame 89, having a pair of concave rollers 90 journaled therein on pins 91, spaced apart a distance sufficient to receive and guide the rod 76 therebetween, which rides in the concave peripheral grooves of the rollers. The rollers 90 reduce the friction which would develop otherwise from the slight longitudinal movement of the rod 76 due to the arc described by the lever arm 83 in oscillating said rod.

The frame 89 has axially aligned journal pins 92 and 93 extending therefrom. The journal pin 92 is journaled in the bottom of a well 94 formed in the partition 18 (Fig. 2) into which the lower portion of the frame 89 extends. The journal pin 93 extends upward through the top 15 in which it is journaled, in alignment with a push button 95 of a push button electric switch 96. This switch 96 is of well-known construction of the type used for controlling electric circuits, in which, however the push button 95 breaks the circuit whenever it is depressed, while release of the pressure causes it to close the electric circuit automatically. The normally closed switch 96 is connected with a source of electrical supply through lines 97, while lines 98 extend from the switch to the electric motor 35, whereby the switch 96 controls the supply of current to the electric motor.

Provision is made also for manually controlling the supply of current to the electric motor 35 independently of the switch 96, for which purpose I have provided a switch 99 connected in parallel with the switch 96 through wires 100 leading directly from the power line 97 to the switch 99, thence to the wires 98, as shown in Fig. 2. The switch 99 is constructed for manual operation, and is adapted for use in testing the operation of the stoker while adjusting the various working parts at the time of instal-

lation. It is also of convenience if and when it should become necessary to remove large clinkers or other foreign matter through the fire door. By closing the switch 99, the operator closes the circuit to the electric motor 35 operating the stoker mechanism, and thereby moving the round bar 81 to any desired position in the combustion chamber 2, so that it will not interfere with his operation. When the round bar 81 has been moved to such desired position, out of the way of the operator, the opening of the switch 99 stops further movement.

Before putting the stoker in operation, it is first necessary to adjust the fuel baffles 51 and 52, so as to cause the fuel to spread evenly over the fuel bed F. To accomplish this, the switch 99 is closed to energize the motor 35 which drives pulleys 32 and 40 through the belt 33. This operates speed reducer 30 and drives the gears 27, 28 attached to the shafts of the twin screws 23, operating the latter to convey fuel from the hopper 11 to the trough 45, from which it discharges by gravity onto the ballistic wheel 41, which is simultaneously rotated in the direction indicated by the arrow in Fig. 2, being driven from the pulley 40 by the belt 39. This fuel is thereby injected through the passageway 19 into the combustion chamber 2 of the heater.

As the fuel is thus being fed, its distribution over the grates is viewed through the opening 6 after the fire door 8 has been moved to an open position. The spread of fuel across the fire bed from front to back is adjusted by means of the baffle 51, which is raised or lowered by the tilting of the arm 46 about the pivot 49. This is accomplished by the rotation of worm 57 operated by the hand wheel 62. The operation of the worm 57 to move the worm gear segment 56 downward causes a tilting movement of the arm 46 to elevate the baffle 51 thereby increasing the amount of fuel thrown to the right hand side of the combustion chamber, as viewed in Fig. 2. The rotation of the worm 57 in the opposite direction lowers the baffle 51, and tends to direct a greater proportion of the fuel downward and to the left in Fig. 2. By looking through the fire door of the heater to observe the action of the fuel in being injected into the heater, the operator may manipulate the hand wheel 62 for proper adjustment of the baffle 51 to obtain the desired distribution from front to back in the combustion chamber.

Lateral adjustment is obtained by the angular positions of the pivoted baffles 52, relative to the fixed baffle 51. Upon unscrewing of an adjusting screw 72 (Fig. 10), so as to allow the spring 71 to force the arm 70 upward, this imparts torsion to the shaft 63 to raise the arm 65, link 67, and its connected baffle 52, thereby increasing the proportion of the fuel deflected laterally to the adjacent side of the combustion chamber. Similar adjustment may be provided at the opposite side thereof.

By means of these several adjustments, an even distribution of fuel can be obtained over the entire surface of the fuel bed, and upon making these adjustments for any particular kind of fuel, such as coke, stove material, etc., it is seldom necessary to change the adjustment once made.

Having thus adjusted the distribution of fuel over the grates of the heater, the device is ready for operation, and the manual switch 99 is opened, thereby stopping the electric motor 35, subject to the control of the current thereto automatically under the control of switch 96.

Assuming that fire has been started in the heater but that the level of the fuel bed is at or below that shown in full lines in Fig. 2, the bar 81 rests on top of the fuel bed, and by reason of its weight, said bar will pull downward on the rod 76, moving the guiding frame 89 to its lowermost position, such downward sliding movement being permitted by the guiding of the pivot pins 92—93. This moves the pin 93 out of pressure engagement with the switch button 95, permitting the switch 96 to snap into a closed position, thus supplying current from the wires 97 to the wires 98 to energize the electric motor 35, operating the moving parts of the stoker mechanism as described above.

The oscillating movement of the rod 76, as indicated in dotted lines in Fig. 4, causes the bar 81 to be dragged back and forth across the top of the fuel bed, leveling the surface of the fuel deposited thereon. As additional fuel is being injected into the combustion chamber, the top of the fuel bed rises gradually which lifts the bar 81, pushing the inner end of the rod 76 upward to the dotted line position in Fig. 2. This raises the guide 89—90 until the pivot pin 93 thereof presses upward against the switch button 95 until the switch 96 snaps into open position, breaking the circuit to the electric motor 35, thus stopping the operation of the stoker.

As the fire continues to burn, the consumption of fuel causes the top of the fuel bed to be lowered until the bar 81 is moved downward to the full line position in Fig. 2, which will pull downward on the arm 76 lowering the guide 89—90 away from pressure engagement with the switch button 95, closing the circuit to the electric motor 35, and operating the stoker mechanism, as described above.

The oscillatory movement of the rod 76 about the guide 89—90, as a fulcrum, with its inner end in the combustion chamber 2, causes the round bar 81 to be dragged back and forth over the surface of the fuel bed F, as will be evident from Fig. 6, where the dotted line positions represent the two extreme limits of the oscillation. The ball and socket connection 82 permits of the slight twisting action of the rod 76 caused by the parts 77, 79 in assuming the angular positions indicated. The dragging of the round bar 81 back and forth over the surface of the fuel bed F aids in maintaining this surface substantially level and in distributing the fuel thereover.

It will be understood that the bar 81 can be adjusted to maintain the fuel bed of different thicknesses, by screwing it up or down on the threaded portion 77 of the rod 76. After making such adjustment, the set screw 80 is tightened to hold the stirrup 79, carrying the bar 81, in its adjusted position on said rod, and with the axis of the bar 81, substantially in the direction shown in Fig. 2.

I claim:

1. The combination with a heater having a combustion chamber, of a fuel feeding conduit associated with the heater, means for injecting solid fuel through the conduit into the combustion chamber, and baffle means in the combustion chamber substantially in the path of the fuel thereto in position to deflect the fuel and to distribute it over the surface of the combustion chamber, said baffle means including a central section and lateral sections arranged on opposite sides of said central section, and means

for supporting said lateral sections for lateral tilting movement relative to the central section.

2. The combination with a heater having a combustion chamber, of a fuel feeding conduit extending approximately to the combustion chamber, means for injecting solid fuel through said conduit into the combustion chamber, and baffle means in the combustion chamber substantially in the path of the fuel thereto in position to deflect the fuel and to distribute it over the surface of the combustion chamber, said baffle means including a central section and lateral sections arranged on opposite sides of said central section, and means for supporting said lateral sections for lateral tilting movement relative to the central section.

3. The combination with a heater having a combustion chamber, of a fuel feeding conduit extending approximately to the combustion chamber, means for injecting solid fuel through said conduit into the combustion chamber, baffle means in the combustion chamber substantially in the path of the fuel thereto in position to deflect the fuel and to distribute it over the surface of the combustion chamber, and means for supporting said baffle means spaced from the end of the conduit and for adjusting the same bodily to different positions relative to the conduit, said baffle means including laterally spaced portions carried by said supporting means and one of said portions being adjustable laterally relative to another of said portions of the baffle means.

4. The combination with a heater having a combustion chamber, of a fuel feeding conduit extending approximately to the combustion chamber, means for injecting solid fuel through said conduit into the combustion chamber, baffle means in the combustion chamber substantially in the path of the fuel thereto in position to deflect the fuel and to distribute it over the surface of the combustion chamber, said baffle means including relatively movable baffle sections adjustable transversely of said conduit, and means for supporting said baffle means and for bodily adjusting the same to different positions relative to the conduit.

5. In a stoker, the combination of a conduit, means for injecting solid fuel through said conduit for discharge at an end thereof, and baffle means adjacent said discharge end of the conduit in the path of the fuel therefrom for distributing said fuel over a surface, said baffle means including a central section and lateral sections arranged on opposite sides of the central section, and means for supporting said lateral sections for tilting movement in lateral directions relative to the central section.

6. In a stoker, the combination of a conduit, means for injecting solid fuel through said conduit for discharge at an end thereof, baffle means adjacent said discharge end of the conduit in the path of the fuel therefrom for distributing said fuel over a surface, said baffle means including a baffle having one or more side baffles hinged thereto for relative swinging movement, and an arm secured to said first-mentioned baffle and supporting the same.

7. In a stoker, the combination of a conduit, means for injecting solid fuel through said conduit for discharge at an end thereof, baffle means adjacent said discharge end of the conduit in the path of the fuel therefrom for distributing said fuel over a surface, said baffle means including a baffle having one or more side baffles hinged thereto for relative swinging movement, an arm secured to said first-mentioned baffle and supporting the same, means pivotally supporting said arm for bodily swinging movement of the baffle means relative to the conduit, and means for adjusting the side baffle or baffles relative to the first-mentioned baffle.

8. In a stoker, the combination of a conduit, means for injecting solid fuel through said conduit for discharge at an end thereof, baffle means adjacent said discharge end of the conduit in the path of the fuel therefrom for distributing said fuel over a surface, said baffle means including a baffle having side baffles hinged to opposite edges thereof, an arm carrying the first-mentioned baffle, shafts extending along said arm and having crank means connecting said shafts with the side baffles, means for turning said shafts to adjust the positions of the side baffles, and gearing connected with the arm to cause swinging movement thereof for bodily adjusting the baffle means relative to the conduit.

9. In a stoker, the combination of wall means having an opening, means for injecting fuel through said opening, baffle means, means for supporting said baffle means adjacent said opening in the path of the fuel therethrough for distributing said fuel over a surface, said baffle means including a section and a side section hinged to a lateral edge of said first-mentioned section for swinging movement relative thereto, and means for securing said side section in different adjusted positions relative to the first-mentioned section.

10. In a stoker, the combination of wall means having an opening, means for injecting fuel through said opening, baffle means adjacent said opening in the path of the fuel therethrough for distributing said fuel over a surface, said baffle means including a section and a side section hinged to a lateral edge of said first-mentioned section for swinging movement relative thereto, means for supporting said baffle means, a shaft having a crank connection with the side section, and means for turning said shaft to adjust the side section relative to the first-mentioned section.

11. In a stoker, the combination of wall means having an opening, means for injecting fuel through said opening, baffle means adjacent said opening in the path of the fuel therethrough for distributing said fuel over a surface, an elongated arm supporting said baffle means, said baffle means including a surface deflected at an acute angle to the length of the arm for deflecting the fuel downwardly in the vertical plane of the arm, means mounting said arm for vertical tilting movement thereof to vary the position of the baffle means relative to the opening, and means for tilting said arm on said mounting means.

12. In a stoker, the combination of wall means having an opening, means for injecting fuel through said opening, baffle means adjacent said opening in the path of the fuel therethrough for distributing said fuel over a surface, an elongated arm supporting said baffle means on an end thereof, means for pivotally supporting said arm intermediate the ends thereof for vertical tilting movement, and gearing connected with the opposite end portion of said arm for tilting the same.

13. In stoking mechanism, an elongated arm adapted to be positioned adjacent an opening through which fuel is injected, baffle means carried by said arm in position to be disposed in the path of said fuel for distributing the fuel over a

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surface, said baffle means including a plane surface deflected at an acute angle to the length of the arm for deflecting the fuel downwardly in the vertical longitudinal plane of the arm, a pivotal support for said arm for mounting the same for tilting movement, and means for tilting said arm on said pivotal support.

14. In stoking mechanism, an arm adapted to be positioned adjacent an opening through which fuel is injected, baffle means carried by said arm in position to be disposed in the path of said fuel for distributing the fuel over a surface, a pivotal support for said arm for mounting the same for tilting movement, means for tilting said arm on said pivotal support, said baffle means including a main section and a lateral section, means mounting said lateral section for lateral swinging movement relative to the main section, and means for securing said lateral section in different adjusted positions relative to the main section.

15. In stoking mechanism, an arm adapted to be positioned adjacent an opening through which fuel is injected, baffle means carried by said arm in position to be disposed in the path of said fuel for distributing the fuel over a surface, a pivotal support for said arm for mounting the same for tilting movement, means for tilting said arm on said pivotal support, said baffle means including a central section and side sections at lateral edges of said central section, means forming hinged supports for said lateral sections at the lateral edges of the central section for swinging movement of said lateral sections relative thereto, and means extending lengthwise of the arm and carried thereby for securing said lateral sections in different adjusted positions relative to the central section.

16. In stoking mechanism, the combination of a support, baffle means carried by the support in position to be disposed in the path of injected material for distributing said material over a surface, said baffle means including a main section having a deflecting surface, means for supporting said main section with said deflecting surface at an angle to said path, and a lateral section having a deflecting surface, and means mounting said lateral section beside an edge of said main section for swinging movement about an axis extending approximately parallel with said edge in a direction transversely relative to said edge of the main section to different angular positions relative thereto.

17. In stoking mechanism, the combination of a support, baffle means carried by the support in position to be disposed in the path of injected material for distributing said material over a surface, said baffle means including a main section carried by the support and lateral sections on opposite sides thereof adjacent opposite lateral edges of said main section in side-by-side relation at an angle to the path of the injected material, and means mounting each of the lateral sections beside an edge of the main section for swinging movement about an axis extending approximately parallel with said lateral edge of the main section in a direction transversely relative to said edge to different angular positions relative thereto.

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