

Nov. 28, 1950

E. L. MIDGETTE ET AL

2,531,779

SPREADER STOKER

Filed June 16, 1945

6 Sheets-Sheet 1

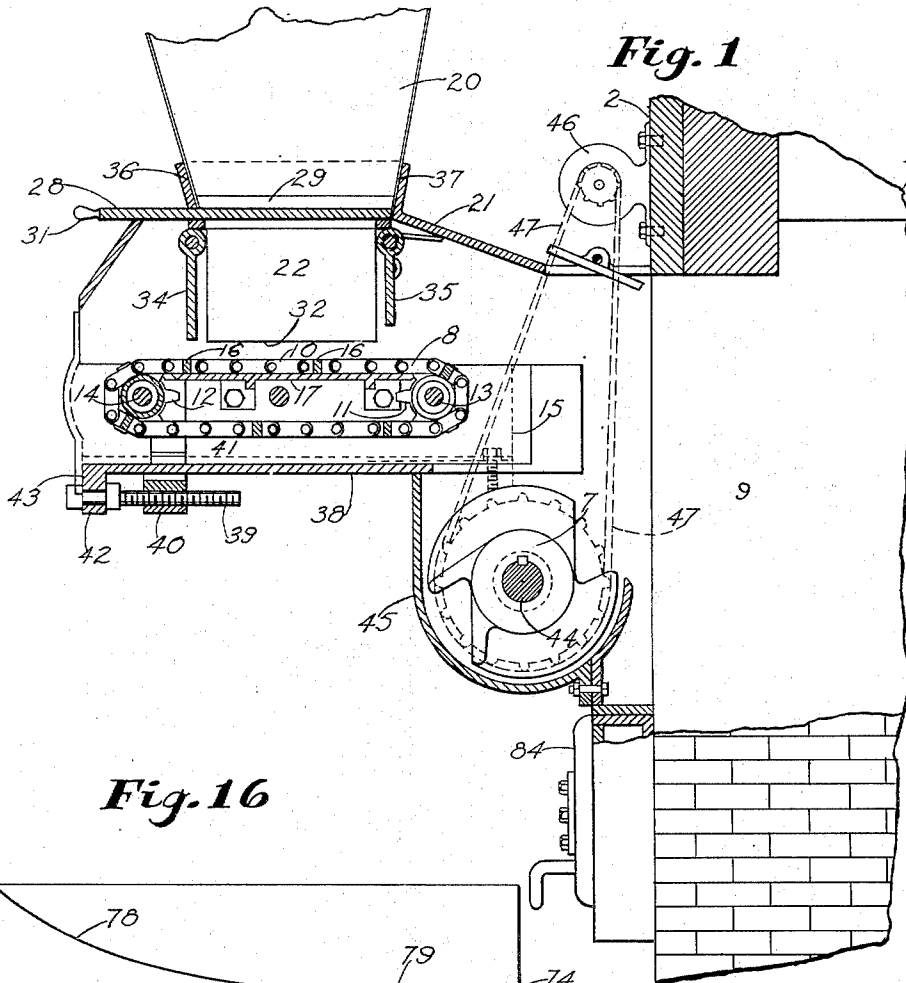
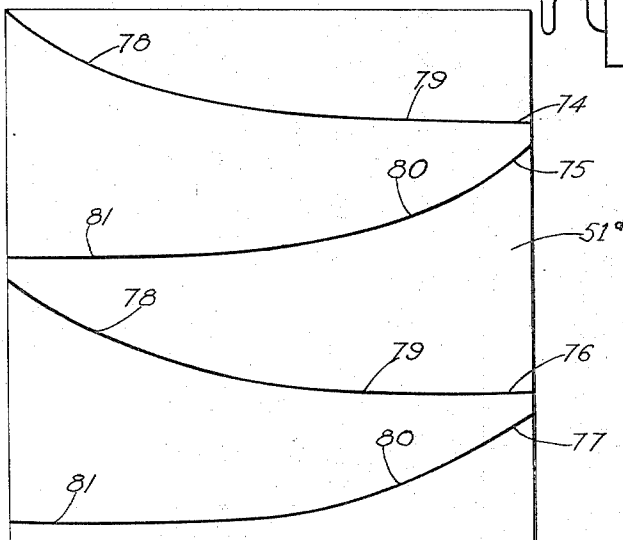


Fig. 16



INVENTOR.
Ernst L. Midgette and
Robert W. Reid
BY *Carl R. Sibbe*
Attorney

Nov. 28, 1950

E. L. MIDGETTE ET AL
SPREADER STOKER

2,531,779

Filed June 16, 1945

6 Sheets-Sheet 2

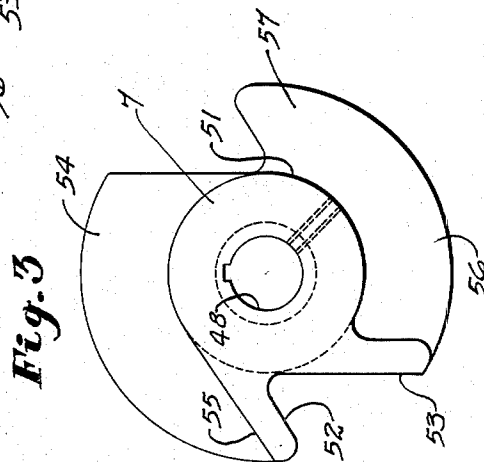
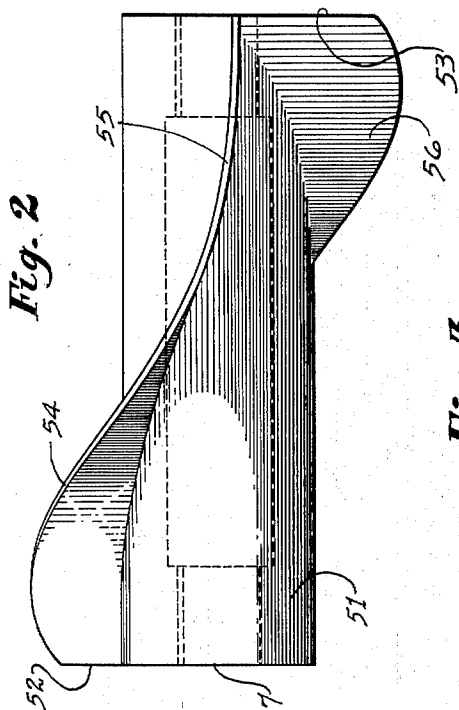
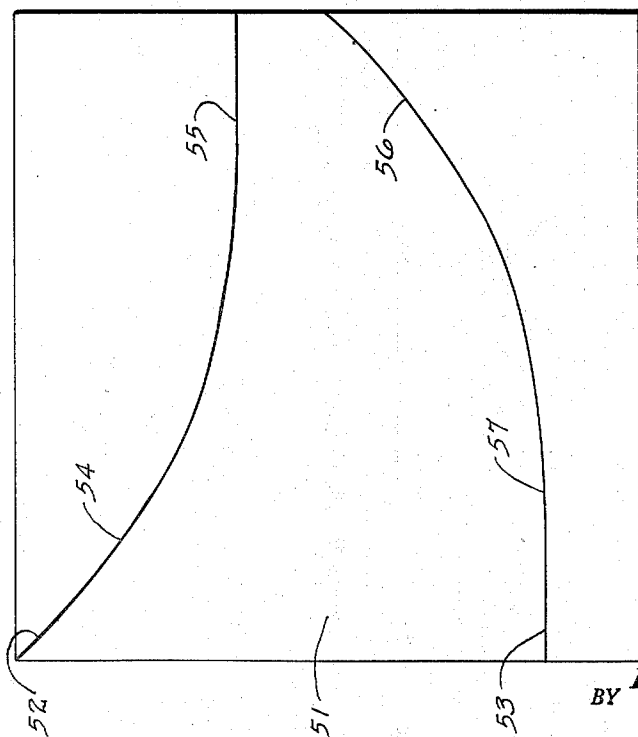


Fig. 4



INVENTOR.
Ernst L. Midgette and
Robert W. Reid.
BY *Carl H. Hildebrand*
Attorney

Nov. 28, 1950

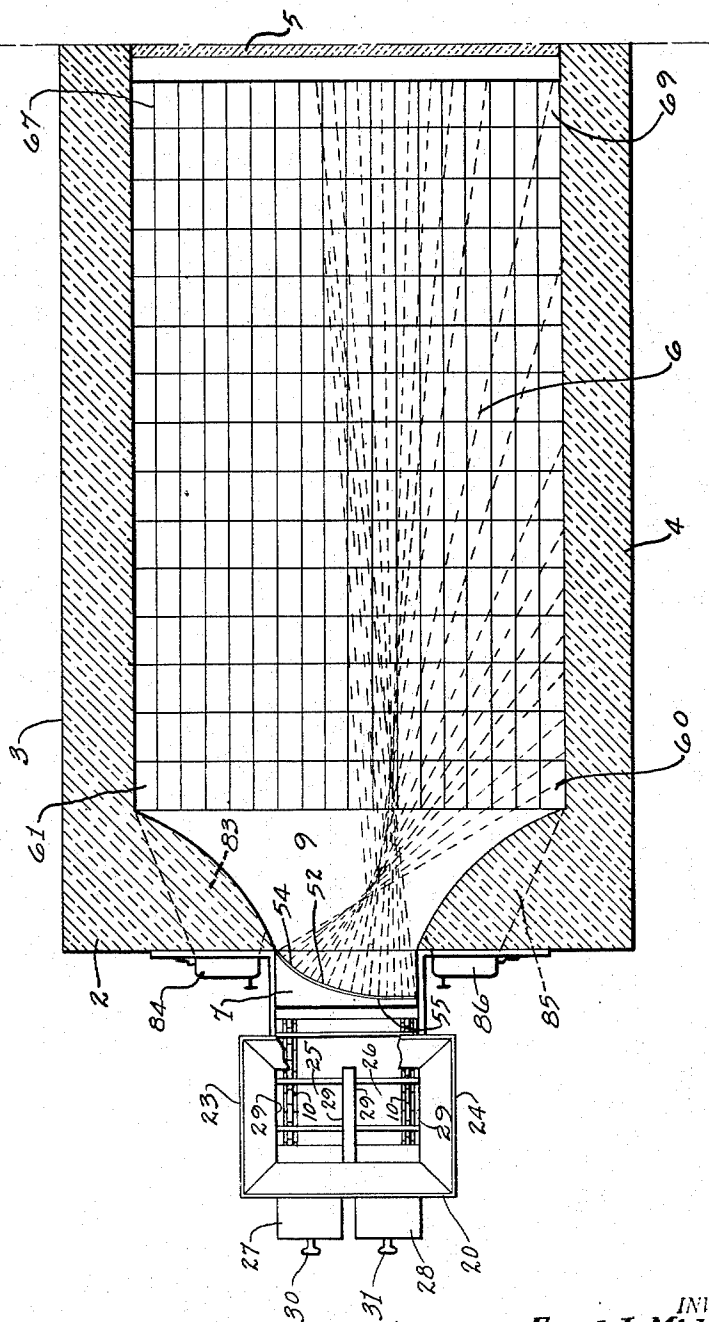
E. L. MIDGETTE ET AL
SPREADER STOKER

2,531,779

Filed June 16, 1945

6 Sheets-Sheet 3

Fig. 5



INVENTOR.
Ernst L. Midgette and
Robert W. Reid
BY *Carl H. Silke*
Attorney

Nov. 28, 1950

E. L. MIDGETTE ET AL
SPREADER STOKER

2,531,779

Filed June 16, 1945

6 Sheets-Sheet 5

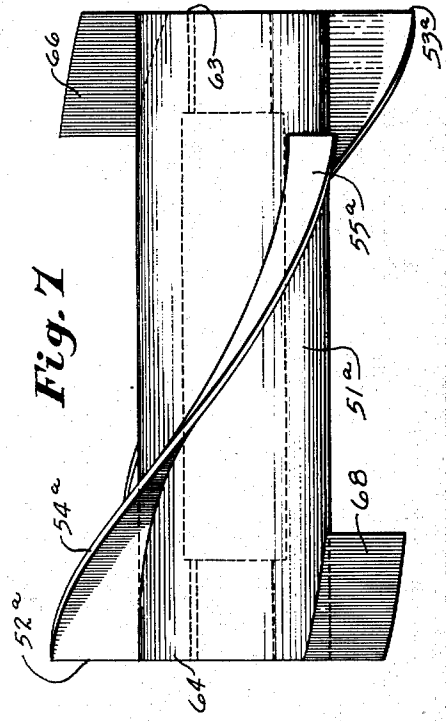


Fig. 7

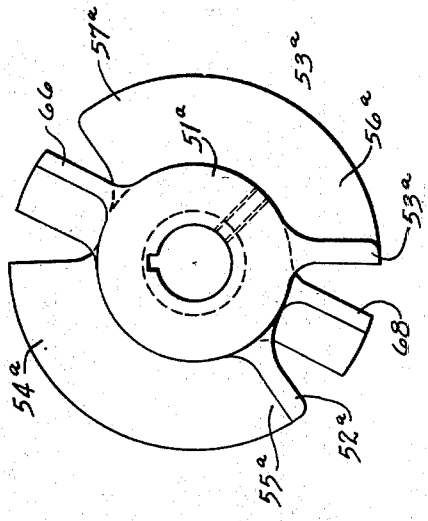


Fig. 8

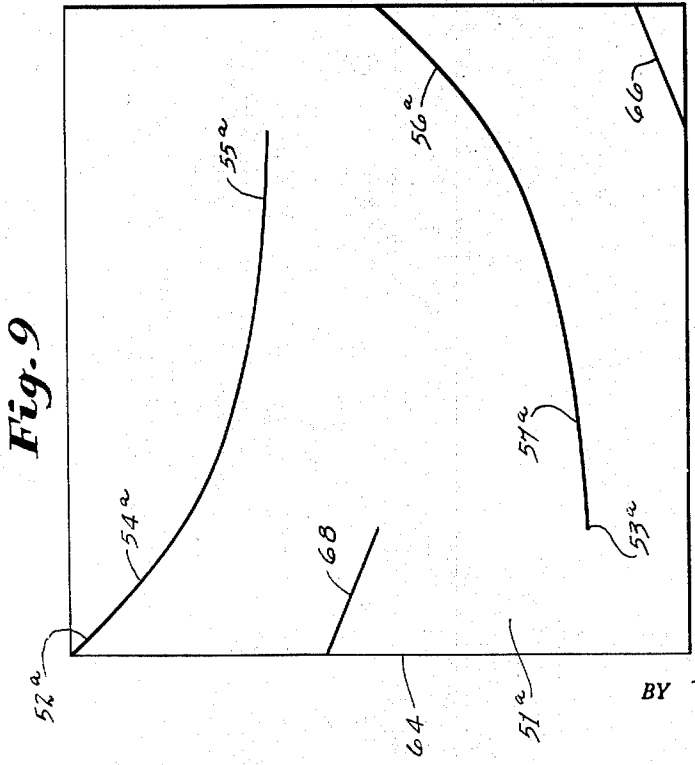


Fig. 9

INVENTOR.
Ernst L. Midgette and
Robert W. Reid
BY *Carl O. Sauer*
Attorney

Nov. 28, 1950

E. L. MIDGETTE ET AL
SPREADER STOKER

2,531,779

Filed June 16, 1945

6 Sheets-Sheet 6

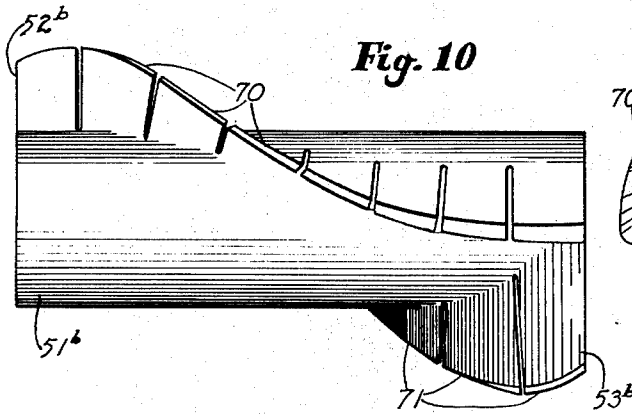


Fig. 10

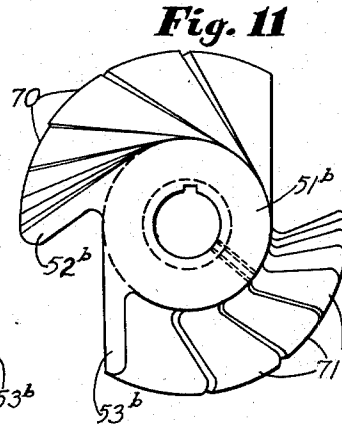


Fig. 11

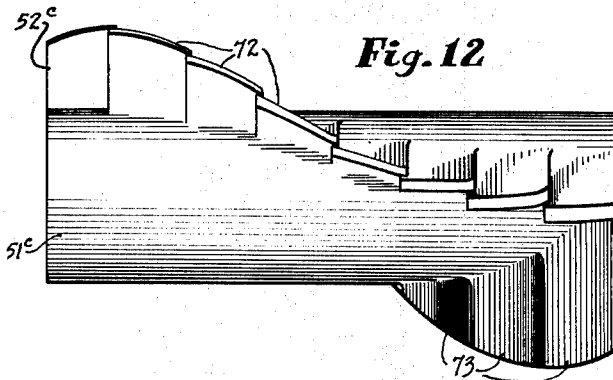


Fig. 12

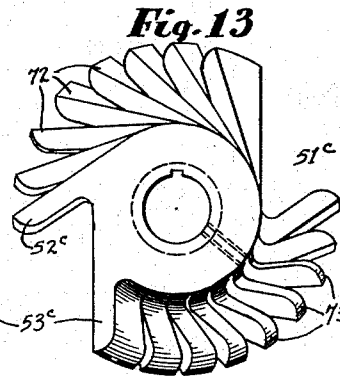


Fig. 13

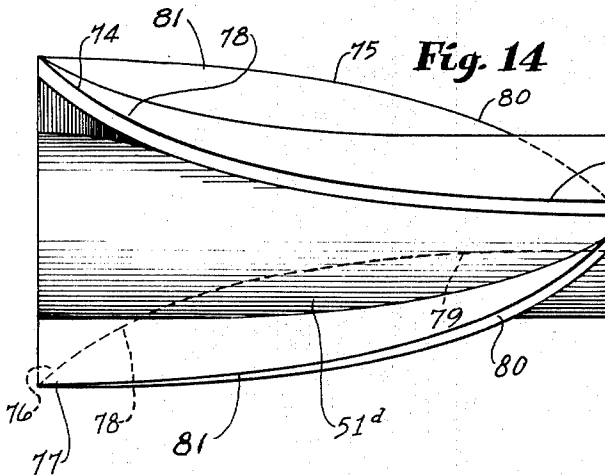


Fig. 14

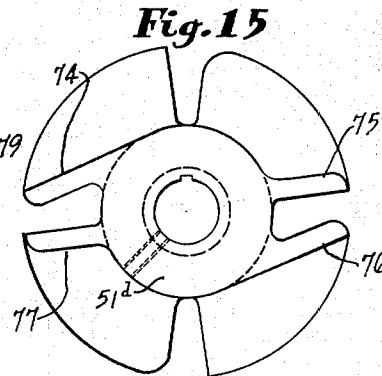


Fig. 15

INVENTOR.
Ernst L. Midgette and
Robert W. Reid
BY *Paul A. Dibble*
Attorney

UNITED STATES PATENT OFFICE

2,531,779

SPREADER STOKER

Ernst L. Midgette and Robert W. Reid, Philadelphia, Pa., assignors to American Engineering Company, Philadelphia, Pa., a corporation of Pennsylvania

Application June 16, 1945, Serial No. 599,812

15 Claims. (Cl. 110—115)

1

This invention relates to stokers of the spreader type and more particularly to the fuel feeding and distributing mechanism for such devices.

One object of the present invention is to provide a generally improved and simplified stoker of the spreader type.

Another object is to provide novel and highly improved fuel feeding and distributing devices for stokers of the stated character which evenly distribute the fuel over the entire grate area thereof.

A further object is to provide a fuel feeding and distributing rotor for stoker furnaces of the stated character having blades extending lengthwise thereof and which are so formed as to effectively propel the fuel through an opening or openings in the front wall of the furnace and to evenly distribute it over the entire area of the grates thereof.

A still further object is to provide rotors having curved sectional blades thereon for feeding and distributing fuel over the grates of stoker furnaces.

Other and further objects will become apparent as the description of the invention progresses.

Of the drawings:

Fig. 1 is a side elevational view partly in section taken through the front end of a spreader stoker showing the fuel feeding and distributing mechanism associated therewith.

Fig. 2 is a side view of a fuel feeding and distributing rotor for a spreader stoker.

Fig. 3 is an end view of the rotor shown in Fig. 2.

Fig. 4 is a diagrammatic view showing projections of the lines of contact of the blades of the fuel feeding and distributing rotor on the developed surface of the supporting cylinder.

Fig. 5 is a plan view of a spreader stoker showing the area of the grate which is supplied with fuel by one of the blades of the fuel feeding and distributing rotor.

Fig. 6 is a plan view similar to Fig. 5, showing the area of the grate supplied with fuel from the other of the blades of the fuel feeding and distributing rotor.

Fig. 7 is a side view of a modified type of feeding and distributing rotor.

Fig. 8 is an end view of the rotor shown in Fig. 7.

Fig. 9 is a diagrammatic view showing projections of the lines of contact of the blades of the fuel feeding and distributing rotor on the developed surface of the supporting cylinder.

Fig. 10 is a side view showing a further modifi-

2

cation of the fuel feeding and distributing rotor.

Fig. 11 is an end view of the rotor shown in Fig. 10.

Fig. 12 is a side view showing a still further modification of the fuel feeding and distributing rotor.

Fig. 13 is an end view of the rotor shown in Fig. 12.

Fig. 14 is a side view of a still further modification of the fuel feeding and distributing rotor.

Fig. 15 is an end view of the rotor shown in Fig. 14, and

Fig. 16 is a diagrammatic view showing the projections of the lines of contact of the blades of the fuel feeding and distributing rotor shown in Figs. 14 and 15 on the developed surface of the supporting cylinder.

Referring to the drawings the numeral 1 indicates a furnace having a front wall 2, side walls 3 and 4, and a rear wall 5. The furnace 1 is fired by a stoker of the spreader type comprising a combustion grate 6, a fuel feeding and distributing rotor 7, and a fuel conveyor indicated generally at 8. The fuel delivered to the rotor 7 is propelled through an opening 9 provided in the front wall 2 of the furnace.

The specific construction of the grate 6, the conveyor 8, and the operating means for the conveyor and rotor 7 forms no part of the present invention and, accordingly, a detailed description thereof is unnecessary. For a complete disclosure of such devices, reference may be had to the patents to George W. Olney, No. 2,001,152 and No. 2,099,618.

As shown more particularly in Figs. 1, 5 and 6, the conveyor 8 comprises a pair of spaced chains 10, 10 trained over sprocket wheels 11 and 12. The sprocket wheels 11 and 12 are secured to shafts 13 and 14, respectively, mounted in suitable bearings provided in a supporting framework 15. As shown in Figs. 5 and 6, the chains 10, 10 are transversely spaced and have secured thereto at spaced intervals therealong feeding bars 16 which slide across a fuel supporting plate 17. Accordingly, upon operation of the said chains and sprocket wheels the bars 16 feed the fuel across plate 17 and over the inner end of the conveyor 8, the fuel then gravitating upon the rotor 7, which in turn propels it through the opening 9 in the front wall 2 and onto the grates 6 of the stoker. Fuel is supplied to the conveyor 8 from a hopper 20 mounted at the upper end of the casing 21 for said conveyor and associated parts. The hopper 20 is disposed immediately above the conveyor 8 and has a partition 22 pro-

vided intermediate the side walls 23 and 24 thereof forming a pair of discharge openings 25 and 26 at the bottom thereof. The discharge openings 25 and 26 may be opened or closed by a pair of closures 27 and 28, respectively, slidably mounted in any suitable guideways 29 mounted in and extending longitudinally of partition 22 and the lower ends of the side walls 23 and 24 of the hopper 20. The closures 27 and 28 may be operated manually by means of handles 30 and 31, respectively, provided at the outer ends thereof. The partition 22 extends downwardly, the lower edge 32 of which being spaced slightly from the top of conveyor 8. Fuel gravitating onto conveyor 8 from the hopper 20 is prevented from overflowing the ends of said conveyor by means of a pair of plates 34 and 35 pivoted immediately below the front and rear walls 36 and 37, respectively, of hopper 20. The framework 15, on which the conveyor 8 is supported, is movable along the bottom wall 38 of the casing 21 towards and from rotor 7 by means of a screw shaft 39. As shown in Fig. 1, screw shaft 39 engages a nut 40 provided in a member 41 secured to and depending from the framework 15. The screw shaft 39 is mounted for rotary movement in a bearing 42 provided in the front wall 43 of casing 21.

The rotor 7 is provided with a central bore 48 for receiving a drive shaft 44, to which the said rotor is keyed or otherwise secured. Shaft 44 is mounted in suitable bearings, not shown, provided exteriorly of front wall 2 of the furnace. A sub-casing 45 is provided around a substantial portion of rotor 7, as shown in Fig. 1, thereby confining the feeding action to the upper inner portion thereof. The rotor is driven in a clockwise direction (Fig. 1) by an electric motor 46 through a chain and sprocket mechanism indicated generally at 47.

Referring to Figs. 2, 3 and 4, the rotor 7 comprises a cylindrical base portion 51 and a pair of curved blades 52 and 53 extending over the entire length thereof. Blade 52 is provided with a relatively sharply curved portion 54 at one end thereof which becomes progressively more gradual toward the other end, the portion 55 extending from a point substantially midway between the ends of the blade and the end of the rotor being relatively straight. Blade 53 is of similar construction having a relatively sharply curved portion 56 and a gradually curving or relatively straight portion 57. The curved portions 54 and 56 of the blades 52 and 53, respectively, are oppositely disposed and propel the fuel in opposite directions, as will appear more fully hereinafter. Fig. 4 is an extended projection of the rotor 7, the numeral 51 disclosing the circumferential area of the rotor, the lines 52 and 53 indicating the lines of contact of the blades 52 and 53 with the cylinder 51, and the numerals 54, 56 and 55, 57 indicating the curved and relatively straight portions, respectively, of the blades 52 and 53.

Referring to Figs. 5 and 6, the broken lines extending from the blade 52, shown in Fig. 5, indicate the portion of the grate 6 supplied with fuel by said blade 52; while the broken lines extending from blade 53, shown in Fig. 6, indicate the portion of the grate supplied with fuel by that blade. It is seen that the end of the curved portion 54 of blade 52 propels the fuel to the area of the grate 6 at the corner 60 thereof and that the remainder of the blade propels the fuel fanwise over substantially one-half the entire area of said grate. It is also seen that the end of the

curved portion 56 of blade 53 propels the fuel to the area at the corner 61 of the grate 6 and that the remainder of the blade propels the fuel fanwise over the other half of said grate.

Figs. 7, 8 and 9 illustrate a modified rotor construction consisting of a cylindrical base portion 51^a having a pair of blades 52^a and 53^a mounted thereon. Blades 52^a and 53^a comprise relatively sharply curved portions 54^a and 56^a and gradually curving or relatively straight portions 55^a and 57^a, respectively, generally similar to the relatively sharply curved and gradually curving or relatively straight portions of the blades 52 and 53. The relatively straight portions 55^a and 57^a, however, terminate inwardly of the ends 63 and 64, respectively, of the base portion 51^a. A relatively short blade 66, whose projected length is substantially equal to the distance between the end of blade 52^a and the end 63 of rotor 7, is also provided on the base portion 51^a. Blade 66 lies between blades 52^a and 53^a and is curved slightly in the opposite direction from the curved portion 54^a of blade 52^a and in operation propels the fuel to the area adjacent one of the remote corners 67 of grate 6, shown in Figs. 5 and 6 of the drawings. A second relatively short blade 68 is provided near the opposite end 64 of rotor 7. Blade 68 is curved slightly in the opposite direction from the curved portion 56^a of blade 53^a and in operation propels the fuel to the area adjacent the other remote corner 69 of the grate 6.

Figs. 10 and 11 illustrate a further modification of the rotor 7, which consists of a cylindrical base portion 51^b and blades 52^b and 53^b, generally similar in shape to the cylinder 51 and blades 52 and 53 shown in Figs. 2 and 3. In this construction, however, the blades 52^b and 53^b are constructed of a series of relatively short sections 70 and 71, respectively, which are spaced slightly apart. By constructing the blades in sections greater allowance is provided for expansion and contraction and, accordingly, this structure is especially desirable in installations wherein the rotor is exposed to high temperatures. By constructing the blades in sections there is also less tendency for warping or cracking to occur when the rotor is manufactured by casting.

Figs. 12 and 13 illustrate a still further modification of the rotor 7. In this construction the cylindrical base portion 51^c, as well as the blades 52^c and 53^c, is also generally similar in shape to the base portion 51 and the blades 52 and 53, respectively, of the structure shown in Figs. 2 to 4. The blades 52^c and 53^c in this construction are also made up of a series of relatively short sections 72 and 73, respectively. The sections 72 and 73 overlap slightly with adjacent sections and thus in operation the blades present, in effect, continuous fuel propelling surfaces. In this construction, like that shown in Figs. 10 and 11, due to the sectional structure of the blades expansion and contraction thereof may take place without causing cracking or warping. This is true both in actual operation when the rotor is subjected to alternative periods of heating and cooling, as well as in the manufacture thereof by casting.

Figs. 14 to 16 illustrate a still further embodiment of the present invention. This construction consists of a cylindrical base member 51^d and four curved blades 74, 75, 76 and 77. These blades are evenly spaced around the base member 51^d, the blades 74 and 76 having the same contour and feed and distribute the fuel to one-half the grate. The blades 75 and 77 also have the same contour and feed the fuel to the other

side of the grate, the curvature thereof being opposite to that of blades 74 and 76. The blades 74 and 76 have sharply curved portions 78, 78 and gradually curving or substantially straight portions 79, 79 extending from one end of the rotor 7; while the blades 75 and 77 have sharply curved portions 80, 80 and gradually curving or relatively straight portions 81, 81 extending from the other end of said rotor.

From the foregoing description it is seen that various forms of simplified and efficient feeding and distributing rotors have been provided. The blades of the rotors are so shaped that one of the blades of the constructions shown in Figs. 1 to 13 of the drawings feeds and distributes the fuel to substantially one-half the area of the grate 6; while the other blade of the said construction feeds the fuel to the other half of the grate. In the construction shown in Figs. 14 to 16 two blades, for example, the blades 74 and 76, feed the fuel to one-half the grate; while the other two blades, 75 and 77, feed the fuel to the other half of the grate. Rotor constructions having two and four blades, respectively, have been shown herein. It is to be understood, however, that rotors having a greater or lesser number of blades may be provided if it is so desired without departing from the invention.

It sometimes is desired to clean the grates while fuel is being fed thereto and without extinguishing the fire. This is accomplished by moving one or the other of the closures 27 or 28 to closed position. For example, when the closure 28 is in closed position fuel will be deposited only on the portion of the conveyor 8 disposed beneath the opening 25 of hopper 20. Accordingly, fuel will only be conveyed to one-half of the rotor 7 and the curved portion 54 of blade 52 and the relatively straight portion of blade 52, accordingly, come in contact with the fuel and propel it to substantially one-half the area of grate 6. The operator may now remove the ashes from the other side of the grate by means of rakes or other tools. The ashes are drawn forwardly along the grate and are removed through an opening 83 provided in the front wall 2. A furnace door 84 normally closes the opening 83. If it should be desired to remove the ashes from the other side of the grate 6, closure 27 is closed. Fuel may now only flow to the side of the conveyor beneath opening 26 and is delivered thereby to the half of rotor 7 on which the curved portion 56 of blade 53 and the relatively straight portion 55 of blade 52 are situated. Fuel is now fed and distributed over the other half of the grate 6. The ashes now may be drawn from the other half of said grate through the opening 85 provided in the front wall 2. A second furnace door 86 normally closes opening 85.

The distance that the fuel is propelled over the grate 6 of the stoker by the various rotors shown and described herein, for any given speed of operation, is controlled to a certain extent by the manner in which the fuel is delivered to the rotors by the conveyor 8. When the fuel gravitates on the blades near the forward end thereof, it is thrown a greater distance into the furnace than when it strikes the blades at points inwardly from the forward or outer extremity thereof. Accordingly, by adjusting the conveyor 8 toward and from the rotor, the proper feeding and distributing action thereof may be obtained.

The depth of the blades provided on the rotors also controls to a certain extent the distance that

the fuel is propelled thereby into the furnace. The deeper the blades the greater the distance the fuel is propelled; and, conversely, the shorter the blades the lesser will be the distance that the fuel will be propelled into the furnace thereby. The length and width of the grate therefor are determining factors in connection with the positioning of the conveyor 8 with respect to the rotor 7, as well as in the selection of a rotor of proper dimensions. It, therefore, is apparent that rotors of various sizes and dimensions may be employed without departing from the invention.

While the embodiments herein shown and described are admirably adapted to fulfill the objects primarily stated, it is to be understood that the invention is not to be limited thereto since it may be embodied in other forms, all coming within the scope of the claims which follow.

What is claimed is:

1. In a device of the class described, the combination of a stoker furnace having front, side and rear walls, a grate forming the bottom wall of said furnace, one of said walls having an enlarged opening therein through which fuel is fed to and distributed over said grate, a fuel feeding and distributing rotor mounted exteriorly of said wall adjacent said opening, a pair of circumferentially spaced feeding and distributing blades extending lengthwise of said rotor, curved and relatively straight fuel engaging portions provided on one of said blades for feeding and distributing the fuel evenly over substantially one-half the area of said grate, curved and relatively straight fuel engaging portions provided on the other of said blades for feeding and evenly distributing the fuel over substantially the other half of said grate, and the said relatively straight portions of said blades extending substantially in parallel relation with the axis of said rotor.

2. In a device of the class described, the combination of a stoker furnace having front, side and rear walls, a grate forming the bottom wall of said furnace, one of said walls having an enlarged opening therein through which fuel is fed to and distributed over said grate, a fuel feeding and distributing rotor mounted exteriorly of said wall adjacent said opening, a pair of circumferentially spaced feeding and distributing blades extending lengthwise of said rotor, curved and relatively straight fuel engaging portions provided on one of said blades for feeding and distributing the fuel evenly over substantially one-half the area of said grate, curved and relatively straight fuel engaging portions provided on the other of said blades for feeding and evenly distributing the fuel over substantially the other half of said grate, means for conveying fuel to said rotor, a hopper for supplying fuel to said fuel conveying means, and means for controlling the flow of fuel from said hopper to said fuel conveying means.

3. In a device of the class described, the combination of a stoker furnace having front, side and rear walls, a grate forming the bottom wall of said furnace, one of said walls having an enlarged opening therein through which fuel is fed to and distributed over said grate, a fuel feeding and distributing rotor mounted exteriorly of said wall adjacent said opening, a pair of circumferentially spaced feeding and distributing blades extending lengthwise of said rotor, curved and relatively straight fuel engaging portions provided on one of said blades for feeding and distributing the fuel evenly over substantially one-

7

half the area of said grate, curved and relatively straight fuel engaging portions provided on the other of said blades for feeding and evenly distributing the fuel over substantially the other half of said grate, a conveyor for conveying fuel to said rotor, a hopper for supplying fuel to said conveyor, a pair of independently operable closures for closing the discharge opening of said hopper whereby upon opening one of said closures fuel is delivered by said conveyor to one end of said rotor which feeds and distributes the said fuel to one side of said grate, and when the other closure only is opened fuel is delivered to the other end of said rotor which feeds and distributes it to the other side of said grate.

4. In a device of the class described, the combination of a stoker furnace having front, side and rear walls, a grate forming the bottom wall of said furnace, one of said walls having an enlarged opening therein through which fuel is fed to and distributed over said grate, a fuel feeding and distributing rotor mounted exteriorly of said wall adjacent said opening, a pair of circumferentially spaced blades extending lengthwise of said rotor, means on one of said blades for feeding and distributing fuel evenly over substantially one-half the area of said grate, means on the other of said blades for feeding and distributing fuel evenly over substantially the other half of said grate, an endless conveyor for conveying fuel to said rotor, a hopper having a pair of discharge openings overlying said conveyor, and a movable closure for each of said discharge openings whereby fuel from said hopper may be caused to discharge to either or both sides of said conveyor.

5. A feeding and distributing rotor comprising a cylindrical base portion, a pair of circumferentially spaced blades secured to and projecting outwardly from said base portion and extending over the entire length thereof, each of said blades having a curved portion extending from one end thereof over a portion of its length and a relatively straight portion extending over the remainder of its length, and said curved portions lying at opposite ends respectively of the rotor and extending angularly with respect to the axis of the rotor with the working faces thereof presented respectively toward the opposite sides of a plane normal to the rotor axis, and each of said blades presenting a smooth working face free from obstruction extending over the full length of the blade.

6. A feeding and distributing rotor comprising a base portion, and a pair of circumferentially spaced blades extending lengthwise of said base portion, the portion of one of said blades extending from one end of said rotor being sharply curved and terminating in a more gradually curving portion, the curvature of said last mentioned portion becoming progressively more gradual as it approaches the said other end of said rotor and terminating in a portion extending substantially in parallel relation with the axis of said rotor, and the portion of the other of said blades extending from the said other end of said rotor being sharply curved and terminating in a more gradually curving portion, the curvature of said last mentioned portion becoming progressively more gradual as it approaches the said first mentioned end of said rotor, and terminating in a portion extending substantially in parallel relation with the axis of said rotor, and the working faces of the curved portions of both blades being presented angularly to a plane normal to

8

the axis of and intermediate the ends of the rotor, each of the blades presenting a smooth working face free from obstruction extending over the full length of the blade and over a major part of the rotor length.

7. A rotor comprising an extended cylindrical base portion, a curved relatively long material feeding and distributing blade extending lengthwise of said base portion from one end thereof, a second curved relatively long material feeding and distributing blade extending lengthwise of said base portion from the other end thereof, a relatively short curved blade provided near said one end of said base portion, and a second relatively short blade provided at said other end of said base portion, the said working faces of the said long blades being presented substantially throughout and respectively toward the areas at opposite sides of a plane normal to the axis and intersecting the rotor, and the working faces of the short blades being presented toward the areas at the opposite sides of said plane, and each of said blades exhibiting a smooth working face free from obstruction extending over the full length of the blade and being circumferentially spaced with respect to the adjoining blades.

8. A rotor comprising an extended cylindrical base portion, a curved relatively long material feeding and distributing blade extending lengthwise of said base portion from one end thereof, said blade terminating inwardly from the other end of said base portion, a second curved relatively long material feeding and distributing blade extending lengthwise of said base portion from the other end thereof, said last mentioned blade terminating inwardly from the said first mentioned end of said base portion, and a pair of spaced relatively short blades provided at the opposite ends of said base portion, said short blades extending inwardly a distance corresponding to the spaces between the ends of said relatively long blades and the corresponding ends of said base portion, the working faces of the said long blades being presented throughout and respectively toward the areas at opposite sides of a plane normal to the axis of and intersecting the rotor, and the working face of each of the short blades being presented toward the areas at the opposite sides of said plane respectively, and all of the blades being circumferentially spaced with respect to each other.

9. A rotor comprising an extended base portion and a relatively long continuously curved material feeding and distributing blade extending lengthwise of said base portion and over a major part of the length of the rotor, the curvature of said blade being relatively sharp at one end thereof and becoming progressively more gradual toward its other end, and toward the said other end extending progressively closer to a relation of parallelism with the rotor axis and said blade comprising a series of spaced sections disposed in end to end relation over the length thereof and exhibiting a smooth working face free from obstruction extending over the full length of the blade.

10. In a device of the class described, the combination of a stoker having front, side and rear walls, a grate forming the bottom wall of said furnace, one of said walls having an enlarged opening therein through which fuel is fed to and distributed over said grate, a fuel feeding and distributing rotor mounted exteriorly of said wall adjacent said opening, a curved relatively long

material feeding and distributing blade extending lengthwise of said rotor from one end thereof for feeding and distributing fuel over substantially one-half the area of said grate, a second curved relatively long material feeding and distributing blade extending lengthwise of said rotor from the other end thereof for feeding and distributing fuel over the other half of said grate area, said blades lying in spaced relation and the curvature of one of said blades being oppositely disposed to that of the other, a relatively short blade extending inwardly from one end of said base portion for feeding fuel to one of the remote corners of said grate and a second relatively short curved blade extending inwardly from the other end of said base portion for feeding fuel to the other of said remote corners of said grate, and said short blades lying in spaced relation with said relatively long blades.

11. In a device of the class described, the combination of a stoker having front, side and rear walls, a grate forming the bottom wall of said furnace, one of said walls having an enlarged opening therein through which fuel is fed to and distributed over said grate, a fuel feeding and distributing rotor mounted exteriorly of said wall adjacent said opening, a curved relatively long sectional material feeding and distributing blade extending lengthwise of said rotor for feeding and distributing fuel over one-half of said grate area, a second curved relatively long sectional material feeding and distributing blade extending lengthwise of said rotor in circumferentially spaced relation with said first mentioned blade for feeding and distributing fuel over the other half of said grate area.

12. In a device of the class described, the combination of a stoker furnace having front, side and rear walls, a grate forming the bottom of said furnace, one of said walls having an enlarged opening therein through which fuel is fed to and distributed over said grate, a fuel feeding and distributing rotor mounted exteriorly of the wall adjacent said opening, circumferentially spaced fuel impelling blades extending inwardly from one end of said rotor, and at least in part being inclined longitudinally to the axis of the rotor for feeding and distributing fuel over substantially one-half the area of the grate, and circumferentially spaced blades extending inwardly from the other end of said rotor and at least in part being inclined to the axis of the rotor for feeding and distributing fuel over substantially the other half of the grate, each of said blades exhibiting a smooth working face free from obstruction and extending over the full length of the blade.

13. In a device of the class described, the combination of a stoker furnace having front, side and rear walls, one of a grate forming the bottom of said furnace, said walls having an enlarged opening therein through which fuel is fed to and distributed over said grate, a fuel feeding and distributing rotor mounted exteriorly of said front wall adjacent said opening, a pair of circumferentially spaced blades extending inwardly from one end of said rotor, one of said blades being longer than the other and having curved and relatively straight portions provided thereon for feeding and distributing fuel over substantially one-half the area of said grate, a pair of circumferentially spaced blades

extending inwardly from the other end of said rotor, one of said blades being longer than the other and having curved and substantially straight portions provided thereon adapted to feed and distribute fuel over substantially the other half of said grate.

14. A feeding and distributing rotor comprising an extended base portion, a pair of circumferentially spaced blades extending inwardly from one end of said base portion, one of said blades being longer than the other and having curved and relatively straight portions provided thereon with the relatively straight portion extending approximately in parallelism with the rotor axis and with the working surface of the curved portion facing angularly toward the area in front of the rotor confronted by the relatively straight portion, a second pair of circumferentially spaced blades extending inwardly from the other end of said base portion, and one of said last mentioned blades being longer than the other and having curved and substantially straight portions provided thereon in reverse position longitudinally of the rotor from the corresponding portions of the longer blade of the first named pair, and the relatively straight portion of the longer blade of the second pair extending approximately in parallelism with the rotor axis and the working surface of the curved portion of said blade facing angularly toward the area in front of the rotor confronted by the relatively straight portion of the said blade.

15. A rotor comprising an extended base portion, a relatively long curved material feeding and distributing blade extending lengthwise of said base portion, a second relatively long curved material feeding and distributing blade extending lengthwise of said base portion in circumferentially spaced relation with said first mentioned blade, each of said blades being constructed in two or more longitudinal sections disposed in end to end relation, each of said blades having a portion thereof extending substantially in parallel relation with the axis of said rotor and having the remaining curved portion disposed so that the working face thereof is presented angularly toward a plane normal to the rotor axis, which plane intersects the portion of the blade which substantially parallels said axis, and each of said blades exhibiting a smooth working face free from obstruction extending over the full length of the blade and over a major part of the rotor length.

ERNST L. MIDGETTE.
ROBT. W. REID.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
578,630	Erickson	Mar. 9, 1897
767,084	Reagan	Aug. 9, 1904
944,959	Ettle	Dec. 28, 1909
1,975,224	Cox	Oct. 2, 1934
2,045,357	Hoffman	June 23, 1936
2,075,736	Lower	Mar. 30, 1937
2,099,618	Olney	Nov. 16, 1937
2,146,469	Foster	Feb. 7, 1939
2,255,841	Bower	Sept. 16, 1941
2,258,757	Hanna	Oct. 14, 1941

Certificate of Correction

Patent No. 2,531,779

November 28, 1950

ERNST L. MIDGETTE ET AL.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows:

Column 9, line 60, strike out the words "one of" and insert the same in line 61 before "said";

and that the said Letters Patent should be read as corrected above, so that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 6th day of March, A. D. 1951.

[SEAL]

THOMAS F. MURPHY,

Assistant Commissioner of Patents.