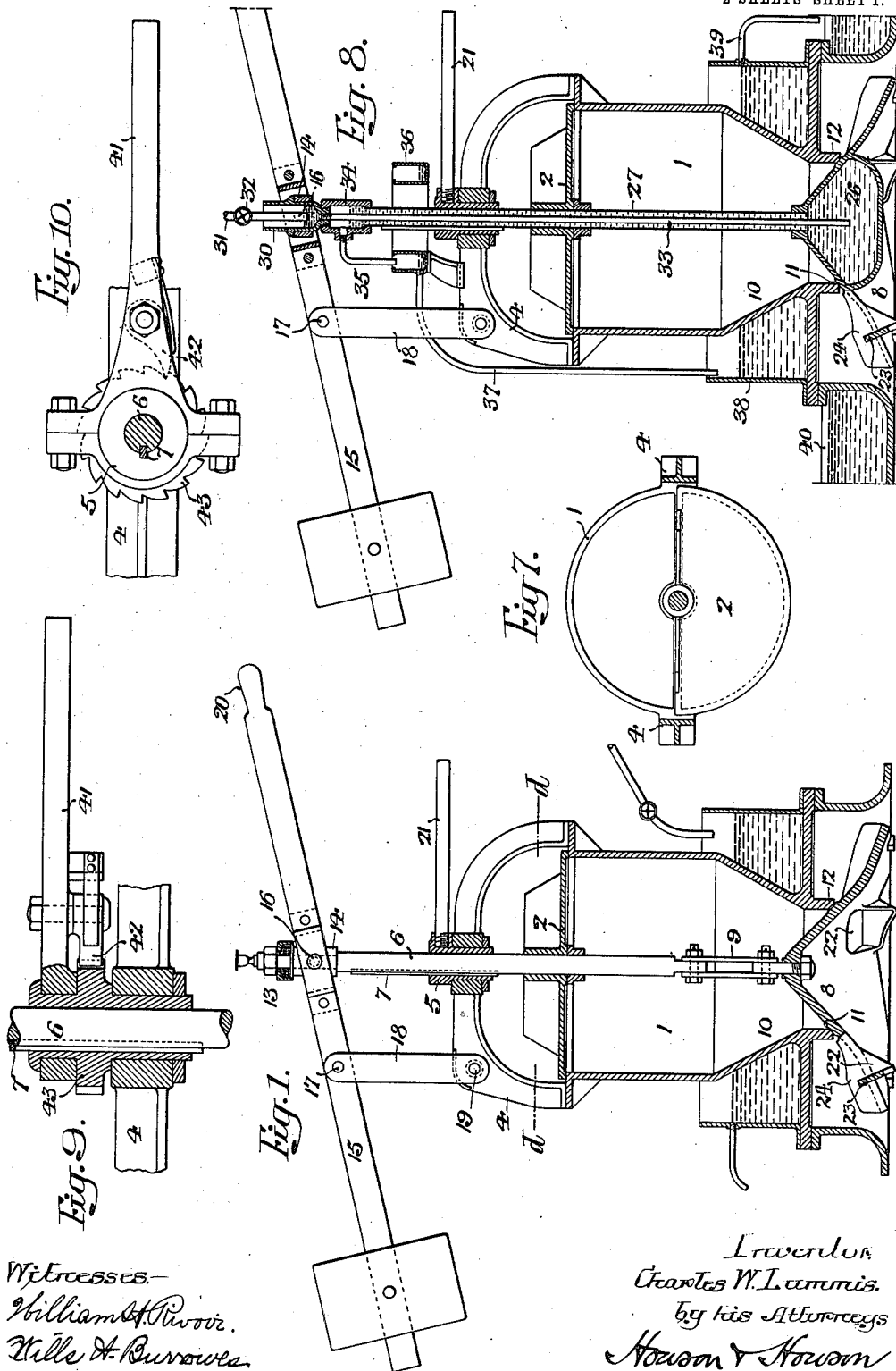


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C. W. LUMMIS.
CHARGING DEVICE.
APPLICATION FILED DEC. 24, 1909.

Patented Feb. 21, 1911.

2 SHEETS-SHEET 1.



Witnesses—
William St. Pierre.
Wells & Burrows.

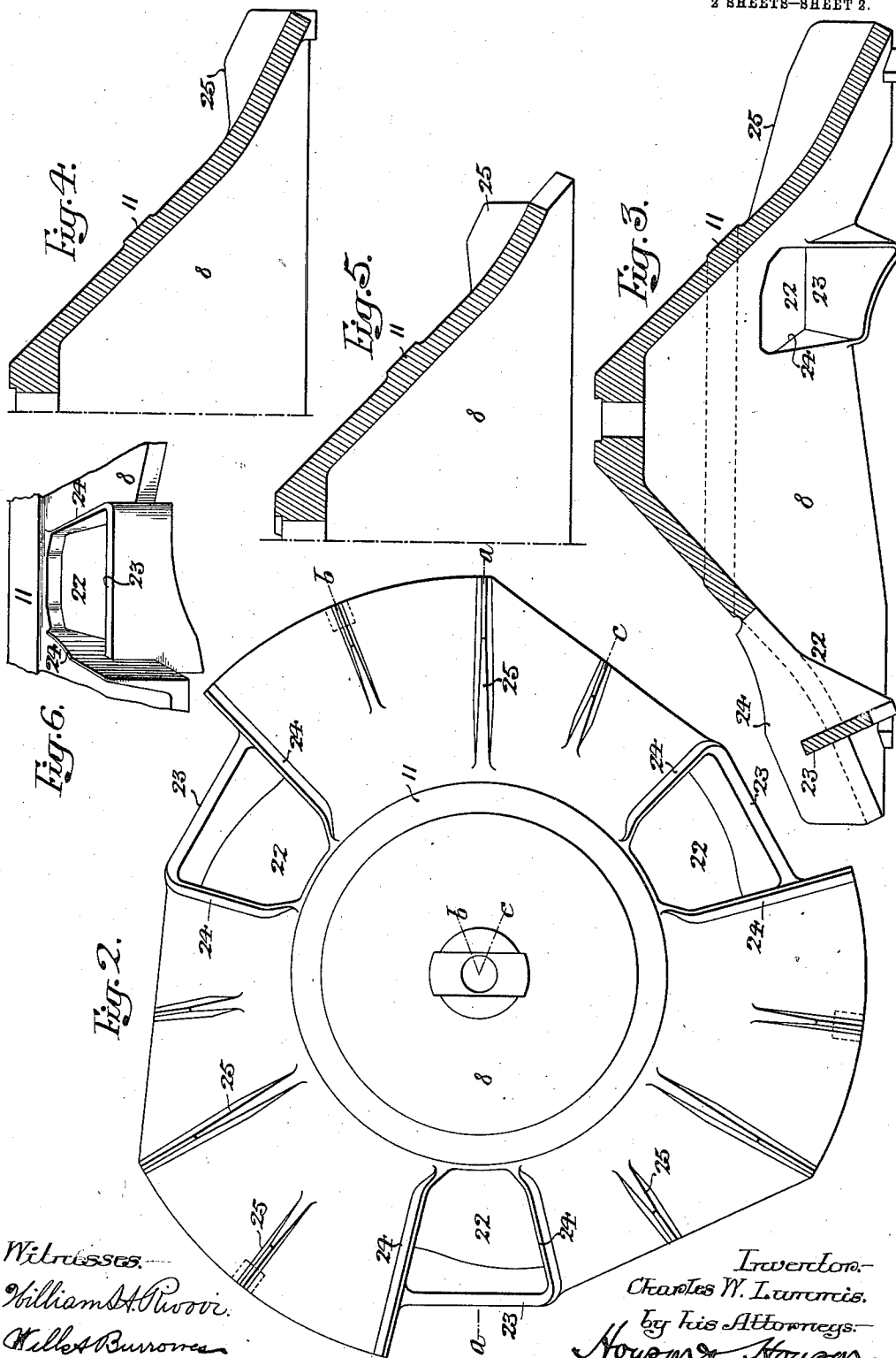
Inventor
Charles W. Lummis.
by his Attorneys
Hosson & Hosson

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2 SHEETS—SHEET 2.



Witnesses:
William H. Wood.
Hester Burrows.

Inventor:
Charles W. Lummis.
by His Attorneys:
Hosmer Hosmer

UNITED STATES PATENT OFFICE.

CHARLES W. LUMMIS, OF CAMDEN, NEW JERSEY, ASSIGNOR TO CAMDEN IRON WORKS, OF CAMDEN, NEW JERSEY, A CORPORATION OF NEW JERSEY.

CHARGING DEVICE.

984,949.

Specification of Letters Patent.

Patented Feb. 21, 1911.

Application filed December 24, 1909. Serial No. 534,864.

To all whom it may concern:

Be it known that I, CHARLES W. LUMMIS, a citizen of the United States, and a resident of Camden, Camden county, New Jersey, have invented certain Improvements in Charging Devices, of which the following is a specification.

My invention relates to means for feeding coal or other material to gas producers, cupola furnaces and structures of a similar character, and the object of my invention is to provide means for insuring an even feed and distribution of the fuel or other material.

The usual method of feeding coal to gas producers, furnaces and the like, is to provide a magazine or hopper, which may be continuously rotatable or have a rotatable bottom into which the coal is fed and from which the coal is discharged, with a suitable distributing device carried by or cooperating with the magazine or hopper initially receiving the coal. It has been proposed heretofore to provide means for effecting an even feed and distribution of the fuel, but in prior instances it has been necessary to provide coal of special and uniform size to effect such even feeding.

The object of my invention is to provide means for effecting an even feed and distribution that will be simple, readily operated and available for use with coal of any size within reasonable limits.

These and other features forming the subject of my invention will be fully pointed out hereinafter, reference being had to the accompanying drawings, in which:

Figure 1, is a sectional elevation of a feed device for furnaces, gas producers and the like, embodying my invention; Fig. 2, is an enlarged plan view of the distributor employed in connection with my improved feed device; Fig. 3, is a sectional view of the distributor on the line *a-a*, Fig. 2; Figs. 4 and 5, are transverse sectional views on the lines *b-b* and *c-c*, respectively, Fig. 2; Fig. 6, is a front elevation of one element of the distributing member; Fig. 7, is a sectional plan view on the line *d-d*, Fig. 1; Fig. 8, is a sectional view similar to Fig. 1 illustrating another form of structure embodying my invention, and Figs. 9 and 10, are, respectively, a sectional elevation and plan

view of a device for operating the distributing element.

In the drawings herewith, 1 represents a magazine or hopper for the reception of fuel or other material introduced at the top of the same; such magazine being provided with a rotatable cover 2, to close or open the top of the hopper. The magazine or hopper carries a bracket 4 receiving a bushing 5 which is mounted for rotation in said bracket and through said bushing a vertically movable shaft 6 passes; said shaft being splined thereto by a feather 7 in order that it may be oscillated by movement imparted to said bushing simultaneously with its vertical movement. The lower end of the shaft 6 carries a conical distributing member 8 of a special character, which may be connected to the shaft by links 9. The magazine or hopper has a contracted outlet 10 and the distributing member 8 is preferably provided with an annular surface for contact with the lower edge 12 of said contracted outlet.

At the upper end of the shaft a thrust bearing 13 is provided for engagement with a collar 14 in which the end of the shaft is free to rotate, such collar being arranged to impart positive movement to the shaft when actuated in a vertical direction. The shaft is maintained in the raised position with the distributing element closed against the lower mouth of the hopper by means of a weighted lever 15 trunnioned to said collar at 16 and fulcrumed at 17 to a link 18 pivotally connected at 19 to the bracket 4; said lever 15 having a handle 20 whereby it may be actuated. The bushing journaled in the bracket 4 is provided with a handle 21 whereby movement may be imparted to the shaft 6 by the operator; such movement being simultaneous with the lowering of the conical distributor carried by said shaft.

The conical distributor is of a novel construction, and in addition to having means for throwing the material from its upper surface due to the centrifugal action imparted to it by rocking the handle 21, it has apertures 22 through which a portion of the coal may be discharged and an irregular margin with portions successively decreasing in radial length. The apertures 22 are provided with a circumferential wall

23 and side walls 24 which form ribs extending above and below the web forming the body of such distributing member. In addition, the distributing member is provided with vanes or blades 25 of different dimensions disposed on its upper surface, which are designed to divert the coal or other material as said member is rocked and as such material is dropped from the distributor in a series of concentric paths it is caused to spread in a substantially even layer in the gas producer or furnace.

The structure shown in Fig. 8 is of substantially the same character as that shown in Fig. 1, except that provision is made for water cooling the same throughout; the distributing member being also water cooled. For this purpose, the distributing member is made hollow, as shown at 26, and is carried by a vertically movable hollow shaft 27, which may be actuated by means of the same character as those indicated in Fig. 1, to lower the distributing member and oscillate the same. The hollow shaft carrying the distributing member is provided with a cup 30 at its upper end into which a cooling fluid may be introduced from a pipe 31, suitably valved at 32. From the cup 30 such fluid may pass to the hollow distributing member through a tube 33. As the distributing member fills, the fluid rises in the hollow shaft outside the tube 33 and may pass to a chamber 34 near the upper end of said shaft, and from said chamber the fluid may overflow through a pipe 35 into a small annular tank 36 suitably supported by the bracket 4. From this tank, the fluid may overflow through a pipe 37 into a tank 38 surrounding the lower portion of the hopper or magazine, and from the latter it may overflow through a pipe 39 to a water receptacle 40 on top of the gas producer or furnace.

The magazine or hopper may be agitated by the handle 21 connected to the bushing 5 through which the shaft slides, as illustrated in Figs. 1 and 8, or I may provide a structure such as shown in Figs. 9 and 10, consisting of a lever 41 with a pawl 42 for engagement with a ratchet 43 so as to impart a continuously rotative movement to the shaft 6 and thence to the hopper from the intermittent oscillating movements of the lever 41. The shaft is splined to the bushing, and the ratchet wheel may be keyed to the bushing, but in this instance these parts are in one piece, and the lever is journaled on the bushing.

I claim:

1. A feeding device for furnaces, gas producers and the like, comprising a hopper, a bell bottom therefor having a series of apertures, vanes carried by said bottom and disposed on the upper surface of the same

for diverting the material dropped thereon, and walls for said apertures projecting below the lower surface of said bottom.

2. A distributor for the feed hoppers of gas producers and analogous structures, comprising a bottom therefor having an irregular margin with portions successively decreasing in length from the center of said bottom, the latter having a series of apertures, and walls for said apertures extending below the under surface of said hopper, said irregular margin and walled apertures serving to divert portions of the material fed and distribute the same in a series of concentric paths.

3. The combination of a hopper, a movable distributing bottom therefor having vanes, said bottom having a plurality of apertures for the passage through the same of material fed over its surface, walls for said apertures projecting below the under surface of the bottom, means for raising and lowering said distributing bottom, and independent means for oscillating the distributing bottom simultaneously with the vertical movements of the same.

4. The combination with a hopper, of a movable bottom distributor therefor having an irregular margin with portions successively decreasing in length from the center of said distributor and walled apertures to divert the material in a series of concentric lines, means for raising and lowering said distributor, and independent means for oscillating the same during its vertical movement.

5. A feeding device for furnaces, gas producers and the like, comprising a hopper, a bell bottom therefor having a series of apertures, vanes carried by said bottom and disposed on the upper surface of the same for diverting the material dropped thereon, and walls for said apertures projecting above and below the upper and lower surfaces of said bottom.

6. A hollow, water-cooled distributor for the feed hoppers of gas producers and analogous structures, having ribs or vanes to divert the material from the upper surface of the same, and apertures for the passage of material to points directly below the distributor, and an irregular margin with portions successively decreasing in length from the center of said distributor.

7. The combination of a hopper, a movable distributing bottom therefor having an irregular margin whereby said bottom has portions differing in length from center to margin over which the material to be fed flows, radially disposed ribs or vanes at the points of change in the contour of said margin, said bottom having a plurality of apertures for the passage through the same of material fed over its surface, walls for said

apertures projecting above and below the upper and lower surfaces of the bottom, means for raising and lowering said distributing bottom, and independent means
5 for oscillating the distributing bottom simultaneously with the vertical movements of the same.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

CHARLES W. LUMMIS.

Witnesses:

MURRAY C. BOYER,
WM. A. BARR.