

G. M. S. TAIT.
CHARGING HOPPER.
APPLICATION FILED JAN. 11, 1910.

1,061,703.

Patented May 13, 1913.

Fig: 1,

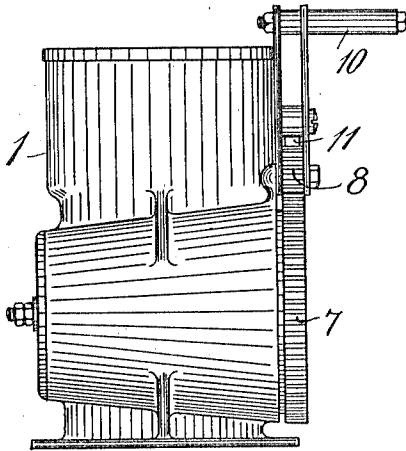


Fig: 2,

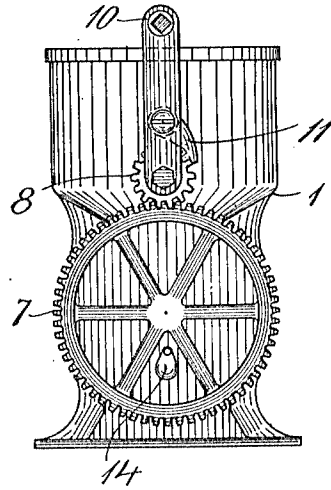


Fig: 3,

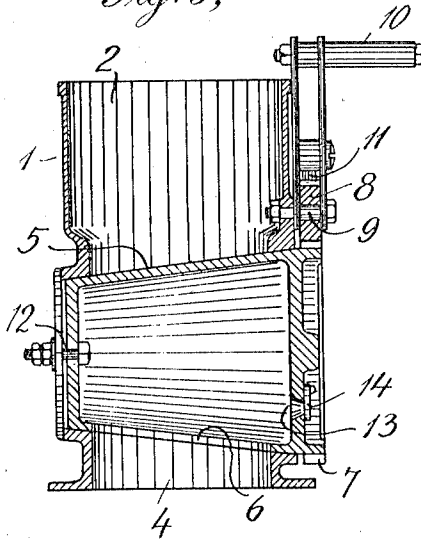
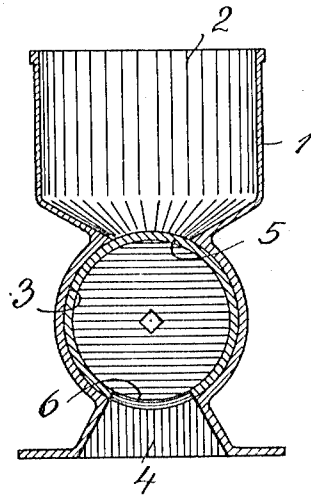


Fig: 4.



WITNESSES:

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UNITED STATES PATENT OFFICE.

GODFREY M. S. TAIT, OF MONTCLAIR, NEW JERSEY, ASSIGNOR TO TAIT PRODUCER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

CHARGING-HOPPER.

1,061,703.

Specification of Letters Patent.

Patented May 13, 1913.

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To all whom it may concern:

Be it known that I, GODFREY M. S. TAIT, a subject of the King of England, and a resident of Montclair, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Charging-Hoppers, of which the following is a full, clear, and exact specification, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a hopper designed particularly for feeding fuel into gas producers and the like.

The invention consists in various details of construction and combinations of parts, all as more particularly hereinafter described.

The object of my invention is to provide a simple and compact hopper for the purpose specified, which shall not itself open the producer or furnace to which it is connected to the air, during the admission of fuel or at other times, the valve of which shall seat automatically of itself and shall be self-grinding, so as to prevent escape of gas even when the valve is much worn; to provide powerful and positive means for rotating said valve and to provide means for freeing the valve in case of accidental clogging thereof.

I will now proceed to describe, as an example, the preferred form of my invention with reference to the accompanying drawings, and will then point out the novel features in the claims.

In said drawings: Figure 1 shows a side elevation of the hopper; Fig. 2 a front elevation thereof; Fig. 3 a central vertical section of the hopper longitudinally of the axis of the valve; and Fig. 4 a central vertical cross-section of the hopper.

In the drawings, 1 designates the main casing of the hopper, comprising a fuel receiving chamber 2 and a valve chamber 3; there being beneath this valve chamber a discharge opening 4.

5 designates a rotary hollow plug valve within the valve chamber 3, which valve is of generally conical shape, the valve chamber being likewise and correspondingly conical or tapering, so that as the valve becomes worn, wear may be taken up by axial movement of the valve. This valve is provided with a port 6 opening into its in-

terior. Upon one end of the valve a driving gear 7 is provided and to drive this gear 7 a pinion 8 is provided, mounted to rotate upon a spindle 9 and arranged to be rotated by a handle 10, which drives said pinion through a ratchet pawl 11. It will be seen that both, because of the high-gear ratio of pinion 8 and gear 7, and also because of the ratchet drive of the pinion, it is possible by means of the handle 10 to apply very great force to the valve to rotate it, for the ratchet connection of the handle 10 to the pinion permits the operator to choose the position of the handle most favorable to the exertion of the effort to turn the valve.

This hopper operates in the following manner: When the port 6 of the valve is in its upper position, in line with the supply chamber 2, said valve will fill with fuel from said chamber, the valve at such time closing communication from the outer air to the discharge opening 4. When the valve has been rotated until its port 6 is at the bottom, the fuel contained within the valve will pass out through the discharge opening 4, the valve at such time also preventing passage of outside air to the discharge opening 4, and conversely, preventing the passage of gases from the furnace or producer upward. At all other times the valve likewise prevents communication between the discharge opening 4 and the outer air, since the port 6 in the valve does not subtend so great an angle as do the sides of the valve chamber 3.

Owing to the conical shape of the valve and valve chamber, and to the fact that the valve is a rotary valve, said valve is self-grinding and, as it becomes worn, wear may be taken up by means of the nuts on the bolt 12 by screwing up which the valve may be moved axially.

It sometimes happens that fuel jams within the valve so that the valve does not empty readily. To provide means for dislodging the fuel in such case I have provided in one end of the valve a poke hole 13 normally closed by a cover 14, which may be pushed to one side to admit a poke rod to the interior of the valve. By means of such poke rod any fuel jammed in the valve may be dislodged.

It will be noted that the port 6 in the valve is of just the width of the mouth of the discharge opening 4 so that on the one hand there are no projections extending part

way across this port upon which the fuel may lodge and, on the other hand, this port is of maximum width and so offers maximum facilities for self-emptying of the valve. To preclude clogging of the fuel within this discharge opening or passage, the same flares or tapers outwardly and downwardly, as particularly shown in Fig. 4.

The fact that this hopper does not permit at any time passage of gases from the furnace or producer upward through the hopper is of great importance, particularly when the hopper is used for feeding gas producers and the like as the rules of the Board of Fire Underwriters with respect to gas producers located within buildings require, that the producer shall be closed in such way that it cannot be opened to the air.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is:

1. A hopper comprising a receiving chamber, a valve chamber below it and a discharge opening beneath said valve chamber, a hollow plug valve within the valve chamber having an opening arranged to register with the receiving chamber in one position of the valve and with the discharge opening in another position of the valve, said valve extending beyond the valve chamber and having teeth on its periphery forming a driving gear for the valve, a pinion mounted on

the casing of the hopper and arranged to engage with said gear to rotate said valve, and an operating handle having ratchet connection with said pinion.

2. A charging hopper for gas producers comprising the combination of the hopper, a casing, a hollow conical rotary valve in said casing, said valve having in its side an opening adapted in one position to receive fuel from the casing and in another position to discharge fuel, a gear on said valve and projecting beyond said casing, a stud on said hopper, a driving pinion meshed with said gear and mounted on said stud and an operating handle mounted on said stud and having ratchet connection with said pinion.

3. A hopper, such as described, comprising a casing and a hollow rotary valve therein having in its side an opening adapted in one position to receive fuel from the casing and in another position to discharge fuel, said valve having in one end a poke hole whereby an instrument may be introduced within the valve to dislodge material clogged therein.

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

GODFREY M. S. TAIT.

Witnesses:

B. BIGGE,

G. U. UNA.