C. C. HOFFMAN AND J. McCASLIN.

METHOD OF AND APPARATUS FOR PREVENTING THE ACCUMULATION OF STICKY CONDENSED PRODUCTS OF A GAS PRODUCER UPON THE RELATIVELY MOVABLE ENGAGING SURFACES OF THE FUEL FEEDING MECHANISM APPLIED TO A GAS PRODUCER.

APPLICATION FILED OCT. 11, 1919.

1,415,238. **Patented May 9, 1922.**

Fig. 2.

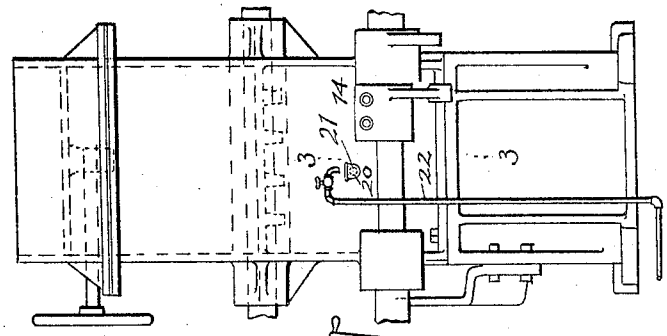
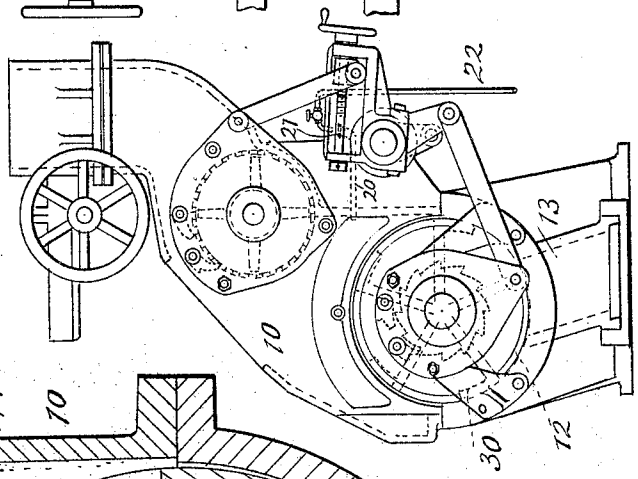


Fig. 1.



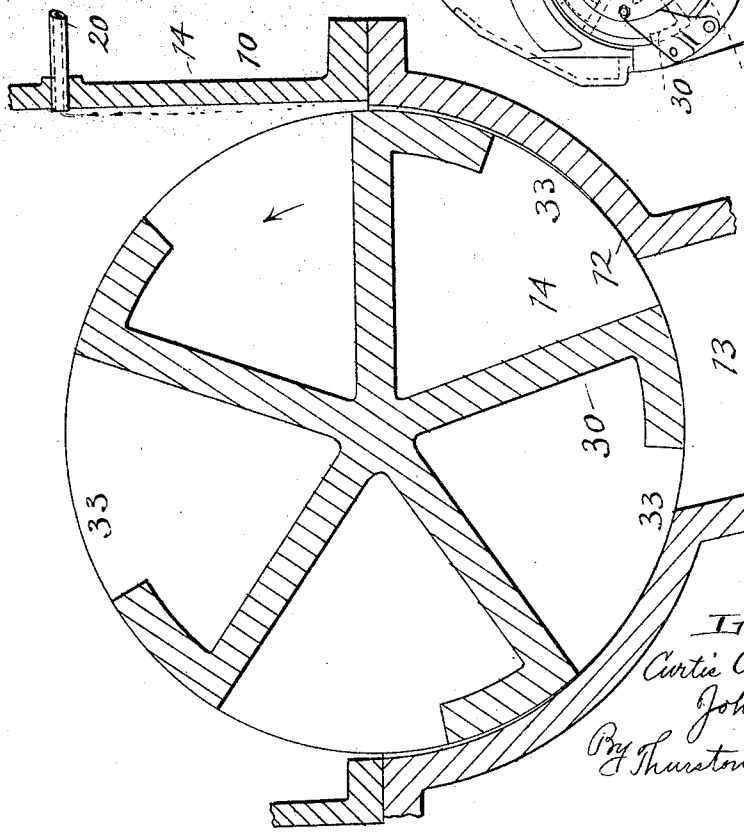


Fig. 3.

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UNITED STATES PATENT OFFICE.

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METHOD OF AND APPARATUS FOR PREVENTING THE ACCUMULATION OF STICKY CONDENSED PRODUCTS OF A GAS PRODUCER UPON THE RELATIVELY MOVABLE ENGAGING SURFACES OF THE FUEL-FEEDING MECHANISM APPLIED TO A GAS PRODUCER.

1,415,238. Specification of Letters Patent. Patented May 9, 1922.

Application filed October 11, 1919. Serial No. 329,931.

To all whom it may concern:

Be it known that we, CURTIS C. HOFFMAN and JOHN MCCASLIN, citizens of the United States, and residents, respectively, of Chagrin Falls, in the county of Cuyahoga and State of Ohio, and Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful improvement in methods of and apparatus for preventing the accumulation of sticky condensed products of a gas producer upon the relatively movable engaging surfaces of the fuel-feeding mechanism applied to a gas producer, of which the following is a full, clear, and exact description.

It is customary to provide gas producers with automatic mechanism for periodically feeding measured quantities of fuel into the producer. All forms of fuel feeding mechanism with which we are acquainted include a movable fuel valve and a seat therefor, and these are necessarily so placed with respect to the producer that parts of the valve are from time to time exposed to the vapors which result from the distillation of the coal in the producer. These vapors find their way between the valve and its seat and condense upon the engaging surfaces of one or both of these parts. This of itself would increase the friction incident to turning the valve in its seat and would tend to cause the valve to stick. But additionally, the dust from the fuel is caught by this sticky deposit. The resultant is a sticky mess which adheres to the valve seat or valve, and renders the movement of the valve difficult, and sometimes beyond the capacity of the mechanism provided for moving it.

The object of this invention is to prevent the accumulation of these sticky friction producing deposits upon the relatively movable engaging surfaces of the valve and its seat.

The invention consists in the method of procedure hereinafter set forth, and in the means shown in the drawing and hereinafter described for producing this result substantially as set forth in the appended claims.

In the drawing, Fig. 1 is a side elevation of and Fig. 2 is a rear elevation of certain fuel feeding mechanism with which is combined means for producing the desired result; Fig. 3 is an enlarged sectional view on line 3—3 of Fig. 2.

The mechanism disclosed in the drawing to which the present invention is applied is substantially like that which is shown and described in the application of Rogers and McClimon, Serial No. 268,960, filed Dec. 30, 1918. It is to be understood, however, that there is no intention of limiting the scope of the appended claims to the use of this invention with fuel feeding mechanism, specifically like that shown.

Referring to the parts by reference characters, 10 represents the lower part of a fuel chute which is adapted to be secured on the top of a gas producer. The upper end of this chute member is in the form of a substantially semi-cylindrical valve seat 12. A fuel discharge passage 13 extends through the bottom of this valve seat to the bottom of the chute member; and when the chute member is secured as stated to the gas producer, this is in open communication with the gas producer, so that fuel may be discharged into the latter. As a necessary consequence also the gases and vapors generated in the gas producer are free to rise through this fuel discharge passageway.

30 represents a cylindrical valve which is rotatably mounted on said valve seat. It has a plurality of peripherally opening pockets 33 into which fuel may be delivered while these pockets are above the valve seat, and from which fuel will be discharged as the mouths of the pockets severally come into registering relation with the fuel passageway through the valve seat; but this valve is intended to prevent the escape of gases and vapors from the producer.

The means shown for imparting to this valve a step by step rotary movement in the direction indicated by arrow "A" in Fig. 3 is substantially the same as that shown for this purpose in the prior application specified, wherefore it is not thought necessary to describe it here.

In constructing fuel feed mechanism of the sort above briefly described, it is customary to make the diameter of the valve about $\frac{1}{32}''$ less than the diameter of the valve seat. The valve under the influence of gravity will rest

upon the bottom of the valve seat, and therefore there will be under normal conditions a slight clearance between the valve and its seat on both sides of the latter along the upper edges thereof.

14 represents a part of the wall of the fuel chute above the valve. 20 represents a pipe which extends through and is fixed in this wall 14 in such a position that, if a suitable substance be allowed to drop from the inner end of this pipe, it will fall into the clearance space between the valve seat and the valve, and on that side of the valve seat out of which the valve rises as the valve is turned. This pipe as shown is so located that the material will be discharged into this space at a point about midway between the ends of the valve. Water is the material which we prefer to discharge from this pipe into the clearance space referred to. When water is the substance used, one pipe 20 located as stated will serve the purpose. But we have no intention of limiting the invention to the use of one pipe only. As many as desired may be provided and used. In the construction shown, which is especially adapted for the use of water, this pipe 20 has at its outer end a cup 21 into which water is delivered slowly from a faucet controlled pipe 22. Water is delivered into this cup, preferably at a rate such as will cause water to flow drop by drop from pipe 20, and these drops as stated, will enter the clearance space between the valve and its seat. The result of so discharging water in these minute quantities into this clearance space is that the engaging surfaces of the valve and its seat keep bright and clean, and do not stick together, wherefore only a minimum of power is required at all times to turn the valve.

We do not pretend to be able to explain why these parts keep bright and clean when water is dropped into the clearance space between the valve at the point or in the manner indicated. It may be that the material discharged onto the surfaces keeps the deposits soft so that the valve as it rotates can and does scrape the deposits off the surface of the valve seat, and that these deposits are burned off the valve as they are carried over the discharge opening in the valve seat. It may be that there is some other and better reason for the results which are secured. But we do know that the slow discharge of either water or graphite grease into the clearance space between the valve and its seat completely prevents the accumulation on the valve and its seat of the sticky condensed products of the distillation of coal in the gas producer.

It will be noted that the pipe 20 as shown, discharges the substance into the clearance space between the valve and its seat on that side of the latter out of which the valve rises as it turns. This is not essential because good results follow if the pipe is arranged to deliver the water into the clearance space between the valve and its seat at that side of the latter where the valve, in turning, moves down into the seat. But our experiments and experience lead to the conclusion that the results are most satisfactory when the pipe 20 is located as shown in the drawing, and discharges water only into the clearance space at the point and in the manner stated.

Having described our invention, we claim:—

1. The method of preventing the accumulation of sticky condensed product of a gas producer upon the relatively movable engaging surfaces of the fuel feeding mechanism of said gas producer, which consists in the delivery onto said surfaces while the apparatus is in operation of a substance which prevents the accumulation on said surfaces of the sticky condensed vaporous products of the gas producer.

2. The method of preventing the accumulation of sticky condensed product of a gas producer upon the relatively movable engaging surfaces of the fuel feeding mechanism of said gas producer, which consists in delivering water onto said surfaces while the apparatus is in operation.

3. The method of preventing the accumulation of sticky condensed product of a gas producer upon the relatively movable engaging surfaces of the fuel feeding mechanism of said gas producer, which consists in delivering water, drop by drop, onto said surfaces while the apparatus is in operation.

4. The method of preventing the accumulation of sticky condensed product of a gas producer upon the relatively movable bearing surfaces of the cylindrical valve seat, and a cylindrical fuel valve mounted therein which consists in delivering water slowly onto the engaging surfaces of said valve and seat.

5. A fuel feeding mechanism for gas producers comprising a movable valve and a valve seat therefor, means for preventing the accumulation of sticky condensate on the engaging surfaces of the valve and seat including delivery means extending through a part of said mechanism and serving to deliver onto said surfaces a substance which prevents said accumulation.

6. A fuel feeding mechanism for gas producers comprising a valve and a seat for the valve, and means for preventing the accumulation of sticky condensate on the engaging surfaces of the valve and seat, said means comprising a delivery member extending into a part of said mechanism and serving to deliver onto said surfaces a fluid which prevents said accumulation.

7. A fuel feeding mechanism for gas producers comprising a valve, a casing member therefor having a seat for the valve, means for preventing the accumulation of sticky

condensate on the surfaces of the seat and valve, said means comprising a delivery member extending to a point in said mechanism such that it may deliver fluid onto said surfaces, and means for supplying to said delivery member a fluid which prevents such accumulation.

8. In combination with the valve and valve seat of a fuel delivery mechanism for gas producers, means for supplying to the surfaces of the seat and valve a regulated amount of a substance which prevents the accumulation of sticky condensate on said surfaces.

9. In combination with the valve and valve seat of the fuel feeding mechanism of a gas producer, means for preventing the accumulation of sticky condensate on the surfaces of the valve and seat, comprising a delivery pipe connected to the mechanism so as to deliver fluid onto said surfaces, and means for supplying water to said pipe.

In testimony whereof, we hereunto affix our signatures.

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