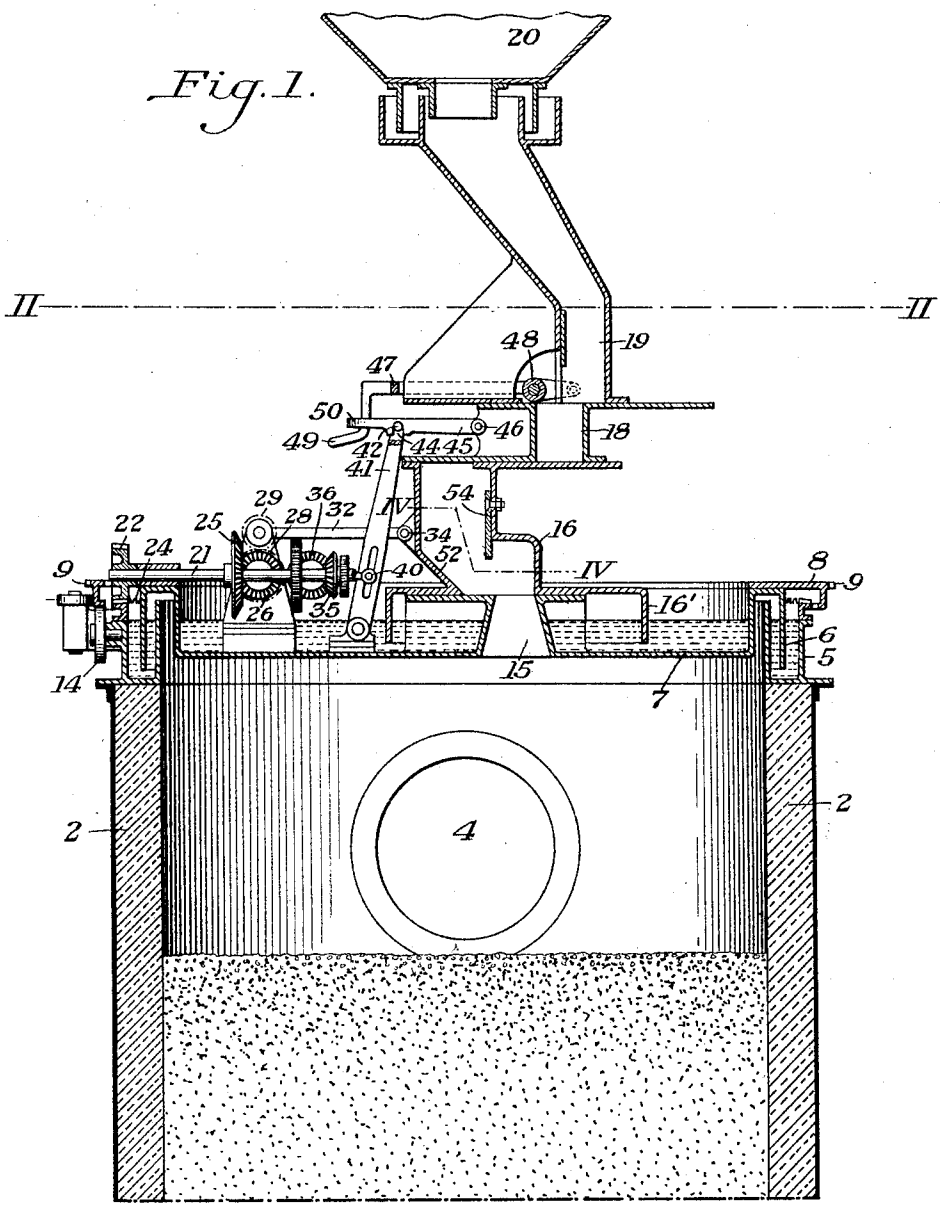
Dec. 30, 1924. 1,521,232

R. DAAE

FEEDING MEANS FOR GAS PRODUCERS

Original Filed Jan. 7, 1920 4 Sheets-Sheet 1

Fig. 1.



INVENTOR

Reinhardt Daae

by his attorneys

Byron, Stubbins & Pannell

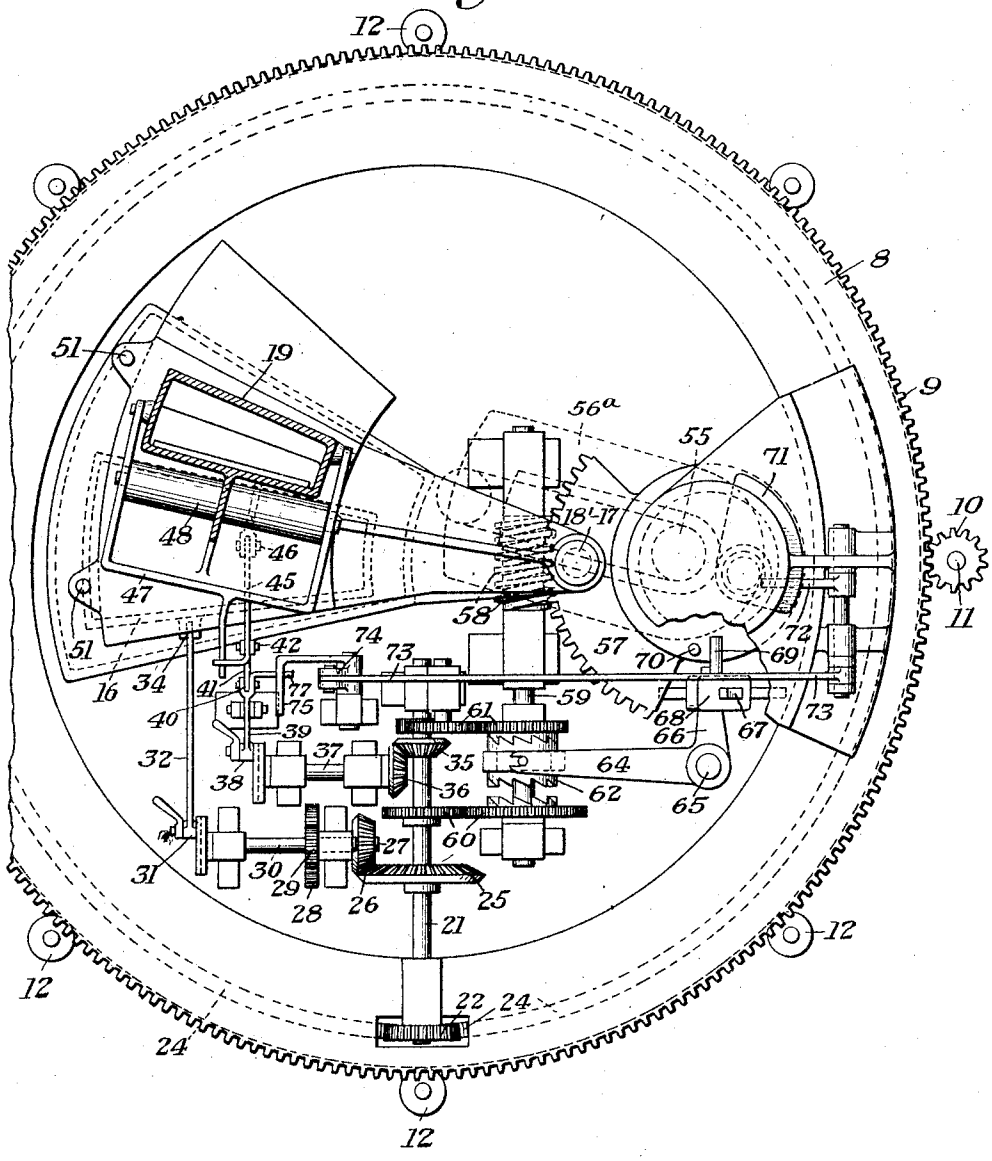
Dec. 30, 1924. 1,521,232

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FEEDING MEANS FOR GAS PRODUCERS

Original Filed Jan. 7, 1920 4 Sheets-Sheet 2

Fig. 2.



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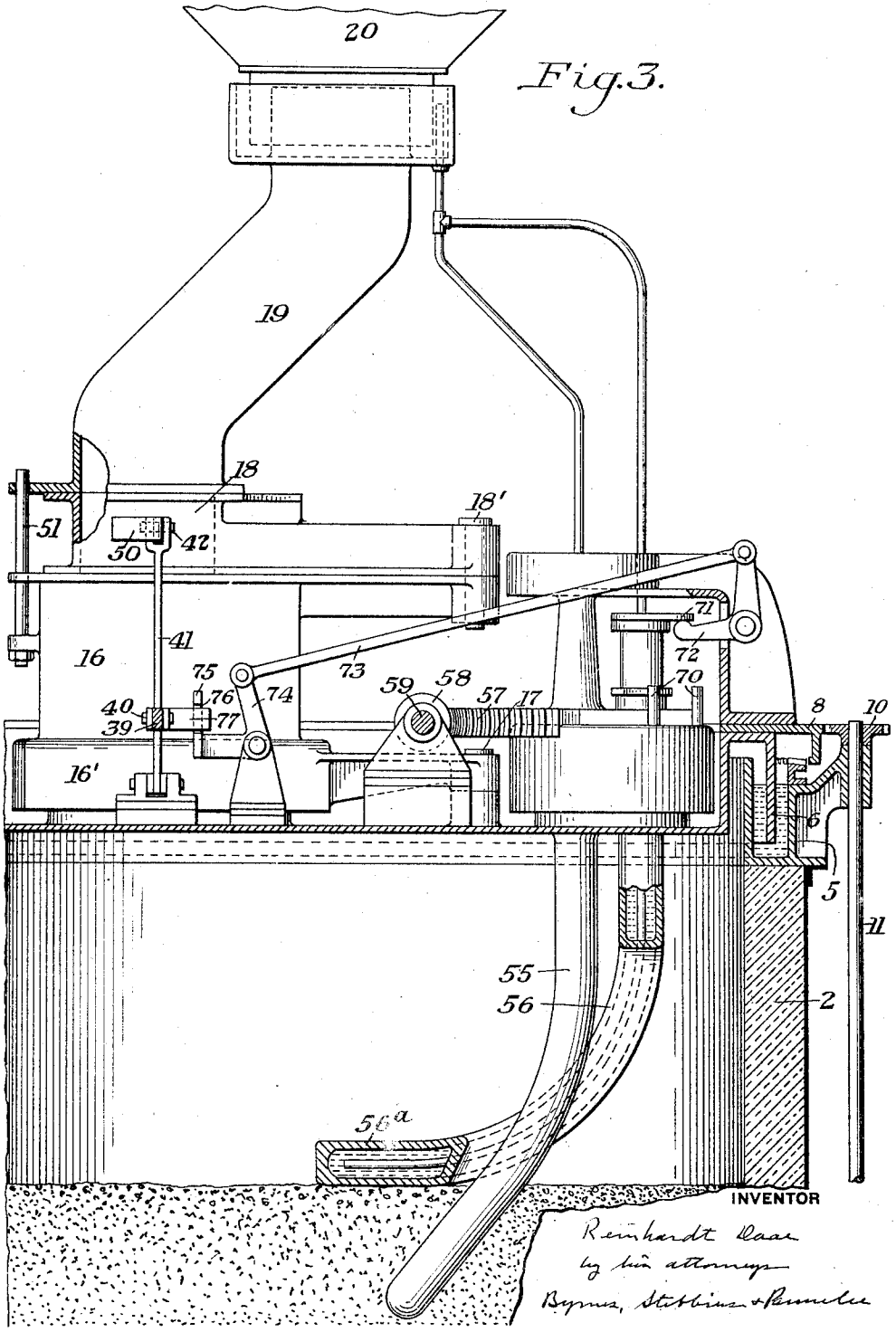
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FEEDING MEANS FOR GAS PRODUCERS

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Fig. 3.



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Dec. 30, 1924. 1,521,232

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FEEDING MEANS FOR GAS PRODUCERS

Original Filed Jan. 7, 1920 4 Sheets-Sheet 4

Fig. 4.

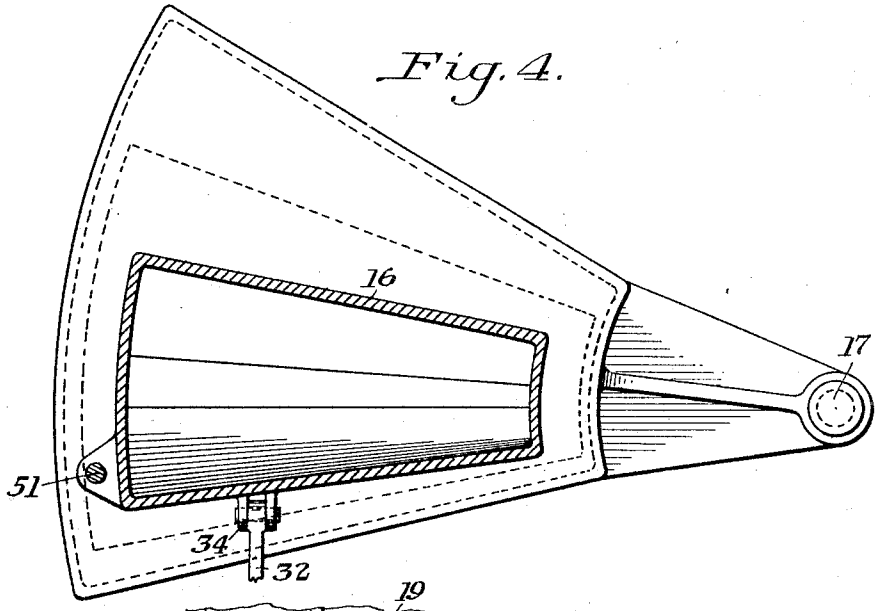
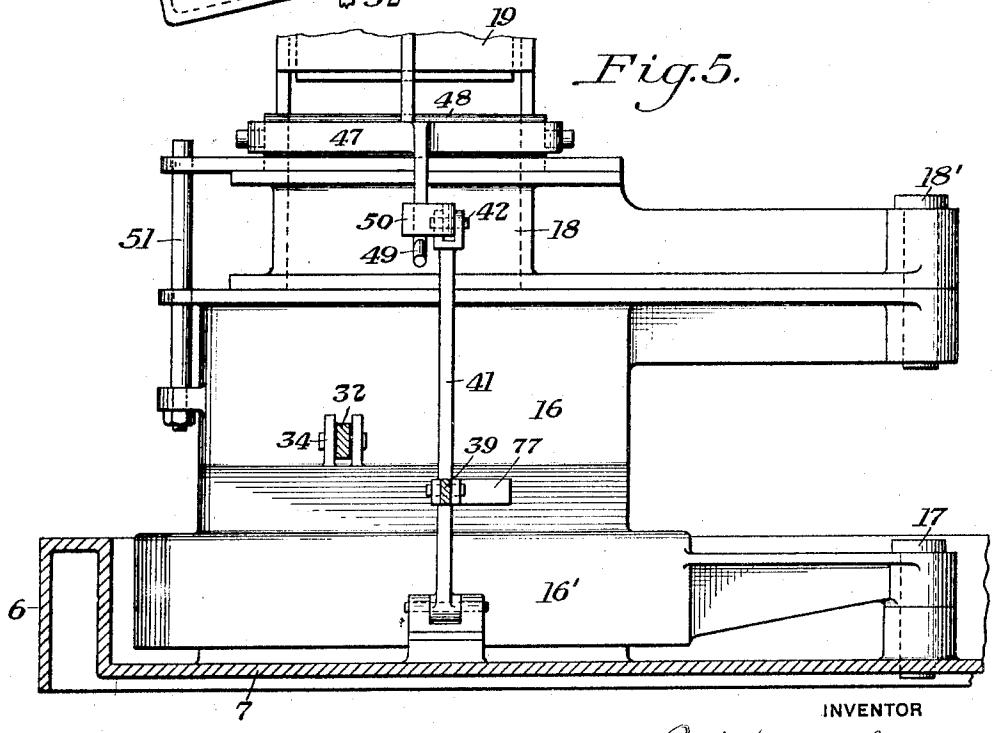


Fig. 5.



INVENTOR

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Byrnes, Stebbins & Pannell

Patented Dec. 30, 1924. 1,521,232

UNITED STATES PATENT OFFICE.

REINHARDT DAAE, OF YOUNGSTOWN, OHIO.

FEEDING MEANS FOR GAS PRODUCERS.

Original application filed January 7, 1920, Serial No. 349,863. Divided and this application filed December 5, 1922. Serial No. 605,907.

To all whom it may concern:

Be it known that I, REINHARDT DAAE, a citizen of the United States, and a resident of Youngstown, in the county of Mahoning and State of Ohio, have invented a new and useful Improvement in Feeding Means for Gas Producers, of which the following is a full, clear, and exact description.

The present invention relates broadly to gas producers, and more particularly to means for feeding fuel thereto in substantially measured quantities as may be required by the producer.

The present application constitutes a division of my patent No. 1,441,217, of January 9, 1923, and in which the details of the poker and plow herein illustrated are specifically claimed.

One of the objects of this invention is to provide means by which a frictional transfer of fuel is effected, thereby minimizing the strains on the apparatus.

In the accompanying drawings, I have shown, for purposes of illustration, only, a preferred embodiment of the present invention, it being understood that the drawings do not define the limits of my invention, and that changes may be made in the construction and operation disclosed without departing from the spirit or scope of my broader claims.

In the drawings,—

Figure 1 is a vertical sectional view through the upper portion of a producer constructed in accordance with this invention;

Figure 2 is a cross sectional view, partly broken away, on the line II—II of Figure 1;

Figure 3 is a vertical sectional view through a portion of the producer at substantially right angles to the section shown in Figure 1, this view being partly broken away and partly in section;

Figure 4 is an enlarged detail sectional view of the lower feed casing, said view being taken on the line IV—IV of Figure 1; and

Figure 5 is a side view, partly in section, of a portion of the fuel feed.

In my Patent No. 1,445,300, of February 13, 1923, there is disclosed a fuel feeding means embodying a rotary measuring or delivering member. By the present invention the use of such a member is obviated and there is substituted therefor a sliding trap cut-off adapted to frictionally feed fuel to the producer.

In the drawings, I have illustrated a producer, which may be of any desired construction, preferably, however, comprising a body portion 2 supported in any suitable manner, and provided with a gas outlet 4. Carried by the producer body is a channel-shaped member 5 forming a water seal for the depending annular flange 6 of the cover 7. According to the present invention, the entire feeding and poking mechanisms are carried by the cover, thereby making it essential that a relative movement be produced between the cover and the body portion of the producer. In the illustrated embodiment, the cover is represented as being the driven member and the body as being the stationary member, although it will be apparent that this condition may be changed if found desirable. For rotating the cover, it is provided with a projecting rim 8 having a series of teeth 9 formed in its periphery to constitute a ring gear. Meshing with this gear is a driving gear 10 carried by a shaft 11 driven from any desired source of power, not shown.

Cooperating with the ring gear 9 to maintain the cover 7 in its proper position, are anti-friction rollers 12 and 14 effective, respectively, at substantially right angles to each other for preventing lateral movement of the cover and supporting the same for rotation.

The cover is formed with a feed opening 15 therethrough, which opening is located at one side of the center of rotation of the cover, whereby when relative rotational movement is produced between the body and the cover fuel will be uniformly fed over the entire fuel bed within the producer body. The feed opening 15 is adapted to receive fuel from a casing 16 having a pivotal mounting 17 on the producer cover. This casing is preferably formed with a downwardly projecting flange 16′ adapted to extend into the body of water carried by the cover and thereby seal the interior of the casing to prevent the escape of gases therefrom. The casing 16 in turn carries a sliding trap cut-off 18 having a pivotal mounting 18′ on the casing 16 and adapted during

operaton of the producer to receive periodically a predetermined amount of fuel through the chute 19 cooperating with and leading from a hopper 20. The opening in the cut-off is so arranged that the chute 19 is sealed thereby before the opening therethrough registers with the opening through the casing through which the fuel is fed to the producer.

For operating the fuel feeding means to effect a uniform distribution of fuel throughout the producer body, the cover is provided with a transversely extending shaft 21 carrying a bevel gear 22 at its outer end, said gear meshing with a gear 24 carried by the channel member 5. With this construction, rotation of the cover will impart rotation to the shaft 21, and thence through the bevel gear 25 to the bevel gear 26 on the stub shaft 27. The opposite end of this stub shaft carries a pinion 28 meshing with a similar gear 29 on the shaft 30. This shaft carries an adjustable crank 31, at one end thereof, for a pitman 32 having a connection 34 with one side of the casing 16. It will be apparent that the pitman 32 will be effective upon rotation of the cover 7 for oscillating the casing 16 across the feed opening 15 in the cover, this oscillation taking place about the pivotal mounting 17 provided for the feed casing. By changing the position of the crank pin 31, the length of stroke of the pitman 32 may be varied at will and the amount of travel of the casing 16 thereby controlled, it being apparent that as the movement of the feed casing is increased, the amount of fuel fed to the producer will be correspondingly increased.

The fuel for the casing 16 is supplied by the sliding trap cut-off 18 before referred to, this sliding trap cut-off having a feed pocket therein adapted to receive and deliver substantially measured amounts of fuel upon each operation thereof. For actuating the cut-off, the shaft 21 may be provided with a supplemental bevel gear 35 meshing with a gear 36 on a shaft 37, which shaft extends substantially parallel to the shaft 30 before described. This shaft also preferably carries an adjustable crank 38 for the pitman 39, the opposite end of the pitman having a pin and slot connection 40 with a substantially vertically extending pivoted lever 41. The upper end of the lever 41 is preferably bifurcated and carries a pin 42 adapted to engage a notch 44 in the under side of a horizontally extending lever 45 having a pivotal connection 46 with the sliding trap cut-off. During the normal operation of the cover, the sliding trap cut-off will be actuated by the mechanism described for frictionally transferring fuel from the chute 19 to the casing 16, from which casing the fuel is, in turn, fed into the producer. The stroke of the sliding cut-off is preferably such that the feed pocket therein is never brought into complete alinement with the chute, thus insuring the transfer of the fuel frictionally by the upper surface of the cut-off. This frictional feed of the fuel is highly advantageous, as it prevents any undue strain being imposed upon the parts of the feed, such as would occur if the feed pocket in the sliding trap cut-off were brought into complete alinement with the chute 19 and an extra large piece of coal or foreign material permitted to pass therein and bridge the joint between the sliding trap cut-off and the chute.

For preventing clogging and consequent breaking of the apparatus, a yoke 47 is pivotally connected to the opposite sides of the chute 19 and carries a roller 48 adapted to extend above the sliding trap cut-off and cooperate with the upper edges of the feed pocket formed therein. Projecting downwardly from the forward portion of the yoke, is an arm 49 which normally extends under an angular portion 50 on the lever 45. If any fuel projects above the upper surface of the sliding trap cut-off, such fuel will be effective for elevating the yoke 47 through the roller 48 to thereby disengage the lever 45 from its operating lever 41 and disconnect the sliding trap cut-off from lever 41. As soon, however, as the material is displaced from under the roller 48 within the feed pocket in the cut-off, the parts will resume their normal positions and fuel will again be automatically fed to the producer.

To insure rotation of the chute 19 with the feed casing in order to maintain the desired relationship between the parts at all times, the casing may be provided with elongated pins 51 extending upwardly therefrom and engaging suitable openings in the lower flanged portion of the chute. Also, in order to facilitate transfer of fuel from the feed casing 16 to the feed opening 15, the feed casing may have one of its walls 52 inclined, as clearly shown in Figure 1, and may be provided with an adjustable gate 54 for assisting in the control of the feed.

The cover 7 also carries a poker 55 and a plow 56, with mechanism for actuating the same. The poker is preferably swingingly mounted in the cover and provided with a segmental gear 57 by means of which it may be swung about its longitudinal axis during rotation of the cover to cause the lower end thereof to travel in a spiral. Meshing with the gear 57 is a worm 58 on the shaft 59. This shaft is adapted to be driven in one direction from the shaft 21 by gearing 60, and in the opposite direction by gearing 61.

Cooperating with this gearing is a clutch member 62 movable into driving engagement with either set of gearing. The clutch member is in turn controlled by one end of a bell crank lever 64 having a pivotal

mounting 65 on the producer cover, and having its opposite end 66 in engagement with a lever 67. The upper end of the lever 67 carries a counter-weight 68 adapted to quickly move the lever in one direction or the other after the center of gravity is passed. Projecting from one side to the lever 67 is an arm 69 adapted to be intermittently engaged during the operation of the producer by one of the pins 70 carried by the poker 55. With this construction, it will be apparent that after the poker has been swung a predetermined distance about its longitudinal axis in one direction, one of the pins 70 will engage the arm 69, and through the lever 67 and bell crank mechanism described, throw the clutch member 62 into engagement with the other set of gearing, thereby changing the direction of movement of the poker. The provision of the weight 68 insures a snap action of the clutch member, thereby quickly disengaging the same from one set of gearing and engaging it with the other set.

Cooperating with the poker 55 is the plow 56, before referred to. This plow is preferably formed by two arms adapted to straddle the poker and connected by an intermediate transverse portion 56ª forming a presser-foot riding over the fuel bed and filling any openings which may be formed therein by the poker. The plow is adapted to slide through a bushing in the cover in accordance with variations in the level of the fuel bed within the producer body. This movement of the plow may be utilized for regulating the rate or amount of fuel fed to the producer by means of a segmental projection 71 secured to the upper end of the plow. This projection cooperates with one arm of a bell crank lever 72, the opposite arm of which is connected by a link 73 with one arm of a similar bell crank 74. The other end of the bell crank 74 has an angular portion 75 provided with an opening 76 adapted to receive the arm 77 attached to the pitman 39. This arrangement is effective for automatically changing the position of the pin and slot connection 40 with the lever 41, thereby changing the stroke of the lever 41 and the amount of travel of the sliding trap cut-off 18.

Certain advantages of the present invention arise from the provision of means for frictionally transferring fuel from the chute to the feed casing. Still further advantages arise from the provision of the sliding trap cut-off and the means for operating the same whereby an undue charge therein will be effective for automatically stopping the operation of certain of the parts.

I claim:

1. In a fuel feeding mechanism for a gas producer, a cover having a feed opening therethrough, a casing above said opening, a sliding member cooperating with said casing and having a fuel receiving pocket, means for sliding said member, and means cooperating with said member for rendering said sliding means ineffective when the material within the pocket projects beyond the upper edges thereof, substantially as described.

2. In a fuel feeding mechanism for a gas producer, a cover having a feed opening therethrough, a casing above said opening, a sliding member cooperating with said casing and having a fuel pocket for delivering fuel thereto, means for sliding said member, means for feeding fuel into said pocket, and a roller on the sliding means cooperating with said member, substantially as described.

3. In a fuel feeding machanism for a gas producer, a cover having a feed opening therethrough, a casing above said opening, means for producing a relative rotational movement between said cover and the producer body, means for automatically oscillating said casing on said cover across said opening, and means having a fuel receiving opening for frictionally feeding fuel into said casing, substantially as described.

4. In a fuel feeding mechanism for a gas producer, a cover having a feed opening therethrough, a feed casing carried by said cover, means having a fuel receiving opening for frictionally feeding fuel to said casing, and means for intermittently oscillating said casing above said opening for delivering fuel therethrough, substantially as described.

5. In a fuel feeding mechanism for a gas producer having a cover, a casing carried by said cover for feeding fuel to the producer, a sliding member having a fuel pocket therein, means for feeding fuel into said pocket, means for operating said member for emptying fuel from said pocket into the producer, and means for automatically varying the operation of said member as the level of fuel within the producer varies, substantially as described.

6. In a fuel feeding mechanism for a gas producer, a cover having a feed opening therethrough, a casing above said opening, means for frictionally feeding fuel into said casing, said means comprising a sliding member having a fuel pocket therein, means for operating said member, and means cooperating with said member for rendering the operating means ineffective when the material within the pocket projects beyond the edges thereof, substantially as described.

7. A fuel feeding mechanism for a gas producer having a body portion, a cover, means for producing a relative movement between the body and cover, said cover having a feed opening therethrough, a casing movable across said opening, a chute, a sliding cut-off and seal intermediate the chute and

casing, and means for actuating said cut-off and casing to feed fuel into the producer, substantially as described.

8. A fuel feeding mechanism for a gas producer having a body portion, a cover, means for producing a relative movement between the body and cover, said cover having a feed opening therethrough, a casing movable across said opening, a chute, a sliding cut-off intermediate the chute and casing, means for actuating said cut-off and casing to feed fuel into the producer, and means for automatically rendering said actuating means inoperative, substantially as described.

9. A fuel feeding mechanism for a gas producer having a body portion, a cover, means for producing a relative movement between the body and cover, said cover having a feed opening therethrough, a casing movable across said opening, a chute, a cut-off and seal intermediate the chute and casing, and means for actuating the cut-off and casing to frictionally transfer fuel from the chute into the casing, substantially as described.

10. A fuel feeding mechanism for a gas producer having a body portion, a cover, means for producing a relative movement between the body and cover, said cover having a feed opening therethrough, a casing movable across said opening, a chute, a cut-off intermediate the chute and casing, means for actuating the cut-off and casing to frictionally transfer fuel from the chute into the casing, and means for automatically rendering said actuating means inoperative under predetermined conditions, substantially as described.

In testimony whereof I have hereunto set my hand.

REINHARDT DAAE.