No. 886,655. PATENTED MAY 5, 1908.

S. B. SHELDON.

POKER MECHANISM FOR GAS PRODUCERS.

APPLICATION FILED AUG. 15, 1907.

4 SHEETS—SHEET 1.

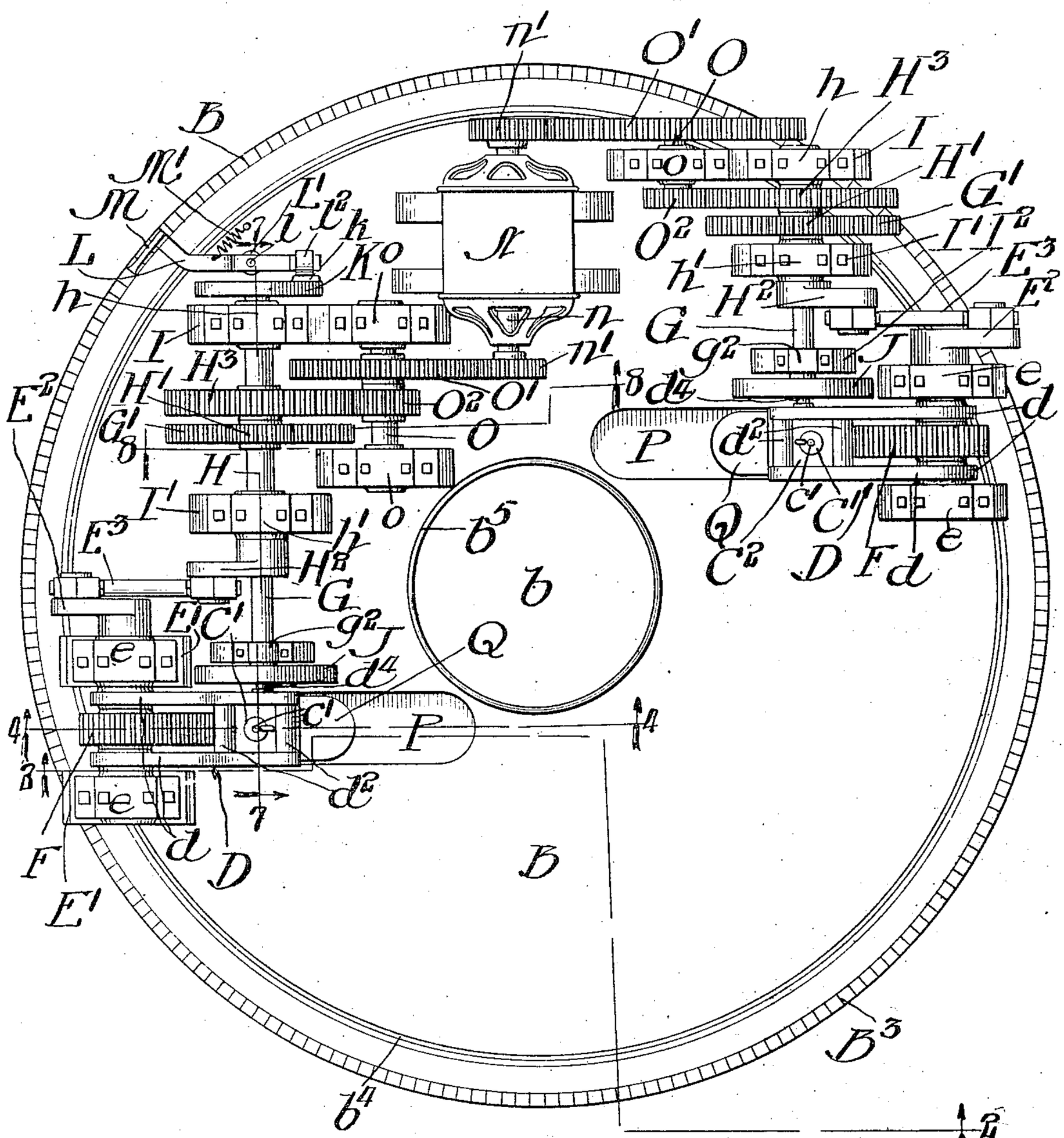

Fig. 1.

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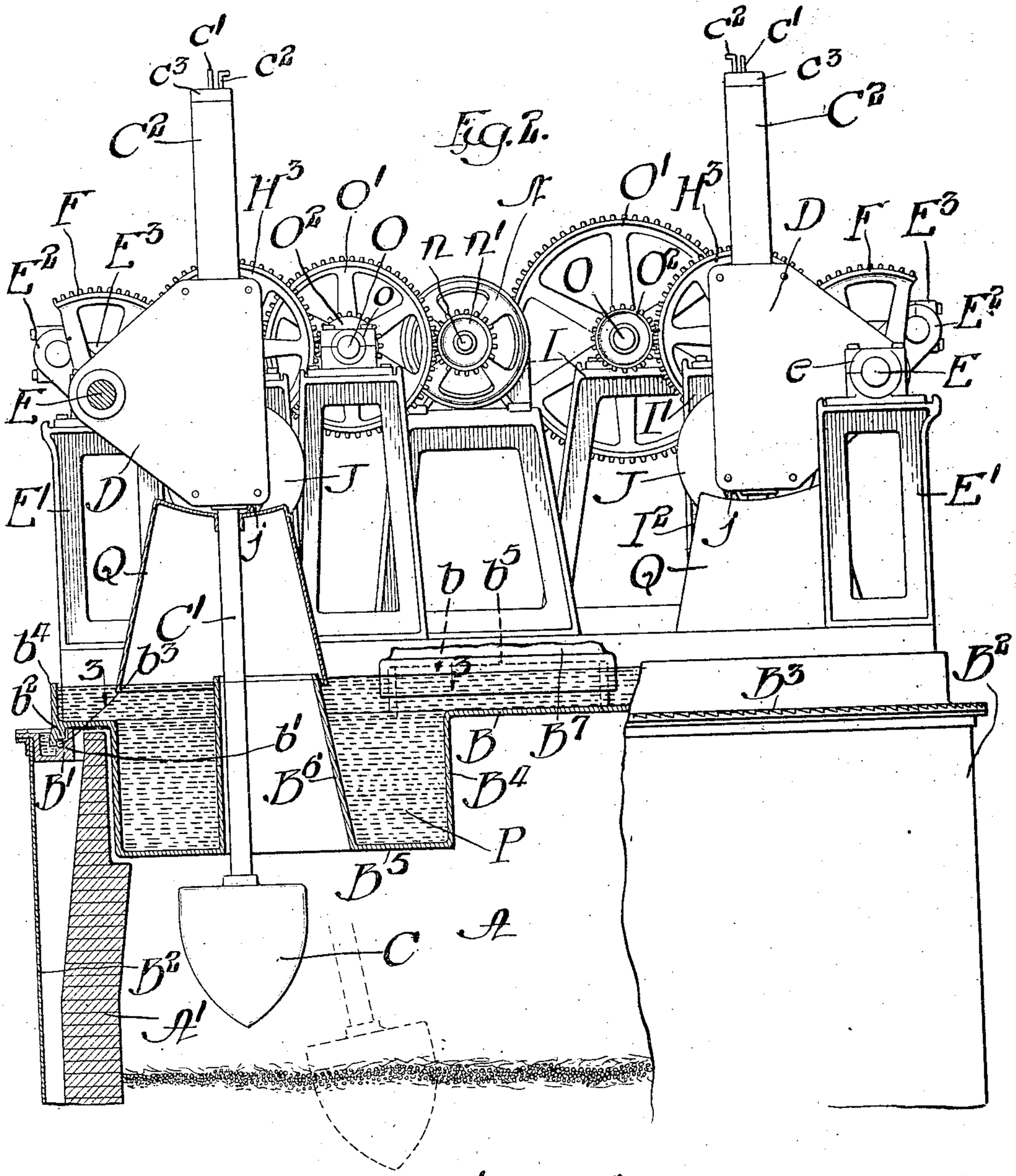
4 SHEETS—SHEET 2.

Fig. 2.



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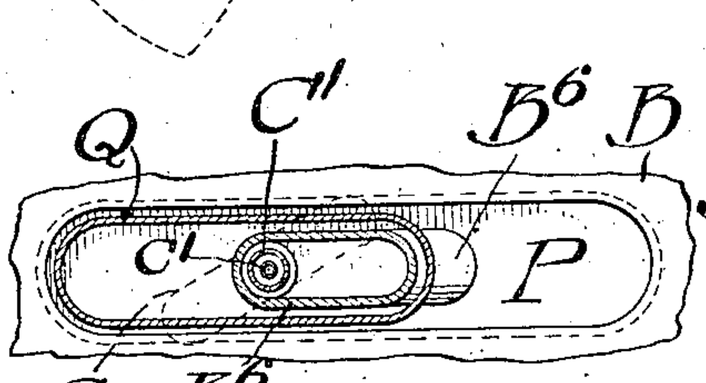

Fig. 3.

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4 SHEETS—SHEET 3.

Fig. 4.

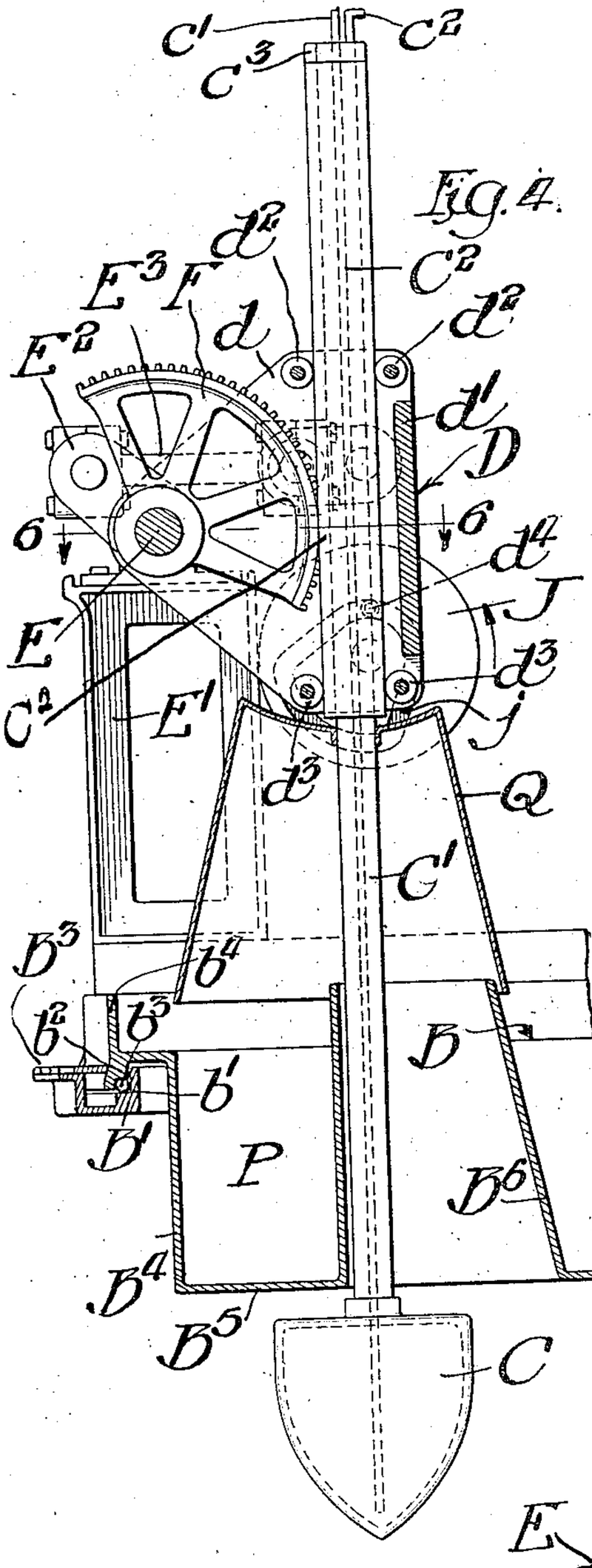


Fig. 5.

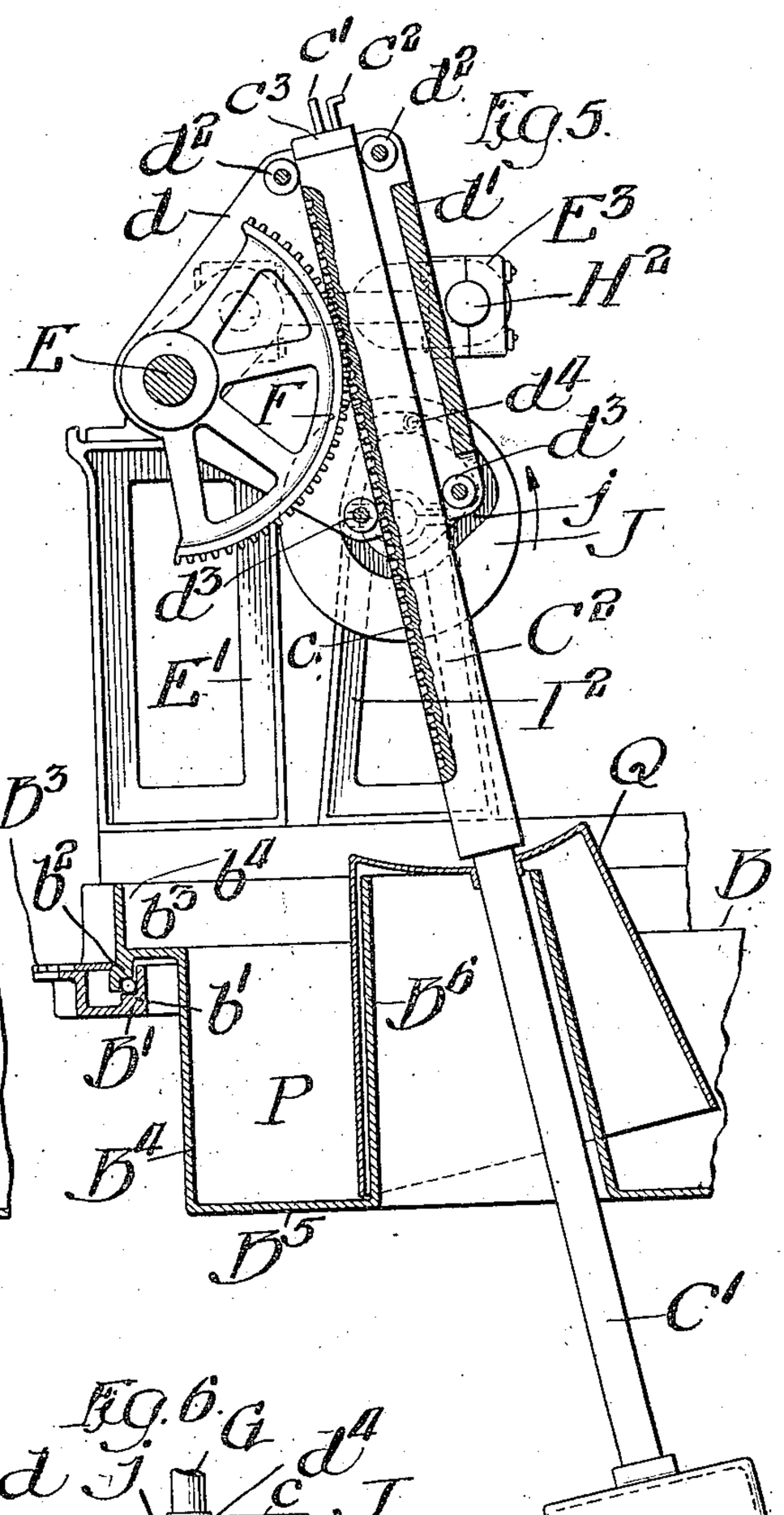
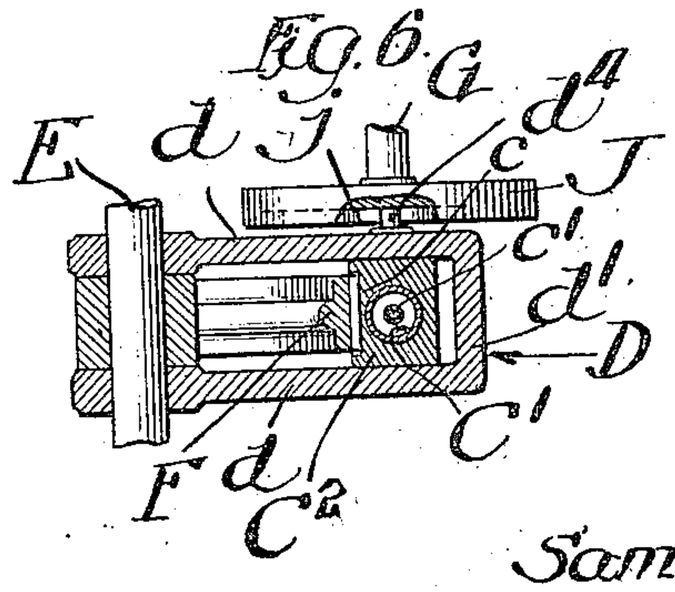


Fig. 6.



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4 SHEETS—SHEET 4.

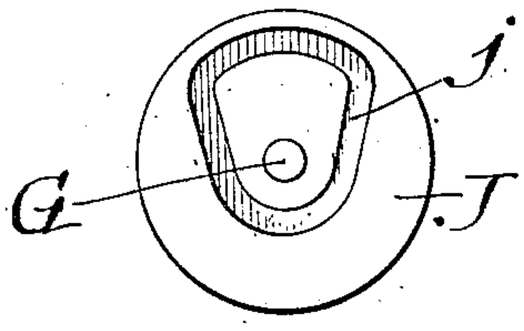

Fig. 9.

Fig. 7

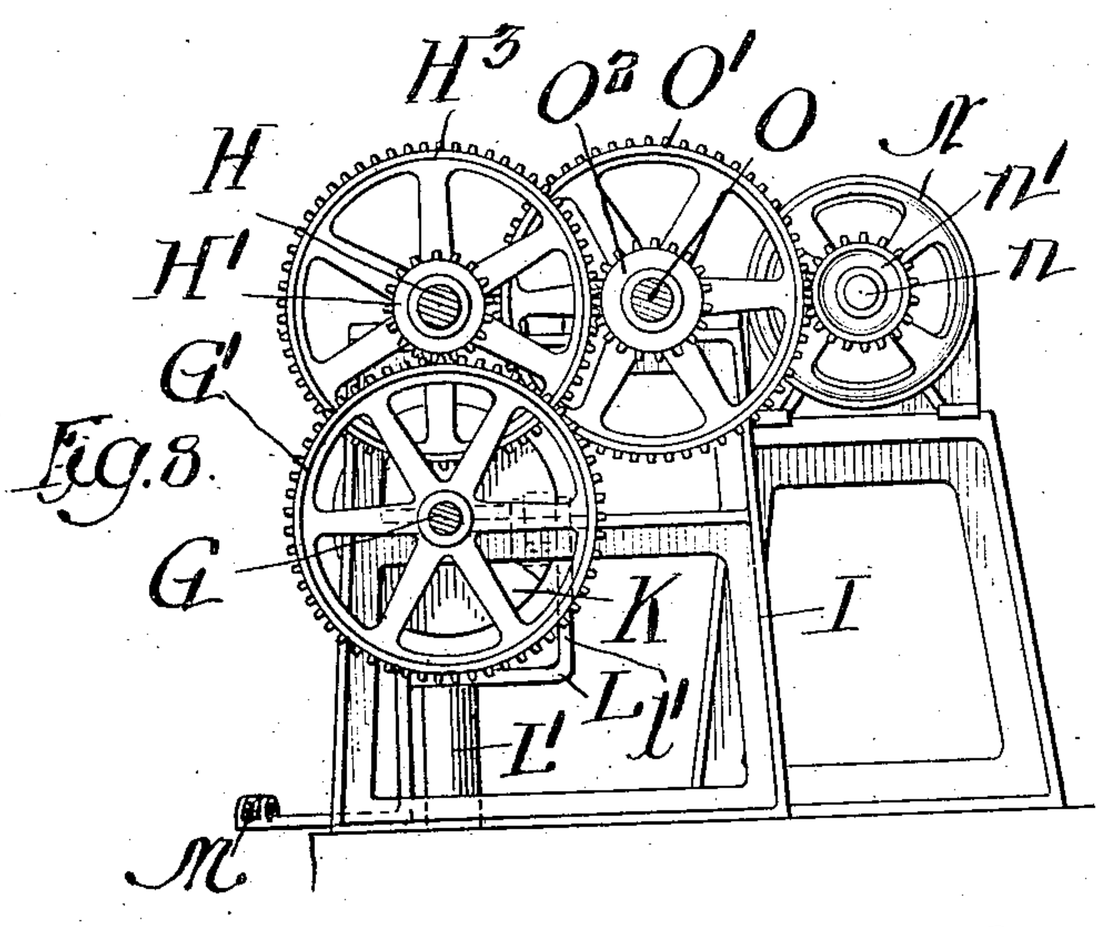

Fig. 8.

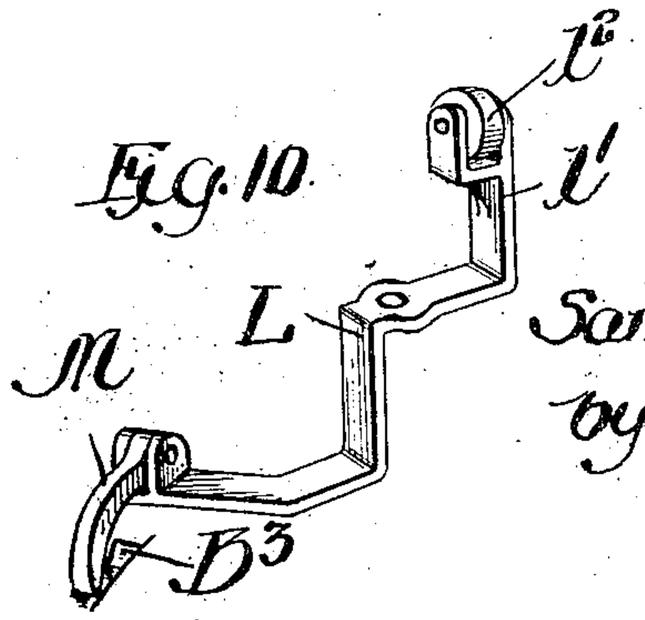

Fig. 10.

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UNITED STATES PATENT OFFICE

SAMUEL B. SHELDON, OF BUFFALO, NEW YORK.

POKER MECHANISM FOR GAS-PRODUCERS.

No. 886,655. Specification of Letters Patent. Patented May 5, 1908

Application filed August 15, 1907. Serial No. 388,574.

To all whom it may concern:

Be it known that I, SAMUEL B. SHELDON, a citizen of the United States, and a resident of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Poker Mechanism for Gas-Producers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to poker actuating mechanism for gas producers, or devices for agitating or stirring the fuel in the combustion chamber of such producers during the process of combustion.

The poker actuating mechanism embodying my invention is of that class in which the combustion chamber of the gas producer is provided with a rotative top, and with one or more pokers mounted on said top and which are carried around with the said top in the turning movement of the same.

The invention consists in the matters hereinafter described and pointed out in the appended claims.

In the accompanying drawings, illustrating one practical embodiment of my invention: Figure 1 is a plan view of the top of a gas producer provided with a poker actuating mechanism. Fig. 2 is a view in side elevation of the gas producer and poker actuating mechanism, a portion of said figure being in vertical section, taken on line 2—2 of Fig. 1. Fig. 3 is a detail plan section taken on line 3—3 of Fig. 2. Fig. 4 is a detail view in vertical section of one of the pokers and adjacent parts taken on line 4—4 of Fig. 1 and showing the poker shaft and its attached actuating segment in elevation. Fig. 5 is a view similar to Fig. 4 showing a changed position of the parts. Fig. 6 is a detail plan section taken upon line 6—6 of Fig. 4. Fig. 7 is a detail section taken on line 7—7 of Fig. 1, illustrating two of the shafts through which the poker is actuated. Fig. 8 is a detail section taken on line 8—8 of Fig. 1. Fig. 9 is a detail face view of a cam through which is actuated the guide frame carrying the poker shaft. Fig. 10 is a detail perspective view of the pawl carrying lever through which turning movement is given to the rotative top of the producer.

As shown in said drawings, A indicates the combustion chamber of the gas producer, which is surrounded by a circular wall A^1 and is provided with a horizontal, rotative, metal top plate B. Said top plate B has a central, circular opening *b* through which fuel is fed to the combustion chamber A. Said opening *b* is kept closed in the operation of the producer, which latter will usually be provided with a fuel feeding mechanism operating to deliver fuel through said opening *b* and the casing of which will have closed or sealed connection with the said top plate, so as to prevent the escape of gas from the producer. Said rotative top plate B is supported at its outer margin in a manner permitting the same to freely rotate. As illustrated, a stationary annular metal bearing ring B^1 is employed to support the said top plate B. Said ring B^1 is located outside of and free from contact with the wall A^1 of the fire chamber. Said bearing ring is shown as supported by means of an external, cylindric metal wall B^2, which surrounds said wall A^1. The bearing ring B^1 is provided with an upwardly facing annular bearing surface or ball-race b^1 and the margin of the top plate is provided with a corresponding downwardly facing ball-race b^2, between which and the ball-race b^1 are inserted a series of bearing balls b^3. Said bearing ring B^1 is made U-shaped in cross section, giving the same the form of an annular trough, and the margin of the top plate B is provided with a depending annular flange which extends downwardly into said trough, which latter is, in the operation of the apparatus, filled with water to constitute a water seal between the rotating top plate and the said bearing ring B^1. The annular bearings or ball-races b^1 and b^2 are located within the trough formed by the U-shaped bearing ring, so that said ball-races and the bearing balls between them are kept cool by the water in said trough. Said top plate B is shown as provided with an upwardly extending, marginal flange b^4 at its outer margin and with a like upwardly extending flange b^5 surrounding the central opening *b* therein; said top plate and its flanges forming a wide shallow trough in which water is placed to cool the entire top plate.

The part indicated by B^7, in Fig. 2 of the drawings, indicates the lower end of the casing of a fuel feeding device which is located over the central opening *b* in the top plate and terminates in a depending annular flange which extends outside of the flange b^5 and depends into the water which covers the top

plate, so as to form a water seal between the said casing of the feeding device and the top plate.

The apparatus illustrated is provided with two pokers, one of which is indicated by C in Figs. 2, 4 and 5. The pokers and devices for supporting and actuating the same will now be described, in connection with one of the pokers illustrated; the said supporting and actuating devices being duplicated in the machine shown. Said poker C is attached to a poker shaft C^1 which extends from the combustion chamber upwardly through an opening in the top plate B and is supported upon said top plate in such manner that its lower end, carrying the poker C, is adapted to swing or oscillate toward and from the center of the combustion chamber and to also have endwise or up and down movement, while it is held rigidly in position relatively to said top plate in such manner that the poker C in all positions thereof will partake of the rotative movement of said top plate. The purpose of such laterally swinging movement of the poker is to enable the latter to act successively on parts of the surface of the fuel at different distances from the center of rotation of the top plate, and the actuating mechanism by which the poker is given its swinging movement is constructed to maintain the poker without lateral movement for considerable periods of time, during each of which the poker is thrust downwardly into position to act on the fuel, as it turns with the top plate, and is then lifted above the latter. The poker is not in action during its lateral swinging movement, which takes place during the time that the same is in its elevated position and free from contact with the fuel. Now referring to the means for supporting said poker shaft C^1, D indicates an oscillating or swinging guide frame in which said poker shaft has endwise movement. Said guide frame is mounted to swing on a horizontal axis and in a vertical plane, and concentrically with a horizontal rock shaft E, through the medium of which endwise or rising and falling movement is given to the said poker shaft. Said guide frame is provided with guiding means for the poker shaft, which engage said shaft in a manner to permit the same to slide up and down in said frame, while holding the said shaft from lateral movement in the frame, so that the shaft partakes of the oscillatory movement of said guide frame. In the particular construction shown, said rock shaft E is mounted in bearings *e e*, which are supported on the top plate B considerably above the level of the same by frame standards E^1 E^1 and the oscillating frame D is pivotally supported by said rock-shaft. Said rock-shaft E is provided with a gear segment F which intermeshes with the teeth *c* of a rack bar C^2 on the poker shaft. The oscillating frame D, consists of two parallel side plates *d d* (Fig. 6), which are rigidly connected at their outer margins remote from the shaft E by a connecting portion d^1. Said side plates *d d* are separated to form a space through which passes the poker shaft and in which is located the gear segment F, and said plates have direct bearing engagement with the rock shaft E, on opposite sides of said gear segment. The rack bar C^2 is shown as being of rectangular form and provided with a longitudinal cylindric passage or bore in which is inserted and secured the poker shaft, which latter consists of a metal tube or pipe. The flat side faces of said rectangular rack bar C^2 have bearing engagement with the inner faces of the plates *d d* (as seen in Fig 6) and the poker shaft is guided by means of bearing rollers d^2 d^2 d^3 d^3 extending transversely between the said plates *d d* at the top and bottom of the oscillating frame and engaging the opposite flat faces of the said rack bar; said rollers d^2 d^3 being mounted on pivot pins which are inserted and secured at their ends in said plates *d d*.

The rack teeth *c* are shown as having their outer faces flush with the inside flat face of the rack bar C^2 and as being made shorter than the width of the rack bar, as seen in Fig. 6, so as to afford longitudinal bearing surfaces on the rack bar, at both sides of said teeth, for contact with the bearing rollers d^2 d^3.

It will be manifest from the construction described that when the oscillating frame D is moved or oscillated the lower end of the poker shaft C^1 with the poker C thereon will be swung or moved toward and from the center of the combustion chamber A and that when said poker shaft is given endwise movement in the oscillating frame by the action of the rock shaft E and gear segment F, a rising and falling movement will be given to said shaft.

As clearly seen in the plan view (Fig. 1), the rock shaft E is not arranged at right angles to a radial line of the circular combustion chamber, but at an angle to such a radial line so that the plane of oscillation of the guide frame D and the poker shaft will not be radial but, if extended, will pass at some distance at one side of the center of the top plate B. By this construction the pokers C, which, as shown consist of flat plates of shovel form, arranged parallel with the oscillating frame D, are made to occupy an inclined or angular position with respect to the circular path of movement in which they travel when the top plate is turned. This arrangement of the parts is employed in order to facilitate the stirring of the fuel, by throwing the same to one side of the path of the poker, as the latter moves through the fuel in its advance movement.

The particular arrangement of the parts described, by which the poker swings laterally in a plane which is inclined to the radial

line of the combustion chamber, is not essential, so far as the general operation of the apparatus is concerned, and the axis of oscillation of the guide frame D and the poker may be arranged at any desired angle relatively to the path of movement of the poker, provided the general direction of the laterally swinging movement of the poker be such as to carry it nearer to and farther away from the center of rotation of the top plate.

Now referring to the means for actuating the frame D and rock shaft E, as required for giving lateral swinging and also rising and falling movement to the poker, devices are provided as follows: G indicates a horizontal, rotative shaft arranged parallel with the rock shaft E and below the level of the same and H another horizontal rotative shaft arranged vertically above and parallel with the shaft G and somewhat above the level of the said rock shaft E. Bearings g g^1 for the shaft G and bearings h h^1 for the shaft H are supported on frame standards I I^1 which are attached to and rise from the top plate B and a third bearing g^2 for said shaft G is attached to the upper end of a frame standard I^2, also attached to said top plate, as clearly seen in Fig. 7. Attached to one end of the shaft G is a circular rotative cam J, located adjacent to the oscillating guide frame D and through the medium of which oscillatory movement is given to said frame. As illustrated the said cam J is provided with a cam groove j into which extends a stud d^4 which is attached to and projects from the adjacent side face of the said frame D. Said cam groove j is provided with concentric inner and outer parts, joined by connecting portions which are inclined somewhat to radial lines of the cam. The said concentric portions of the cam groove operate to hold the oscillating frame at the outward and inward limits of its movement for considerable periods of time during each rotation of the cam, or in other words, give to the guide frame and poker two periods of rest during each complete rotation of the cam. The inclined connecting portions of the cam groove act to give quick or rapid swinging movement to the said guide frame between such periods of rest. The shaft H has geared connection with the shaft G through the medium of a large gear wheel G^1 on said shaft G and a smaller gear wheel or pinion H^1 on said shaft H, the gear-wheels being so proportioned that the shaft H turns twice to each rotation of said shaft G. On one end of said shaft H is secured a crank arm H^2, the crank pin of which is connected by a connecting rod E^3 with a crank arm E^2 on the said shaft E. The end of said crank arm E^2 has oscillatory movement in an arc above the shaft E, and the shaft H is arranged horizontally opposite the arc or path of movement of the said swinging end of the crank arm E^2 so that in the rotative movement of the shaft H, oscillatory movement will be imparted to the crank arm E^2 and rock shaft E through the action of the connecting rod E^3. The said shafts G and H being given rotary movement by suitable actuating means, both oscillatory and endwise movement is imparted to the poker shaft through the medium of the oscillating guide frame D and oscillating gear segment F. The rotative movement of the said cam J is so arranged or adjusted with respect to the rotation of the crank arm H^2 on the shaft H that the lateral or swinging movement of the poker will occur when the latter is in its elevated position and is above and out of contact with the fuel in the combustion chamber and the advance or downward and succeeding return or rising strokes of the poker will take place while the poker is maintained laterally immovable at both the inward and outward limits of its swinging movement.

It being understood that the shafts G and H turn in the direction indicated by the arrows in Figs. 4 and 5, it will be seen that when the parts are in the position shown in Fig. 4 (the poker shaft then being vertical and in an elevated position) the stud d^4 of the oscillating arm D will occupy the concentric part of the cam groove j nearest the center of the cam and will have just entered said concentric part of said cam groove, while the crank arm H^2 is about to swing upwardly over the shaft H so as to carry the crank arm E^2 toward the right in Fig. 4 and thereby move the gear segment F in a direction to carry the poker downwardly. Such downward movement of the poker and its succeeding rising movement will be effected while the stud d^4 is engaged with the said inner concentric part of the cam groove, so that no swinging movement of the poker will take place during its advance and return strokes. By reason of the fact that the shaft H is arranged to make two rotations to each rotation of the shaft G and the inner concentric portion of the cam groove j extend a considerable distance circumferentially of the cam, the poker will complete its downward movement and will be again elevated to its starting point, or to the position shown in Fig. 4, while the said stud d^4 is still engaged with the said inner concentric part of the cam groove. The poker will be retained practically without movement at the lower limit of the stroke while the crank arm H^2 is passing through the part of its arc at the left of the shaft H in Fig. 4 and during this period the poker acts upon the fuel, being carried or moved through the same by the forward movement imparted to it by the turning of the top plate from the time it penetrates the surface of the fuel in its descent until it leaves the same in its back stroke. After the crank arm H^2 has made a complete rotation from

the position shown in Fig. 4, with the effect of lowering and again raising the poker the inward swinging movement of the poker (to the right in Figs. 4 and 5) is effected by the movement of the stud d^4 outwardly in the cam groove j to the outer concentric portion of said cam groove; such swinging movement taking place during the time the poker is held at or near the upward limit of its movement, by the passing of the crank arm H^2 through the part of its arc to the left of the shaft H, as shown in Fig. 4. The inward swinging movement of the poker will thus take place before the poker has been moved to any considerable extent downward (at the beginning of the second rotation of the shaft H from the position shown in Fig. 4) so that said poker will not enter the fuel until it has reached the inward limit of its swinging movement, as shown in Fig. 5. In said Fig. 5 the crank arm H^2 has just completed its movement over the shaft H toward the right, and the gear segment F has been thrown to the limit of its downward movement and the poker thereby depressed to the full extent of its downward stroke. The stud b^4 is at this time engaged with the outer concentric part of the cam groove j, and it remains in said outer concentric part during the completion of the rotation of the crank arm H^2, or until said crank arm reaches the position at the left of the crank shaft H, Fig. 5, and thereby effects the lifting of the poker out of the fuel. When the poker has been lifted from the position shown in Fig. 5 to the upper limit of its lifting movement, the stud d^4 is again carried from the outer to the inner part of the concentric groove j and the poker shaft again swung inwardly to its vertical position, as shown in Fig. 4.

For giving rotative movement to the top plate B of the combustion chamber, together with the several operative parts carried by said plate as hereinbefore described, a construction is shown in the drawing, as follows: On the end of one of the shafts G opposite to the end which carries the cam J, is a cam disk K provided on its outer side face with a cam projection k. L (Figs. 1, 7 and 10) indicates a lever which is pivoted by an upright pivot stud l to a standard L^1 which rises from the top plate B. One end of said lever L has an upwardly extending arm l^1 which rises to the level of the shaft G and is provided with a roller l^2 which bears upon the face of the cam disk K and is in position to be engaged by the cam projection k. The opposite end of the lever L extends downwardly, and outwardly beyond the margin of the top plate B, and is provided with a vertically swinging, pivoted pawl M adapted to act upon a series of upwardly facing ratchet teeth B^3 (Figs. 1 and 2) formed on the outer margin of the supporting ring B^1. A contractile, coiled spring M^1 is connected with the top plate and the lever L, and acts on said lever in a direction to hold said roller l^2 yieldingly pressed against the face of the cam disk K. By the operation of said cam disk K, lever L and pawl M the top plate will be given a step by step turning movement, by which, when the poker C is in its depressed position and engaged with the fuel in the combustion chamber, said poker will be advanced or moved along or through said fuel, with the effect of stirring or agitating the same.

The said shafts G and H may be given rotary movement by any suitably arranged motor. As illustrated in the drawings an electric motor N is mounted on the top plate B, with its armature shaft n horizontal and parallel with the said shafts G and H. Said motor shaft n is provided at its opposite ends with gear pinions n^1 n^1 which intermesh with gear wheels O^1 O^1 mounted on counter-shafts O O which are mounted in bearings o o, and are arranged parallel with and between the motor shaft and the shafts H. Gear pinions O^2, on the said counter-shafts O intermesh with gear-wheels H^3 H^3 on the shafts H, and thereby transmit motion to said shaft H. The shafts G are driven from the shaft H through the medium of the gear wheels G^1 and H^1.

To provide a water seal between the vertically movable and swinging poker shafts and the top plate B a construction is provided as follows: Surrounding the opening through which extends the poker shaft C^1, said top plate B is provided with a water trough or receptacle P, in depth substantially equal to the endwise movement of the poker shaft, and the poker shaft has attached to it a bell Q adapted to enter said trough and the height of which is substantially equal to the stroke of the said poker shaft. The outer wall B^4 of said trough is formed by a vertical, flattened tube which depends from the top plate B and is elongated in the direction of the swinging or oscillatory movement of the poker shaft. The said outer wall B^4 has connected with its lower margin a flat bottom wall B^5, having an elongated opening through which the poker shaft passes, and which is surrounded by an upwardly extending tubular part B^6 which forms the inner wall of the trough and rises to a point above or near the level of the top of the flange b^4 of the top plate B. The outer and inner walls B^4 and B^6 form, with the bottom wall B^5, a well or depression in the top plate, which communicates with the trough formed by the marginal flanges b^4 and b^5 and which is filled with the water by which said top plate is cooled. The bell Q has parallel sides located in vertical planes between the inner and outer walls B^4 and B^6 of the trough P, the lower margin of said bell being so located as to come below the level of the

water which covers the top plate B when the poker shaft is in its elevated position, as shown in Fig. 2. Said bell Q by dipping at its lower margin into the water, prevents the escape of gas through the opening in the top plate formed by the tubular wall B^6, so that the water in the trough constitutes a water seal between the top plate and the poker shaft.

The trough formed by the walls B^4, B^5 and B^6 is deep enough to permit the downward movement of the bell Q into the same when the poker shaft is fully depressed, and said bell is made of downwardly flaring shape so as to permit the swinging of the same with the poker shaft to the extreme limit of the movement of the shaft in both directions, as clearly shown in Figs. 4 and 5.

To provide for water cooling the poker and poker shaft, the said poker consists of a hollow casting, the interior of which is in communication with the interior of the poker shaft which, as hereinbefore stated, consists of a pipe or tube. The upper end of said poker shaft is closed by means of a cap c^3, and a water supply pipe c^1 extends through said cap downward through the hollow poker shaft to the bottom of the hollow interior of the poker, as indicated in dotted lines in Fig. 4. An overflow or return pipe c^2 is connected with the cap c^3. Water supplied under pressure by the supply pipe c^1 is delivered to the lower end of the hollow poker and circulates upwardly through the poker and poker shaft and is delivered through the overflow pipe c^2.

The devices by which the poker is actuated and the top plate rotated may be so timed or adjusted with respect to each other that the poker will not enter the fire at the same place in successive rotations of the top plate. In other words, if the rotation of the cam J with respect to the speed of rotation of the top plate be so adjusted as to give a specific number of rotations to said cam during each rotation of the top plate, then the poker will act on the same part of the fire bed at each succeeding rotation of the top plate, but by obvious arrangement or adjustment of the driving mechanisms for the poker and top plate the poker may be adapted to act at constantly changing points in the rotative movement of the top plate.

While I have illustrated mechanism for giving rotative movement to the top plate, actuated from a motor that is carried by said top plate and by which motion is given to the pokers, yet this particular construction is not essential and the said top plate may be turned or rotated by power supplied from a motor otherwise located or by any other suitable means. Said top plate, moreover, need not necessarily be turned continuously in one direction but it may have rotative movement alternately in opposite directions. As for instance, if said top plate be turned 180° in one direction and an equal distance in the other direction the entire circumference of the fuel will be acted on, provided the top plate be equipped with two pokers arranged at 180° apart thereon, as shown in the drawings; moreover, if the top plate be provided with only one poker it may be rotated one complete turn and then reversely rotated for a complete turn in order that the poker may operate through the entire circumference of the combustion chamber.

It will, of course, be understood that the turning movement of the top plate and the poker may be either substantially continuous or intermittent.

An important advantage gained by giving lateral swinging or oscillatory movement to the poker is that it enables substantially the entire superficial area of the fuel in the combustion chamber to be covered by one relatively narrow poker, while, in the case of a poker which is not so laterally movable, it is necessary to employ a very much wider poker, or more than one poker, to cover an annular path of the same width as that covered by such swinging poker.

While the poker actuating mechanism described gives movement to the poker to two positions yet it will be understood that by entirely obvious modifications of the mechanism the poker may be swung to three or more positions and may thereby be adapted to act at three or more instead of at two different distances radially from the center of the combustion chamber. As for instance, the cam J may be arranged to shift the oscillating guide frame D to three different points in its swing, so as to carry the poker to and hold it in three different positions, in each of which the poker is depressed and raised, the geared connection between the shaft G and H, in that case being arranged to give three rotations of the shaft H to one of the shaft G.

I claim as my invention:

1. A poker actuating mechanism for gas producers comprising a rotative top plate, a poker carried by said top plate, and poker-actuating mechanism mounted on and turning with said top plate, acting to give rising and falling movement to said poker, to give swinging movement to the poker when the same is in its elevated position only and to maintain said poker substantially without swinging movement during its advance or downward movement, when in its lowermost position and during its subsequent return or upward movement.

2. In a poker actuating mechanism for gas producers, the combination of a rotative top plate, a poker provided with a shaft which extends through the said top plate, an oscillating guide frame mounted on the top plate

and in which said poker shaft has endwise movement, and poker actuating means mounted upon and turning with said top plate for giving oscillatory movement to said guide frame and endwise movement to the poker shaft, acting to give swinging movement to the guide frame when the poker is in its elevated position only and to maintain said guide frame substantially without movement during the advance or downward movement, during the time the poker is in its lowermost position, and during the subsequent return or upward movement of said poker.

3. In a poker actuating mechanism for gas producers, the combination of a rotative top plate, a poker provided with a shaft, an oscillating guide frame mounted on the top plate and with which the poker shaft has endwise sliding connection, and means for giving endwise movement to the poker shaft, embracing a rack bar on the poker shaft and an oscillating gear segment mounted concentrically with the said oscillating guide frame.

4. In a poker actuating mechanism for gas producers, the combination of a rotative top plate, a poker shaft, an oscillating guide frame mounted on the top plate and with which said poker shaft has endwise sliding engagement, a rock shaft mounted concentrically with the said oscillating guide frame, operative connections between said rock shaft and the poker shaft, adapted for giving endwise movement to the poker shaft and mechanism giving oscillatory movement to the guide frame and rocking movement to the said rock shaft.

5. In a poker actuating mechanism for gas producers, the combination of a rotative top plate, a poker shaft, an oscillating guide frame in which the poker shaft has endwise movement, a rock shaft mounted concentrically with the oscillating guide frame, a rack bar on the poker shaft, a gear segment affixed to the rock shaft and intermeshing with said rack bar, and actuating mechanism giving oscillatory movement to the guide frame and rocking movement to the rock shaft.

6. In a poker actuating mechanism for gas producers, the combination of a rotative top plate, a poker shaft, an oscillating guide frame mounted on the top plate and in which said poker shaft has endwise movement, a rock shaft mounted concentrically with the oscillating frame, a rack bar on the poker shaft, a gear segment affixed to the rock shaft and intermeshing with said rack bar, and means for giving oscillatory movement to the guide frame and rocking movement to the rock shaft adapted to give movement to the guide frame when the poker shaft is elevated and to maintain the guide frame substantially without movement during the endwise movement of the poker shaft.

7. In a poker actuating mechanism for gas producers the combination of a rotative top plate, a poker shaft, an oscillating guide frame mounted on the top plate and in which the poker shaft has endwise movement, a rotative cam acting on the guide frame to give oscillatory movement thereto and means for giving endwise movement to the poker shaft.

8. In a poker actuating mechanism for gas producers, the combination of a rotative top plate, a poker shaft, an oscillating guide frame mounted on the top plate and in which the poker shaft has endwise movement, a rotative cam acting on the guide frame, to give oscillatory movement thereto and means for giving endwise reciprocatory movement to the poker shaft, said cam acting to maintain the poker shaft laterally immovable for periods of time during each of which the poker shaft is advanced and retracted.

9. In a poker actuating mechanism for gas producers, the combination of a rotative top plate, a poker shaft, an oscillating guide frame mounted on the top plate and in which the poker shaft has endwise movement, a rock shaft mounted on the top plate concentric with the oscillating guide frame, operative connections between the said rock shaft and the poker shaft for giving endwise reciprocatory movement to the latter and a rotative cam acting on the guide frame for giving oscillatory movement thereto.

10. In a poker actuating mechanism for gas producers, the combination of a rotative top plate, a poker shaft, an oscillating guide frame in which said poker shaft has endwise movement, a rock shaft mounted concentrically with the guide frame, a rack bar on the poker shaft, a gear segment attached to the rock shaft and a rotative cam acting on the guide frame to give oscillatory movement thereto.

11. In a poker actuating mechanism for gas producers, the combination of a rotative top plate, a poker shaft, an oscillating guide frame mounted on the top plate and in which the poker shaft has endwise movement, a rock shaft mounted on the top plate concentrically with the oscillating guide frame, operative connections between said rock shaft and the poker shaft for giving endwise movement to the latter, a crank arm on the rock shaft, a rotative shaft provided with a crank arm, a connecting rod extending between the crank arm on the said rotative shaft and crank arm on the rock shaft and means, embracing a positive gear connection with said rotative shaft, for giving oscillatory movement to the guide frame.

12. In a poker actuating mechanism for gas producers, the combination of a rotative top plate, a poker shaft, an oscillating guide frame mounted on the top plate and in which the poker shaft has endwise movement, a rock shaft mounted concentrically with the

said guide frame, a rack bar on the poker shaft, a gear segment affixed to the rock shaft and intermeshing with said rack bar, a crank arm on the rock shaft, a rotative shaft provided with a crank arm, a connecting rod extending between the crank arm on the said rotative shaft and the crank arm on the rock shaft and means acting on the guide frame to give oscillatory movement thereto.

13. In a poker actuating mechanism for gas producers, the combination of a rotative top plate, a poker shaft, an oscillating guide frame mounted on the top plate and with which the poker shaft has endwise movement, a rock shaft mounted on the top plate concentrically with the said guide frame, operative connections between said rock shaft and the poker shaft, acting to give endwise movement to said poker shaft, a rotative cam acting on the guide frame to give oscillatory movement to the same, a crank arm on the rock shaft, a rotative shaft provided with a crank arm, a connecting rod extending between said crank arm on the rotative shaft and the crank arm on the rock shaft and gearing connecting said rotative shaft with said cam.

14. In a poker actuating mechanism for gas producers, the combination of a rotative top plate, a poker shaft, an oscillating guide frame mounted on the top plate and in which the poker shaft has endwise movement, a rock shaft mounted on the top plate concentrically with said guide frame, connections between the said rock shaft and the poker shaft, for giving endwise reciprocatory motion to the said poker shaft, a rotative shaft, connecting means between said rotative shaft and the rock shaft for giving rocking movement to the latter, a rotative cam acting on the guide frame to give oscillatory movement thereto; said cam acting to give swinging movement to the guide frame in both directions, during each rotation of the cam and to hold the said frame immovable for periods of time during each of which the poker shaft is advanced and retracted, and gearing connecting said rotative shaft with the said cam affording a plurality of rotations of the said shaft to each rotation of said cam.

15. In a poker actuating mechanism for gas producers, the combination of a rotative top plate, a poker shaft, an oscillating guide frame mounted on the top plate and in which said poker shaft has endwise movement, a rock shaft mounted on the top plate concentrically with the said oscillating guide frame, a rack bar on the poker shaft, a gear segment affixed to said rock shaft, a crank arm on said rock shaft, a rotative shaft provided with a crank arm, a connecting rod extended between the crank arm on the rotative shaft and the crank arm on the rock shaft, a rotative cam acting on the guide frame to give oscillatory movement thereto, a cam shaft arranged parallel with the said rotative shaft and intermeshing gear wheels on the said rotative shaft and cam shaft.

16. In a poker actuating mechanism for gas producers, the combination of a rotative top plate, a poker shaft, an oscillating guide frame in which said poker shaft has endwise movement, guide rollers on the said guide frame engaging the poker shaft, means for giving oscillatory movement to said guide frame and means for giving endwise movement to the poker shaft in the guide frame.

17. In a poker actuating mechanism for gas producers, the combination of a rotative top plate, a poker shaft, an oscillating guide frame in which the poker shaft has endwise movement, a rack bar on the poker shaft, and an oscillating gear segment mounted concentrically with the guide frame, said rack bar having flat side faces for engagement with the guide frame and rack teeth formed in one of said flat faces.

18. In a poker actuating mechanism for gas producers the combination of a rotative top plate, a poker shaft, an oscillating guide frame, a rack bar on the poker shaft, and an oscillating gear segment mounted concentrically with the guide frame, said rack bar being of rectangular form and having a longitudinal bore through which the poker shaft extends and in which it is secured.

19. In a poker actuating mechanism for gas producers, the combination of a rotative top plate, a poker shaft, an oscillating guide frame mounted on the top plate and in which the poker shaft has endwise movement, a rock shaft mounted on the top plate concentrically with the said guide frame, a rack bar on the poker shaft, and a gear segment attached to the rock shaft, said oscillating frame embracing two parallel side plates which engage the said rock shaft at opposite sides of the gear segment and between which the poker shaft extends.

20. In a poker actuating machanism for gas producers, the combination of a rotative top plate, a poker having a shaft which passes through the top plate, actuating devices mounted on the top plate for giving endwise and laterally swinging movement to said poker shaft, a motor mounted on the top plate for driving said actuating mechanism, and actuating means for turning the top plate, embracing an oscillating lever mounted on the top plate, a stationary ring provided with ratchet teeth, a pawl on the lever engaging said ratchet teeth and a cam driven by said motor and acting on said lever.

21. In a poker actuating mechanism for gas producers, the combination of a rotative top plate, a poker having a shaft which passes through said top plate, mechanism mounted

on the top plate and giving lateral swinging and endwise reciprocating movement to said poker shaft, and means for water sealing the opening in the top plate, through which said poker shaft passes, comprising a trough in the top plate surrounding the said opening and a bell attached to the poker shaft and adapted to enter said trough, the said trough and bell having parallel, vertical side walls which are laterally elongated in the direction of the swinging movement of the poker shaft, and the bell having downwardly and outwardly divergent end walls.

In testimony, that I claim the foregoing as my invention I affix my signature in the presence of two witnesses, this 12 day of August A. D. 1907.

SAMUEL B. SHELDON.

Witnesses:
MARY E. CARR,
A. H. VOGEL.