

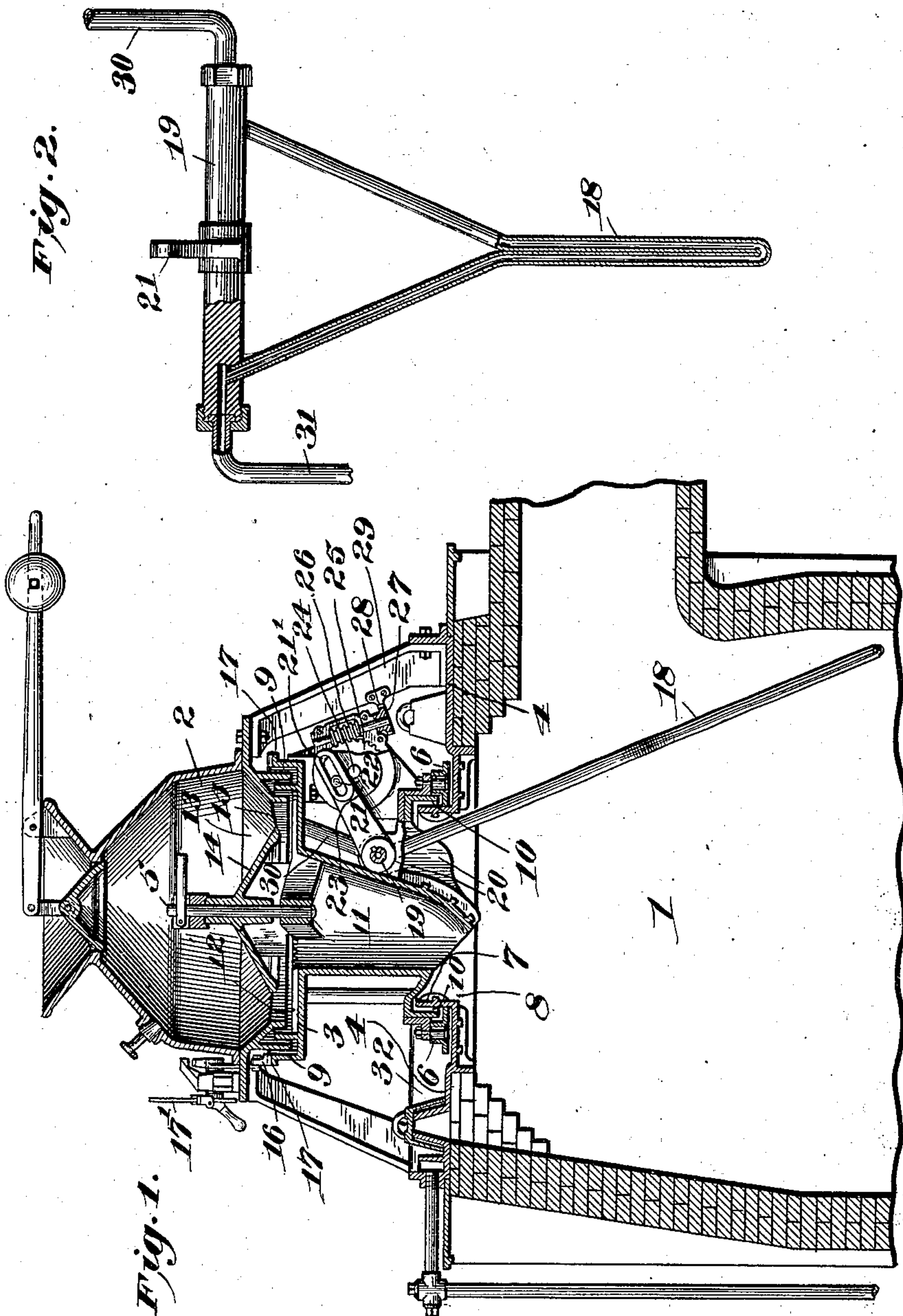
No. 723,897.

PATENTED MAR. 31, 1903.

C. H. MORGAN.  
GAS PRODUCER.

APPLICATION FILED JULY 21, 1902.

NO MODEL.



Witnesses  
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# UNITED STATES PATENT OFFICE.

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## GAS-PRODUCER.

SPECIFICATION forming part of Letters Patent No. 723,897, dated March 31, 1903.

Application filed July 21, 1902. Serial No. 116,436. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES H. MORGAN, a citizen of the United States, residing at Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented a new and useful Improvement in Gas-Producers, of which the following is a specification, accompanied by drawings, forming a part of the same, in which—

Figure 1 is a vertical section through the gas-producer, and Fig. 2 is a detail.

Similar reference-figures refer to similar parts in the different views.

The object of my invention is to provide improved mechanical means for automatically poking and stirring the upper surface of the coal in the gas-producing chamber, and in order to attain the best possible results it is my purpose to provide a mechanical poker which is constructed and adapted to travel independently of the furnace and depending through the regular feed-opening at the top of the furnace; and with this object in view my invention consists in certain novel features of construction and combination of parts, which will be hereinafter described, and pointed out in the claims.

Referring to the drawings, 1 denotes the usual gas-producing chamber, into which the coal is fed from the coal-reservoir 2 above.

The numeral 3 indicates a rotary coal-distributor, which intervenes and fills the space between the top plate 4 of the gas-producing chamber and the lower edge of the coal-reservoir 2, it being supported and centered by the shaft 5 at the top and at the lower edge by horizontally-disposed antifriction-rollers 6 6, and these rollers are preferably carried by the distributor so that they bear upon the upturned annular flange 7 of the central opening 8 in the top of the gas-producing chamber. Water seals 9 and 10 are formed at the joints between the upper and lower edges, respectively, of the coal-distributor to prevent the escape of gas at the joints. The distributor has a central opening or spout 11, through which coal issues into the gas-producing chamber below, and a side of the wall of this opening preferably inclines, so that the coal descending through it is more evenly

distributed, a portion dropping directly downward and a portion being deflected by the inclining wall toward the outer edges of the coal-bed. The top of the distributor, between the central opening or spout 11 and the water seal 9, is preferably flat, as at 12, and the coal from the reservoir drops initially upon this flat portion, the bottom of the reservoir inclining in two directions from the outside, as at 13, and from the inside, where the cone 14 is located, so that an annular discharge-orifice 15 is formed immediately above the flat portion 12 of the coal-distributor, and by reason of this construction the coal is normally held in the angle of repose formed between the upper end of the central opening or spout 11 and the outer edge of the cone 14. The distributor has a rotary movement, preferably, as in this instance, intermittent, imparted to it by the pawl 16, which engages the ratchet-teeth 17, circumferentially formed around the upper outer edge of the distributor, and this pawl may be reciprocated by the pitman 17' in any approved manner. A poker 18 depends from the hollow shaft 19, which latter rocks in bearings 20, carried by the coal-distributor at a point as close over the central opening of the gas-producing chamber and as near the middle thereof as the spout 11 will admit, so that the poker swinging from its point of support as a center will reach from across the entire area of the gas-producing chamber. This poker is made of metal, preferably in the general shape of the letter Y and of sufficient length to reach to the desired depth into the coal in the gas-producing chamber, with a water-space formed through it from one end to the other. The upper ends of this poker are spread apart and connected with the hollow shaft 19, the bore of which is in open communication with the open center of the poker. The purpose of the upper end being divided and spread apart is to afford lateral support for the poker, one brace forming a brace for the other, as the poker meets with considerable resistance in forcing its way through the coal in the gas-producing chamber. An arm 21 is secured on the shaft 19, and this arm is provided with an elongated slot 21'. In this slot a wrist-pin



22 operates, it being secured on the crank-disk 23, which disk is attached to a rotary shaft 24. On the rotary shaft 24 a worm-wheel 25 is keyed or otherwise secured, and  
 5 a worm 26 engages the teeth of this worm-wheel and in that way rotates it. Worm 26 is preferably turned periodically a limited distance with each revolution of the distributor by one of the teeth of star-wheel 27  
 10 striking a projection 28 on one of the brackets 29, which connects the coal-reservoir with the top of the gas-producer. By means of this mechanism the poker 18 is swung back and forth in the gas-producing chamber as  
 15 the distributor rotates, the swinging movement of the poker being slow and periodical in the construction shown, due to the fact that the worm 26 is only actuated with each complete revolution of the coal-distributor  
 20 and then to the extent only of a single tooth on the star-wheel 27. The result of this combined swinging motion of the poker and rotary travel is to cause the lower end of the poker to take a spiral course through the  
 25 loose coal upon the surface of the fire, which has the effect of stirring and distributing the coal and passing and repassing through the entire area of the coal-surface, which is the primary object of the invention. It is obvious  
 30 that the worm 26 might be actuated more than once during a revolution of the coal-distributor and that other slight changes might be made in various parts of the invention without departing from its spirit and scope. To  
 35 prevent the poker from burning out, a continuous circulation of water is maintained through it, a pipe 30, swiveled thereto, supplying water to the hollow shaft 19 from the water seal 9 above and another pipe 31 discharging  
 40 the water into the water seal 10 below. The

upper water seal 9 is replenished with water in any convenient way. Likewise it is customary to keep the top of the gas-producing chamber covered with water to keep it cool, and for that purpose a receptacle 32 therefor  
 45 is formed at the top of the gas-producer.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a gas-producer, the combination with a gas-producing chamber having an opening  
 50 in the top, and means for feeding coal through said opening, of a poker constructed and adapted to travel in a circular path through the opening independent of the body of the gas-producer, and means for swinging the poker  
 55 on its axial support during its rotary travel, whereby it takes a spiral course through the coal.

2. The combination with a gas-producing chamber, a coal-reservoir, and a revolving  
 60 coal-distributor, of a poker carried by the distributor, this poker comprising a bar having a passage therethrough for the circulation of water through it, the upper ends of the bar diverging so that the two members of the  
 65 poker thus constructed brace or support each other laterally, a shaft for supporting the poker having a hollow bore in communication with the passage-way through the poker, whereby a continuous circulation of water  
 70 may be maintained through the poker, and means for automatically swinging the poker in a radial path while it travels bodily in a rotary circuit through the coal.

Dated this 8th day of July, 1902.

CHAS. H. MORGAN.

Witnesses:

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