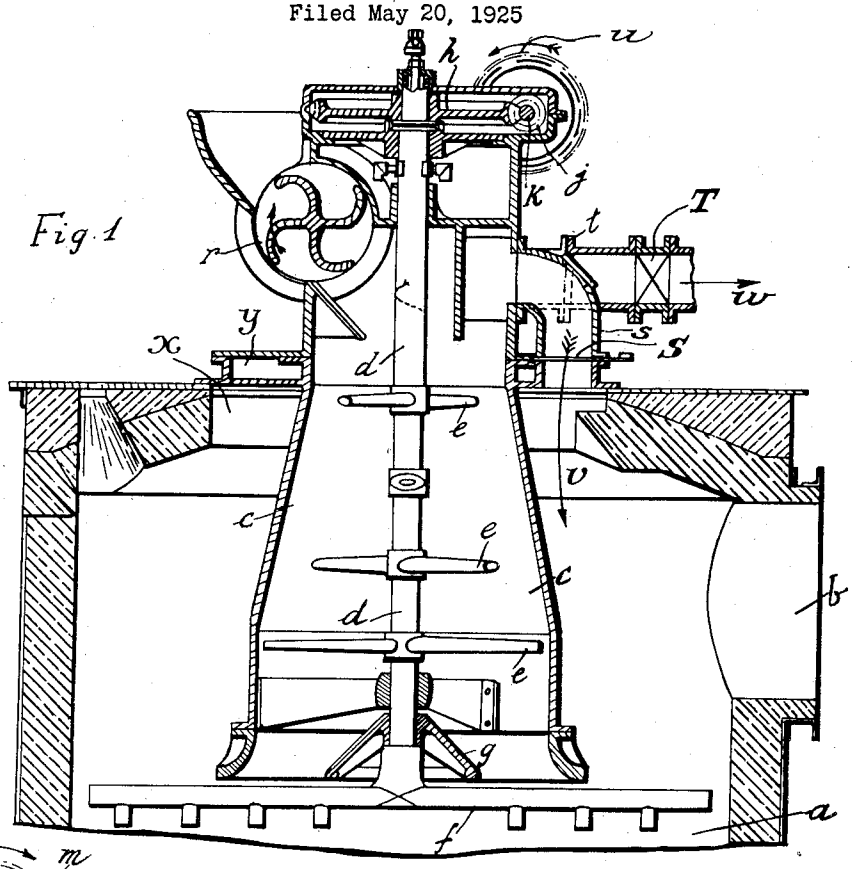
Aug. 7, 1928. 1,679,645

G. H. BENTLEY ET AL

GAS PRODUCER

Filed May 20, 1925

Fig. 1



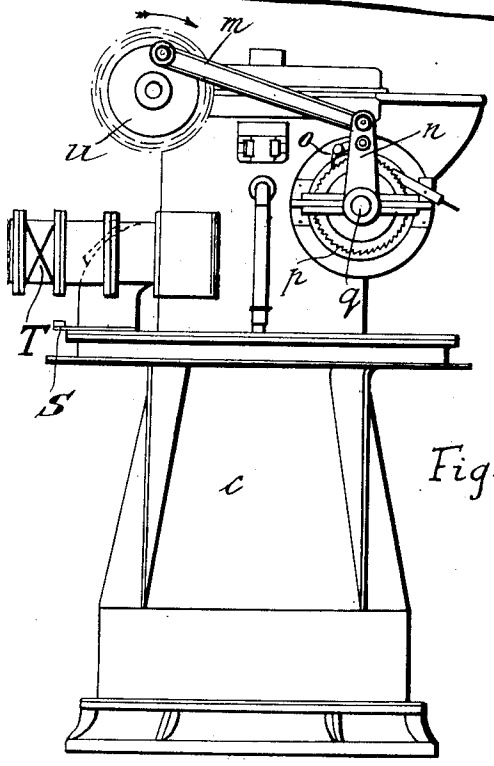
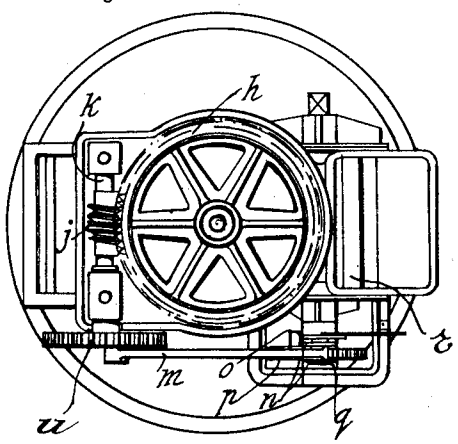


Fig. 3

Fig. 2



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Patented Aug. 7, 1928. 1,679,645

UNITED STATES PATENT OFFICE.

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GAS PRODUCER.

Application filed May 20, 1925, Serial No. 31,616, and in Great Britain May 22, 1924.

This invention relates to gas producers having a main gas generating chamber combined with a distillation chamber, an agitator in the distillation chamber and an agitator in the gas generating chamber.

According to this invention an agitator is provided a short distance, say one and a half inches below the lower end of the distillation chamber which agitator rotates in and maintains the fuel at an even level in the gas generating chamber. Preferably the agitators in the distillation chamber are secured to a central vertical shaft at the end of which is suspended the agitator in the gas generating chamber. Preferably also a fuel spreading bell is fixed to the agitator shaft. The distillation chamber is preferably half the diameter of the gas generating chamber.

The fuel may be supplied to the distillation chamber by a rotating valve whose rate of drive varies with the rate of drive of the agitator shaft so that the amount of agitation depends on the quantity of fuel being supplied. The outlet for the distilled gases from the distillation chamber is at the top thereof and may be connected to the gas generating chamber or to a condenser in which the distillation products are collected.

The accompanying drawings illustrate a gas producer made in accordance with this invention.

Figure 1 is a vertical section of the upper part of the gas producer;

Figure 2 is a plan, and

Figure 3 is an elevation of the distillation chamber showing the drive of the fuel feeding mechanism.

The gas producer has a gas generating chamber *a* having a gas outlet *b*, and a carbonization or distillation chamber *c* arranged partly in the upper part of the chamber *a*, and partly outside this chamber *a*. This distillation chamber has an increasing cross-section for a part of the inner portion. Secured at the top of the distillation chamber *c* is a shaft *d* carrying agitators *e*, *e*, *e*, located in the chamber *c*, and at the end of the shaft *d* is an agitator *f* in the gas generating chamber *a*. On the shaft *d* is also a fuel spreading bell *g*. Secured to the upper end of the shaft *d* is a worm wheel *h* gearing with a worm *j* on a shaft *k* having at its end a toothed wheel *u* through which the mechanism is driven. To the toothed wheel *u* is pivoted a link *m* which is also pivoted to a pivoted lever *n* carrying a pawl *o*, which engages ratchet teeth on a wheel *p* on a shaft *q* which carries a rotary valve *r*. By this means the rate of rotation of the fuel feed valve *r* varies with the rate of rotation of the agitator shaft *d*. The distillation chamber *c* is provided with two outlet pipes *s* and *t* regulated by valves S and T, the outlet *s* leading back to the gas generating chamber *a* as shown by the arrow *v* and the outlet *t* to a condensing apparatus, as shown by the arrow *w*. This condensing apparatus being of usual construction is not shown.

The carbonized fuel from the distillation chamber *c* is fed past the fuel spreading bell *g* to the gas generating chamber *a* at such a speed that the level of the fuel in the gas generating chamber *a* is kept at the proper level. The top of the fuel bed in chamber *a* is maintained level by the agitator *f*.

The gas producer generates producer gas by the admission of air mixed with steam or water vapor according to the usual methods of operation; air and steam or water vapor admissions being well known are not shown.

The gas generating chamber has an opening *x* in its top, which opening is of slightly larger diameter than the largest diameter of the distillation chamber; means *y* provided on the outside of the distillation chamber close the said opening *x* of the gas generating chamber to the outside and enable at the same time a communication to be established between the outlet pipe *s* and the gas generating chamber, as shown by the arrow *v*.

What we claim is:

A gas producer comprising in combination, a stationary gas generating chamber having an opening in its top, a stationary separate coal distillation chamber situated partly inside and partly outside the gas generating chamber and having an increasing cross-section for a part of the inner portion, the largest diameter of the distillation chamber being slightly smaller than the said opening, the said distillation chamber carrying an agitator shaft, a mechanism for feeding fuel to the distillation chamber, means interconnecting the fuel feeding mechanism with the agitator shaft so that the speed of the

agitation inside the distillation chamber always corresponds to the amount of fuel fed into the distillation chamber, two gas outlet pipes, one leading from the distillation chamber back into the gas generating chamber, and means adapted to close the said opening of the gas generating chamber to the outside and enable at the said time a communication to be established between one of the outlet pipes and the gas generating chamber, as set forth.

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