

(No Model.)

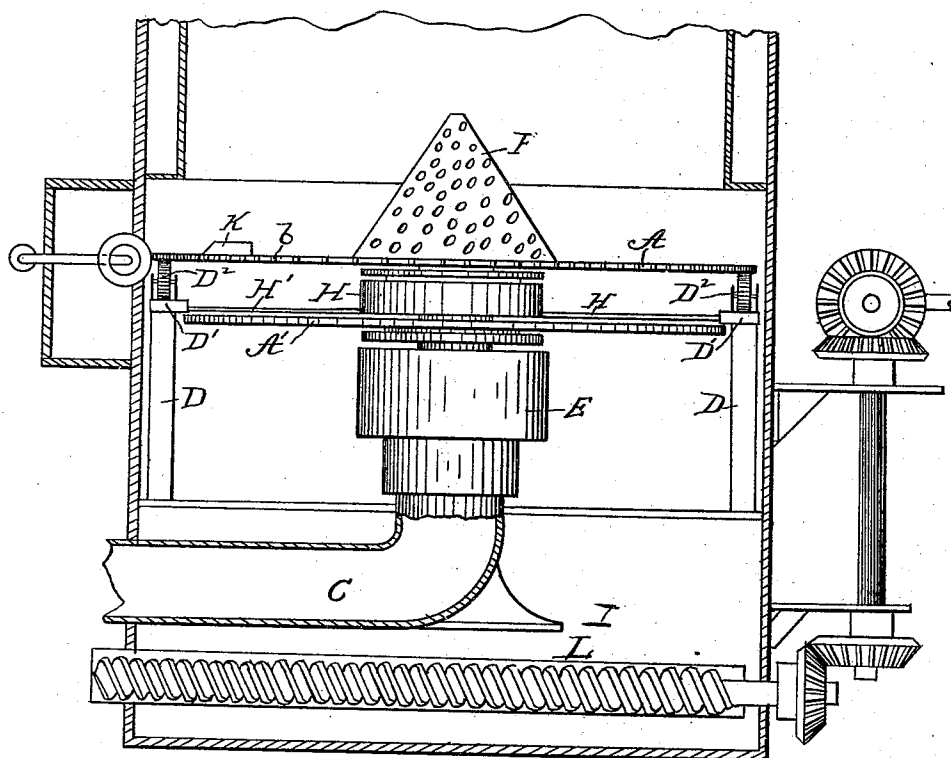
2 Sheets—Sheet 1.

O. W. KETCHUM.
GAS PRODUCER.

No. 490,771.

Patented Jan. 31, 1893.

Fig. 1.



Witnesses

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Fig. 2.

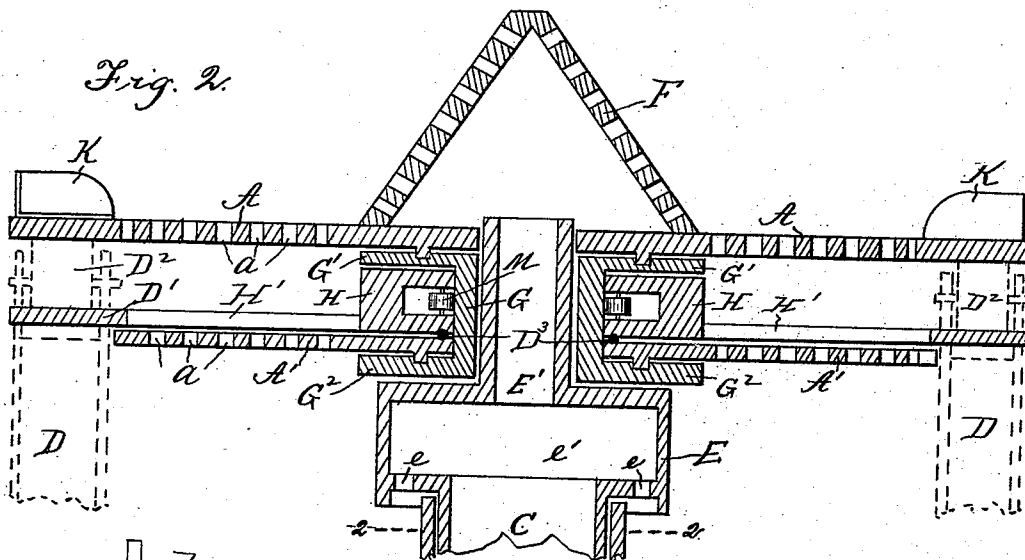


Fig. 3.

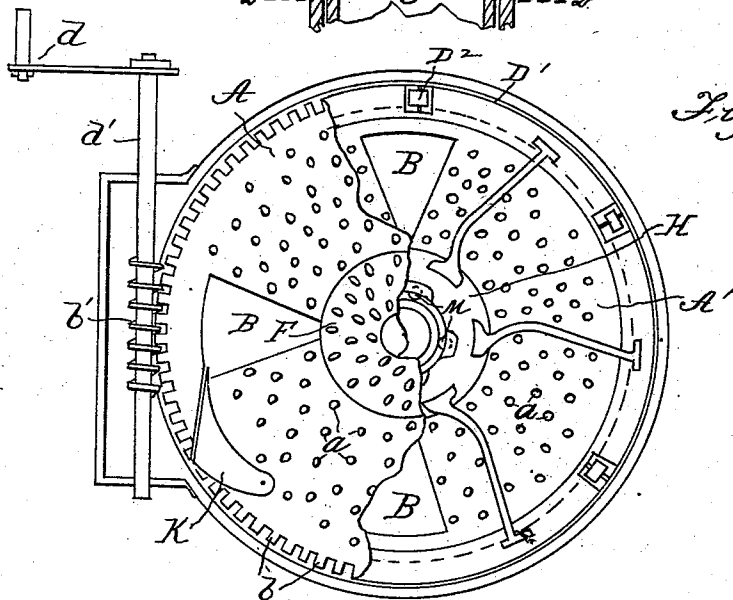
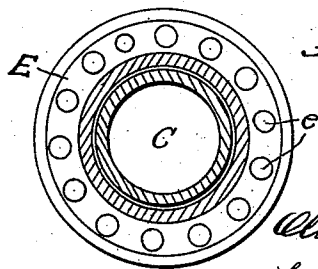


Fig. 4.



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UNITED STATES PATENT OFFICE.

OLIVER WILLIAM KETCHUM, OF TORONTO, CANADA.

GAS-PRODUCER.

SPECIFICATION forming part of Letters Patent No. 490,771, dated January 31, 1893.

Application filed March 29, 1892. Serial No. 426,944. (No model.)

To all whom it may concern:

Be it known that I, OLIVER WILLIAM KETCHUM, a subject of the Queen of Great Britain, residing at Toronto, in the Province of Ontario and Dominion of Canada, have invented certain new and useful Improvements in Gas-Producers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates generally to gas producers where coal is gasified and the gas is burned in a separate furnace. In these gas producing furnaces great difficulty has been experienced in keeping the apparatus in good order because of the accumulation of ashes in the grate which in some instances necessitates the stopping of the apparatus that it may be cleaned.

My invention further consists in, and more particularly relates to the form of grate used which belongs to that class known as rotary or revolving grates, and is constructed of two circular plates as will be hereinafter described.

In the accompanying drawings Figure 1 is an elevation of the grate showing part of a furnace. Fig. 2 is a section on an enlarged scale. Fig. 3 is a top plan of the grate the top plate being partly broken away, and Fig. 4 is a section on the line 2—2 Fig. 2.

Referring to the drawings A represents the upper plate which is of greater diameter than A' the lower plate, and has upon its periphery the gears *b b*. Upon the outer edge of this plate A are pivoted two or more scrapers K, which so adjust themselves when the grate revolves as to scrape the circumference of the fire pot and push the loose ashes toward the center of the plate. Each of these plates has the ordinary perforations *a a* common to all grates and besides the perforations each plate has two large openings B, B. so arranged that those in the upper plate are not in line with those in the lower plate.

C is a heavy iron pipe which conducts air to the furnace from a blower (not shown). Fitting over the end of pipe C is the casting E, having the chamber *e'* which is provided with a series of holes *e e* as shown. Formed integral with the casting E and extending up through a hole in the center of the grate just

under the hollow perforated cone F, which is secured on plate A, is a pipe E' which conducts air to the upper part of the fuel through the said cone F. This pipe E' forms an axis for the grate the weight of which is supported by the pipe C. Surrounding the pipe E' is the circular collar G having the upper and lower flanges G', G² respectively. This collar is rigidly secured to the upper and lower plates A, A' by the respective flanges, as clearly shown in Fig. 2.

D, D, are standards supporting the circular plate D' and are provided with rollers D² which serve to support the outer edge of plate A.

Located around the collar G is the stationary disk H which is provided with the rollers M, M, designed to contact with said collar and prevent friction. Secured to this disk H by any suitable means and extending across the lower plate A' to the plate D² are the stationary arms H', H', the use of which will be hereinafter stated.

D³, D³ are antifriction balls placed between the disk H and plate A'.

The operation of the device is as follows: When air is forced through pipe C the current divides because the pipe E' is of less diameter than pipe C and is unable to carry off all of the air; some is therefore forced back through the holes *e e*, and rises through the perforations *a a* and openings B, B. in the plates, to feed the fire. The rest of the current passes to the fire through the perforations in the hollow cone F. When it is necessary to remove the ashes from the grate, the handle *d* is turned and the worm *b'* on shaft *d'* meshes with the cogs on the upper plate and causes the grate to revolve as indicated in Fig. 3. The compact condition of the burning fuel in the fire pot keeps it from turning with the grate and as the said grate revolves the ashes fall through the holes B, B, in the plate A on plate A'. The ashes move with the lower plate until they are arrested by coming in contact with the stationary arms H', H', here they are retained until they fall through the holes B, B, in plate A' into the ash pit I. In the ashpit I construct a screw L for removing the ashes which is operated by the crank *c* through the gearing as shown in Fig. 1.

What I claim as new is:

1. In a gas producing furnace a grate composed of an upper and a lower circular plate rigidly connected by a flanged collar, said upper plate having gear teeth on its periphery and a hollow cone located above its center, and means for rotating said plates substantially as described.

2. In a gas producer a grate composed of an upper and a lower plate each provided with openings B, B, said upper plate having the gear teeth and carrying two or more pivoted scrapers and the hollow cone; a casting provided with the chamber E and having a pipe E' extending up through a central hole in said plates and connected to an air supply pipe substantially as shown.

3. In a gas producer, a grate composed of an upper and a lower plate rigidly connected by a flanged collar, said upper plate having the gear teeth and carrying the pivoted scrapers and the hollow cone; the casting E having the chamber e' provided with the holes e e and the pipe E' extending up through a cen-

tral hole in said plates, the standards D D supporting the plate D' which carries the rollers D³, said plate D' being rigidly connected to a disk H by the arms H', substantially as described.

4. In a gas producer the combination of the upper plate having the gears and carrying the pivoted scrapers and the cone, the lower plate rigidly secured to said upper plate by the flanged collar and means for rotating said plates, the casting E connected to the air supply pipe and having the chamber and the pipe E', the standards supporting plate D' which carries the rollers; and the disk H fitting around said flanged collar and connected to said plate D' by the arms H', H', which are adapted to sweep the plate A' substantially as shown.

In testimony whereof I affix my signature in presence of two witnesses.

OLIVER WILLIAM KETCHUM.

Witnesses:

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W. G. SHAW.