

Aug. 10, 1926.

1,595,425

J. SAUVAGEOT

GRATE FOR GAS PRODUCERS, FURNACES, AND THE LIKE

Filed June 3, 1924

3 Sheets-Sheet 1

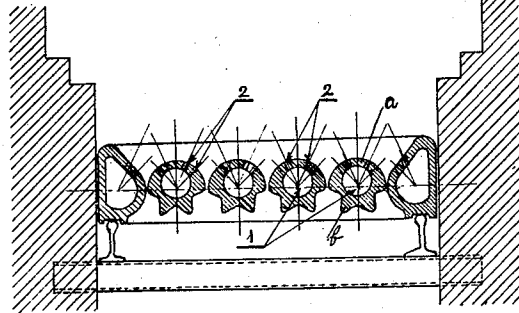


Fig. 1.

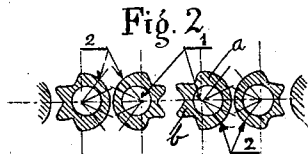


Fig. 2.

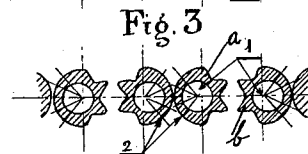


Fig. 3.

Fig. 4.

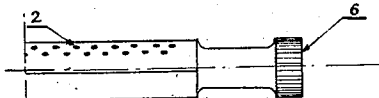


Fig. 5.

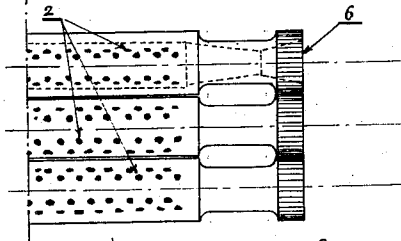
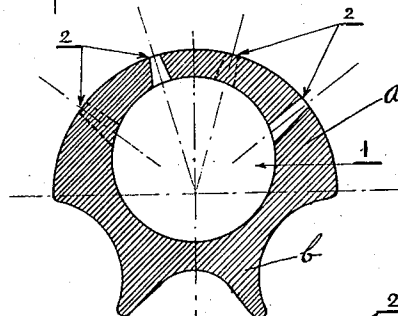
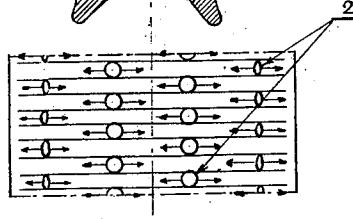


Fig. 6.



Witnesses: Fig. 7
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Fig. 8

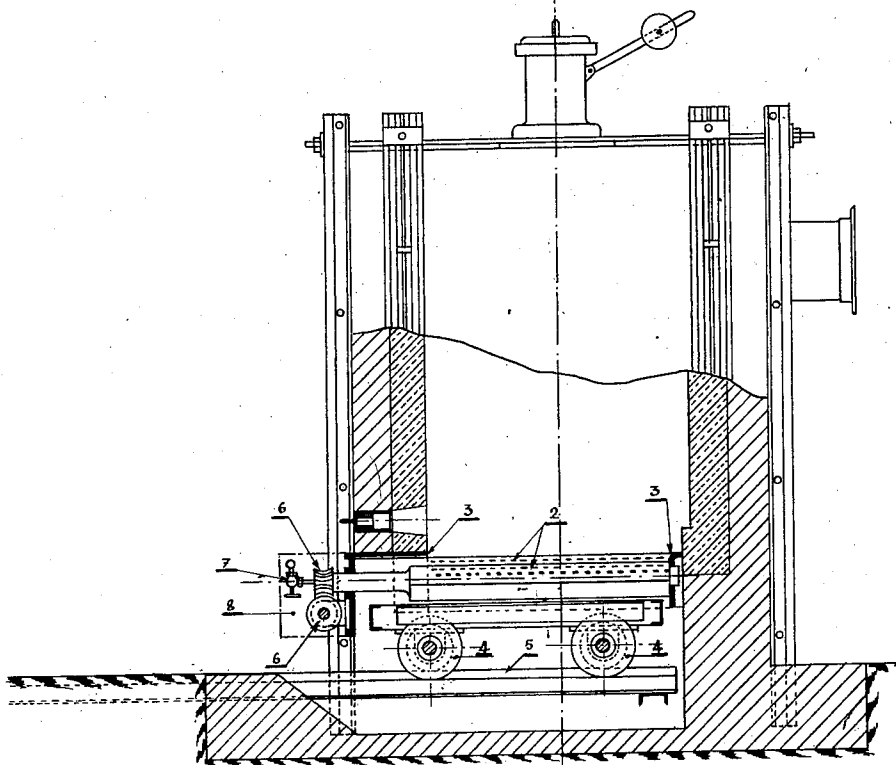
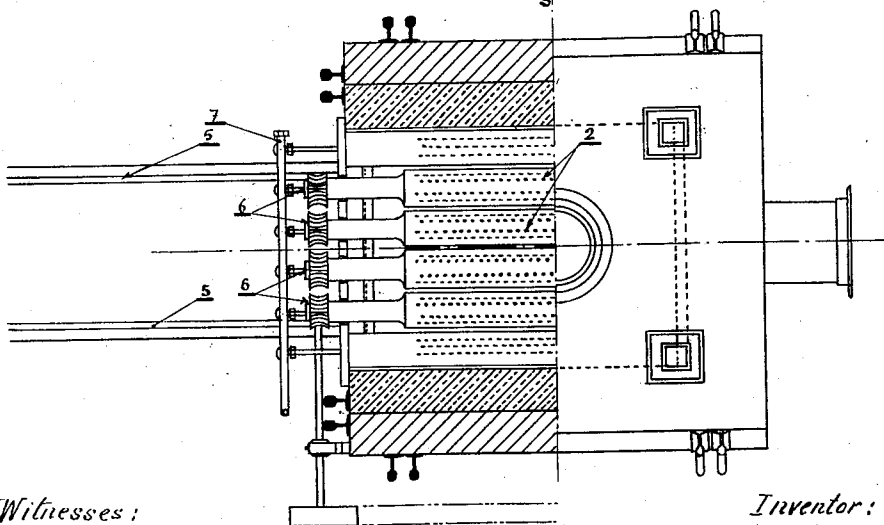


Fig. 9



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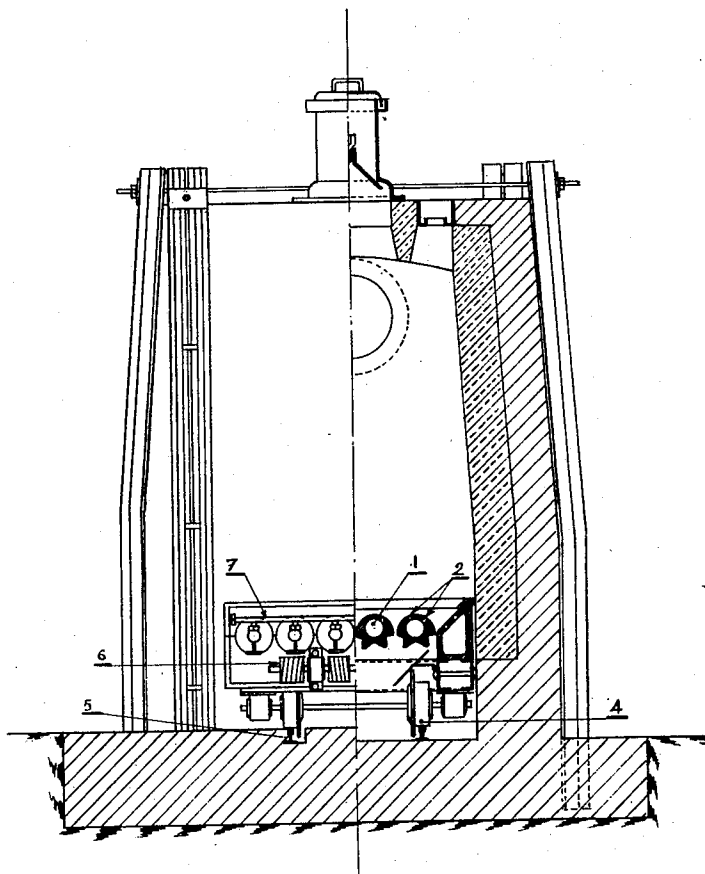
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GRATE FOR GAS PRODUCERS, FURNACES, AND THE LIKE

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3 Sheets-Sheet 3

Fig. 10



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UNITED STATES PATENT OFFICE.

JEAN SAUVAGEOT, OF PARIS, FRANCE.

GRATE FOR GAS PRODUCERS, FURNACES, AND THE LIKE.

Application filed June 3, 1924, Serial No. 717,503, and in France November 21, 1923.

This invention relates to grates of the type used in all classes of gas-producer plants, including those of the Siemens variety, in furnaces, ovens, boilers and the like, and of the kind in which the clearing or cleansing of the fire from ash, clinker and the like is effected mechanically.

Grates for use in gas-producers as at present constructed, require, on account of their form, circular movements to effect the before mentioned clearing or cleansing of the fires. This makes the construction cumbersome, and the result is imperfect. Moreover, an excess of carbonic acid is produced, which leads to the excessive formation of slack.

The present invention provides means for clearing the fires in an even and complete manner, and also causes a decrease in the amount of carbonic acid formed, this decrease being such that the troubles due to the excessive production of slack are overcome.

A grate constructed according to the invention comprises a series of hollow fire bars, so mounted that they can turn about their longitudinal axes. These bars are located in close proximity to one another, and may have an oval, triangular, or other polygonal, or circular shape in cross section, with projections on one half of the surface, the arrangement being such that the projections on one fire bar are adapted to register or co-operate with those on a neighboring bar, when the bars are turned.

In order that the invention may be clearly understood it will now be described with reference to the accompanying drawings which illustrate by way of example, a grate and arrangement of fire bars made according to the said invention.

Fig. 1 shows, in cross section, a grate with hollow partly star shaped fire bars.

Fig. 2 shows the position of these bars during the clearing or cleansing operations.

Fig. 3 shows the position of the bars when the motion of rotation is continued.

Fig. 4 shows a side elevation of the hollow fire bar.

Fig. 5 is a top plan of a portion of the grate surface with the fire bars brought close together.

Fig. 6 shows in cross section, to an enlarged scale, a fire bar showing the arrangement for the air currents.

Fig. 7 is a top plan of the surface of the fire bar showing holes arranged in quincunx formation.

Figs. 8, 9 and 10 show various elevations and sections of a gas-producer with a mechanical grate fixed therein.

In the construction illustrated in the drawings, the hollow fire bars *a* are arranged horizontally adjacent to one another. As will be seen from the cross sections the bars are provided with projecting teeth *b*. Air is supplied to the hollow interior 1, of each bar, and passes through outwardly extending holes 2 arranged in the form illustrated on the semi-cylindrical portions of the bars.

The hollow bars may be mounted on a frame 3, in such a way that they can be turned about their longitudinal axes. This frame may be mounted upon wheels or rollers 4 running upon extension rails 5, so that it can be easily drawn out of or pushed into the gas-producer.

A gear wheel 6 is mounted on the forward end of each of the fire bars, and a transverse bar with a worm or corresponding gears is provided, so that by turning a single bar all the fire bars can be rotated. They may be turned continuously or periodically.

The revolutions of the bars cause each pair to cooperate in such a way that the teeth of the said bars catch the cinders, break them up and deliver them between the bars into the ash box. By this regular movement, the fires are regularly cleared of cinders, and at the same time a regular current of air is supplied through the holes 2.

The operation of the gas-producer is as follows:—

Air under pressure, with or without the addition of steam, is supplied through a tap or nozzle 7, to the interior of the grate 8, and conducted into the hollow spaces 1 in each of the fire bars, whence it blows through the holes 2 in the semi-cylindrical portions into the gas-producer.

During normal working, the fire bars are in the positions shown in Fig. 1.

To clear or cleanse the fire, the bars are turned in one direction or the other by means of the gearing 6. In the case of small installations, this operation can be easily effected by hand by means of a han-

dle and appropriate gearing mounted on the front of the carriage. In the case of large installations, and central stations, the operation may be effected mechanically and automatically by any usual mechanism.

To obtain an efficient arrangement of blowing air, the holes 2 may be disposed in quincunx formation as shown at Fig. 7.

In the case of hand operated installations, the workman gives the handle a slight turn to the right or left from time to time, thus communicating a slight oscillation to the fire bars, and in this way the whole surface of the combustible materials will be swept in turn by the air.

In the case of large installations this movement of oscillation can easily be obtained mechanically.

The hollow fire bars may in some cases be three cornered, quadrangular or elliptical.

For effecting complete cleaning, or for repairs, the whole of the grate can be drawn out of the plant on the wheels or rollers 4.

The apparatus may be adapted to any furnaces or for heating boilers, ovens or the like.

What I claim and desire to secure by Letters Patent of the United States of America is:—

1. In a grate for gas producers, furnaces and the like, the combination of a supporting frame, hollow bars rotatably mounted in said frame and adjacent to one another, each bar being provided with a substantially semi-cylindrical portion extending substantially throughout the entire length of the bar, and normally forming the supporting surface of the grate, longitudinal ribs projecting from the surface of said bars opposite the semi-cylindrical portion and extending substantially throughout the length of said bars, and means for rotating adjacent bars in opposite directions.

2. In a grate for gas producers, furnaces and the like, the combination of a supporting frame, hollow fire bars rotatably mount-

ed in said frame, the said bars being arranged in pairs, means for rotating the bars in each pair in opposite directions, each bar having an upper fuel supporting surface substantially semi-circular in cross section, the lower surface of said bars being provided with projecting ribs extending substantially throughout the length of the bars, the ribs on adjacent bars co-operating upon rotation thereof, to engage and break the cinders and deliver them to the ashpit.

3. In a grate for gas producers, furnaces and the like, the combination of a supporting frame, hollow fire bars rotatably mounted in said frame, and adjacent to one another, means for rotating said bars, each bar being provided with a semi-cylindrical upper surface normally forming the supporting surface of the grate, the lower portion of said bars being provided with projecting ribs extending substantially throughout the length of the bars, the projecting ribs of adjacent bars co-operating to break the cinders and deliver them to the ashpit upon rotation of said bars, the semi-cylindrical portion of the fire bars having radially extending perforations passing there-through, and means for supplying fluid to the interior of the hollow bars.

4. In a grate for gas producers, furnaces and the like, the combination of a supporting frame, hollow bars rotatably mounted in said frame and adjacent to one another, each bar being provided with a substantially semi-cylindrical portion extending substantially throughout the entire length of the bar, and normally forming the supporting surface of the grate, longitudinal ribs projecting from the surface of said bars opposite the semi-cylindrical portion and extending substantially throughout the length of said bars, and means for rotating such bars.

In testimony whereof, I have signed my name to this specification at Paris, France, May, 1924.

JEAN SAUVAGEOT.