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L. BEMELMANS.
GAS GENERATOR FURNACE.
APPLICATION FILED OCT. 5, 1905.

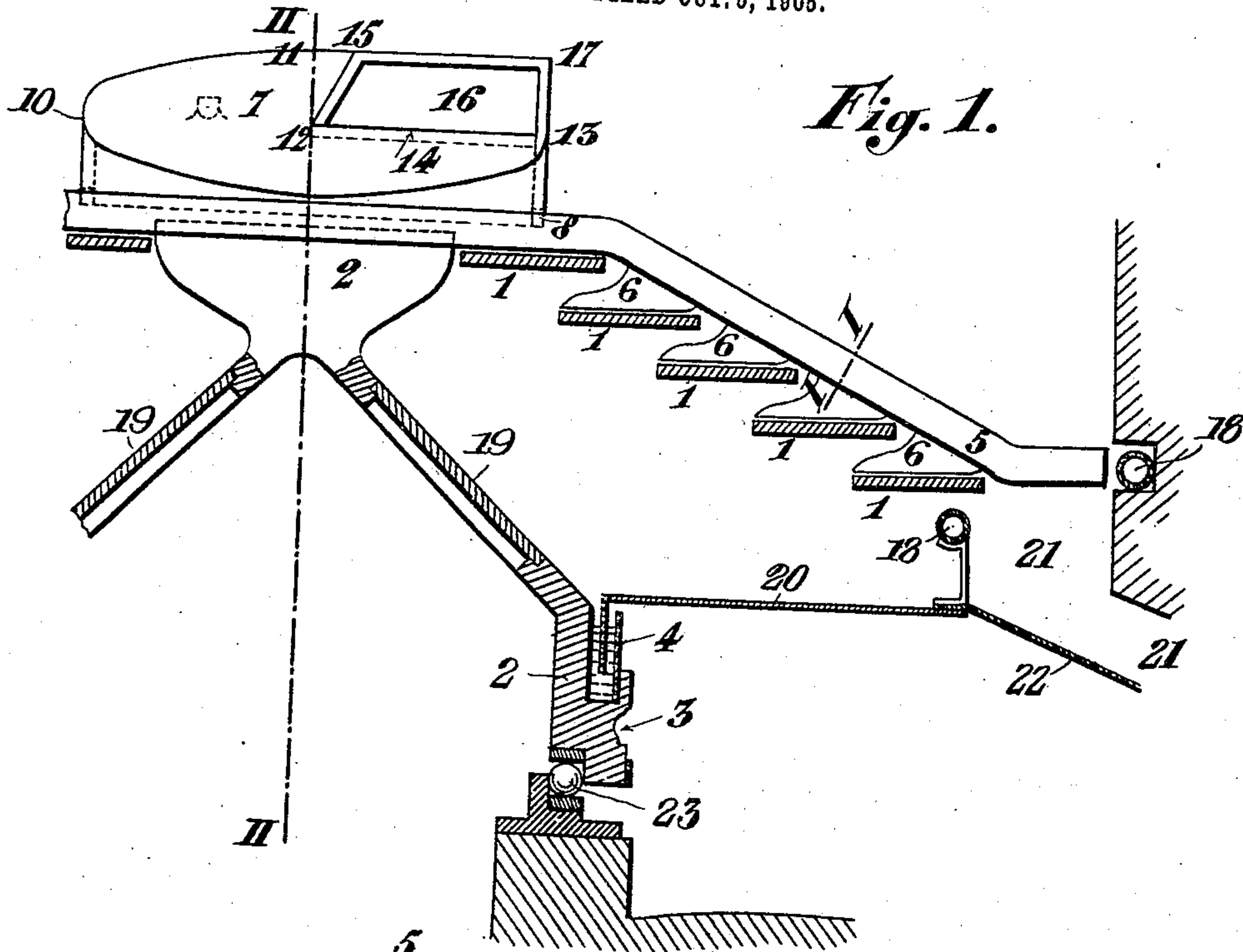


Fig. 1.

Fig. 2.

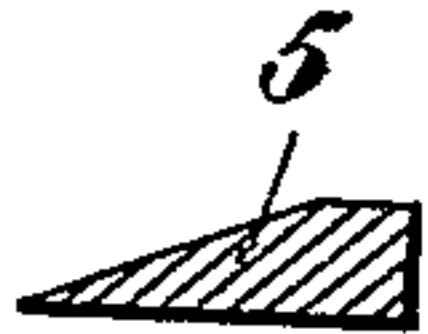


Fig. 3.

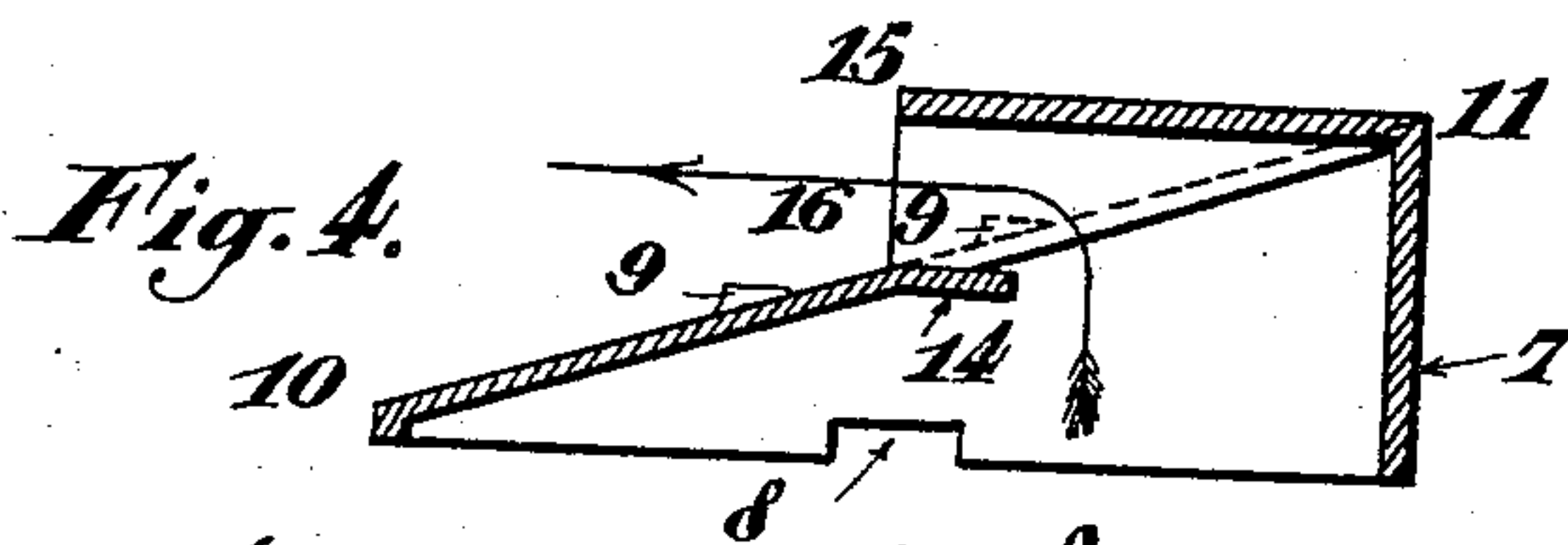
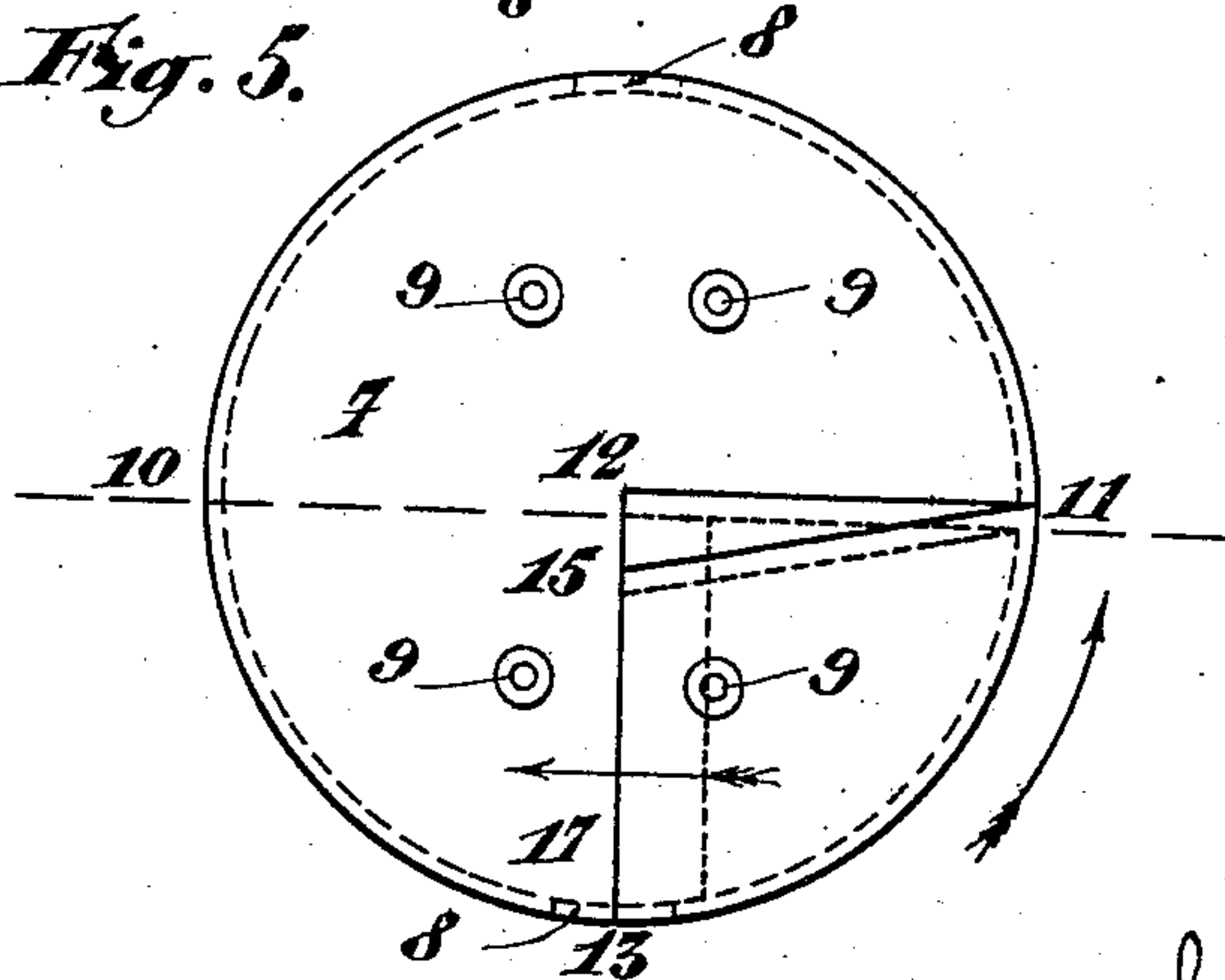


Fig. 4.

Fig. 5.



Witnesses
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GAS-GENERATOR FURNACE.

No. 855,749.

Specification of Letters Patent.

Patented June 4, 1907.

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To all whom it may concern:

Be it known that I, LEON BEMELMANS, a subject of the King of the Belgians, residing in Schaerbeek, near Brussels, 46 Rue de l'Est, Belgium, have invented certain new and useful Improvements in Gas-Generator Furnaces; 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, reference being had to the accompanying drawings, and to letters or figures of reference marked therein, which form a part of this specification.

The present invention relates to improvements in gas generator furnaces and more especially to the devices for disturbing the fuel in order to break the lumps and shake the ashes off.

It has for its object to provide a device of the kind which will continuously lift the fuel in vertical slices throughout the furnace and let it drop so as to break the fuel agglomerations on the top and to hinder the ashes from sticking together, thus from forming lumps, and so as to shake the ashes off nearly as quickly as they are being formed.

It has furthermore for its object to provide a means for breaking, lacerating and disaggregating the fuel agglomerated on the top, in the distillating zone, in the center of the furnace, where the rotary arms have hardly any action on the fuel, so as to form small lumps.

One embodiment of the present invention has been represented in the annexed drawing in which:

Figure 1 is a cross section of a gas-generator through a vertical plane; Figs. 2 & 3 are cross sections of two movable arms, on a plane I—I (Fig. 1); Fig. 4 is a section through piece 7 (Fig. 1) on a vertical plane II, in a vertical direction to the cut plane of Fig. 1; Fig. 5 is a top view on piece 7.

The furnace consists of a conical, stepped fire grate 1 and of a shaft 2 in the center, which shaft turns on a ball race-way 23 and is worked by means of a wheel or pulley 3. Obviously, any other suitable gear may be used. The moving parts of the furnace and the stationary-ones are tight jointed by means of an hydraulic joint 4.

The shaft 2 bears arms 5 which rotate with the shaft. These arms are provided on their bottom side with scrapers 6, which, when the arms rotate, travel over the fire

grate at a relatively small distance from the said grate. The said arms are so constructed that in cross section they form an incline (Fig. 2 & 3). This incline ends at the rear extremity in a vertical face (Fig. 2 & 3). The incline is disposed in such a way that, when the arm is moving, the fuel tends to rise along this incline. When it reaches its top, the fuel drops suddenly. These movements, say rising and falling, are communicated to the whole of the fuel and thus prevent the latter from sticking together and cause the ashes to fall as soon as they are produced.

In the center of the furnace, just there where it is preferably loaded, it is indispensable to disturb the fuel, but there the arms are hardly of any use. In order to provide for an effective device, according to the present invention a cylindrical part 7 is arranged in the center. This cylinder 7 may be solid or hollow or provided with channels; it may rest on the arms or be fixed to the shaft and the arms be fixed to this cylinder. In the present embodiment, the cylinder 7 rests by means of recesses 8 on the arms 5, and is hollow. It is fixed on the arms by means of bolts 9. Its bottom is open and its top forms a smooth inclined plane 10—11, which consequently has an elliptic circumference.

20 is a sheet metal bottom which is connected in any suitable manner at one end with the wall of the furnace and connected at the other end with the rotatable shaft or pivot by means of the hydraulic joint 4. This bottom may be pierced with air holes, it may also be placed at a sufficient distance from the floor to allow inspecting of the furnace.

21 is an annular ash-pit the bottom 22 of which forms an incline so as to allow the ashes to slide along when they have been sufficiently moistened by means of the perforated water pipes 18. A sector of this ellipsis is cut out along 11—12—13 (Fig. 5) and the metal is bent along 12—13 so as to form a lip 14 (Fig. 4). Above the opening produced in this way in the ellipsis is a horizontal sector which is represented by 11—15 (Fig. 4) and by 11—15—13 (Fig. 5). The fuel rests on this horizontal part of the sector, so that the air arriving from underneath through the opening 16 (Fig. 4), which is placed between the inclined face and the horizontal sector, may reach the fuel, which is prevented by the lip 14, from falling in the cylinder. This

cylinder 7, which rotates with the arms 5, turns in the direction of the arrow (Fig. 5). The upper edge 11—15 of the horizontal sector joins the inclined face (ellipsis) by means of a small jointing face 11.12.13 (Fig. 5) of any suitable shape. Owing to the rotation of this cylinder 7, any vertical slice of the fuel is, during the whole revolution, first lifted to the full extent of the height of the said cylinder and then dropped suddenly at the very moment of its arrival on the edge 13—15. This device enables the center part of the fuel to be lifted too.

The extent of the action, in the middle of the furnace, viz: where the fuel tends more especially to stick together and to form lumps, will correspond to the height of the cylinder.

Having thus described my invention what I claim and desire to secure by Letters Patent is:

1. In a gas generator furnace having a fire-grate and a rotatable shaft carrying one or several arms integral with or made integral with the said shaft, the said arms forming an incline in cross section, the said incline ending at its rear extremity in a vertical or hollow face, scrapers on the bottom face of the said arms, traveling above the fire-grate at a small distance from the latter.

2. In a gas generator furnace having a fire-grate and a rotatable shaft carrying one or several arms integral with or made integral with the said shaft, the said arms forming an incline in cross section, the said incline ending at its rear extremity in a vertical or hollow face, scrapers on the bottom face of the said arms, traveling above the fire-grate at a small distance from the latter, a cylinder partially

encircling the shaft, the said cylinder being provided with recesses engaging the said arms and being bolted on them, or being fixed to the said shaft and carrying the said arms.

3. In a gas generator furnace having a fire-grate and a rotatable shaft carrying one or several arms integral with or made integral with the said shaft, the said arms forming an incline in cross section, the said incline ending at its rear extremity in a vertical or hollow face, scrapers on the bottom face of the said arms, traveling above the fire-grate at a small distance from the latter, a cylinder partially encircling the shaft, the said cylinder being provided with recesses engaging the said arms and being bolted on them, or being fixed to the said shaft and carrying the said arms, an open bottom in the said cylinder, the top of which has an air-hole therein and forms an inclined space, an integral lip over the said hole and a more or less horizontal sector over the said hole a small jointing face connecting the upper edge of the horizontal sector with the inclined face.

4. In a gas generator furnace, the combination with a revoluble shaft, of a series of inclined arms, projecting from the said shaft, substantially at the same height, and a stepped fire-grate; the said arms having scrapers on their face adjacent to the fire-grate.

In testimony that I claim the foregoing as my invention, and have signed my name in presence of two subscribing witnesses.

LEON BEMELMANS.

Witnesses:

E. HEYL,
GREGORY PHELAN.