

No. 675,147.

Patented May 28, 1901.

L. BEMELMANS.  
FUEL STIRRING DEVICE FOR FURNACES.

(Application filed Apr. 10, 1900.)

(No Model.)

2 Sheets—Sheet 1.

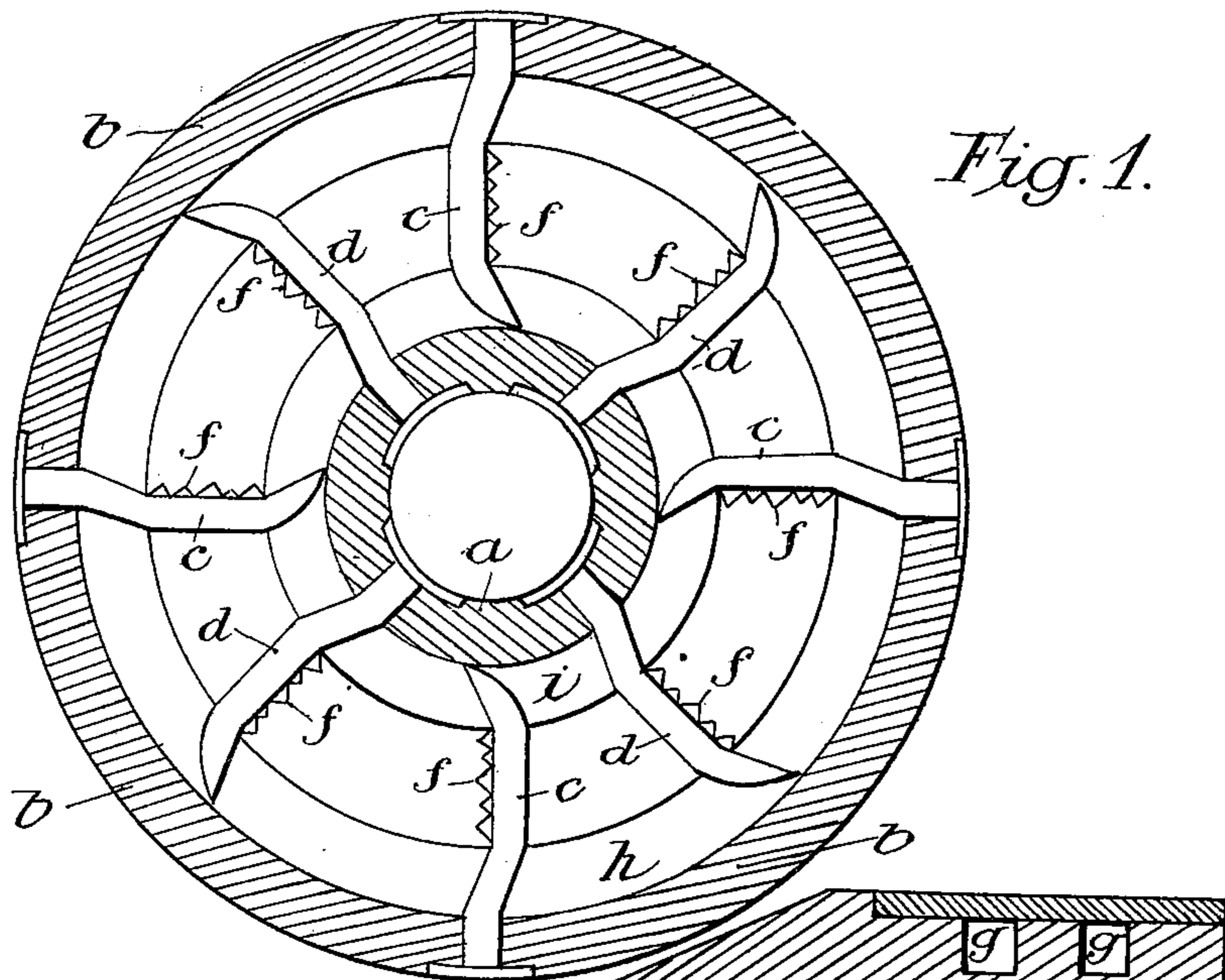


Fig. 1.

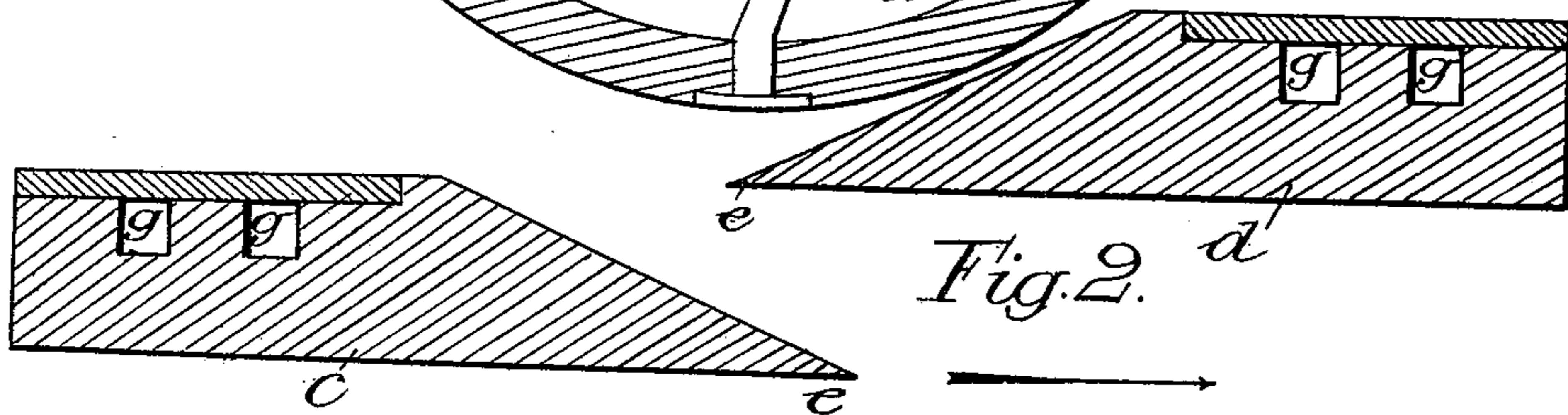
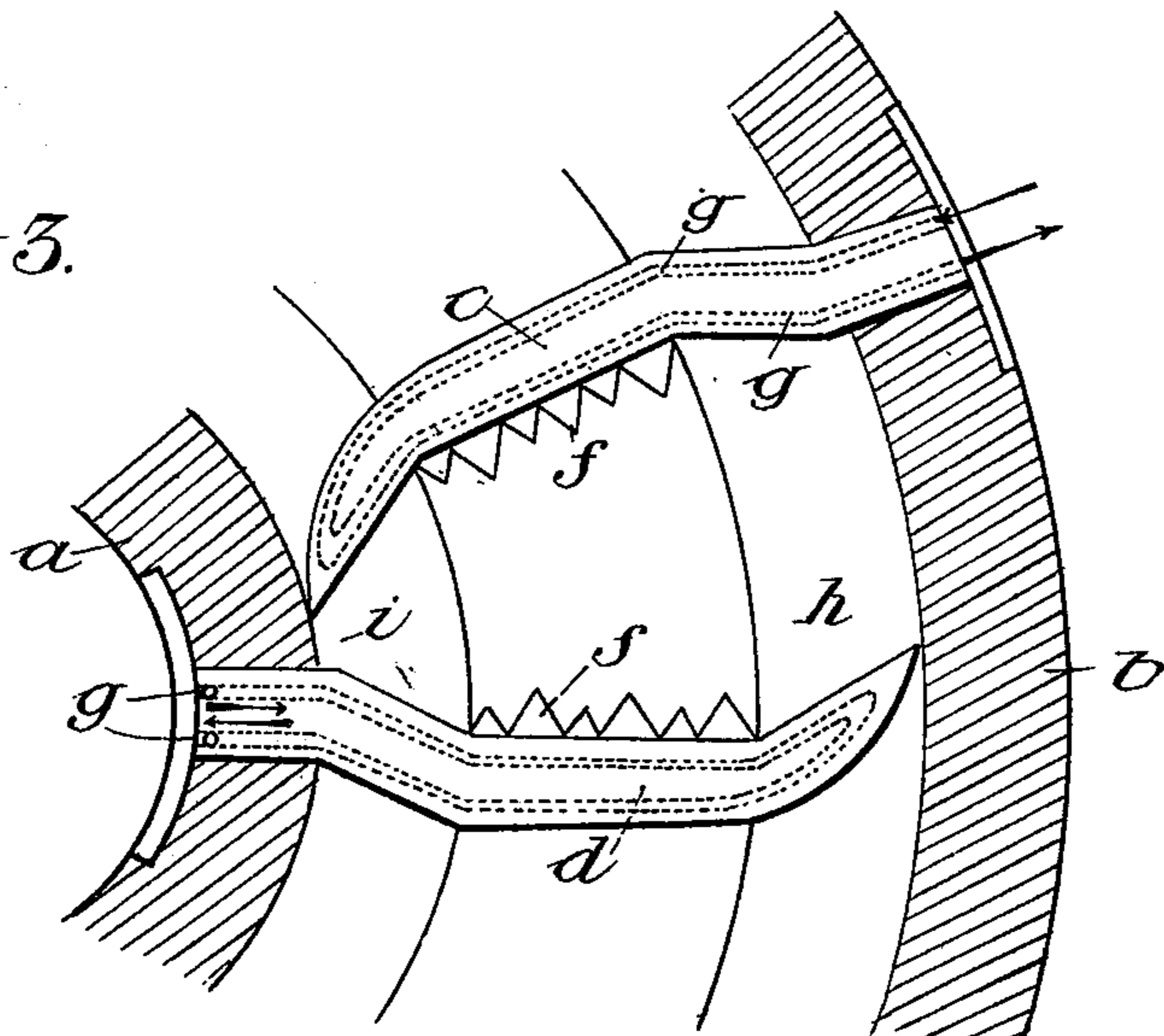


Fig. 2.

Fig. 3.



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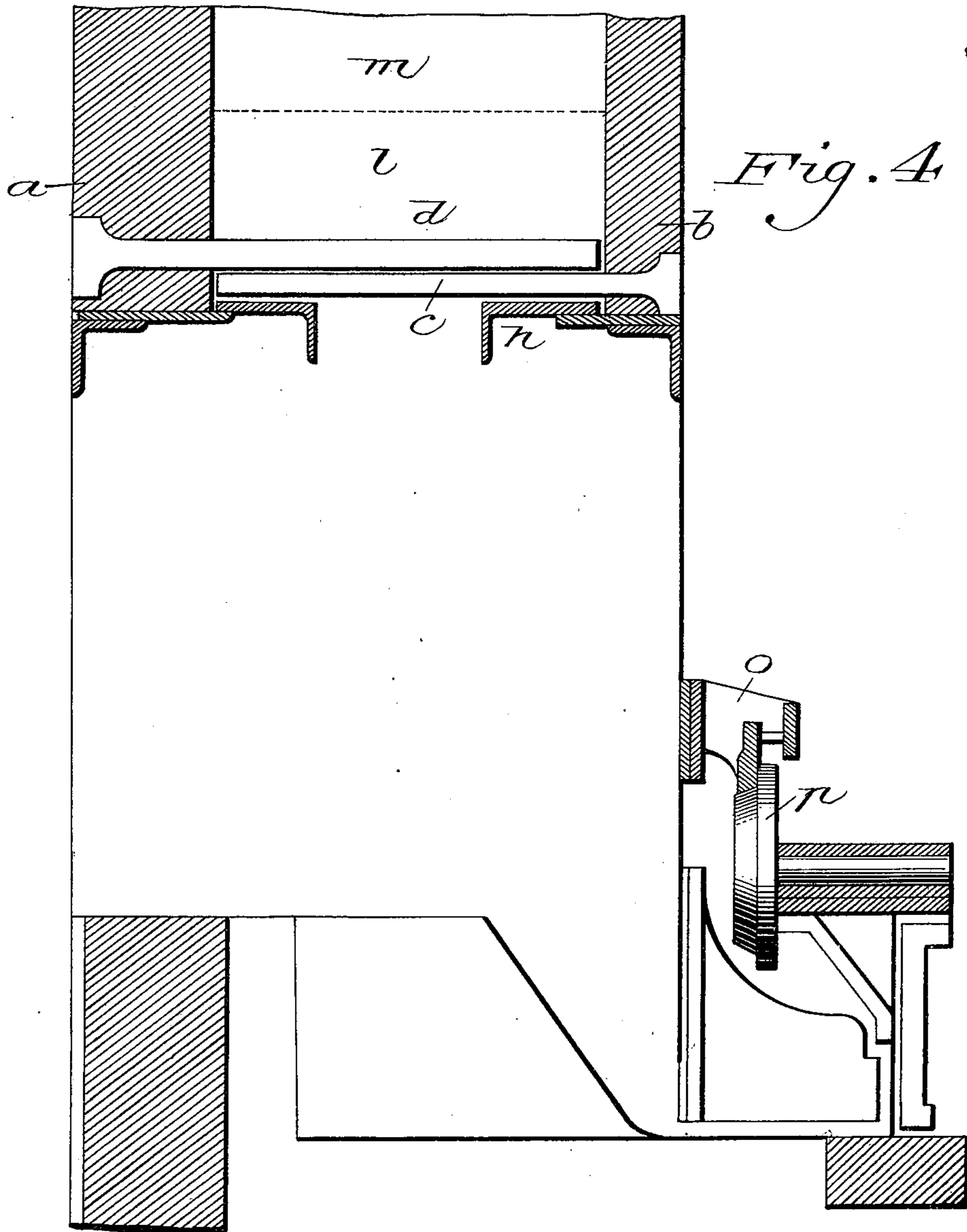
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2 Sheets—Sheet 2.



Witnesses

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# UNITED STATES PATENT OFFICE.

LEON BEMELMANS, OF SCHAERBEEK, BELGIUM, ASSIGNOR TO SOCIÉTÉ ANONYME PYR, OF SAME PLACE.

## FUEL-STIRRING DEVICE FOR FURNACES.

SPECIFICATION forming part of Letters Patent No. 675,147, dated May 28, 1901.

Application filed April 10, 1900. Serial No. 12,290. (No model.)

*To all whom it may concern:*

Be it known that I, LEON BEMELMANS, engineer, a subject of the King of Belgium, residing at 54 Rue de l'Est, Schaerbeek, near  
5 Brussels, in the Kingdom of Belgium, have invented certain new and useful Improvements in Fuel-Stirring Devices for Furnaces, of which the following is a specification.

My invention relates to an improved construction of fuel-stirring device for furnaces, which is designed to intermittently rake the coal or other combustible material in circular and annular furnaces provided with one stationary and one rotary wall, the system being  
10 also applicable to furnaces of the kind which have two rotary walls.

My improved furnace is constructed in such a manner that the rakes lift the charges beneath which they pass without compressing  
20 the ashes situated below, and thus in this manner facilitate the circulation of the air in the furnace.

In order that my invention may be readily understood and carried into effect, I will describe the same with reference to the accompanying drawings, in which is illustrated my improved device as applied to a furnace adapted for the generation of gas, having a stationary central body portion and a rotary outer  
30 wall, although it is obvious that it may be applied to other descriptions of furnaces without departing from the spirit of my invention.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts, Figure 1 is a horizontal section of a furnace of this kind, illustrating the general arrangement of parts constituting the same. Fig. 2 is a vertical cross-section showing the two rakes, one of which forms part of a series of stationary rakes fixed to the stationary central body portion of the furnace, the other rake forming part of a series of rakes fixed to the outer rotary wall of the  
40 furnace. Fig. 3 is a plan of a portion of a furnace constructed in accordance with my invention and showing two rakes, together with a portion of the walls to which they are attached. Fig. 4 represents a vertical sectional view of a furnace to which my invention is applicable.

The shape in general of these rakes is of little importance, although it is advantageous to give them a curved form or composed of broken lines, as indicated in the drawings, 55 so as to cause the ashes or other matter to be moved toward the annular orifice of the ash-pit.

The fore part of the rakes is formed with a chamfered portion taking a downward direction in such a manner as to form an incline terminating at the bottom in a cutting edge *e*, as seen more clearly in Fig. 2, this form being more advantageously adapted to lift the upper portions of the fuel without compressing the ashes situated at the bottom. This cutting edge, which is provided with teeth *f*, Fig. 3, preferably extends only over that part which is situated above the annular aperture of the ash-pit, and the rakes are formed with  
60 grooves *g* in the body thereof for the purpose of admitting a circulation of water which by its temperature at leaving indicates the proximity of the fire.

As will be seen from Figs. 1 and 3, a series 75 of rakes *c* are fixed at regular intervals in the external rotary wall *b* of the furnace and they are so disposed as to point in the direction of rotation of the wall to which they are fixed, while those fixed in the stationary central 80 body portion *a* have their cutting edge disposed in the opposite direction. The rakes *c* are situated in the ashes immediately above the flanges *h* and *i* of the rotary wall *b* and central body portion *a*, respectively, while 85 the stationary rakes *d* are fixed in the body portion *a* in such a manner that the rakes *c* when rotating with the wall *b* pass immediately beneath them. In Fig. 4, *l* designates the ashes; *m*, the incandescent fuel; *o*, a circular rail fixed to the outside of the wall *b*, and *p* designates the actuating-gear. When the wall *b* is rotated, the said rakes *c* in their rotary movement carry along with them the charge in the furnace, while the stationary 95 rakes *d* tend to obstruct this movement. Thus it will be seen that when the rakes *c* pass beneath the stationary rakes *d* the charge no longer reposing upon the rakes *c* gradually ceases to be carried along by them 100 and becomes approximately stationary, and after the rakes *c* pass the stationary rakes *d*

the charge is again carried forward in the direction of rotation of the rotary rakes until arriving at the point where each rotary rake is at equal distance between two consecutive stationary rakes, whence the travel of the charge decreases gradually until it again ceases, when the stationary rakes are once more above the movable rakes. The charge is thus intermittently moved and is evenly distributed throughout the furnace.

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

1. In a fuel-stirring device for furnaces, a combustion-chamber having a stationary wall, an annular rotary wall and an opening for the discharge of ashes, a series of rakes secured in said rotary wall above said opening, and a series of similar rakes secured in said stationary wall and located above the rakes of said rotary wall.

2. In a fuel-stirring device for furnaces, a combustion-chamber having a stationary wall, an annular rotary wall and an opening for the discharge of ashes, a series of rakes secured in said rotary wall above said opening, said rakes being provided with a cutting edge at the bottom of their fore part, and a series of similar rakes secured in said stationary wall, the cutting edges of said last-mentioned rakes being disposed in an opposite direction to the cutting edges of the rakes attached to said rotary wall.

3. In a furnace, a combustion-chamber hav-

ing a stationary wall, an annular rotary wall and an opening for the discharge of ashes, a series of rakes secured in said rotary wall, above said opening, said rakes having a curving edge, and teeth at the bottom of their fore part, the latter being curved or formed of broken lines with the middle portion set back, and a series of rakes secured in said stationary wall, above the rakes of said rotary wall, the cutting edge of one series of rakes pointing in an opposite direction to the cutting edge of the other series of rakes.

4. In a circular furnace, a combustion-chamber having a stationary wall, an annular rotary wall and an opening for the discharge of ashes, a series of rakes secured in said rotary wall above said opening, a cutting edge on said rakes located at the bottom of their fore part, grooves or channels in the body of said rakes for the circulation of water, and a series of similar rakes located in said stationary wall, above the rakes of said rotary wall, the cutting edges of said respective series of rakes being oppositely disposed to each other.

In testimony whereof I have hereunto set my hand, in presence of two subscribing witnesses, this 27th day of March, 1900.

LEON BEMELMANS.

Witnesses:

H. T. E. KIRKPATRICK,  
J. S. KIRKPATRICK.