

No. 815,450.

PATENTED MAR. 20, 1906.

R. A. MAY.

GRATE.

APPLICATION FILED JULY 20, 1905.

2 SHEETS—SHEET 1.

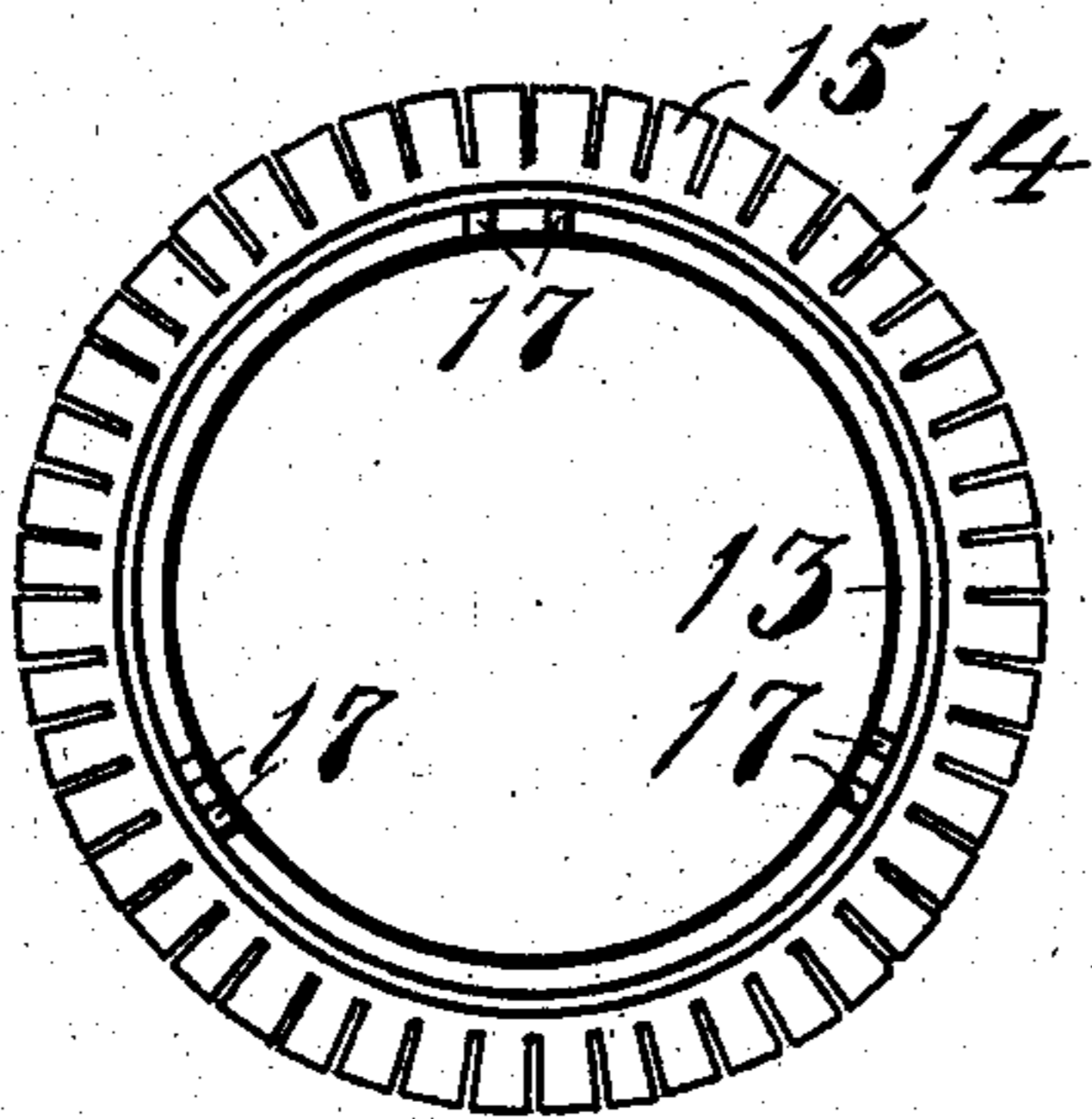
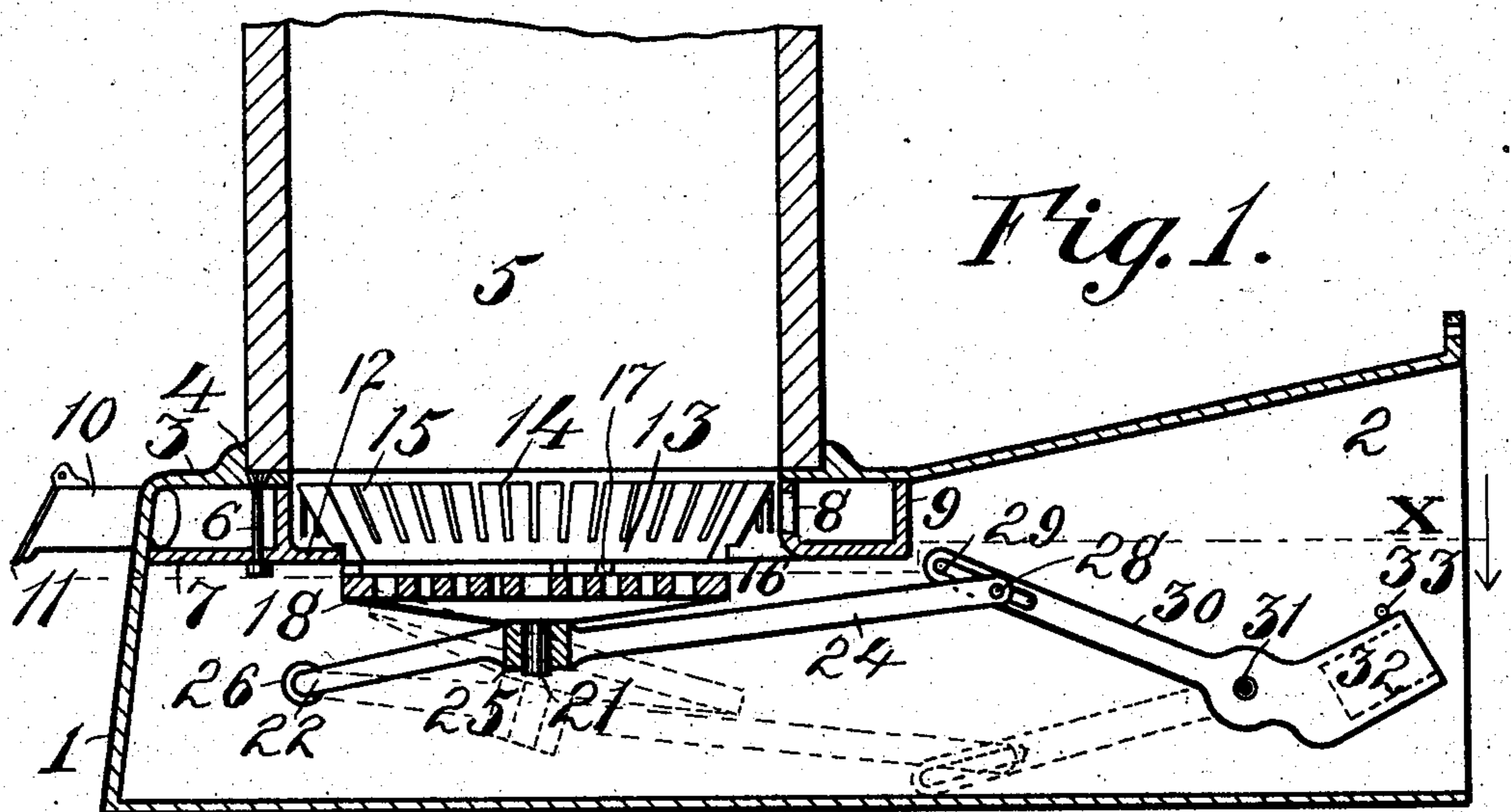


Fig. 2.

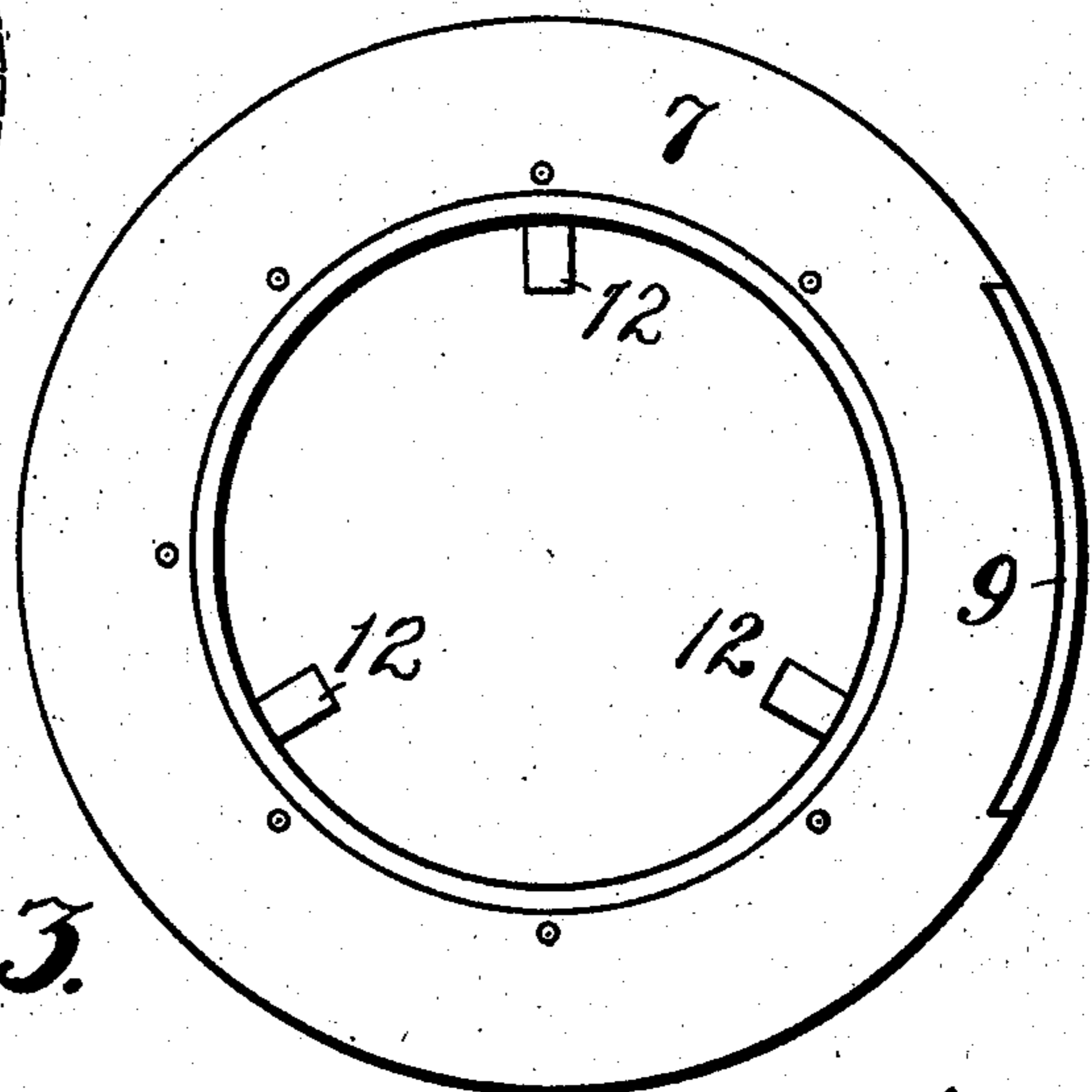


Fig. 3.

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Glenara Fox

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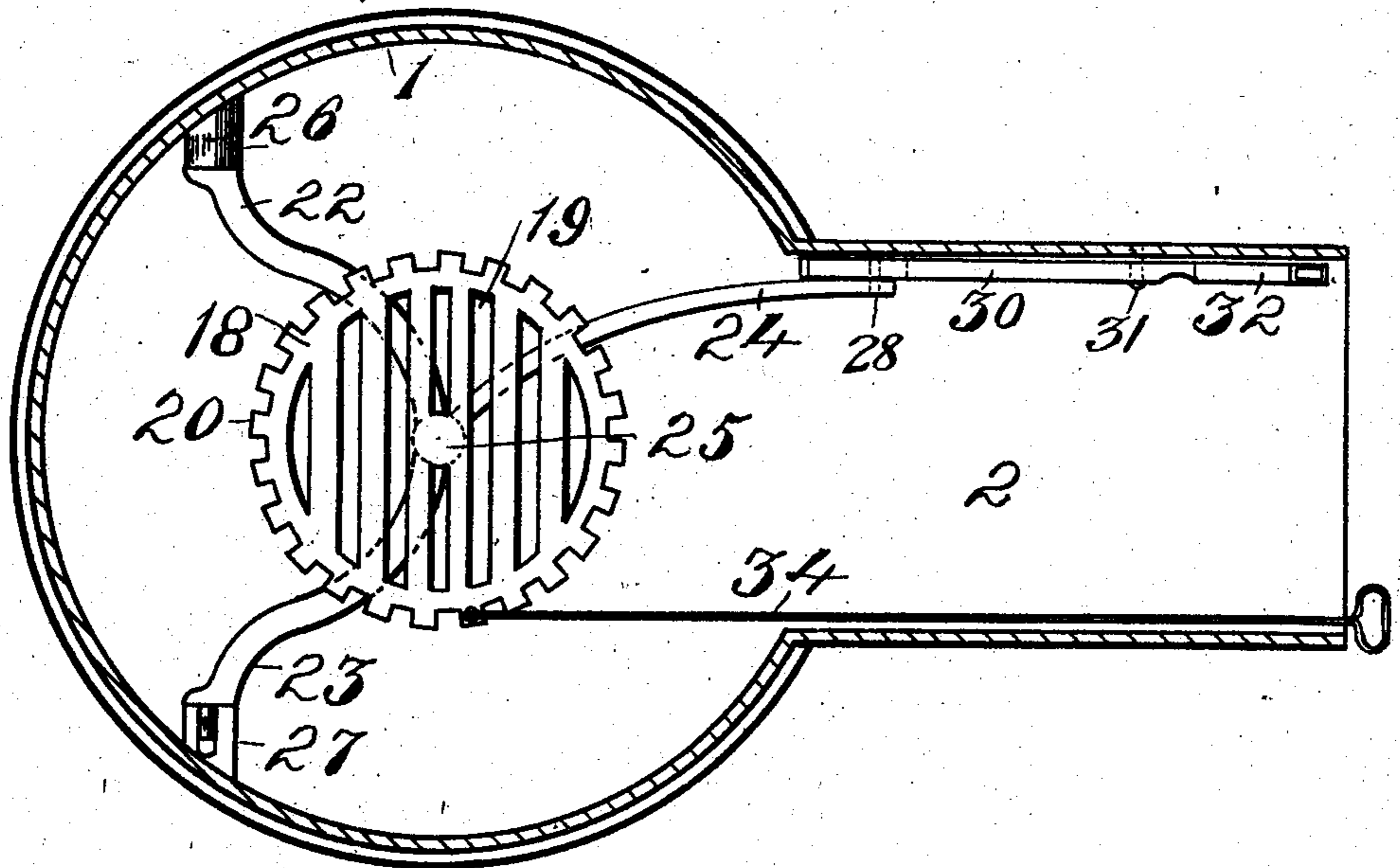


Fig. 4.

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UNITED STATES PATENT OFFICE.

RUDOLF A. MAY, OF AKRON, OHIO.

GRATE.

No. 815,450.

Specification of Letters Patent.

Patented March 20, 1906.

Application filed July 20, 1905. Serial No. 270,543.

To all whom it may concern:

Be it known that I, RUDOLF A. MAY, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented new and useful Improvements in Grates, of which the following is a specification.

My invention has relation to the construction of combustion devices for stoves and furnaces; and the object of my invention is to provide a new and improved grate therefor of simple construction which will be strong, safe, durable, and readily placed in position and capable of easy operation in the hands of unskilled persons.

The invention aims to construct a grate preferably made in two parts—viz., an outer portion annularly shaped and arranged to be operated in substantially the same horizontal plane to sustain the mass of burning fuel and a central portion which may be easily lowered and tilted forward to permit ready cleaning and to afford access to the lower portion of the fuel sustained by the first part.

The invention further aims to so construct these two parts constituting the grate that when the central portion is lowered from engagement with the outer portion the latter will be suitably sustained and when the central portion is raised the two members will engage in such a manner that the inclosing portion will be sustained on the central portion and the two be so locked together as to permit their free horizontal rotation in unison.

With the foregoing and other objects in view the invention consists of the novel construction, combination, and arrangement of parts constituting the device to be hereinafter referred to, and illustrated in the accompanying drawings, which form a part of this specification, in which is shown the preferred embodiment of the invention; but it is to be understood that changes, variations, and modifications can be resorted to which come within the scope of the claims hereunto appended.

In the drawings, wherein like reference characters denote corresponding parts throughout the several views, Figure 1 is a central vertical section of a combustion device, showing a portion of the fire-pot and ash-pit operated in connection therewith. Fig. 2 is an inverted plan view of a portion of the grate of the device. Fig. 3 is a plan view of my device by which oxygen is supplied to the sides of

the burning fuel, and Fig. 4 is a section on line X of Fig. 1.

In the drawings, 1 is the ash-pit of my device, having, as usual, an integral inlet 2 and is provided at the top with a circular opening, around which is an inwardly-extending annular flange 3, integral with the body of the ash-pit, and this flange 3 is further provided with a concentric beading 4.

Mounted upon the flange 3 of the ash-pit and within the confines of the beading 4 is the fire-pot 5.

Attached, preferably by bolts 6, to the flange 3 of the ash-pit is a ring 7, preferably L-shaped in cross-section, which when in position as shown in Fig. 2 will constitute, in connection with the side wall and flange 3 of the ash-pit, an annular air-duct. The vertical portions of this L-shaped ring 7 contain at intervals openings or slots 8, by which air is permitted to enter the interior of the combustion-chamber. At the point where this annular air-duct crosses the inlet 2 there is provided a rear vertically-extending partition 9, conforming in contour and integral with the main body of the ring 7, which serves to close the rear of the annular duct from open communication with the interior of the inlet 2.

At some preferred place in the side wall of the ash-pit 1 is placed an inlet-pipe 10, the interior of which is in open communication with the interior of the duct formed by the ring 7, and this inlet-pipe 10 is closed by an ordinary door 11, the construction of which is immaterial to this invention and which may be of any desired or preferred type.

It will be obvious from this description that air admitted through the pipe 10 will circulate freely in the duct formed by the side wall, the annular flange 3 of the ash-pit, and the L-shaped ring 7 and from thence will pass, by means of the openings 8, into the combustion-chamber and from thence to the fuel therein.

In order to sustain the fuel to be consumed in immediate proximity to the supply of oxygen from the openings 8, inwardly-projecting arms 12 are employed, the ends of which extend into the opening of the ring 7, and these arms 12 are preferably integral with the ring 7. In Fig. 3 three of these arms 12 are shown; but the number may be changed sufficiently to sustain the mechanism to be hereinafter described. Arranged to be temporarily sustained by these arms 12 is a bas-

ket 13, consisting, preferably, of a frusto-con-
 5 ically-formed annulus, the upper portions of
 which are provided with a series of radial
 slots 14, thereby forming between them a
 plurality of teeth or fingers 15. This basket
 13 is provided on its lower outer side with a
 rabbet 16, into which the arms 12 are ar-
 ranged to engage and temporarily sustain the
 basket and the fuel which may be contained
 10 thereon. From the lower portion of this
 basket 13 extends a series of lugs or fingers
 17, preferably arranged in pairs, as shown in
 Fig. 2, for a purpose to be stated. It is ar-
 15 ranged to close the opening surrounded by
 the annularly-formed basket 13 with a grate
 18. This grate (shown best in Fig. 4) con-
 sists of a body portion, preferably provided
 with a series of perforations or slots 19 and
 20 having on its outer edge a series of lugs or
 fingers 20 and, further, provided on its under
 central portion with a depending pin 21.
 This grate 18 is sustained by a tripodal struc-
 ture consisting of rearwardly-extending legs
 22 and 23 and a forwardly-extending leg 24,
 25 all preferably formed integral with each other
 and uniting at the center into a socket mem-
 ber 25 through which is a vertical perforation
 in which the pin 21 of the grate is arranged to
 enter. The leg 22 is provided on its outer
 30 end with a pin which enters an opening in a
 lug 26, formed in the inner face of the side
 wall of the ash-pit 1, and the leg 23 is also
 provided with a pin at its outer end, which
 enters a semicircularly-formed lug 27, also
 35 attached to the inner face of the ash-pit and
 oppositely disposed with respect to the posi-
 tion of the lug 26, and the legs 22 and 23 are
 thereby sustained pivotally in position.

Projecting laterally from the outer free end
 40 of the arm 24 is a pin 28, which engages in a
 slot 29 in the outer end of a rocking member
 30. This rocking member 30 is pivoted on a
 pin 31, attached to one of the side walls of the
 inlet 2 of the ash-pit, and it is further pro-
 45 vided at its opposite end with a socket por-
 tion 32, in which is inserted a bar by which it
 may be conveniently actuated. A pin or
 catch 33 is attached to the side wall of the
 ash-pit to retain the socket end 32 of the
 50 member 30 at the bottom of its downward
 movement, and thereby maintain the slotted
 end of the member 30 in an upright position,
 which also sustains the leg 24 of the tripodal
 structure, on which the grate 18 is mounted.
 55 The grate 18 is capable of being rotated on
 the pin 21, which has been before described
 as being journaled in the perforation in the
 socket portion 25.

In order to cause the rotation of the grate
 60 18, a rod 34 is suitably connected with one
 side of the grate, and is it provided at its
 outer end with a handle for convenience in
 operation. This rod 34 is generally carried
 out through the inlet 2 of the ash-pit and may
 65 be suitably supported at its outer end; but as

this is an ordinary construction the support
 for the rod 34 is not shown, as it is believed to
 be unnecessary for the complete understand-
 ing of this invention.

The operation of this device is as follows: 70
 The members being in the position shown in
 Fig. 1, a suitable supply of fuel is placed upon
 the grate 18 and basket 13, and the same is
 ignited in the ordinary way. In order to aid
 the combustion of the fuel thus sustained, 75
 the gate 11 is opened and air is permitted to
 circulate through the duct formed by the
 ring 7, and it passes therefrom through the
 openings 8 to the outer portions of the mass
 of burning fuel. When it is desired to re- 80
 move ashes or clinkers from the fuel, a bar is
 inserted in the socket portion 32 of the mem-
 ber 30 and the catch 33 released, allowing the
 slotted end of the member 30 to swing down- 85
 ward, carrying with it the tripodal structure
 which supports the grate 18 until the slotted
 end of the member 30 encounters the floor of
 the ash-pit. When this has been done, the
 grate and its supporting mechanism will as-
 90 sume the position shown in dotted lines in
 Fig. 1. Access may then be had to the bot-
 tom of the fuel through the opening inclosed
 by the annularly-formed basket 13. It will
 be here stated that by reason of the coking
 and matting together of the fuel while being 95
 consumed it will be readily sustained by the
 basket 13 and unless roughly attacked from
 below will not fall through the opening there-
 in. At the time the grate 18 is lowered its
 forward end is tipped down sufficiently to 100
 enable a person with the aid of a suitable tool
 to remove therefrom all ashes and clinkers
 which might exist thereon. When this has
 been properly done, the socket end 32 of the
 member 30 is depressed by means of the bar 105
 inserted therein and the grate raised to the
 position shown in Fig. 1. This grate 18 and
 basket 13 are so arranged with respect to
 each other that when the grate 18 is raised
 110 the fingers 20 on the outer periphery of the
 grate 18 will interlock with the lugs 17 on the
 bottom face of the annularly-formed basket
 13, and the grate 18 will raise the basket 13 a
 slight distance from engagement with the in- 115
 wardly-extending arms 12, on which it is tem-
 porarily sustained while the grate 18 is being
 lowered, as before described. This raising of
 the basket 13 from engagement with the arms
 12 practically causes the basket 13 and grate
 18 to become a unitary article, and the inter- 120
 locking of the fingers 20 on the outer edge of
 the grate 18 with the depending lugs 17 on the
 basket 13 will cause the two to rotate in uni-
 son when the rod 34 is employed.

It will be seen from the foregoing descrip- 125
 tion that at the same time the grate 18 is low-
 ered, as has been already described, the
 basket 13 will be lowered sufficiently to rest
 on and be sustained by the arms 12 until the
 return of the grate to its former position, and 130

yet when raised by the grate 18 the basket 13 may be rotated in connection therewith.

What I claim, and desire to secure by Letters Patent, is—

5 1. In a stove or furnace, a rotary grate comprising in combination an annular member, means connected with the ash-pit of the device to temporarily sustain said member, a central portion for said grate suitably sus-
10 tained to permit its being raised and lowered, means to raise and lower said central portion, said annular member being adapted to be sustained in operative position by said central portion when said central portion is
15 raised.

2. In a stove or furnace, a rotary grate comprising in combination an annular member, lugs depending from the under face thereof, means connected with the ash-pit of
20 the device to temporarily sustain said member, a central portion for said grate, members on said central portion adapted to engage said lugs, means to sustain said central portion so as to permit its being raised and
25 lowered, said annular member being adapted to be sustained in its operative position by said central portion, when said central portion is raised.

3. In a stove or furnace, a rotary grate
30 comprising in combination an annular member, depending members on the under face of said member, means connected with the ash-pit of the device to temporarily sustain said member, a central portion for said grate,
35 members on said central portion adapted to engage the depending members of said annular portion, means to sustain said central portion so as to permit its being raised and lowered, said annular member being adapted
40 to be supported in its operative position by said central portion when said central portion is raised.

4. In a stove or furnace, a rotary grate comprising in combination an annular mem-
45 ber, depending members on the under face of said member, means connected with the ash-pit of the device to temporarily sustain said member, a central portion for said grate, members on said central portion adapted to
50 engage said depending members, means to sustain said central portion to permit its be-

ing raised and lowered, said annular member being adapted to be supported in its operative position by said central portion when said central portion is raised, and means to
55 rotate the two parts of said grate in unison when said annular member is sustained on said central portion.

5. In a stove or furnace, a rotary grate comprising in combination an annular mem-
60 ber, depending members on said member, a central portion for said grate, members on said central portion adapted to engage said depending members, means to raise and lower said central portion, said annular mem-
65 ber being adapted to be supported in its operative position by said central portion when said central portion is raised, and means connected with the ash-pit of the device to temporarily sustain said annular member when
70 said central portion is lowered.

6. In a grate, the combination of a central portion capable of horizontal rotation, means to rotate said central portion, means to suitably sustain said central portion to permit it
75 to be raised or lowered, an annular member, means to temporarily sustain said annular member, said annular member being adapted to be supported in its operative position on said central portion when said central por-
80 tion is raised.

7. In a rotary grate, the combination of a central portion capable of horizontal rota-
tion, means to sustain said central portion to permit its being raised or lowered, an annu-
85 lar member arranged to be supported by said central portion when said central portion is raised, means on said central portion, and means on said annular member adapted to interlock when said central portion is
90 raised and said annular member is supported on said central member, and means to sustain said annular member when said central portion is lowered from engagement there-
95 with.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

RUDOLF A. MAY.

Witnesses:

C. E. HUMPHREY,
GLENARA FOX.