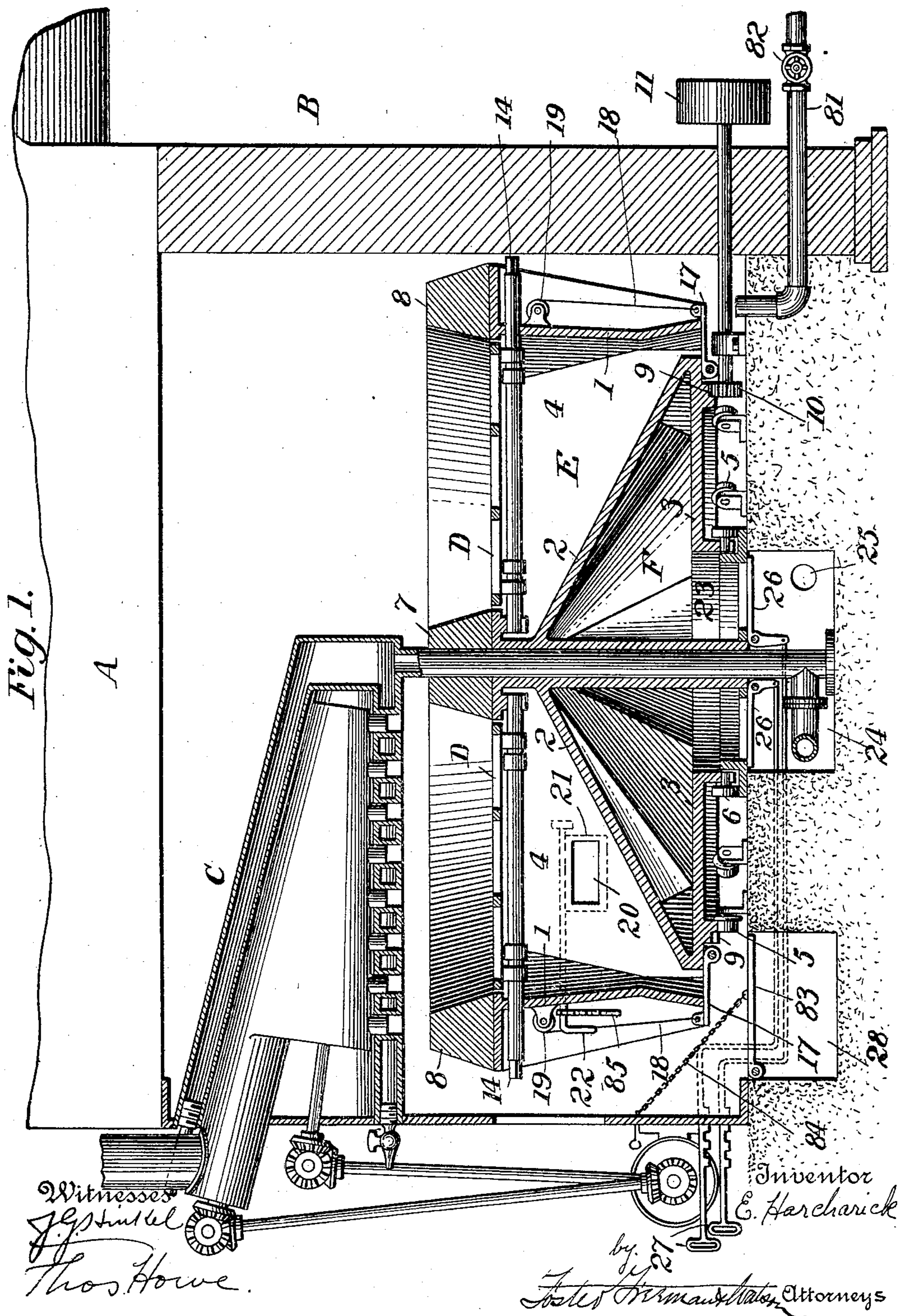


No. 814,650.

PATENTED MAR. 6, 1906.

E. HARCHARICK.
AIR FEEDING DEVICE.
APPLICATION FILED AUG. 9, 1904.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

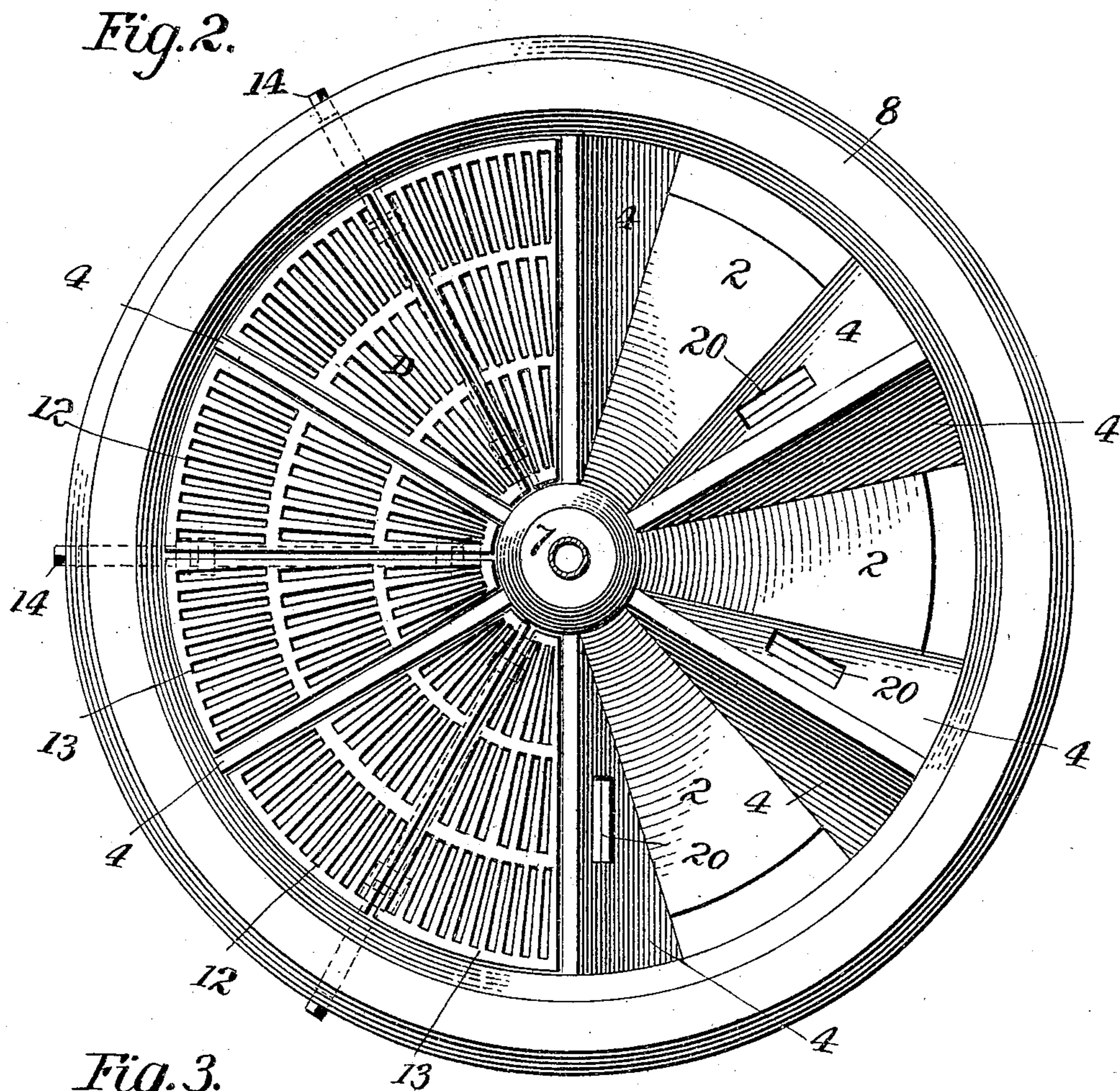
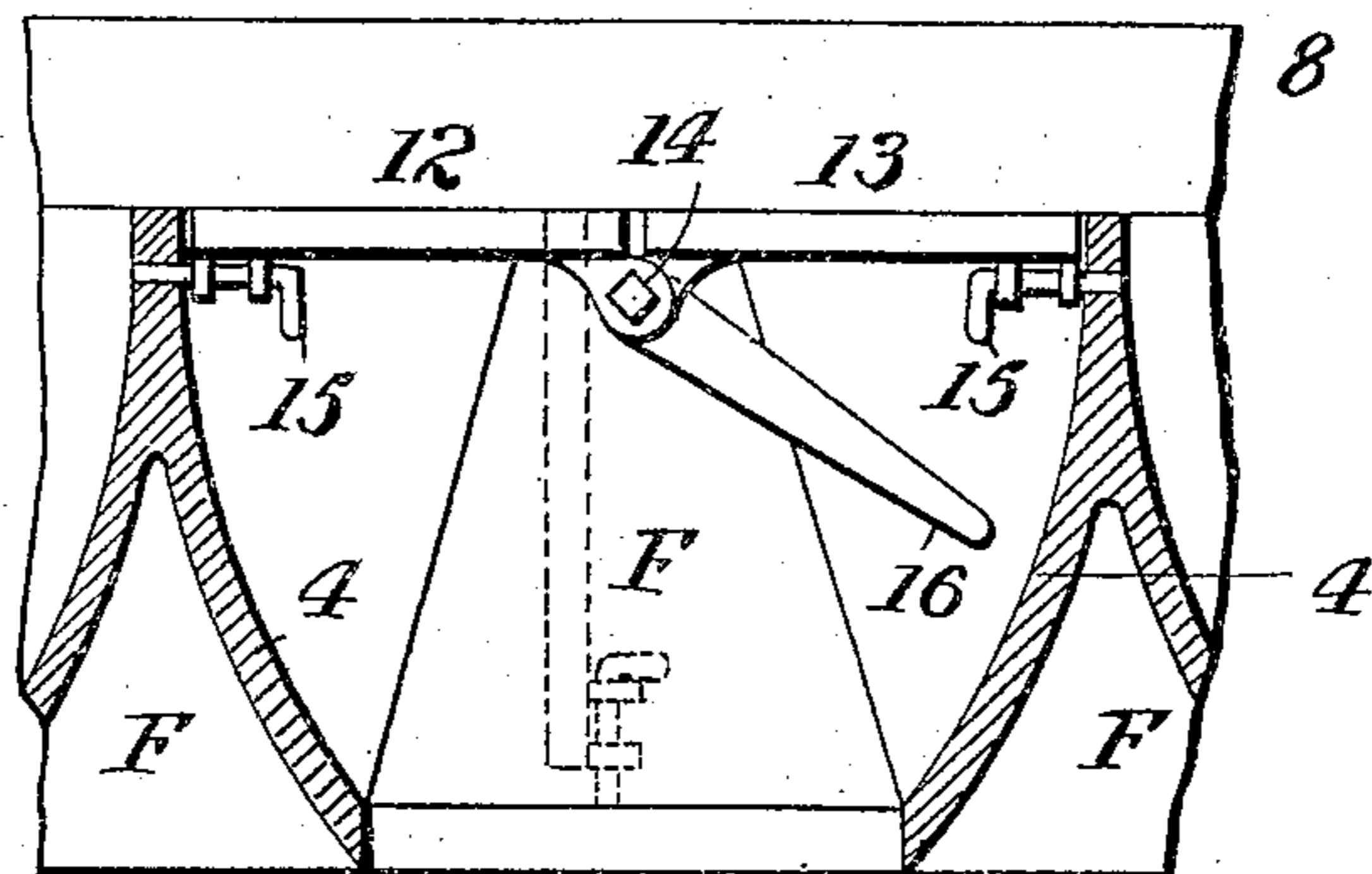


Fig. 3.



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UNITED STATES PATENT OFFICE.

EMRO HARCHARICK, OF WILKES-BARRE, PENNSYLVANIA.

AIR-FEEDING DEVICE.

No. 814,650.

Specification of Letters Patent.

Patented March 6, 1906.

Original application filed April 1, 1904, Serial No. 201,121. Divided and this application filed August 9, 1904. Serial No. 220,112

To all whom it may concern:

Be it known that I, EMRO HARCHARICK, a citizen of the United States, residing at Wilkes-Barre, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Air-Feeding Devices, of which the following is a specification.

This application is a division of my application, Serial No. 201,121, filed April 1, 1904.

This invention relates to air-feeding or draft apparatus for furnaces, and has for its object the provision of apparatus which embodies improvements as will be hereinafter set forth.

In the accompanying drawings, Figure 1 is a vertical section of a furnace embodying my invention. Fig. 2 is a plan view of the grate, certain of the sections being removed to show the ash-chambers and the arrangement of the draft apparatus beneath the grate. Fig. 3 is a side elevation and partial section of a portion of the grate and ash-chambers, showing the construction of the said chambers and also certain portions of the draft apparatus.

Referring to the drawings, a boiler A is suitably supported on a foundation B, and beneath the boiler is arranged a furnace comprising the stoker C, the grate D, the ash-chambers E, the air-chamber F, and connections whereby the proper circulation of water and air is effected.

The walls 1, 2, and 3 of the air and ash chambers are suitably connected to form a frame, which is rotatably supported by rollers 5 and 6 and supports the grate and refractory walls 7 and 8 about the interior and exterior edges of the grate. Rotation of the frame, and with it the grate, may be accomplished by means of a circular rack 9, connected to the frame, which engages with a pinion 10, connected to a driving-pulley 11.

The grate D is divided into radial sections, each section comprising two parts 12 and 13, hinged to a radially-extending bar 14, rotatably mounted in the frame. The parts 12 and 13 are normally held in horizontal position by suitable means, as sliding bolts 15, secured to the grate portions and adapted to enter sockets in the side walls of the ash-chamber. Upon the release of the bolts 15 the parts will swing into a vertical position,

as indicated by the dotted lines in Fig. 3, and their contents be emptied in an ash-chamber E. The parts may be returned to the horizontal position by means of an arm 16, fixed to the bar 14, which may be moved against the bottom of either part by turning the bar 14 by means of a wrench applied to its outer end or in any other suitable manner. After having been thus returned the parts may be secured by refastening the bolts 15.

An ash-chamber E is located beneath each section of the grate and is inclosed by inclined side walls 4, which may be curved, as shown, to afford clearance for the swinging grate portions 12 and 13, the outside wall 1 and the bottom 2 sloping downwardly from the center of the frame to a point near the wall 1, at which point is located an exit for ashes, which exit as the aforesaid frame is revolved passes over an ash-pit 28 and is normally closed by a door 17. Suitable means, as a chain 18 secured to a spring-barrel 19, may be employed for normally holding the door closed. Preferably the walls 4 extend between the grate-sections.

Beneath and between the ash-chambers is an air-chamber F, inclosed by the side walls and bottoms of the ash-chambers and the bottom 3 of the frame. This air-chamber communicates with the ash-chambers by openings 20 in the side walls, which may be closed by doors 21, operated by handles 22 or other suitable means. The air-chamber also communicates by an opening 23 with a pit 24, communicating, by means of an opening 25, with an air source. The whole supply of forced air for the grate may be controlled by means of doors 26 in the opening 23, operated by handles 27, which are notched, as shown in Fig. 1, so that they may engage with the front plate of the furnace and be held in any given adjusted position.

The stoker C, which extends over the grate, may be of any suitable construction for distributing the fuel upon the grate.

There is danger that fumes and heated gases will descend between the edges of the grate and the walls of the furnace to the floor beneath, where the heat thereby caused would prove injurious to the grate and its operating mechanism. This may be avoided by connecting a source of fluid-pressure, as air or steam, by means of any suitable num-

ber of pipes 81 with the interior of the furnace below the grate. Each of the pipes may be controlled by a valve 82, and thus fluid-pressure may be created within the furnace-chamber below the grate at will, and all fumes which might otherwise find their way downwardly between the edges of the grate and the furnace-walls will be driven upwardly. In order that the fluid-pressure thus supplied may not find an outlet through the ash-pit 28, a door 83 for closing the mouth of the ash-pit may be provided, and by this means the furnace beneath the grate is rendered tight. Suitable means for opening the door 83 from the front of the furnace whenever it is desired to dump the ashes from an ash-chamber may consist of a cord or chain 84.

While the pressure of the whole supply of air to the grate may be regulated by adjusting the doors 26, an individual adjustment of the air-supply to each of the sections of the grate may be accomplished by adjusting the doors 21, the doors being held in any desired position by any suitable means, as notched racks 85, which engage with the handles 22 in their various positions.

In the operation of the apparatus as the grate revolves fuel will be distributed upon it by the stoker. When it becomes desirable to dump any portion of the grate, the air-blast is cut off from the particular ash-chamber beneath it by closing the door 21 of said chamber. The supporting-bolts of the grate-sections are then withdrawn, when the grate parts swing downwardly, emptying their contents into the ash-chamber, the grate parts being then returned to the horizontal position and secured in a manner as before described. Fire may be rekindled upon it and fuel supplied to it from the stoker. In a similar manner all the grate-sections may be successively dumped and resupplied with fuel. An ash-chamber E may be relieved of its contents whenever desired by opening its door 17 when it is over the ash-pit. It will be of course understood that in emptying an ash-chamber the door 83 closing the mouth of the ash-pit must also be opened.

While I have illustrated my invention in what I consider one of its best applications, it may be embodied in other constructions, and I do not, therefore, wish to be limited to that shown.

Several of the novel features of the construction illustrated and described in this application form the subject-matter of the claims of my original application, Serial No. 201,121, of which this case is a division, and therefore are not claimed herein.

What I claim is—

1. In a furnace, the combination of a frame having its interior divided into a central air-chamber and an ash-chamber ar-

ranged about and over said air-chamber, a grate supported above said ash-chamber, and means for controlling the passage of air from the air-chamber to the ash-chamber, substantially as described.

2. In a furnace, the combination of a frame having its interior divided into a central air-chamber and a plurality of ash-chambers arranged about and over said air-chamber, a sectional grate supported by said frame and having each of its sections arranged over one of the ash-chambers, and independent means for controlling the passage of air from the air-chamber to each of the ash-chambers, substantially as described.

3. In a furnace, the combination of a frame having its interior divided into a central air-chamber and a plurality of ash-chambers arranged about and over said air-chamber, a sectional grate supported by said frame and having each of its sections arranged over one of the ash-chambers, means for controlling the admission of air to the air-chamber, and independent means for controlling the passage of air from the air-chamber to each of the ash-chambers, substantially as described.

4. In a furnace, the combination of an inclosed frame or support having its interior divided into a central air-chamber and a plurality of ash-chambers arranged over said air-chamber, and having apertures formed in their walls, a grate supported by said frame, and means for opening and closing the apertures in the walls of said ash-chambers to control the passage of air to said chambers, substantially as described.

5. In a furnace, the combination of a rotatable frame having its interior divided into a central air-chamber and an ash-chamber arranged about and over said air-chamber, a sectional grate supported by said frame above the ash-chamber, means for revolving said frame, and means for controlling the passage of air from the air-chamber into the ash-chamber below the grate, substantially as described.

6. In a furnace, the combination of a rotatable frame, having its interior divided to provide a central air-chamber, and a plurality of ash-chambers arranged about and over said air-chamber, a sectional grate carried by said frame above the ash-chambers each section of said grate being arranged above one of the ash-chambers, means for revolving said frame, and means for independently controlling the admission of air to each of the ash-chambers, substantially as described.

7. In a furnace, the combination with a suitable chamber, of a frame arranged in and separated from the side walls of said chamber, the interior of said frame being divided into a central air-chamber and an ash-cham-

ber arranged above said air-chamber, a grate supported by said frame, means for supplying air to said central air-chamber, means for supplying fluid under pressure to the furnace-chamber outside of said frame, and independent means for controlling the passage of air to the ash-chamber and grate, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EMRO HARCHARICK.

Witnesses:

W. L. RAEDER,
M. C. BARRETT.