

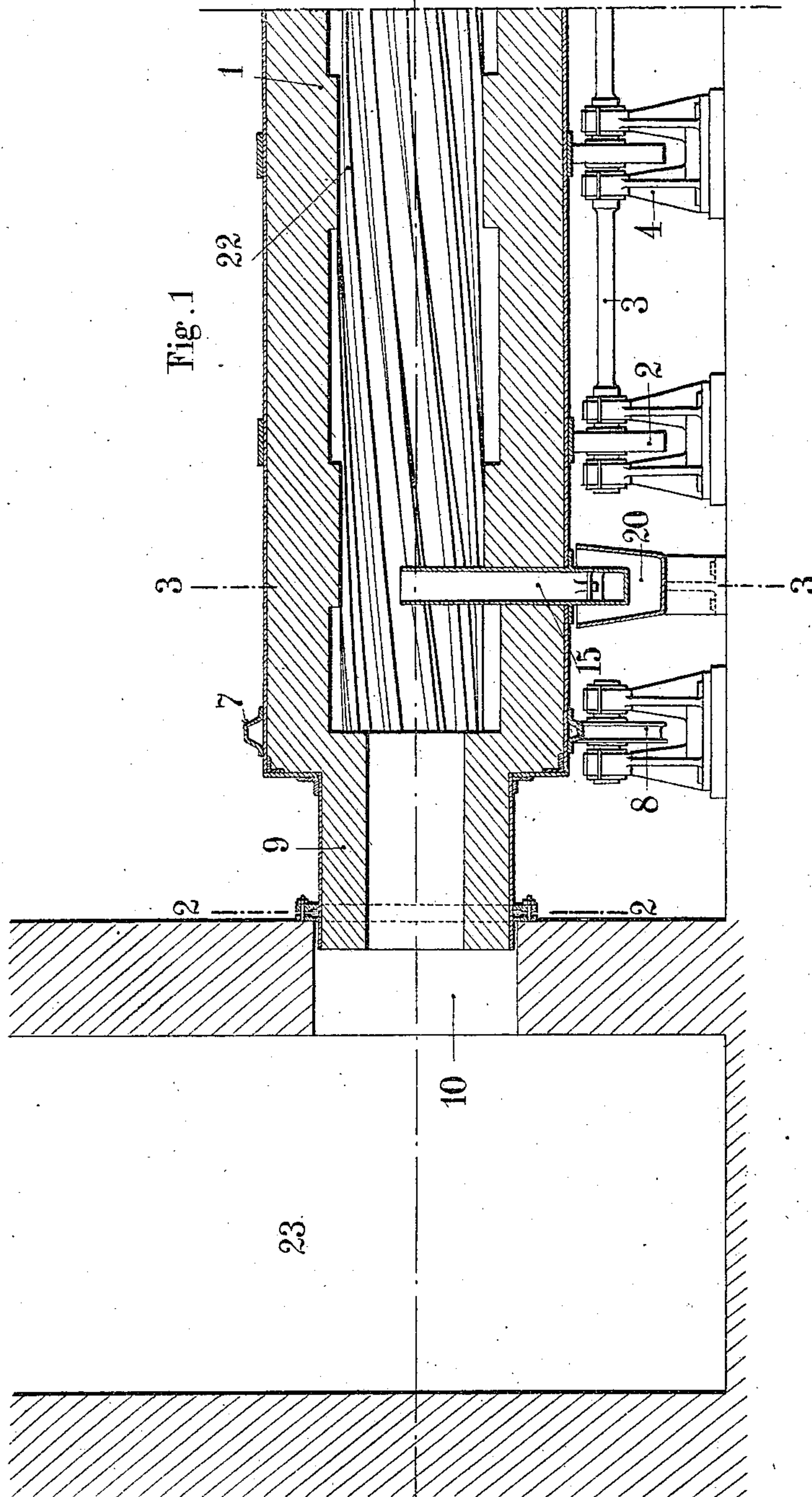
No. 855,289.

PATENTED MAY 28, 1907.

A. DUCCO.
FURNACE.

APPLICATION FILED MAR. 15, 1906.

3 SHEETS—SHEET 1.



WITNESSES :

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INVENTOR

Antonio Ducco

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3 SHEETS—SHEET 2.

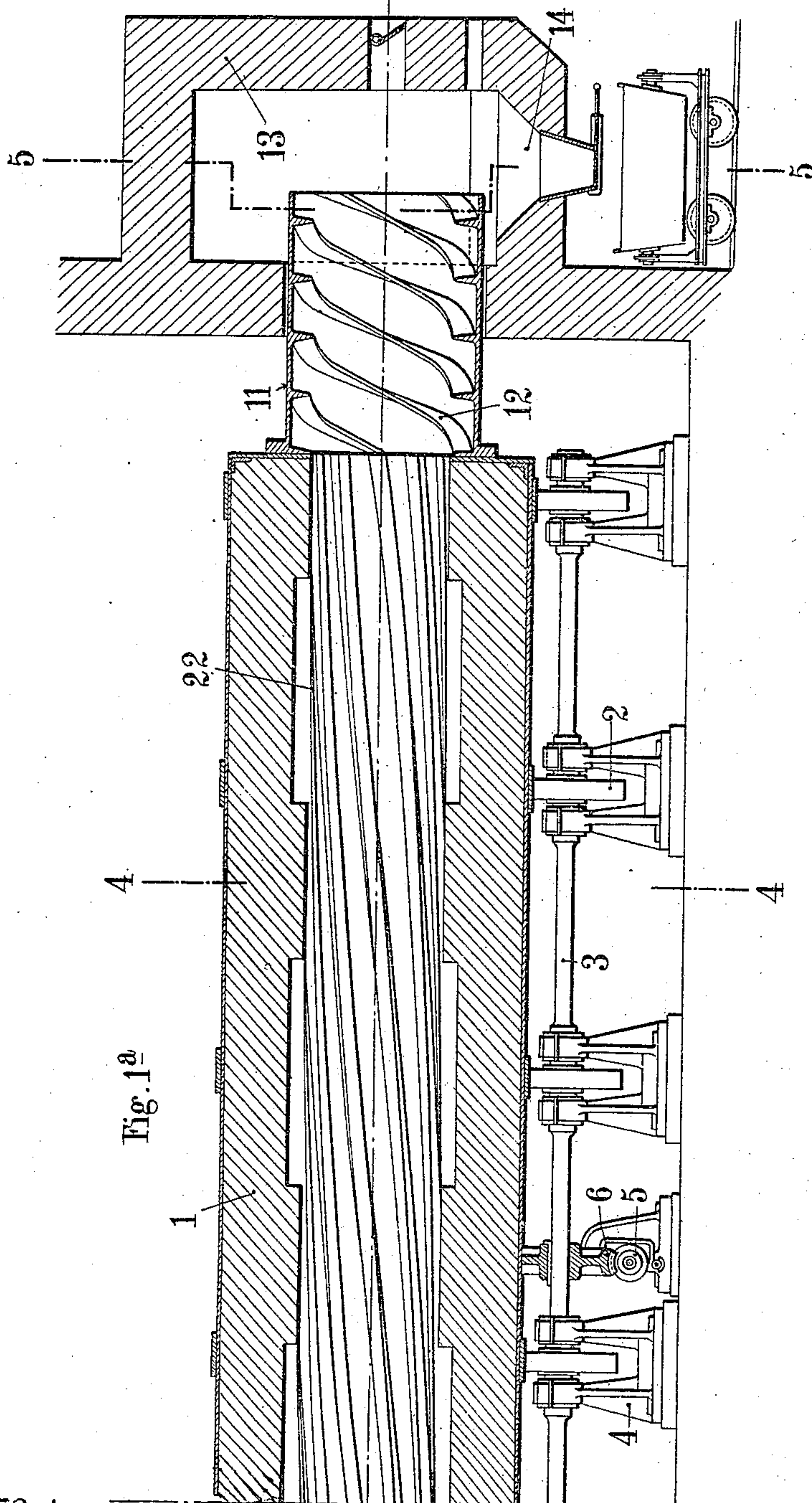


Fig. 1a

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3 SHEETS—SHEET 3.

Fig. 2

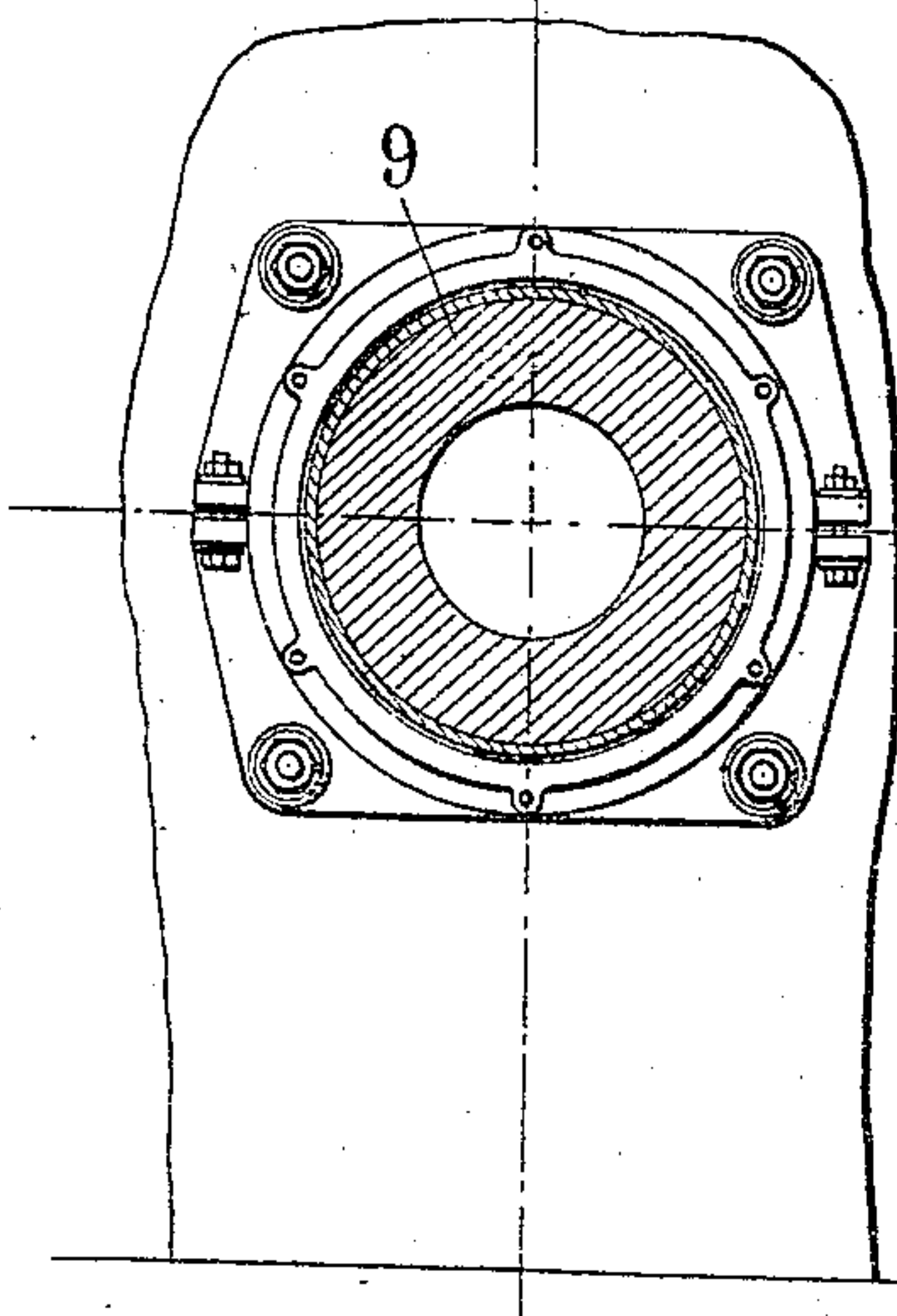


Fig. 3

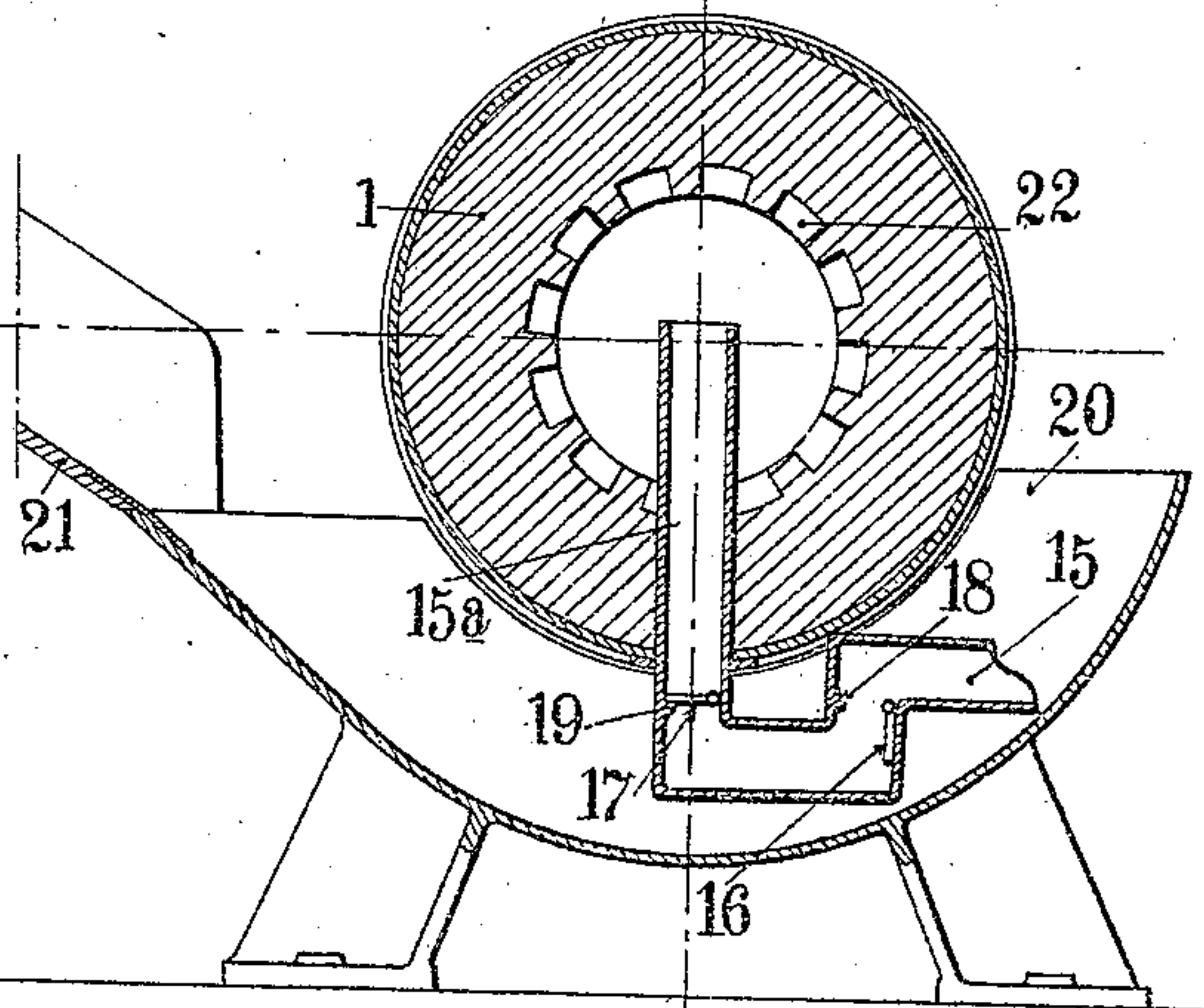


Fig. 4

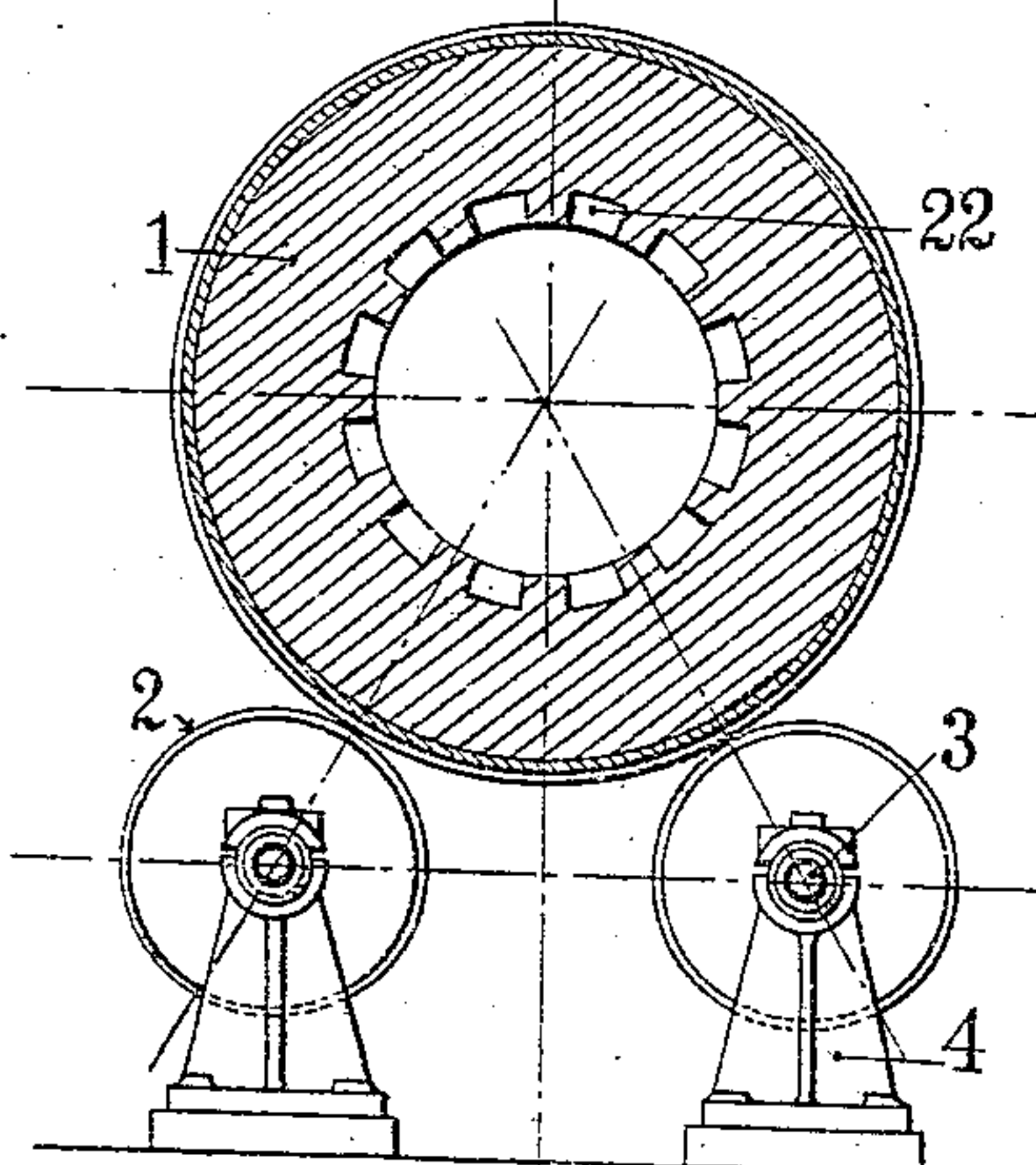
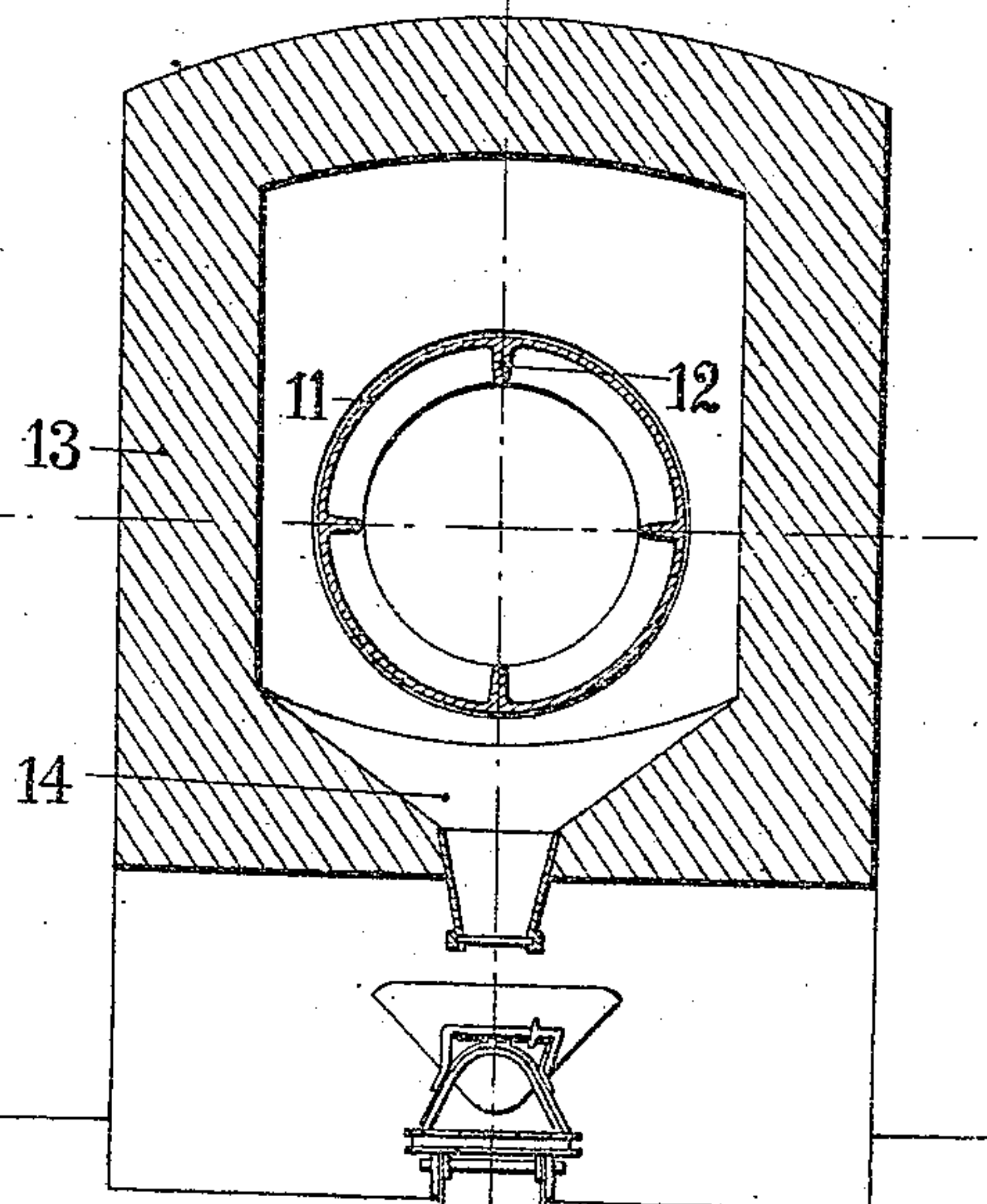


Fig. 5



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UNITED STATES PATENT OFFICE.

ANTONIO DUCCO, OF TURIN, ITALY.

FURNACE.

No. 855,289.

Specification of Letters Patent.

Patented May 28, 1907.

Application filed March 15, 1906. Serial No. 306,168.

To all whom it may concern:

Be it known that I, ANTONIO DUCCO, a subject of the Kingdom of Italy, and a resident of 36 Via Pio Quinto, at Turin, Italy, have invented certain new and useful Improvements in Rotary Furnaces, of which the following is a specification.

This invention relates to rotary mechanical furnaces for the treatment of ores of all kinds, more especially sulfurous ores.

In order to obtain in such furnaces as good a combustion as possible, the quantity of ores must be maintained in a suitable proportion with the speed of the roasting, that is, mostly with the quantity of air causing combustion. It is also necessary to avoid the introduction of air while charging.

According to this invention the rotary furnace is provided with a charging device arranged on the roasting chamber itself, and which, at each revolution of the furnace raises but just the quantity of ore corresponding to the speed of the combustion. Furthermore, with this charging device, air cannot enter into the furnace while charging, nor can the combustion gases developed in the furnace, escape.

In the accompanying drawings—Figures 1 and 1^a arranged end to end, show in axial longitudinal section a constructional form of the furnace, with charging devices in cross section. Figs. 2, 3, 4 and 5 are respectively cross sections through the furnace on the lines 2—2, 3—3, 4—4, and 5—5 of Figs. 1 and 1^a.

In the constructional form illustrated in the drawings the furnace is formed of a rotary chamber 1, of great length, which rests upon rollers 2, the shaft 3 of which is carried by a suitable number of bearings 4, and may be rotated by means of a shaft 5 with an endless screw and a helical wheel 6.

A guide crown 7 is arranged at one of the extremities of the rotary chamber and engages with a grooved wheel 8 serving to prevent longitudinal displacement of the apparatus.

The chamber 1 terminates at one side in a cylindrical sleeve 9 entering an opening 10 in the chamber 23 of the furnace. At the other extremity of the rotary chamber there is fixed a discharging cylinder 11, the interior of which is provided with helicoidal elements 12. This cylinder opens into a masonry chamber 13 closing the furnace, terminated

at its lower part by a discharging hopper 14, from which the treated products may be withdrawn.

The charging device for the furnace is constituted by a pipe 15—15^a presenting a triple bend (Figs. 1 and 3) the part 15^a of which extends to about the center of the rotary chamber. This pipe is provided internally with two valves or doors 16, 17 adapted to rest respectively on stops 18, 19 in the closed positions. Externally of the furnace and in the circular course of the charging pipe 15—15^a, there is arranged a trough 20 into which the materials to be treated in the furnace are charged through the inclined channel 21.

The inner wall, of refractory material, of the rotary chamber 1, comprises grooves or baffles 22, of appropriate number, the inclination of which, relatively to the generatrix of the cylinder, is comparatively small. A suitable inclination to give these grooves or baffles is 10 cm. per meter for example, that is to say about 60 cm. for a chamber 6 meters in length.

The operation of the furnace is as follows: The charging is effected methodically during the rotation of the chamber 1, through the charging-pipe 15—15^a which obtains the materials to be treated in the trough 20 by means of its spout 15. In the position represented in Fig. 3, the valve or door 17 is closed, preventing the escape of the gases, while the door 16 is open for the admission of the ore.

When the spout 15 of the charging pipe reaches the vertical position and the part 15^a the horizontal position, the valve 16 closes and prevents the escape of the gases while the valve 17 begins to open inside the part 15^a. From this moment, the ore is able to fall into the chamber 1 of the furnace, through the port 15^a of the pipe. The valves 16 and 17 retain these respective open and closed positions until the charging-pipe 15—15^a is again ready to take ore from the trough 20. At this moment the valve 17 is closed while the valve 16 is again open for the admission of the ore.

It is therefore obvious that during the whole of the rotation of the charging means one of these valves is closed, so that any admission of atmospheric air and any escape of gas is prevented.

Having now particularly described and as-

certained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In a mechanical furnace for the treatment of ore and the like, the combination of a rotary chamber having helical grooves, with an automatic charging device mounted thereon, consisting of a pipe having multiple bends, hinged valves or doors in said pipe, one end of said pipe projecting into the rotary chamber, and the other projecting outward.

2. In a furnace for the treatment of ore and the like, the combination of a rotary chamber, a trough below one end of the chamber, and a pipe leading from the interior of the furnace and having a bent outer end, the terminal of which is approximately at right angles to the body of the pipe.

3. In a furnace for the treatment of ore and the like, the combination of a rotary chamber, a trough below one end of the chamber, a pipe leading from the interior of

the chamber and provided with a bent outer end, the terminal of which is approximately at right angles to the body of the pipe, and automatic valves in said pipe, said valves being alternately opened and closed.

4. In a furnace for the treatment of ore and the like, the combination of a rotary chamber, a trough below one end of the chamber, a pipe leading from the interior of the chamber and provided with an angular outer end, the terminal of which is at right angles to the body of the pipe, and hinged valves, one in the body of the pipe and the other in the angular end.

In testimony whereof I have hereunto placed my hand, this 28th day of February 1906.

ANTONIO DUCCO.

Witnesses: ~~WITNESSES~~

GOTTARDO C. PIRONI,
EUGENIO FIZLIS.