

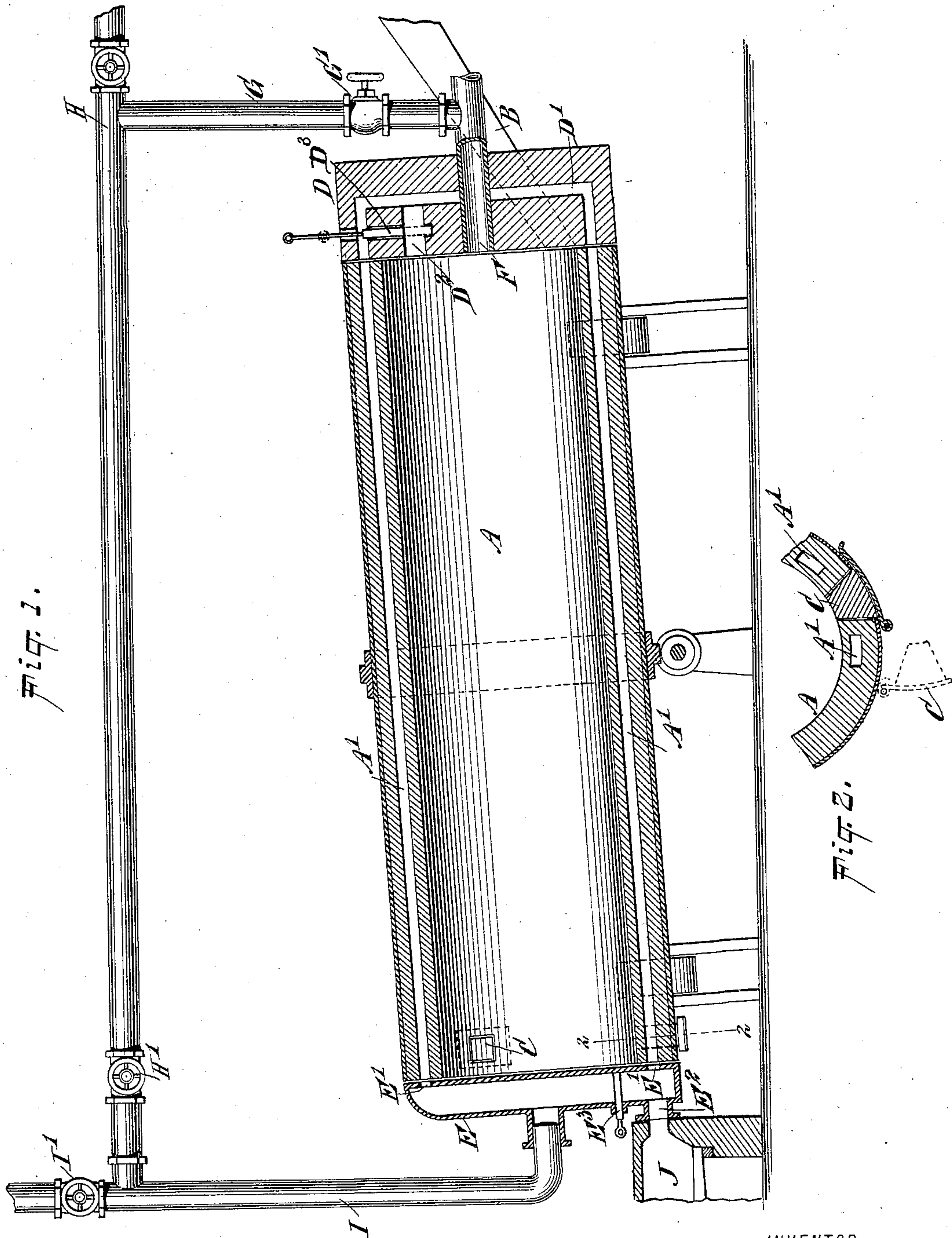
(No Model.)

2 Sheets—Sheet 1.

A. R. MEYER.
REVOLVING MUFFLE FURNACE.

No. 581,168.

Patented Apr. 20, 1897.



WITNESSES:
William P. Gaebel.
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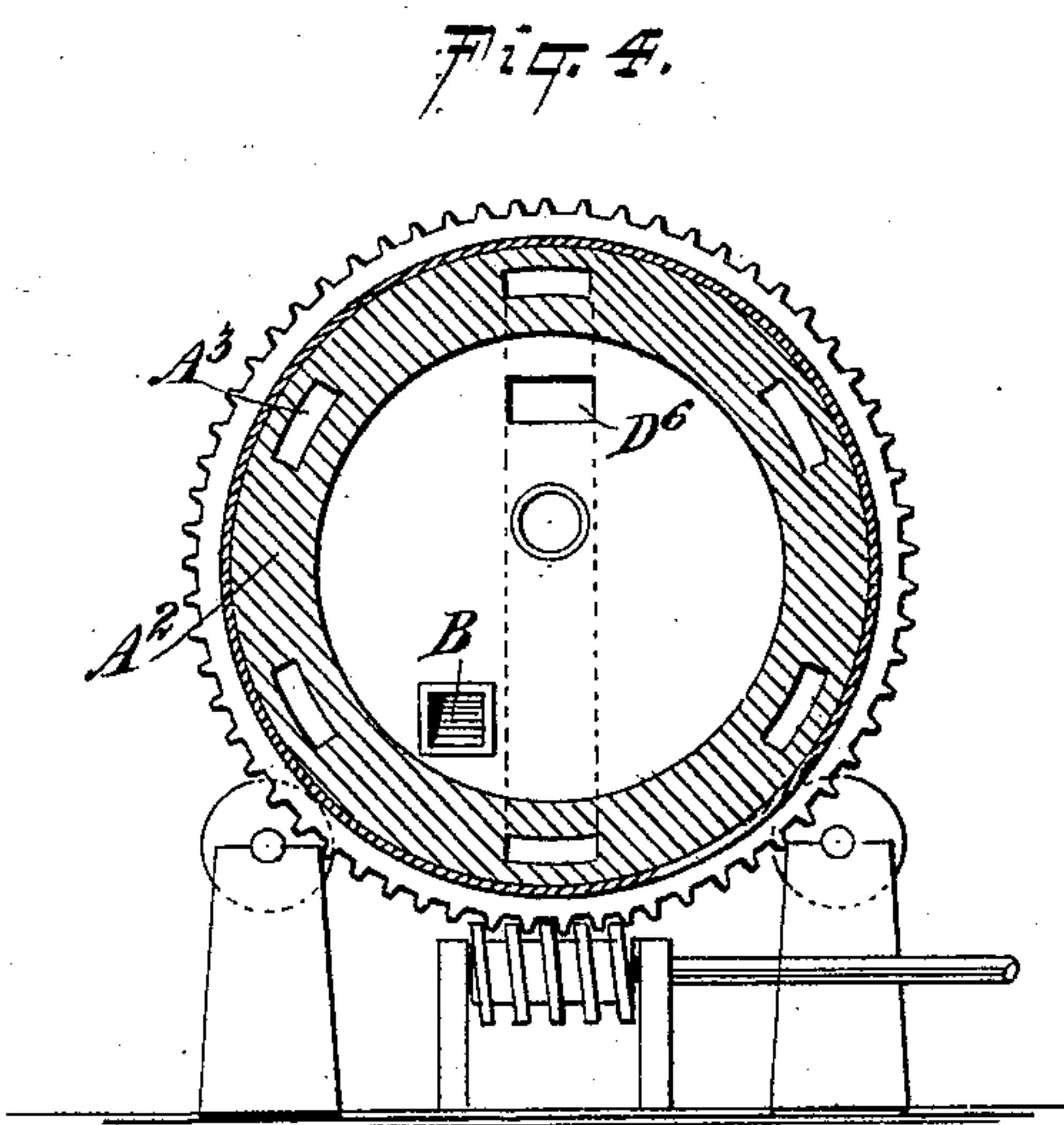
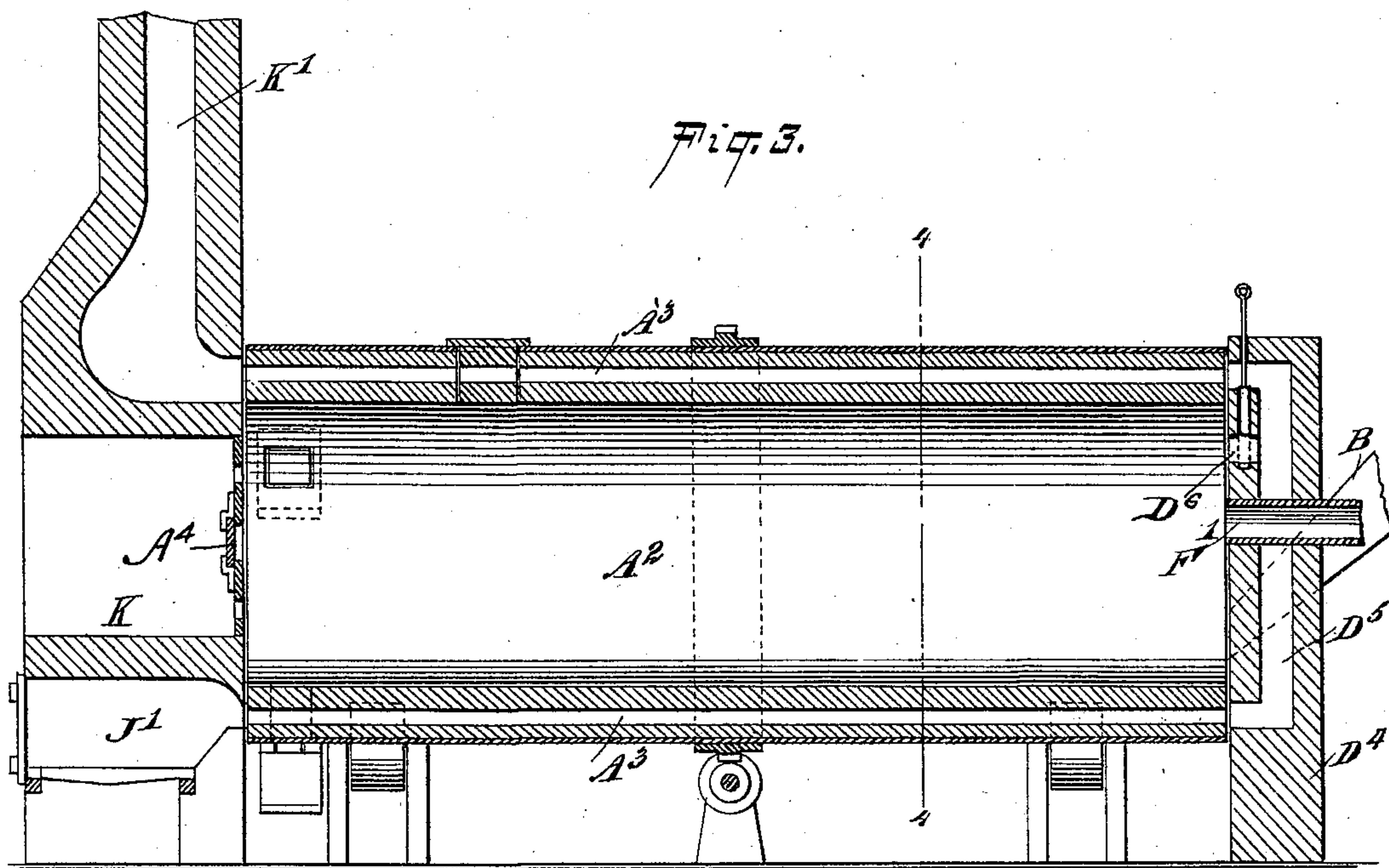
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REVOLVING MUFFLE FURNACE.

No. 581,168.

Patented Apr. 20, 1897.



WITNESSES:

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UNITED STATES PATENT OFFICE.

AUGUST ROBERT MEYER, OF KANSAS CITY, MISSOURI.

REVOLVING MUFFLE-FURNACE.

SPECIFICATION forming part of Letters Patent No. 581,168, dated April 20, 1897.

Application filed February 25, 1896. Serial No. 580,680. (No model.)

To all whom it may concern:

Be it known that I, AUGUST ROBERT MEYER, of Kansas City, in the county of Jackson and State of Missouri, have invented a new and Improved Revolving Muffle-Furnace, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved revolving muffle-furnace, to facilitate the desulfurizing or chloridizing of ores or metallurgical products by a more rational application of the heat, to keep the products of combustion of the burning fuel entirely separate from the material under treatment, and to utilize the gases produced in the revoluble cylinder for heating the latter.

The invention consists of certain parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side elevation of the improvement. Fig. 2 is a transverse section of part of the same on the line 2 2 of Fig. 1. Fig. 3 is a sectional side elevation of a modified form of the improvement, and Fig. 4 is a transverse section of the same on the line 4 4 of Fig. 3.

The muffle-furnace as illustrated in Fig. 1 is provided with a revoluble cylinder A, mounted in the usual manner and turned by the ordinary means well known in the construction of revoluble furnaces. The cylinder A is adapted to be charged with the ore and metallurgical product through a chute B, delivering the ore at the upper end of the cylinder A, and the material after the process is completed discharges through open doors C at the outside of the cylinder at the lower end thereof. The open ends of the cylinder abut against a brickwork D and a casing E, both stationary.

In the wall of the cylinder A are arranged longitudinally-extending flues A', adapted to connect at their upper ends with a U-shaped channel D' and at their lower ends by ports E' with the interior of the casing E. In the brickwork D is arranged an opening D² for

connecting the interior of the cylinder A with the channel D', so that the hot gases arising in the cylinder A can pass through said opening D² into the channel D' and from the latter through the flues A' to the casing E. The opening D², however, may be closed by a suitable valve D³, and the hot gases may be taken from the interior of the furnace A through a pipe F, arranged in the brickwork D and connected at its outer end by a pipe G, provided with a valve G', with a pipe H for carrying the gases to a suitable chamber for further treatment, the pipe H being provided with a valve H'.

The casing E is provided with an outlet-pipe I, provided with a valve I' and adapted to connect with a chimney and also connect below the valve I' with the pipe H. Now it will be seen that when the valve G' in the pipe G and the valve I' in the pipe I are closed and the valve H' in the pipe H is open then the hot gases from the cylinder A can pass through the opening D² and channel D' into and through the flues A' to finally pass into the casing E, from which the said hot gases pass to the pipe I and into the pipe H to the chamber hereinbefore referred to to be further treated. Thus the hot gases arising in the cylinder A are utilized to heat the latter.

If desired, products of combustion from a furnace J may be passed through the flues A' to heat the cylinder A without the said products of combustion coming in contact with the material and gases contained in the cylinder A. For this purpose the furnace J connects by a neck E² with the lower end of the casing E, and this lower end is cut off from the upper part of the casing by a suitable valve E³. Now it will be seen that the products of combustion from the furnace J pass through the neck E² into the lower part of the casing E and through the port E' into the lowermost flue A' to pass along the same and enter the lower end of the channel D', through which channel the products of combustion pass to the uppermost flue A' and along the same back into the upper part of the casing E and thence through the pipe I to the chimney, it being understood that the valve I' is then opened and the valve H' is closed.

As shown in Figs. 3 and 4, the cylinder A² is likewise provided in its wall with longitu-

dinal flues A^3 , connecting with the upper and lower ends of a channel D^5 in the brickwork D^4 , and the lower end of the cylinder A^2 is provided with a register or damper A^4 and abuts
 5 on a brickwork K , containing the chimney K' , in register with the flues A^3 of the revolving cylinder A^2 . A furnace J' , built in the brickwork K , connects with the flues A^3 in the same manner as the furnace J , previously
 10 described in reference to Fig. 1. An outlet-pipe F' is provided for the interior of the cylinder A^2 , and an opening D^6 is arranged in the brickwork D^4 for connecting the interior of the cylinder with the channel D^5 and lead-
 15 ing the hot gases through the uppermost flues A^3 into the chimney K' whenever desired.

It is understood that when the furnaces $J J'$ are employed then the products of combustion arising from said furnaces pass through the
 20 flues A^1 and A^3 to heat the cylinders A and A^2 and the ores or metallurgical products, so as to desulfurize or chloridize the same without the heat coming in contact with the material under treatment.

25 It will further be seen that the products of combustion travel twice through the flues before passing off to the chimney, so that the heat is utilized to the fullest advantage. The air or steam necessary to the desulfurizing
 30 or chloridizing of the material in the cylinder can be supplied through a register or damper in the front of the cylinder.

Having thus fully described my invention, I claim as new and desire to secure by Letters
 35 Patent—

1. A revolving muffle-furnace, comprising a revoluble cylinder formed in its walls with independent longitudinal flues, a furnace adapted to discharge successively into said
 40 flues, a channel at the end of the cylinder remote from the furnace, said channel connecting the cylinder-flues and adapted to be placed in communication with the interior of the cylinder, and an outlet at the furnace end of the

cylinder and adapted to be successively connected with the cylinder-flues, substantially as described. 45

2. A revolving muffle-furnace, comprising a revoluble cylinder formed in its walls with independent longitudinal flues, a furnace adapted to discharge successively into said
 50 flues, a U-shaped channel arranged in fixed brickwork for connecting the flues of the cylinder at the end of the cylinder remote from the furnace and from which an opening leads
 55 through the brickwork for establishing communication between it and the cylinder, and an outlet at the furnace end in position to be connected successively with the said cylinder-flues, substantially as described. 60

3. A revolving muffle-furnace, comprising a revoluble cylinder formed with flues, a fixed brickwork at one end of said cylinder and provided with a channel connected with the
 65 said flues, said brickwork being also provided with an opening for connecting the interior of the cylinder with the said channel, a casing at the other end of the said cylinder and connected with said flues, a valve in the casing
 70 and an outlet for said casing, substantially as shown and described.

4. A revolving muffle-furnace, comprising a revoluble cylinder formed with flues, a fixed brickwork at one end of said cylinder and provided with a channel connected with the
 75 said flues, said brickwork being also provided with an opening for connecting the interior of the cylinder with the said channel, a casing at the other end of the said cylinder and connected with said flues, a valve in the casing,
 80 an outlet for said casing, and a furnace adapted to be connected with the lower part of said casing, substantially as shown and described.

AUGUST ROBERT MEYER.

Witnesses:

THEO. G. HOSTER,
 JNO. M. RITTER.