

(No Model.)

2 Sheets—Sheet 1.

A. DROIT.
CALCINING APPARATUS.

No. 370,326.

Patented Sept. 20, 1887.

Fig. 1.

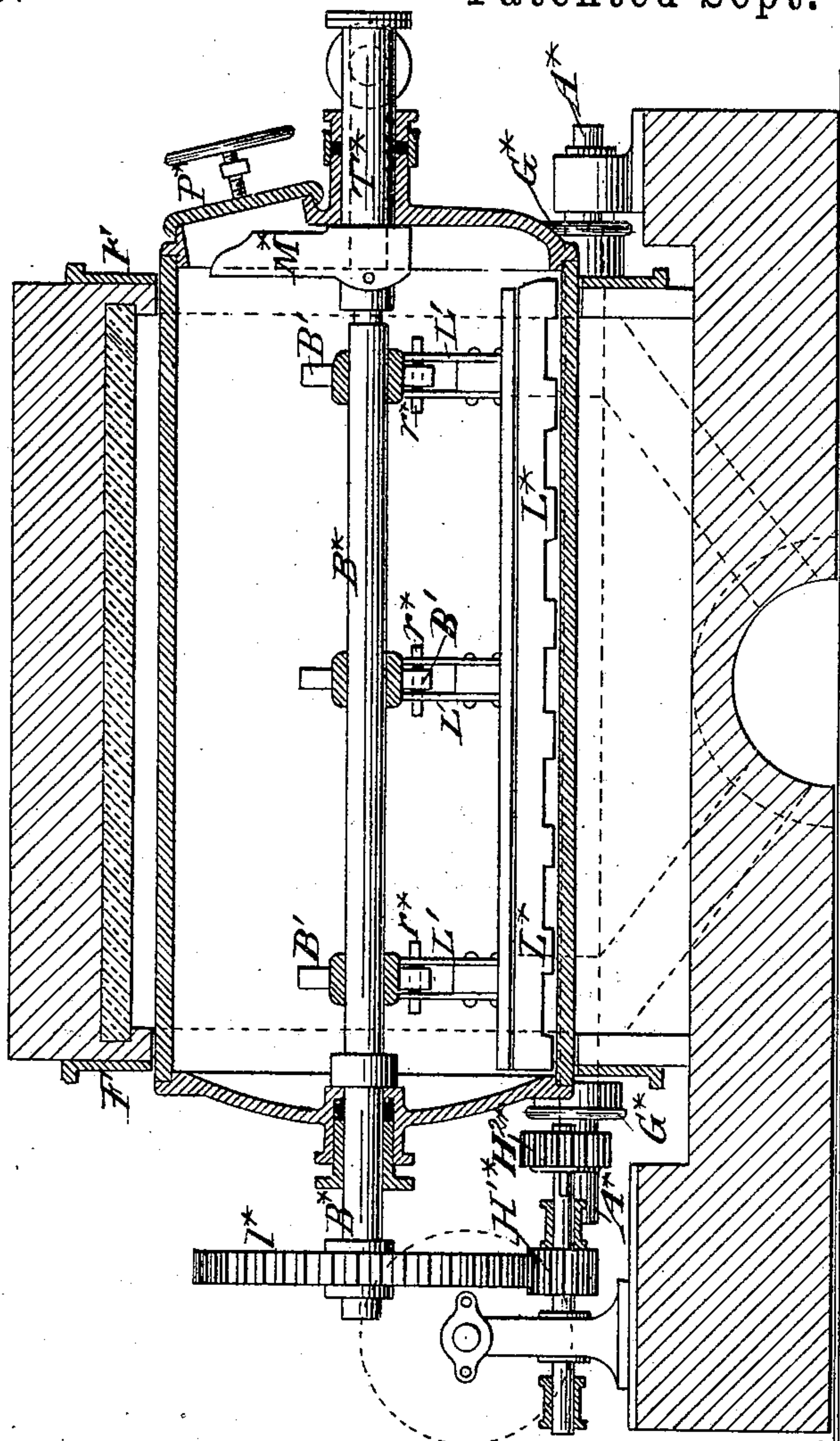
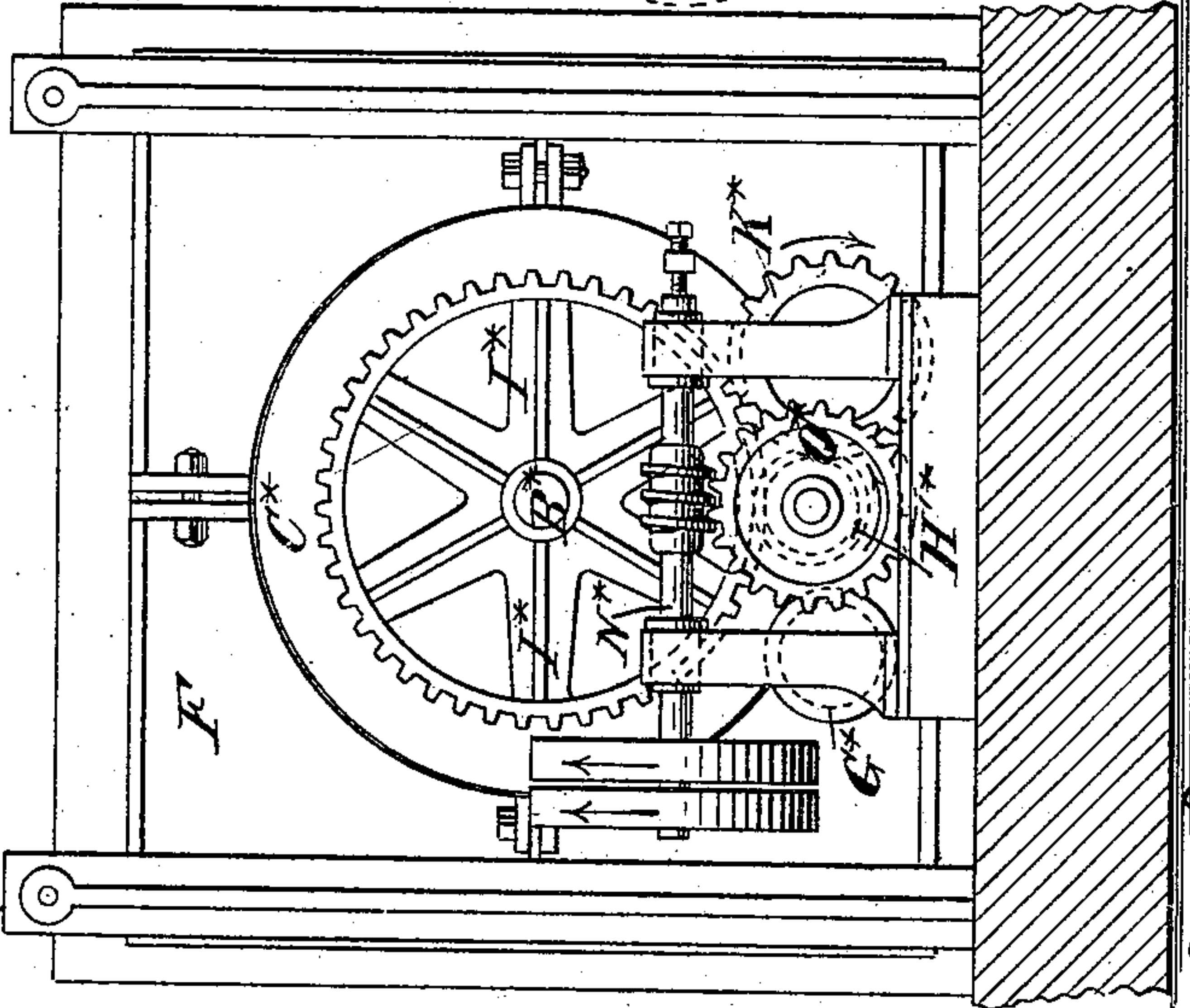


Fig. 2.



Witnesses.
Emil Hertel.
Henry J. White.

Inventor.
Albert Droit
by his attorneys
Brown & Hall.

(No Model.)

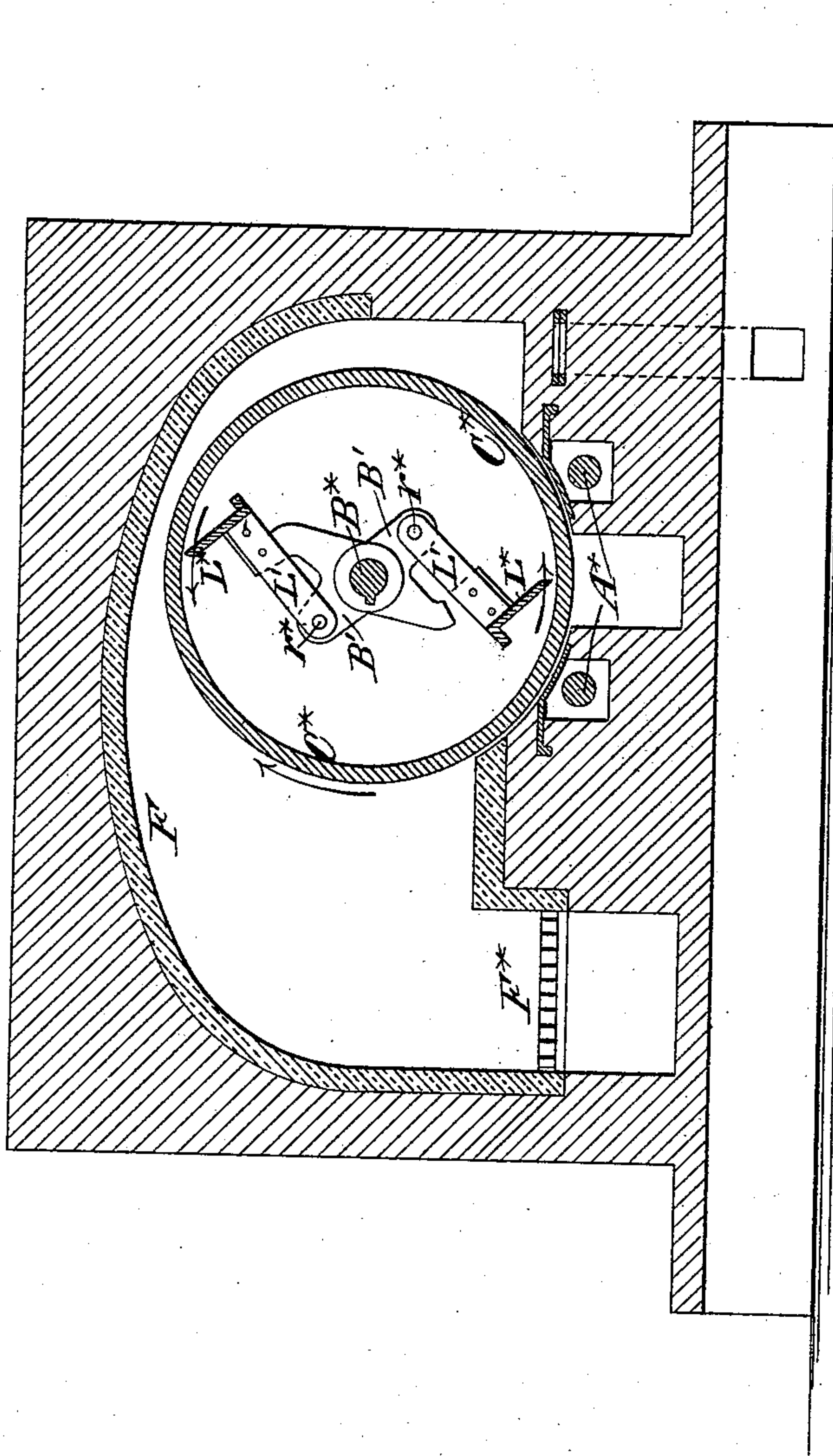
2 Sheets—Sheet 2.

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Patented Sept. 20, 1887.

Fig. 3.



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UNITED STATES PATENT OFFICE.

ALBERT DROIT, OF PARIS, FRANCE.

CALCINING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 370,326, dated September 20, 1887.

Application filed July 14, 1887. Serial No. 244,237. (No model.)

To all whom it may concern:

Be it known that I, ALBERT DROIT, a citizen of the Republic of France, residing in Paris, in said Republic, have invented a new and useful Improvement in Apparatus for Calcining Carbonate of Soda and other Substances, of which the following is a specification, reference being had to the accompanying drawings.

10 This invention has especially for its object the calcination of the bicarbonate of soda obtained by the ammonia process. The conditions to be fulfilled in such calcination are as follows: First, it is necessary to treat large
15 quantities of the bicarbonate at a time; second, the bicarbonate is a bad conductor of heat, and to heat it in all its parts it is necessary to stir it to prevent the formation of crusts on the heated surface; third, the apparatus should permit the collection of the gas and vapor disengaged; fourth, the product having to be calcined highly to have a convenient density, the apparatus is quickly destroyed, and it is necessary to construct it as durable
25 as possible to facilitate the repair.

The apparatuses heretofore employed to calcine by direct heating are generally formed of a cast-iron kettle or of a horizontal cylinder. These apparatuses are fixed. The heating being direct, the fire strikes upon a restricted surface and the iron is quickly burned. The soda is stirred by very complicated agitators, which incompletely scrape the heated surfaces, because of the rapid deformation which the apparatuses are subject to under the influence of the heat.

30 My invention consists in the combination, as hereinafter described and claimed, of a rotary cylinder, a rotary shaft, and articulated stirrers and scrapers contained in said cylinder, and a surrounding furnace having a fire-place on one side.

40 In the accompanying drawings, Figure 1 represents a longitudinal and nearly central section of an apparatus constructed according to my invention. Fig. 2 is an end view of the same, and Fig. 3 a transverse section of the same.

50 Similar letters of reference designate corresponding parts in the several figures.

C* designates the rotary cylinder, placed in

an arched furnace, F, heated by a fire-place which ranges along the whole length of one side of it. This cylinder is mounted on four rollers, G*, keyed upon two horizontal shafts, A*. One of these shafts receives a continuous rotary motion, which it communicates to the cylinder C* by the intermediation of the rollers G*.

60 The axis of the cylinder C* is traversed by the shaft B*, which receives a rotary motion in a reverse direction to that of the cylinder. This shaft passes through a stuffing-box in one end of the cylinder, said stuffing-box being furnished with asbestos packing. It is supported
65 at its other extremity by a fixed tubular bearing, T*, inserted through the other end of the cylinder. A second stuffing-box packed with asbestos prevents the escape of gas at this end.

70 The shaft B* carries two cast-iron blades, L*, carried by arms L', articulated by pivots l* to flanges B', keyed on the shaft. These blades by their own weight scrape the surface of the cylinder during about a half-revolution, and in
75 order that their action may be more energetic they are formed with numerous teeth in the direction of their length, the teeth of one blade corresponding with the spaces on the other blade.

80 The tube T* carries a nozzle, M*, which is keyed to it, and which debouches in the upper part of the cylinder.

85 The charging and discharging of the bicarbonate into and from the cylinder are made by two doors, P*, provided in one of the heads, and furnished with means for making them airtight. The exit of the gas, which is disengaged during the reaction, takes place through the nozzle M* and the fixed tube T*.

90 A shaft, N*, receiving motion through a pulley and belt, carries an endless screw which gears with a wheel, O*. Two pinions, H* and H²*, mounted on the same shaft with the worm-wheel O*, communicate their movement, the
95 first to the shaft B* through the intermediation of the wheel I* on the said shaft, and the second to the cylinder C* by the intermediation of the wheel K*. This latter pinion H²* may slide on its shaft in order to permit the
100 throwing out of gear when it is required to charge or discharge the cylinder.

The advantages which result from the employment of this apparatus are considerable; the rotary cylinder is heated uniformly, and consequently is more durable. The decomposition of the bicarbonate will be more rapid, because the heating-surface is greater. The articulated and toothed stirrers produce an energetic stirring and prevent the formation of adherent crusts of soda.

10 What I claim as my invention, and desire to secure by Letters Patent, is—

The combination of the rotary cylinder C*,

the rotary shaft fitted to bearings in the ends of said cylinder and having flanges B' within the said cylinder, the arms F', pivoted to said flanges, the scrapers L*, carried by said arms, and the inclosing-furnace F, having the fireplace on one side, substantially as herein described. 15

ALBERT DROIT.

Witnesses:

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LOUIS QUATREHOMMES.