

(No Model.)

2 Sheets—Sheet 1.

H. BREER.
DESICCATING APPARATUS.

No. 313,402.

Patented Mar. 3, 1885.

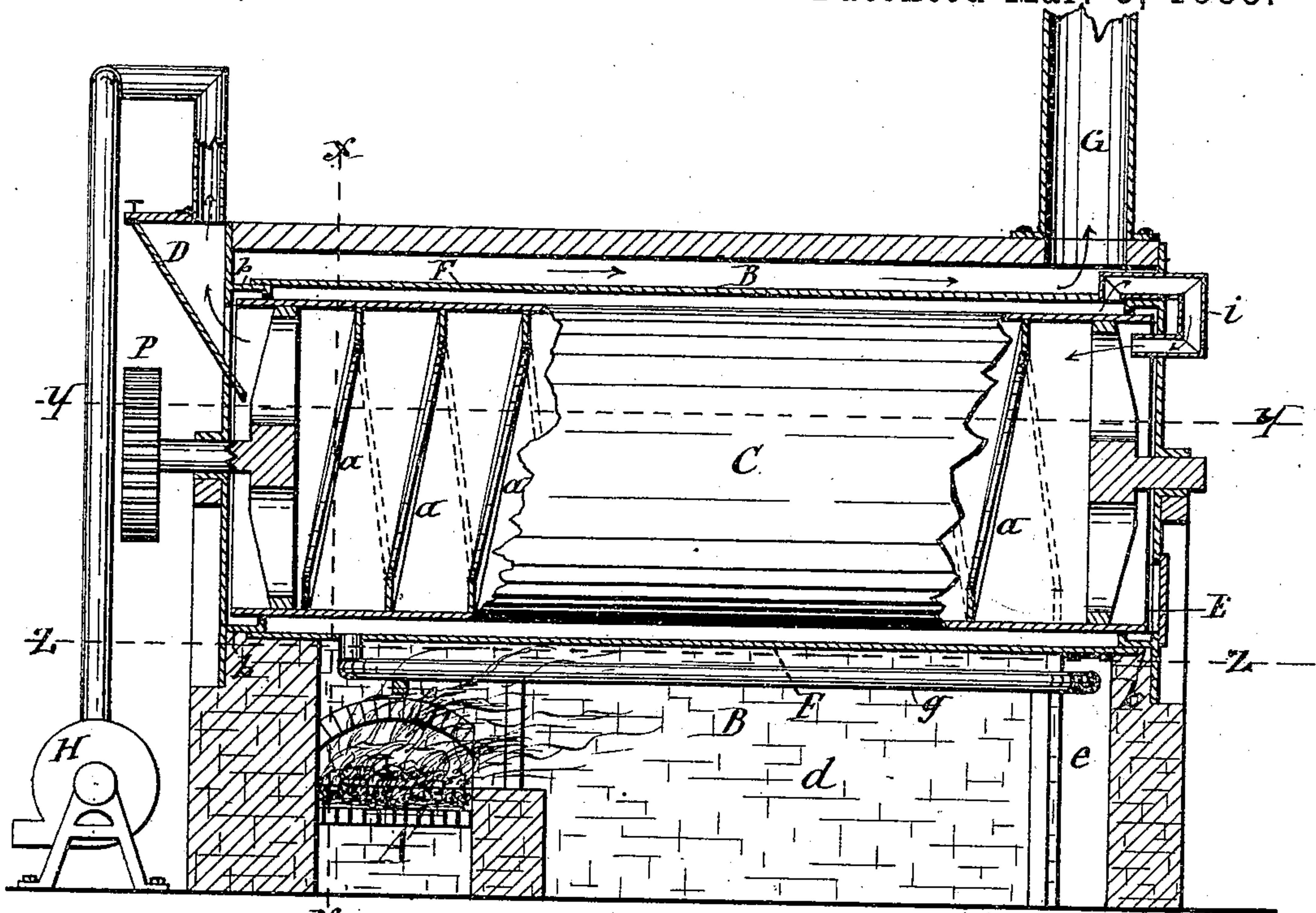


FIG-1-

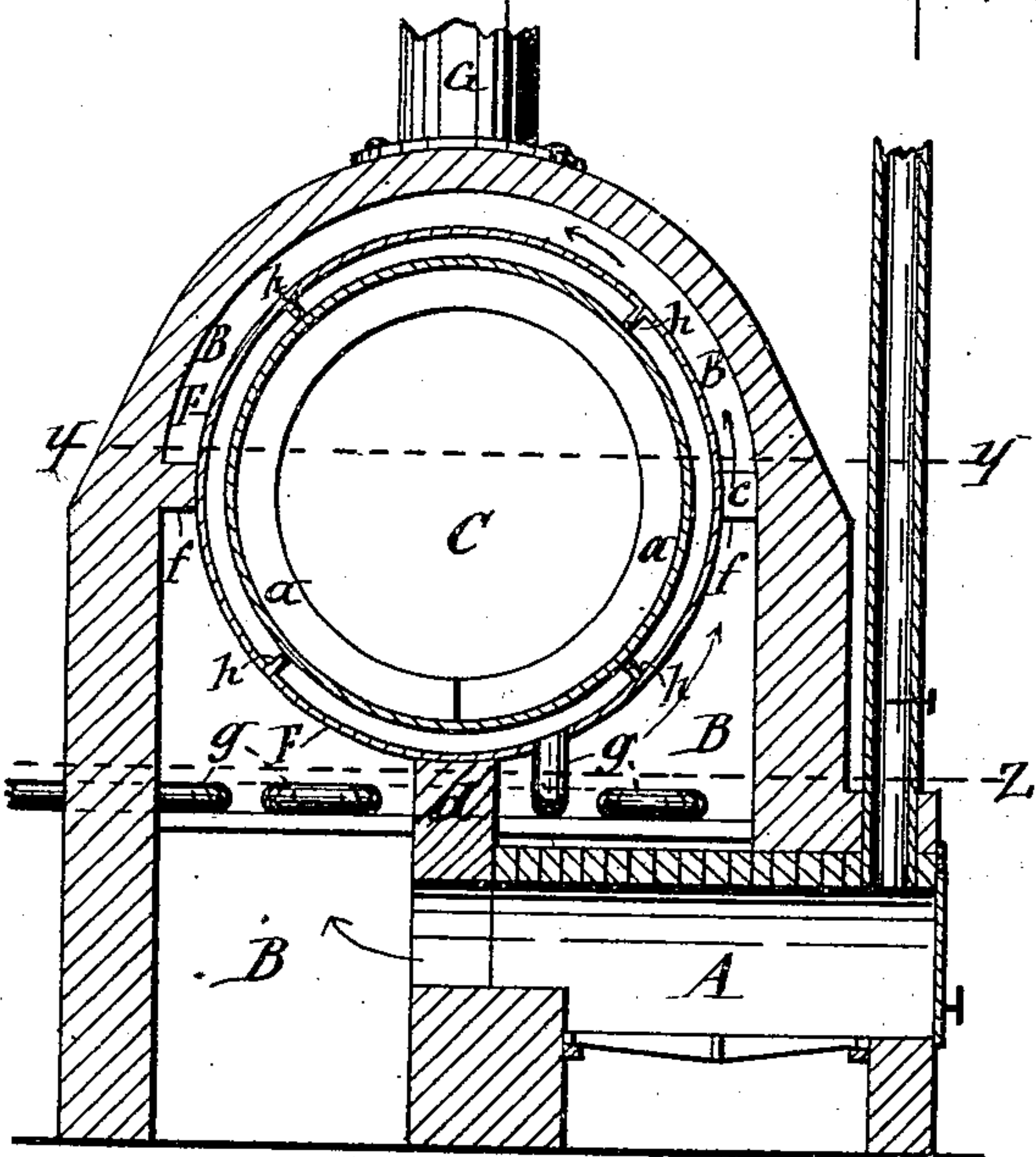


FIG-2-

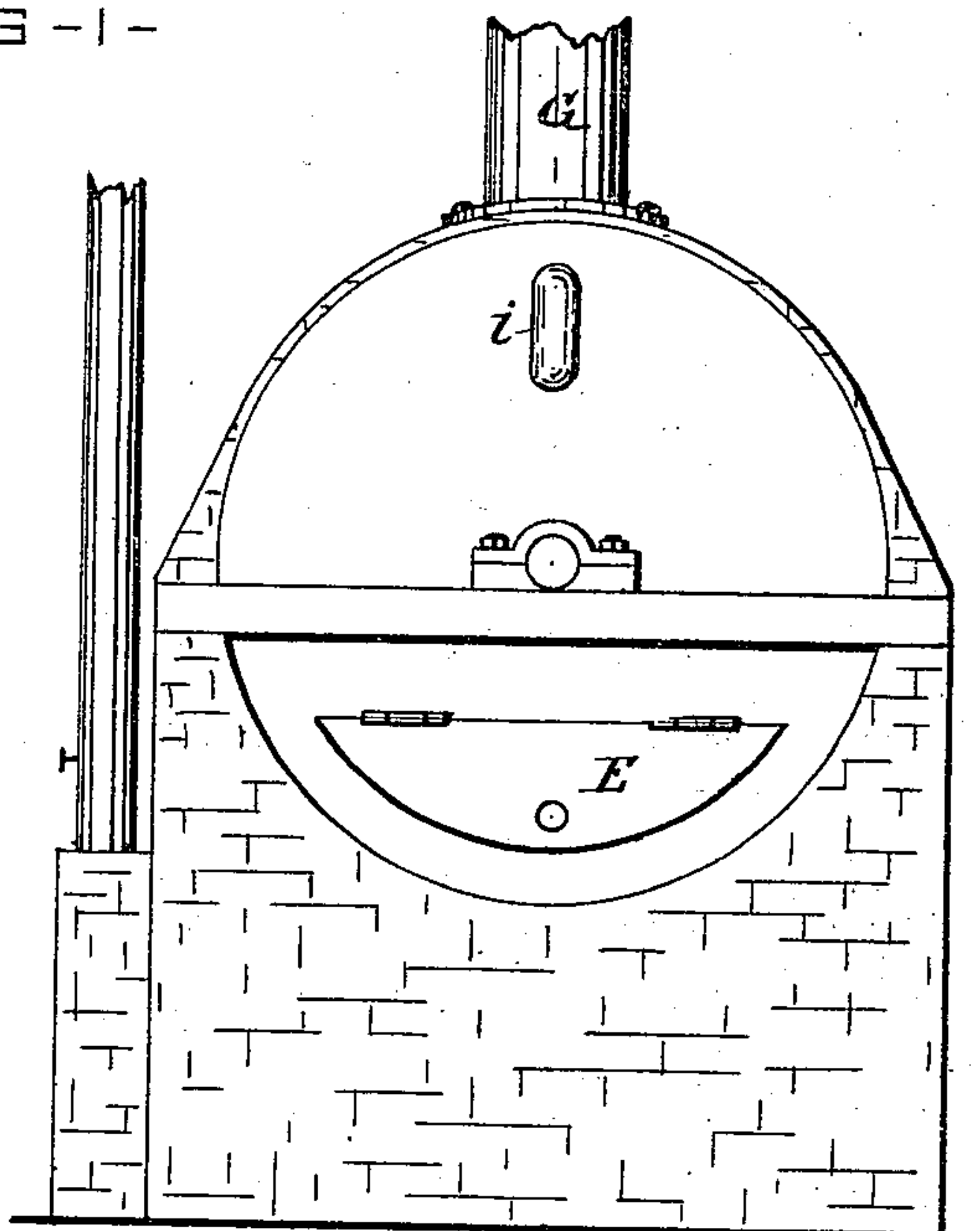


FIG-3-

ATTEST—
C. E. Raymond
C. B. Bissell

INVENTOR—
Henry Breer
per R. L. Lass & Co.
— for Atty —

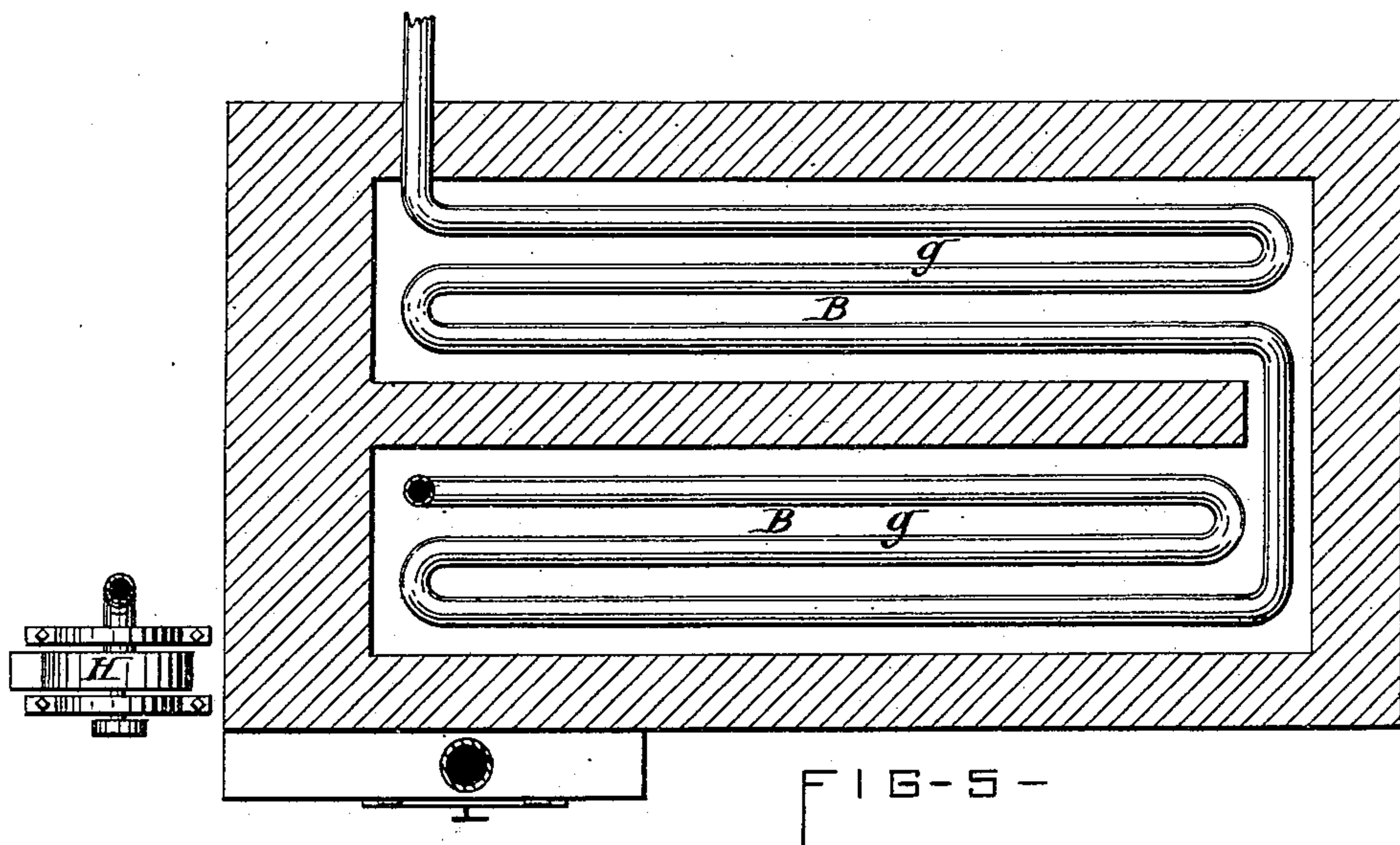
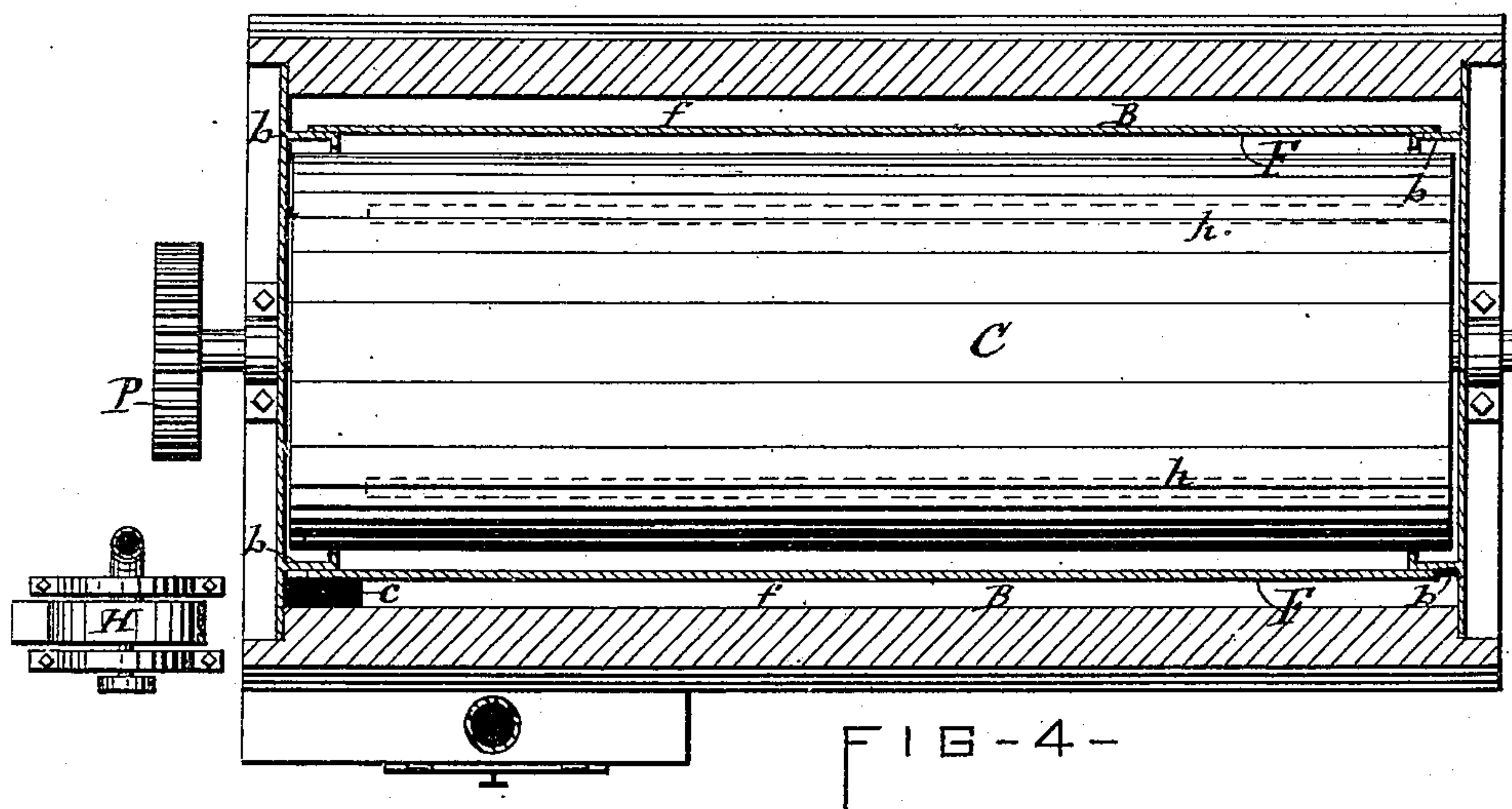
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2 Sheets—Sheet 2.

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ATTEST—
C. Raymond.
G. Rendix.

INVENTOR—
Henry Breer.
per [Signature] Attorney

UNITED STATES PATENT OFFICE.

HENRY BREER, OF DE WITT, NEW YORK, ASSIGNOR TO CAROLINE H. BREER,
OF SAME PLACE.

DESICCATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 313,402, dated March 3, 1885.

Application filed August 7, 1884. (No model.)

To all whom it may concern:

Be it known that I, HENRY BREER, of De Witt, in the county of Onondaga, in the State of New York, have invented new and useful
5 Improvements in Desiccating Apparatus, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

In the drawings, Figure 1 is a central longitudinal vertical section of my invention, with a portion of the shell of the desiccating-cylinder kept intact to better distinguish it from the surrounding stationary cylinder or air-jacket. Fig. 2 is a vertical transverse section
10 on line *xx*, Fig. 1. Fig. 3 is a rear end view; and Figs. 4 and 5 are horizontal transverse sections taken, respectively, on lines *yy* and *zz* in Figs. 1 and 2.

This invention is designed for desiccating
20 substances without subjecting the same to direct contact with the products of combustion, and is provided with various appliances for conveying hot air through the desiccating-cylinder, and for stirring and moving the substances under treatment from end to end of
25 said cylinder during the rotation thereof, all as hereinafter more fully described, and specifically set forth in the claims.

A represents a furnace or fire arch, which
30 communicates with a horizontal elongated combustion-chamber, B, and C denotes the rotary desiccating-cylinder arranged horizontally and lengthwise in the combustion-chamber, and provided at its ends with journals, by
35 which it is mounted in suitable boxes in the end walls or end plates of the combustion-chamber, one of said journals projecting at the outside of the combustion-chamber sufficiently to carry a pulley or gear-wheel, P, by
40 which to transmit rotary motion to the desiccating-cylinder.

The combustion-chamber is provided, respectively at opposite ends thereof, with a
45 chute, D, through which to introduce into the desiccating-cylinder the substance to be treated, and with a discharge-opening, E, through which to remove the desiccated substance.

To the inner surface of the desiccating-cylinder is attached a spiral flange, *a*, which ex-

tends around the cylinder, and from end to
50 end thereof, said flange serving to stir the substance under treatment, and to gradually move the same from the feed end to the discharge end of the cylinder during the rotation thereof.

F represents a stationary cylinder surrounding the desiccating-cylinder, with a space between them, and secured to annular flanges *b*
55 on the end plates of the combustion-chamber, so as to prevent communication between the interior of said stationary cylinder and combustion-chamber. Said cylinder F forms an air-jacket around the desiccating-cylinder, the air being made to circulate through the said jacket, as hereinafter described.

Around the exterior of the jacket F, I form
65 sinuous or tortuous passages for the products of combustion by a vertical partition, *d*, extending lengthwise the combustion-chamber underneath the stationary cylinder, and dividing the lower portion of said chamber into
70 two passages, one of which communicates at one end with the furnace A, and at the opposite end with the other passage by an opening, *e*, in the partition *d*.

Between the sides of the stationary cylinder
75 F and combustion-chamber are horizontal partitions *ff*, one of which extends the entire length of the combustion-chamber and separates the upper part of the combustion-chamber from that of the lower passage, which communicates direct with the furnace. The other
80 partition *f* terminates with an opening, *c*, at the end nearest the furnace, through which opening the products of combustion ascend to the upper part of the combustion-chamber,
85 and thence escape through the chimney G on the opposite or rear end of the combustion-chamber, as indicated by arrows in the drawings. The stationary cylinder or jacket F is
90 thus surrounded by the products of combustion, and consequently effectually heated thereby. This jacket I utilize for heating air, which is admitted thereto by a pipe or duct,
95 *g*, which communicates at one end with the outside of the apparatus to receive the air thereat, and is extended in a sinuous or tortuous course through the lower portion of the combustion-chamber or lower passages for the

products of combustion, and enters or communicates with the bottom of the jacket F at one end thereof. The interior of said jacket I form into sinuous passages by means of longitudinal partitions *h h*, which extend alternately from opposite ends of the jacket part way the length thereof. The air which enters the jacket at one end, as aforesaid, is thus caused to circulate back and forth through the jacket and to absorb the heat from the same. A duct, *i*, is extended from the top of the rear portion of the jacket into the rear end of the desiccating-cylinder to conduct thereto the heated air. A suction-fan, H, communicates with the opposite end of the desiccating-cylinder and draws therefrom the hot air and moisture absorbed from the substance under treatment by the hot air.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the desiccating-cylinder and furnace, of an air-jacket surrounding said cylinder, an air-duct communicating at one end with the exterior of the apparatus and at the opposite end with the air-jacket, and a passage for products of combustion around the exterior of the air-jacket, as set forth.

2. The combination, with the desiccating-cylinder and furnace, of an air-jacket surrounding said cylinder and communicating with the interior thereof at one end, an exhaust-fan communicating with the interior of the cylinder at the opposite end, and a passage for products of combustion around the exterior of the air-jacket, all combined and arranged in the manner set forth and shown.

3. The combination, with the desiccating-cylinder and furnace, of an air-jacket surrounding said cylinder, and an air-duct exposed to the heat from the furnace and communicating with the air-jacket, as and for the purpose specified.

4. The combination, with the desiccating-cylinder and furnace, of an air-jacket surrounding said cylinder, an air-duct exposed to the heat from the furnace and communicating with the air-jacket, and sinuous or tortuous air-passages in the said jacket, substantially as and for the purpose set forth.

5. In combination with the combustion-chamber, a stationary cylinder arranged therein, with a passage for the products of combustion around it, the desiccating-cylinder arranged to rotate in the stationary cylinder, and an air-duct extended through the combustion-chamber and communicating with the interior of the stationary cylinder, substantially as described and shown.

6. In combination with the furnace and combustion-chamber, a stationary cylinder arranged horizontally in said chamber, with a space around the convex side of the cylinder, and with the interior of the cylinder incommunicative with the combustion-chamber, a partition extending lengthwise the combustion-chamber under the stationary cylinder, with an opening through said partition at the end farthest from the furnace, partitions at the sides of the stationary cylinder, with an opening in one of said partitions at the end nearest the furnace, a chimney at the opposite end of the combustion-chamber, and the rotary desiccating-cylinder arranged in the stationary cylinder, substantially as shown and described.

7. In combination with the combustion-chamber, a stationary cylinder arranged horizontally in said chamber and having its interior incommunicative therewith, partitions between the cylinder and combustion-chamber extended alternately from opposite ends of the combustion-chamber part way the length thereof, the rotary desiccating-cylinder arranged in the stationary cylinder, and an air-duct extended through the lower passages of the combustion-chamber and communicating with the interior of the stationary cylinder at the bottom thereof, an air-duct extended from the top of the stationary cylinder to the end of the desiccating-cylinder, and partitions between the two cylinders extended alternately from opposite ends part way the length thereof, all constructed and combined substantially in the manner specified and shown.

8. In combination with the combustion-chamber, a stationary cylinder arranged horizontally in said chamber and having its interior incommunicative therewith, the rotary desiccating-cylinder arranged in the stationary cylinder, with a space between them, an air-duct extended through the combustion-chamber and into the stationary cylinder, an air-duct extended from the stationary cylinder into the desiccating-cylinder, a spiral flange around the inner surface of the desiccating-cylinder, and feed and discharge openings, respectively, at opposite ends of said cylinder, all constructed and combined substantially as described and shown.

In testimony whereof I have hereunto signed my name and affixed my seal, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 14th day of July, 1884.

HENRY BREER. [L. s.]

Witnesses:

C. H. DUELL,
FREDERICK H. GIBBS.