(No Model.) 2 Sheets—Sheet 1.

F. C. PRINDLE.

RETORT LID.

No. 416,855. Patented Dec. 10, 1889.

Fig. 3.

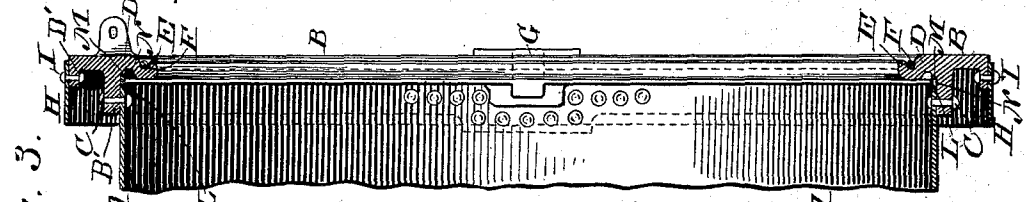


Fig. 1.

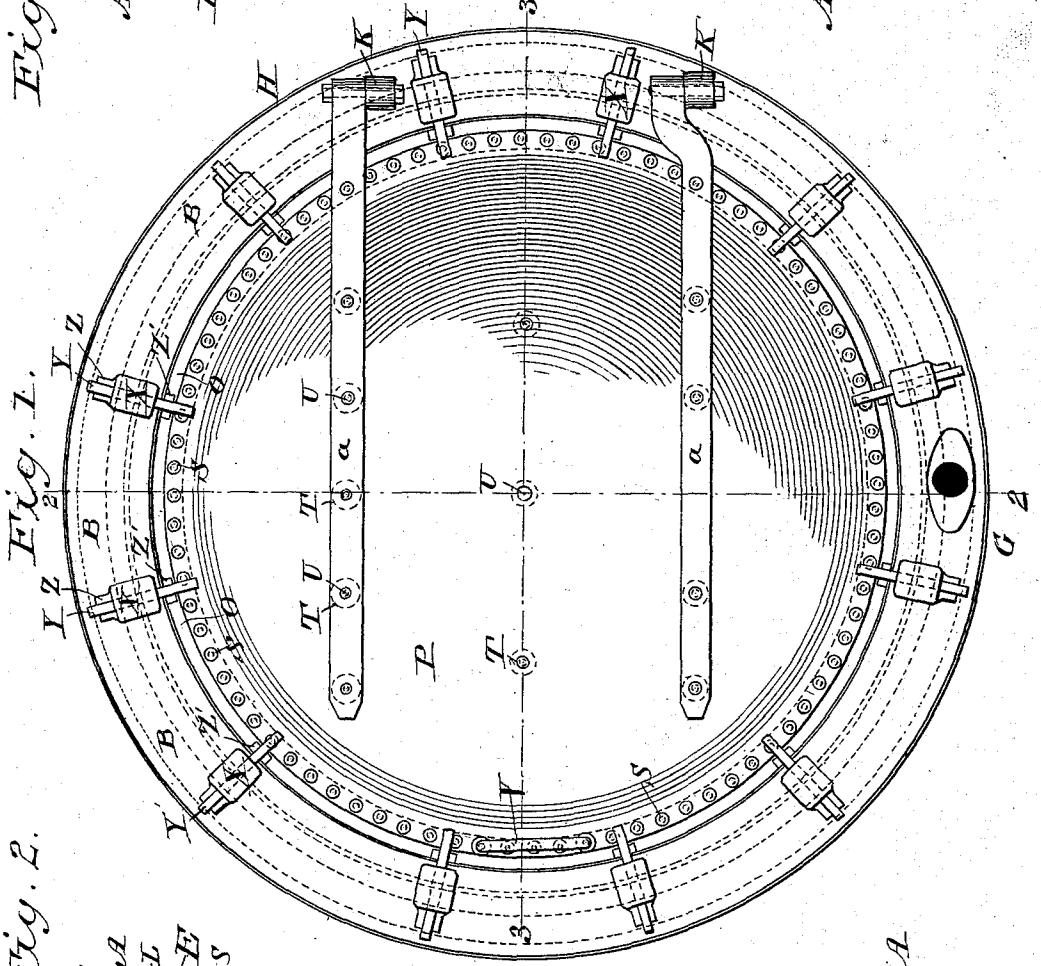
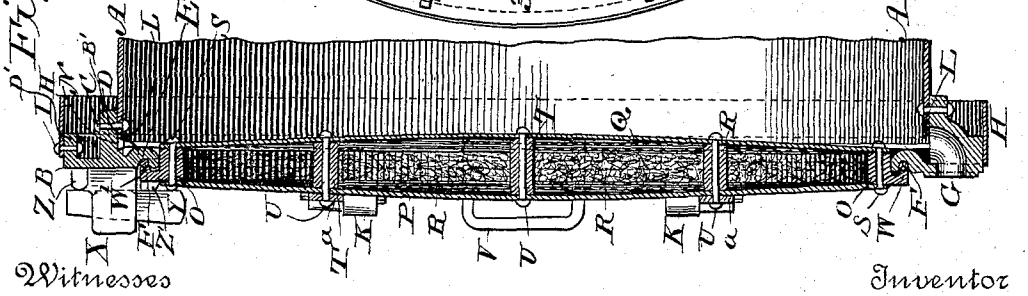


Fig. 2.



Witnesses

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(No Model.) 2 Sheets—Sheet 2.

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RETORT LID.

No. 416,855. Patented Dec. 10, 1889.

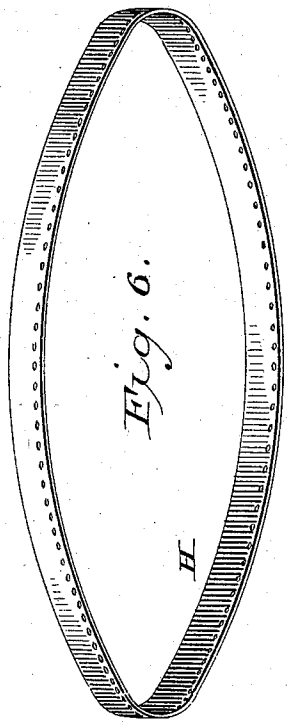

Fig. 6.

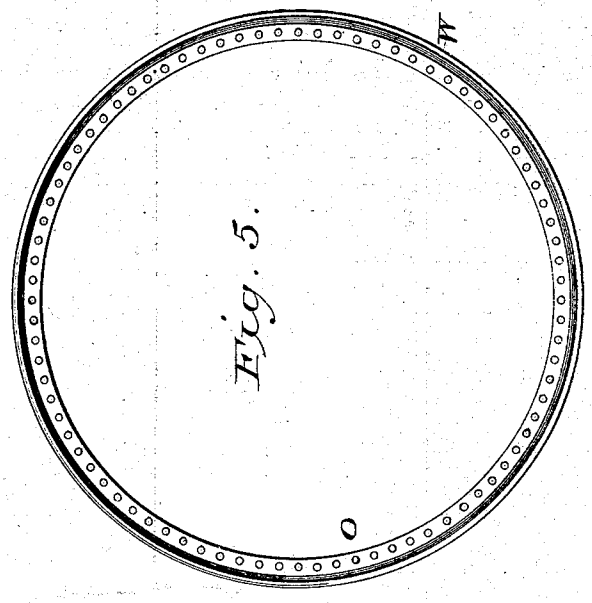

Fig. 5.

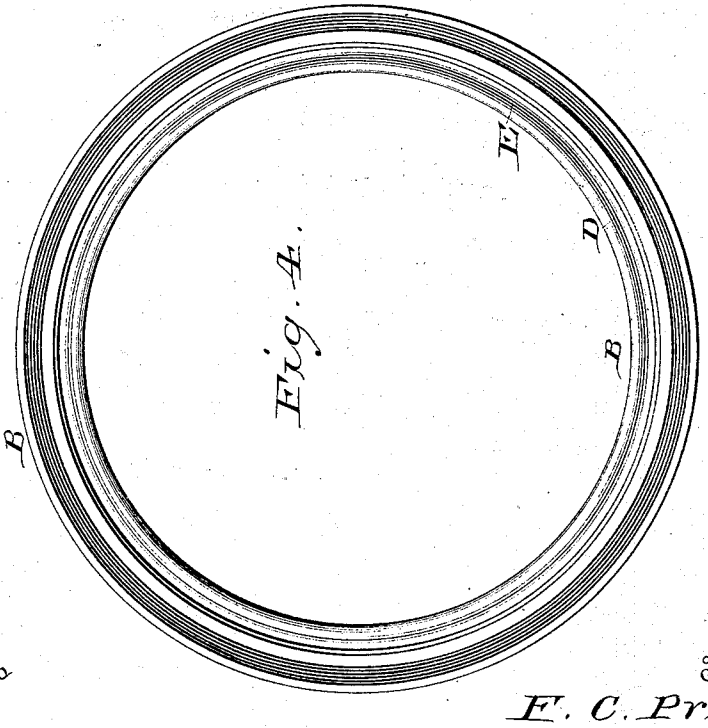

Fig. 4.

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UNITED STATES PATENT OFFICE.

FRANKLIN C. PRINDLE, OF WILMINGTON, NORTH CAROLINA.

RETORT-LID.

SPECIFICATION forming part of Letters Patent No. 416,855, dated December 10, 1889.

Application filed March 27, 1889. Serial No. 304,952. (No model.)

To all whom it may concern:

Be it known that I, FRANKLIN C. PRINDLE, of Wilmington, in the county of New Hanover and State of North Carolina, have invented certain new and useful Improvements in Retort-Lids, of which the following is a specification, reference being had to the accompanying drawings.

My improvements relate to cylindrical retorts which are provided with doors for admitting raw material and for removing the residual products after heat has been applied to the retorts—as, for example, for the destructive distillation of wood. In fact, my improvements may be applied to hollow cylders of any sort.

The object of my invention is to produce improved means of closing the end of a retort or hollow cylinder, so as to secure gas-tight joints, and to prevent undue waste of heat by conduction or radiation. The structure of my improved appliance is also designed with reference to economy of manufacture, durability, and convenience in use.

In the accompanying drawings, illustrating my improvements, Figure 1 is an end elevation of a retort provided with a circular hinged door and annular parts around its margin corresponding in function and relation to a common door-jamb. Fig. 2 is a section on the line 2 2 of Fig. 1. Fig. 3 is a section on the line 3 3 of Fig. 1. Fig. 4 shows an annular end casting to which in practice the door is hinged. Fig. 5 shows an annular casting which constitutes the frame of my improved door. Fig. 6 shows a sheet-metal ring to be secured in practice around the periphery of the annular end casting shown in Fig. 4.

Referring to the letters upon the drawings, A indicates a section of a hollow sheet-metal cylinder suitable for a retort; B, an annular end casting having a cylindrical part B′, adapted to be secured to the end of the retort-cylinder by means of bolts and rivets C, for example, passing through the part B′, or in any other suitable way. This annular end casting is formed with an inward annular projection D, provided with an annular packing-socket E for the purpose of receiving a packing-ring F, which may be of asbestus or any other suitable material. It is also formed with an outward annular projection D′, adapted to support the end of a retort. It is also formed with an opening or passage (indicated at G and in practice located in the lower part of the casting) for the purpose of drawing off any residual liquid products that may be contained in the retort. This passage may have applied to it any suitable cock for this purpose; but as any ordinary cock or faucet adapted to such uses will answer, and as it forms no part of my invention, it is not illustrated in the drawings.

H indicates a sheet-metal ring, which is bolted, as at I, or otherwise suitably secured to the outward projection D′ of the end casting B, and serves to rest the retort upon the masonry, so as to leave an air-space between the retort and the masonry to facilitate cooling and to prevent overheating the retort in use and injuring it.

K indicates suitable hinge-pivot projections of ordinary character properly placed or formed upon the outer face of the end casting. The end of the retort-cylinder at L is preferably cut away, so as to incline, as illustrated. A shoulder M is formed upon the inner part of the end casting B, inclining in an opposite direction to the incline of the end of the retort just mentioned. The object of this structure is to form a dovetail annular pocket for receiving packing N, which extends in practice all around the end of the retort and secures a gas-tight joint between it and the end casting.

O indicates an annular casting suitable to form a frame for the retort-door and adapted to fit within the end casting B. The door is composed of this end casting and an outer sheet-metal plate P and an inner sheet-metal plate Q and suitable filling R between the two of a character to prevent rapid conduction and radiation of heat from the interior of the retort out to the open air.

Asbestus or some composition of asbestus may be used, if desired; but any other substance preferred may also be employed. These inner and outer door-plates consist of concavo-convex metallic disks with their concave faces toward each other and adapted to fit the annular casting O, to which they are bolted—as, for example, by means of bolts S.

T indicates stay-pieces through which the bolts U pass to preserve the contour of the

door-plates, which gives great strength to the door. Any suitable packing may of course be used, if desired, between the margins of the plates and the annular casting O to make gas-tight joints; but no such packing is illustrated, because it forms no part of my invention and is generally not necessary where the metal work is properly done.

V indicates a handle for the door.

W indicates an outward annular projection from the casting O, having an annular flange W′, adapted to fit into the annular socket E of the casting B and bear upon the packing-ring F to make a gas-tight joint.

X indicates a series of projections from the end casting B, provided with wedge-holes to receive the wedges Y. These wedges bear at one end upon stumps Z on the end casting B and at the other upon stumps Z′ upon the annular casting O and serve to hold the door in place when closed, as is usual.

a indicates the door-hinges, of usual construction.

By the instrumentalities described I am able to form end supports and closers for retorts provided with hinged doors which are cheap, durable, gas-tight, and convenient to use, and that will conserve the heat of retort ends, so as to render the interior of a long retort more uniform in temperature than is usually practicable. By this means I dispense with the inconvenience of clay lutings ordinarily used in this class of retorts (which lutings are liable to shrink and crack) and enable them to be opened and tightly closed with facility by an ordinary workman without danger of either the liquid or gaseous products within the retort escaping.

What I claim is—

1. As an improved article of manufacture, an annular end casting for a retort-cylinder, provided with a cylindrical part B′ for securing it to a retort, an inner annular projection D, having an annular socket E therein for receiving an annular packing, and an outer annular projection D′ for supporting a retort end on masonry, substantially as set forth.

2. The annular end casting B, provided with the part B′, the annular projections D and D′, and the annular packing-socket E, in combination with the packing-ring F, adapted to fit in the said socket, and the annular casting O, provided with the annular projection W, having the annular flange W′, substantially as set forth.

3. As an improved article of manufacture, an annular casting for a frame of a retort-door, having an outward annular projection W and annular flange W′ for fitting an annular packing-socket, substantially as set forth.

4. A door for retorts or hollow cylinders, consisting of an annular casting or frame part O, two concavo-convex metal plates secured on opposite sides thereof with their convex faces outward, and a heat-non-conducting filling and suitable stay-pieces between the plates, substantially as set forth.

In testimony of all which I have hereunto subscribed my name.

FRANKLIN C. PRINDLE.

Witnesses:
R. H. McKAY,
R. H. BUNTING.