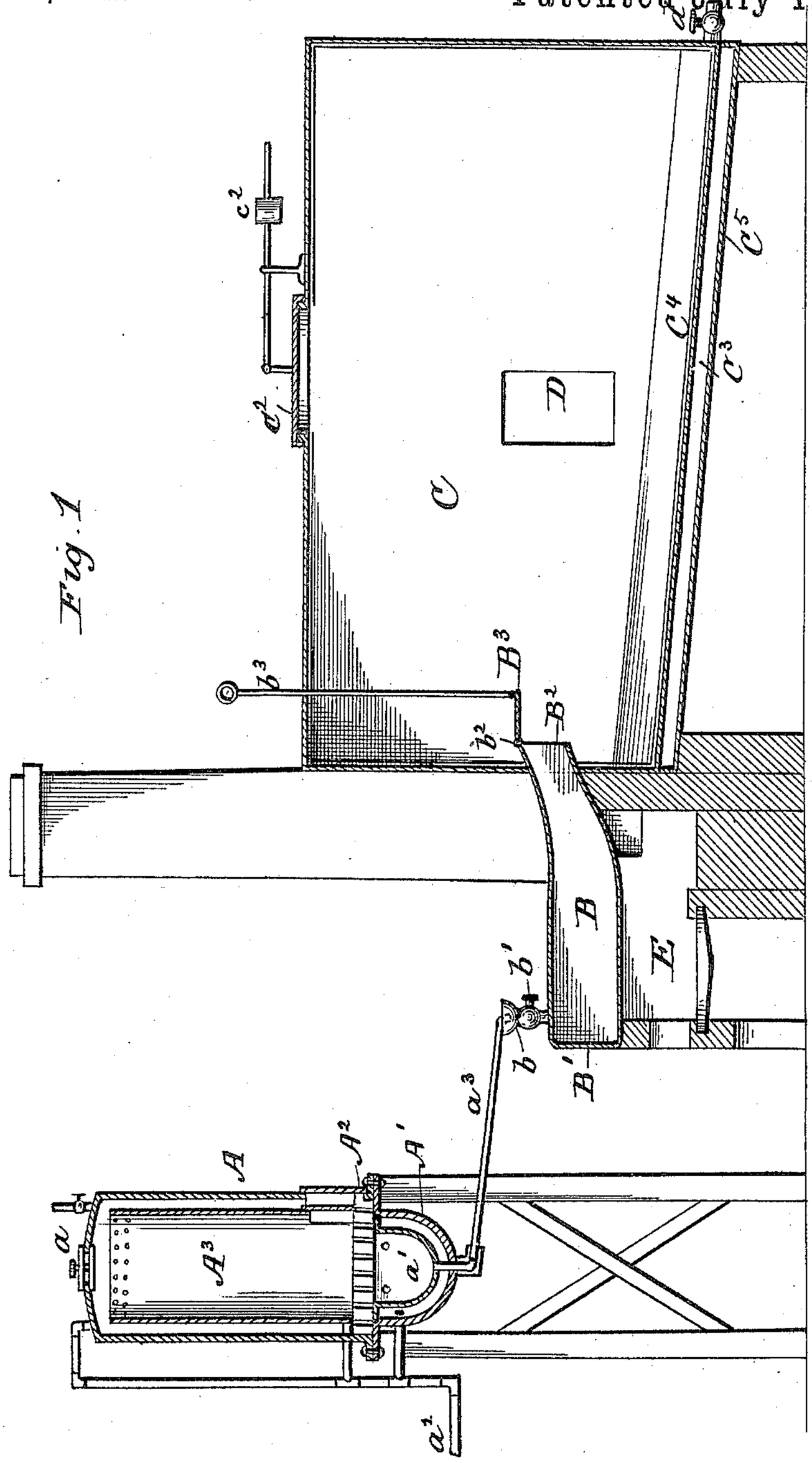
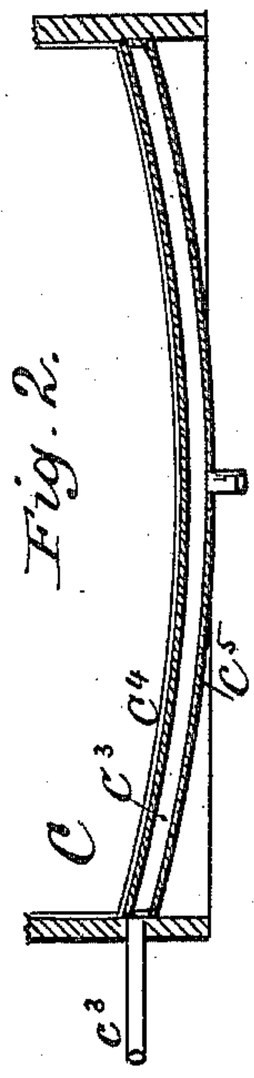
(No Model.)

F. DICKERT.

SULPHUR REFINING APPARATUS.

No. 301,222. Patented July 1, 1884.





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UNITED STATES PATENT OFFICE.

FERDINAND DICKERT, OF SALT LAKE CITY, UTAH TERRITORY.

SULPHUR-REFINING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 301,222, dated July 1, 1884.

Application filed March 10, 1884. (No model.)

To all whom it may concern:

Be it known that I, FERDINAND DICKERT, a citizen of the United States, residing at Salt Lake City, in the county of Salt Lake and Territory of Utah, have invented certain new and useful Improvements in Sulphur-Refining Apparatus, of which the following is a specification, reference being had therein to the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section through the apparatus. Fig. 2 is a transverse section through the bottom of the collecting-chamber.

My invention relates to improvements in apparatus for making flour-sulphur or refining sulphur; and the objects of my improvements are to rapidly produce higher refined sulphur direct from the ore by means of simple and comparatively inexpensive apparatus, having a retort permanently or tightly closed at one end to prevent the escape of gases, and a receiving-chamber provided with a double bottom for the admission of steam therein.

The invention will first be described in connection with the drawings, and then pointed out in the claims.

A represents a cast-iron cylinder, having a kettle-shaped bottom, A′, securely attached thereto, and between the two is placed a perforated plate or grate, A^2, and upon the latter is placed a cylinder, A^3, open at both ends, and intended to receive the sulphur ore introduced through the opening *a* in the top of the outer cylinder. The kettle A′ may also have an internal receiver, *a′*. Between the cylinders A and A^3 and the kettle A *a′* steam is admitted through the pipe a^2, to melt the sulphur contained in the ore and keep said sulphur in a melted condition. This part of the apparatus need not be more fully described, as it forms the subject of another pending or companion application. To refine the sulphur thus produced and obtain "flour-sulphur" or highly-refined sulphur, the melted sulphur contained within the kettle *a′* is directed through a movable pipe, a^3, into the cylinder or retort B, passing first through a funnel, *b*, controlled by a cock, *b′*, in the upper portion of the permanently-closed end B′ of said retort. The opposite end, B^2, thereof enters into a large chamber, C, preferably made of wood and lined with sheet-lead. The open end B^2 of the retort is controlled by means of a door, B^3, hinged thereto at b^2, and said door is opened or closed by means of a rod or chain, b^3, leading to the top of the chamber C. Said chamber is provided with a safety-valve, C^2, which is so balanced by a weight, c^2, adjustable upon its supporting-rod, that a light internal pressure will allow the gases in the chamber to escape. The bottom of the chamber C is made hollow at C^3 by means of two sheets of metal, C^4 and C^5. The upper surface of the inner sheet is lined with lead to prevent its oxidation by the sulphurous gases contained in the chamber. The hollow space C^3 between the double bottoms is for the reception of steam through the pipe c^3, to keep them at the proper temperature, and thus maintain the sulphur resting upon the bottom of the chamber C at the temperature at which it possesses the greatest fluidity, (about 240° Fahrenheit,) so that it can escape through a small opening controlled by a cock, *d*, when it is desired to make roll-sulphur. The bottom of the chamber C is made concave to direct the melted sulphur toward said opening. A larger opening, D, is formed in the side for the admission of one or more men into the collecting-chamber C to scrape the flour of sulphur from the walls after said chamber has been used for that purpose. At other times the opening D is closed air-tight by a door provided with packing-rings. The opening B^3 at the mouth of the retort B is of sufficient size for a man to crawl in from the chamber C and clean the retort. Under the retort is a fire place or chamber, E, to cause the contents to boil and escape in the form of vapor into the chamber C.

Having now fully described my invention, I claim—

1. An apparatus for refining sulphur, comprising a retort having its bottom over a fire-place, one end closed and the opposite end open into a collecting-chamber, C, provided with a double bottom, substantially as and for the purpose described.

2. In a sulphur-refining apparatus, the combination of a fire-chamber and a retort therein with a collecting-chamber having a concave hollow or double bottom, and a steam-pipe entering said hollow bottom, substantially as and for the purpose described.

3. In a sulphur-refining apparatus, the com-

bination of the retort B, its door B^3, pivoted thereto, and rod b^3, with a collecting-chamber having a double bottom, a door, D, in the side, and a valve on top controlled by an adjustable weight, substantially as described.

4. The combination of the external cylinder, A, internal cylinder, A^3, and kettle A′, provided with steam-passages and movable pipe a^3, with the retort B, having the funnel b, and the collecting-chamber C, having a concave hollow bottom for the reception of steam, substantially as and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

FERDINAND DICKERT.

Witnesses:

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