

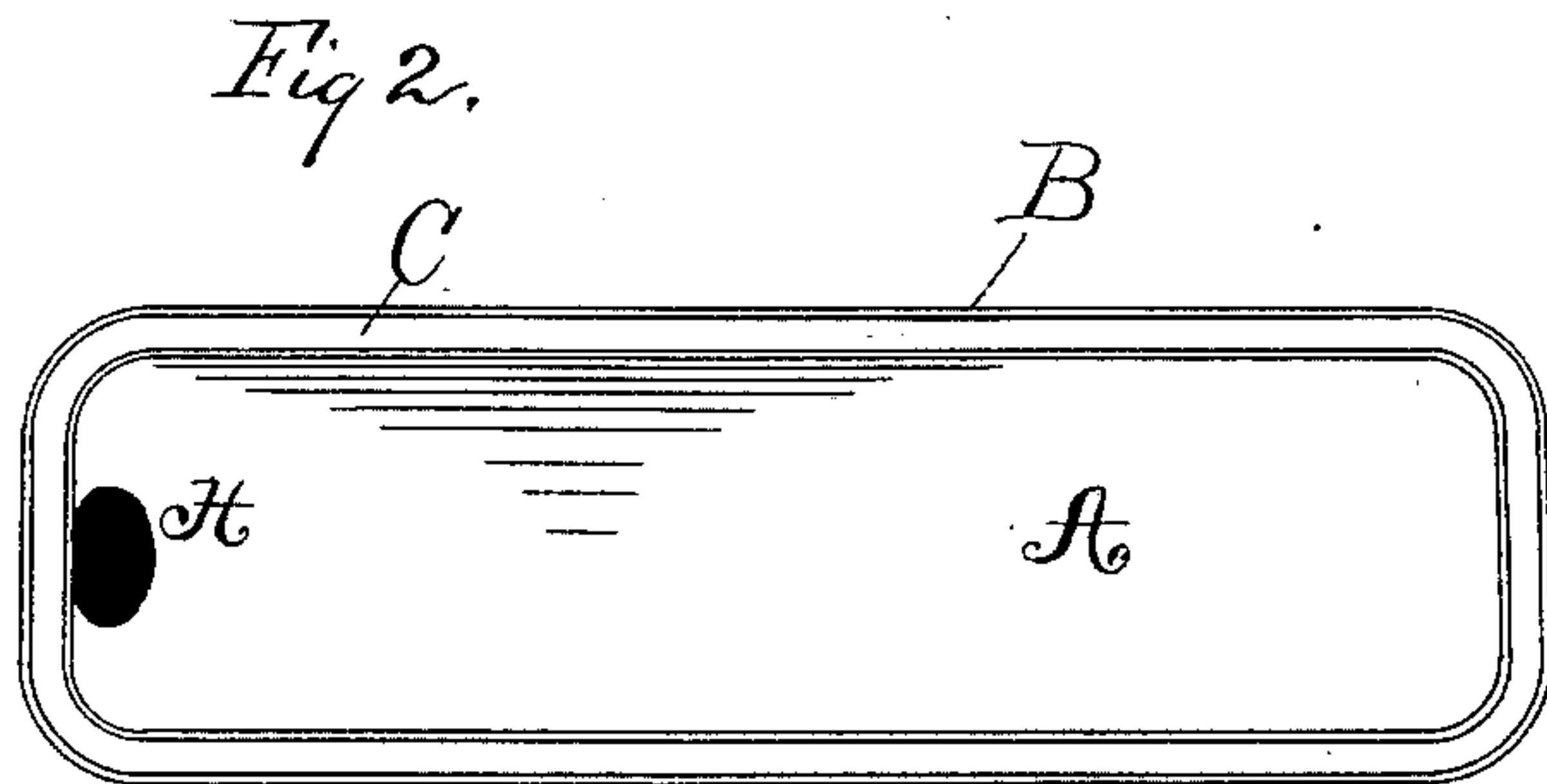
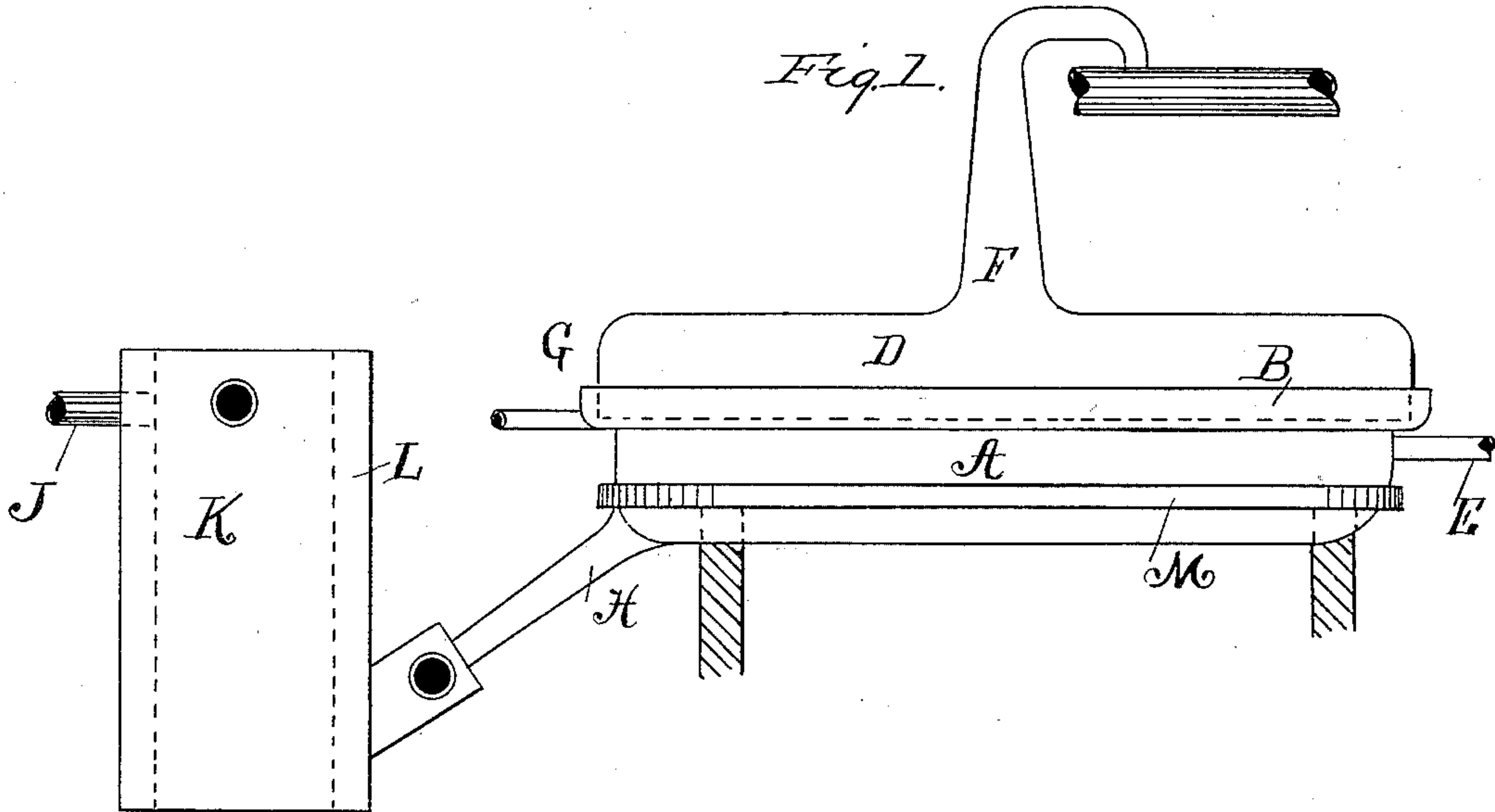
(No Model.)

C. A. BARTSCH.

STILL FOR CONCENTRATING SULPHURIC ACID.

No. 318,682.

Patented May 26, 1885.



Witnesses
S. S. Williamson
W. J. Haviland

Inventor
Charles A. Bartsch
by *Smith and Hubbard*
Attys

UNITED STATES PATENT OFFICE.

CHARLES A. BARTSCH, OF BRIDGEPORT, CONNECTICUT.

STILL FOR CONCENTRATING SULPHURIC ACID.

SPECIFICATION forming part of Letters Patent No. 318,682, dated May 26, 1885.

Application filed October 20, 1884. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. BARTSCH, a citizen of the Kingdom of Saxony, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Stills for Concentrating Sulphuric Acid; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to stills for concentrating sulphuric acid, and has for its object to provide such a still as may be readily opened for inspection, and which, moreover, shall be more durable and less liable to foul than the ordinary platinum still now in use; and, further, to furnish by my construction a still in which acid may be concentrated to a very high degree of strength; and with these ends in view my invention consists in the details of construction and combination of elements hereinafter fully and in detail explained, and then specifically designated by the claims.

In order that those skilled in the art to which my invention appertains may more fully understand its construction and operation, I will proceed to describe the same in detail, referring by letter to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side elevation of my improvement in position, and with the equalizing-jar attached thereto; Fig. 2, a top view of the interior of the lower section of the still.

Similar letters denote like parts in both figures of the drawings.

A is a trough of platinum, semicircular in cross-section, and with rounded ends rising from its bottom in a gradual curve to the top, and B is a flange secured to A near its top and extending around its periphery, leaving between its upper edge and the edge of the trough a gutter, C.

D is a cover similar in shape to A, and of such size as to fit readily over A and rest in gutter, C.

E is the inlet-pipe through which acid is admitted to the still, and this I preferably locate near the top of trough A.

F is the outlet for escaping fumes.

G is an overflow-pipe from the gutter.

H is the main outlet leading into an equalizing-jar, whence the acid flows off through pipe J into convenient receptacles. This equalizing-jar I preferably make from two receptacles, one within the other, as K L. The inner contains the acid, and through the outer jar is passed a stream of cold water.

M is an iron bed-ring, within which the still is adapted to rest for exposure to the fire and support. I do not necessarily make use of this ring, for I can support the still at either end thereof; but the ring relieves the still from strain and is found convenient. The still, supported either by the ring or by the ends, is exposed to the strong heat of the furnace-fire beneath. As will be seen by the drawings, the ends of the still are not exposed to the action of the fire, and the outlet-pipe is not directly exposed to the heat.

The equalizing-jar is so placed that its outlet shall be in the same horizontal plane with the level at which the acid is desired to be kept in the still.

Before commencing to distill, the gutter C, in which the edge of cover D rests, is filled with any liquid, so as to form a seal against escaping fumes, and the equalizing-jar is filled with acid up to the level of its outlet. The acid to be concentrated is then allowed to flow slowly into the still through inlet E. The heat to which the still is exposed causes fumes to be thrown off and evaporation to take place from the acid therein. A great proportion of these fumes pass off through pipe F, and are saved by condensation elsewhere. A certain amount of liquid collects upon the inner surface of the top of the still and trickles down into the gutter in which the cover rests. This furnishes a continuous supply of liquid to form a seal for the joint, and any surplus is carried off by the small outlet G. The main outlet is connected with the still at the point where the end rise commences from the bottom, and thus will carry off acid from the very lowest portion of the still. Passing through the outlet the acid enters the equalizing-jar at or near its base, and the level of the outlet from the jar determines the depth of acid in the still. The pressure of the incoming stream of acid causes a gradual flow into the equalizing-jar from the still and also an outflow from the jar. By

taking the acid from the bottom of the still only that of the greatest specific gravity and consequent concentration flows off.

Heretofore platinum stills have ordinarily
5 been made non-separable and with the outlet at the height at which its contents was desired to be kept. Consequently an accumulation of deposit, which on account of its specific gravity could not pass off through the outlet, collected in the bottom of the still and burned
10 fast to the bottom thereof. The absence of an equalizing-jar rendered the position of the outlet above the bottom necessary.

Stills of this description are intended only
15 for the concentration to a great degree of strength of acid already at a strength of at least 65° Baumé, when it cannot be worked in apparatus of other material. Above a strength of 65½° Baumé the sulphurets of lead and
20 iron contained in the acid are precipitated, and when accumulated in the bottom of the still have a tendency to burn fast, obstruct the still, and sometimes by unequal expansion to crack the bottom. In my invention the out-
25 let at the bottom of the still, and without the direct influence of the furnace-heat, not only takes that acid which is most highly concentrated from the still, but also carries off the precipitated sulphurets which are deposited
30 in the jar, instead of burned to the bottom of the still.

I am well aware that stills for this purpose have sometimes been made separable; but I do not know that stills of a form practically cy-
35 lindric have been made in any form other than as by Willett, (Patent No. 301,033.)

While I think that the form of still shown

in the drawings (nearly cylindric) is the most advantageous, I do not wish to be limited to that precise form in the application of my in-
40 vention, the gist of which rests in the idea of a separable platinum still, with a fluid-seal joint and an outlet at its bottom, in connection with which is used an equalizing-jar of the construction hereinbefore set forth.

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

1. In an apparatus for concentrating sulphuric acid, the combination, with a furnace,
50 of a still extending outside of the furnace and having an outlet-pipe extending from the lowest part of the still and outside of the furnace, substantially as described.

2. In an apparatus for concentrating sul-
55 phuric acid, the combination, with a still having an outlet-pipe at its lowest point, of an equalizing-jar connected to the still by said outlet-pipe, whereby the depth of the acid in the still is determined by the jar, as set forth. 60

3. In an apparatus for concentrating sulphuric acid, the combination of a still practically cylindrical in form, a separable cover having an opening connected with a condenser, an outlet-pipe at the lowest point of the
65 still and outside the fire-box, a jacketed equalizing-jar connected to said pipe, and an outlet for the said jar, substantially as described.

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

CHARLES A. BARTSCH.

Witnesses:

WALLACE A. SMITH,
E. KLEEMANN.