

(No Model.)

H. HIRZEL.

APPARATUS FOR CLEANING OVERFLOW PIPES IN COLUMN APPARATUS.

No. 579,391.

Patented Mar. 23, 1897.

Fig. 1.

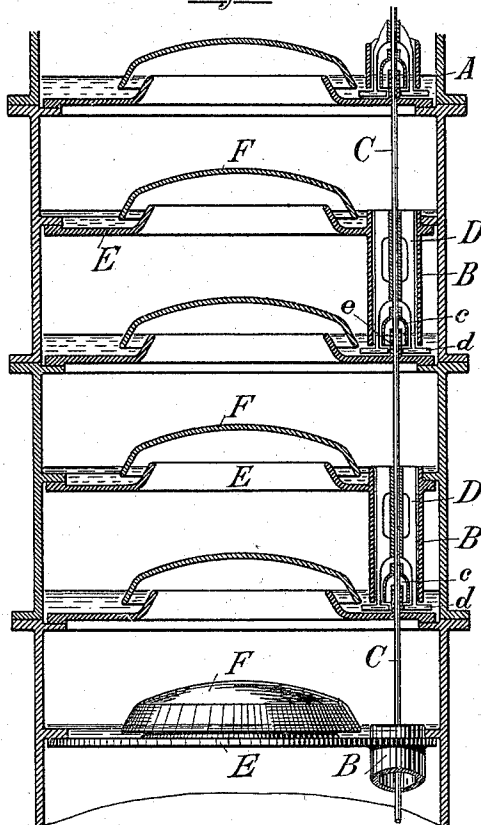


Fig. 3.

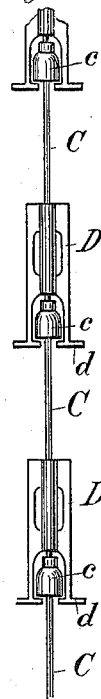
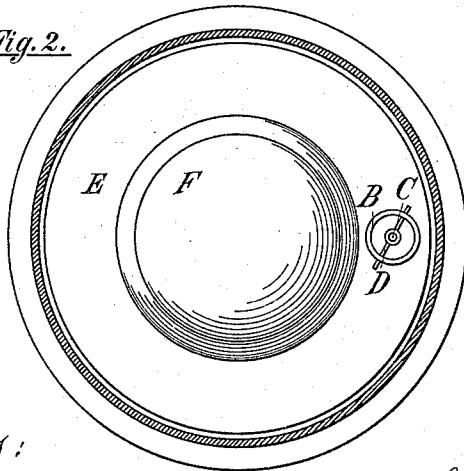


Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

HEINRICH HIRZEL, OF PLAGWITZ, NEAR LEIPSIC, GERMANY.

APPARATUS FOR CLEANING OVERFLOW-PIPES IN COLUMN APPARATUS.

SPECIFICATION forming part of Letters Patent No. 579,391, dated March 23, 1897.

Application filed July 27, 1896. Serial No. 600,668. (No model.)

To all whom it may concern:

Be it known that I, HEINRICH HIRZEL, manufacturer, a citizen of the Kingdom of Saxony, residing at Plagwitz, near Leipsic, in the Kingdom of Saxony and German Empire, have invented a new and useful Apparatus for Cleaning Overflow-Pipes, of which the following is a specification.

My invention relates to improvements in apparatus for cleaning overflow-pipes.

In distilling liquids which carry along with them solid matter or tend readily to form crusts the overflow-pipes of the columns are frequently clogged in such a way as to cause a frequent interruption of the operation.

The object of my invention is to produce a device which will remedy this defect.

My invention consists in the features, details of construction, and combinations of parts which will first be described in connection with the accompanying drawings, and then particularly pointed out in the claims.

In the drawings, Figure 1 is a longitudinal section, Fig. 2 a horizontal section, and Fig. 3 a detail view, illustrating an apparatus embodying my invention.

Referring to the drawings, it will be seen that I employ a plurality of trays E, which are arranged to contain the distilled liquid, the trays having central openings around which each tray is flanged upward in order to retain a certain amount of liquid upon itself.

The alternate trays are provided with depending overflow-pipes B, which end a short distance above the trays beneath those to which said overflow-pipes are connected. Each overflow-pipe projects a short distance above the bottom of the tray to which it is connected, but not quite so high as the flange around the central opening of the tray to which it is so connected. By this construction the surplus liquid flows down the overflow-pipe of such a tray to the tray below and then through the central opening of said lower tray to the next tray beneath, and so on, as will be fully understood by those skilled in the art. Owing to the projection of each overflow-pipe above the tray to which it is connected and the flange around the central

openings of the trays, the level of the liquid in the trays is kept at a predetermined height.

Within the overflow-pipes B, arranged vertically, one above the other, are arranged the scrapers D, which are secured to a common rod C, extending through the entire series and adapted to turn with said rod, or they may be connected by couplings. By this arrangement the crusts or deposits which may adhere to the inner walls of the pipes are continually scraped away by the scrapers. The crust or sediment, as it drops upon the trays E below the overflow-pipes B, is conveyed outwardly by means of two arms *d*, attached to lower portions of the scrapers D, said arms projecting outwardly and being straight or, preferably, curved. The said crust or sediment is thereby caused to be carried off with the liquid, so that the spaces between the pipes and trays will be constantly maintained open, thereby permitting an unobstructed circulation.

To remove the necessity of stuffing-boxes at the points where the rod passes through the trays E, those trays which are without an overflow-pipe are provided with sleeves *e*, which extend somewhat above the highest level of the fluid in such trays. These sleeves *e* serve as bearings for the rod or shaft C, and over them are arranged small inverted cups *c*, attached to rod C and extending down over the sleeves *e* and forming water seals, which serve to keep the liquid and sediment or crust away from the upper throat of the sleeves where the rod C passes through during the scraping operation and the overflow of liquid through the pipes B.

Instead of forming the shaft or rod C in one piece the same may, for the purpose of more conveniently assembling the parts, be made in separate sections, one for each division of the column or for a number of such divisions, the several shaft-sections being suitably coupled.

What I claim, and desire to secure by Letters Patent, is—

1. The combination with a plurality of trays, and an overflow-pipe depending from one tray and ending above the tray beneath, of a scraper within said overflow-pipe and pro-

vided with laterally-extending wings arranged to project outward between the lower end of said overflow-pipe and the tray beneath, and means for operating said scraper, substantially as described.

2. The combination, with a plurality of trays and an overflow-pipe depending from one tray, of a sleeve projecting upward from the tray below, a rod passing through said sleeve and a scraper carried by said rod and located within the overflow-pipe, substantially as set forth.

3. The combination with a plurality of trays arranged to contain liquid at a predetermined level in each tray, of an overflow-pipe connected to one tray, a sleeve projecting upward from the tray below to a point above the predetermined level of the liquid in said latter tray, a rod passing through said sleeve, and a scraper connected to said rod, substantially as set forth.

4. The combination, with a plurality of trays and an overflow-pipe depending from one tray and ending above the tray below, of a sleeve

projecting upward from the latter tray, a rod passing through said sleeve, and a scraper connected to the rod and located within the overflow-pipe, said scraper having laterally-extending wings projecting between the end of the overflow-pipe and the tray beneath, substantially as set forth.

5. A series of trays and overflow-pipes connecting one set of such trays with another set below the first set, the trays of the lower set being provided with sleeves extending upward from the trays, in combination with a rod or shaft extending through the overflow-pipes and the sleeves and provided with scrapers and cups inverted over the sleeves, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

HEINRICH HIRZEL.

Witnesses:

ERNST HIRZEL,
RUDOLPH FRICKE.