H. L. WALTER & C. E. GOODRICH.

FAT EXTRACTION APPARATUS.

APPLICATION FILED JUNE 21, 1911.

1,010,991. Patented Dec. 5, 1911.

Fig. 3.

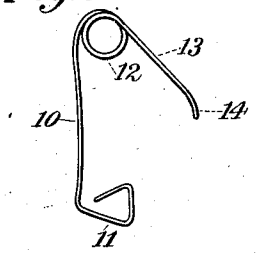


Fig. 2.

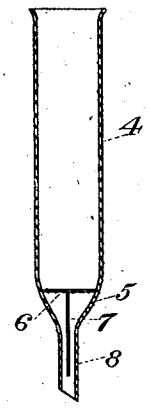


Fig. 4.

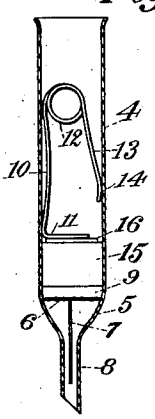


Fig. 1.

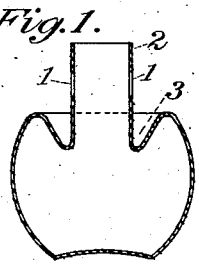
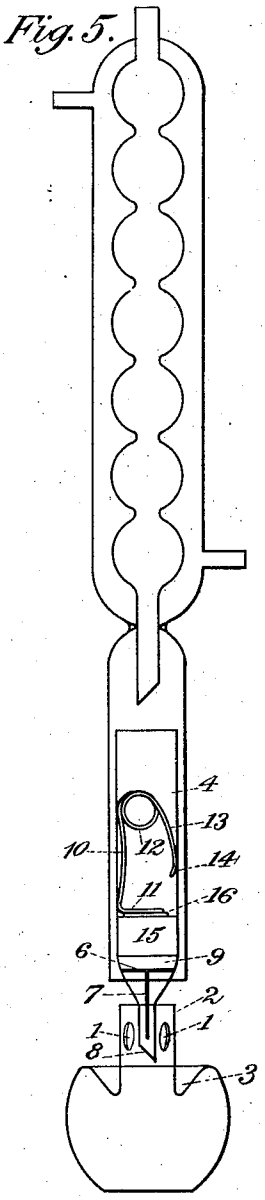


Fig. 5.



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FAT-EXTRACTION APPARATUS.

1,010,991. Specification of Letters Patent. Patented Dec. 5, 1911.

Application filed June 21, 1911. Serial No. 634,641.

(DEDICATED TO THE PUBLIC.)

To all whom it may concern:

Be it known that we, HENRY L. WALTER and CHARLES E. GOODRICH, citizens of the United States, residing in the city of Washington, District of Columbia, and employees of the Department of Agriculture of the United States of America, (whose post-office addresses are Washington, District of Columbia,) have invented a new and useful Improvement in Fat-Extraction Apparatus.

This application is made under the act of March 3, 1883, chapter 143 (22 Stat., 625), and the invention herein described and claimed may be used by the Government of the United States or any of its officers or employees in the prosecution of work for the United States, or by any person in the United States, without the payment of any royalty thereon.

This invention relates to apparatus for use in the determination of fats (ether extract) and similar processes.

In the accompanying drawings Figure 1 shows a modified form of flask. Fig. 2 shows a simple form of extraction tube, provided with a readily removable perforated plate for supporting the material being treated. Fig. 3 is a form of spring for use in connection with the same, being shown in perspective. Fig. 4 shows the extraction tube ready for use in a determination. Fig. 5 shows the complete device, the parts separated to avoid confusion.

The flask shown in Figs. 1 and 5 differs from the ordinary Knorr's fat flask, for mercury seal, in that it is provided with one or more holes, 1, for allowing the passage of vapors outwardly and to allow any ether condensed in the tube, 2, surrounding the extraction tube to flow back into the flask. These holes may be ¼ inch in diameter and about ¼ inch above the level of the mercury trough, 3.

Referring to Fig. 2, the extraction tube, 4, is of simple construction and the lower tapered end is allowed to enter the neck of the fat bottle, the shoulder, 5, setting on the top of said neck. It is immaterial if it forms an almost tight joint, since the vapors from the flask can pass outwardly through the holes, 1, above referred to. In this tube, resting on the shoulder, is placed a disk, 6, made of any suitable substance. Nickel may be used in connection with most solvents, but with a few special solvents platinum may be necessary. The wire, 7, is welded or otherwise secured to the disk, 6, and may be made of nickel or platinum, or any metal not acted on by the solvent used. The tube, 4, is extended below the shoulder, 5, as an extension, 8, which is preferably a tube about ¼ of an inch in diameter. This part extends into the neck of the fat bottle and is preferably cut off at an angle as illustrated.

The spring illustrated in Fig. 3 may be made of spring brass wire, in case brass is not acted on by the solvent used. Any other resilient wire may be used. This may be made of No. 19 wire and comprises an inwardly curved portion, 10, a portion triangular, circular, or other portion, 11, lying in a plane at right angles to the part, 10, a single coil, 12, at the top, an end portion, 13, the extreme end of which is bent slightly inwardly as illustrated at 14.

The apparatus is used as follows: The disk, 6, is placed in position as shown and a thin layer, asbestos or similar fibrous material, 9, is placed thereon. The weighed sample of material being analyzed (shown at 15), is placed thereon, and a disk of platinum, nickel, or other material, 16, is placed thereon and the end of the spring inserted in the tube by pressing the parts 10 and 13 together and sliding it down into the tube as shown in Fig. 4. The function of the disk, 16, as will be observed, is to prevent floating or puffing up of the material being extracted, due to air contained therein or to the vaporization of the solvent, which sometimes is liable to occur, particularly with light and fluffy materials. Ether, or other solvent to be employed, is then placed in the weighed flask, and the tube, 4, placed in position, and the condenser lowered into place, mercury being placed in the trough, 3, to seal the bottom of the part, 2. The extraction, evaporation of the ether, and final weighing are conducted in the usual manner. The spring may then be removed if desired from the tube, 4, (after drying to remove the ether), by means of a small hook of wire, or bent glass rod, or "shoe buttoner." A small glass tube is then inserted at the bottom end of the tube, 8, and by gently pressing upwardly the plate, 6, as-

bestos layer, 9, sample, 15, and plate, 16, are removed, after which the sample can easily be separated, by washing, if necessary, for the determination of crude fiber in the ordinary manner.

The device is easy to manipulate, cheap in construction, and not liable to breakage.

Having thus described our invention, we claim as follows:

1. An apparatus for extraction, comprising a "Knorr" fat flask provided with a hole above the normal mercury level, an extraction tube, a disk capable of being placed in said extraction tube for supporting the material to be extracted, a disk to prevent rising, floating, or puffing up of the material, and a spring adapted to hold the same in place, substantially as described.

2. An apparatus for extraction, comprising a flask provided with a mercury trough, a plurality of holes in the neck located substantially above the level of the outer edge of said trough, an extraction tube having a cylindrical portion, shoulder therebelow, an extension below this shoulder, a perforated disk capable of resting on said shoulder, provided with a wire extending downwardly into said extension, a layer of filtering material on said disk for supporting the material to be extracted, a disk adapted to be placed on said material, a spring adapted to be placed in said extraction tube to hold said last named disk in place, substantially as described.

In testimony whereof we affix our signatures in the presence of two subscribed witnesses.

HENRY L. WALTER.
CHARLES E. GOODRICH.

Witnesses:
GEO. L. BIDWELL,
GEO. P. WALTON.