Nov. 18, 1924. 1,516,187

V. E. HANSON

GAS ABSORBING APPARATUS

Filed Aug. 30, 1920

Fig. 1

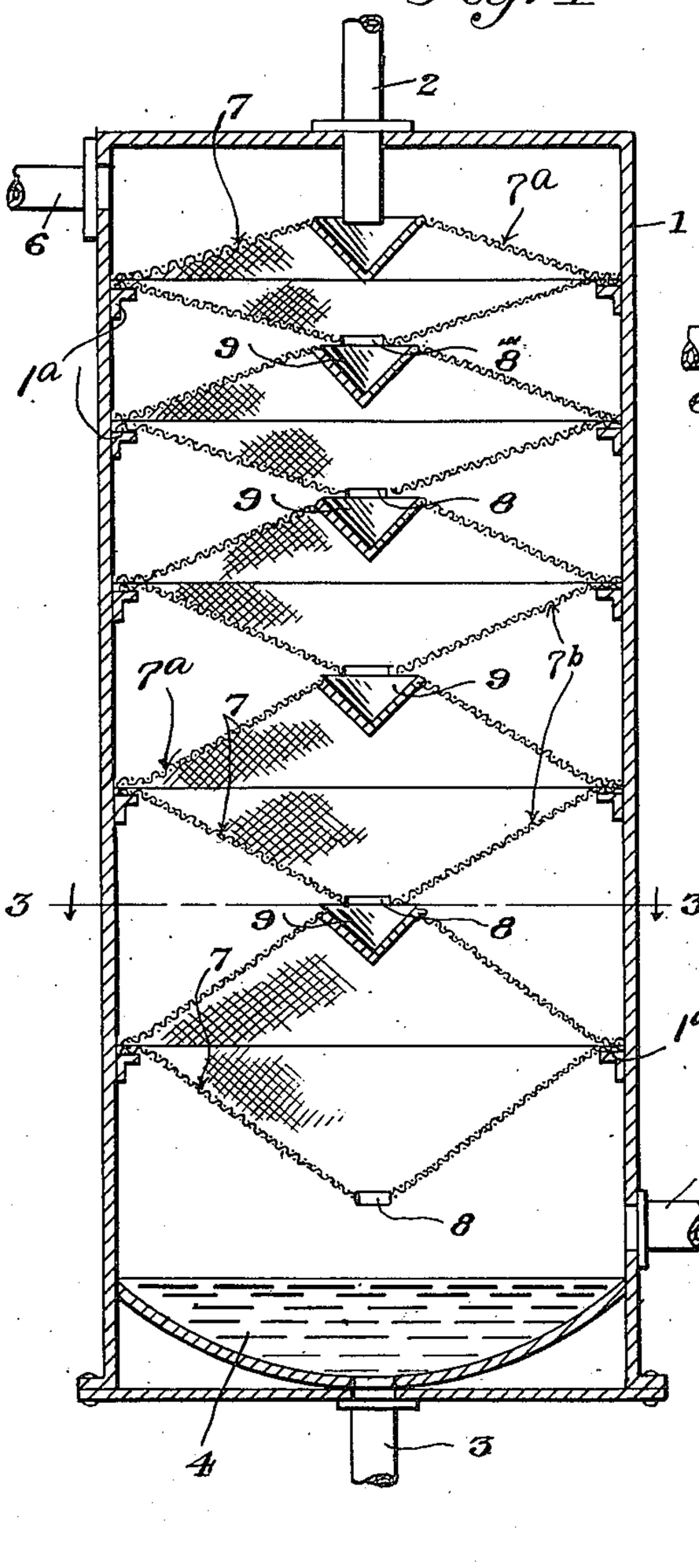


Fig. 2

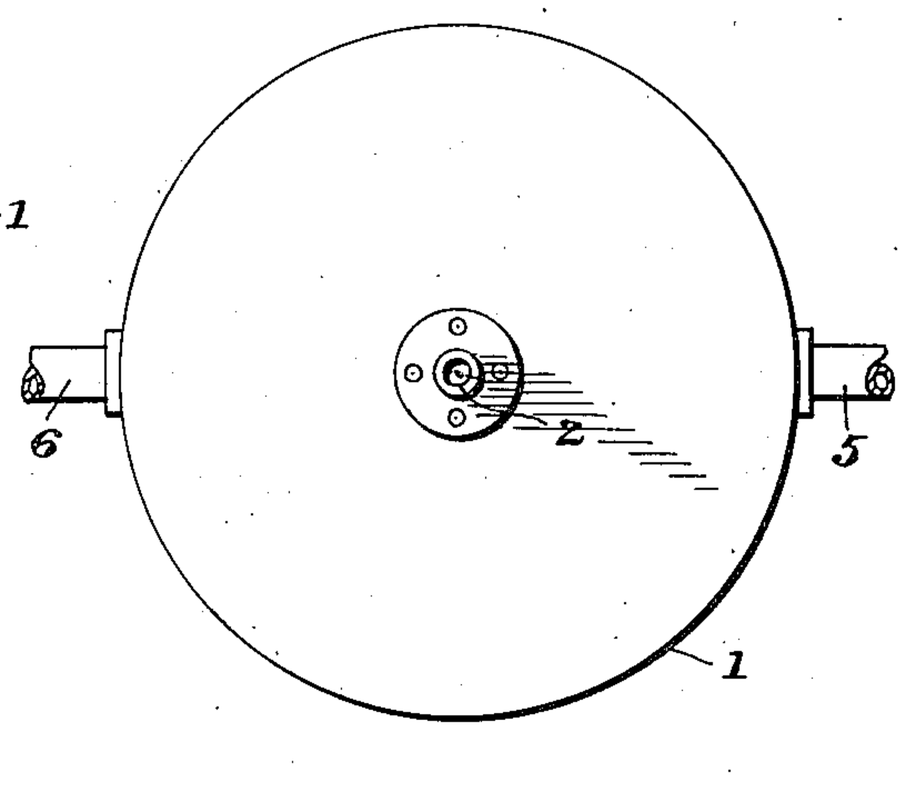
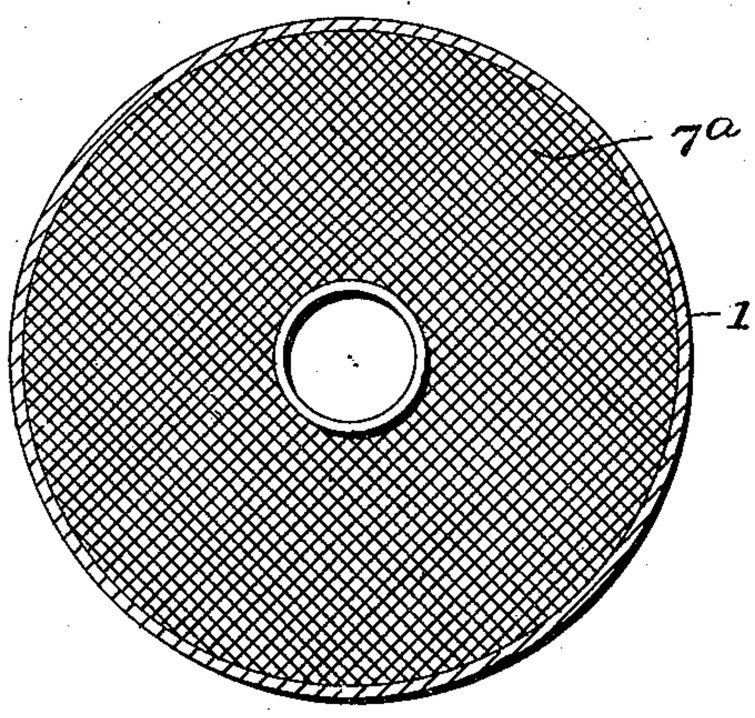


Fig. 3



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UNITED STATES PATENT OFFICE.

VIGGO E. HANSON, OF CASPER, WYOMING, ASSIGNOR TO STANDARD OIL COMPANY, OF WHITING, INDIANA, A CORPORATION OF INDIANA.

GAS-ABSORBING APPARATUS.

Application filed August 30, 1920. Serial No. 407,006.

To all whom it may concern:

Be it known that I, VIGGO E. HANSON, a citizen of the United States, residing at Casper, in the county of Natrona and State of Wyoming, have invented new and useful Improvements in Gas-Absorbing Apparatus, of which the following is a specification.

This invention relates to an apparatus wherein a liquid is adapted to absorb a gas.

In the refining of oil, gases are formed in each still which are carried over beyond the condenser. Such gases are of value as when contained in products of the refining process, for instance liquid naptha, and it is in this connection that the present invention is primarily used. It is particularly aimed to provide a novel and efficient means wherein such gases may be absorbed by the liquid naptha aside from enabling the admixture of a liquid and a gas generally to be efficiently carried out.

Another object is to provide a construction having an upstanding row of baffles to facilitate flow of the naptha or liquid for absorbing contact with the gases and to equip the baffles at their apices with overflow cups one of which receives the naptha from the source of supply and all of which serve to retard and insure its flow over the baffles.

A further object is to provide such an apparatus wherein the baffles in a downward direction progressively increase in angularity with respect to the horizontal to compensate for changes in specific gravity of the naptha or absorbent so as to avoid falling through as contrasted with flowing over the baffles.

In the accompanying drawings illustrating an operative embodiment of the invention:

Figure 1 is a vertical substantially diametric section of the apparatus;

Figure 2 is a plan view thereof and

Figure 3 is a cross sectional view taken on the line 3—3 of Figure 1 looking in the direction of the arrows.

Referring specifically to the drawings, 1 designates a preferably cylindrical casing which is closed except for a naptha inlet means 2 entering through its top wall, a naptha outlet means 3 fastened to its bottom wall, a gas inlet means 5 secured to its side wall adjacent its bottom, and a gas outlet 6 secured to the side wall adjacent the top and on a line diametrically opposite to said inlet means 5. A receptacle 4 is disposed within and at the bottom of casing 1 in communication with said outlet means 3.

A vertical row of baffles or screens 7 is disposed in casing 1. Each baffle preferably consists of a pair of substantially frusto-conical, respectively upper and lower sections 7^a and 7^b, of reticulate material, usually screen wire, arranged with their bases in contact and at such bases being supported by and resting on or secured to ledge elements 1^a fastened to and within casing 1. The angles or hypotenuses of the screens of the respective baffles progressively increase in a downward direction relative to the horizontal.

Said screens or sections 7^a at their frustrums have imperforate centrally and axially disposed cups 9 suitably fastened thereto. These cups are preferably of light metal, depend into the section 7^a and have their marginal edges in the planes of the frustrums. Said cups further have conical inner surfaces which insure overflow or distribution of the absorbent evenly therefrom onto the screens 7^a.

The screens or sections 7^b have centrally located or frustrum openings 8 in axially alignment with the cups 9 and the inlet means 2. The latter depends below the top of and into casing 1 terminating relatively close to and discharging into the uppermost cup 9. The lowermost opening 8 discharges into receptacle 4.

In using the apparatus, by way of example, naptha or other liquid absorbent is supplied to the casing through the inlet 2 into the uppermost cup 9 and overflows the same so as to travel evenly over its upper edge onto the uppermost baffle 7 first at its section 7^a in a downward and outward direction and thence onto its section 7^b in an inward and downward direction to its opening 8. The absorbent passes from the opening 8 into the cup 9 beneath it and in this manner progressively in a general downward direction, flows over the baffles 7 and overflows the various cups 9. From the lowermost baffle 7, the absorbent drains into receptacle 4 from which it passes to a storage tank or means for immediate use, as preferred. As the naptha descends, it is met by ascending gases such as are formed in the stills during the refining of oil and

carried over beyond the condenser as previously referred to. Said gases enter at 5 and as they ascend in casing 1, they are baffled by the elements 7 to insure intimate contact thereof with the flowing naptha which absorbs most of such gases. The unabsorbed gases escape through outlet 6. The naptha or absorbent becomes lighter as it passes downwardly and progressively over baffles 7 due to the content of the gases absorbed by it and hence the increasing inclination of the baffles 7 progressively in a downward direction with respect to the horizontal is important, since the same is proportioned to the variation in specific gravity of the absorbent so as to prevent the latter from falling through the screens or baffles instead of flowing thereover. It also enables the screens or baffles to be compactly disposed or arranged in minimum space.

I claim:—

1. An absorber having an upstanding row of reticulate baffles, with inclined surfaces disposed for flow of absorbent thereover, the angularity of such surfaces progressively increasing in a downward direction with respect to the horizontal, each baffle having an imperforate absorbent-overflow cup disposed at the uppermost portion thereof, and said cups being arranged for engagement by the absorbent successively in a downward direction.

2. An absorber having an upstanding row of baffles provided with inclined baffling surfaces for flow of the absorbent thereover, and the angularity of said surfaces in a downward direction progressively increasing with respect to the horizontal.

3. An absorber having an upstanding row of baffles provided with inclined baffling surfaces for flow of the absorbent thereover, the angularity of said baffles in a downward direction progressively increasing with respect to the horizontal, each baffle adjacent the top thereof having a cup for reception and overflow of the absorbent, an absorbent-inlet means arranged to discharge into the uppermost cup, and each baffle above the lowermost one being arranged for passage of the absorbent therefrom into the cup of the next lower baffle.

4. An absorber having an upstanding row of baffles, a casing within which said baffles are arranged, each baffle consisting of a pair of conical sections of reticulate material arranged with their axes in alignment and their bases in a common plane, means within the casing engaging said baffles at their marginal edges to support the same, the upper section of each pair having an interiorly conical cup arranged to receive absorbent and for overflow of the same at a frustrum of the section carrying it, the angularity of said baffles in a downward direction progressively increasing with respect to the horizontal, an absorbent-inlet means arranged to discharge into the uppermost cup, said baffles and their cups being adapted for engagement by the absorbent successively in a downward direction, outlet means for the absorbent adjacent the base of the casing, inlet means for material to be absorbed adjacent the base of the casing, and outlet means for the unabsorbed portion of the last mentioned material located adjacent the top of the casing.

In testimony whereof I affix my signature.

VIGGO E. HANSON.