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H. GIEHNE ET AL
BELL-TRAYS
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2 Sheets-Sheet 1

Fig. 1

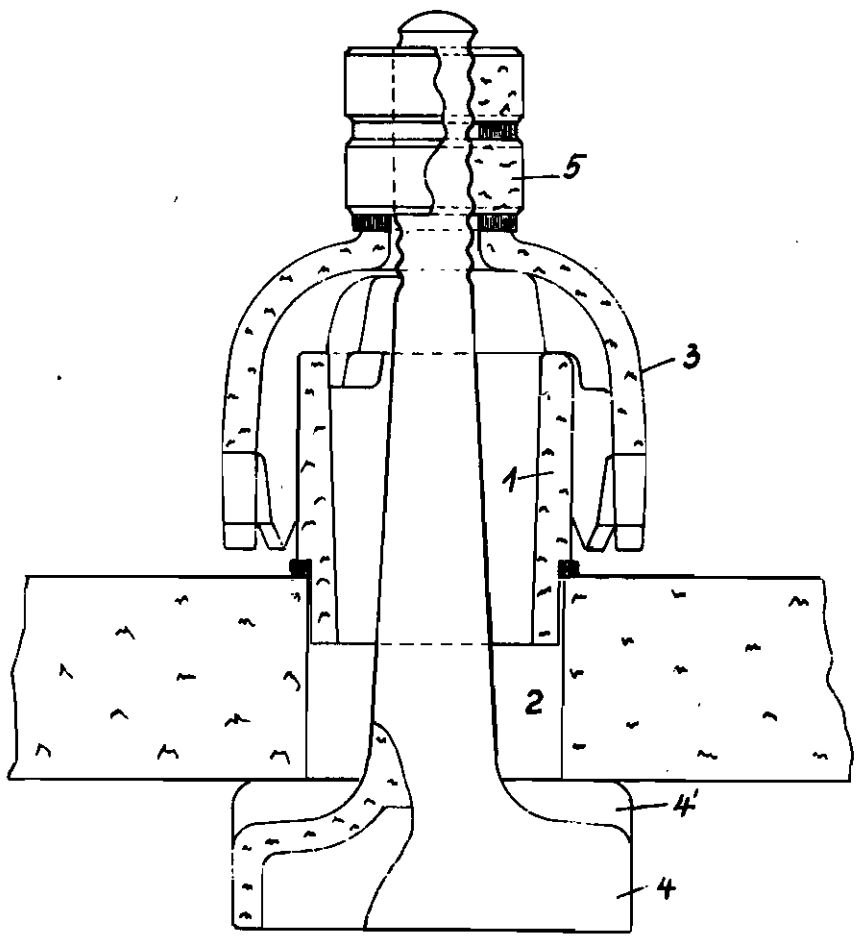

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Fig. 3

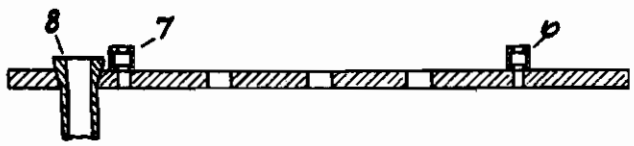
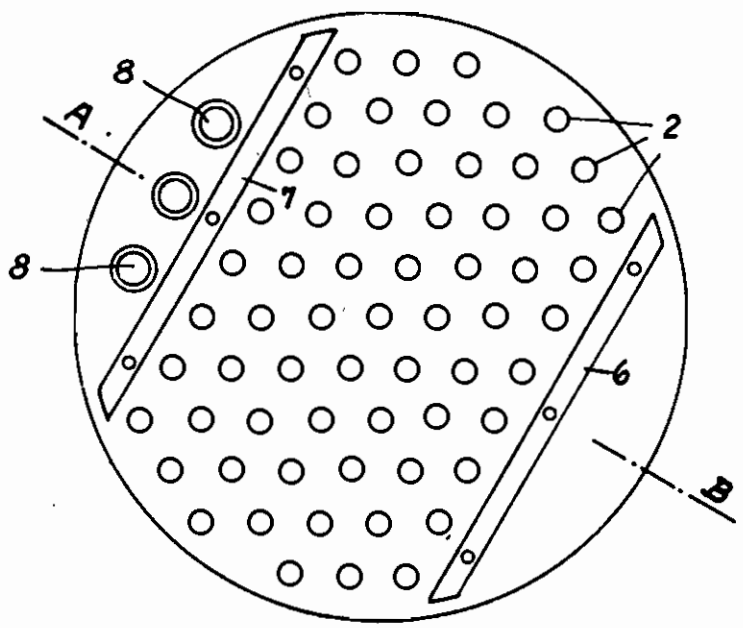


Fig. 2



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ALIEN PROPERTY CUSTODIAN

BELL-TRAYS

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Application filed October 8, 1940

The present invention relates to improvements in the construction of bell-tray arrangements.

In the common practice of effecting a continuous interchange of substance or heat between two liquid mediums or between a liquid and a gaseous medium, columns are used which are charged with fillers, for example with such of the Raschig ring type, or are fitted with trays, especially trays provided with so-called bells or bubble caps. The columns provided with trays offer the advantage that the efficiency or the degree of the interchange (with reference to a given cross-section of the column) is less dependent on the quantities of the substances in interchange which are passed through the column in the unit of time than is true with filler columns, the efficiency of the latter having a more or less pronounced peak value at a definite throughput.

Where the corrosive properties of the substances to be operated preclude the ordinary metallic materials from being used in the construction of bell-tray columns, it has hitherto been the common practice, especially in the case of large-scale arrangements, to resort to the use of filler columns. Attempts to make bell-tray columns of non-metallic materials resistant to corrosion proved hitherto unsuccessful in practice, insofar as either the chemical or the mechanical resistance of the materials left much to be desired.

We have now found that bell-tray columns which are free of the said drawback are obtained by employing glass as construction material. Bell-tray arrangements according to our invention comprise glass bells and glass trays fitted with openings for the insertion of fixtures for the bells, and means for securing the bells and the said fixtures to the trays. In this manner bell-tray columns with all elements consisting of glass, may be made without difficulty of any dimension suitable in technical scale. The tray plates may be cast of glass in relatively large dimensions.

The present invention will be further described with reference to the accompanying drawings in which

Fig. 1 is a longitudinal section through a bell and part of the bell-tray as well as through means for screwing said bell upon said tray;

Fig. 2 is a top view of a tray;

Fig. 3 is a section along line A—B of Fig. 2.

Referring to the said figures in detail, sockets 1 preferably made of glass and suitable to fit in openings 2 of the tray are used as fixtures for the bells 3. The sockets and the bells resting upon them are interlocked and secured to the tray with the aid of a screw-fitted body 4 which is likewise made by preference of glass, advantageously by moulding and which body comprises an enlarged base portion with ribs 4' serving to keep the base portion in a distance from the tray in order to avoid a sealing of the opening 2, a stem-shaped middle portion protruding through the opening 2 and the socket 1 and a threaded top portion which keeps the bell in position by means of a female screw 5. Since this joint when working with liquids is subject to a permanent strain by the bubbling of the liquids, it is preferably secured in its position by a second female screw or by other appropriate means. The bell may also be secured instead of by a screw-joint by other appropriate means, for example one of the bayonet-joint type.

The damming ledges or weirs ordinarily used to accomplish a uniform distribution of the liquid over the whole cross-section of the column, are preferably made of flat shaped glass or of hollow glass bodies with rectangular cross-section (cf. 6 and 7 in Fig. 2) and advantageously secured to the tray by means of screws. 8 denotes the usual tubes for the intercommunication between two column bottoms.

According to the present invention bell-trays which are resistant to corrosion, may be made in technical dimensions, for example such of a diameter of 1 meter, in which dimensions they meet high demands as regards the quantities passed through in the unit of time.

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