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A. J. OSTRANDER

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LIQUID FEEDING MEANS

Filed Oct. 22, 1931

Fig 1

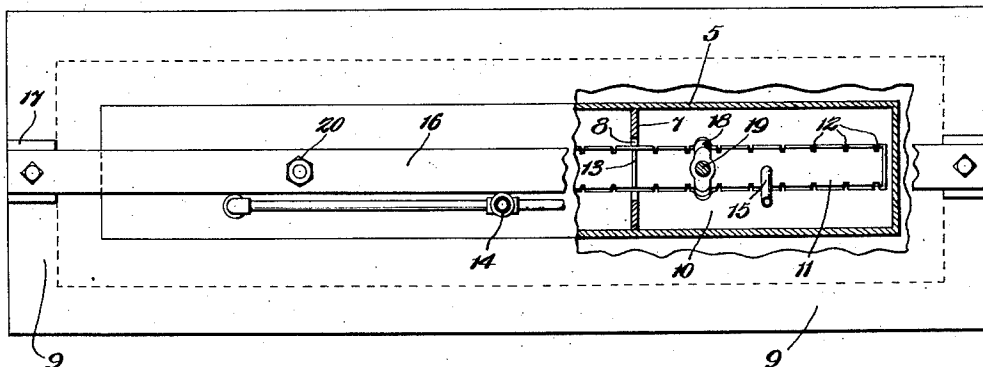


Fig 2

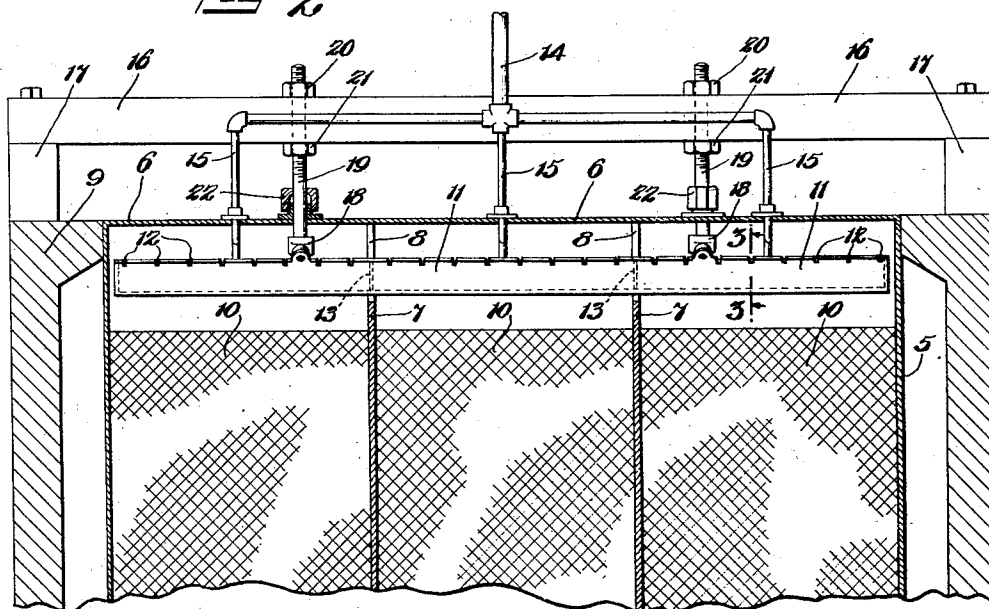
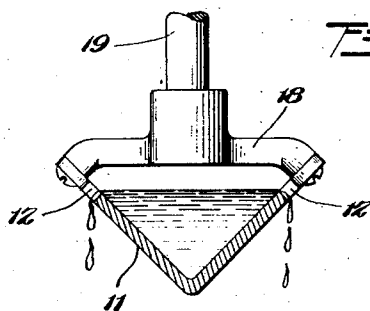


Fig 3



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LIQUID-FEEDING MEANS

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This invention relates particularly to means for feeding oil or other liquid in numerous drops or small streams, distributed uniformly across the upper part of a chamber containing a contact mass upon or within which the liquid is subjected to a treatment or reaction involving super-atmospheric temperature.

As a convenient means for the purpose in question, it has heretofore been proposed to use a horizontal trough into which the liquid is conducted, the trough being provided with a series of lateral slots through which the liquid escapes and falls. In the use of this device, however, if it be attached to and supported by the walls or top of the chamber, difficulty is met in keeping the trough adjusted to exactly horizontal position, owing to the expansion and contraction of the metal, of which the chamber is composed, in the heating and cooling of the chamber. Any departure from horizontal position causes the feed to become uneven, the liquid being discharged chiefly or entirely from the lower part of the trough.

The object of the present invention is to avoid the difficulty just described, and to this end it is proposed to support the feed-trough by connection with a firm and perfectly stationary member located above and independent of the chamber, this member being unaffected by the temperature conditions in the chamber.

In the accompanying drawing, Fig. 1 is a plan view, partly in section, of a reaction chamber and liquid-feeding means in accordance with the present invention;

Fig. 2 is a sectional side elevation of the same; and

Fig. 3 a detail sectional view on the line 3—3 in Fig. 2, but on a larger scale.

The invention is illustrated as embodied in feeding means used in connection with a reaction chamber of rectangular form, which has vertical walls 5 and a flat top 6 made of sheet steel or other suitable metal. This chamber is partially divided by two vertical partitions 7, but these partitions have openings 8 at their upper ends so that all parts of the chamber are interconnected. The

chamber is shown as enclosed within a furnace or oven 9 by means of which heat may be applied externally to the chamber to promote reactions therein. The chamber contains a contact mass 10 consisting of granulated fullers' earth or other suitable material to promote the operation or reaction which is to be performed within the chamber.

The feed-trough 11 constituting an element of the present invention extends horizontally across the top of the chamber, and is provided at both sides with uniformly spaced slots or notches 12 through which the liquid overflows from the trough, as shown in Fig. 3, and is thus discharged at uniformly spaced points upon the upper surface of the contact mass. In order to make this feed as uniform as possible, the trough is preferably divided into three parts by partitions 13, corresponding to the three sections of the chamber, and the oil or other liquid is fed independently to these three sections of the trough. As shown in the drawing, the liquid is supplied through a pipe 14 having three branch pipes 15, each of which passes through the top of the chamber and discharges into one of the sections in the feed-trough.

The means peculiar to the present invention for supporting the feed-trough comprise a horizontal beam 16 which is fixed to supports 17 at the ends of the oven, the beam and the supports being rigid and stationary. By means of two hangers 18 the trough is attached to vertical stems 19 which pass upwardly through openings in the top of the chamber. The upper ends of these stems pass through the beam 16 and are screw-threaded to receive upper and lower nuts 20 and 21 bearing against the beam.

After the structure has been assembled, the feed-trough may be exactly levelled and fixed rigidly in position by the nuts 20 and 21. To facilitate this operation, the stems 19 may be made of equal length so that a level resting upon their upper extremities will indicate when the trough is level. In order to permit the top of the chamber to move independently of the stems, but to preserve fluid-tight joints between the stems and top, the stems are surrounded by glands 22 con-

taining suitable packing and fixed to the top of the chamber.

It will be evident that the top of the chamber may rise and fall freely with respect to the stems 19, and that the feed-trough will not participate in these movements, since its supports are independent of heat conditions within the chamber. The trough is thus maintained in horizontal adjustment regardless of the expansion and contraction of the reaction chamber.

The invention claimed is:

The combination, with a reaction chamber, of a horizontal feed-trough within the chamber, a stationary support above and independent of the chamber, connecting means, between the feed-trough and said support, passing through the top of the chamber, and means for making fluid-tight but vertically yielding joints between said connecting means and the top of the chamber.

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