April 14, 1925. 1,533,173

G. EGLOFF ET AL

DISTILLATION APPARATUS

Filed Nov. 10, 1920

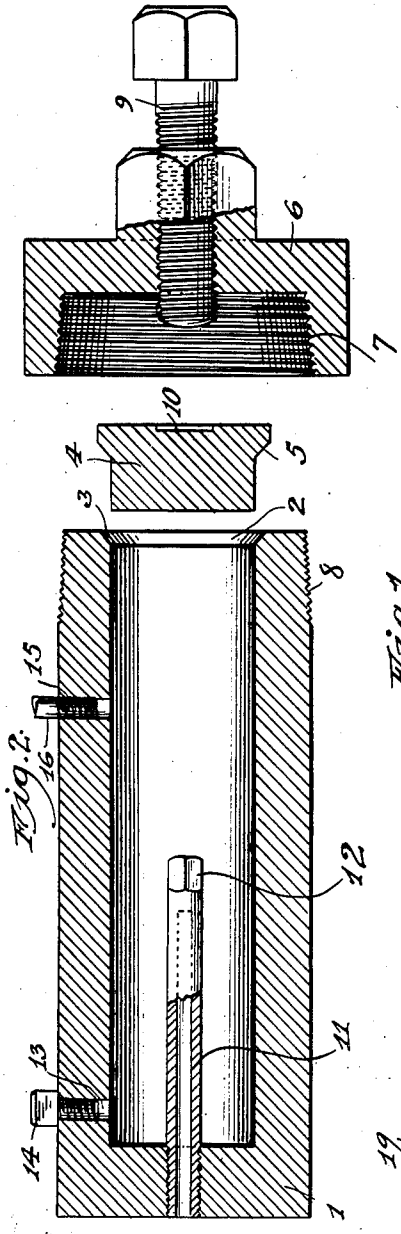


Fig. 2.

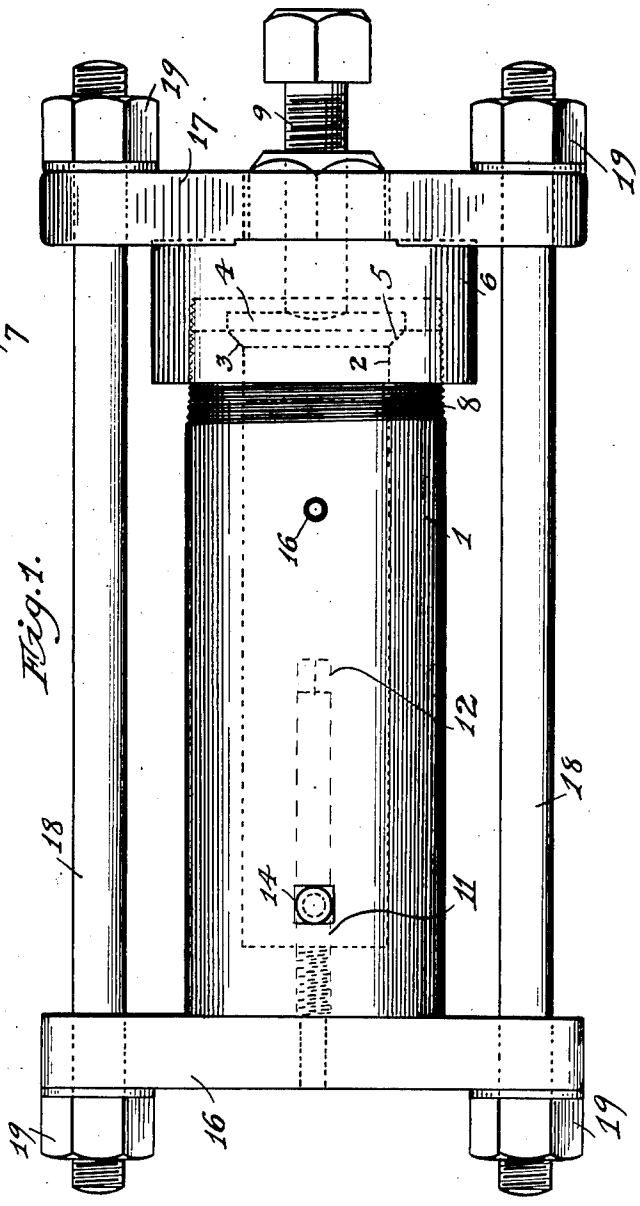


Fig. 1.

Witness,
S. E. Mann.

Inventors,
Gustav Egloff.
Harry P. Bellner.
By Frank L. Belknap Atty.

Patented Apr. 14, 1925. 1,533,173

UNITED STATES PATENT OFFICE.

GUSTAV EGLOFF AND HARRY P. BENNER, OF INDEPENDENCE, KANSAS, ASSIGNORS TO UNIVERSAL OIL PRODUCTS COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF SOUTH DAKOTA.

DISTILLATION APPARATUS.

Application filed November 10, 1920. Serial No. 423,019.

To all whom it may concern:

Be it known that we, GUSTAV EGLOFF and HARRY P. BENNER, both citizens of the United States, residing in the town of Independence, county of Montgomery, and State of Kansas, have invented certain new and useful Improvements in Distillation Apparatus, of which the following is a specification.

This invention relates to improvements in an apparatus for distillation of liquid or solid substances under high pressure.

Among the salient objects of the invention are to provide an apparatus by means of which liquid or solid substances may be distilled under very high pressures to convert the same into substances having a different physical form and chemical composition; to provide an apparatus which is particularly adapted to withstand conditions of extremely high temperature and pressure and an apparatus which is simple to charge, easily taken apart for renewing any portion thereof and one that is particularly adapted for experimental work in that its size and strength, together with its being fitted with appurtenances for taking pressures and temperatures, make it extremely useful, and to provide an apparatus which is particularly adapted for distillation of oils of a high boiling point, asphalt, tars or mastic substances which do not distill easily in the common type of apparatus.

Figure 1 is a plan view of the assembled apparatus, and

Fig. 2 is a sectional side view of the retort, showing the end closure detached therefrom.

Referring to the drawings, 1 is a heavily constructed retort of comparatively small size open-ended at 2, in which is ground a seat 3. A plug 4 is adapted to seat in the open end of the retort 1 and has a similarly ground seat 5, which seats at 3 in the retort and assures a pressure-tight closure when the screw cap 6, internally threaded at 7 to fit over the external threads 8 of the retort, is screwed in place. When the plug 4 has been seated in the open end of the retort and the cap 6 screwed in place, a screw bolt 9 threaded in the closure cap 6 may be set up so that the tail end of the bolt sets firmly against the top of the plug 4 in the recess 10 and holds the same firmly upon its seat, thereby assisting the cap in its closure function. A thermometer well 11 is screwed into the end of the retort through the open end 2 by means of the square head 12. This well is screwed into the retort from the inside thereof in order that it may not be forced from its engagement with the retort when the latter is maintained under a very high pressure. At 13 a threaded hole is provided fitted with the plug 14, which communicates with the interior of the retort and furnishes a means for charging the same when liquids or flowing substances are to be distilled. If, however, a solid substance or some material that would be difficult to charge through this small hole 13 is to be treated, the plug 4 must be removed and the retort charged through the open end. A similar threaded hole 15, communicating with the interior of the retort into which is screwed a pipe 16, communicates with a condenser and other apparatus (not shown) essential to the particular distilling operation.

At both ends of the retort are flanged members 16 and 17 held in place by staybolts 18 and nuts 19. The flange 16 has a small aperture therein to permit the insertion of the thermometer in the well 11, while the flange 17 is constructed to fit over the closure cap and by means of the staybolts, previously mentioned, adapted to hold the construction rigid against very high pressure.

During the distillation, at which time the pressure has mounted to considerable height within the retort, it may be advisable from time to time to take some off the staybolts in order that the flanges may assume the greater part of the pressure and in order that the weaker parts of the apparatus may be relieved of the extreme expansive strain upon its weaker parts. It has been found that as the temperature and pressure in the retort increases there are highly unequal strains in the system which may be taken care of and these flanges and bolts have been highly useful in this regard.

This apparatus has actually been tested out on numerous runs up to actual working pressures of ten thousand pounds per square inch and very satisfactory and interesting results have been obtained by its use.

We claim as our invention:

A closure for an open ended tubular distilling retort having a ground closure receiv-

ing seat at one end, comprising an elongated circular plug provided with a ground surface adapted to seal the open end of the retort, a circular casing capable of surrounding said plug provided with peripheral flanges threadedly engaging the outer wall of said retort, an adjustable head screw carried by said closure cap and engaging said plug at substantially its center for clamping the plug in pressure tight engagement with the retort, an end flange at one end of the retort, a second end flange recessed to engage with said closure cap, and adjustable screw threaded stay bolts for uniting said flanges and for holding them in operative position.

GUSTAV EGLOFF.
HARRY P. BENNER.