March 8, 1927.

1,619,922

G. EGLOFF ET AL

APPARATUS FOR CRACKING OIL

Original Filed Sept. 1, 1920 2 Sheets-Sheet 1

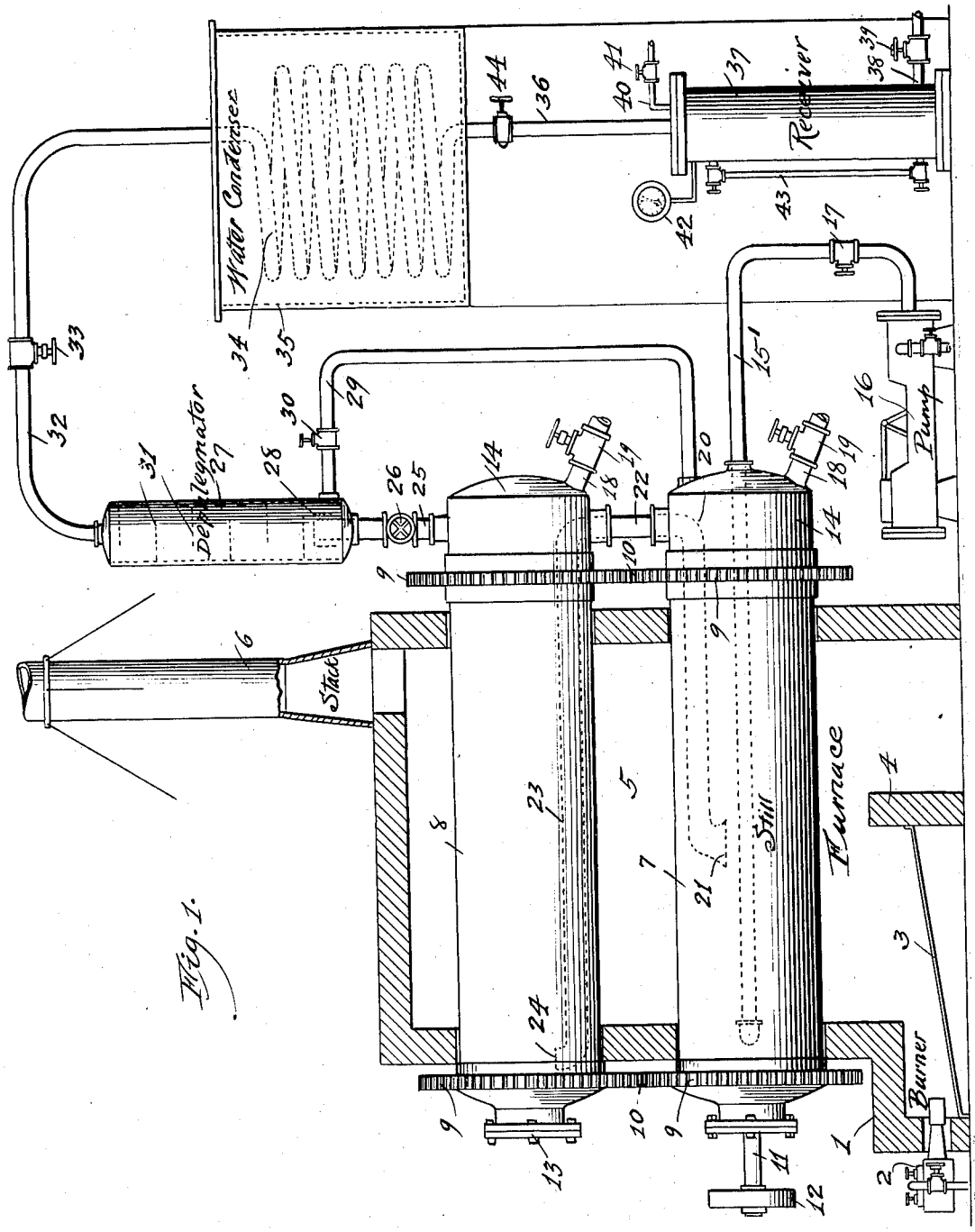


Fig. 1.

Witness,
V. B. Mann

Inventors,
Gustav Egloff
Harry P. Bedtner.
By Frank A. Belknap Jr. Atty.

March 8, 1927. 1,619,922

G. EGLOFF ET AL

APPARATUS FOR CRACKING OIL

Original Filed Sept. 1, 1920 2 Sheets-Sheet 2

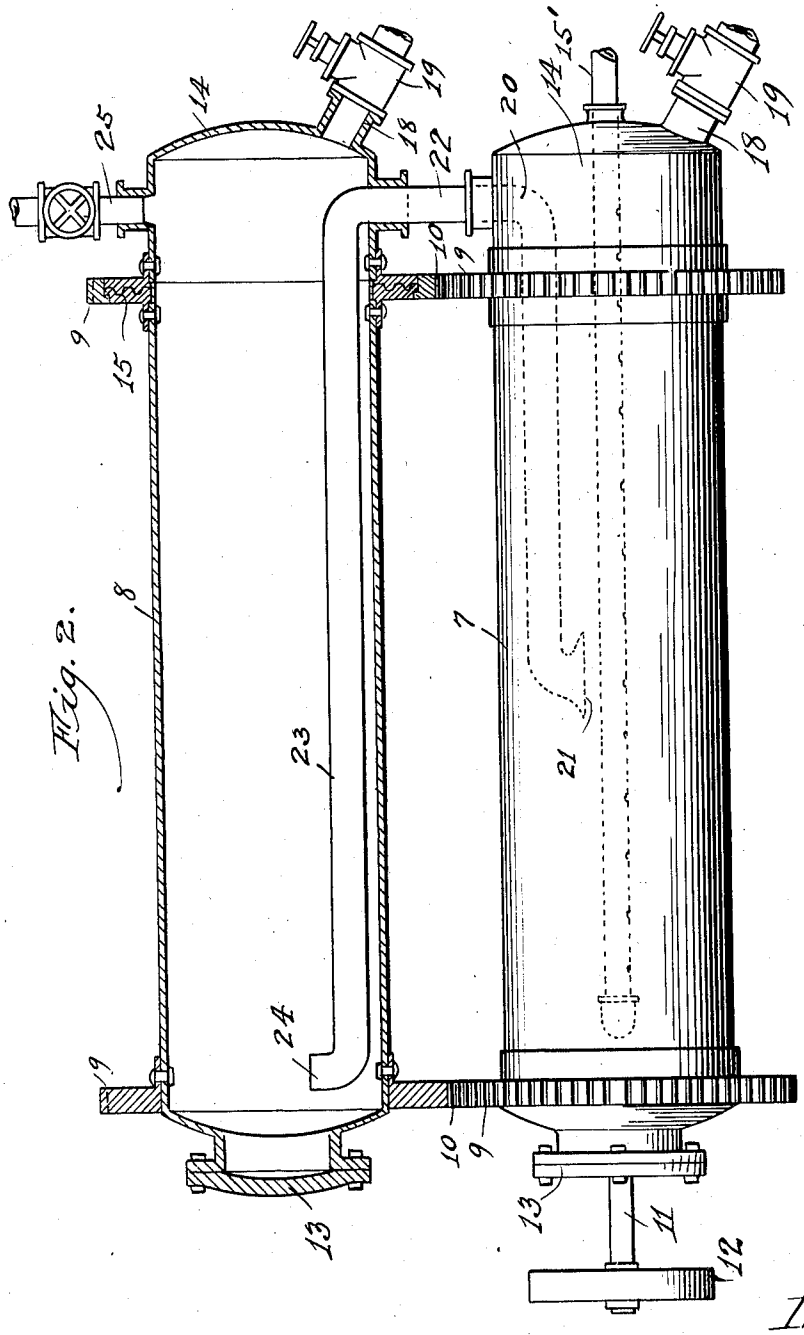


Fig. 2.

Witness,
P. S. Mann

Inventors,
Gustav Egloff
Harry P. Bellner
By Frank & Belknap Attys.

Patented Mar. 8, 1927. 1,619,922

UNITED STATES PATENT OFFICE.

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

APPARATUS FOR CRACKING OIL.

Application filed September 1, 1920, Serial No. 407,402. Renewed September 2, 1926.

This invention relates to improvements in apparatus for cracking oil such as petroleum oil to produce further light hydrocarbons such as gasoline, kerosene or the like.

In the drawings, Fig. 1 is a view partly in side elevation and partly in vertical section of our improved apparatus. Fig. 2 is a view on an enlarged scale of the rotating still members.

Referring to the drawings, 1 designates the furnace, provided with burner 2, grate 3, bridge wall 4, combustion chamber 5, stack 6. In the furnace is rotatably supported a pair of still members 7 and 8. These still members are suitably mounted on trunnions (not shown) and are rotated as follows: At either end the shells 7 and 8 are provided with circumferentially extending gears 9, which mesh with the intermediate gears 10, the arrangement being such that the shells are rotated in the same direction relative to each other. The lower shell 7 is provided with a drive shaft 11 and driving pulley 12 connected to any suitable source of driving power. One end of each still is provided with the man hole plate 13 and the other end is open and connects with the stationary still sections 14. The sections 7 and 8 are rotatably connected to the stationary section 14 by means of the groundjoint 15, the arrangement being such that the main part of the stills rotate while the short sections 14 are stationary. Oil is delivered to the lower stationary section 14 through the charging line 15', connected to feed pump 16 in which is interposed valve 17. Any liquid residue may be drawn off from either of the stationary sections 14 through the draw off pipes 18 controlled by the valves 19. The vapors pass out of the lower shell or still member 7 by means of the vapor pipe 20 supported in the lower stationary member 14 and extending into but out of contact with the rotary shell 7 and terminating in a bellmouth 21. The pipe 20 leads to the connection 22 extending into the upper stationary member 14 as shown more clearly in Fig. 2. The pipe 22 in turn connects to pipe 23, which extends longitudinally through the upper shell or vapor chamber 8 and opens into the latter at the opposite end as shown at 24. Vapors pass out of the upper stationary section 14 through the vapor pipe 25 in which is interposed a throttle valve 26. The pipe 25 extends into the lower part of the dephlegmator 27 and is provided with a space cap member 28 which permits of the vapors passing out of the pipe 25, but prevents the reflux condensate from falling back into the pipe. The reflux condensate is returned to the still 7 by means of a reflux condensate pipe 29, provided with throttle valve 30. The dephlegmator 27 is provided with the alternately disposed baffles 31 and vapor outlet pipe 32, controlled by valve 33. The pipe 32 leads to water condenser 34 seated in condenser box 35 and is connected by pipe 36 to receiver 37. The receiver 37 is provided with liquid draw off pipe 38, controlled by throttle valve 39, gas outlet pipe 40, controlled by valve 41, pressure gauge 42 and liquid level gauge 43. A throttle valve 44 may be interposed in the pipe 36 if desired.

The operation of the apparatus will be apparent from the foregoing description, and therefore need not be described. It is to be noted, however, that a novel feature of the construction is that we not only have a double still comprising a pair of superimposed shells, both of which rotate, but that if desired the apparatus may be so operated that the lower shell member forms a still and the upper vapor chamber.

We claim as our invention:

1. In an apparatus for treating oil, the combination with a shell forming a still member of means for feeding oil to said still, of a second shell forming a vapor chamber, means for delivering vapors from said first mentioned shell forming still member to said shell forming vapor chamber, and means for simultaneously rotating both the said shell members.

2. In an apparatus for treating oil, the combination with a shell member comprised of a stationary section and a rotary section forming a still means for delivering oil to said shell members, of a second shell member comprised of a stationary section and a rotary section forming a vapor chamber, connections between the still and vapor chamber for delivering vapors from one to the other, means for discharging vapors from the rotary section constituting the vapor chamber, and means for rotating said rotary members.

3. An apparatus for treating oil, comprising a shell forming a still member, means for introducing oil thereto, a second shell forming a vapor receiving member adjacent said first mentioned member, means for establishing communication between said members whereby vapors from said first mentioned member are introduced to the second member for expansion, and means for rotating both of said shell members, a vapor outlet from said vapor receiving member, a reflux condenser in communication therewith, and means for returning reflux condensate to the rotating still member.

4. An apparatus for treating oil, comprising a rotating still member having a non-rotating section, means for delivering oil to said still member, means for heating the still member, a rotating vapor chamber having a non-rotating supporting section, a communication between the still member and the vapor chamber, said communication comprising a transfer line leading from the still member through the non-rotating portion thereof and entering the non-rotating portion of said vapor chamber, means for simultaneously rotating the vapor chamber and still member, a dephlegmator, means for discharging vapors from the vapor chamber to the dephlegmator, and means for returning reflux condensate from the dephlegmator to the still member.

5. In an apparatus for treating oil, the combination with a rotating still member having a non-rotating part, a vapor chamber having a main rotating part and a non-rotating part connected therewith, means connecting said still and said vapor chamber whereby they rotate in unison, an oil inlet to said still, a residuum discharge from the non-rotating part thereof, a vapor discharge from said still leading outwardly therefrom through the non-rotating part and entering said vapor chamber through an opening in the stationary part thereof for transferring the vapors from the still to the vapor chamber, and means for discharging vapors from the stationary part of the vapor chamber.

6. In an apparatus for treating oil, the combination with a rotating still member having a non-rotating part, a vapor chamber having a main rotating part and a non-rotating part connected therewith, means connecting said still and said vapor chamber whereby they rotate in unison, an oil inlet to said still member, a vapor discharge from said still member leading outwardly therefrom through the non-rotating part and entering said vapor chamber through an opening in the stationary part thereof for transferring the vapors from the still to the vapor chamber, means for discharging vapors from the stationary part of the vapor chamber and residue discharge members communicating with the stationary portions of both the still and vapor chamber.

GUSTAV EGLOFF.
HARRY P. BENNER.