April 1, 1930. F. C. FANTZ 1,752,332

CLEAN-OUT ELBOW FOR CRACKING STILLS, ETC

Filed April 12, 1929 2 Sheets-Sheet 1

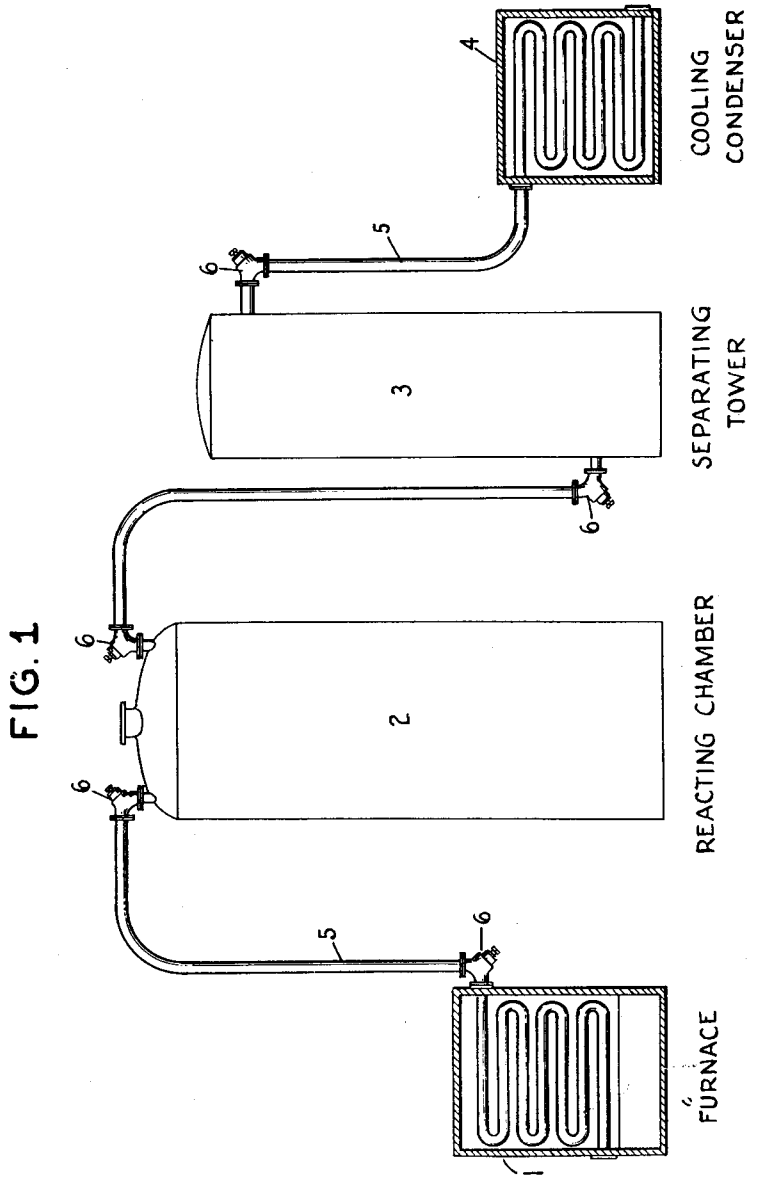


FIG. 1

INVENTOR
FRED C. FANTZ
BY Dodson & Roe
ATTORNEYS

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CLEAN-OUT ELBOW FOR CRACKING STILLS, ETC

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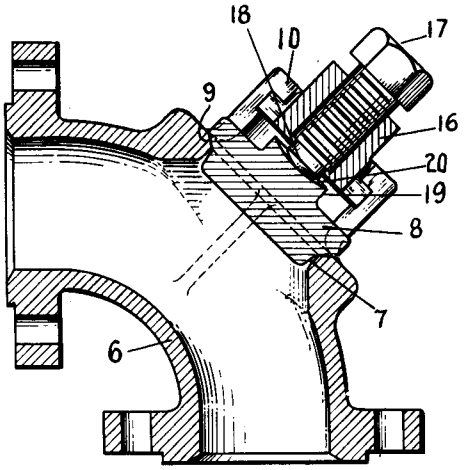


FIG. 2

FIG. 6

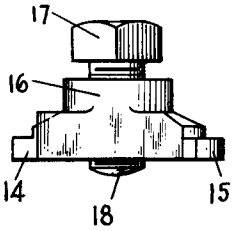


FIG. 4

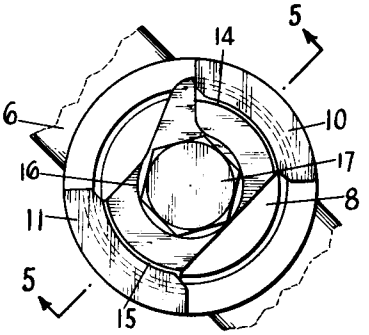
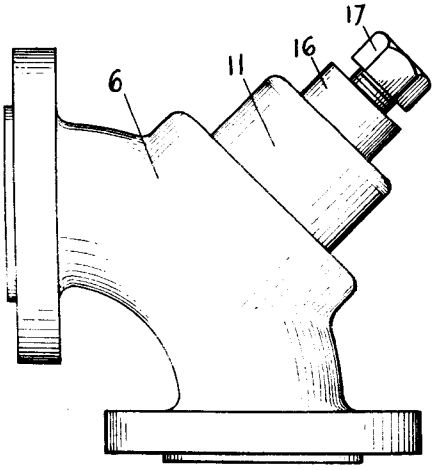


FIG. 3



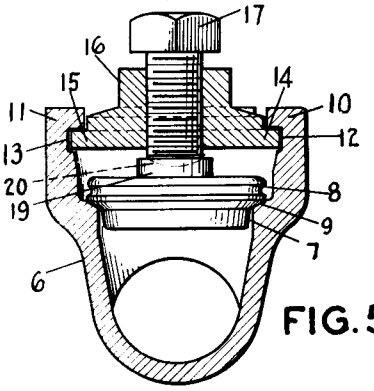


FIG. 5

INVENTOR
FRED C. FANTZ
BY Dodson & Roe
ATTORNEYS

Patented Apr. 1, 1930

1,752,332

UNITED STATES PATENT OFFICE

FRED C. FANTZ, OF WEBSTER GROVES, MISSOURI

CLEAN-OUT ELBOW FOR CRACKING STILLS, ETC.

Application filed April 12, 1929. Serial No. 354,461.

My invention is designed to be utilized where it is necessary to gain access to a pipe to remove the coke resulting from the operation of the still. In devices of this character with which I am familiar, it is customary to employ a cross for this purpose, and this results in providing a number of pockets which become filled with coke so that it is a very difficult operation to open them, and then the coke has to be chiseled out before the tube-cleaner can be introduced into the pipe or tube to be cleaned. It is well known that the coke formed in cracking stills possesses a high shearing strength but a low tensile strength.

My invention has for its object, to provide an elbow which will not have any pockets in it, but which will be provided with a detachable closure at the center of its outer bend, so that by opening the elbow at this point the tube-cleaner can be introduced into pipes which are at right angles to each other; and to provide a construction which will not only successfully resist the high temperatures and pressures to which devices of this character are subjected, but will also avoid the accumulation or deposit of coke which would be sufficient to resist the removal of the closure; and to provide a construction where the only resistance to the removal of the plug will be the tensile strength of the coke rather than the shearing strength.

My means for accomplishing the foregoing objects may be more readily understood by having reference to the accompanying drawings, which are hereunto annexed and are a part of this specification, in which—

Fig. 1 is a diagrammatic view of a cracking still, showing my improved elbow;

Fig. 2 is a vertical sectional view through the elbow;

Fig. 3 is a side elevation of the same;

Fig. 4 is a top or plan view;

Fig. 5 is a sectional view on line 5—5 in Fig. 4; and

Fig. 6 is a detail view of the clamping member.

Similar reference numerals refer to similar parts throughout the entire description.

As shown in the drawings, Fig. 1 is a diagram of a cracking still, illustrating the relation between the furnace 1, reacting chamber 2, separating tower 3, and cooling condenser 4. Pipes 5, which convey the fluid from one to another, become so filled with coke as to render cleaning a frequent operation. As stated in the preamble, this is usually done by means of a cross where I have mounted my improved elbow 6.

By providing for an opening 7 in the elbow 6, as shown in Fig. 2, so that the opening 6 is in line with the vertical and horizontal lines of the pipe 5, I permit the introduction of a tube-cleaner (not shown) to clean either the vertical or the horizontal portion of the pipe 5. This opening 7 is closed by a plug 8, which is tapered to fit a tapered shoulder 9 adjacent the outer edge of the opening 7. As clearly shown in the drawings this shoulder is formed at such an angle that to remove it it will be only necessary to lift it therefrom and not to slide it, hence there is only the tensile strength of the coke to be overcome, whereas, if it had to slide, the shearing strength of the coke would be such that in many instances the plug would have to be chiseled away. The elbow 6 is provided with two outwardly extending arms 10 and 11, which are provided with grooves or recesses 12 and 13, which are adapted to engage arms 14 and 15 on the clamping member 16. In the center of the clamping member 16 is a set screw 17, the inner end 18 of which bears against an upwardly projecting stem 19 in which is formed a socket 20.

The assembly of the elbow 6 is as follows: The plug 8 is placed in position in the opening 7, so that its tapered portion engages the tapered shoulder 9. The clamping member 16 is then placed in the opening 7 so that its arms 14 and 15 are clear of the arms 10 and 11 cast or formed on the elbow 6. The clamping member 16 is then rotated until the arms 14 and 15 enter the recesses or grooves 12 and 13 in the arms 10 and 11, bringing the set screw 17 in position to engage the socket 20 on the stem 19 of the plug 8, when by tightening the set screw 17 the plug 8 will be seated firmly upon the tapered shoulder 9.

It will be obvious from an inspection of the drawings that there is no possibility of the coke lodging in the elbow 6, as there is really no pocket where it can lodge so as to interfere with the removal of the plug 8, and a very slight blow of a hammer is sufficient to dislodge plug 8 and permit its removal.

Having described my invention, what I regard as new, and desire to secure by Letters Patent of the United States, is:

1. An elbow for cracking stills having an opening at the center of its outer bend, a plug to close said opening and adapted to provide a seal therefor, the sealing surface between the plug and wall of said opening being so shaped that the plug can be removed without any sliding movement between adjacent parts, upwardly extending arms at each side of said opening, there being arcuate recesses formed therein, means detachably mounted in engagement with said recesses, and a set screw mounted in said means which engages said plug whereby the tightening of said set screw will cause said plug to seal said opening.

2. An elbow for cracking stills having an opening at the center of its outer bend, a plug to close said opening and adapted to provide a seal therefor, the sealing surface between said plug and elbow being at such an angle that the seal can be broken by placing said seal under sufficient tension to overcome its tensile strength alone, and detachable means to hold said plug in said opening.

3. A fitting for cracking stills having an opening therethrough, a plug to close said opening and adapted to provide a seal therefor, the sealing surface between said plug and elbow being at such an angle that the seal can be broken by placing said seal under sufficient tension to overcome its tensile strength alone and detachable means to hold said plug in said opening.

4. An elbow for cracking stills having an opening at the center of its outer bend, a plug to close said opening, a tapered shoulder adjacent said opening, a corresponding taper on said plug to register therewith and form a seal therefor, the sealing surface between the plug and elbow being at such an angle that the tensile strength alone of the seal must be overcome to remove the plug, upwardly extending arms at each side of said opening, there being arcuate recesses formed therein, means detachably mounted in engagement with said recesses and a set screw mounted in said means which engages said plug whereby the tightening of said set screw will cause the plug to close said opening.

FRED C. FANTZ.