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A. J. KING

2,196,336

COKE CHAMBER LINE

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Fig. 1.

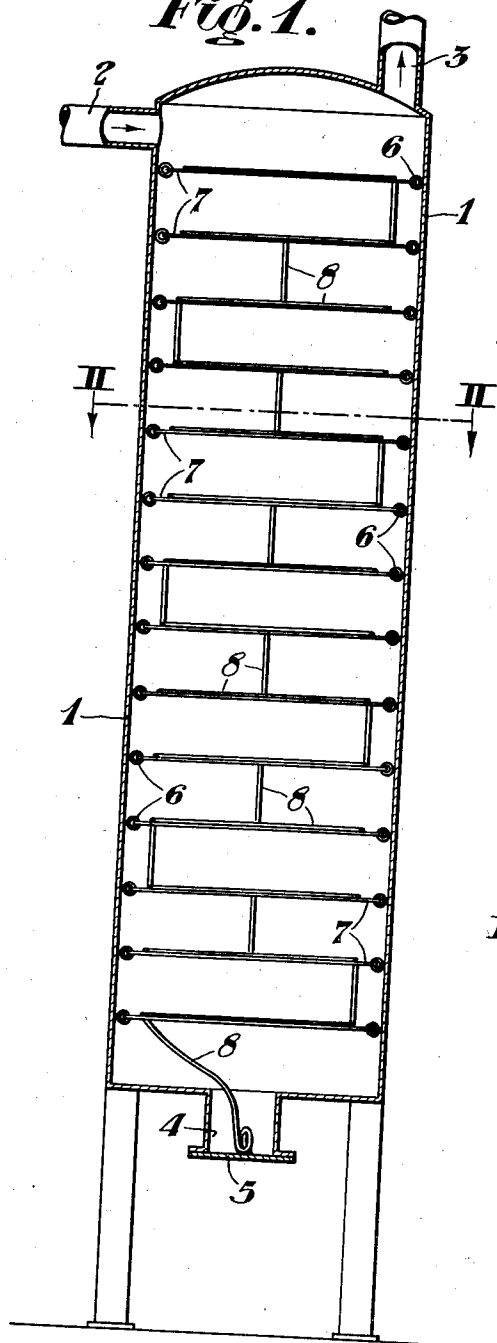


Fig. 2.

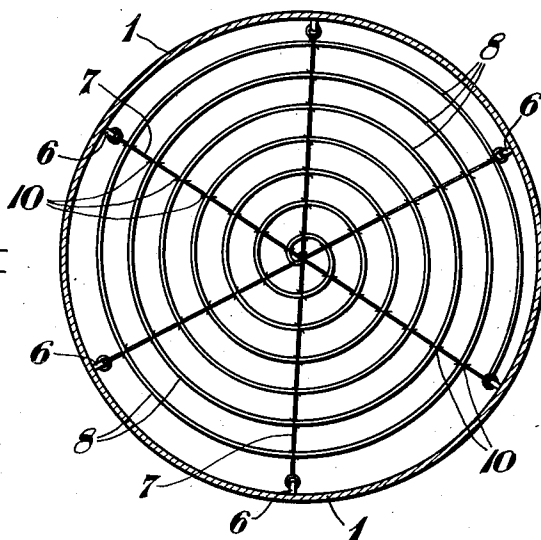


Fig. 3.

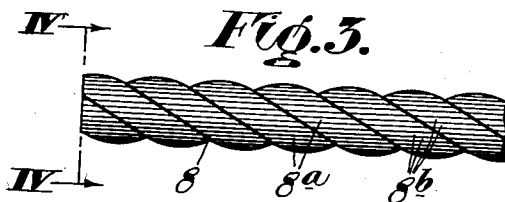
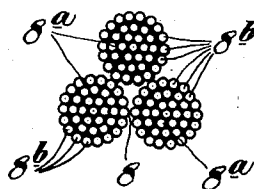


Fig. 4.



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COKE CHAMBER LINE

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3 Claims. (Cl. 57—144)

This invention relates to the removal of coke from coke chambers of the character used in connection with the refinement of oil.

Such a coke chamber is an elongated vertically positioned affair into which oil being refined is expanded. This chamber becomes full of coke which must be removed through a manhole in its bottom.

To facilitate the removal of this coke it is customary to use a coke chamber line. Ordinarily this consists merely of a length of wire rope of conventional construction. That is to say, it consists of a number of strands laid up in inter-twisted relationship about a central strand which functions as a core.

This rope is coiled into the chamber in a series of levels which are maintained by hanger wires stretched across the chamber. When the chamber becomes full of coke this rope is dragged out through an opening in its bottom so as to break up the coke. Suitable conveying mechanism is arranged beneath this opening so as to carry away the coke as it falls out during the withdrawal of the rope.

After a coke chamber line of this character has been used for some time it becomes difficult to handle if not actually useless. A coke chamber line when new may have a diameter of $\frac{7}{8}$ " and the same line when used for some time may enlarge to such an extent that its diameter is increased to $1\frac{1}{2}$ ".

The primary object of the present invention is to provide a solution for the above trouble. Other objects may be inferred.

A specific example of the present invention is illustrated by the accompanying drawing, in which:

Figure 1 is a vertical section of a coke chamber.

Figure 2 is a cross-section of this chamber taken from the line II—II in Figure 1.

Figure 3 is a side view of the coke chamber line shown in use by the first two figures.

Figure 4 is a cross-section taken from the line IV—IV in Figure 3.

The coke chamber 1 is the usual elongated enclosure having an oil inlet 2, a gas outlet 3 and an opening 4 in its bottom which is closed by a manhole 5. It is through this opening 4 that the coke formed in the chamber must be removed.

Inside of the chamber 1 are a plurality of hangers 6 that are spaced circumferentially around the inside of the chamber in a series of levels, and a plurality of centrally intersecting hanger wires 7 that are stretched horizontally

across the chamber 1, each wire extending between two of the hangers 6.

A coke chamber line 8 is positioned in a series of superposed coils by the hanger wires 7. When it is time to remove the coke from the chamber 1 the cover 5 is removed from the opening 4 and the coke chamber line pulled out, it being understood that the hanger wires 7 are not strong enough to resist the pull applied to the line.

According to the present invention, the line 8 is made of three strands 8^a laid up in inter-twisted relationship with a lay that is appreciably shorter than that of wire rope of similar diameter and of any standard construction. Each of these strands are made from at least thirty-seven inter-twisted wires 8^b.

In service, this coke chamber line is characterized by its ability to successfully resist penetration of the coke to a much greater degree than can any other line. It is to be noted that the new line does not have any core or, in other words, that the strands 8^a are arranged so that no one is enclosed by the others. It is this construction that accounts for the new coke line's ability to resist the penetration of the coke, this being because a core expands when the line is heated, so as to separate the outside strands and permit penetration of the coke. This is obviously an impossibility in the case of the new line. Furthermore, it is obvious that any coke that collects in the valleys of the three strands will be dislodged during the flexing of the line incidental to its handling.

While it is possible to construct the new line with either less or more strands than has been described, it is believed at the present time that the three-strand construction is much superior. This is because the use of three strands necessarily results in a structure that is very rigid to lateral deformation. At the same time, due to the sharp pitch of the three strands, the line is extremely flexible to longitudinal bending. Because of this extreme flexibility a means is provided for interfastening the hanger wires 7 and the line 8 at the mutually intersecting portions thereof. This means may consist of short lengths of wire 10 which are wrapped around the mutually intersecting portions.

The use of at least thirty-seven wires in the construction of each of the strands is considered important because it results in further flexibility while permitting the use of strands of sufficient size to assure adequate strength. Since only three strands make up the illustrated line, each of the wires constituting these strands may be

sufficiently large, in spite of their relatively great number, to successfully resist abrasion. However, if the advantages of this particular construction are not desired, less than thirty-seven wires may be used in the construction of the strands.

5 I claim:

1. A coke chamber line consisting solely of a plurality of strands laid up in intertwisted and intercontacting relationship so that no one is enclosed by the others, each of said strands being made of a plurality of intertwisted wires.

10 2. A coke chamber line consisting solely of not

more than three strands laid up in intertwisted and intercontacting relationship, each of said strands being made of approximately thirty-seven intertwisted wires.

3. A coke chamber line consisting solely of not more than three strands laid up in intertwisted and intercontacting relationship with a lay that is appreciably shorter than that of a wire rope of similar diameter and of any standard construction, each of said strands being made of approximately thirty-seven intertwisted wires.

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