April 9, 1940. J. J. DUNN 2,196,960

TUBE QUENCHING APPARATUS

Filed April 21, 1939

FIG. 1.

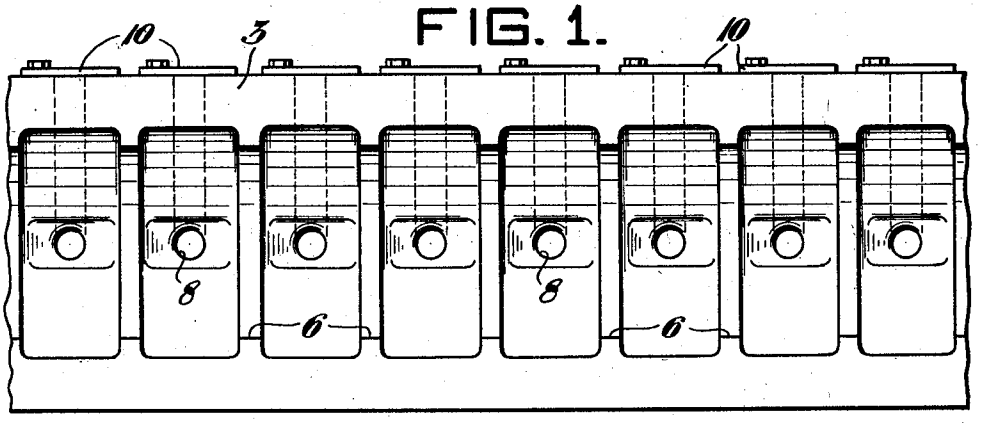


FIG. 2.

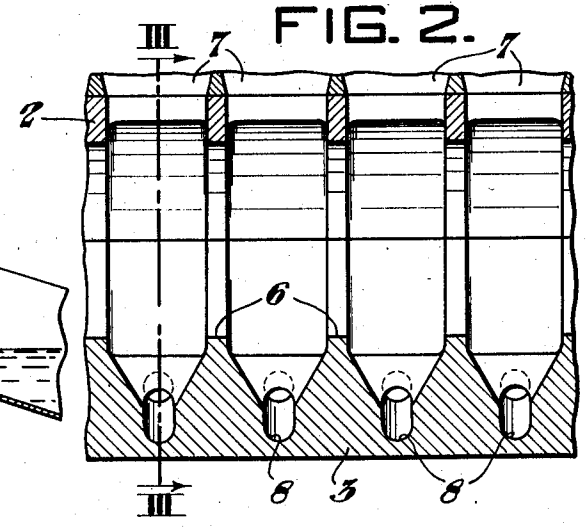
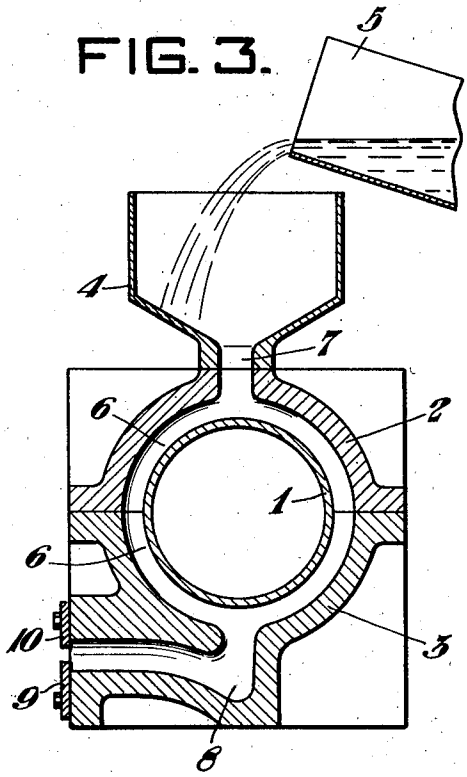


FIG. 3.



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TUBE QUENCHING APPARATUS

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1 Claim. (Cl. 266—6)

This invention relates generally to the quenching of heated metal tubes, but it is particularly concerned with the quenching of oil well casing made of steel, which is a part of its heat treatment for the purpose of materially increasing its yield strength without serious sacrifice of its ductile properties.

Such processing of oil well casing involves heating of the casing to a proper temperature and the application of a quenching fluid of definite volume applied to the casing over a definite time period, thereby effecting a definite drop in temperature and rate of drop. It is necessary to carry out the quenching operation with uniformity throughout the length of the pipe and simultaneously maintain the pipe round and straight.

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

Figure 1 is a plan of a part of the apparatus constituting this example;

Figure 2 is a vertical longitudinal section of the complete apparatus; and

Figure 3 is a cross section taken from the line III—III of Figure 2.

As shown by the drawing, this apparatus is a form or jig in which the casing 1 is placed, the jig being in two halves 2 and 3. A quenching-fluid distributing trough 4 extends the whole length of the top of the jig, the numeral 5 schematically illustrating a quenching-fluid container arranged to discharge a predetermined quantity of the fluid into the distributing trough 4.

The two halves of the jig cooperatively provide a plurality of inwardly extending radial ribs or parts 6, these being adapted to engage the casing when the jig is closed about the same and positively hold the casing against change in its contour. It is to be understood that the two halves of the jig are provided with suitable means, not shown, for clamping them together about the casing, whereby to render operative the ribs or parts 6.

A plurality of quenching-fluid inlets 7 open from the trough 4 into the various annular spaces between the annular parts 6, and a plurality of outlets 8 in the bottom of the jig open from these just mentioned spaces, whereby fluid dumped into the trough 4 by the container 5 practically simultaneously encircles the casing throughout its length. To enable variation in the quenching period, plates 9 and 10 provide a means for regulating the exit of the quenching fluid from the outlets 8. Thus is retained the quenching-fluid in the various spaces between the annular ribs for the necessary length of time.

I claim:

Apparatus for quenching tubes, comprising a form adapted to be closed about the tube and having a plurality of longitudinally spaced annular parts extending inwardly to engage and hold the tube, said form having a plurality of inlets in its top for the spaces between said parts and a plurality of outlets in its bottom for said spaces, said inlets connecting with a trough extending the length of said form and said outlets having means for regulating the exit of said medium therethrough.

JERRY JAY DUNN.