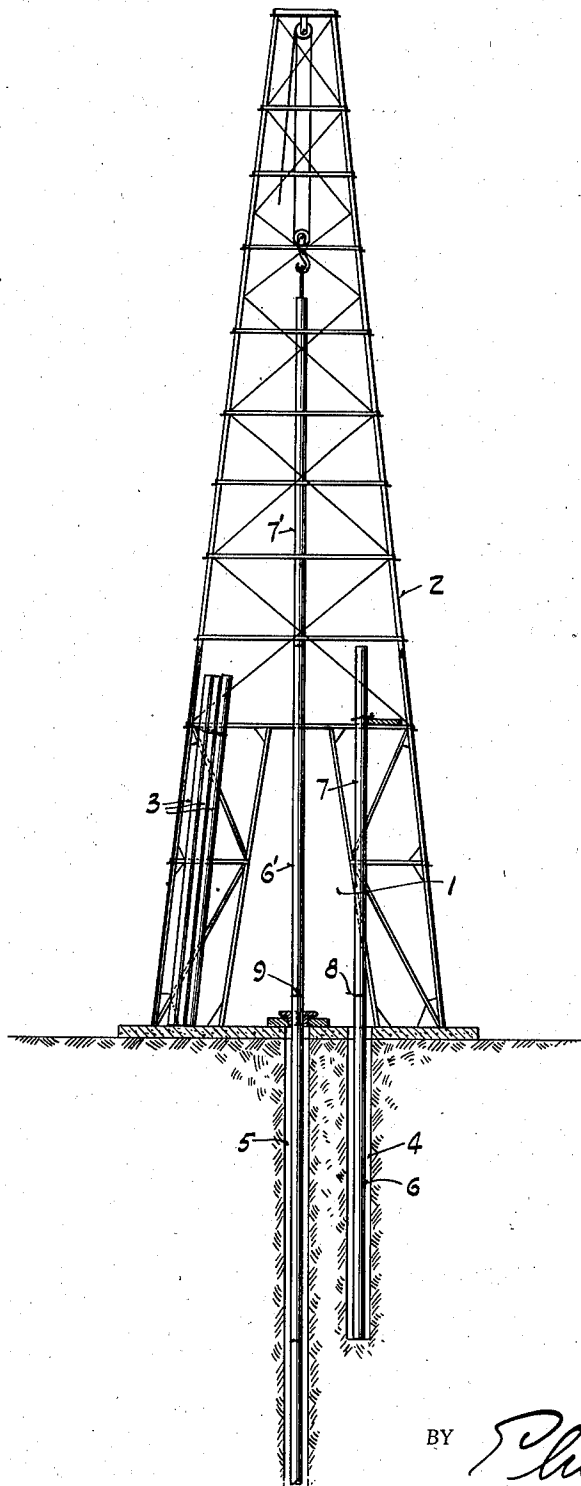


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METHOD OF SETTING WELL CASING

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METHOD OF SETTING WELL CASING

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This invention relates to an improved method of setting casing in oil and gas wells.

Heretofore it has been the common practice to drag sections of casing through a door in the derrick and after hoisting the section until it hangs vertically, to lower it into the well. Frequently a number of sections of casing are set up around the inside of the derrick where they will be quickly accessible for lowering into the well.

Where the joints between sections are to be welded, the general practice is to lower a section into the well and to suspend it therein by suitable clamps on its upper end. A second section is then hoisted into a position above the well so that the exposed end of the set casing is in abutting position with respect to the hoisted section and a weld is made along the circumferential joint. The clamp is then released, and the united sections are lowered into the well so that the top end of the last welded section is in position for the welding of subsequent sections of casing. By this method, a complete string of casing is welded and lowered into the well.

The desirability of welding together sections prior to their being hoisted and positioned for welding to the string of casing lowered in the well, has caused those engaged in this industry to consider the advisability of heightening the doorway to the derrick so that such sections, previously welded, could be set up on the inside of the derrick. It was believed that this was impractical because of the weakening of the derrick structure that would result.

The object of the present invention is to provide a means for the welding of the sections prior to their being hoisted in a position for welding to the lowered casing. By the use of the method herein described, it is possible to set up a number of single sections on the inside of the derrick and then pre-weld several sections thus permitting a great saving in time without in any way causing any departure from the structure of the derrick now commonly used.

A further object of the method employed, is to permit the welders to weld the sections of the casing prior to their joinder to the rest of the string, thus avoiding the waste of time which occurs while the welders must wait for the setting of individual sections.

Reference is made to the accompanying drawing, which will serve to illustrate the method herein described.

Sections of casing are drawn through the doorway 1 of the derrick 2 and may be set up at any

convenient point inside the derrick as illustrated by the casing 3.

A hole 4 is drilled through the derrick floor at any convenient point in the derrick, a distance removed from the well 5. This hole should be deep enough and of sufficiently large diameter to permit the lowering of a section of casing into the hole the same as it could be lowered into the well. In practice, such holes have frequently been drilled for the purpose of storing bits and other tools, and are commonly called "rat holes".

A section of casing 6 will be lowered into this hole and a second section 7 will be hoisted above it so that the abutting ends of the two sections will be in a position for welding at their circumferential joint 8.

After a section of casing has been lowered into the well, the two sections 6 and 7, welded together at their junction 8, will be hoisted out of the rat hole and placed in a position for welding to the section previously lowered into the well. The sections 6 and 7 are represented on the drawing by the sections 6' and 7' previous to their joinder to the lowered section at the weld 9. While the welders are forming the weld 9 between the sections 6' and 7' and the lowered casing, the derrick crew will be lowering another section into the rat hole and positioning a second section above it for welding. Having completed the weld 9, the welding crew, without any delay in time, will move over to the rat hole and form the weld 8, the casing at the same time being lowered into the well. By the use of this method, a welding crew can be kept constantly occupied with a great saving of time and cost.

In the ordinary derrick, which is generally 120' high, the pre-welding of two forty foot sections of casing creates the longest section that can be conveniently handled inside the derrick. Should shorter sections of casings be employed, it would be possible under the present invention to unite three sections in the auxiliary well or "rat hole". Should this be desired, several rat holes should be drilled so that the welding of the first and second sections, and the section formed by the first and second, and the third section could be welded over separate holes. The three sections thus united would be welded to the string of casing previously set in the well in the same manner as has heretofore been described.

So long as the welding crew is occupied with welding over the well, there is no interruption in the work. It is only when casing is being lowered and additional sections positioned for the subsequent weld that the delays occur, which the

present invention prevents. Accordingly the crew may not finish the weld 8, before they move back to the well to form the joint 9, between the lowered casing and a section hoisted into position while the crew has been operating over the rat hole. Since the welds will generally consist of several passes, no harm results from this intermittent welding of the joint 8.

Where it is possible to have two welding crews available at one time, considerably greater speed in the setting of casing can be obtained by having the welding proceed over the well hole and the rat hole at the same time.

The inventors claim:

1. A method of setting casing in a well which comprises the lowering of a section of casing in a hole within the area covered by the derrick floor, hoisting a second section of casing above the section thus lowered and welding the abutting edges of the two casings along their circumferential joint, hoisting the two sections thus welded out of the hole, and positioning them above the well so that the lower end of the sections will be welded to the string of casing lowered into the well.

2. A method of setting casing in a well which comprises welding a section of casing to the string of casing lowered in the well, simultaneously lowering another section of casing through a hole in the derrick floor into an auxiliary vertical well and positioning a section of casing above the last named lowered section so that the ends of the two sections are in abutting relation for welding, welding said sections while the section welded over the well is being lowered, hoisting the two sections welded over the auxiliary hole into position for welding to the lowered casing, welding said two sections to the lowered

casing, and repeating the operation until the entire casing has been set.

3. A method of setting casing in a well which comprises the repeated operations of hoisting a section of casing above the casing lowered into the well and welding along the meeting edges of the sections, partially welding two sections, one of which is lowered into a rat hole within the area covered by the derrick floor and the other hoisted into welding position above the last named lowered section, said welding being done at intervals while the casing is being lowered into the well and subsequent sections are positioned for welding over the well, and finally hoisting the two sections welded over the rat hole into position for welding to the lowered casing and welding the same.

4. The method of setting casing in a well which comprises welding a section of casing to the casing set in the well, and welding another section of casing to a section lowered into a rat hole extending through the derrick floor, said last named welding being done at intervals while the casing previously welded over the well is being lowered into the well.

5. The method of setting casing in a well which comprises lowering a section of casing in the well, welding successive single sections of casing to the casing lowered in the well, utilizing the time required to position the successive sections for welding by welding two sections together over an auxiliary hole in the area covered by the derrick floor, one of said sections being lowered into said hole and the other hoisted above it for welding, and then welding the two sections to the casing lowered into the well.

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