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MEANS FOR RECOVERING CEMENTED WELL CASINGS

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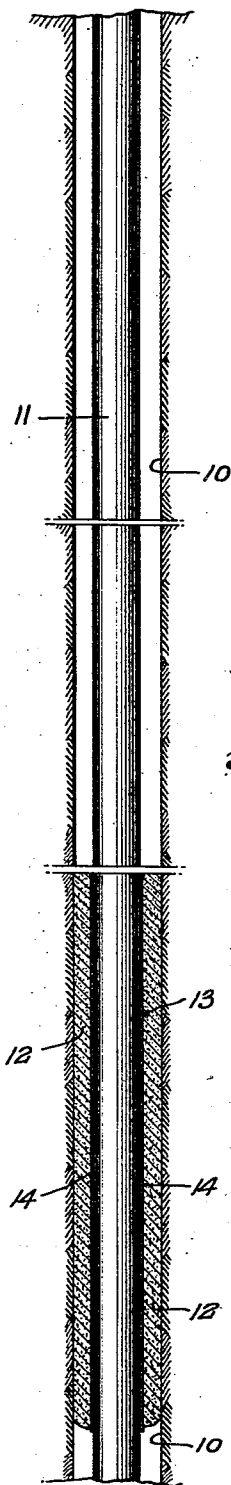


Fig. 1.

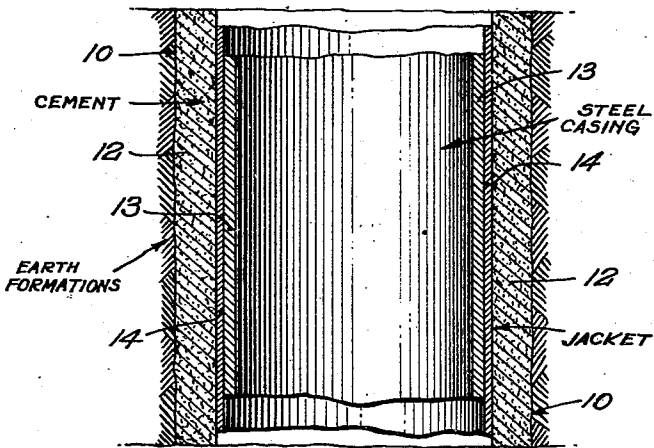


Fig. 2.

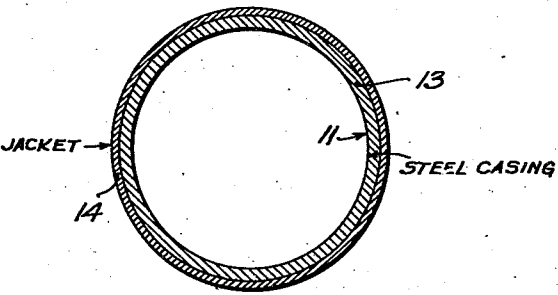


Fig. 3.

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MEANS FOR RECOVERING CEMENTED WELL CASINGS

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1 Claim. (Cl. 166—1)

The invention relates to casings for oil and water wells and the object of the invention is to provide a method whereby the casing of an oil or other well which has been surrounded by cement or concrete may when desired be removed from the well after the concrete has set.

The process of cementing oil wells is well known, the purpose being to seal off one part of the well from another. At the present time there is no means whereby that portion of the casing which is set in the cement may be removed after the casing has served its function. In this manner a very great loss of valuable equipment results.

In order to eliminate this loss it has been proposed to use sealing material other than cement, thus permitting the entire length of casing to be withdrawn. However, in practice cement is used in nearly all wells and no satisfactory substitute has been found.

The object of my invention is accordingly to provide means for overcoming the tendency of the concrete and the steel to adhere to one another, so as to permit the casing to be withdrawn from the well after it has served its function. My solution of the problem is to interpose between the steel casing and the concrete a material of less tensile strength than either.

According to my invention I provide a jacket for the casing which normally adheres thereto but which does not adhere with such a force either to the steel casing or to the concrete that the casing cannot be pulled out of the well by applying an outside force in a longitudinal direction.

The improved device is in effect a laminated tube or casing, including an inner casing which is the valuable part of the device and which it is important to recover, and one or more outer layers of relatively inexpensive material, which may be destroyed or left in the well when the inner part is drawn out of the well.

The purpose of the present invention is to overcome the tendency of the concrete to stick to the steel casing and to permit said casing to be recovered after it has served its purpose. I have found that this tendency can be overcome by interposing a material of lesser tensile strength than either the steel casing or the concrete between them. As long as no longitudinal pressure is exerted on the pipe, the covering will have no function other than to separate the steel casing from the concrete, and only comes into play when the casing is to be withdrawn from the well. The easiest way to carry out the invention would be

to place the jacket, or other covering, on the casing before it was actually put to use and would have no effect on the casing if it remained in the hole. The concrete being put into the hole in a soft or semi-liquid state would be forced around the outside of the pipe between the covering and the side of the hole and would therefore adhere to the outside covering rather than to the steel pipe itself.

The casing itself forms the principal part of the device and is the part which is sought to be recovered, since it is usually made of a high grade tool steel and has a considerable value. The outside covering, which may be termed a jacket or sleeve, may be of any material having only a nominal value. It could be in the form of a baser metal in which the outer part could be shrunk on the pipe, or any other means used to attach it thereto with sufficient adhesive qualities so that it would not separate unless force were applied. The outer jacket could also be made of a heavy coating of paper such as building paper or tarred paper which could be glued to the steel casing, or it could consist of a rubber jacket which could be stretched over the casing, or even of wax or similar material. In short, it could consist of any material or means forming a separate film or partition between the casing and the cement and in such a way that either the casing could be separated from it, or the casing together with the covering separated from the concrete by the application of pressure. The latter contingency would arise in the case of a rubber jacket, or any other elastic material, which would stretch when pressure would be applied to the casing and by its stretching separate itself from the concrete.

The invention will be more readily understood by reference to the accompanying drawing in which is set forth an illustrative embodiment of the inventive thought involved.

In the drawing:

Fig. 1 is a diagrammatic view of an oil well including a casing embodying the present invention.

Fig. 2 is a vertical section showing a portion of the jacketed casing embedded in the concrete.

Fig. 3 is a horizontal section of the jacketed casing.

Referring to the drawing, the reference numeral 10 denotes generally an oil, gas or water well which is provided with a casing 11. A portion of the well is cemented at 12. The casing is of course made up in sections, the various lengths of the casing being threaded together. When the casing has served its purpose that por-

tion of the casing above the cement or concrete 12 may be readily removed but prior to the present invention, the portion surrounded by the cement or concrete had to be abandoned resulting in tremendous losses, frequently amounting to as much as \$5,000.00 per well.

According to my invention the inner steel casing 13 or at least that portion which is to be embedded in concrete is provided with a jacket 10 14 which may be of paper, rubber, a baser metal than steel or may be of hard paraffin wax or similar material, having relatively high melting points. Grease, fat or material melting under normal conditions met with in an oil well, 15 should preferably be avoided. Plastic materials such as synthetic resins, or plaster of Paris which will crumble when pressure is applied in pulling, might also be used.

When such a jacket 14 is employed the inner

casing may be withdrawn from the well by the use of the ordinary machinery with which oil wells are equipped, the inner sleeve either slipping out of its jacket or the jacket separating from the concrete. In many cases the jacket 5 itself is completely destroyed, part adhering to the concrete and part to the steel casing, the separation taking place within the jacket itself.

The invention has been described in detail for the purpose of illustration but it will be apparent that many variations and modifications may be restored to without departing from the spirit of the invention. 10

I claim:

In a cemented oil well, a casing having a rubber jacket separating the steel portion from the cement. 15

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