Jan. 12, 1943. J. C. BALLAGH 2,308,147

PROTECTOR FOR DRILL PIPES

Filed Oct. 12, 1940

Fig. 1

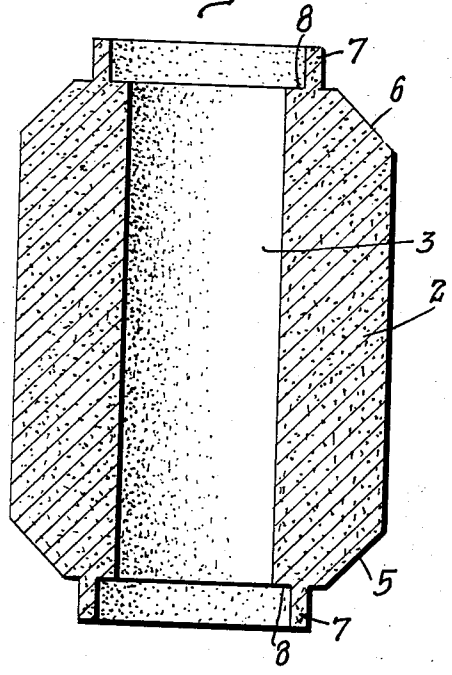
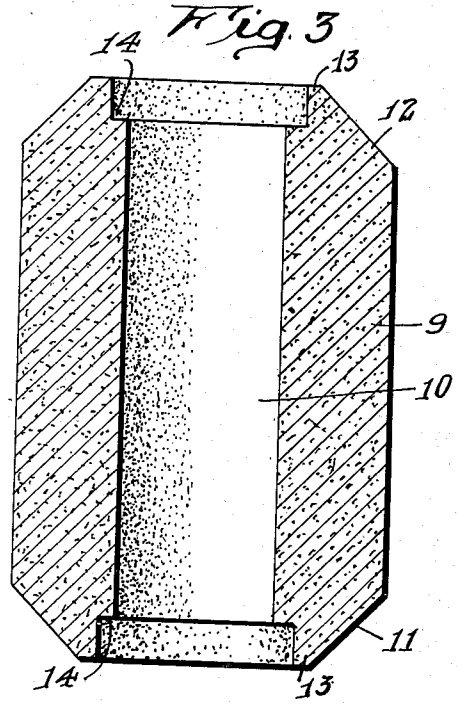


Fig. 3



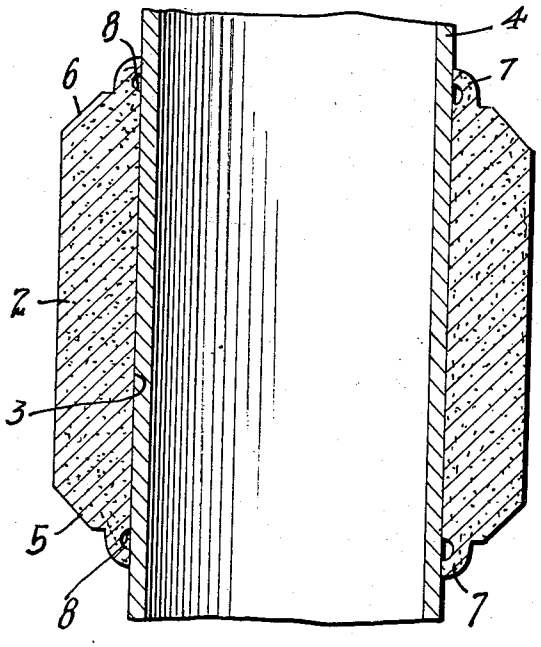
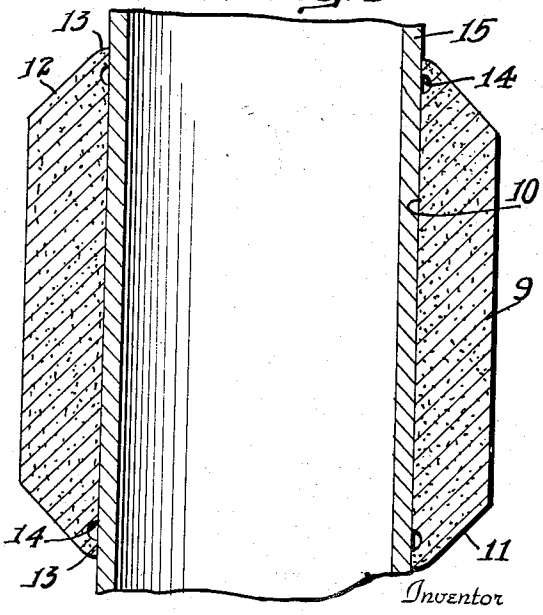


Fig. 2

Fig. 4



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PROTECTOR FOR DRILL PIPES

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3 Claims. (Cl. 308—4)

The present invention relates to an improvement in rubber protectors employed upon drilling pipe.

For the protection of drill pipe, such as employed in a rotary system of drilling oil wells, from abrasion through contact with the sides of a well hole or well casing through which the drill pipe passes in drilling operations, it has been the practice to provide such drill pipe with rubber protector sleeves. These rubber protector sleeves consist of a hollow cylinder of rubber, the central bore of which is initially considerably smaller than the diameter of the drill pipe to which they are to be applied, and they are applied to the drill pipe by being stretched over the same. As the protector sleeves have been constructed in the past, it is found that the drill pipe undergoes considerable wear adjacent the ends of the protectors. This is believed to be due to the fact that the drilling fluid circulated during drilling operations undergoes a swirling action at the ends of the protector sleeves, particularly at the top of the sleeve, with the result that the drilling mud cuts a ring in the drill pipe above the protector.

It is a general object of the present invention to provide a protector for drill pipe which will eliminate the destruction of the drill pipe which is attendant through the use of the present forms of protector.

I have found that by providing protector sleeves with extending rings at their ends, which rings have a larger interior diameter than the diameter of the bore of the main body of the sleeve, the cutting of the drill pipe by the mud fluid characterized by the use of the present form of protector sleeves can be substantially entirely eliminated. I have further found that such rings facilitate the installation of the protector sleeve on the pipe in that such rings may be employed for holding extra lubricant to be used in installing the rings.

The improved protector sleeve of the present invention will best be understood from a description of a preferred form or example of protector sleeve embodying the present invention. I have, therefore, described the preferred form or forms of protector sleeve of the present invention in connection with the accompanying drawing, in which—

Figure 1 is an elevation in vertical section of one form of the protector sleeve.

Figure 2 is an elevation in vertical section of the protector sleeve as applied to a drill pipe.

Figure 3 is an elevation in section of a slightly modified form of protector sleeve.

Figure 4 is an elevation in section of the protector sleeve of Figure 3 as applied to a drill pipe.

Referring, first, to Figures 1 and 2 of the drawing, the protector of the present invention consists of a body 2 which is formed of rubber in accordance with the usual or preferred practice. The body 2 provides a central bore 3, which is normally of a diameter considerably smaller than the diameter of the drill pipe 4 to which the protector is to be applied. The body 2 of the protector is a cylindrical body, preferably chamfered at its ends, as indicated at 5 and 6. From the ends of the body protector I extend the annular lips 7. The lips 7 are provided with an interior diameter somewhat larger than the center bore 3 of the protector to provide the shoulders 8, which may be employed for lubricant during the act of installing the protector upon the pipe 4. With the protectors of the form indicated in Figure 1 it is found that when such protectors are stretched over a drill pipe the ends of the lips 7 are curved against the drill pipe in the manner indicated in Figure 2, thereby covering that portion of the drill pipe which in usual practice is cut by the action of the drilling fluid in the well. The lips 7 of the protector apparently break up the eddy currents at the ends of the protector, thereby preserving the drill pipe 4 from deterioration.

Now, referring to Figures 3 and 4, I have shown a somewhat modified form of protector in which 9 indicates the cylindrical body of the protector and 10 the bore. The protector is preferably beveled or chamfered at its ends, as indicated at 11 and 12. To form the projecting lips indicated at 13 at the end of the projector, I undercut the ends of the protector as indicated at 14. With this form of protector the projecting lips 13 formed by the undercut 14 function similar in manner to the lips 7 previously described. When the protector is stretched over a drill pipe, such as indicated at 15 in Figure 4, the projecting lips 13 are curved into contact with the pipe, providing smooth surfaces at the ends of the protector which function to eliminate any eddy currents.

While the particular forms of protector herein described are well adapted to carry out the objects of the invention, various modifications and changes may be made, and this invention is of the scope indicated in the appended claims.

I claim:

1. In a rubber protector for drill pipes, a cylindrical body member having a central bore of normally smaller inner diameter than the outer diameter of the drill pipe to which the protector is to be applied, and an angular lip at the end of the protector having an inner diameter larger than the inner diameter of the body of the protector, said member being adapted to be stretched over the drill pipe and to provide an elastic force for gripping the member to the drill pipe, said lip adapted to be curved inwardly into contact with the drill pipe through the action of stretching the protector over the drill pipe.

2. A rubber protector for drill pipes, which protector comprises a cylindrical body having a central bore of smaller inner diameter than the outer diameter of the pipe to which the protector is to be applied and adapted to be stretched over the pipe and resiliently grip the pipe, an integral portion of the protector at at least one end thereof forming a lip having a larger inner diameter than the inner diameter of the body of the protector, said lip being adapted to curve towards the drill pipe as the protector is stretched over the pipe.

3. A rubber protector for drill pipes, consisting of a body part having a central bore of smaller inner diameter than the outer diameter of the pipe to which the same is to be applied, and an undercut at one end of said body forming a lip having a larger interior diameter than the inner diameter of the body of the protector and being adapted to curve towards a drill pipe when the body of the protector is stretched over the same, the body part being adapted to resiliently grip said drill pipe and stretch thereover.

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