

May 20, 1969

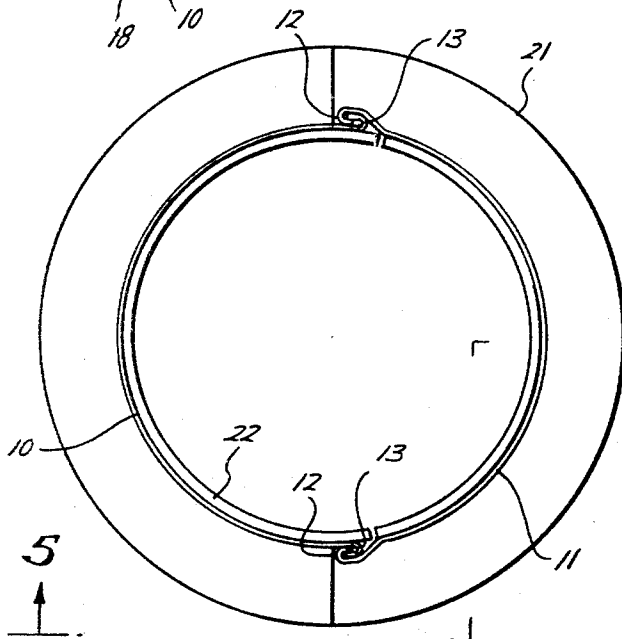
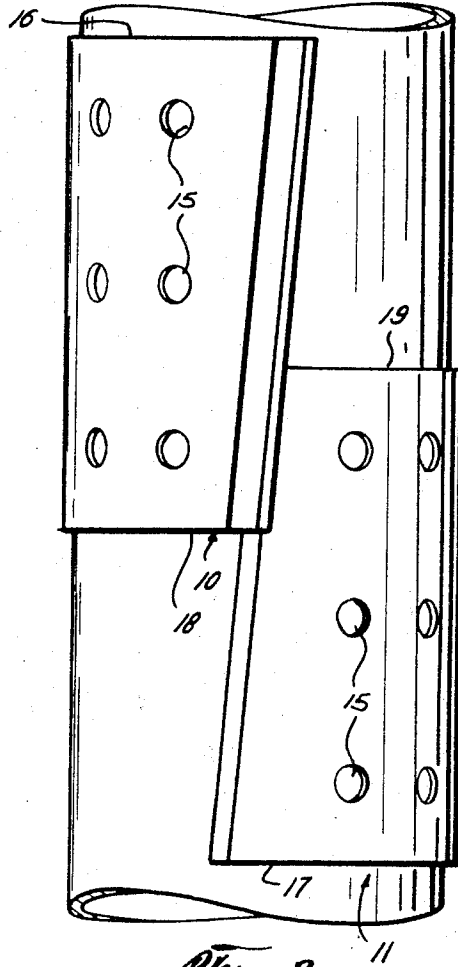
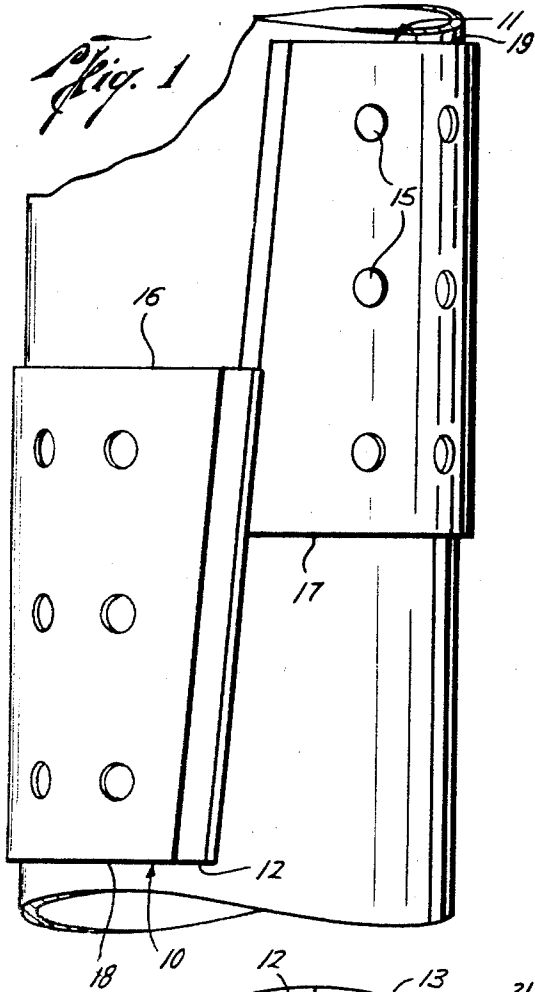
J. H. McBRIEN

3,445,144

PIPE PROTECTOR

Filed March 20, 1967

Sheet 1 of 2



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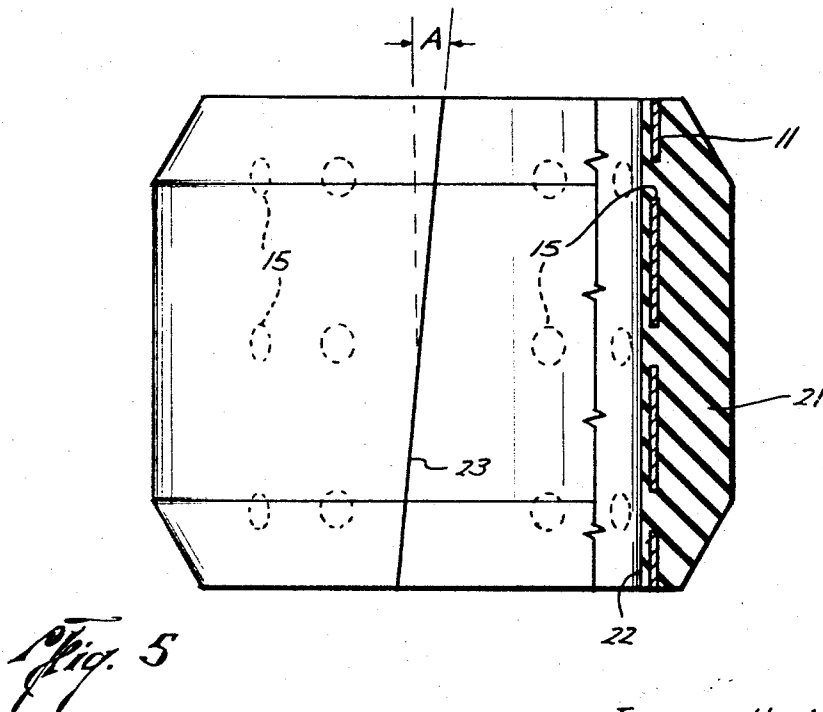
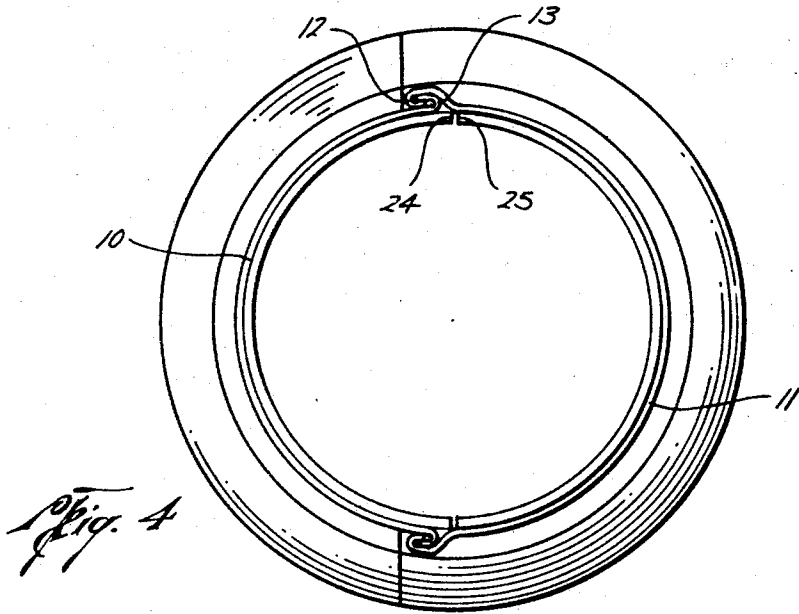
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Sheet 2 of 2



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3,445,144

PIPE PROTECTOR

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3 Claims

ABSTRACT OF THE DISCLOSURE

A split collar-type pipe protector having a pair of bias-cut sleeves enclosed by resilient bodies having similar cuts, forming two truncated hemi-cylinders, such partial cylinders capable of being mated about a pipe by sliding engagement of male and female extensions provided respective of said sleeves.

This invention concerns a device which may be fitted about a section of pipe in order to protect said pipe when it is lowered into or withdrawn from a casing, such as that lining a drill hole.

Inasmuch as contact between the drill pipe, for example, and the casing may cause substantial wear on both members during a drilling operation, it has become common to provide a protective covering or collar at spaced intervals along the tubing or pipe.

In order to permit expeditious assembly and disassembly of such collars, segmented or split collars have been devised, such as that illustrated by U.S. Patent No. 3,054,646. Continuing problems have occurred as, for example, the desire of a user to have the collar insertable at any position on the pipe desired, and to have one collar that may be utilized on pipe or tubing that varies in diameter from standard sizes. Thus, this invention has as a purpose the provision of a segmented collar or pipe protector. A further object is the provision of such a protector that may be used on pipe of differing outside diameters. These and other objects and uses will become obvious on considering the following description and drawings, in which:

FIGURE 1 is a side elevation of the sleeves with their large ends interlocked;

FIGURE 2 is an elevation similar to FIGURE 1, but with the small ends interlocked;

FIGURE 3 is an end view of the sleeves, and coatings therefor, fully linked together;

FIGURE 4 is an end view opposite from that of FIGURE 3; and

FIGURE 5 is a section taken along lines 5—5 of FIGURE 3.

Looking first at FIGURES 1 and 2, a pair of sleeves 10, 11 are shown. Said sleeves may be described as truncated hemi-cylinders. It should be noted that the line of truncation of both sleeves is a bias cut, i.e., rather than being an axial cut, or one parallel to the axis, it varies therefrom by an angle A (see FIGURE 5). While such an angle may vary, experience thus far has shown that one of approximately 5 degrees is acceptable. The opposite side edges of sleeve 11, sometimes hereinafter referred to as the female sleeve, form gutter or receiving socket or gutter 12 by virtue of the side edges being turned out, down, inward and up, as best seen in FIGURES 3 and 4. Conversely, the opposite side edges of sleeve 10, sometimes hereinafter referred to as the male sleeve, form guides 13 slidably received transversely of the entire length of socket 12. Both the male and female sleeves

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may be apertured, as at 15 to conserve material, promote flexibility, as well as to provide a path for rubber, or similar substance, to flow when the coating, hereinafter described, is applied to said sleeves. Because of the bias cut previously described, it will be noted that one end of each sleeve, such as ends 16, 17 of respective sleeves 10 and 11 are larger, i.e., said ends traverse a larger radius of an arc than are the opposite ends 18, 19 of the same respective sleeves.

A coating of rubber, or similar substance, is applied to both sleeves, to both their radial exteriors, as indicated by numeral 21 and to their radial interiors, as indicated at 22. Inasmuch as such coating conforms substantially to the configuration of the sleeves, it is obvious that the coated collar is also biasly cut, as illustrated at 23 in FIGURE 5. The inner coating of member 10 may terminate to form a shoulder 24 closely adjacent channels 12, while the male sleeve's inner coating 22 may form a like but oppositely disposed shoulder 25, closely adjacent guides 13. Such abutting shoulders may aid in guiding and positioning the inter-locking sleeves.

The collar formed by this invention is obviously intended to be locked about a cylindrical member such as a drill pipe. Inasmuch as such pipe may oftentimes vary in diameter, it is quite helpful to have a collar that may be used with pipe that various from standard diameters, as well as with regulation sizes. Such use is possible with this collar-protector, not only by virtue of the flexibility of sleeves 10, 11 and their respective coatings, but because of the bias arrangement. On being affixed to a pipe, the large ends 16, 17, as in FIGURE 1, would be placed adjacent opposite sides of a pipe. Such an arrangement provides a maximum diameter opening therethrough. Guide 13 would then be engaged with channel 12, and the respective collar sections would be forced into engagement, i.e., collar portion 10 move to its right and/or portion 11 move to its left as seen in FIGURE 1. As the sections move toward the positions shown in FIGURES 2 or 5, the diameter of the effective opening lessens, and the collar tightly constricts the pipe, to be fixed thereon. By virtue of the inherent flexibility of each section, an extremely close fit, relative to a pipe, is possible. Further, depending on the pipe diameter, the ultimate position of the two collar sections may approach that of FIGURES 1 and 2 as well as the fully made up position of FIGURE 5. Additionally, by virtue of the outward force exerted on the sections when said sections are tightly encompassing a pipe section, and the interlocking of biased gutters and guides 12, 13, a locking taper is formed, resulting in an extremely rigid and durable collar.

Although only a single embodiment has been described, it should be obvious that numerous modifications would be possible by one skilled in the art without departing from the spirit of the invention, the scope of which is intended to be limited only by the following appended claims.

I claim:

1. A pipe protector comprising a generally cylindrical member adapted to be encirclingly affixed to the outside surface of a pipe, said protector including:

a pair of generally truncated hemi-cylindrical sleeves, the line of truncation being non-parallel to the axis of said sleeves;

means at opposite edges of both of said sleeves forming means for sliding engagement therebetween;

a first layer of deformable material provided to the exterior surface of both sleeves, said first layers pro-

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viding oppositely disposed first shoulders on each of said sleeves wherein, on engagement of said sliding engagement means, said first shoulders of one of said sleeve exterior layers may slidingly abut said first shoulders of the other of said sleeve exterior layers; and

a second layer of deformable material provided to the interior surface of both sleeves, so as to be engageable with the outer surface of said pipe, said second layer of deformable material providing oppositely disposed second shoulders on each of said sleeves wherein, on engagement of said sliding engagement means, said second shoulders of one of said sleeve interior layers may slidingly abut said second shoulders of the other of said sleeve interior layers.

2. The protector of claim 1 wherein the line of abutment between said second shoulders is parallel with the line of abutment between said first shoulders, but non co-linear therewith.

3. The protector of claim 2 wherein a part of at least

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one of said second layers forms a barrier between said sliding engagement means and said pipe.

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