Aug. 12, 1952 H. E. MARSH 2,606,792

PROTECTIVE COLLAR FOR DRILL PIPES

Filed Nov. 14, 1949

Fig. 1

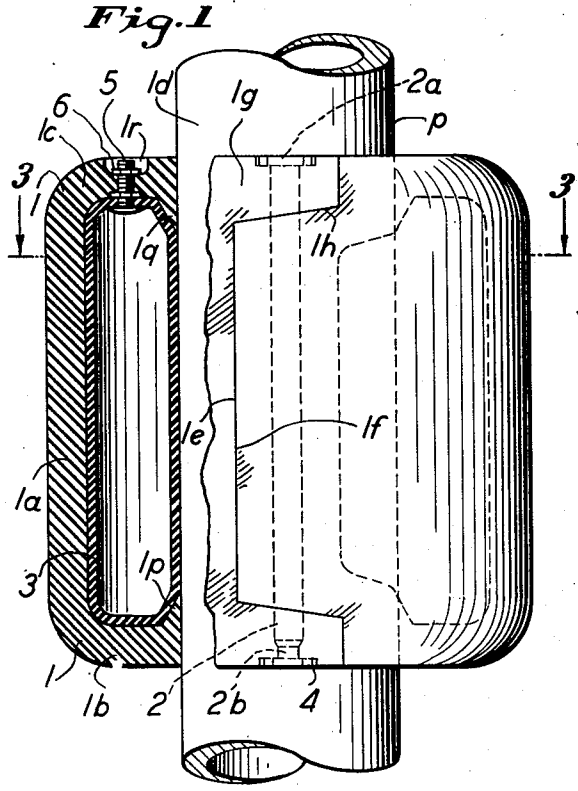


Fig. 4

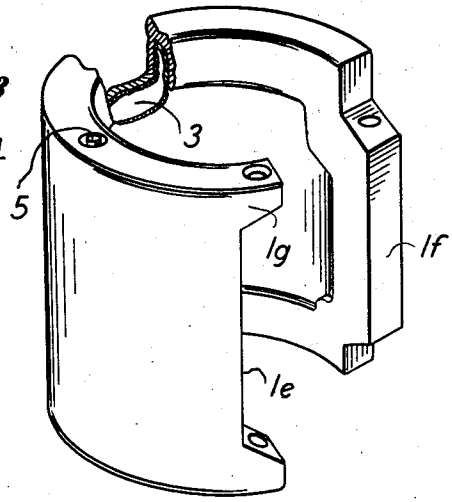


Fig. 2

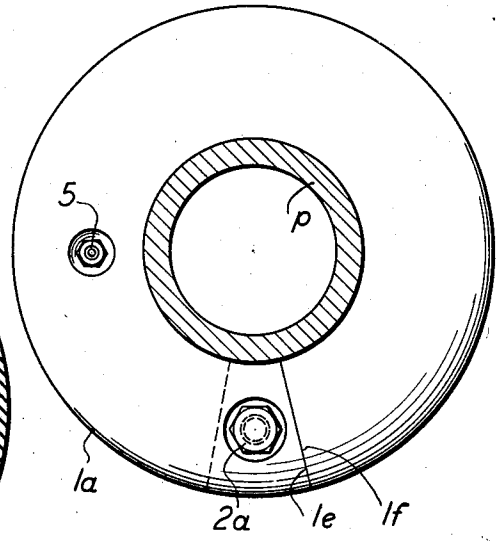
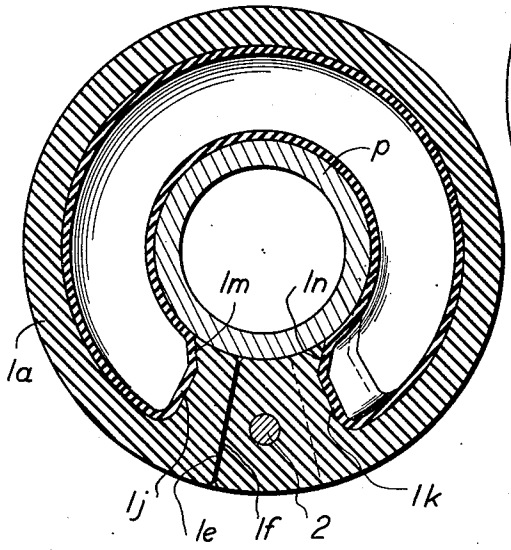


Fig. 3



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PROTECTIVE COLLAR FOR DRILL PIPES

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2 Claims. (Cl. 308—4)

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My invention relates to a protective collar particularly adapted for well drill pipes.

One of the principal objects of this invention is to provide a protective collar of this class which may be readily placed around any portion between the ends of a well drill pipe, and which, when placed around the pipe, may be readily locked circumferentially and frictionally secured in the desired position therearound against longitudinal movement.

Another important object of this invention is to provide a collar of this class which, when closed or locked around a pipe, or the like, may be easily moved to the desired position longitudinally of the pipe, or the like, and then easily secured in such position.

An important object also is the provision of a collar in the form of a diametrically expansible casing, and one which may be so expanded and also frictionally secured to the pipe by means of a readily inflatable, pneumatic tube within the casing.

A further important object of this invention is to provide a novelly and simply constructed casing for retaining the tube when inflated and for seating itself against the surface of the pipe, or the like, and for retaining the tube.

With these and other objects in view, as will appear hereinafter, I have devised a protective drill pipe collar having certain novel features of construction, combination, and arrangement of parts and portions, as will be hereinafter described in detail, and particularly set forth in the appended claims, reference being had to the accompanying drawings and to the characters of reference thereon, which form a part of this application in which:

Fig. 1 is a side elevational view of my protective collar in one form, showing the same placed around a pipe, and showing portions of the collar broken away and in section to facilitate the illustration;

Fig. 2 is a top end view thereof;

Fig. 3 is a transverse sectional view thereof, taken through 3—3 of Fig. 1; and,

Fig. 4 is a perspective view of the same, partly open, for placing around a pipe, portions being broken away and in section to facilitate the illustration.

My protective collar, as shown in the drawings, is placed around and mounted on a pipe P. My invention, as shown, consists essentially of a casing 1, a locking pin 2, and a tube 3.

Both the casing 1 and the tube 3 are molded of rubber, neoprene, or other similar flexible

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and resilient material. The casing is preferably a thick walled member and substantially retains its intended shape, while the tube 3 may be highly flexible and is adapted to be inflated with air, or other gas, and when so inflated conforms to the interior of the casing and the walls of the pipe.

The casing 1 is cylindrical in shape and is hollow, having an outer cylindrical wall 1^a and end walls 1^b and 1^c and a central bore 1^d of substantially the diameter of the pipe P and through which the pipe extends.

The casing is split at one side on a plane which may extend through the longitudinal axis providing abutting portions 1^e and 1^f. At the opposite ends of the casing are provided circumferential extensions 1^g forming ears which extend into conforming recesses 1^h also at the opposite ends of the casing. The ears 1^g extend circumferentially beyond the face 1^e and are positioned at the opposite ends of the portion having the face 1^f, thus providing overlapping portions through which the pin 2 extends, that is, the pin extends parallel to the axis of the casing through the ears 1^g and through the portion extending between the recesses 1^h. The abutting surfaces of the ears 1^g and adjacent sides of the recesses 1^h are slightly inclined, that is, the adjacent sides 1^g are divergent to permit the interlocking and overlapping portions to be readily interpositioned, as shown in Fig. 1.

The upper end of the pin 2 is shown as having a flat head 2^a which is flush with the upper end of the casing. The lower end of the pin has a reduced threaded portion 2^b to limit the downward extension of the pin. On the threaded end is a flat nut 4 which is preferably flush with the bottom end of the casing.

The void formed within the casing 1 is of only partial circular extent, as shown in Fig. 3. The end 1^j of the void is spaced from the face 1^e of the casing by a wall thickness while the other end 1^k of the void is spaced a substantially equal distance from the pin 2. The radially inner ends of the portions forming said free ends are provided with fins 1^m and 1^n which rest against the surface of the pipe. Similarly, the radially inner portions of the end walls 1^b and 1^c of the casing have fins 1^p and 1^q which similarly engage the outer surface of the pipe P. When the tube 3, placed within the void, is inflated with air, or other gas, the fins 1^m, 1^n, 1^p, and 1^q, are securely seated against the surface of the pipe, sealing the tube within the void and also securely and frictionally retaining the casing, and therefore

the protective collar, in the desired position on the pipe P.

The tube has a valve located within a valve stem 5 which extends from the tube through a hole in one of the end walls of the casing whereby the tube may be readily inflated. The valve stem may be secured to such end wall of the casing by a nut 6 located within a recess 7, as shown in Fig. 1. In this manner, the outer end of the valve stem is protected.

I wish it to be understood that I do not desire to be limited to the exact details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

I claim:

1. A collar of the class described, comprising a resilient, rubber-like, annular casing having a split portion at one side whereby the casing may be opened at one side for folding it around a pipe, the split portion consisting of normally abutted and overlapping portions, the latter portions overlapping each other circumferentially between the axial ends of the casing, a pin extending parallel with the axis of the casing through the overlapping portions, the casing having therein and at the inner side thereof a partially circular void open at the bore side of the casing and extending circumferentially to near the overlapping portions and to near the axially-spaced ends so as to provide axially-spaced end walls and circumferentially-spaced, axially extending walls, and a flexible, distensible tube positioned within the void, the interior of the tube and casing being substantially of the diameter of the pipe, the tube having a valve stem extending through one end of the casing, the inner surfaces of the axially-spaced end walls of the casing having annular, flexible, wedge-like ribs directed toward each other and capable of being deflected radially inwardly against the periphery of the pipe in response to radially inward forces exerted thereagainst by the tube when the latter is distended, said axially-extending walls of the casing having inner curved surfaces substantially conforming to the peripheral surface of the pipe and disposed adjacent thereto, said axially-extending walls also having substantially radially-extending surfaces, said axially-extending and curved surfaces together defining longitudinally extending corners, said corners having longitudinal, flexible extensions of wedge-like shape capable of being deflected into engagement with the periphery of the pipe in response to distension of said tube.

2. A collar of the class described comprising a resilient, annular casing having a split portion at one side whereby the casing may be opened for folding it around a pipe, the split portion consisting of normally abutting and circumferentially overlapping portions, a fastening element extending parallel with the axis of the casing and through the overlapping portions to retain the casing in position encircling the pipe, said casing having a relatively deep depression in its inner arcuate surface, the sides and ends of said depression terminating inwardly of the longitudinally-spaced ends of the casing and the abutting portions thereof to provide a continuous wall surrounding the depression and having an inner curved surface engaging with the periphery of the pipe, said continuous wall having a continuous extension of wedge-like shape overlying the depression, said extension having a curved surface conforming to the periphery of the pipe, and a flexible, distensible inner tube disposed within the depression, the inner diameters of the tube and casing being substantially equal to the external diameter of the pipe, the tube having a valve stem extending through one end of the casing, said tube, when distended, exerting radially inward force against said continuous extension so as to force the extension into sealing engagement with the periphery of the pipe.

HOWARD E. MARSH.

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