Nov. 29, 1932. H. E. DENNIE 1,889,059

WELL CASING PROTECTOR

Filed March 29, 1930

Fig. 1.

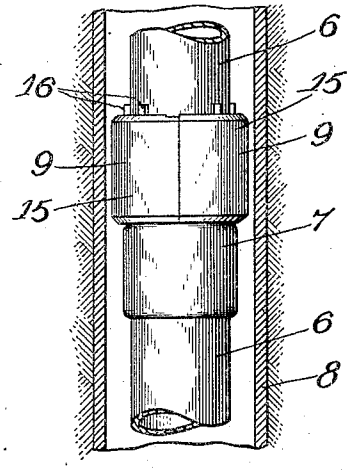


Fig. 2.

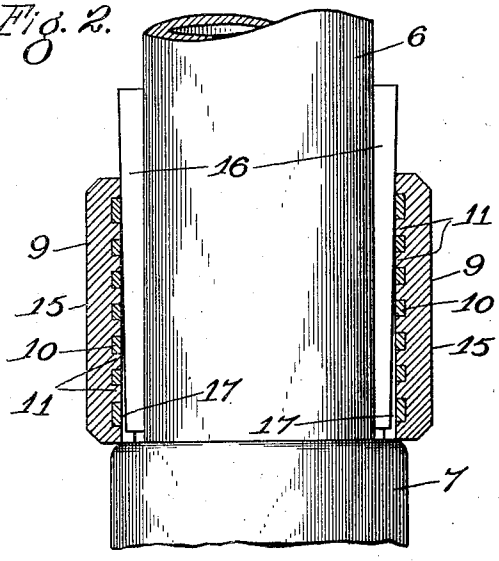


Fig. 3.

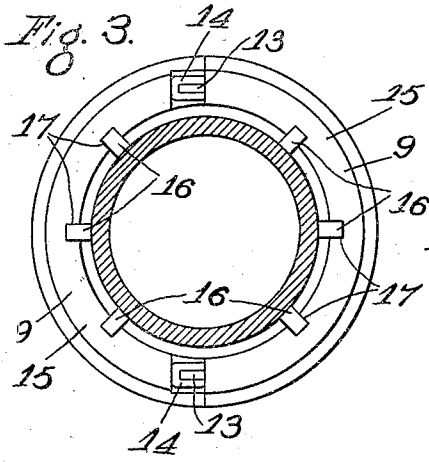


Fig. 4.

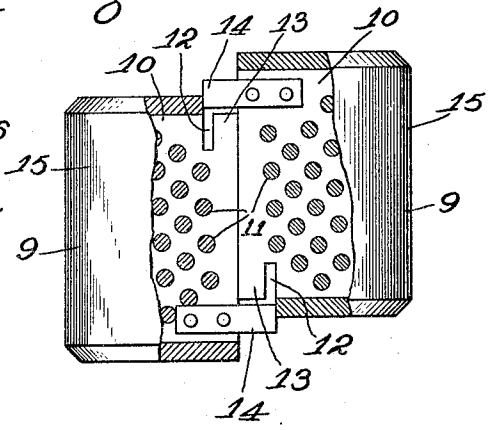
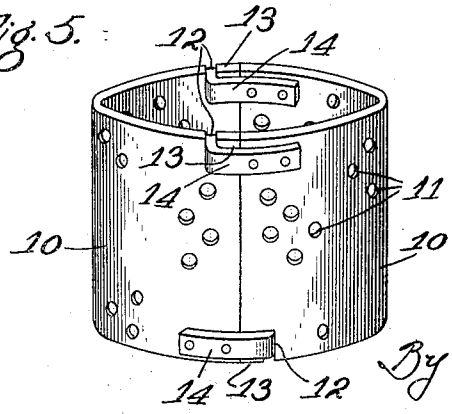


Fig. 5.



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UNITED STATES PATENT OFFICE

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WELL CASING PROTECTOR

Application filed March 29, 1930. Serial No. 439,998.

My invention relates to means for protecting the casings of wells during the operation of the drills therein and more particularly where the drills are of the rotating type and comprise sections, commonly of pipe, coupled together in end to end relation.

One of my objects is to provide a novel, simple, and relatively inexpensive construction of protector by which the drill, in its movements in the well-casing, will be prevented from contacting with the casing.

Another object is to provide a construction of protector which may be readily applied to, and removed from, the drill and which when applied thereto will be rigidly secured in position.

Referring to the accompanying drawing:

Figure 1 is a broken view in elevation of a well casing in position in the ground and a drill in the casing and provided with my improved projector, the casing and the ground being shown in section.

Figure 2 is a view in elevation of a portion of the drill and my improved protector applied thereto, the protector being shown in section.

Figure 3 is a plan view of the construction shown in Fig. 2, the drill being shown in section.

Figure 4 is a view in elevation, with certain portions sectioned, of my improved protector showing the positions the parts thereof assume in the assembling thereof upon a drill; and

Figure 5, a perspective view of the sectional internal band member of the protector with the means provided for securing together the sections of the protector in the application of the same to the drill.

The well-drilling apparatus shown and in connection with which I have chosen to illustrate my invention, is of a common type involving a tubular drill formed of a series of end-wise disposed pipe sections 6 adjacent ones of which are connected together by tubular couplings; the one shown as connecting the two pipe sections 6 in the fragmentary illustration in Fig. 1, being represented at 7.

The tool referred to is rotated in the operation of drilling the well and as the drilling progresses a tubular well casing 8 formed of sections of tubing, is sunk into the hole made by the drill and in surrounding relationship to the drill.

My improved protector, one of which would be applied preferably to each pipe section 6 between the couplings 7 at the ends thereof comprises, in accordance with the preferred embodiment of my invention, two internally concaved and externally convexed semicylindrical sections 9 of the same shape and construction adapting the protector to be applied to the pipe section 6 between the couplings 7 and secured thereto as hereinafter described, the internal diameter of the protector being slightly greater than the external diameter of the pipe section 6, as shown.

Each protector-section 9 comprises a semicylindrical band 10 of metal which is preferably perforated throughout the greater portion of its area as represented at 11, each section 10 being recessed at opposite sides at one end, as represented at 12, to cause the band to present the tongues 13. At the opposite end each section 10 is provided with strips 14 rigidly secured thereto and projecting therefrom into such position, as shown, that upon assembling the sections 9 into the position shown in the drawing the tongues 13 will be received into the loops 14, the closed ends of the latter extending into the recesses 12.

Each section 9 also comprises a resilient sheathing 15 in which the relatively rigid, stiffening, band-section 10 is embedded. The sheathing 15 by preference is formed of relatively soft vulcanized rubber portions of which, and integral with the portions of the sheathing at the inner and outer faces of the band-sections 10, extend through the openings 11, whereby the sheathing and the metal band sections are firmly anchored together, the sheathing material in uncured condition and the band sections 10 being assembled together to the position stated and the structure thus formed then subjected to the desired vulcanizing process.

The protector is secured in the desired position on the drill by wedging means which are

movable lengthwise of the drill to exert the wedging effect, the wedging means shown comprising a circular series of wedge pins 16 insertable between the protector and the drill and when driven into place securely hold the protector in the desired position on the drill; the sheathing 15 at the interior surface of the protector being grooved, to the band sections 10, and in a direction longitudinally of the protector, as represented at 17, to receive the wedge pins 16 which thus have metal to metal contact not only with the drill but also with the protector, the latter being of such diameter that when applied to the drill it extends laterally beyond the couplers 7 thereby protecting the latter, as well as the drill sections, from engagement with the interior of the well-casing.

While I have illustrated and described a particular contruction embodying my invention, I do not wish to be understood as intending to limit it thereto as the same may be variously modified and altered without departing from the spirit of my invention.

What I claim as new and desire to secure by Letters Patent, is:

1. A well-casing protector comprising a tubular body of resilient material and stiffening means for said body, said body being grooved part way therethrough to said means at its inner surface in a direction lengthwise of the protector.

2. A well-casing protector comprising a metal band containing openings therein and a tubular body of resilient material in which said band is embedded with portions of said material extending through said openings and anchoring said body to said band, said body of material at its inner surface being grooved lengthwise of the protector, for the purpose set forth.

3. A well-casing protector comprising a metal band containing openings therein and a tubular body of resilient material in which said band is embedded with portions of said material extending through said openings and anchoring said body to said band, said body of material at its inner surface being grooved to said band lengthwise of the protector, for the purpose set forth.

4. A well-casing protector comprising a metal band formed of sections of arc-shape in cross section, and a sheathing of resilient material on each of said sections, each of said sections being provided adjacent its longitudinal edges at one end with tongues and at its opposite end with loops, said loops being adapted to be positioned over said tongues in the assembling of said sheathed band-sections.

5. A well-casing protector comprising a metal band formed of sections of arc-shape in cross section, and a sheathing of resilient material on each of said sections, each of said sections containing recesses at one end near, but reaching short of, its longitudinal edges, whereby said sections present tongues extending lengthwise of the protector and provided at its opposite end with loops which project crosswise of said section and beyond its longitudinal edges, said loops being adapted to be positioned over said tongues in the assembling of said band sections.

6. In combination with a drilling tool, a protector on said tool comprising a ring surrounding said tool and formed of a metal band having a sheathing of resilient material in which said ring is embedded, and wedging means extending lengthwise of said protector and in contact with said metal band for wedging said protector in position on said tool.

HARRY E. DENNIE.