

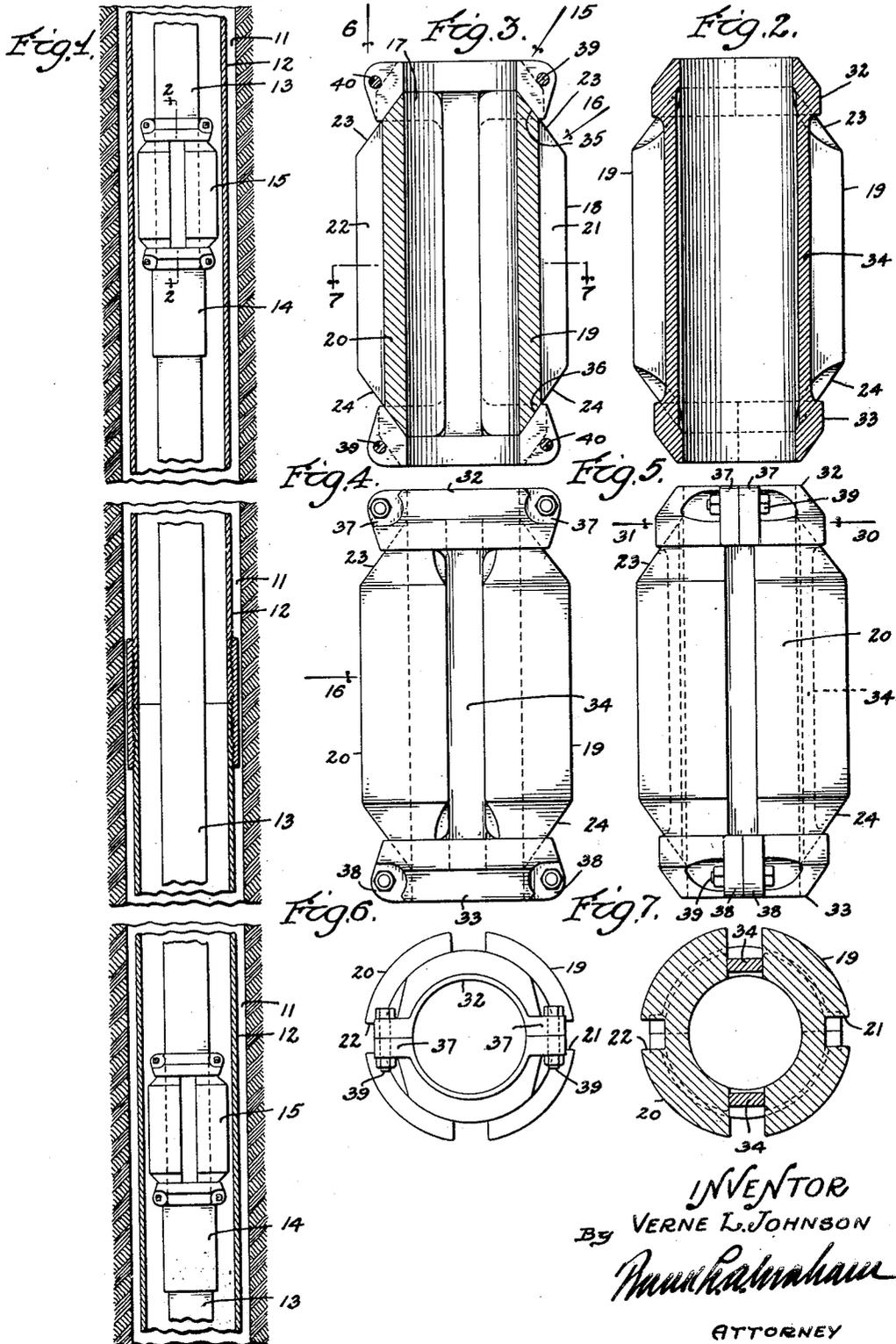
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TUBING PROTECTOR AND GUIDE

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TUBING PROTECTOR AND GUIDE

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My invention relates to a device to be used in oil wells, being more particularly a device to prevent the wear of the tubing and the casing in an oil well and, incidentally, to act as a guide for the mentioned tubing.

Due to the various strata encountered in drilling an oil well, it is practically impossible to maintain a well which is relatively perpendicular, there being many irregularities in the forms of curves and contours which cause the tubing that operates within the casing to engage the walls of the casing at various points, the friction there between wearing holes in the casing which may allow the entrance of water, or the casing may collapse, necessitating repairs which are expensive, both from the standpoint of time and material. It has, therefore, been an object of my invention to provide means for guiding the tubing so that the walls thereof are substantially parallel to the walls of the casing, the guiding means comprising collars which are adapted to surround the tubing and which are composed of wood or other material which is comparatively inexpensive and has a low resistance to frictional wear relative to that of the casing. These protecting collars I make in a manner which will facilitate their rapid placement at various points upon the tubing, and they are preferably made to be held against movement down the tubing by the interconnecting collars by which the tubing sections are held together.

Other objects and advantages of my invention, including the fluid circulating channels, etc., will be better understood from the following description, the appended claim and the accompanying drawing, in which

Fig. 1 is an elevational view, showing a section of an oil well and an assembly embodying a form of my invention.

Fig. 2 is a sectional elevation along the line 2—2 of Fig. 1, showing one embodiment of my invention.

Fig. 3 is a sectional elevation taken at right angles to the view shown in Fig. 2.

Fig. 4 is an elevational view corresponding to the section shown in Fig. 3.

Fig. 5 is an elevational view, corresponding to the section shown in Fig. 2.

Fig. 6 is a plan view in the direction of arrow 6 of Fig. 3, and

Fig. 7 is a plan section along the line 7—7 of Fig. 3.

More particularly describing my invention as herein illustrated, 11 indicates an oil well having a casing 12 inserted therein and a tubing 13 extending through the casing 12. Mounted on the tubing 13 above collars 14 are protecting members 15. The protecting members 15 comprise an inner cylindrical collar section 16 having a substantially cylindrical interior opening 17 and a substantially cylindrical exterior surface 18, the collar being composed of segments 19 and 20, which segments have lateral fluid channels 21 and 22, formed oppositely thereon. The opposite ends of these segments are in the form of frustral conical surfaces 23 and 24. This so called inner section may be composed of any material which has a lower resistance to frictional wear than the mentioned casing 12, and I prefer to make same of wood or other similar fibrous material, the casing being of metal.

For the purpose of holding the inner section 16 in engagement with the tubing 13, I provide retaining members 30 and 31, each of which consists of two semicircular ring members 32 and 33, connected by a web 34. These ring members are provided with faces 35 and 36, adapted to engage the frustral conical end surfaces 23 and 24 on the protecting cylindrical segments. The semicircular ring members are further provided with cooperating ears 37 and 38, adapted to receive connecting means such as the bolts 39 extending through the openings 40 in the ears. In assembling this device the segmental sections 19 and 20 comprising the inner member 16 are first placed about the tubing in any desired position, preferably above the connecting collars 14 of the tubing 13, and the retaining members 30 and 31 are then placed in the position best illustrated in Fig. 5. The bolts 39 are inserted through the openings 40 whereby the protectors are retained in position. In case the operator of

the drilling organization knows of the existence of a sharp curve or bend in the well in which the casing is in constant engagement with the tubing, it may be desirable to place a number of these protecting members about the tubing in that region. However, for ordinary purposes, it will be sufficient to place one of the protectors above each tubing collar.

It is obvious from the above description and the accompanying illustration that my invention will largely eliminate wear, both upon the well casing and the well tubing, the wear being taken up in the protecting members which may be readily and economically replaced at such time that they may become worn to the point at which the tubing is again engaging the casing. It will be understood that the protecting members are of substantially greater external diameter than the tubing collars, and that the material from which they are made will be governed, to a large extent, by its resistance to frictional wear.

While I have herein described one embodiment of my invention, it will be understood that various modifications of the same may be made by those familiar with the art without in the least departing from the spirit and scope of my invention, as described above and in the following claims.

I claim as my invention:

In an organization for guiding tubing in a well casing and reducing wear upon said well casing caused by the friction of tubing and tubing collars thereon: cylindrical segmental members composed of substance having a lower resistance to frictional wear than said casing and adapted to surround said tubing; and means for retaining said segments in relative engagement with said tubing, comprising cooperating end clamping collars having interconnecting webs, said cylindrical segmental members having a substantially circular section of greater outside diameter than said tubing collars and less inside diameter than the outside diameter of said tubing collars, said end members having clamping ears and said interconnecting webs being joined to said end members substantially equidistant from said clamping ears.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 27th day of September, 1927.

VERNE L. JOHNSON.