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1,652,650

G. D. WATSON ET AL

OIL WELL APPARATUS

Filed July 17, 1924

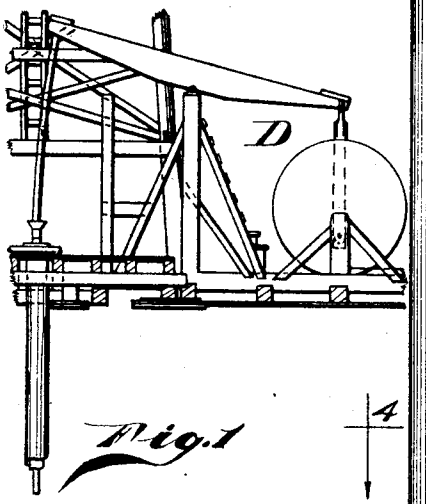
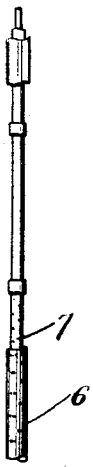


Fig. 1



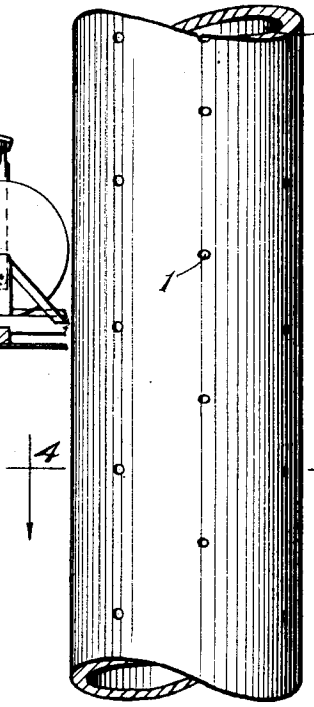


Fig. 2

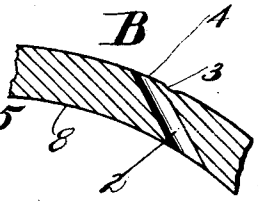


Fig. 5

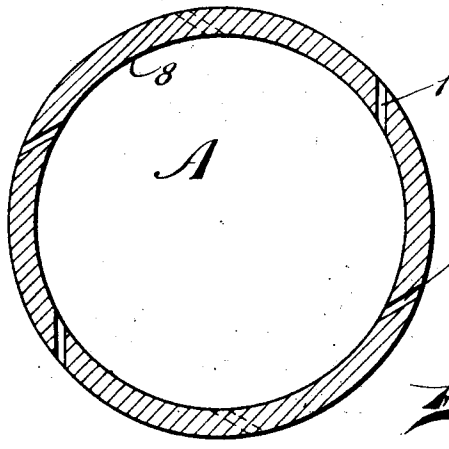


Fig. 4

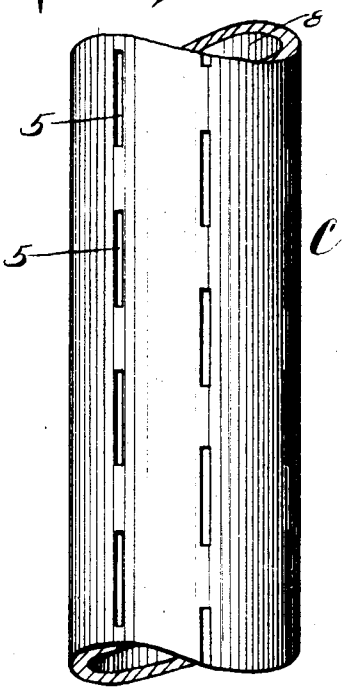


Fig. 3

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UNITED STATES PATENT OFFICE.

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OIL-WELL APPARATUS.

Application filed July 17, 1924. Serial No. 726,478.

This invention relates to oil well apparatus, and particularly to an improved form of perforated screening, casing, liners or the like. At the present time during a pumping action, or in case the well has sufficient gas pressure within the same to elevate oil or other liquid, it often happens that débris enters through the perforations of the screen, casing or liner, so that the inside of such screen or the like becomes coated with mud, sand and other particles, and eventually renders the screening or the like useless, and entails the placement of new screening, casing, liners or the like.

An object of the present invention is to provide a perforated casing, liner or screening in which the oil is given a rapid rotary movement upon its entering within the casing or the like, so as to keep clean one surface of such casing, liner or screen during a pumping operation.

In the drawing:

Figure 1 is a fragmentary view showing the invention as associated with well pumping apparatus;

Figure 2 is a fragmentary enlarged view partly in section and showing one form of screen, casing, or liner;

Figure 3 is a fragmentary view of a second form of such screen, casing or liner;

Figure 4 is a cross sectional view on an enlarged scale taken on the line 4—4 of Figure 2; and,

Figure 5 is an enlarged fragmentary cross sectional view showing a modification of the openings formed in the screening, casing, liner or the like.

In the drawings three forms of casing, screening or liners are shown and designated as A, B and C respectively. The form shown by A consists in perforating the casing or the like in such a manner as to provide openings through such casing or the like which are in the direction of chords of the cross sectional annular plane best shown in Figure 4 at 1. A plurality of such openings is provided as indicated in Figures 2 and 4.

It is noted that the usual screening, casing or liner is substantially annular, and in Fig. 5 the chorded opening is designated as 2 and such annulus has been struck inwardly as shown at 3, so as to restrict the entrance passage of such opening as indicated at 4. Thus, in actual operation any particle that would enter through the restricted opening shown at 4 will naturally pass through the remaining portion of such opening, as it is larger than the entrance opening, and prevent a clogging of such opening.

In Figure 3 the openings are shown at 5 and are substantially slits or slots which are in the direction of chords of the cross sectional annular plane of said annulus. In other words, the slits or slots would present an appearance approximately the same as that shown in section in Figures 4 and 5 if a cross section were taken of the device C.

In actual operation and referring to Fig. 1, we have the usual pumping apparatus shown at D and the usual screen is provided at 6, and immediately within the same we have perforated pipe or casing as shown at 7. The screening, pipe or casing shown at either 6 or 7, or both, may be any of the forms shown in Figs. 2 to 5 inclusive, so far as openings in the same are concerned. If oil under gas pressure is forced through the openings in such screening, casing or liner, the stream of oil will be forced against the inner wall surface 8 of such devices A, B and C, and clean the same of any sediment whatsoever. In other words, a jet of oil or other fluid would be projected inwardly of the casing for each opening and upon hitting the surface 8 a whirling action of the oil or other fluid will result within such casing, and this whirling action will clean the inner surface and maintain clean such inner surface of the casing, screening or liner at all times during a pumping action of the oil or other fluid.

It will be noted that the openings 1 are of greater length than diameter, and that the same is true as regards the width of the slits 5. This construction is of course accomplished by providing a casing having a relatively thick annular wall and the slots are so made in order that a jet effect may result upon passage of a fluid through said slots into the casing.

It is obvious that various changes may be made in the arrangement of the openings in such casing, screening or liner within the scope of the invention to obtain the results

desired, namely, the whirling action within such casing or the like to clean the inside of same.

Having thus disclosed our invention, we claim and desire to secure by Letters Patent:

Improvements in well casing, said casing being formed with openings which extend in the direction of chords of the cross sectional annular plane of said casing, and said openings being of greater length than diameter.

In testimony whereof, we have signed our names to this specification.

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