J. R. HALL.

OIL WELL SCREEN AND LINER CLEANER.

APPLICATION FILED JULY 30, 1920.

1,379,815. Patented May 31, 1921.

2 SHEETS—SHEET 1.

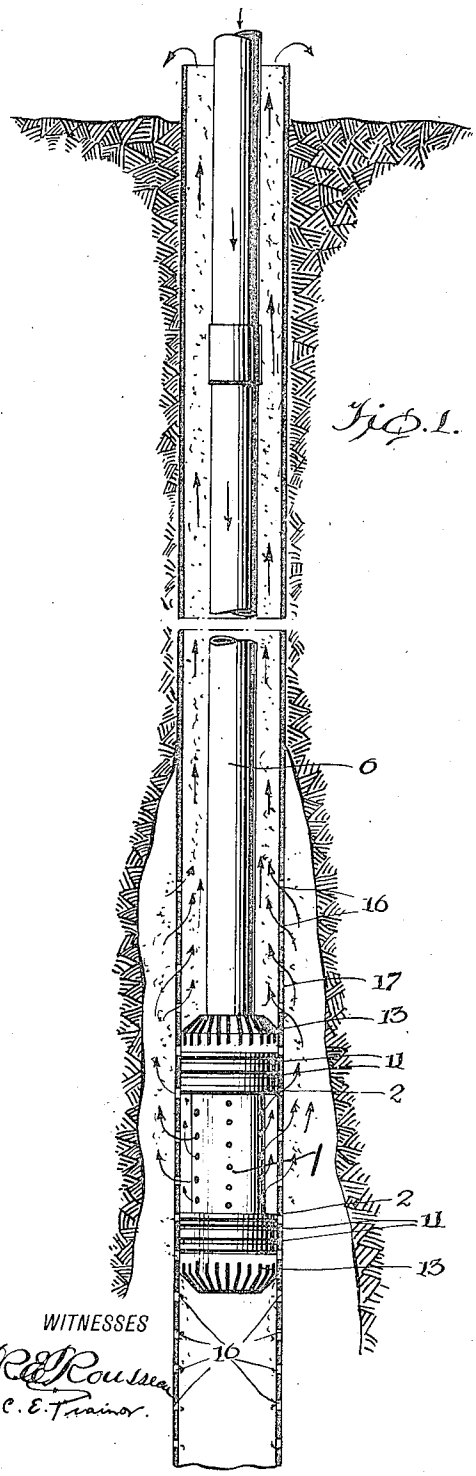


Fig. 1.

Fig. 2.

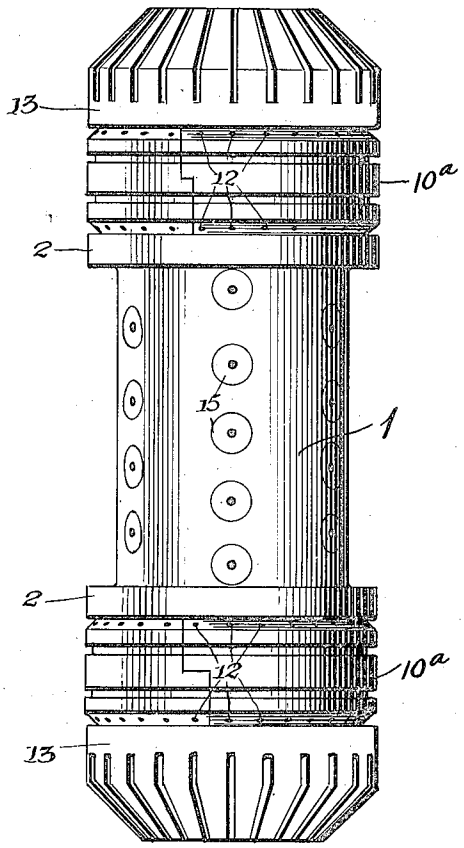
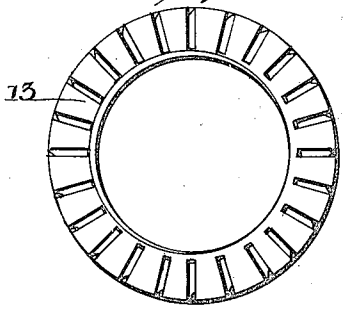


Fig. 3.



WITNESSES

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Fig. 4.

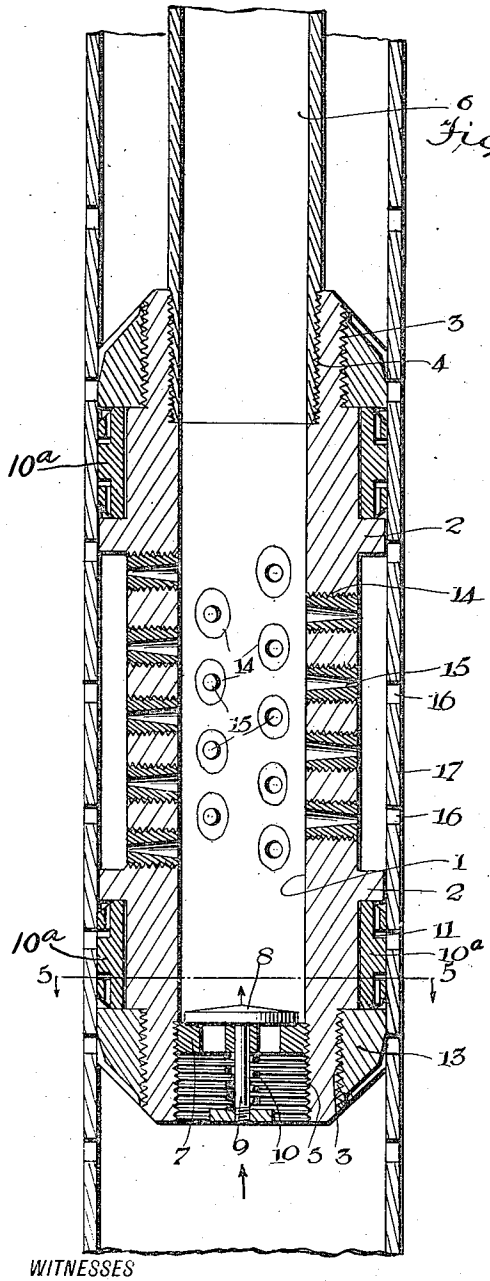


Fig. 5.

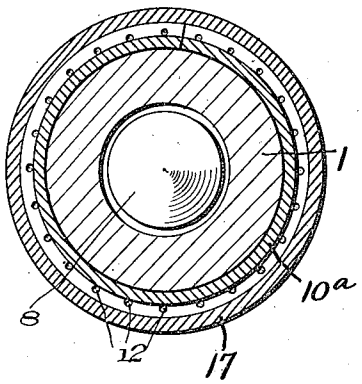


Fig. 6.

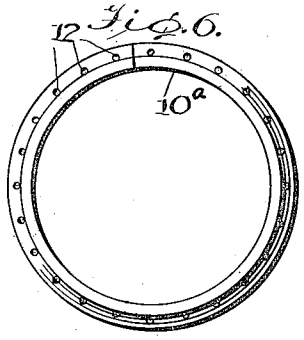
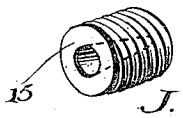


Fig. 7.



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UNITED STATES PATENT OFFICE.

JAMES ROBERT HALL, OF WINNFIELD, LOUISIANA.

OIL-WELL SCREEN AND LINER CLEANER.

1,379,815. Specification of Letters Patent. Patented May 31, 1921.

Application filed July 30, 1920. Serial No. 400,101.

To all whom it may concern:

Be it known that I, JAMES ROBERT HALL, a citizen of the United States, and a resident of Winnfield, in the parish of Winn and State of Louisiana, have invented certain new and useful Improvements in Oil-Well Screen and Liner Cleaners, of which the following is a specification.

My invention is an improvement in oil well screen and liner cleaners, and has for its object to provide a device of the character specified, by means of which the screen and liner of a well may be easily and efficiently cleaned from within the same, by means of jets of water, driven through the screen, and wherein means is also provided for dressing the inside of the screen or liner to remove burs left in the formation of the same.

In the drawings,

Figure 1 is a vertical section of a well, with the improved cleaner in place,

Fig. 2 is an enlarged side view of the cleaner,

Fig. 3 is an end view,

Fig. 4 is a vertical section of the cleaner and the screen and liner,

Fig. 5 is a section on the line 5—5 of Fig. 4,

Fig. 6 is an end view of one of the piston rings,

Fig. 7 is a perspective view of one of the nozzles detached.

As is known, wells frequently fail to produce oil, simply because the liner or screen is choked or stopped up from the outside, checking the flow of the oil, and the present invention is designed to provide a convenient and easily operated means for cleaning the screen, to permit the flow of oil to resume.

In addition, there is provided means for removing the burs that may be formed in the drilling of the openings of the screen.

In the present embodiment of the invention, the improved cleaner comprises a hollow, cylindrical body 1 of suitable cross section, having near each end an annular external rib 2, and each end of the body is reduced externally and threaded, as shown at 3. The ends of the body are internally threaded, as indicated at 4 and 5 respectively, the first mentioned thread being for engagement by a hollow stem 6, to handle the cleaner, while the latter is for receiving a check valve seat 7, the seat being threaded into the end of the body.

At the thread 4, the bore of the body is enlarged or counterbored, as shown, and a valve 8 coöperates with the seat 7, the valve having a headed stem 9, which is encircled by a coiled spring 10, the spring being between the head and the seat, and acting normally to hold the valve closed.

Between each rib 2 and the threaded portions 3 of the body, there is arranged a piston ring 10^a. Each piston ring 10^a may be split, and the ends may be interlocked as illustrated in Fig. 2. These rings, as shown in Fig. 6, have their edges beveled externally, and each ring has an annular groove 11 near each end. Openings 12 lead from the beveled ends to the grooves 11 for a purpose to be presently described. The rings are held in place by cutter heads or rings 13, which are threaded on to the body at the ends thereof. Each of these cutter heads 13 is tapered, the tapering consisting of two portions having different angles of inclination, and the cutting surface extends over both portions. The body has formed therein between the ribs 2 a series of openings 14, each of which is internally threaded, as shown, and nozzles 15 are arranged within the openings. Each of these nozzles, as shown, has a tapering or choked bore, the small end of the bore being outward, and these nozzles are designed to direct jets of water through the openings 16 of the screen or liner 17.

I claim:

1. A device of the character specified, comprising a tubular body having a check valve at its lower end for preventing the outflow of water from the same, and having a series of radial, choked-bore nozzles in its side wall for directing the jets of water through a screen liner, said body having packing rings above and below the series of nozzles, and annular cutters detachably connected with the ends of the body for dressing the inner surface of the liner.

2. A device of the character specified, comprising a tubular body having a check valve at its lower end for preventing the outflow of water from the same, and having

a series of radial, choked-bore nozzles in its side walls for directing the jets of water through a screen liner, said body having packing rings above and below the series of nozzles.

3. A device of the character specified, comprising a tubular body having a check valve at its lower end for preventing the outflow of water from the same, and having a series of radial, choked-bore nozzles in its side walls for directing the jets of water through a screen liner, said nozzles being detachably connected with the body.

4. A device of the character specified, comprising a tubular body having a check valve at its lower end for preventing the outflow of water from the same, and having a series of radial, choked-bore nozzles in its side walls for directing the jets of water through a screen liner.

5. A device of the character specified, comprising a hollow, cylindrical body having intermediate its ends a series of radial nozzles for directing radial jets of water, and having a check valve at its lower end for preventing the outflow of water, said body having packing rings at its ends for the purpose specified, each of the packing rings having its outer end beveled, and having an annular groove intermediate its ends and longitudinally extending openings leading from the beveled end to the groove.

6. A device of the character specified, comprising a hollow, cylindrical body having intermediate its ends a series of radial nozzles for directing radial jets of water, and having a check valve at its lower end for preventing the outflow of water, said body having packing rings at its ends for the purpose specified, and having cutters detachably connected with its ends outside the packing rings.

7. A device of the character specified, comprising a hollow, cylindrical body having intermediate its ends a series of radial nozzles for directing radial jets of water, and having a check valve at its lower end for preventing the outflow of water, said body having packing rings at its ends for the purpose specified.

8. A device of the character specified, comprising a hollow cylindrical body having intermediate its ends a series of radial nozzles for directing radial jets of water, and having a check valve at its lower end for preventing the outflow of water, and having cutters detachably connected with its ends.

JAMES ROBERT HALL.