July 21, 1953 J. L. STRICKLER 2,646,124

CASING SEALING SHOE OR BOOT

Filed Oct. 15, 1951

Fig. 1

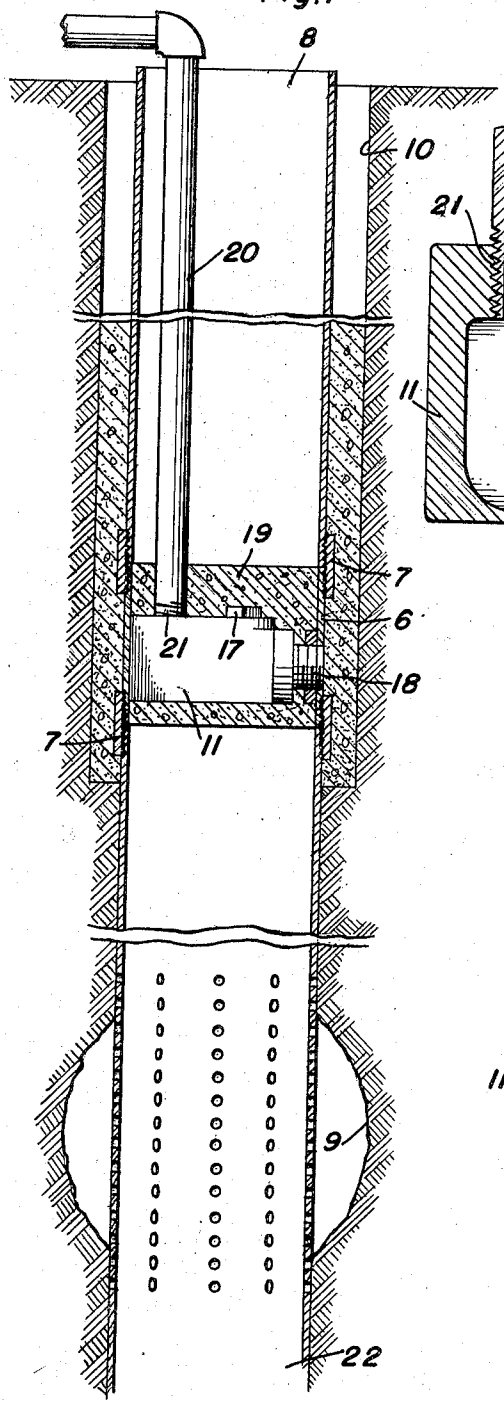


Fig. 2

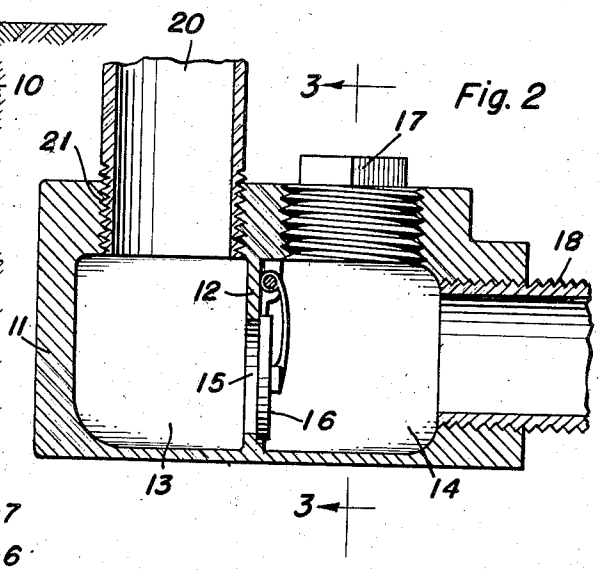
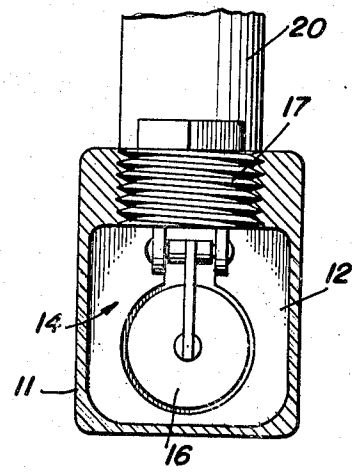


Fig. 3



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CASING SEALING SHOE OR BOOT

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1 Claim. (Cl. 166—1)

1

The present invention relates to new and useful improvements in casing sealing shoes or boots for use particularly in relatively shallow oil wells where it is frequently necessary to enlarge the bottom of the hole by shooting, and wherein considerable difficulty may be encountered in permanently sealing the casing in place after the shot.

The primary object of the present invention is to provide novel means for forcing cement under pressure into the usual space between the casing and the wall of the bore hole.

Other objects of the invention are to provide a casing sealing shoe or boot of the aforementioned character which will be comparatively simple in construction, strong, durable, highly efficient and reliable in use, compact and which may be manufactured at low cost.

All of the foregoing and still further objects and advantages of the invention will become apparent from a study of the following specification, taken in connection with the accompanying drawing wherein like characters of reference designate corresponding parts throughout the several views, and wherein:

Figure 1 is a vertical sectional view, showing a casing sealing shoe or boot embodying the present invention in position in a well;

Figure 2 is a view in vertical section through the device; and

Figure 3 is a view in transverse section, taken substantially on the line 3—3 of Figure 2.

Referring now to the drawing in detail, it will be seen that the embodiment of the invention which has been illustrated comprises a nipple 6 which is interposed through the medium of coupling sleeves 7 at the desired point in an oil well casing 8 above the shot hole 9 of the well or bore hole 10. Mounted in the nipple 6 is a hollow body 11 of aluminum, cast iron or other suitable metal. The body 11 comprises a partition 12 providing intake and discharge chambers 13 and 14, respectively, in said body. The chambers 13 and 14 communicate with each other through a port 15 in the partition 12. A swinging check valve 16 in the chamber 14 controls the port 15. Access may be had to the chamber 14 and the check valve 16 through a removable plug 17 which is threadedly mounted in the upper portion of the body 11.

A threaded conduit 18 of cast iron or other suitable material connects one end of the body 11 to the nipple 6, through which conduit cement flows from the chamber 14 to the exterior of said nipple. This is shown to advantage in

2

Figure 1 of the drawing. The other end of the body 11 may, if desired, be secured by light welding to the casing 8. Also, in the embodiment shown, the entire body 11 is encased in concrete, as at 19.

A tubing 20 extends downwardly in the casing 8 and is connected to the body 11 in communication with the chamber 13. The tubing 20 is joined to the body 11 by a left hand thread connection 21. The tubing 20 extends to a suitable cement pump (not shown).

It is thought that the operation of the invention will be readily apparent from a consideration of the foregoing. Briefly, the casing 8 is pulled and the well is shot. The assembly comprising the elements 6, 7, 11, 18, 20, etc., is then interposed in the casing at the desired point, after which said casing is lowered into the well. Cement under pressure from a suitable source of supply is then forced through the tubing 20 into the chamber 13 of the body 11. From the chamber 13 the cement flows through the port 15 past the check valve 16 into the chamber 14, thence through the conduit 18 into the space between the casing 8 and the bore hole 10. After a sufficient quantity of cement has thus been deposited in the bore hole the tubing 20 is unscrewed from the body 11 and pulled out of the well. The cement that has been deposited in the bore hole is then permitted to set, thus firmly securing the casing in position. Then, the usual tools are lowered into the well for breaking the concrete 19 and the conduit 18 away from the nipple 6, the parts falling into the usual pocket 22 below the shot hole 9.

It is believed that the many advantages of a casing sealing boot or shoe constructed in accordance with the present invention will be readily understood and although a preferred embodiment of the device is as illustrated and described, it is to be understood that changes and the details of construction may be resorted to which will fall within the scope of the invention as claimed.

Having described the invention, what is claimed as new is:

Means for sealing a well casing in a bore hole comprising, a nipple interposed in the casing, an elongated, hollow body mounted diametrically in said nipple, a transverse, vertical partition in the body defining inlet and outlet chambers, said partition having a port therein for the passage of cement from the inlet to the outlet chamber, a gravity closed check valve hingedly mounted on the partition for preventing retro-

grade flow of the cement through the port, a detachable supply tubing threadedly connected to one end of the body and communicating with the inlet chamber, a breakable discharge conduit threadedly connecting the other end of the body to the nipple in spaced relation thereto for supporting said body therein, said conduit communicating with the outlet chamber, and cement in the nipple encasing the body and the conduit, said one end of said body abutting the nipple.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,391,678	Francois	Sept. 27, 1921
1,411,057	Miller	Mar. 28, 1922
1,491,986	Greene	Apr. 29, 1924
1,830,851	Murphy	Nov. 10, 1931
2,173,034	Armentrout et al.	Sept. 12, 1939