A. B. ELLIS.

PROCESS FOR SEALING DRIVEN WELLS.

APPLICATION FILED JUNE 6, 1919.

1,404,353. Patented Jan. 24, 1922.

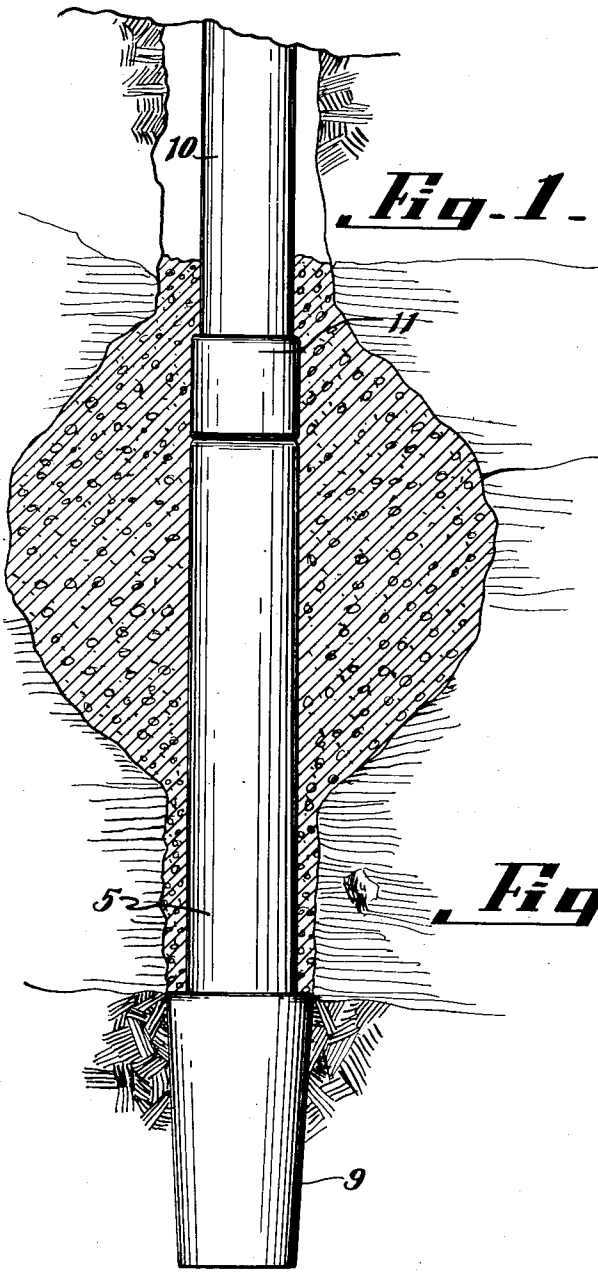


Fig. 1.

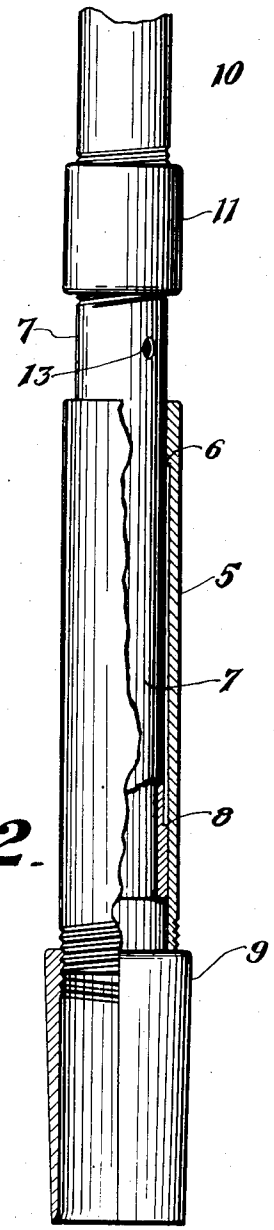


Fig. 2.

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ALFRED B. ELLIS, OF VENTURA, CALIFORNIA.

PROCESS FOR SEALING DRIVEN WELLS.

1,404,353. Specification of Letters Patent. Patented Jan. 24, 1922.

Application filed June 6, 1919. Serial No. 302,265.

To all whom it may concern:

Be it known that I, ALFRED B. ELLIS, a citizen of the United States, residing at Ventura, in the county of Ventura, State of California, have invented certain new and useful Improvements in Processes for Sealing Driven Wells; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to well sealing processes, and more particularly to processes for sealing driven wells against the entrance of water from permeable strata through which the well may be driven into the well casing, the process consisting of steps by which a pocket is formed surrounding the well casing and this pocket is filled with cement or other impermeable material.

In carrying out the process, I preferably employ mechanism as illustrated in my copending application Serial No. 270,329.

It is an object, also, of the present process to lock the well casing securely within the well.

In the accompanying drawing,

Figure 1 illustrates a well and the well casing employed in the performance of the present process, after the completion of the process, the view being taken in section vertically of the well.

Figure 2 is an elevational view of the well casing employed in connection with the present process, part being broken away.

Referring to the drawings, and especially to Figure 2 thereof, the casing employed in connection with the present process consists of a casing section 5 having an inwardly directed flange 6 at its upper end, this flange having a proper length to serve as a bearing surface for a telescoping casing section 7 engaged within the section 5. This section 7 has at its lower end an outwardly directed flange 8 similar in size to the flange 6, and contacting the inner surface of the section 5. When the section 7 is telescoped into the section 5, the two flanges 6 and 8 lie spaced from each other, mutual engagement of the two flanges when the inner section 7 is elevated serving to limit the upward movement of the section 7.

The lower end of the section 5 carries a shoe 9, and the upper end of the section 7 has connected therewith the upper sections of the well casing, the lowermost of which is indicated at 10. A sleeve 11 serves to connect the section 7 with the section 10, and projecting outwardly beyond these two sections lies in position for engagement against the upper end of the section 5 to limit the inward telescoping movement of the section 7.

Adjacent to the sleeve 11 the section 7 is provided with a laterally directed port 13 which, when the section 7 is telescoped into the section 5, is closed by the flange 6; but which is opened, as will be understood, when the section 7 is elevated.

In carrying out the present process, the casing illustrated is sunk into the ground in the usual manner, and the shoe 9 is driven into the shale below permeable strata. The upper casing sections are then elevated to elevate the section 7, when the port 13 is brought above the upper end of the section 5. Water under pressure is then forced down through the casing and out through the port 13. The section 7 is rotated within the section 5 by rotating the upper casing section and thus a column of water from the port 13 is directed against the earth surrounding the casing with the result that the earth is hydraulically excavated to form a pocket surrounding the casing. The dimensions of this pocket may be regulated by the manipulation of the section 7 as will be understood.

After the earth has been excavated, water remaining within the casing is exhausted therefrom and cement is forced down through the casing under pressure and out through the port 13, the section 7 being again rotated to evenly distribute the cement within the pocket. When this step in the process has been completed the section 7 is lowered to close the port 13, and cement remaining within the casing is exhausted therefrom. When the cement has set, the casing will be securely locked within the wall by reason of the shoulder indicated at 11′ and formed by the upper end of the sleeve 11.

My process may be performed in a modified way in which the water used for hydraulically excavating the pocket is not exhausted from the casing but is displaced by cement forced from the pocket.

What is claimed is:

1. The process of sealing a well against

access of water to the well casing from permeable strata surrounding the casing, which consists in directing a stream of water radially from the casing in a plane above the lower end of the casing against the earthen wall of the well until the bore of the well has been locally enlarged with a resultant pocket entirely surrounding the casing and subsequently ejecting cement from the casing into and filling the pocket.

2. The process of sealing a well against access of water to the well casing from permeable strata surrounding the casing, which consists in providing the casing with a radial opening at a point above its lower end, forcing water through the casing and outwardly through the opening against the surrounding stratum and simultaneously rotating the casing until a pocket is formed entirely about the casing and of subsequently forcing through the casing and outwardly through said opening and into the pocket, a filling of cement for the pocket.

3. The process of sealing a well against access of water to the well casing, which consists in providing the casing with a collar and a radial opening adjacent thereto, forcing water through the casing and outwardly through the opening against the surrounding stratum until there is formed a pocket in said stratum extending beyond the collar, then forcing cement through the casing and outwardly of the opening and into the pocket to fill it and enclose the collar, and then closing the opening.

In testimony whereof, I affix my signature, in the presence of two witnesses.

ALFRED B. ELLIS.

Witnesses:
H. F. ORR,
FERN SMITH.