

C. C. POLYSU.

METHOD AND APPARATUS FOR CASING WELLS.

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1,313,013.

Patented Aug. 12, 1919.

Fig. 1.

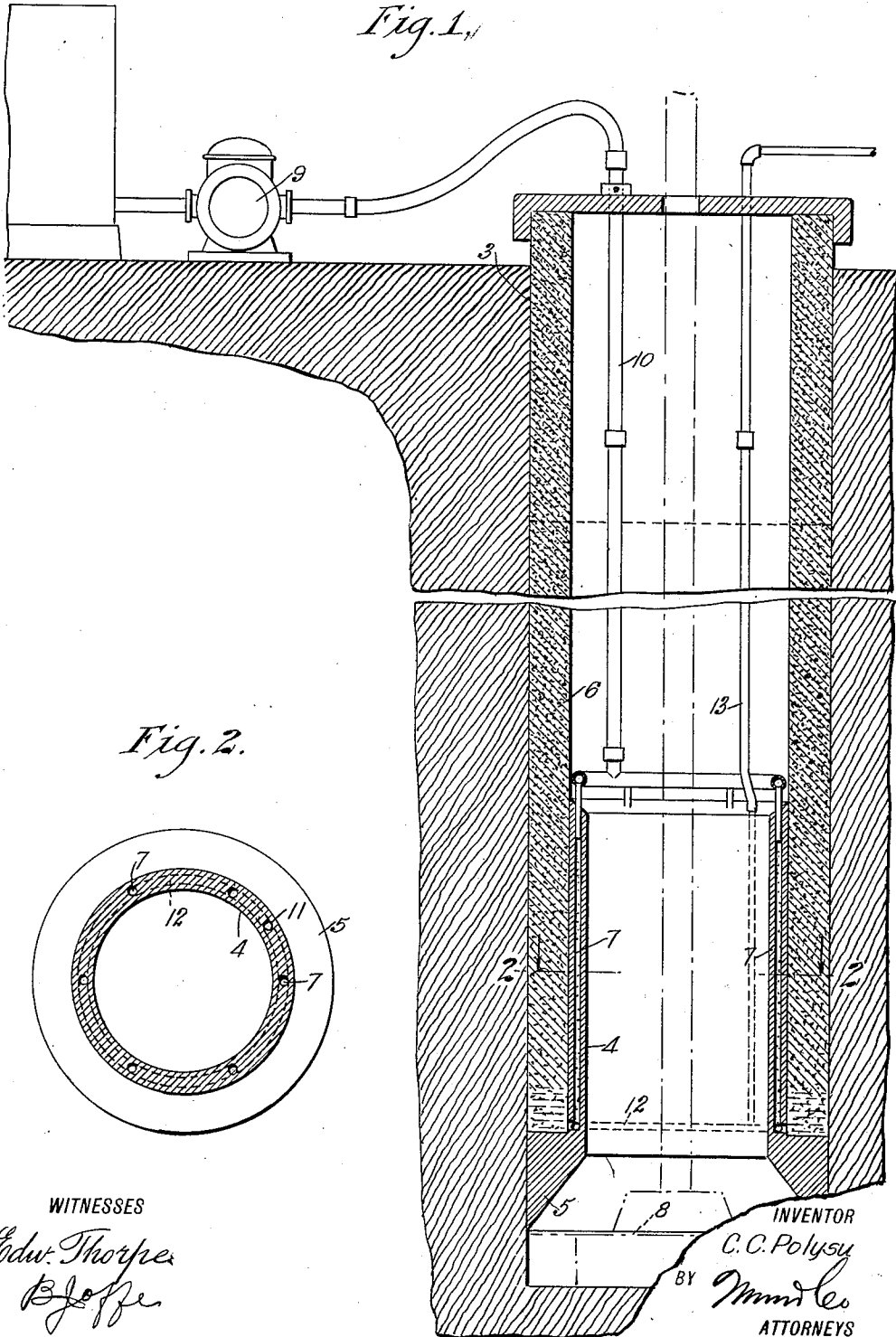
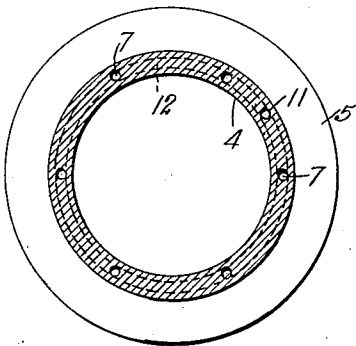


Fig. 2.



WITNESSES

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METHOD AND APPARATUS FOR CASING WELLS.

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To all whom it may concern:

Be it known that I, CONSTANTINE C. POLYSU, a subject of the King of Roumania, residing at Tonnerre, France, have invented a new and Improved Method and Apparatus for Casing Wells, of which the following is a full, clear, and exact description.

My invention relates to a novel method of casing wells and is characterized by the fact that the casing is built as the boring proceeds, the casing being built up from the lower end.

An object of the invention is to provide a casing of uniform bore so as not to reduce the diameter of the well as the depth of same increases.

Another object of the invention is to provide a mold which follows the boring tool and to which cement may be supplied to mold the casing continuously as the depth of the well increases.

With the above and other objects in view, the nature of which will more fully appear as the description proceeds, the invention consists in the novel construction, combination and arrangement of parts as herein fully described, illustrated and claimed.

In the accompanying drawings, forming part of the application, similar characters of reference indicate corresponding parts in both views.

Figure 1 is a diagrammatic fragmentary section through a well provided with a casing built in accordance with my method; and

Fig. 2 is a cross section on line 2—2, Fig. 1.

In casing wells with steel tubing, it is necessary to start the well at a considerably larger diameter of bore than the one it is desirable to have when the well is finished, the reason being that the casing is built up from the top of the well as the boring progresses; and in view of the fact that the friction between the ground and the casing increases with the depth, the time comes when the casing will not descend any further and, in consequence, a smaller casing has to be introduced so that the boring can be progressed with. Therefore, at great depths a large number of interengaging casings accumulates within the well with a considerable decrease in the diameter of the bore of the well. To obviate a great reduction in the diameter of the bore of the well and the use of a large number of casings, I pro-

pose to build a casing of uniform diameter which progresses with the depth of the well by building the casing up from the lower end.

Referring to the drawings, 3 is a well in which a tubular mold 4 is provided. The mold 4 at the lower end has a head 5 extending laterally and the outer diameter of which is substantially equal to the diameter of the bore of the well. The outer diameter of the mold 4 is such that the width of the margin of the head represents the thickness which the casing 6 for the well is to have. The mold 4 has a plurality of tubular passages 7 open at the upper end in the edge of the mold. At the lower end the passages 7 open laterally on to the outer periphery of the mold in proximity of the head 5.

The mold 4 is adapted to follow the boring tool 8, shown in dotted lines, which is of the expansible type so that the same can pass the mold and be expanded to the size of the head 5 of the mold. It may be here remarked that my method of casing is suitable for boring systems of the rotary and the impact type. As the boring proceeds the mold descends and the annular space formed about the mold in the well is filled by the cement supplied to the mold continuously under pressure by a pump 9. In consequence, the formation of the casing is continuous. A suitable conduit 10 extends from the top of the well to the passages 7. This conduit is increased in length as the depth of the well increases. The mold is continuously forced to follow the boring tool, for the pressure under which the cement is supplied about the mold reacts against the head of the mold, and since the only movable part is the mold, the same is caused to follow the boring tool. It is self-evident that the pressure under which the cement is supplied to the mold may be varied according to the resistance offered and to the ground in which the work is carried on. The mold may be highly polished so as to reduce friction between the portion of the casing formed when in engagement with the mold, and the mold.

In cases where the formation of the casing is to be interrupted for some cause, it is necessary to prevent the cement from hardening in the passages of the mold, and for this purpose I provide an auxiliary passage 11 in the mold similar to the passages 7 but which is united with the passages 7 near

the bottom of said passages by a circular passage 12, shown in dotted line. Water can be supplied to said passage 11 by a conduit 13 from a suitable pump, not shown, so as to drive out all the cement in the passages 7 and conduits leading thereto.

From the above description it will be seen that by my method the casing is built continuously from the lower end, the progress being continuous with the progress of the depth of the well. Though the mold remains permanently in the well, the boring tool can be extracted for exchange or repair, as the case may be. Means are provided for driving out the cement from the mold when the boring of the well is arrested for one cause or another.

While I have described the method and the apparatus which I consider to be the best embodiment thereof, I desire to have it understood that the method and apparatus shown are merely illustrative and that such changes may be made as are within the scope of the appended claims.

I claim:

1. A method of casing wells, which consists in boring the well and forming the

casing adjacently above the boring tool as the tool descends.

2. A method of casing wells, which consists in providing a mold adapted to follow the boring tool and supply cement continuously to the mold as the boring proceeds whereby the casing is formed continuously by the mold above the boring tool.

3. A device for forming casing sections in a well, comprising a tubular form having a lateral head at the lower end, said tubular form having passages opening in the upper edge of the mold and also in the outer periphery in proximity of the head whereby molding material may be supplied about the mold through said passages.

4. A device for forming casing sections in the well, comprising a tubular form having a lateral head at the lower end, said tubular form having passages opening in the upper edge of the mold and also in the outer periphery in proximity to the head, and a passage opening in the upper edge and connected with the previously mentioned passages near the lower end of said passages.

CONSTANTINE C. POLYSU.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."