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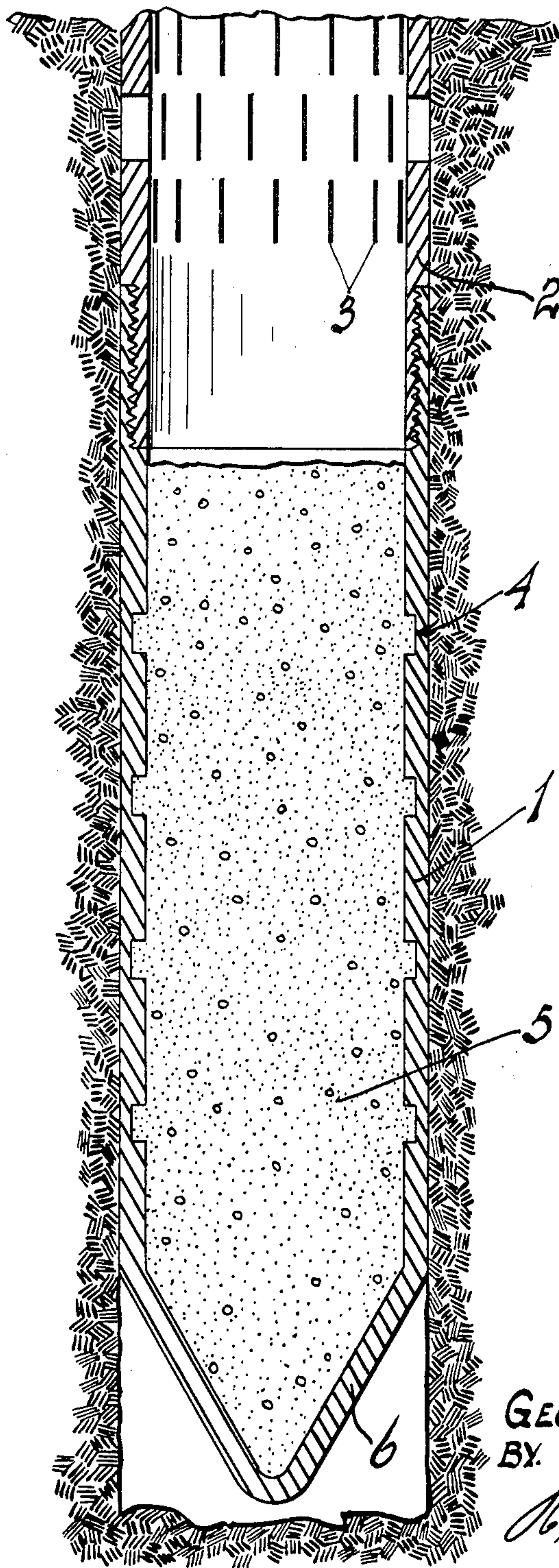
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SAFETY LINER SHOE

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166. WELLS
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SEARCH ROOM

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SAFETY LINER SHOE

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10 Claims. (Cl. 166—1)

This invention relates to a safety or signaling type liner shoe whereby the recovery of unusual or easily distinguishable material from the well will indicate to the operator that the well has
5 been cleaned and that further use of a clean-out tool or bailer might damage the well by breaking or opening the bottom of the liner or screen.

An object of my invention is to provide a novel
10 safety liner shoe which is attached to the lower end of an oil well liner or screen and which contains material placed therein before the liner has been run into the well, this material being recoverable by a clean-out tool or bailer and being readily distinguishable by the operator.

15 Another object is to provide a novel method of indicating to the operator the fact that extraneous material has been removed from the well by the bailer and that further use of the bailer is unnecessary.

20 Still another object is to provide a novel safety liner shoe filled with a recoverable and frangible material which cannot shrink away from the shoe or be driven out of the shoe by a blow of the bailer or other tool.

25 Other objects, advantages and features of invention may appear from the accompanying drawing, the subjoined detailed description and the appended claims.

In the drawing:

30 The figure in the drawing is a longitudinal sectional view of my safety liner shoe.

It is common oil field practice to close in the lower end of liners by cutting segments from the lower end of the liner and then folding these segments inwardly to form a closure. The reason
35 for this closing of the liner is to prevent the material of the oil producing formation from pushing upwardly into the liner during the operation of the well. It is also common oil field practice to attach a closed metal shoe to the lower end
40 of the liner.

From time to time it is necessary to shut down an oil well in order that quantities of sand and the like may be removed from the liner; these
45 materials are carried into the liner through slots or openings by the oil. To remove these materials various types of clean-out bailers are lowered into the well on a cable until the tool comes to rest on the material to be removed, the clean-out tool is then filled or loaded, either by some
50 mechanical means or by repeatedly raising and dropping the tool on to the material. In any case, considerable weight is dropped against the material in the well while the clean out tool is
55 being filled. It frequently happens that due to

a mistake in measurements or through misinformation the operator will have cleaned out the liner to the bottom unknowingly and will continue to raise and drop the tool thus subjecting the bottom of the liner or the shoe to severe but unintended treatment with the result that the liner or shoe will split or burst. When this has been done, sand or other material will be forced upwardly into the liner because of the flow of fluid or gas pressure causing a great deal of difficulty.
5 10

My invention consists of a metallic shoe 1 which is threaded onto the lower end of a liner or screen 2, the liner or screen is perforated or slotted as shown at 3 and the oil passes through these slots into the liner and is then recovered.
15 The shoe is provided with a plurality of annular grooves 4. The purpose of these grooves is to lock the cement or other recoverable and frangible material 5 in the shoe. The material 5 may consist of colored cement or cement impregnated with shot or any other type of material which is different from or is not usually found in an oil well. The bottom of the shoe is closed as shown at 6, thus supporting the recoverable material 5 in the shoe. It will be evident
20 25 that as the bailer is operated in the well when this bailer strikes the top of the material 5 particles of this material will be broken off and will pass into the bailer. When the bailer is dumped on the surface the operators will notice the presence of this material and will thus know that the bottom of the well has been reached and that the well is clean.
30

By closing the bottom of the shoe a support is provided for the material and striking of the
35 bailer on the top of this material will not drive it downwardly which would cause the bottom of the hole to be opened. As previously stated, it is necessary that the bottom of the hole be closed so that the formation cannot crown inwardly or
40 pass up into the liner.

The material 5 is poured or formed in the shoe 1 before the liner is run into the well. The liner is then run into the well in the usual or well known manner with the shoe 1 closing the bottom of the liner.
45

Occasionally it is necessary to drill through the shoe at the bottom of the liner in order to deepen a well. It might, therefore, be advisable to make the shoe 1 of a breakable material such
50 as cast iron, or the bottom of the shoe 1 could be formed of some drillable material such as cast iron, aluminum or the like.

Having described my invention, I claim:

1. The method of indicating the bottom of the 55

perforated pipe section of a fully drilled well to the operator of a bailer consisting of placing frangible or recoverable material at the lower end of an oil well liner.

- 5 2. The method of indicating the bottom of the perforated pipe section of a well to the operator of a bailer consisting of placing frangible or recoverable material at the lower end of an oil well liner and supporting the lower end of the
10 recoverable material to prevent the bailer from pushing said material out through the bottom of the well.

3. The method of indicating to the operator of a clean-out tool the bottom of a well strainer
15 consisting of attaching to the lower end of said strained a tubular extension containing frangible or recoverable material.

4. The method of indicating to the operator of a clean-out tool the bottom of a well strainer
20 consisting of attaching to the lower end of said strainer a tubular extension containing frangible or recoverable material, said extension being closed at its lower end to support the material contained therein.

- 25 5. The method of determining the bottom of a well strainer consisting of lowering into the well a tool capable of fracturing and capturing

fragments of a frangible material in place in the bottom of the strainer and withdrawing said tool to the surface for examination and identification of said fragments.

6. A tubular member adapted to be attached
5 to the lower end of a well strainer, said member containing a frangible or recoverable material.

7. A tubular member adapted to be attached to the lower end of a well strainer, said member containing a frangible or recoverable material
10 and being closed at its lower end.

8. In an oil well, a perforated section of pipe having at its lower end a blank tubular extension containing a frangible or recoverable material.
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9. In an oil well, a perforated section of pipe having at its lower end a blank tubular extension containing a frangible or recoverable material and said extension being closed at its lower end.
20

10. In an oil well, a perforated section of pipe having at its lower end a blank tubular extension containing a frangible or recoverable material, said extension being closed at its lower end, and means interlocking the material and the tubular
25 extension.

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