Oct. 28, 1924. 1,513,083

R. C. BAKER

CLEAN-OUT BAILER

Filed July 20, 1922

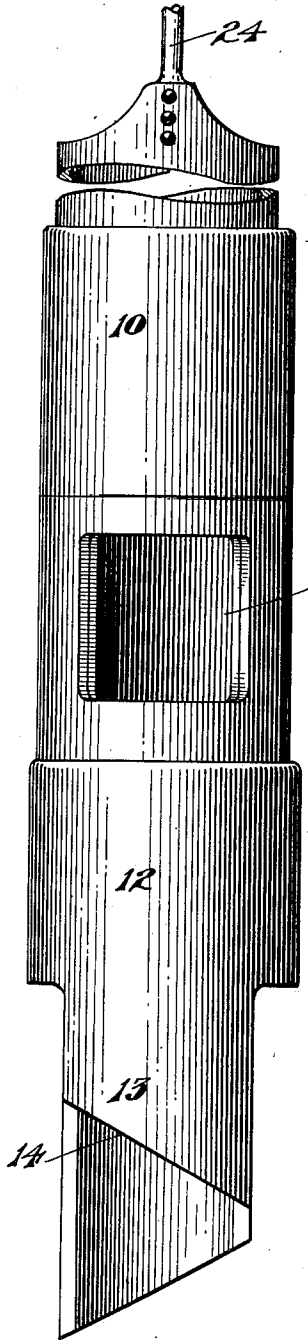


Fig. 1.

Fig. 2

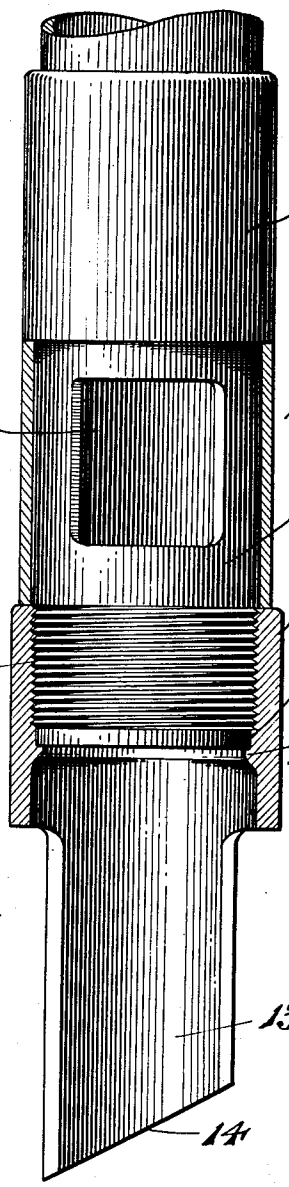
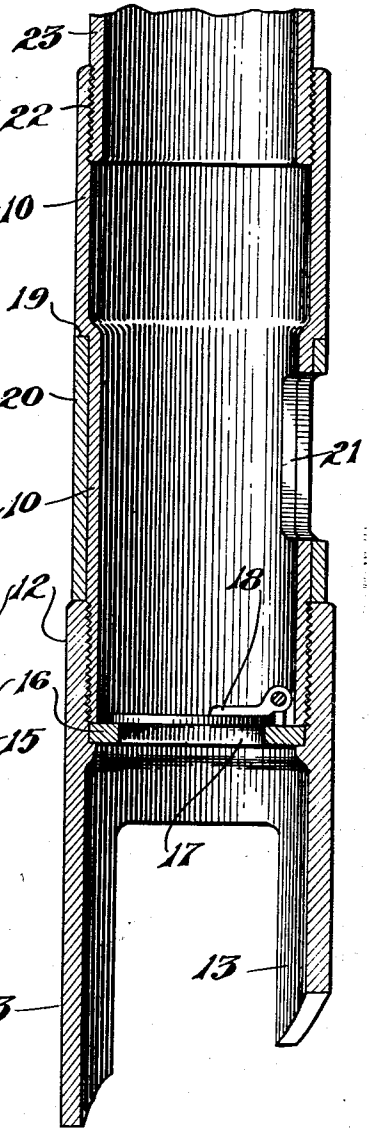


Fig. 3



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UNITED STATES PATENT OFFICE.

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CLEAN-OUT BAILER.

Application filed July 20, 1922. Serial No. 576,332.

To all whom it may concern:

Be it known that I, REUBEN C. BAKER, a citizen of the United States, residing at Coalinga, county of Fresno, and State of California, have invented new and useful Improvements in Clean-Out Bailers, of which the following is a specification.

This invention relates to deep well equipment and particularly pertains to a clean out bailer.

During the operation of oil wells, sand and shale often enters the bottom of the well and shuts off the ingress of the oil. At the present time there are several devices in use which were designed for cleaning the well bottoms of such obstruction. However, the sand and shale in some instances becomes packed and offers such resistance that the devices mentioned are useless, necessitating the rigging up of the drilling equipment. This last operation is expensive and causes considerable delay. It is the object of the present invention, therefore, to provide an improved form of device which may be employed to thoroughly clean wells, removing sand, shale, and like formations, the device being simple in construction and efficient in operation.

The invention contemplates the use of a cylindrical structure having a plurality of peculiarly formed cutting blades mounted at its lower end, these blades being adapted to penetrate and loosen the formation encountered, so that it may be forced upwardly into the structure and entrapped, and thereafter removed from the well.

One form which the invention may assume is exemplified in the following description and illustrated by way of example in the accompanying drawings, in which:

Fig. 1 is a view in side elevation of a device embodying the present invention.

Fig. 2 is a similar view partly in section.

Fig. 3 is a longitudinal section disclosing the construction of the device.

Referring more particularly to the drawings, 10 indicates a cylindrical body member formed at its lower end with exterior threads 11 for the reception of a cutting head 12. This head is formed with a pair of downwardly extending segmental cutting blades 13. These blades, as shown in the drawings, are of different lengths and are formed with oppositely inclined angular cutting ends 14.

Formed in the head member 12 is an annular shoulder 15 which cooperates with the lower end of the body member 10 to rigidly support a valve plate 16. This plate is apertured as at 17 and is provided with a flap valve 18. This valve is hingedly connected to the plate 16 and is normally maintained in closed position over the aperture 17 by gravity action.

By referring to Fig. 3 it will be seen that the diameter of the cylindrical body member 10 is increased at its upper end so as to provide an annular shoulder 19. Positioned between this shoulder and the upper end of the cutting head is a turnable sleeve member 20 which circumscribes the central portion of the cylindrical body member as shown. The sleeve 20 and the cylindrical body member 10 are each formed with a rectangular discharge opening 21. This opening is employed for the purpose of discharging any material within the device when it is drawn from the well. When the device is to be lowered into the well the discharge opening may be closed by simply turning the sleeve 20 until the opening 21 therein is out of register with the opening 21 in the body member.

The upper end of the body member 10 is interiorly threaded as at 22 for reception of a pipe 23 which may be of any desired length and is provided with a bail 24. This bail may be connected to a cable by which the device may be raised or lowered in the well as desired. However, this feature is of little importance as the device may be connected to any other form of operating mechanism.

In operation the device is assembled as shown in the drawings and the sleeve 20 positioned so that the openings 21 are out of register. The device may then be lowered in the well until it encounters the material to be removed. When the cutting blades 13 encounter the material to be removed from the well, the weight of the device will cause them to loosen the material adjacent the well casing, causing a core to be formed. Continued downward movement of the device, due to its weight, will cause the said core to be forced upwardly through the valve passage 17 and into the main cham-

ber in the body member 10. The device may then be elevated. This action causes the valve 18 to close, thus trapping the material in the main chamber. When the device is removed from the well, the sleeve 20 may be turned until the openings 21 are in register. The material may then be discharged from the main chamber.

Should the sand or shale become packed in the well bottom, the device may be raised and dropped a short distance a number of times in quick succession. This causes the device to rotate due to the angle of the cutting ends of the blades. Such rotation expedites the loosening of the material for passage through the valve and into the main chamber.

From the foregoing it will be seen that the device here disclosed, while simple in construction, is very efficient in operation and provides a mechanism, by the use of which well bottoms may be thoroughly cleaned at a minimum expense and without delay.

While I have shown the preferred form of my invention as now known to me, it will be understood that various changes might be made in the combination, construction and arrangement of parts by those skilled in the art, without departing from the spirit of the invention as claimed.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A clean-out bailer comprising a cylindrical body member having a pair of downwardly extending cutting blades of different lengths formed at its lowermost end, and a normally closed flap valve mounted within said body member just above said blades.

2. A clean-out bailer comprising a cylindrical body member having a pair of downwardly extending segmental cutting blades having angular lower ends, and a normally closed flap valve in said body member adjacent its lower end.

3. A clean-out bailer comprising a cylindrical body member having a plurality of downwardly extending segmental cutting blades of different lengths formed at its lower end and blades having oppositely inclined lower ends, said body member having a discharge opening formed therein, a turnable sleeve member mounted on said body member and formed with an opening therein which may be registered with the opening in said body member, and a normally closed flap valve mounted in said body member adjacent its lower end.

4. A clean-out bailer comprising a cylindrical body member having a plurality of downwardly extending cutting blades of different lengths formed at its lowermost end, said cutting blades having angular lower ends, said blades adapted to penetrate and loosen the material to be removed when the device is lowered into a well, and means for trapping said material within said body member so that it may be removed from the well with said member.

5. A clean-out bailer comprising a cylindrical body member having a plurality of downwardly extending cutting blades of different lengths formed at its lowermost end, said cutting blades having angular lower ends, said blades adapted to penetrate and loosen the material to be removed when the device is lowered into a well, means for trapping said material within said body member so that it may be removed from the well with said member, said body member having a discharge opening formed therein, and a closure for said opening.

6. A clean-out bailer comprising a cylindrical body member having a pair of downwardly extending cutting blades of different lengths formed at its lowermost end, said cutting blades being segmental and having angular lower ends, said cutting blades adapted to penetrate and loosen the material to be removed from the well when the device is lowered therein, and means for trapping said material within said body member so that it may be removed from the well with said member.

7. A clean-out bailer comprising a cylindrical body member having a pair of downwardly extending cutting blades of different lengths formed at its lowermost end, said cutting blades being segmental and having angular lower ends, said cutting blades adapted to penetrate and loosen the material to be removed from the well when the device is lowered therein, means for trapping said material within said body member so that it may be removed from the well with said member, said body member having a discharge opening formed in the side thereof, and a turnable closure member for said opening whereby the opening may be closed during the operative period of the device and opened to discharge the material trapped in the body member.

REUBEN C. BAKER.