R. B. RICHARDSON.

MEASURE FOR OIL WELLS.

APPLICATION FILED AUG. 1, 1917.

1,267,271. Patented May 21, 1918.

Fig. 1.

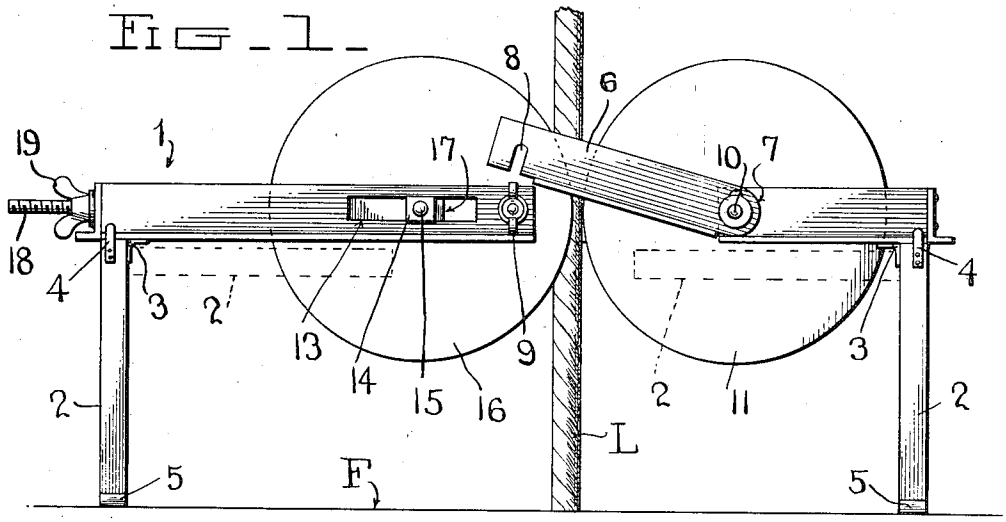


Fig. 2.

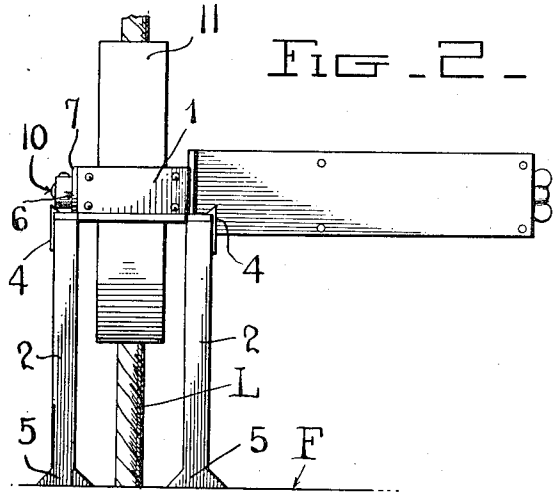
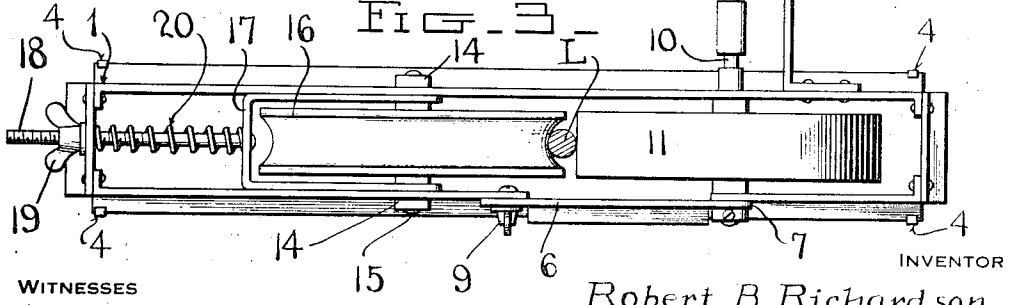


Fig. 3.



WITNESSES

L. B. James

N. L. Collamer

INVENTOR

Robert B. Richardson

BY Victor J. Evans

ATTORNEY

UNITED STATES PATENT OFFICE.

ROBERT B. RICHARDSON, OF ELECTRA, TEXAS.

MEASURE FOR OIL-WELLS.

1,267,271. Specification of Letters Patent. Patented May 21, 1918.

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To all whom it may concern:

Be it known that I, ROBERT B. RICHARDSON, a citizen of the United States, residing at Electra, in the county of Wichita and State of Texas, have invented new and useful Improvements in Measures for Oil-Wells, of which the following is a specification.

This invention relates to distance measuring instruments, and more especially to those having a rolling contact and a computer; and the object of the same is to produce a device for measuring the depth of oil and other wells by computing the distance preferably by the sand line or other line as it is let down from the earth's surface to the bottom of the well.

As is well known to those familiar with this art, the measuring of the depth of a well with an ordinary steel tape having a weight on its end, is an arduous task, the weight and the tape when let out some distance weighing 150 pounds, and the weight often failing to pass irregularities of the well. As also is well known to those familiar with the business, the tools all reach the bottom, and when let down by a line the latter is paid out by machinery. I propose to use the rope or line as it descends for measuring distance—thereby saving labor to the workman and economizing the time which would otherwise be consumed in letting down and withdrawing a measuring line. In other words, my invention is an attachment for use in connection with the sand line ordinarily employed in the drilling operation, and when not in use it can be laid aside.

Details are set forth in the following specification, reference being made to the accompanying drawings in which—

Figure 1 is a side elevation of this device ready for work.

Fig. 2 is a right end elevation.

Fig. 3 is a plan view.

In the drawings the numeral 1 designates a frame of rectangular contour, perhaps a foot long and one or two inches wide, supported at its ends by legs 2 hinged to the frame at 3 so that they may be folded upward when not in use, as seen in dotted lines, and appropriate catches 4 may hold these legs in folded position. At their lower ends the legs are widened into feet as best seen at 5 in Fig. 2 to give stability to the frame when set up, and these feet rest on the floor boards F at either side of the well so that the rope or line L may pass downward through the frame at about the midlength of the latter. This line may carry a tool or a drill, or any other object or instrument which is used in the ordinary course of drilling the well, but ordinarily it is a rope which is at times withdrawn and at times let down, and the tape is used only occasionally to ascertain depth. One side of the frame has a movable section indicated at 6 in Fig. 1, pivoted at one end at 7 and notched at the other end at 8, and this section is raised slightly in this view. This constitutes a gate through which the line can be passed into the frame. Then the gate is closed the notch 8 passes over a suitable fastening device such as a thumb screw 9 which is set up to hold the gate closed and the frame complete.

Through the frame at one side of the gate opening is a shaft 10 on which within the frame is fixedly mounted a contact wheel 11 whose circumference measures exactly one foot; and the shaft is extended into the casing of a computer or register best seen in Fig. 3 and designated broadly by the numeral 12. Details of the structure are unimportant, further than that it registers one foot for each rotation of the shaft 10, and therefore its total increases in feet. The sides of the frame at the other side of the gate opening are slotted as at 13, and in the slots are slidably mounted boxes 14 in which is journaled the shaft 15 of another contact wheel 16 preferably having a slightly curved surface. A yoke 17 connects the boxes and extends around the outside of this wheel, and from the center of the yoke a screw 18 passes through the end of the frame and carries the thumb nut 19.

Coiled on the screw between the yoke and the end of the frame is a spring 20. When the nut is turned in one direction the spring expands and the yoke and its wheel move inwardly, and when the nut is turned in the opposite direction the parts are drawn outward and the spring compressed. In either case the boxes slide in the sides of the frame. This wheel should be at one side of the gate opening and the other contact wheel at the other side.

At some time when a line is about to be let down into the well, this device is brought

out, its legs 2 opened out as seen in full lines in Fig. 1, its gate opened, and the line L passed through the open gate between the faces of the wheels. The frame is now stood with its feet on the floor boards, the gate closed and latched, and the thumb nut adjusted so that the line is gently clamped between the two wheels. Now the well machinery is operated to pay out on the line L rapidly. As it passes between the wheels, both rotate, and as the wheel 11 makes one rotation for each foot of line going past it, the computer or register is actuated accordingly. When the tool strikes the bottom of the well, a proper computation can be made to ascertain the depth of the well, if it be an oil well, in a manner which will be clear. The wheel 16 is now retracted, the gate opened, the instrument removed entirely from the line, its legs 2 folded and latched, and the entire apparatus put away for future use; and thereafter the ordinary function of the well machinery may be carried on without interruption.

What I claim as new, is—

A measuring device of the class described comprising a frame having an opening in one side, folding supporting legs for said frame, the side bars of the latter being slotted longitudinally at one side of said opening, boxes mounted in these slots, a shaft journaled in said boxes, a contact wheel mounted on said shaft, a yoke connecting said boxes, a screw extending from the center of said yoke through the contiguous end of said frame, a nut on the screw outside such end, a spring coiled on the screw between the end of the frame and center of the yoke, a second contact wheel journaled in the frame at the opposite side of the opening therein, a counting mechanism connected with the last-mentioned wheel.

In testimony whereof I affix my signature.

ROBERT B. RICHARDSON.