Oct. 30, 1923. 1,472,213

D. L. GILSTRAP

FISHING TOOL FOR JUNK IN WELLS

Filed Nov. 7, 1922

Fig. 1.

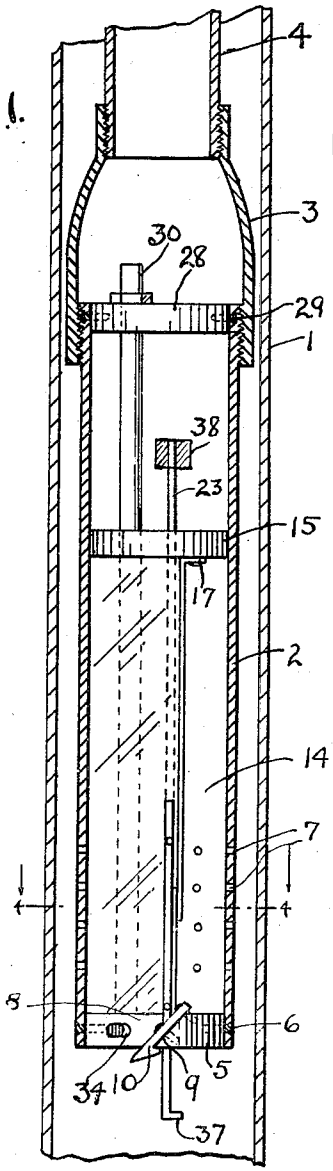


Fig. 5.

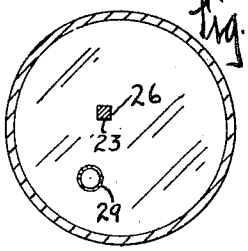


Fig. 3.

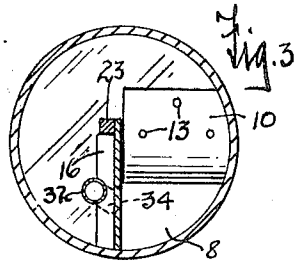


Fig. 2.

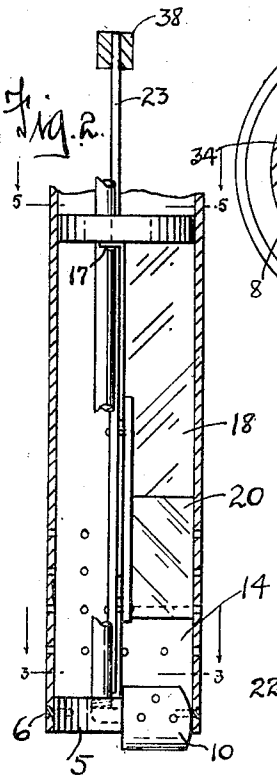


Fig. 4.

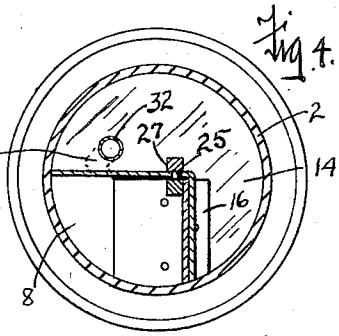


Fig. 6.

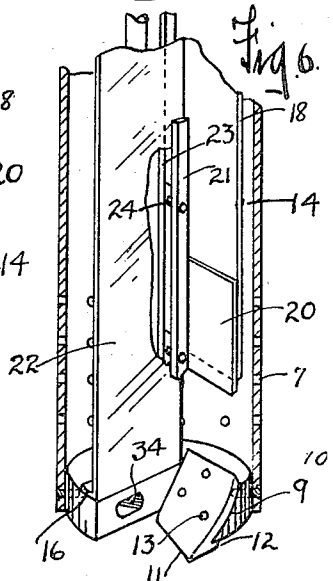
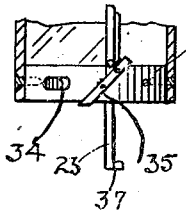


Fig. 7.



D.L. Gilstrap Inventor

By Jesse F. Stone

his Attorney

Patented Oct. 30, 1923. 1,472,213

UNITED STATES PATENT OFFICE.

DANIEL L. GILSTRAP, OF BATSON, TEXAS.

FISHING TOOL FOR JUNK IN WELLS.

Application filed November 7, 1922. Serial No. 599,494.

To all whom it may concern:

Be it known that I, DANIEL L. GILSTRAP, a citizen of the United States, residing at Batson, Hardin County, Texas, have invented a certain new and useful Improvement in Fishing Tools for Junk in Wells, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make use of the same.

My invention relates to tools for fishing out and removing pieces of broken tools, rock, or other "junk" from wells.

The object of my invention is to provide a device which will scrape up and remove small or broken pieces of steel or lost tools from the well.

Another object is to provide a fishing tool which will scrape up material from the bottom of the well, and means thereon to prevent the loss of such material from the device when the same is being removed from the well.

Another object of the invention is to provide efficient means for forcing the junk or other objects up into the device whereby it may be removed.

Other objects and advantages will be more clearly set forth in the specification which follows.

Referring to the drawing herewith illustrating the preferred embodiment of my invention, Fig. 1 is a central longitudinal section through a well casing showing my tool therein, some parts of said tool being in elevation; Fig. 2 is a similar view of the device taken at right angles to the position shown in Fig. 1; Fig. 3 is a transverse section on the line 3—3 of Fig. 2; Fig. 4 is a similar section on the line 4—4 of Fig. 1; Fig. 5 is a similar view taken on the line 5—5 of Fig. 2; Fig. 6 is a broken perspective view of the lower portion of the tool, and Fig. 7 is a broken view illustrating another embodiment of the scraping device.

In the drilling of wells for oil, water, gas, etc., it frequently occurs that bolts, nuts or broken pieces of drilling tools are lost in the well and lie upon the bottom of the hole, where they seriously interfere with the progress of the drilling. Some times the cutters from a roller bit will become loosened and lost in the hole and cannot be milled to pieces in such way as to allow the drilling to proceed. In the use of my improved device I desire to introduce the tool into the bottom of the well and by rotating it to scoop up and retain such broken pieces of junk so that they may be removed and the drilling proceed.

In the drawing, wherein like numerals have been applied to like parts in all the views, I have illustrated my device in Fig. 1 as being inserted downwardly within a casing 1. The tool comprises an outer length of pipe 2 threaded at its upper end for connection by means of a nipple 3 to a drill stem 4. The lower end of the pipe is partially closed by means of a cylindrical block 5 secured firmly in place by means of set screws 6 or other similar expedients. The pipe 2 is perforated at 7 adjacent the lower end thereof to allow the passage therethrough of water which may enter the tool.

The lower block 5 at the end of the tool is provided with a sector-shaped opening 8 extending from the outer margin to a point somewhat past the center thereof. On one side of this opening I form an inclined seat 9 for a scraping knife or blade 10. This blade, as seen particularly in Fig. 6, is formed with a scraping edge 11 at its lower end and projects slightly beyond the block 5 upon which it is mounted and has a rearwardly-extending portion 12 fitting beneath the lower edge of the block. The scraper is secured to the block by means of set screws or bolts 13 extending through the blade of the scraper and attached within the block. The upper end of the blade extends slightly above the block and the upper set screw serves to hold it firmly at that point. The scraping blade is designed to extend slightly past the middle of the tool so that it will scrape the entire bottom of the hole as the tool is rotated in the usual right-hand direction.

Immediately above the lower block 5 is formed a chamber 14 extending for a greater portion of the distance from the lower end to the upper end of the pipe 2 and having an upper cylindrical block 15 fitting within said pipe 2 to bound the upper end of the said chamber. The opening 8 in the lower block 5 has vertically extending walls at each edge thereof, bounding the quadrant of the circle, these walls being attached at

their lower ends at 16 to the block 5 and at their upper ends at 17 to the block 15. The walls, therefore, serve to enclose a chamber including about three quarters of the area of the blocks. The wall 18 on the side adjacent the scraping blade has therein adjacent the lower end a vertically slidable door 20. This door it attached at its inner end to a bar or rod 21 of wood or other light material, positioned on the side of the wall 22 adjacent the opening. This bar 21 is attached to a second bar 23 on the opposite side of the wall 22 and spaced therefrom by means of rods or bolts 24; said bolts 24 are adapted to move in a vertical slot 25 formed in the wall 22. The upper end of the bar 23 extends through an opening 26 in the block 15 to a predetermined point above the said block. It also passes downwardly through the lower block 5 by means of an opening 27 therein. The bar 23 is squared and fits within the squared openings 26 and 27 whereby rotation is prevented.

The upper end of the pipe 2 is fitted with a third block 28 which is secured in place flush with the upper end by means of set screws or pins 29 passing through the pipe 2 and secured within the block. An opening 29 is formed therein at a point adjacent one side of the center thereof to allow the passage therefrom of a pipe 30 to conduct water from the upper drill stem 4 to the scraping point of the blade 10. It extends through the central block 15 and fits tightly in the lower block 5 by being secured within a recess 32 therein. The recess 32 communicates with a laterally directed opening 34 which is curved adjacent the wall of the opening 8 so as to direct the liquid from the pipe 30 directly toward the point of the blade 10. This is shown in dotted lines in Fig. 4.

The blade shown in Figs. 1 to 6 of the drawing are intended particularly for a soft formation. In extremely hard formation it may be preferable to use a scraping blade 35 such as is shown in Fig. 7. This blade is like the blade 10 except that the lower end extends only very slightly beneath the lower end of the tool and will therefore take only part of the downward thrust of the tool upon the bottom of the hole and act to scrape the rock somewhat more efficiently.

In the use of my device the parts are assembled as shown in Fig. 1. The rod or bar 23 will be moved into its lower position as there shown and will extend several inches below the lower block 5. The door 20 will be thus in closed position. When the tool strikes the bottom of the hole the bar 23 will be forced upwardly, thereby opening the door 20 and maintaining the same in raised position while the device is operating. A lower hooked end 37 on the bar will fit within a recess provided therefor in the bottom of the block 5 and will thereby hold the rod and door in raised position.

The rotation of the device in the usual right-hand direction will serve to scrape the bottom of the hole and pieces of broken steel or rock, or similar objects will be scraped upwardly by the blade and carried into the lower end of the chamber 14. The blade extending slightly above the lower end of the chamber will prevent its easy removal. The current of flushing fluid pumped downwardly through the drill stem and the pipe 30 will be projected directly against the blade and will assist in throwing these objects into the retaining chamber. When these objects have been scraped into the device the said device will be raised upwardly from the bottom, allowing the rod 23 to drop downwardly. If desired, a weight 38 may be fixed upon the upper end of the rod 23, thus assuring the dropping of the door when the device is raised from the bottom. Water finding an entrance to the chamber with the rotation of the device will be adapted to be drained therefrom through the openings 7.

While this tool is adapted simply for scraping material from the bottom of the hole, it will in certain cases perform a slight drilling function. It is not intended for drilling, however, and may therefore be built fairly cheaply of light construction. It is only intended for the scraping of the bottom of the hole and will therefore accomplish its object without the necessity of the usual heavy construction used in drilling tools. It is obvious that it may be used for removing samples of the formation, especially where the formation is comparatively soft. The further objects and advantages of this device will be apparent to one skilled in the art without further description.

What I claim as new and desire to protect by Letters Patent is:

1. In a fishing tool, a tubular cylindrical housing, a closure for the lower end having a sector-shaped opening therein, a scraping blade on one side of said opening, a chamber in said housing having walls around said opening, a sliding door in the wall above said blade, automatic means to open said door actuated by contact of the tool on the bottom of the hole, and means to close said door when the tool is raised from the bottom.

2. In a fishing tool, a housing, a closure for the lower end having an opening therein, a scraping blade at one side of said opening, a receiving chamber in said housing having walls around said opening, a vertically slidable door in the wall above said blade, means to automatically open said door when the tool is in operative position, said door adapted to automatically close when said tool is raised from the bottom.

3. In a fishing tool, a housing having closures at both ends thereof, the lower closure having a sectoral opening therein, a forwardly inclined blade on one side of said opening and a water conducting pipe extending through said housing and closures and adapted to discharge liquid directly against the forward side of said blade, whereby material on the bottom of the hole is forced into said housing.

4. In a fishing tool, a housing having an opening therein at the lower end, means adjacent said opening to scrape up small objects from the bottom of a well hole, flushing means to assist said scraping means in gathering up said objects through said opening and means operable when said tool is raised from the bottom to retain said objects in said housing.

5. In a fishing tool, a tubular housing, a lower end closed except for a sectoral-shaped opening therein, a chamber in said housing having a sliding door therein above said opening and means to open said door automatically when said tool is in operative position, said door adapted to close when said device is raised, a pipe extending through said housing to direct water into said opening, the walls of said housing having perforations therein to drain liquid therefrom.

In testimony whereof I hereunto affix my signature, this the 3rd day of November, A. D. 1922.

DANIEL L. GILSTRAP.