Jan. 1, 1924

1,479,132

L. J. GIANELLA

COMBINATION REVERSING JAR

Filed Sept. 18, 1922

Fig. 1.

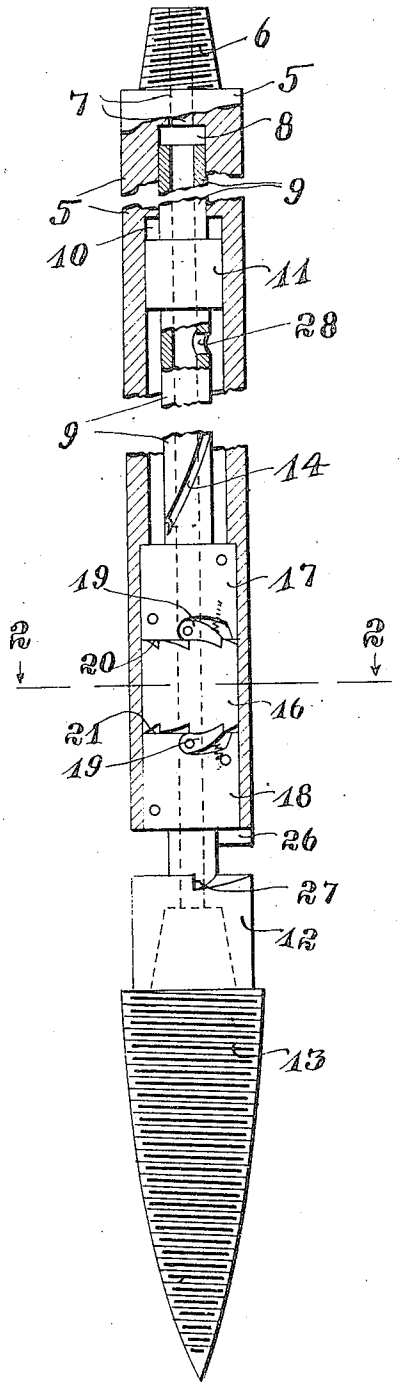


Fig. 2.

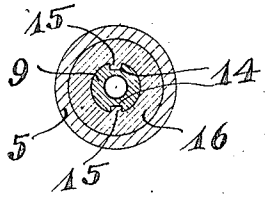


Fig. 3.

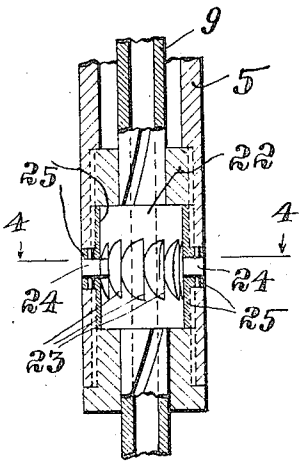
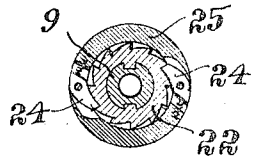


Fig. 4.



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UNITED STATES PATENT OFFICE.

LEO J. GIANELLA, OF LONG BEACH, CALIFORNIA.

COMBINATION REVERSING JAR.

Application filed September 18, 1922. Serial No. 588,889.

To all whom it may concern:

Be it known that I, LEO J. GIANELLA, a citizen of the United States, residing at Long Beach, in the county of Los Angeles and State of California, have invented a new and useful Combination Reversing Jar, of which the following is a specification.

My invention relates to devices used in connection with so-called fishing tools, and for making connections below the surface in a well.

One of the objects of this invention is to provide a device by which a tubing spear, or socket, or bowl can be screwed or rotated to connect with a member in a well by a jarring motion.

Another object is to provide a device that will screw into a left-hand drill pipe when operated, either, in connection with left-hand or right-hand operating pipe; or that may be used attached to a left-hand or right-hand drill pipe, to be used within the well, for catching and screwing into, either, left-hand or right-hand tubing or tools in the well.

Another object is to provide a device that can be rotated by longitudinal jarring motions.

Other objects will appear from the following description and appended claims as well as from the accompanying drawing, in which—

Fig. 1 is a fragmentary longitudinal mid-sectional view of a device embodying the invention, some of the parts being illustrated in side elevation to show their operative relation.

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

Fig. 3 is a fragmentary longitudinal mid-sectional view of a slightly modified form of engaging means, partly in side elevation.

Fig. 4 is a cross section on line 4—4 of Fig. 3.

The inclosing housing or main body member 5 of the device as illustrated in Fig. 1 is provided with the pin end 6, to be connected to other tools used in deep wells. The main body member 5 is preferably provided with a central bore or conduit 7, to form the passage for circulating liquids. The conduit 7 is enlarged to telescopically engage and inclose the hollow fluid-transmitting stem 9. The conduit 7 is further enlarged, as indicated at 10, to form the cylinder for the piston 11. The stem 9 extends further downward, and is at its lower termination provided with a socket end 12, to engage with other tools or members, to be used in a well, a so-called spear being indicated at 13.

The stem 9 is provided with helical grooves 14, in which corresponding lips or projections 15 are disposed to slidingly engage the block 16 with the stem. Being slidingly mounted on the stem 9, a moving of the block 16 in longitudinal direction in relation to the stem means also a rotating movement of the block 16 around the stem 9 by reason of the helical engagement between the two members. The block 16 is for this reason disposed turnably within the body 5.

Abutting blocks 17 and 18, on the other hand, are disposed firmly engaged within the body 5. An engagement, yieldable in one direction, but holding the operating block 16 against rotating movement in the other direction, is provided between the several blocks. In Fig. 1, the pawls 19 are provided on the blocks 17 and 18, to engage with the operating block 16. The blocks 17 and 18 form also abutting shoulders as indicated at 20 and 21, between which the operating block is held in position against shifting movement within the body 5.

Jarring the body downwardly, considering that the spear 13 is resting on some member in a well, to which and with which the device is to be engaged, the operating block 16 is forced to slide along the helical grooves 14 on the stem 9, by reason of the abutting engagement of the block 16 between the blocks 17 and 18, the shoulder 20 resting on the operating block 16. Since the stem cannot move downwardly as long as the spear is resting on a tool or other article in a well, the body, in being jarred, compels the operating block 16 to slide downwardly on the stem 9 along the helical grooves 14. In a deep well, when using rotary drill pipe, this drill pipe represents an enormous weight and a rigid body which will not very quickly react on a turning motion or force, with the result, that the stem is forced to rotate as the great weight of drill pipe is jarred downwardly, on account of the helical interengagement between the body and stem.

In lifting the drill pipe, this longitudinal movement does not influence the stem 9, since the ratchet-engagement of the pawls 19 with the operating block 16 allows the block to move upwardly, following the

grooves 14, rotating between the blocks 17 and 18 free of engagement with the pawls, so that the body can move and can be jarred up- and downwardly without being rotated, while the stem is caused to rotate through the operating block and the helical grooves on the stem 9.

The body 5 itself is illustrated broken at several points, to indicate that the body can be made of a length and to represent a weight sufficient to actuate the stem by a jarring of the body, without requiring additional weight in drill pipes, so that this device can easily be attached to a cable for making connection with a lost tool in a well.

With this device, the spear or other fishing tool may be provided with, either left-hand or right-hand threads, to be used for catching a lost tool or articles of the left-hand or right-hand type, by providing the stem of different devices with left-hand or right-hand grooves for engagement with the operating block 16. The device itself is then sufficient to recover a tool, regardless of the type of tools used in a well, since the connections above the pin 6 are very little influenced by the jarring and turning motions of the stem, as long as the body 5 is made heavy enough to serve in the manner described above.

In Figs. 3 and 4, a slightly modified form is illustrated, the operating block 22 being provided with radial teeth instead of the teeth on the ends of the block 16 in the form of Fig. 1. The radial teeth 23 are provided in the cylindrical outer surface of the block 22. Pawls 24 are provided within the connecting coupling 25, to act in a similar manner on the stem 9 by a jarring of the housing or body 5.

The lower end of the body 5 is preferably provided with jaw-like means 26, to engage with cooperating jaw-like means 27 on the stem 9 for disengaging the spear or other fishing tool in case that the lost tool or article cannot be dislodged from the well.

In addition to the jarring, the device can also be operated by pressure through the conduit 7. The stem 9 is for this reason provided with an aperture or opening 28, forming a communication between the conduit 7 and the space between the piston 11 and the block 17 within the body 5. Any liquid forced through the conduit 7 and through the hollow stem 9 passes through the opening 28 to force the piston 11 and the block 17 apart, so that the body 5 with the operating block 16 are forced along the curved grooves 14 of the stem in a similar manner as by the jarring described above.

The pressure system and the jarring system can, of course, be combined; or, either of the systems can be used separately without departing from the principle of this invention.

Having thus described my invention, I claim:

1. In a deep well tool, a body member, a stem member shiftably and turnably disposed in the body, and ratchet means in the body adapted to free the stem so as to allow the stem to slide in longitudinal direction in relation to the body without turning.

2. In a deep well tool, a body member, a stem member shiftably and turnably disposed in the body, engaging means between the body and the stem embodying a helical pathway and ratchet mechanism for rotating the stem when the body is forced in a longitudinal direction and adapted to allow the body to slide back in the opposite direction freely without turning the stem.

3. In a deep well tool, a hollow body member, a hollow stem member shiftably and turnably disposed in the body, engaging means between the body and the stem embodying a helical guideway of a form to turn the stem a short distance when the body is forced in longitudinal direction, the hollow body and stem forming a continuous conduit, and means to allow a forcing of liquids through the conduit into the device for moving the stem in relation to the body.

4. In a deep well tool, two telescopically engaged members having a passage therethrough and having means for slightly turning one member in relation to the other when actuating both in longitudinal direction to each other, and means forming communication with the passage for actuating the members by liquids passing through the passage.

5. In a deep well tool, two telescopically engaged members having a passage therethrough, one member having oppositely arranged abutting shoulder members firmly secured thereto, the other member having a helical guideway, and an actuating member disposed between the shoulder members for a turning movement and having means for slidingly engaging with the helical guideways in the second-named telescoping member.

6. In a deep well tool, two telescopically engaged members, one of the said members having spaced abutments, the other of the said members having a helical guideway, an actuating collar having means for slidingly engaging with said guideway and adapted to turnably seat between the said spaced abutments, and means for turning one member in relation to the other when shifted in longitudinal direction and adapted to allow a shifting in the opposite direction without the turning effect.

7. In a deep well tool, two telescopically engaged members having means for slightly turning one member by a shifting move-

ment in one direction and adapted to leave the one of the members uninfluenced when shifting in the opposite direction, and means for engaging both members for a turning movement in the reversed direction.

In testimony that I claim the foregoing as my invention I have signed my name in the presence of two subscribing witnesses.

LEO J. GIANELLA.

Witnesses:
O. H. KRUEGER,
JESSIE A. MANOCK.