July 2, 1929. J. C. STOKES ET AL 1,719,144

OVERSHOT

Filed April 30, 1928

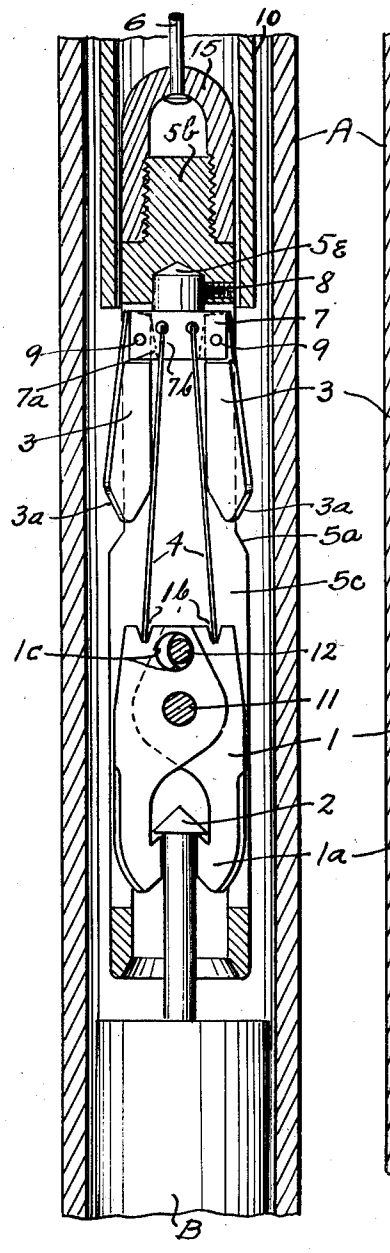


Fig. 1.

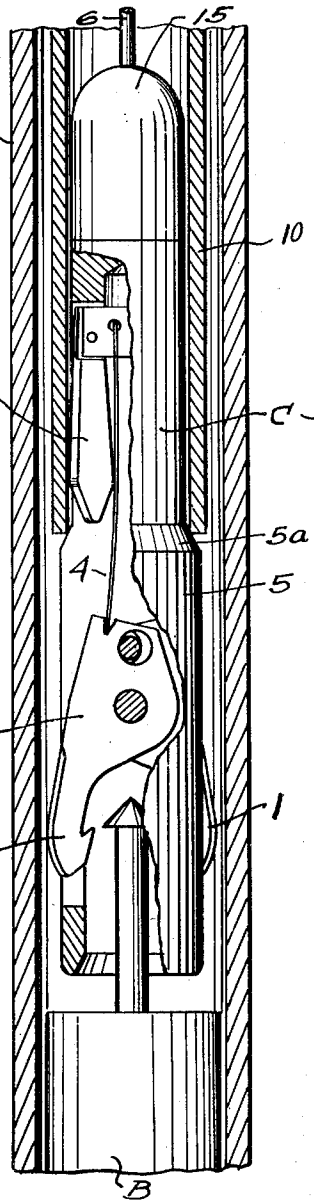


Fig. 2.

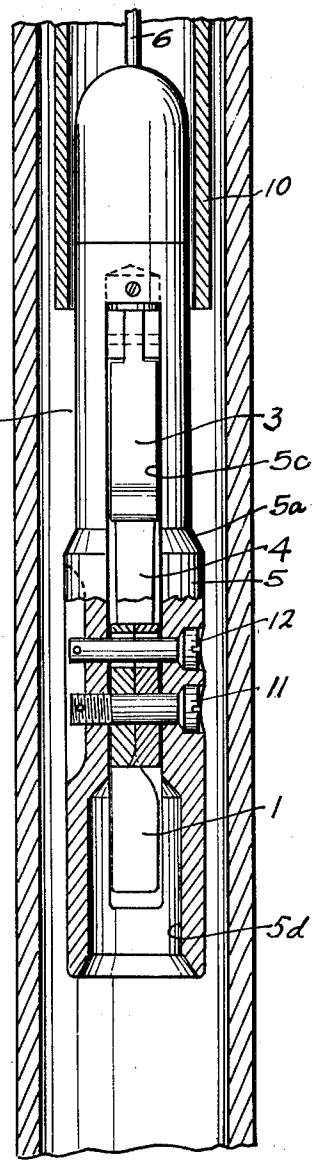


Fig. 3.

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UNITED STATES PATENT OFFICE.

JOHN C. STOKES, OF HOUSTON, TEXAS, AND FRANK C. GIGNOUX, OF LOS ANGELES, CALIFORNIA, ASSIGNORS TO REED ROLLER BIT COMPANY, OF HOUSTON, TEXAS, A CORPORATION OF TEXAS.

OVERSHOT.

Application filed April 30, 1928. Serial No. 273,801.

This invention relates to overshots, and more particularly to overshots of the type covered by Letters Patent of the United States No. 1,442,188, to John C. Stokes, of January 16th, 1928.

The overshot disclosed by the said Letters Patent embodies a pair of pivoted dogs attached to the end of a cable and having teeth on the lower end thereof to engage the conical head of a collapsible bit or the like, the upper ends of said jaws remote from said teeth extending laterally to be engaged by a trip tube dropped thereon to swing the teeth out of engagement with said conical head or the like.

The laterally extending upper ends of the dogs just referred to quite often become caught on irregular internal surfaces of deep well drill stems and are either broken off or so badly worn that they no longer extend into the path of the trip tube and consequently the bit or other element held by the dogs cannot be released.

This invention has for one of its specific objects the provision of a new and improved overshot embodying dogs the upper ends of which do not project laterally outside of the overshot body, and are therefore not subjected to the danger of becoming worn or broken, the releasing movement of the dogs being effected by means actuated by the trip tube.

Other objects of the invention will hereinafter appear.

In the accompanying drawings, which are illustrative of the preferred embodiment of the invention, Fig. 1 is a fragmentary side elevation partly in section, of a drill stem with a bit therein, and the overshot gripping the conical head of the bit; Fig. 2, a view similar to Fig. 1 and showing the teeth of the dogs moved out of engagement with the conical head by the trip tube; and Fig. 3, a view similar to Fig. 1 and at a right angle thereto.

The drill stem is shown at A, the bit at B, and the overshot at C.

The bit comprises no part of the present invention, and is shown only to illustrate one use to which the overshot may be put. Ordinarily, collapsible bits are lowered into drill stems by means of the overshot on the end of a cable. When the bit reaches the lower end of the stem, the overshot is disconnected by dropping a trip tube on the dogs, as above pointed out, after which it is removed, and drilling commenced. When removal of the bit becomes desirable, the overshot is again lowered into the stem and automatically becomes connected to the bit.

Fig. 1 illustrates the overshot connected to the bit. It will be observed that the teeth 1^a of the dogs 1 are gripping the conical head 2 of the bit.

In Fig. 2, the trip tube 10 has effected disengagement of the dogs and the head of the bit by moving the upper ends of the dogs 1 inwardly by means of the arms 3 and springs 4. From this position, the overshot may be moved upwardly away from the bit.

The dogs 1 do not extend outwardly from the overshot body 5 and therefore cannot be worn or broken by becoming caught on irregularities in the drill stem A.

The reduction of the upper end of the body 5 forms a shoulder 5^a to limit the downward movement of the trip tube 10.

The cable 6 is suitably secured to the cap 15 which is screwed on the shank 5^b of the body 5. The body is longitudinaly slotted as shown at 5^c for the reception of the dogs 1, arms 3, and springs 4; and it has a recess 5^d in its bottom for the reception of the bit or other element to be engaged by the dogs.

A T-shaped plug 7 extends into a socket 5^e in the upper wall of slot 5^c and is held therein by set screw 8. This plug supports the arms 3 which are pivoted at 9 in the lateral slots thereof. The inner walls 7^a of the slots are angular, as shown, so that the arms 3 can swing outwardly only a limited distance, and cannot, therefore, become caught on obstacles in the drill stem.

The plug 7 has also a pair of diverging slots 7^b in which the springs 4 are secured.

The springs 4 extend downwardly and outwardly into the pockets 1^b in the upper ends of dogs 1.

The dogs 1 are pivoted at 11 and have openings 1^c through which the pin 12 extends. The diameter of each opening 1^c is much greater than the diameter of the pin 12, so the dogs 1 may swing only a limited amount on their pivot 11, and objectionable lateral projection thereof prevented.

The dogs 1 are normally in the position illustrated by Fig. 1, both gravity and the springs 4 serving to urge the dogs into this position. The head 2 forces the dogs apart and become locked therebetween. When the trip

tube is dropped onto the overshot, it moves the arms 3 inwardly, the arms 3 moving the springs 4, and the springs 4 the upper ends of the dogs 1. Thus the teeth 1ª of the dogs are moved out of engagement with the head 2.

It will be noted that all of the parts may quickly and easily be separated, and so dogs of various sizes may successively be used with the other parts.

The invention is not limited to the preferred embodiment shown and various changes may be made without departing from the scope of the following claims.

We claim:

1. An overshot having movable dogs, dog-actuating arms, and springs connecting said dogs and arms.

2. An overshot having movable dogs, spring means serving to normally hold said dogs in an engaging position, and means to actuate said spring means to move said dogs into a releasing position.

3. In an overshot, a pair of dogs, each of said dogs having a pair of openings therein, a pivot pin extending through one of the openings in each dog, and a stop pin extending through the other of the openings in each dog, said stop pin fitting loosely in the last-mentioned openings, whereby the pivoted movement of the dogs is limited.

4. An overshot having a body, dogs movably mounted on said body, and arms movably mounted on said body above and operatively connected to said dogs and adapted to be actuated by tripping means.

5. An overshot having a body with a slot therein, dogs movably mounted in said slot and arms movably mounted in said slot, extending laterally to be engaged by tripping means, and operatively connected to said dogs.

6. An overshot having a body with a slot therein, dogs movably mounted in said slot, arms movably mounted in said slot and extending laterally to be engaged by tripping means, and spring means in said slot and operatively connecting said dogs and arms.

7. An overshot having a body with a reduced upper portion, dogs movably mounted in the lower portion of said body, and arms movably mounted in said reduced upper portion operatively connected to said dogs, and extending laterally out of said body to be engaged by tripping means.

8. An overshot having a body, said body having a shoulder, dogs mounted in said body below said shoulder, arms mounted in said body above said shoulder, operatively connected to said dogs, and a trip tube to actuate said arms, said shoulder limiting the downward movement of said tube.

9. An overshot having a body, arms pivotally mounted in said body, springs mounted in said body between said arms, dogs connected to said springs and means to actuate said arms.

10. An overshot having a body, dogs and arms movably mounted in said body, the outward movement of said dogs and arms being limited, said dogs and arms being operatively connected together, said arms being adapted to be engaged by tripping means.

11. An overshot having a body, a removable plug in said body, arms pivoted to said plug, springs carried by said plug adjacent said arms, dogs removably mounted in said body and connected to said springs, and means to actuate said arms to move said dogs.

In testimony whereof, we hereunto affix our signatures.

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FRANK C. GIGNOUX.