Oct. 3, 1933. T. N. ROSE 1,929,332

DRILL PULL

Filed May 28, 1932 2 Sheets-Sheet 1

Fig. 1.

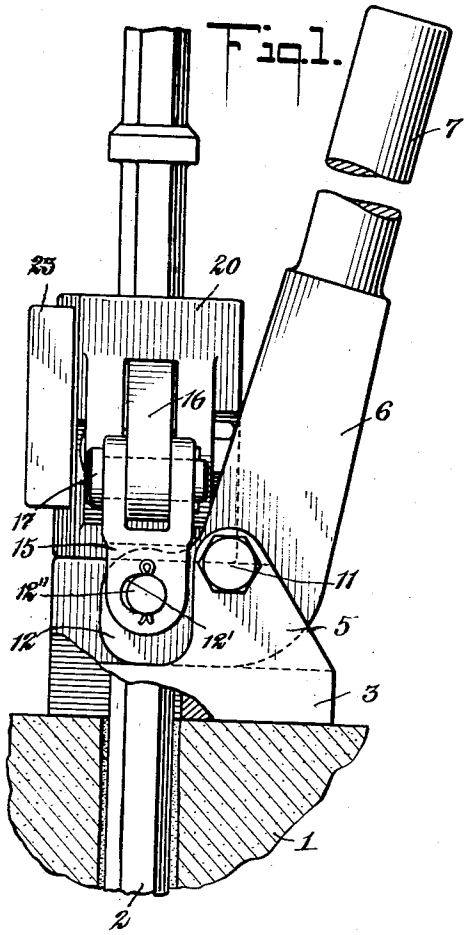


Fig. 2.

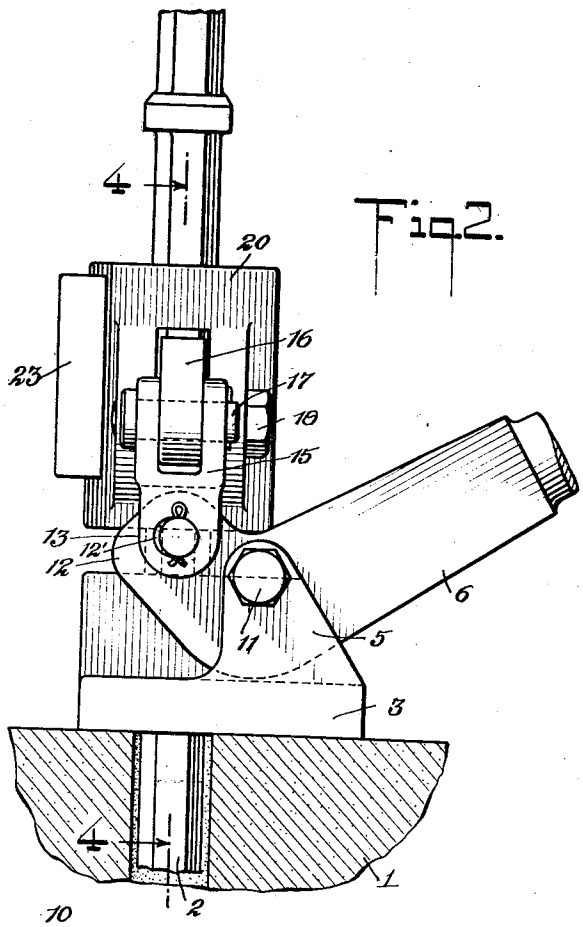
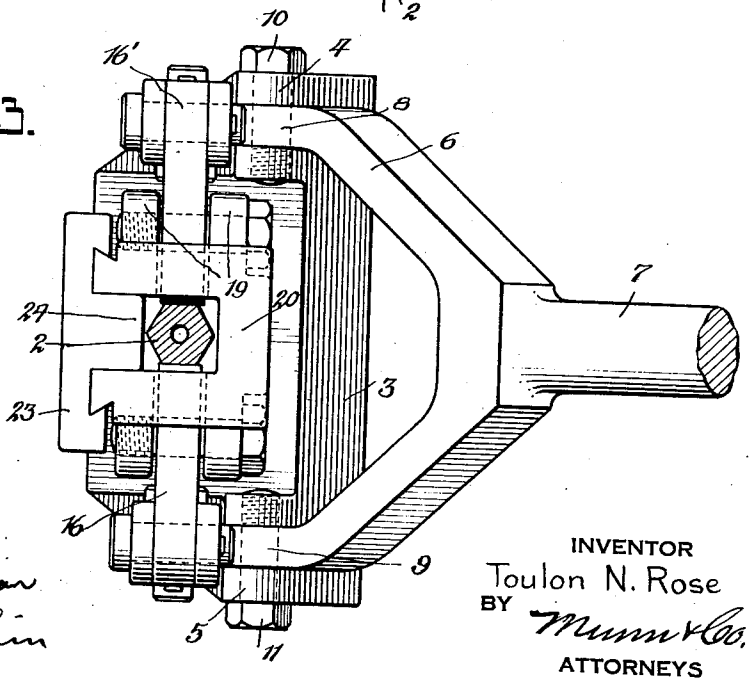


Fig. 3.



WITNESSES

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Fig. 4.

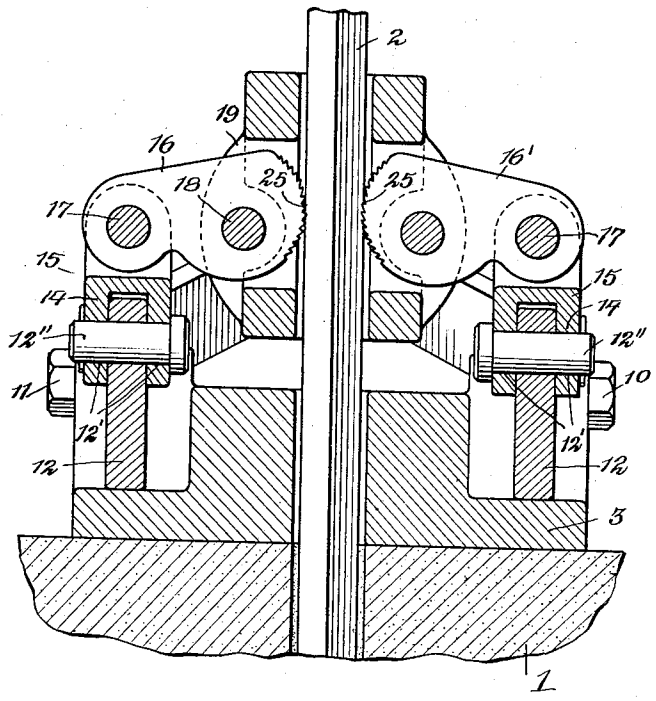


Fig. 5.

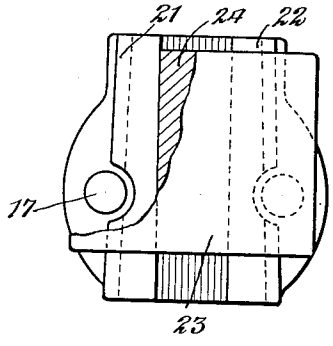
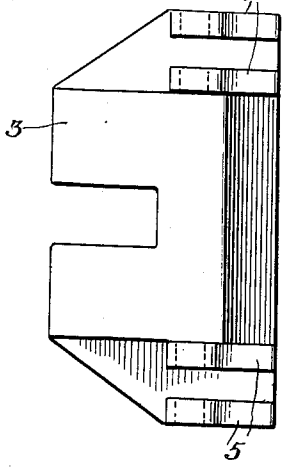


Fig. 6.



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UNITED STATES PATENT OFFICE

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DRILL PULL

Toulon N. Rose, Grantwood, N. J.

Application May 28, 1932. Serial No. 614,263

2 Claims. (Cl. 254—31)

This invention relates to drill pulls and has for an object to provide an improved construction wherein the device may be readily fitted to a drill which has become stuck in a stone or other material whereby the device may be caused to function to pull the drill loose.

Another object of the invention is to provide a drill pull forming gripping and pulling means arranged to readily straddle a drill and then function to grip and pull the drill by successive actions to any desired extent.

A further object, more specifically, is to provide a drill pull for large stone drills which is formed with a drill straddling member associated with means for preventing spreading thereof, the drill straddling member being also associated with a system of grips and levers whereby upon the swinging of a given lever a drill will be gripped and then pulled longitudinally a predetermined distance, the structure being such that the parts may be quickly swung back and another gripping and pulling action secured.

In the accompanying drawings,—

Figure 1 is a side view of a drill pull disclosing an embodiment of the invention, the same being shown in a position ready to pull a drill which has become stuck in the body of stone or other material.

Figure 2 is a view similar to Figure 1 but showing the parts after they have been operated.

Figure 3 is a top plan view of the structure shown in Figure 1, the drill being shown in section.

Figure 4 is a vertical sectional view through Figure 2 on line 4—4.

Figure 5 is a detail fragmentary front view of the drill-receiving box, certain parts being broken away for illustrating the tapering of the dove-tail guides.

Fig. 6 is a top plan view of the base.

Referring to the accompanying drawings by numerals, 1 indicates a block of stone, cement or the like, into which the drill 2 is being forced in the usual manner. The drill 2 may be three feet long or six or eight feet long, and when it is forced into a stone or other material for substantially its full length, it oftentimes becomes stuck by reason of some fault of the stone. When once it has become stuck, it is very difficult to remove and in many instances it cannot be removed by the pulling devices now in common use. The drill 2 ordinarily is driven by intermittent blows of a pneumatic hammer or some other device and, consequently, it becomes more or less wedged in place before the operator realizes that the drill is having difficulties. When once it becomes firmly wedged it requires a very strong pull to dislodge the same. In the accompanying drawings one embodiment of the invention is shown which is adapted to grip a drill under these circumstances and to pull the same a short distance. This action may be repeated as many times as desired so that the drill will be intermittently pulled until it is sufficiently loose to be operated by hand.

As shown in the drawings, the drill pull is provided with a base 3 having pairs of upstanding ears 4 and 5 which may be integral with the base or may be rigidly secured thereto. Preferably, the parts are cast or otherwise formed integral so as to receive the lever 6. This lever is provided with an arm 7 whereby it may be moved back and forth. The lever 6 is bifurcated, as shown in Figure 3, and the respective ends 8 and 9 are fitted into the ears 4 and 5 and journaled therein by the pins 10 and 11. The ends 8 and 9 are each provided with an extension 12, as shown in Figures 1 and 2, said extensions each carrying a pin 12, which extends through the respective ends 14 of the double clevis 15. The upper part of the double clevis 15 straddles the gripping lever 16 and is pivotally connected therewith by a pin 17.

It will be understood that the gripping levers 16 and 16' are identical, and also, the respective double clevises 15 and associated parts are identical, so that the description of one will apply to both. The reason that two are provided is in order that the drill 2 may be gripped on diametrically opposite sides, as shown in Figure 4, and then forced upwardly.

As illustrated in Figure 4, the gripping lever 16 is journaled on the pin 18, which in turn is journaled in a suitable enlargement 19 on the drill-receiving box 20. This box is preferably rectangular in cross section, as shown in Figure 3, with one open side, and is, preferably, cast or otherwise formed with rather thick walls. The open side of this box is provided with inclined dove-tail runways 21 and 22 which receive a connecting block 23 having an extension 24 projecting into the opening in the box 20, so that said opening will be left square in cross section, as illustrated in Figure 3. The connecting block 23 is removed when it is desired to use the device, and after it is removed, the lever 6 is moved to the position shown in Figure 1, and then the device is moved to straddle the drill 2. After this has been done, the connecting block 23 is slid into place so as to prevent any spreading of the box 20. Then the arm 7 is swung

downwardly, as shown in Figure 2, and as it starts to move downwardly, the extensions 12 will move upwardly and will swing the gripping levers 16 and 16' until they grip the drill 2. After these gripping levers have firmly gripped the drill 2, any further movement in an upward direction of the extensions 12 will cause the levers 16 and 16', box 20 and associated parts to move as a unit upwardly, and as it moves with the serrated edges 25 of the respective levers 16 and 16', the drill 2 will also be moved. In a full-sized device, this movement is usually very small, as, for instance, from one-half inch to one inch, but by swinging the arm 7 back to the position shown in Figure 1, and then upwardly again, the gripping levers will be released, move downwardly, grip at the lower position and then move upwardly again so as to give another pull to the drill. In this way by moving the arm 7 back and forth, the device will intermittently grip the drill and will step by step pull the same. Ordinarily, after the drill has been pulled for a few inches or even less, it is sufficiently loose to be removed manually. This pulling action, as just described, will not injure the drill and may be done quickly at any time. After the drill has been released it may be moved out of the hole and used somewhere else or may be again used in the same hole.

The movement of the respective double clevises 15 are substantially in a straight line while the extensions 12 move through a very small arc. As the double clevises are swingably mounted on the extensions 12, and the clamping levers are at right angles with each other, the swinging action just described may readily take place. The extensions 12 are each provided with a slot 12' for accommodating the respective journal pins 12'' so that there will be no pinching action as the lever 6 moves from the position shown in Figure 1 to that shown in Figure 2.

In operation, when a drill becomes stuck and it is desired to remove the same, the connecting block 23 is removed and the device is slid into the position shown in Figure 1. The block 23 is then replaced and the lever 6 swung downwardly to the position shown in Figure 2. The first part of the swinging movement causes the gripping levers 16 and 16' to function and then the remaining part moves the box and associated parts including the drill 2 upwardly a short distance. The lever 6 is then swung back until the parts again assume the position shown in Figure 1. If the drill is sufficiently lose by this one operation, the device is removed from the drill, but if the drill is not sufficiently loose, this operation is repeated a second or more times. After the drill has become sufficiently loose, the connecting block 23 is slid off of its guides 21 and 22, and then the device moved at right angles away from the drill, after which the block 23 is replaced and the device set to one side until it is again needed. In this way, a stuck drill may be quickly released and the drilling operation continued, or the drill used some other place. It will be noted that there is no damage done to the drill and when it is removed it is as straight as it was before the device was operated.

I claim:—

1. A drill pull including a base having a notch extending from one side whereby the base may be slid so as to straddle a drill, said base being provided with a pair of apertured ears at each end, a lifting box open at one side fitting around the inner end of said notch whereby the lifting box may straddle a drill when the base is slid to straddle a drill, a pair of diametrically oppositely positioned gripping and lifting levers carried by said lifting box and positioned to grip and lift the drill extending through said box, a lever having a bifurcated end positioned to have the bifurcated end extend between the respective pairs of ears on said base, pins for pivotally connecting said bifurcated members to the ears, each arm of the bifurcated members having an extension, and a member pivotally mounted to the upper end of each of said gripping levers and to said extensions, whereby when said lever having the bifurcated end is caused to function it will swing the gripping levers to a gripping position and then move the gripping levers, the lifting box and drill in a direction normal to the surface of the base.

2. A drill pull including a base having a flat bottom, a notch arranged substantially centrally and extending from one edge and a pair of apertured ears at each end, said ears and apertures being in alignment, a hand-operated lever having a bifurcated end, the respective arms of the bifurcated end fitting between the respective pairs of ears, a pivotal pin extending through each pair of ears and through said arms for pivotally connecting the arms, each of said arms having an extension, a double clevis for each of said arms, each clevis having a bifurcated portion straddling the respective extensions and a bifurcated portion at right angles to the first mentioned bifurcated portion, a gripping lever for each of said double clevises extending into the last mentioned bifurcated portion thereof, pins for pivotally connecting the gripping levers to the respective double clevises, a substantially U-shaped lifting box, a pin extending through each of said gripping levers and through part of said box for pivotally connecting the levers to the box, each of said levers having a gripping face formed on an arc which is eccentric to the members which pivotally mount the gripping levers, and means removably connected to said box for preventing spreading thereof when said gripping levers function.

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