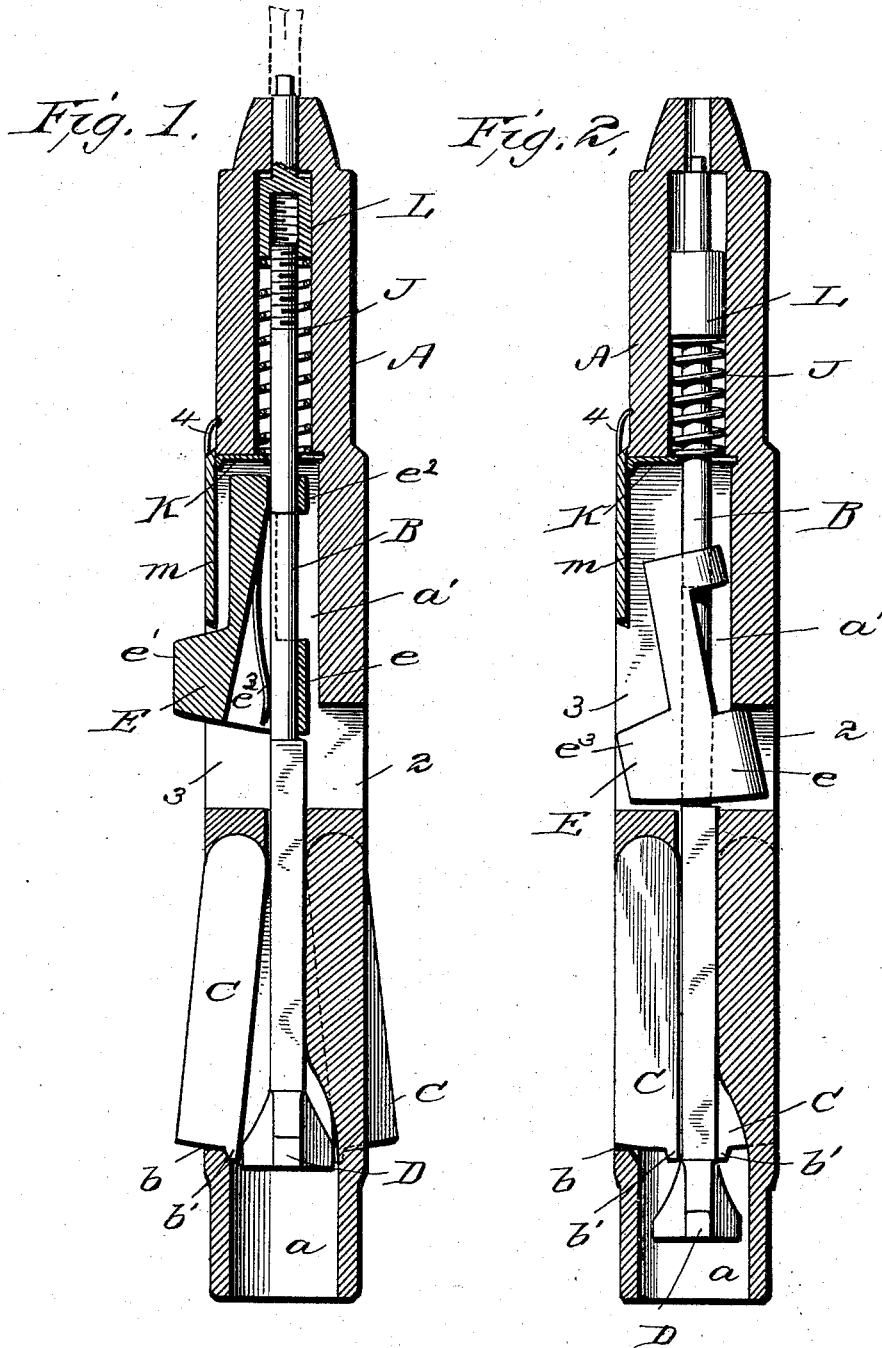


(No Model.)

J. DEISCH.
WELL REAMER.

No. 526,440.

Patented Sept. 25, 1894.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN DEISCH, OF WHITE LAKE, SOUTH DAKOTA.

WELL-REAMER.

SPECIFICATION forming part of Letters Patent No. 526,440, dated September 25, 1894.

Application filed May 31, 1894. Serial No. 513,093. (No model.)

To all whom it may concern:

Be it known that I, JOHN DEISCH, a citizen of the United States, residing at White Lake, in the county of Aurora and State of South Dakota, have invented certain new and useful Improvements in Well-Reamers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

15 This invention aims to provide a reamer for enlarging the bore of Artesian and oil wells below the well tubing which will be automatic in its action expanding as soon as the bits clear the well tubing through which the 20 tool is passed and again contracting on withdrawing the tool through the said tubing, the bits being locked in their expanded position to prevent their yielding when striking rock or gravel thereby insuring the removal of the 25 latter and the enlargement of the bore to the limit of the cutting edges of the bits.

The improvement will be more fully set forth hereinafter and claimed and is shown in the accompanying drawings, in which—

30 Figure 1, is a vertical section of the tool showing the relative disposition of the parts when the bits are expanded and locked, and Fig. 2 is a view similar to Fig. 1 showing the position of the parts when the bits are with- 35 drawn within the outer walls of the stock.

The letter A represents a stock constructed at its upper end to receive the operating rod and longitudinally bored to receive and permit of the free working of the rod B carrying 40 the spreader head D. The lower portion *a* of the bore is enlarged sufficiently to receive the spreader head and admit of the same having a limited reciprocating movement therein. Longitudinal slots *b* extend through the sides of the 45 stock and receive the bits C which come flush at their outer surfaces with the sides of the stock. The upper ends of the slots *b* are concaved to receive the rounded ends of the bits which articulate therein as the lower ends 50 swing in and out. Shoulders or projections *b'* at the inner lower corners of the bits limit their outward movement by engagement with

the inner walls of the bar contiguous to the lower ends of the slots *b*. The upper portion *a'* of the bore is reduced or smaller than the 55 bore *a* and has two diametrically disposed slots 2 and 3, the slot 3 being the larger to receive the locking head E and admit of its having a limited movement therein.

A projection or shoulder *e* of the part E is 60 constructed to enter the slot 2 when the head E is at the lower limit of its movement and hold the spreader at its lowest position when the said locking head is pressed in laterally by the well tubing when passing the tool 65 through the same either for removing or adjusting to place. The locking head is mounted on the rod B and the opening therein increases in width from the upper to the lower end to admit of the latter swinging laterally. 70 One side is cut away forming the projection *e'* and the loop *e''*, the latter engaging with the shoulder on the rod B to cause the rod and the head to move up together. A spring *e'''* exerts a lateral pressure on the rod B 75 to hold the lower end of the locking head at the limit of its outward movement, so that the lateral extension *e'* will normally project beyond the side of the stock. The upper end of the extension *e'* is beveled to glance the 80 side on the lower end of the well tubing when the tool is withdrawn within the same. A coil spring J is fitted in the upper part of the bore *a'* above the slot and is mounted on the upper end of the rod B being confined be- 85 tween a plate K provided at the upper end of the slot 3 and sliding in ways or grooves in the sides thereof, and an adjustable stop L on the threaded end of the rod B. This spring is normally compressed and has a tend- 90 ency to move the rod B upward and its tension is regulated by adjusting the stop L which is effected by means of a key or wrench shown by the dotted lines in Fig. 1, which is fitted to the end of the stop and inserted through 95 the further reduced bore of the stock. The upper portion of the slot 3 is closed by a slide *m* held in ways in the sides of the said slot and retained in place by a spring catch 4. There will be as many bits C as required and 100 they will be distributed at proper intervals about the sides of the stock.

Normally the locking head and the rod with the spreader head, occupy the highest

limit of the movement and the bits are expanded, being locked by the spreader head which is forced between their lower ends. To pass the tool through a well tubing of 5 proper size to correspond with the diameter of the stock, the head E is moved to the limit of its lowest position in the slot 3. This operation moves the spreader head from between the inner ends of the bits and permits the 10 latter to contract. After the tool passes below the lower end of the tubing so as to release the head E the latter moves laterally, and the spring J moves the rod B upward forcing the spreader head D between the 15 lower ends of the bits and pressing the latter outward. On withdrawing the tool the projection *e'* of the locking head striking the lower end of the tubing moves the head down to the lower end of the slot 3, and laterally so 20 that the projection *e* enters the slot 2. This operation moves the rod down and withdraws the spreader head from between the lower ends of the bits and permits the latter to contract or pass within the sides of the stock 25 which is easily removed through the tubing.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A tool for the purposes set forth comprising 30 ing a stock, bits adapted to be projected beyond the sides of the stock, a spreader head for locking the bits in their expanded position, a rod attached to and carrying the

spreader head, a spring for normally retaining the spreader head between the ends of the 35 bits, and a head mounted upon the said rod to move therewith and having a lateral extension normally projecting beyond the side of the stock, and having the opening through 40 which the rod passes increasing in width from the top to the bottom end, to permit of the lateral movement of the said head, substantially as specified.

2. In combination a stock longitudinally bored, having slots *b* and 2 and 3 in its sides, 45 bits fitted in the slots *b* and articulating with the upper ends thereof, the lower ends having stops to limit their outer movement, a spreader, a rod attached to the spreader, a spring mounted on the rod and arranged to 50 normally hold the same at the limit of its upward movement, a head mounted on the rod and adapted to work in the slot 3, one side being cut away to form a loop *e'* and a projection *e*³, the latter constructed to enter the 55 slot 2, the opening in the head widening from the top to the bottom, and a spring in the head to bear laterally on the rod to project a lateral extension of the said head beyond the side of the stock, substantially as specified. 60

In witness whereof I affix my signature in presence of two witnesses.

JOHN DEISCH.

Witnesses:

M. E. LONG,
A. DOTY.