

No. 633,574.

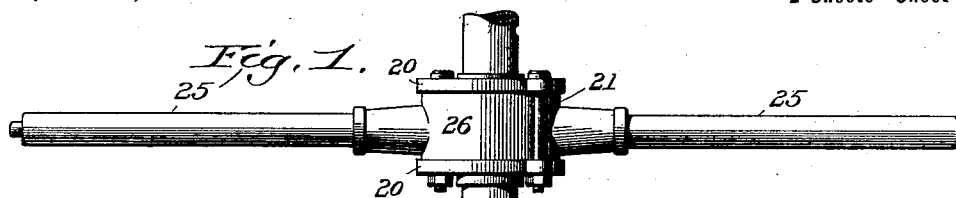
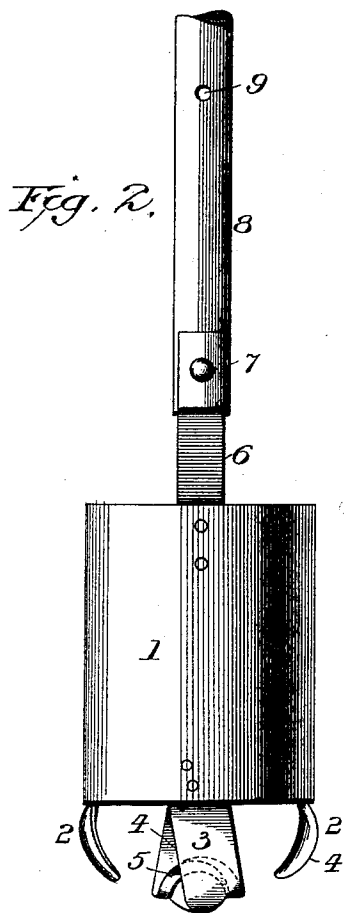
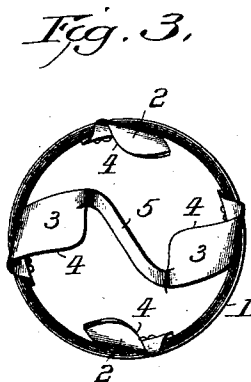
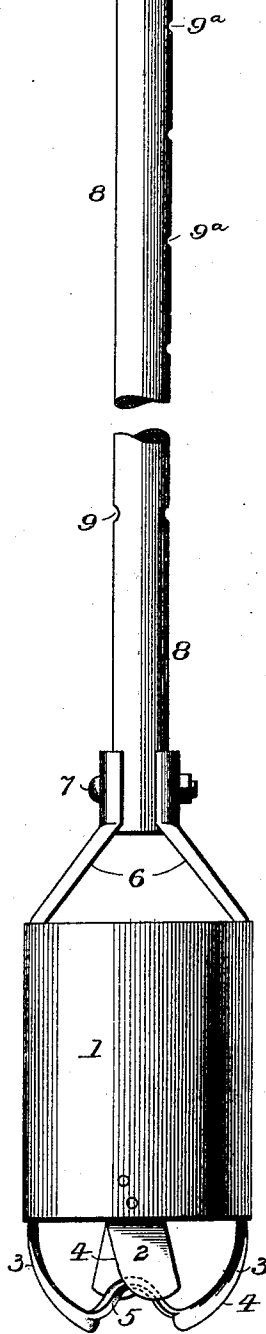
Patented Sept. 26, 1899.

C. DENSMORE.  
EARTH AUGER.

(Application filed Apr. 19, 1899.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses  
*A. S. Gilbert*

Inventor  
Charles Densmore  
By *Henry N. Copp*  
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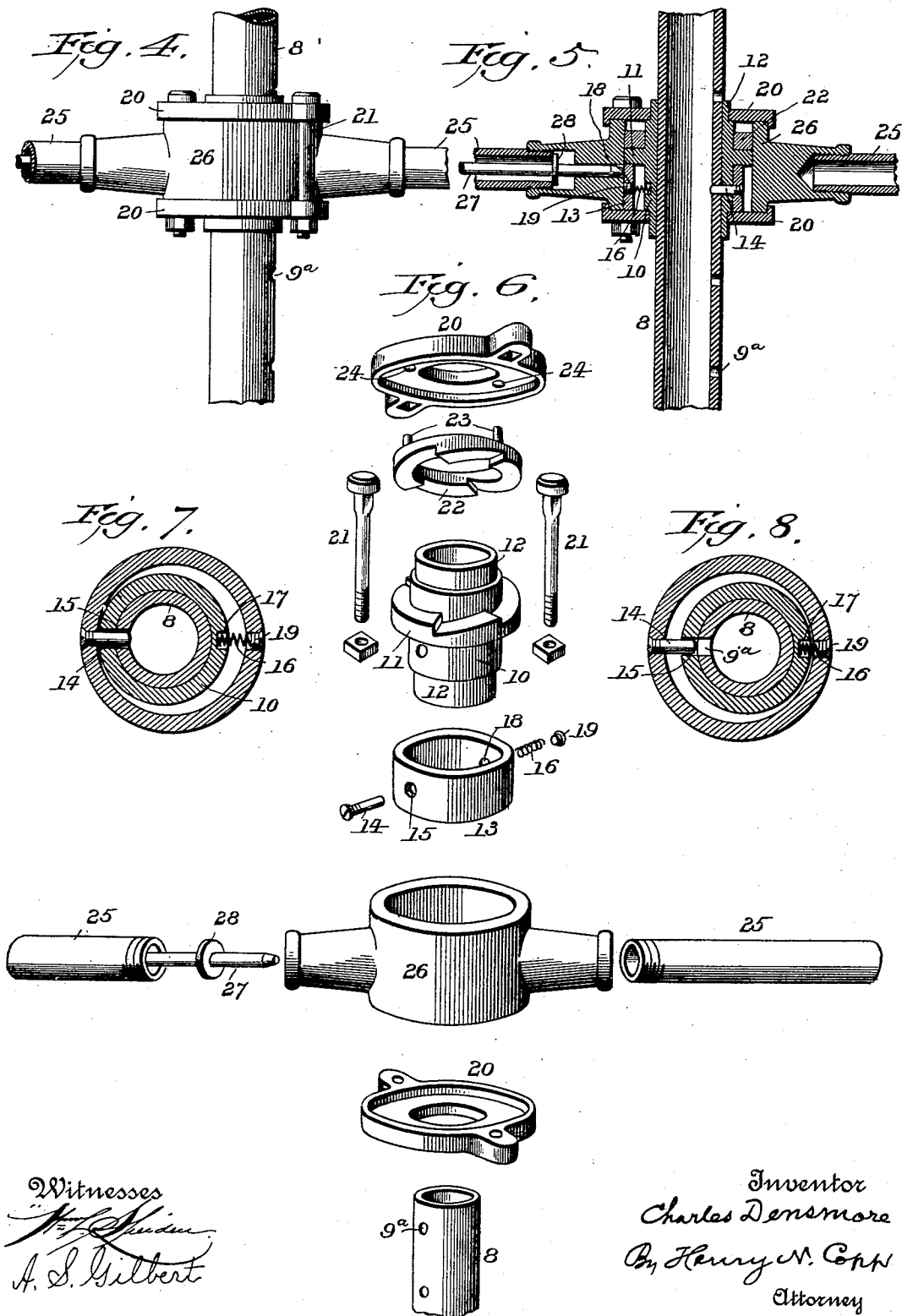
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# UNITED STATES PATENT OFFICE.

CHARLES DENSMORE, OF PIERRE, SOUTH DAKOTA, ASSIGNOR OF TWO-THIRDS TO CHARLES H. ANDERSON AND DE LORME W. ROBINSON, OF SAME PLACE.

## EARTH-AUGER.

SPECIFICATION forming part of Letters Patent No. 633,574, dated September 26, 1899.

Application filed April 19, 1899. Serial No. 713,617. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES DENSMORE, a citizen of the United States, residing at Pierre, in the county of Hughes and State of South Dakota, have invented certain new and useful Improvements in Earth-Augers; and I do hereby 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.

My invention relates to earth-augers, and has for its objects greater ease of manipulation and rapidity of action than has heretofore been possible. These objects are accomplished by the provision of an improved manipulating-handle, whereby the device can be operated in awkward positions, and by providing improved knives and a peculiar form of bridge or brace connection between them. The details of construction will be fully set forth hereinafter and the novel features and combinations embodied in the appended claims.

In the accompanying drawings, Figure 1 is a side elevation of my improved earth-auger. Fig. 2 is a detail view of the bucket, taken at right angles to Fig. 1. Fig. 3 is a bottom view of the bucket. Fig. 4 is a detail view of a portion of the handle and stem. Fig. 5 is a longitudinal section thereof. Fig. 6 is a perspective view of the different parts of the handle shown separated and in relative position, and Figs. 7 and 8 sectional detail views showing the manner of locking and unlocking the handle.

The usual cylindrical bucket 1 is employed, and 2 and 3 designate the respective sets of knives, which have their shanks secured to the inside of the bucket at its lower end. All of the knives are of spiral form and sharpened at the same edge 4, so they will cut the earth successively; but the knives 2 are short, while knives 3 are considerably longer and have their free ends located much nearer the central longitudinal axis of the bucket than knives 2. This arrangement of the sets of knives constitutes one of the important features of the invention, and the advantage is that the knives 3 do practically all the cutting and by reason of being close together and of marked spiral shape feed themselves

very fast and rapidly elevate the cut earth, while the short knives 2 enlarge and ream the hole being cut by the knives 3. A bridge or brace 5 connects the extremities of the knives 3 together, its ends being fastened to or formed integral with the tips of the knives at the unsharpened edges thereof. This brace is of spiral form and is bowed upwardly throughout its length and has a twofold function. It braces the knives and prevents vibration or springing, and it assists in lifting the earth cut by the ends of the knives to which it is connected.

Extending upwardly from the bucket are arms 6, which are connected by bolt 7 to a pipe 8. Another bolt-hole 9 is provided in case it is desired to lessen the effective length of the pipe. Along one side of the pipe is a row of holes 9<sup>a</sup>, adapted to receive the locking-pin of the improved handle.

The numeral 10 designates a sleeve adapted to fit over the pipe 8 and having a ratchet-ring 11, of ordinary construction, and reduced ends 12. A locking-ring 13 very loosely encircles the sleeve, so as to be capable of considerable lateral play, and it is provided with a locking-pin 14, which is held projecting through an aperture 15 in the sleeve by a coil-spring 16, interposed between the ring and sleeve and seated in a pocket 17 in the latter and in an opening 18, closed by a screw 19, in the ring. The screw can be removed when it is desired to take out the spring. Heads or caps 20 are fitted on the reduced ends 12 of sleeve and connected together by bolts 21.

The numeral 22 represents a ratchet-ring having guide-pins 23 freely movable through openings 24 in the upper cap 20. This ratchet-ring is adapted to engage the ratchet-ring 11 when turned in one direction and to rise and fall freely without such engagement when turned in the opposite direction. The handles 25 have a hub 26, which receives the operative parts and against which the caps are firmly clamped by the bolts. Inside one of the handles is an unlocking-rod 27, which projects through the side of hub 26 in position to move ring 13. This rod is provided with a shoulder 28, which limits its play.

When the tips of knives 3 enter the ground, the earth is cut and elevated and the knives

2 ream the hole. The peculiar arrangement of the knives and the bracing of the longer ones renders the manipulation of the tool easy and the action rapid. The bridge connecting the knives not only braces them, but by reason of its peculiar upwardly-bowed and spiral shape guides or directs the earth as it is cut both upwardly and to the spiral knives, which lift it and materially assist in elevating the earth into the bucket, thus preventing all clogging. When the handles are turned, as usual, the ratchet-rings interlock and the tool is turned; but when a backward turn is given the ratchet-rings disengage and the handle turns freely. If it is desired to adjust the handle up or down on the pipe, the unlocking-rod is pressed, thereby moving the locking-ring and withdrawing the locking-pin from the opening in the pipe. On releasing the rod the spring will cause the locking-pin to enter the hole opposite it in the pipe. When the auger is to be used in a ditch or next to a wall or post or in a corner or other position where only a limited movement is possible, the handle 25 not provided with the unlocking-rod is unscrewed and removed and the other handle used singly.

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

1. In an earth-auger, the combination with an auger-stem, of a sleeve loose on said stem, a ratchet on the sleeve, a spring-actuated locking-pin passing through the sleeve and

adapted to engage the stem, a handle, a ratchet secured to the handle and adapted to engage the first-named ratchet, and means for pressing back the locking-pin.

2. In an earth-auger, the combination with an auger-stem, of a sleeve on said stem, a ratchet on the sleeve, a spring-actuated locking-ring loosely encircling the sleeve, a locking-pin connected to the ring and projecting through the sleeve, a handle, a ratchet secured to the handle, and means for moving the locking-ring against the action of the spring.

3. In an earth-auger, the combination with an auger-stem, of a sleeve on said stem, a ratchet on the sleeve, a cap or head on the sleeve, a ratchet having guide-pins which pass loosely through openings in the cap, and which is adapted to engage the first-named ratchet, and a handle for turning the cap.

4. In an earth-auger, the combination with an auger-stem, of a hub, a hollow handle secured thereto, a sleeve in the hub and surrounding the stem, interlocking ratchets connected to the handle and sleeve respectively, a movable locking-ring encircling the sleeve, and a rod slidable in the handle and adapted to shift the locking-ring.

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

CHARLES DENSMORE.

Witnesses:

G. D. PARR,  
B. J. BINFORD.