

J. W. Heath.

Earth-Boring Auger.

N^o 76188

Patented Mar. 31, 1868.

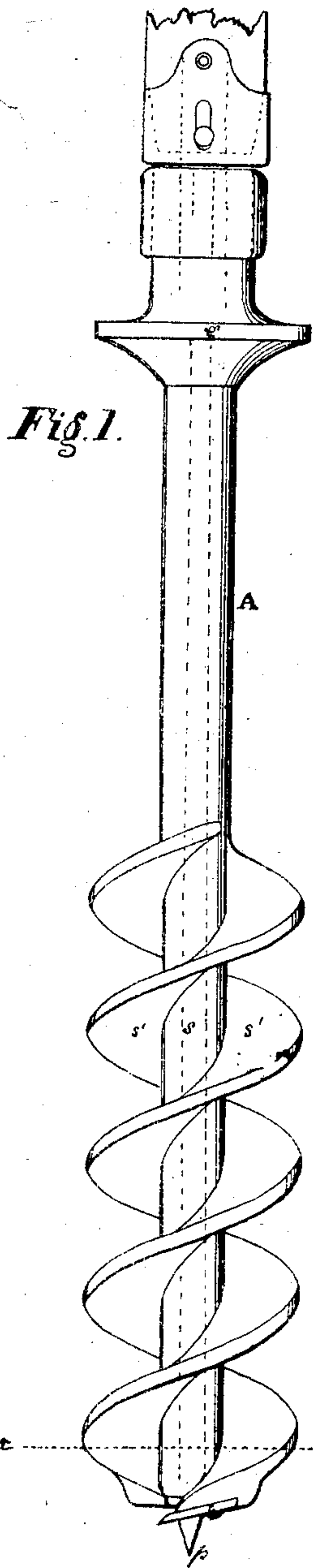


Fig. 1.

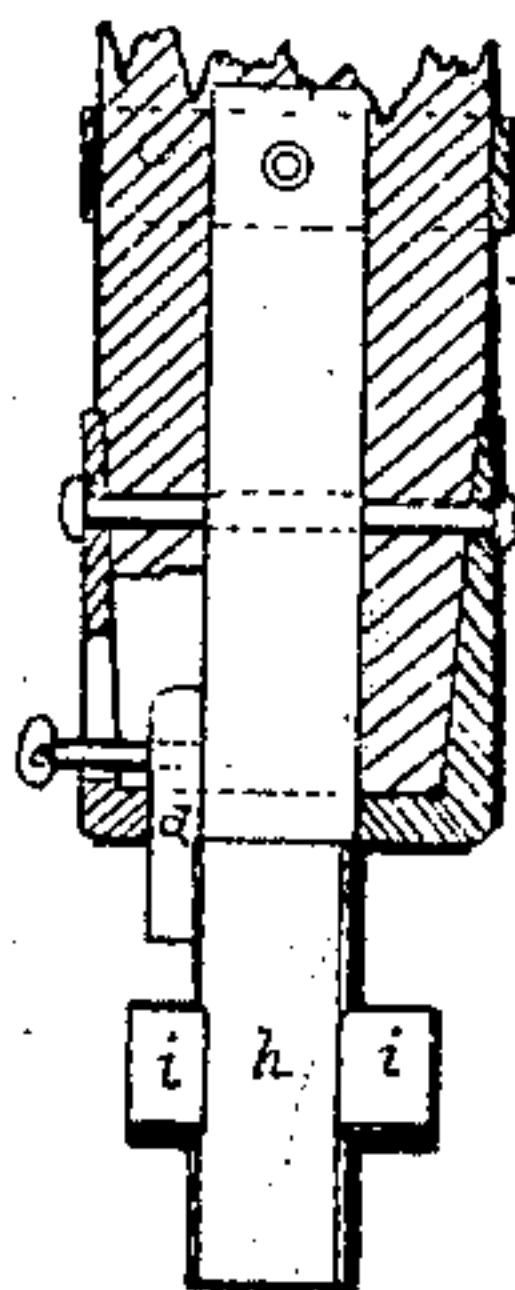


Fig. 7.

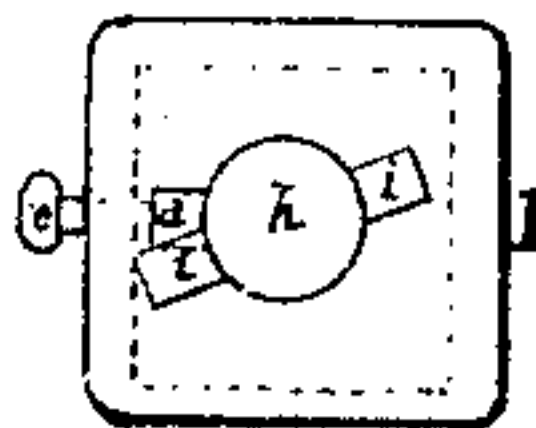


Fig. 8.

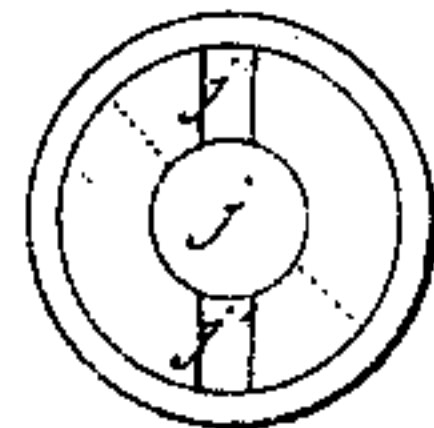


Fig. 6.

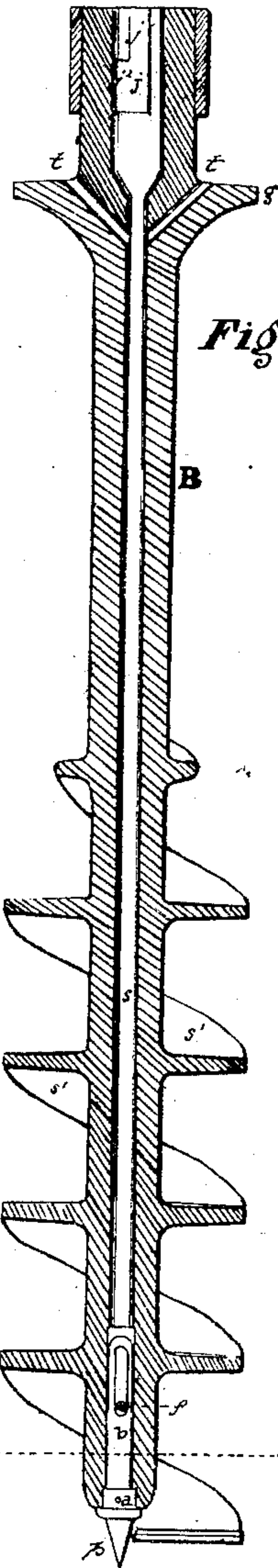


Fig. 2.

Fig. 10.



Fig. 3.

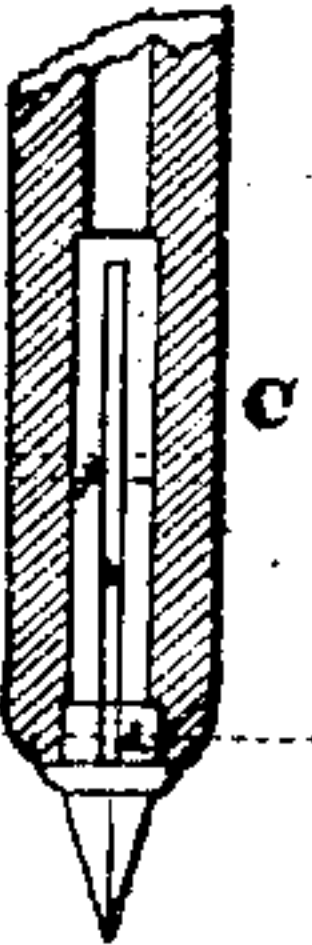


Fig. 9.

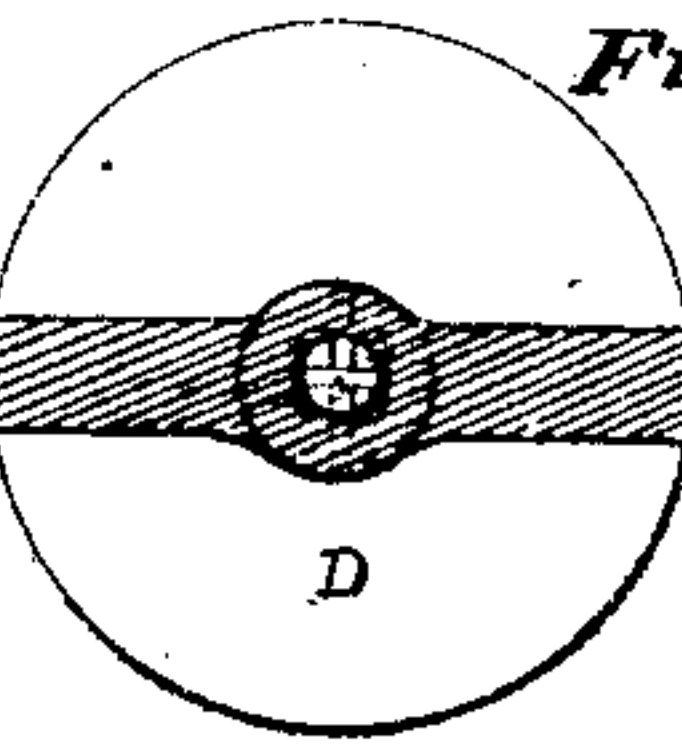


Fig. 4.

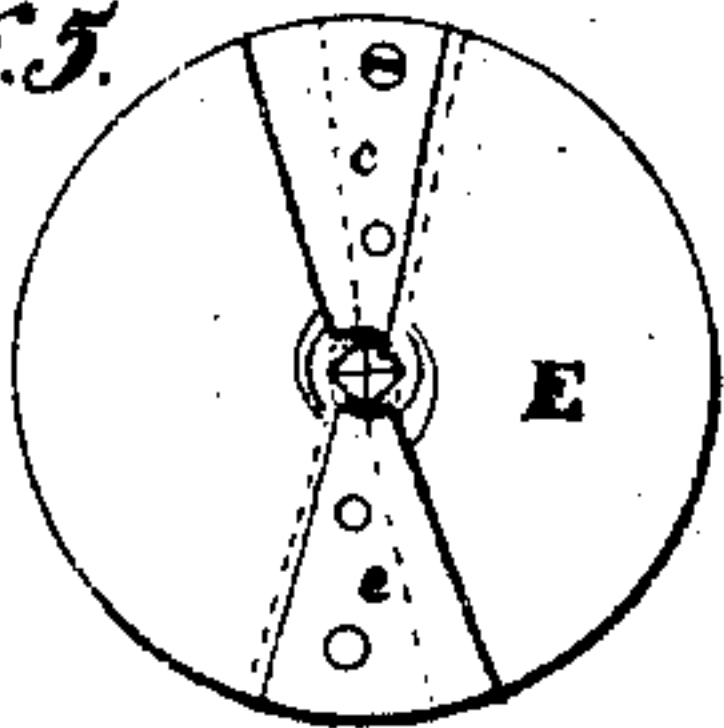


Fig. 5.

Witnesses.

W. H. Macewan
Austin Boland

Inventor.

J. Wilson Heath.

UNITED STATES PATENT OFFICE.

J. WILSON HEATH, OF MEMPHIS, TENNESSEE.

IMPROVED EARTH-BORING AUGER.

Specification forming part of Letters Patent No. 76,188, dated March 31, 1868.

To all whom it may concern:

Be it known that I, J. WILSON HEATH, of Memphis, in the county of Shelby and State of Tennessee, have invented a new and Improved Earth-Boring Auger; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, which are made a part of this specification.

Figure 1 represents a longitudinal view of my improved earth-auger with its coupling. Fig. 2 represents a longitudinal section of the same with the coupling-lock and the drop-valve. Fig. 3 is a longitudinal section of the lower end of the hollow shaft in a plane at right angles to that of Fig. 2, showing the seated position of the drop-valve and its stem. Fig. 4 shows a cross-section of the auger at $x x$, Figs. 1 and 2, through the valve-stem. Fig. 5 is an under-side view of the auger, showing the cutters and their mode of attachment. Fig. 6 is a top view of the upper end of the auger. Fig. 7 is a sectional view of the coupling attached to the rod. Fig. 8 is a lower-end view of the coupling. Fig. 9 is an end view of the flanged point at the foot of the valve. Fig. 10 represents a cross-section at $y y$, Fig. 3.

My improvements relate chiefly to new devices by which the necessity of a guide at the foot of the auger is removed, and the suction, on its withdrawal from the bore, relieved, and to an improved coupling for connecting the auger to its rod.

My improved auger is cast with a hollow shaft, s , and a double spiral, $s' s'$, and at its upper end provided with a guiding-collar, g , which may also be cast in one piece with the shaft. The spirals $s' s'$ terminate on a level at their lower ends, so as to cause the auger to work true without requiring the guiding disk or flange which is usually employed at the lower end of earth-augers. $c c$ represent steel cutters, attached by screws to the lower ends of the spirals.

The auger-point p is of square or angular shape, and is formed upon a drop-valve, a , which is hung by a wrought-iron stem, b , slotted to receive a pin, f , by which the valve is secured to the auger, but allowed a limited vertical play. The neck of the valve is formed

with cavities a' , Fig. 10, forming outlets from the interior of the shaft when the valve is down from its seat.

$t t$ represent apertures communicating with the interior of the shaft from above the collar g . As the auger is drawn from the bore the air will pass freely through the apertures $t t$, the hollow stem of the auger, and the cavities $a' a'$, so as to prevent the formation of a vacuum below the auger, and consequent atmospheric resistance. While the auger is working the pressure will keep the valve a up against its seat, and thus prevent the entrance of earth within the hollow shaft.

My improved coupling, by which the auger is connected to its rod, consists of lugs $i i$, projecting from a central stem, h , which is secured to the rod by a ferrule and bolts. The said lugs are passed into grooves j^1 in the socket j in the top of the auger-shaft, and, being turned into the recesses j^2 , are secured by a bolt, d , which is mounted in the ferrule of the rod, and when slid down engages in the contracted upper end of one of the grooves j^1 , so as to prevent the stem h and lugs $i i$ turning backward within the socket.

By this expedient I have effectually overcome the common inconvenience of the detachment of the auger from its rod while in the well.

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

1. The combination of the valve a with the slotted stem b , pin f , hollow shaft s , and inlets $t t$, all constructed, arranged, and employed substantially as and for the purposes specified.

2. The collar g , when used in combination with a double spiral earth-auger, as and for the purposes stated.

3. The coupling $h i j j^1 j^2$, constructed and arranged as described, and for the purpose specified.

To the above specification of my improved earth-boring auger I have signed my hand this 12th day of February, A. D. 1868.

J. WILSON HEATH.

Witnesses:

OCTAVIUS KNIGHT,
J. E. M. BOWEN.