

R.M. LAFFERTY and E.P. SMITH'S

No. 118,806.

HOLLOW AUGER.

Patented Sep. 12, 1871.

Figure 1—

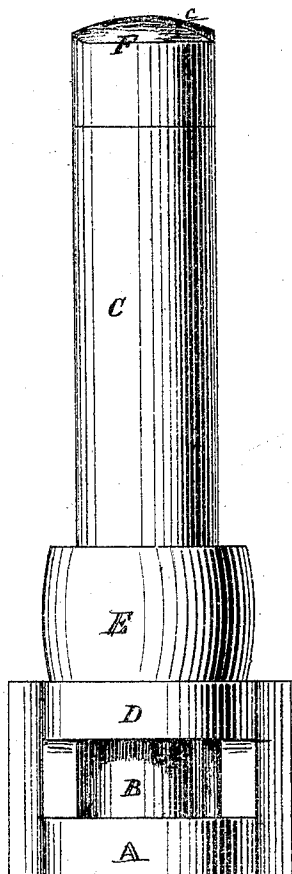


Figure 2—

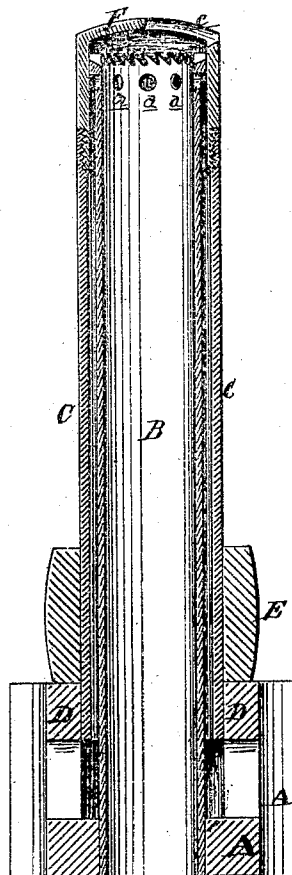


Figure 4—

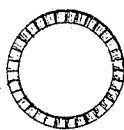
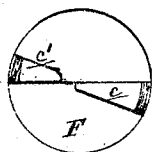
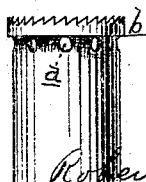


Figure 3



ATTEST:

James Thierry
W. F. Everts

INVENTORS.

Robert M. Lafferty
Edward P. Smith
By their Attorney
Thos. S. Sprague

UNITED STATES PATENT OFFICE.

ROBERT M. LAFFERTY AND EDWARD P. SMITH, OF THREE RIVERS, MICHIGAN.

IMPROVEMENT IN AUGERS.

Specification forming part of Letters Patent No. 118,806, dated September 12, 1871.

To all whom it may concern:

Be it known that we, ROBERT M. LAFFERTY and EDWARD P. SMITH, of Three Rivers, in the county of St. Joseph and State of Michigan, have invented a new and useful Improvement in Hollow Augers; and we do declare that the following is a true and accurate description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon, and being a part of this specification, in which—

Figure 1 is an elevation of our improvement. Fig. 2 is a vertical section of the same. Fig. 3 is a detached section of the upper end of the internal guide-tube, and Fig. 4 is a plan of the boring-head.

Similar letters of reference indicate corresponding parts in each figure.

The nature of this invention relates to certain improvements in the construction of hollow augers for boring pump-logs and other long wooden cylinders, and consists, first, in the peculiar construction of the boring-head; second, in sleeving the hollow auger on a stationary guide-tube in such a manner that a current of air may pass between the auger and the tube and enter the latter through holes about its point, to assist in the discharge of the chips, which may either fall down out of it by their own gravity, or be drawn down by a suction-fan. In the latter case the formation of a vacuum in the upper part of the tube is prevented by the admission of air therein. Also in the arrangement of its various parts, as hereinafter more fully shown and set forth.

In the drawing, A represents a bracket, in which is secured the vertical tube B, its upper edge being serrated, as shown. *a* are apertures in the upper part of the tube, between which and the top thereof is a collar, *b*. C is a hollow auger, which is sleeved on the tube B, whose collar forms a bearing and guide therefor at its upper end, while its lower end rotates within the box D of the bracket. As the tube passes concentrically through the box and is of less diameter than the auger an annular space is left between them, through which a current of air may pass to the upper end of the tube and there enter it through the apertures *a*. E is a pulley, so placed on the shaft or body of the auger that its hub acts as a collar, riding on the box to prevent its descent through it, and at the same time affords a means of rotating it, through a belt, from any

convenient source of power. F is a boring-head, the peculiarity of whose construction is that one of its bits or cutters *c* radiates from its center to its periphery, and one or more others, *c'*, are of less length and do not radiate from the center. By this arrangement the auger is kept in its true course and prevented from deviating laterally, the shorter bits dividing the lateral strain on the longer one while doing a large proportion of the work. As many of the shorter bits as can be conveniently formed in the head without weakening it are employed, increasing its cutting capacity in the ratio of their number. The induction-pipe of a suction-fan is connected to the lower end of the guide-tube, which draws the chips made by the bits down through said tube and are discharged by it at any convenient point, while a current of air entering the tube at its top in the manner described prevents the formation of a vacuum in the tube while adding the pressure of the atmosphere to the gravity of the chips to force them down. Where a large auger is employed the fan may be dispensed with, as the chips will fall out of their own gravity. The serrations at the top of the tube prevent the chips from lodging or choking, as, in the rotation of the auger, should they lodge for a moment, they are at once torn away. Any suitable carriage for feeding the log or timber to be bored down on the auger may be employed for the purpose.

The objection to the use of one or two similar bits, extending from the center to the periphery of the head, is that the chips cut out by said bits are too large and too firm and choke the passages in the hollow of the auger. By the employment of one long and several short bits in our auger-head this objection is obviated, as the shorter bits cut away the greater portion of the wood from the outsides, leaving the long bit little work except at the center, thus making the chips numerous, fine, and easily disintegrated.

We are aware of the construction of the auger-head in the invention of A. Wyckoff and E. Morrison, patented September 25, 1855, and disclaim the use of the same; but

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The boring-head F, constructed of one piece of metal and provided with the bit *c*, radiating from the center to the periphery of the front end thereof, and with one or more short angular bits *c'*

extending only a portion of the distance from said periphery toward said center, when each of said parts is constructed as described, shown, and set forth.

2. The guide-tube B, provided with apertures *a* and serrated edge *b*, as described, shown, and set forth.

3. The bracket A, box D, and guide-tube B, provided with apertures *a* and serrated edge *b*, constructed and combined as described and set forth.

4. The combination of the hollow auger C, the pulley E, the box D, and the guide-tube B, when each is constructed as described and all are arranged to operate as and for the purpose set forth.

ROBERT M. LAFFERTY.
EDWARD P. SMITH.

Witnesses:

H. S. SPRAGUE,
JAS. I. DAY.