



# UNITED STATES PATENT OFFICE.

LOUIS H. SHOLDER, OF CLEVELAND, OHIO.

## COMBINED AUGER AND CUTTER.

SPECIFICATION forming part of Letters Patent No. 605,614, dated June 14, 1898.

Application filed December 24, 1897. Serial No. 663,418. (No model.)

*To all whom it may concern:*

Be it known that I, LOUIS H. SHOLDER, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in a Combined Auger and Cutter; and I do declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a combined auger and cutter adapted together to produce an angular hole in a single operation, all substantially as described, and more particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of my improved tool shown combined as in use. Fig. 2 is a longitudinal sectional elevation thereof. Fig. 3 is an elevation of the top and bottom ends of the auger or bit alone, the same being broken out at the middle. Fig. 4 is a side elevation of the top portion of the casing alone, and Fig. 5 is an elevation of the lower end thereof. Fig. 6 is a perspective view of the clip or fastener which unites the auger and casing, as herein-after described.

The tool as here shown consists of a casing A, shown in this instance as square in cross-section and fitting snugly over the auger or bit B down to the point just above the cutting part 2 of the auger B. This casing consists of a comparatively thin shell of steel or other suitable metal, whole or in part, which incloses the twist of the auger from the vertical cutting edges 2 at its lower end to the top of the twist, and holes or openings 3 in the several sides of the casing extend the entire length of the casing at close intervals, so as freely to discharge the chips and shavings, the top holes of the series being opposite the top of the twist in the auger and serving to clear all the cuttings or chips that rise to that point.

To unite the casing with the auger and to compel it to follow the auger, as well as to do its own work, I provide the auger with a collar 5 about its neck, just above the twist, and form transverse slots 5' on opposite sides in the upper end of the casing A, and in these I fix the clips 6. These clips are in pairs,

having right-angled portions 7, with circular recesses to fit around the circular neck of the auger above and below the annular collar 5, and at one end enter the casing through slots 5', while at the other they overlap the end of the casing. These clips have each a screw 6', which fasten them to the casing and hold them in place; but the end thrust is against the clip and not on the screw, and this is very important, because the endwise thrust or pressure is very severe and could not be sustained by a screw or by a mere cap on top of the casing. The casing of course has only a rectilinear travel while the auger rotates.

The four sides of the casing A have cutting edges 9, beveled on their inside and drawn to a very sharp edge, so as to cut easily and serve to square the hole made by the auger; but to make these edges 9 thoroughly effective they are fashioned with inverted-V-shaped recesses, which practically take up the entire side of the casing, and thus produce also substantially V-shaped cutting corners 10, with the point of the V in the angle of the sides. As the work of boring proceeds the long lead-screw 8 draws the tool deeper and deeper into the work, the chips rising and being cast off through the openings 3 above the surface of the work.

Two other features of invention are present in this tool which are deemed very important. The first of these is the taper of the casing on its four sides from the abutting edge at its bottom to the top or, what is its equivalent, having the cutting end perceptibly larger in cross-section than the body and top portion, so as to effect perfect clearance for the casing in the tool. I have discovered that it is impossible to operate a hand-tool of this kind when the cross-section of the casing is the same at all points, because of the friction and the tendency of the wood to close into the hole made by the auger. Hence I have narrowed the casing from its lower end toward its upper end perceptibly from the four sides, and this affords the necessary relief and makes the tool not only operative, but comparatively easy of operation and decidedly practical. This taper may not, and, indeed, need not, be visible to the eye, but can be easily ascertained by measurement with an instrument. The other important

feature referred to is the offset or shoulder *a* at the start of the worm *b* of the auger, where the worm is enlarged laterally the thickness of the casing. This causes both the vertical and the horizontal cutting edges to do their work the full width of the finished bore or hole, leaving the casing to simply cut out and square the corners. Above the shoulder *a* the worm or thread of the auger necessarily is narrowed to come within the casing, where it has room for free rotation and nothing more; but the casing must not be loose on the auger, particularly at the bottom.

I do not wish to limit myself to the exact construction of casing shown, because some modifications thereof could be made without departing from the spirit of the invention—that is, there might be differently-shaped openings 3, or probably one or more longitudinal openings corresponding to the holes 3 used.

The construction of the auger-point here shown is very important. This point must be long and narrow and is of about the same cross-section its entire length except at its immediate extremity. This enables holes to be bored in very narrow places without splitting the wood, and the thread on the point is so spaced and constructed as to take a very firm hold and produce a strong pull to carry the tool forward by its own action. A point tapered uniformly from end to end like common auger-points will not serve the purpose, and the thread must be spaced substantially as herein shown to get the requisite grip on the wood. This thread is comparatively light or thin in cross-section, but has penetration and strength enough to serve my purpose.

A wider space apart of the threads would feed too fast, while a closer space would tend to cut away the hold of the threads. My construction employs a long point of the same cross-section substantially its entire length till the extremity is reached, which is tapered.

What I claim as new is—

1. The chisel-edged casing for the auger constructed with greater cross-section at its lower cutting end than higher up, whereby the casing is given clearance its entire length, in combination with the auger having a lead-screw of a size and length sufficient to draw the said casing through the wood, substantially as described.

2. The chisel-edged casing provided with openings in its sides to discharge the cuttings and reduced from its lower to its upper end to form a clearance thereof in the hole it cuts, in combination with the auger having a lead-screw constructed to feed the auger and draw the chisel through the wood and square the hole while the auger is at work, substantially as described.

3. The auger having a shoulder on the neck thereof above the thread, the casing having openings in its top and securing-pieces connecting said casing and auger entering said openings and engaging said shoulder, whereby the endwise thrust of the casing comes on said pieces, substantially as described.

Witness my hand to the foregoing specification this 8th day of December, 1897.

LOUIS H. SHOLDER.

Witnesses:

H. T. FISHER,  
H. E. MUDRA.