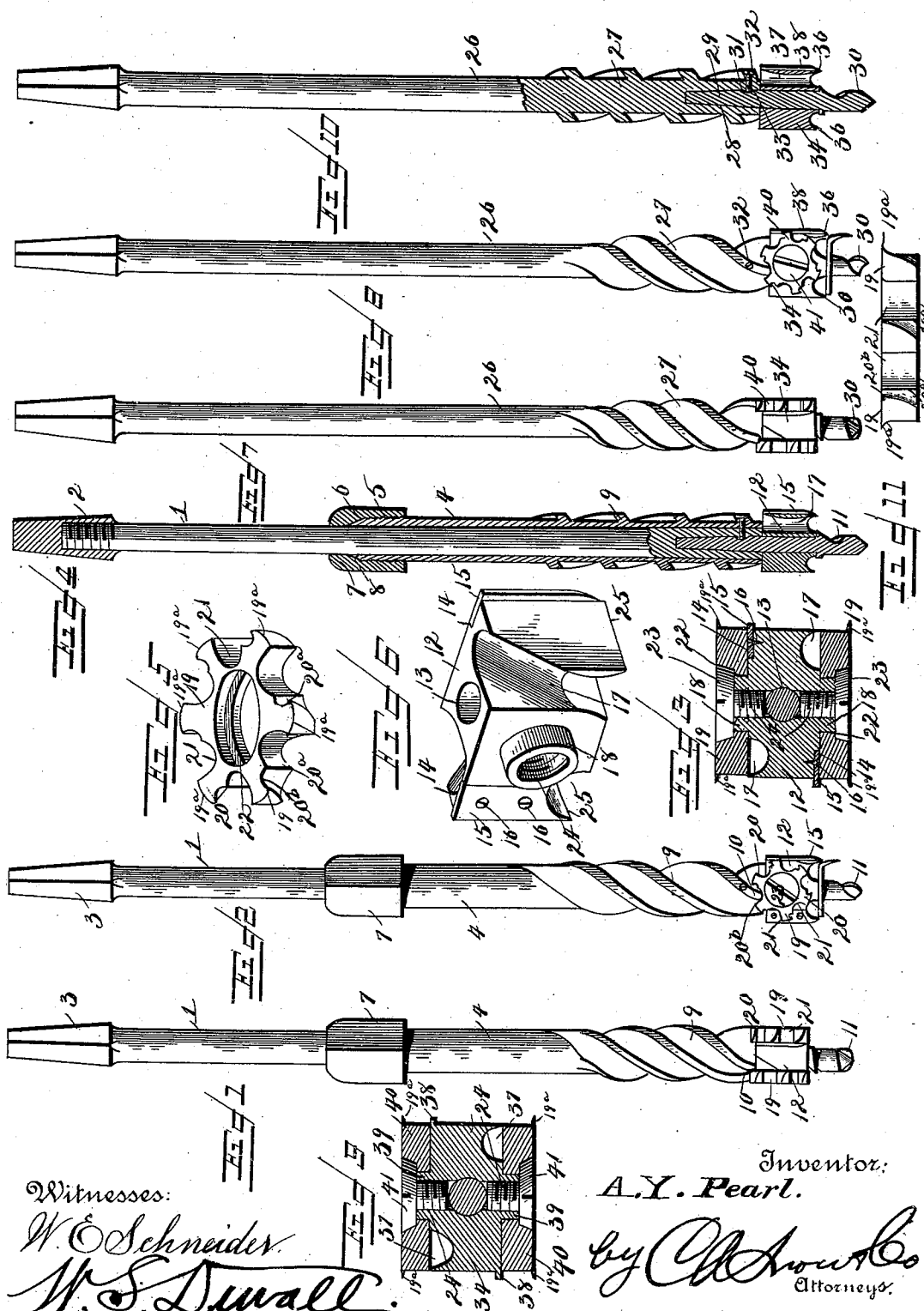


(No Model.)

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AUGER.

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UNITED STATES PATENT OFFICE.

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AUGER.

SPECIFICATION forming part of Letters Patent No. 505,844, dated October 3, 1893.

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To all whom it may concern:

Be it known that I, AZARIAH YELDON PEARL, a citizen of the United States, residing at West Lebanon, in the county of York and State of Maine, have invented a new and useful Auger, of which the following is a specification.

My invention relates to improvements in augers; and the objects in view are to construct an auger so as to adapt it for cutting angular holes in one and the same operation; and to obviate in the construction of the auger the necessity of employing gear-teeth in addition to the side cutters for the purpose of operating the latter; to operate the side cutters by the twist or spiral of the auger; and to provide for a convenient detachment of the several parts for the purpose of sharpening or repair or for a removal of any one or more of the parts when worn.

With these and various other objects in view the invention consists broadly in an auger having located above its gimlet a guide-block; and in opposite rotary cutters which are operated by the twist or spiral of the auger; and also, in certain other novel features of construction hereinafter specified and particularly pointed out in the appended claims.

Referring to the drawings:—Figure 1 is a side elevation of an auger embodying my invention, the same being adapted for cutting large holes. Fig. 2 is a similar view, the auger having been given a quarter turn. Fig. 3 is a transverse sectional view through the cutter-block. Fig. 4 is a longitudinal sectional view. Fig. 5 is a detail in perspective of one of the revolving cutters. Fig. 6 is a similar view of the block, the cutters removed. Fig. 7 is a side elevation of a slightly modified construction of auger, the same being designed for operating upon smaller work, or in other words, to be manufactured in the smaller sizes. Fig. 8 is a similar view, the auger having been given a quarter turn. Fig. 9 is a transverse sectional view through the block and cutters. Fig. 10 is a vertical longitudinal sectional view. Fig. 11 is an edge view of one of the rotary-cutters.

Like numerals of reference indicate like parts in all the figures of the drawings.

1 designates the cylindrical shank of the auger and of that class especially adapted for the formation of large holes, or in other words

to be manufactured in the larger sizes. The upper end of the shank is reduced and threaded as at 2, and has located thereon the angular head 3 by which the auger is adapted to be fitted within any suitable operating device or mechanism, as for instance a brace.

Previous to the application of the head 3 a sleeve 4 is slipped over the shank 1, and the same has its upper portion externally threaded as at 5 and its extremity made conical as at 6. A nut 7 which is exteriorly rectangular to receive a wrench, and is interiorly cylindrical and threaded, is slipped over the shank and the upper end of the sleeve and at its upper end has an internal conical seat 8, which binds against the conical wall 6 of the sleeve and thus secures the said sleeve 4 upon the shank. The sleeve 4 has formed thereupon the usual twists or spirals 9, and the same terminate short of the auger-point in rounded ends 10. The usual gimlet or auger-point 11 is in the present instance formed integral with the shank at the lower end thereof, and a space intervenes between the upper side of said point and the lower end of the said sleeve 4.

12 designates a block or cutter-head, the same being of such depth as to loosely fit between the upper side of the point 11 and the lower side of the sleeve 4. The said block is oblong in cross-section and is provided with a central bore 13 which loosely receives the shank. The opposite faces of the block are recessed at diagonally opposite points, as shown at 14, and fitting in the recesses are chisel-pointed stationary blades 15. The blades 15 whose side edges are beveled extend beyond the sides of the blocks to form guides. The blades are held in position through the medium of small screws 16, which pass through the blades and into the sides or ends of the block. The under side of the block at one side of each blade is provided with a clearance channel 17 which extends up through the block upon an incline and is adapted to register with the clearance grooves or spaces intermediate the twists of the sleeves.

The opposite flat spaces, with which the guide blades 14 are in the same plane, have formed at their centers exteriorly smooth and internally threaded bearing studs 18. Mount-

ed to revolve upon these bearing studs 18 are opposite side cutters 19, which cutters extend above the block as shown and are provided with a series of radially cutting arms 20 having cutting lips 19^a at their sides, and whose outer cutting edges 20^a are disposed at an angle to the axes of the cutters, and in rear of each tooth there is formed a curved recess 21 with which the lower rounded ends 10 of the spirals 9 are designed to engage, the outer corners of the recess forming facial cutters 20^b. The cutters have their centers provided with countersunk openings 22, which fit over the aforesaid studs 18 and which receive the heads 23 of the screws 24, which serve the purpose of retaining the cutters in position.

The opposite narrow sides of the block 12 between the cutters have formed at their lower edges by reason of the production of the clearance channel upon the under side of the block, the beveled or chisel-pointed corners or cutting blades 25, and from the sides of these blades the guide-blades 15 extend.

In operation the auger is employed like an ordinary boring-tool, that is, revolved either through the medium of a hand-brace or by suitable machinery, and the penetrating point or boring end 11 first forms the circular opening. The revolving of the auger causes the spirals 9 to engage at their lower ends with the teeth or recess 21 of the two cutters and revolve said cutters in reverse directions, which squares two of the sides and the four angles of the opening. The intermediate part or remaining sides of the opening are squared by the stationary blades 25, the guide-blades 15 taking into the fiber of the wood and keeping the device steady. The shavings formed by the cutters pass out through the clearance channels 17 and into the clearance channels of the spirals, by which they are conducted to the top of the hole in the usual manner.

In the modification referred to, 26 represents the shank which in the present instance for the purpose of strengthening the device as a whole, has the twist 27 formed integral therewith. The shank ends abruptly at the lower end and is provided with an axial bore 28. Into this bore fits the spindle-portion 29 of the boring-point 30, and said spindle-portion is provided at one side with a seat 31 which is engaged by the inner end of a screw 32 which is threaded in an opening 33 formed in one of the spirals and has its head countersunk in said opening. Upon this spindle there is loosely mounted the block 34, whose opposite narrow sides are provided with vertical stationary cutters 36 produced by the clearance channels 37, and at diagonally opposite corners are provided with vertical ribs 38, which take the place of the guide-blades 15 in the former construction. The trunnions or studs 39 extend from the opposite faces of the block, are exteriorly smooth and interiorly threaded, and serve as bearings for

the revolving cutters 40, which cutters are of a formation corresponding to that heretofore described and are secured in position by the countersunk screws 41. In this latter construction it will be seen I avoid the multiplicity of parts employed in the former construction and simplify and strengthen the device considerably. The operation is precisely the same as that heretofore described, and consequently need not be particularized.

Various changes in the details of construction of my invention will readily suggest themselves to those skilled in this class of devices, and I therefore do not limit the same to such details as I have herein shown.

Having described my invention, what I claim is—

1. In an auger, the combination with a shank terminating at its lower end in a boring point, of a block rotatably mounted upon the auger above the boring point, and below the twist and having opposite bearings, and rotary cutters carried by the bearings and having peripheral teeth engaged by the ends of the twist, substantially as specified.

2. In an auger, the combination with a shank having a twist and below the same a boring point, of an intermediate block having opposite stationary cutters, and provided upon its remaining sides with opposite bearings, and rotary cutters mounted upon the bearings and having peripheral teeth engaged by the ends of the twists, substantially as specified.

3. In an auger, the combination with a shank having a twist and below the same a boring point, of a block loosely mounted on the shank between the point and twist and having opposite vertical stationary cutters, and guides located at the sides thereof, said block being provided at its remaining sides with bearings, and rotary cutters mounted on the bearings, substantially as specified.

4. In an auger, the combination with a shank having a twist and below the same a boring point, of an intermediate block having opposite vertical side cutters, and its opposite faces at diagonally opposite corners provided with shallow recesses and at one side of the same with bearing studs, internally threaded, vertical guide blades removably seated in said recesses and flush with the faces having their outer edges extending beyond the vertical cutters, rotary cutters mounted on the studs or bearings and screws passing through the rotary cutters into the studs or bearings, and having their heads countersunk in the cutters, substantially as specified.

5. The combination with an auger-shank, a block in which the shank is loosely mounted provided with opposite bearings, of opposite rotary cutters having cutting edges disposed at an angle to the axes thereof and having cutting lips 19^a and in rear of each cutter rounded to form a recess for receiving

the lower ends of the twists of the shank, the outer edges of the recess being beveled to form facial cutters, substantially as specified.

6. The combination with a cylindrical shank
5 having an upper removable head, a sleeve having a twist at its lower end mounted on the shank, the upper end of the sleeve being conical and below the same provided with threads, a nut mounted on the sleeve and
10 having a conical seat binding against that of the sleeve, and a bearing point at the lower end of the shank, of an intermediate block in which the shank is loosely journaled, opposite stationary vertical side cutters, bearings
15 extending from the block between said cutters, and notched rotary cutters mounted on the bearings and engaged by the twists, substantially as specified.

7. In an auger, the combination with a
20 shank having a twist terminating in lower rounded ends and below the same provided

with a boring point, of a block in which the shank is loosely journaled, opposite stationary cutters, opposite rotary cutters operated by the twist, and clearance channels formed
25 in rear of the side cutters, and upwardly disposed and communicating with the clearance channels formed by the twist, substantially as specified.

8. In an auger, the auger shank provided at
30 its lower end with a boring point, and above the same with a block having stationary side cutters, and the rotary cutters carried by the block and operated by the twists of the auger shank, as set forth.

In testimony that I claim the foregoing as
35 my own I have hereto affixed my signature in the presence of two witnesses.

AZARIAH YELDON PEARL.

Witnesses:

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JOHN P. MESENE.