

(No Model.)

E. C. PHILLIPS.
AUGER BIT.

No. 529,832.

Patented Nov. 27, 1894.

FIG. 1.

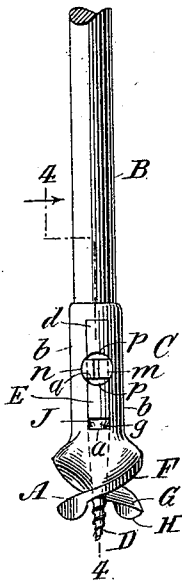


FIG. 2.

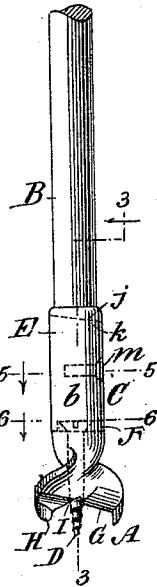


FIG. 3.

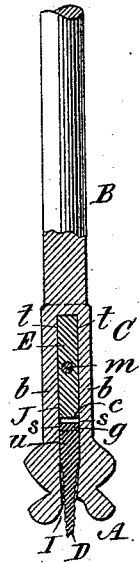


FIG. 4.

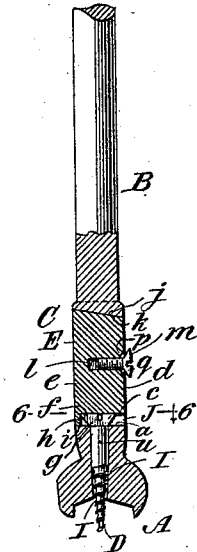


FIG. 5.

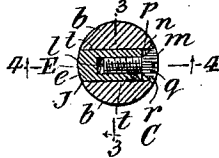


FIG. 7.

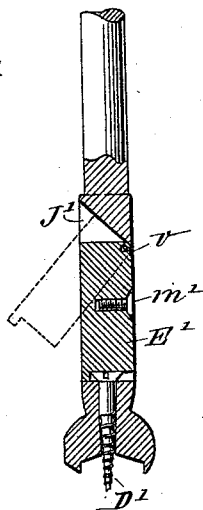
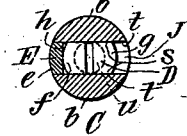


FIG. 6.



WITNESSES:

Fred Whitey
Thomas F. Wallace

INVENTOR:

Edward C. Phillips,
By his Attorneys,

Arthur C. Draper & Co.

UNITED STATES PATENT OFFICE.

ELWOOD C. PHILLIPS, OF CHICAGO, ILLINOIS, ASSIGNOR TO FRANK F. SPENCER, OF MONTCLAIR, NEW JERSEY.

AUGER-BIT.

SPECIFICATION forming part of Letters Patent No. 529,832, dated November 27, 1894.

Application filed June 9, 1894. Serial No. 514,041. (No model.)

To all whom it may concern:

Be it known that I, ELWOOD C. PHILLIPS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Auger-Bits, of which the following is a specification.

My present invention relates to auger bits having a removable point, such for example as those shown in my application for Letters Patent filed January 30, 1892, Serial No. 420,137, and aims to provide certain improvements in such devices.

My improved auger bit in its preferred form has a removable screw set in through an improved hole at the side of the shank into a socket, an improved lock for the screw, and improved means for retaining the lock in place.

In the accompanying drawings, which illustrate the preferred form of my invention, Figure 1 is an elevation of an auger bit. Fig. 2 is an elevation thereof taken at right angles to Fig. 1. Fig. 3 is a fragmentary axial section thereof cut on the line 3—3 in Figs. 2 and 5. Fig. 4 is a fragmentary axial section thereof cut on the lines 4—4 in Figs. 1 and 5. Fig. 5 is a transverse section thereof cut on the line 5—5 in Fig. 2. Fig. 6 is a transverse section thereof cut on the lines 6—6 in Figs. 2 and 4; and Fig. 7 is an axial section corresponding to Fig. 4 but showing a modification.

Referring to Figs. 1 to 6 inclusive, I will first describe the preferred form of my present improvements. In these figures, let A represent the boring head of the bit; B, the cylindrical shank of the bit; C, an intermediate enlarged cylindrical neck between the shank and head; D, the removable screw or point for the head, and E the lock therefor.

The bit may be of any usual or suitable construction, that shown having two spiral blades F carrying cutting lips G and denting lips H formed integrally with the neck and shank. As usual the head has an axial screw-hole or socket I carrying the screw D, and exposing the lower end of the latter to serve as the screw or point of the bit. This hole opens at top into an opening J, through which the screw may be removed from or passed to its hole or socket I, and in this opening is seated a lock

E, which is a plug serving when clamped in position to prevent escape of the screw from the socket, according to the principles of construction disclosed in my said application.

My present improvements relate to the construction of the opening and of the lock, and aim to provide an opening that can be easily formed, and which will be disposed relatively to the metal of the shank to preserve the greatest structural strength; and to provide an improved lock, easy of application, which can be surely fixed in place, which will firmly maintain the screw in position, and be free from protruding portions increasing the size of the shank or neck of the auger. To this end I construct the opening J as a lateral mortise preferably traversing entirely through the shank or its neck diametrically thereof, and of a width coinciding with the width of the screw socket I, which mortise is of sufficient height to permit the entrance or removal of the screw, and has preferably a flat bottom *a* flush with the top of the hole I, at which bottom the head of the screw D seats. By thus constructing the opening J, it may be a very slender cross-mortise or slot uniformly disposed relatively to the axis of the bit, whereby upon each side of the shank or its neck an equal portion of the metal of the shank or its neck is left in the form of uprights *b* having arc-shaped external walls and flat inner walls, which uprights being of greater cross-sectional length than width, and disposed edgewise relatively to the torsional strains on the shank, are advantageously adapted to transmit the strains of boring between the head and shank without flexure or distortion, and still require but very little metal to possess the requisite strength.

The lock E consists of a flat block of greater cross-sectional length than its width, and corresponding substantially in shape to and preferably snugly fitting the interior of the mortise or opening J. When seated in the latter the block preferably exactly completes the portion of the neck or shank cut away to form the mortise, whereby a full cylindrical shape for the shank or its neck is maintained at this point. The lower end of the block acts upon the top of the screw D to prevent the displacement of the latter, and is preferably

constructed with a flat end *c* traversing the block horizontally from its front face *d* almost to its rear face *e*, and terminating at a point coincident with the rear edge *f* of the head *g* of the screw *D*, upon the top of which head the end *c* of the block bears. At the rear edge of the screw the horizontal end face *c* of the block meets a vertical face or shoulder *h* extending vertically and forming a downward continuation of the block, to a point flush with the bottom *a* of the mortise *J*, where the block has a short bottom face *i* running from the shoulder *h* to its rear face *e*, and normally bearing upon the bottom *a* of the mortise, and closing the rear side of the latter opposite the head of the screw. The metal of the block at this point constitutes a step or projection preventing forward movement of the block through the mortise.

According to one feature of this invention the block is given a downwardly moving tendency against the screw. This is preferably accomplished by constructing the mortise *J* with an inclined or wedge-shaped top face *j*, and the block *E* with a corresponding inclined face *k* engaging the face *j*, so that when the block is drawn forward in the mortise, the engagement of these faces will force it downward against the screw *D*.

My invention provides an improved fastening for holding the lock in the closed position. This consists in tapping a screwthreaded hole *l* in the block *E*, and providing a fastening screw *m* having a screwthreaded shank entering this hole, and a head projecting at the front edge of the block of greater length than its width, and adapted when the screw is turned at right angles to the block to fit into a socket *n* in the neck and thereby draw the block forwardly in the mortise, and when the screw is turned ninety degrees, to stand with its longer axis parallel with the longer axis of the block, and its head within a socket *p* formed therefor in the front edge of the block. The narrowest width of the head of the screw is not greater than the width of the block, whereby when the screw is in the open position, it, with the block, can pass through the mortise. The outer end of the head of the screw is arc-shaped to correspond with the periphery of the neck when the screw is in the fastening position. Preferably the fastening screw has flat sides *q* and inclined bearing faces *r*, and the sockets *n* and *p* are correspondingly beveled to fit the inclined projecting bearing ends of this screw-head.

In operation, the block *E* being removed from the mortise, the screw *D* is passed into its socket *I* point first, the head of the screw being turned to present its narrow edge to the mortise so that it will pass within the latter. When therein, its flat side faces *s* fit against and are tightly embraced by the side faces of the mortise, whereby no room for rotative motion of the screw exists. The fastening screw *m* is then turned to bring its flat sides parallel with the like sides of the block

E, whereupon the latter is passed through the mortise until its shoulder *h* strikes the head of the screw *D*, and its top *k* meets the top *j* of the mortise. Then the screw *m* is turned to bring its shoulders into the sockets *n*, which turning, by screwing the screw into the block, draws the latter forward through the mortise until the block is wedged tightly against the screw *D*, and until the frictional engagement between the fastening screw *m* and its socket *n* is sufficient to prevent unscrewing of this screw. Then the bit is ready for use, and the parts will maintain themselves in this condition until the fastening screw is loosened by the use of a screw-driver, which can be conveniently done at any time when it is desired to remove the block and replace the screw point with a new one.

The screw *D* is preferably an ordinary wood screw having the opposite sides of its tapering head *g* cut off at right angles to the notch to form flat walls *s* which coincide with the maximum diameter of the shank *u* of the screw, and fit snugly between the side walls *t* of the socket, which walls likewise correspond with said diameter and with the diameter of the screw socket *I*, as best seen in Figs. 3 and 6. Any other suitable or special construction of screw or point may however be used instead of the screw *D* shown.

It is not essential to the invention that the top of the block *E* and the top of the mortise *J* be constructed as inclined surfaces, as any suitable provision for giving a downward tendency to the block as it is drawn into the mortise may be used instead. An example of such a modification is shown in Fig. 7, wherein the block lettered *E'* is pivotally hung in the mortise lettered *J'* by a pin *v* on which the block swings. With this construction, as the fastening screw lettered *m'* is adjusted to draw the block forward in the mortise, the block swings downwardly against the screw lettered *D'* and holds the latter tightly in position. The other parts of this construction are similar to those before described.

It will be seen that my invention provides a boring bit with a removable point which can be easily constructed, will be effective in use, and in which the means for locking the point will not interfere with the escape of the chips or cuttings during boring.

It will be understood that the invention is not limited to the particular details of construction and arrangement set forth, but that it may be availed of according to such modifications as circumstances or the judgment of those skilled in the art may dictate, without departing from the spirit of the invention.

What I claim is—

1. In an auger bit, the head, shank, and a removable point, the head having a socket receiving said point, and a lateral slot extending entirely through the auger above said socket, and a block in said slot engaging the point and retaining it in place.

2. In a boring bit, the head, shank, and a removable point, the head having an axial socket receiving said point, and the shank having a lateral mortise extending entirely through it above and communicating with the upper end of said socket through which said point may be inserted into said socket, said mortise of the same width as said socket, and a block fitting and seating in said mortise and when therein bearing against said point and preventing its displacement, and means for holding said block in said mortise.

3. In a boring bit, the head, shank, and a removable point, the head having an axial socket receiving said point, and the shank having a mortise extending diametrically through it above and communicating with said socket, and a block fitting said mortise and when therein engaging the head of said point and retaining it in position in said socket, and a rotative lock engaging said block and shank, carried by one of said parts and fastening them together.

4. In a boring bit, the head, shank, and a removable point, the head having a socket receiving said point, and the shank having a mortise extending entirely through it above and communicating with said socket, through which mortise said point is inserted, and a block entering and fitting said mortise and when therein engaging said point and retaining it in position in said socket, said mortise and block constructed with interengaging parts forcing said block against said point when the block is seated in the mortise.

5. In a boring bit, the head, shank, and a removable point, the head and shank consisting of a single integral piece of metal having a diametrical mortise above said socket, a block entering and fitting said mortise and when therein engaging said point and retaining it in place in said socket, and a screw having a shank engaging said block, and a head bearing on said bit and fastening said block in said mortise.

6. In a boring bit, the head, shank, and a

removable point, the head having a socket receiving said point, and the shank having a mortise extending diametrically through it, a block fitting said mortise and when therein engaging said point and locking it in place, said mortise and block having interengaging faces limiting the movement of the latter through the former, and a fastening for said block holding the latter in said mortise with said faces in engagement.

7. In a boring bit, the head A, shank B, and removable point D, the head having a socket I receiving said point, and the shank having a neck C traversed by a diametric mortise J of uniform width above and communicating with said socket, and having uprights *b* at the sides of said mortise, and a block E fitting said mortise, entering therein, and holding said point in position in said socket.

8. In a boring bit, a head A and a shank B, said head having an axial socket, a removable point D in said socket, said shank having a lateral mortise above and communicating with said socket, and a block E fitting and entering said socket and having a bottom face *c* bearing on the head of said point, and a shoulder *h* engaging the side of said point when said block is in said mortise, as and for the purpose set forth.

9. In a boring bit, the head A, shank B, and removable point D, the head having a socket I for said point, the shank having a mortise J above said socket, and block E fitting said mortise, and having a screwthreaded hole *l*, a screw *m* having a screwthreaded shank screwing in said hole *l*, and a projecting head of greater length than its width at the edge of said block, engaging said shank and thereby locking said block in position in said mortise.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

ELWOOD C. PHILLIPS.

Witnesses:

GEORGE H. FRASER,
THOMAS F. WALLACE.