

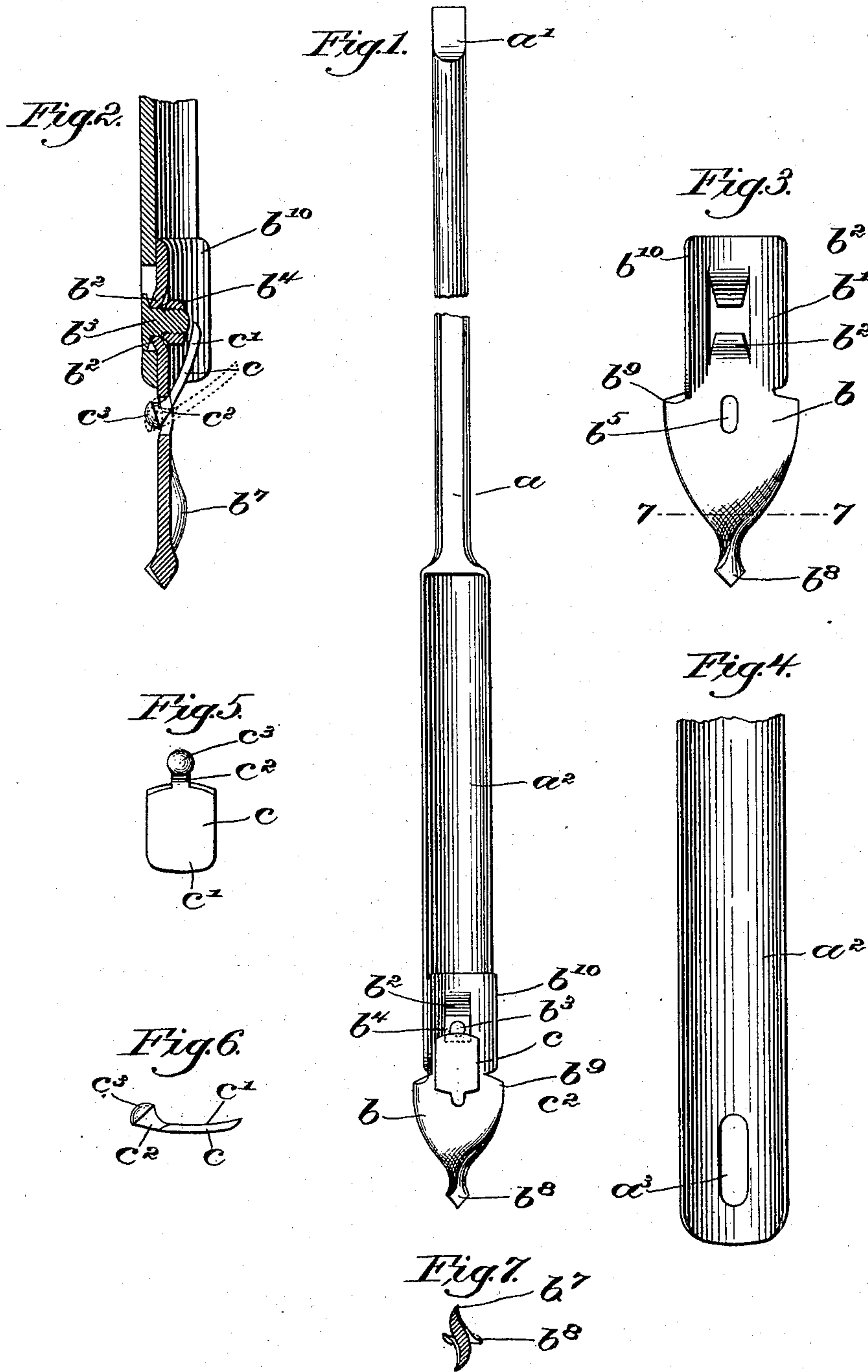
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Patented Jan. 9, 1900.

D. McCABE.
PROSPECTING DRILL.

(Application filed Mar. 29, 1898. Renewed June 14, 1899.)

(No Model.)



Witnesses.

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UNITED STATES PATENT OFFICE.

DAVID McCABE, OF BOSTON, MASSACHUSETTS.

PROSPECTING-DRILL.

SPECIFICATION forming part of Letters Patent No. 640,928, dated January 9, 1900.

Application filed March 29, 1898. Renewed June 14, 1899. Serial No. 720,553. (No model.)

To all whom it may concern:

Be it known that I, DAVID McCABE, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Prospecting-Drills, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention is an improvement in drills, being particularly intended for the use of prospectors, although it will be understood that it is capable of general use for which earth-drills are intended.

In its general features my invention comprises an automatic lifter which enables the operator to withdraw in compact undisturbed columnar form a desired sample of earth from any depth. Also my invention comprises a special form of self-feeding blade, this blade preferably being removable from the shank in order that worn-out or injured blades may be replaced by new ones; and a further feature of my invention resides in the means for securing the blade to the shank, whereby they are rendered rigid against lateral displacement.

Further features of my invention and the more detailed construction thereof will be fully understood from the following description, reference being had to the accompanying drawings, illustrative of a preferred embodiment thereof, and the invention will be more particularly defined in the appended claims, also forming a part of this specification.

In the drawings, Figure 1 is a front elevation of a drill constructed according to my invention. Fig. 2 is a central vertical section of the lower digging end thereof. Fig. 3 is an enlarged detail in elevation, showing the blade removed from the drill proper. Fig. 4 is an enlarged detail in elevation of the lower end of the drill to which the blade is secured. Fig. 5 is a front elevation of the automatic lifter. Fig. 6 is a side elevation thereof. Fig. 7 is a transverse section taken on the line 7 7, Fig. 3, showing the arrangement of the special point of the blade.

The shank a , of a convenient length (herein shown as intermediately broken out) and having a squared end a' or other connection for securing successive sections thereto as the

drill descends to greater depths, may be and is of usual construction as found in earth-drills, my invention residing in the lower or digging end of the drill. The latter is shown as having a concaved spoon-like or semicylindrical portion a^2 , semicircular in cross-section and of convenient length for carrying the desired sample of earth for inspection, while yet being capable of hand manipulation. At its lower end the portion a^2 is slotted, as shown at a^3 , and receives a blade b . (Shown in enlarged detail in Fig. 3.)

The blade b has a curved leg or shank b' , provided with two wedge-shaped tongues or projections b^2 , herein shown as struck up from the metal itself to the extent shown more clearly in Fig. 2, these tongues having a width fitting snugly into the slot a^3 in order to render the blade rigid against any twisting or lateral shifting movement relatively to the shank of the drill. A bolt b^3 and nut b^4 serve to secure the blade in position. The blade is provided immediately below the end of the portion a^2 with an aperture b^5 , in which I hang a lifter c , shown as having a shovel-like form c' , (see Figs. 1, 2, 5, and 6,) projecting forward, a neck c^2 , and a retaining-head c^3 , this lifter being loosely mounted in the aperture b^5 , so that as the drill is being bored forward into the earth the lifter will assume the position shown in Fig. 2 in full lines, and the moment the drill starts to move upward the lifter will drop into the position shown in dotted lines in Fig. 2, thereby supporting the column of earth held in the concaved portion a^2 of the shank, so as to insure that the sample of earth will be raised safely without having its particles materially disturbed. It will be understood that if the portion a^2 is of extreme length or if for any other reason it is desired I may provide a plurality of these lifters, one above the other, along the portion a^2 .

Referring to Figs. 1, 3, and 7, it will be seen that the blade b is of special and peculiar construction, having forwardly-curved flanged lips b^7 near its lower end and having at its lower end a drill-point b^8 capable of forcing its way through stone. The lips b^7 make the drill self-feeding, the blade being thence tapered upwardly, as shown, to the shoulders b^9 , which extend slightly beyond the vertical line of the portion a^2 , so as to prevent the

latter from binding and insure that it shall be free to remove a column or sample of earth without undue disturbance of the earth.

The rear or following edge b^{10} of the leg portion of the blade or knife is slightly wider than the opposite side, so as to make a scraper edge or flange projecting beyond the edge of the portion a^2 for making the hole smooth as the drill is rotated and also for directing the dirt into the tube a^2 .

In operation the prospector or other operator, for instance, (as it will be understood that my drill may be used for digging any kind of a hole, although being specially intended for prospecting for minerals,) rotates the drill to the right and the lips b^7 automatically feed the drill into the earth, the drill-point b^8 opening the way, and as the dirt is caught by the cutting edge b^{10} it is directed into the hollow or tubular shank portion a^2 and retained thereby. As the drill sinks into the earth the portion a^2 is gradually filled with the sample desired for the inspection of the prospector, the lifter c meantime resting in the position shown in full lines in Fig. 2 and not interfering with the downward progress of the drill. The prospector having reached the depth desired, such depth it may be having been attained by the use of other sections of shank or handle secured end to end above the end a' , then raises the drill, the lifter c at once automatically dropping to the position shown in dotted lines and being held in said position by the column of earth above it, which it serves to raise intact to the surface of the ground.

If a blade should get damaged, it is quickly removed simply by loosening the nut b^4 , and a new blade is put in place.

The blade is rigidly clamped against lateral displacement by means of the tongues b^2 entering the slot a^3 and held there by the bolt and nut.

While I have herein described my invention in all the details of its preferred embodiment, I do not intend to limit myself to these details, inasmuch as many changes in form, proportion, and arrangement of parts may be resorted to without departing from the spirit and scope of my invention.

Having fully described my invention, what claim, and desire to secure by Letters Patent, is—

1. An earth-drill having at its lower end a semicylindrical portion for retaining a sample of earth, a separable boring-blade, said blade comprising a shank curved to fit within said semicylindrical portion, and a boring portion below said shank tapering to a drill-point at its lower end, and having at its upper end a vertically-elongated slot, and a lifter movably mounted in said slot having a

broad shovel-like lifting end, and a reduced neck having substantially parallel sides fitting within said elongated slot and serving to maintain said lifter in proper upright position while permitting it to swing up and down in the slot, and a retaining-head at the outer end of said neck and behind said slot, and means for detachably securing said boring-blade to said semicylindrical portion, substantially as described.

2. An earth-drill comprising a semicylindrical shank having an elongated slot centrally located at its lower end, and a removable blade provided with two wedge-shaped tongues narrowing toward their free ends and being widest next the blade and adapted to both seat snugly into the said central slot for preventing lateral displacement of the blade relatively to said shank, and means independent of said tongues to clamp the blade and shank together, substantially as described.

3. An earth-drill having at its lower end a semicylindrical portion for retaining a sample of earth, a single separable boring-blade, said boring-blade comprising a shank curved to fit within said semicylindrical portion, the blade below said shank having a width greater than said shank and tapering thence to a drill-point, the latter being substantially in the axial line of the earth-drill, and means to secure said separable blade in central longitudinal alinement with said semicylindrical portion, said shank when so secured projecting slightly at its rear edge beyond the edge of the semicylindrical portion, substantially as described.

4. The herein-described drill for boring into and raising a sample from stony earth, said drill comprising a concave or hollow portion at its lower end for retaining a sample of earth to be raised with the drill, and a boring-blade at the lower extremity of said concave portion, said boring-blade having its extreme lower point formed with two straight edges only slightly beveled, and diverging from each other at approximately ninety degrees, to constitute a drill-point for drilling through stone when met with in the earth-boring, said drill-point having, in addition to said stone-drilling edges, forwardly-projecting lips, said lips being at the edges of the blade and extending upwardly in opposite directions from adjacent the upper ends of the edges of said drill-point, for feeding the drill into the earth, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DAVID McCABE.

Witnesses:

GEO. H. MAXWELL,
ALEX. C. PROUDFIT.