

(No Model.)

W. L. ROSS.
SUBAQUEOUS ROCK BREAKING CHISEL.

No. 531,334.

Patented Dec. 25, 1894.

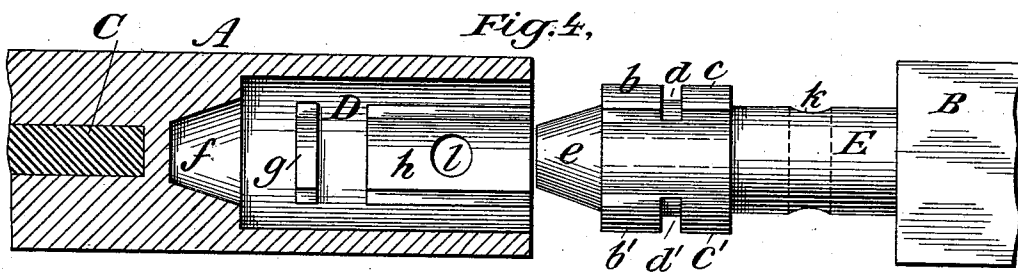
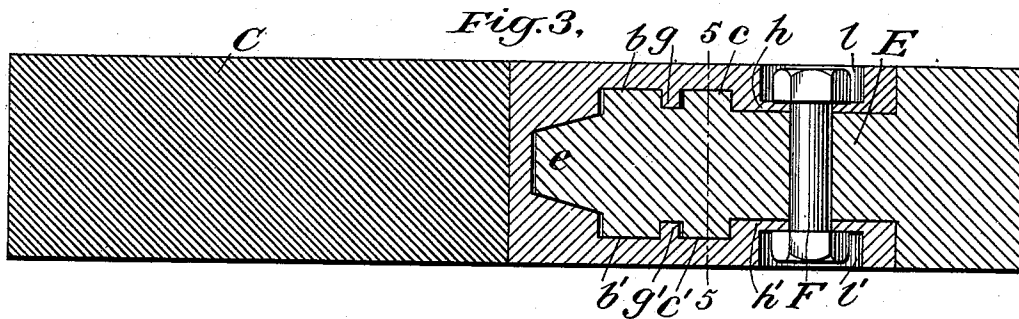
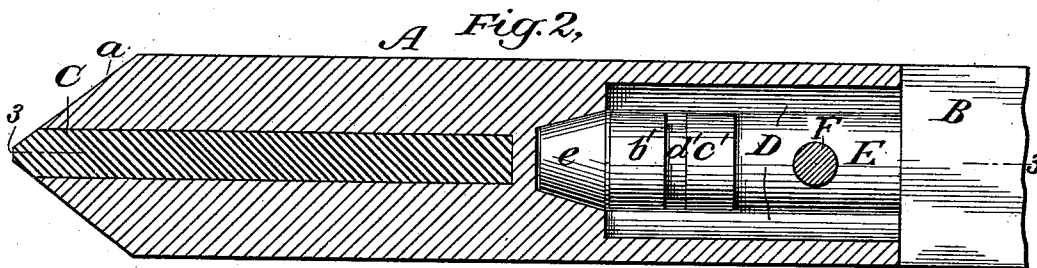
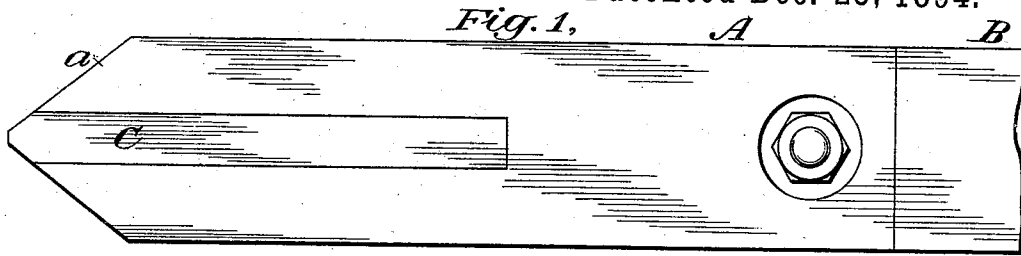


Fig. 5. *A*

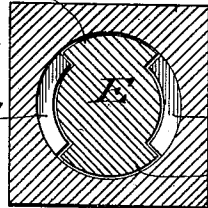
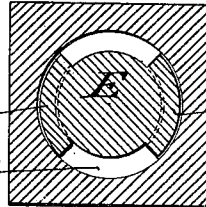


Fig. 6. *A*



Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM L. ROSS, OF NEWARK, NEW JERSEY, ASSIGNOR TO P. SANFORD
ROSS, OF SAME PLACE.

SUBAQUEOUS ROCK-BREAKING CHISEL.

SPECIFICATION forming part of Letters Patent No. 531,334, dated December 25, 1894.

Application filed July 11, 1894. Serial No. 517,176. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM L. ROSS, a citizen of the United States, and a resident of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Subaqueous Rock-Breaking Chisels, of which the following is a specification.

My invention relates to subaqueous rock-breaking chisels and has for its object to provide a removable point for the body of the chisel.

In the patent for a subaqueous rock breaker, No. 517,556, granted to P. Sanford Ross April 3, 1894, there is described a series of iron chisels weighing each about six tons, which are hoisted by means of a derrick to a considerable height and dropped upon the rock below. The enormous force of the blow disintegrates the rock, and although these chisels are provided with steel cores welded in at their points as referred to in the said patents, nevertheless the points will of course wear out in time and require to be renewed. It has been found that there is great inconvenience and expense, both of time and money, involved in renewing the points on account of the great weight and size of the chisels. They have to be unmounted from the derrick and shipped to a distant shop especially equipped to effect the needed repair. This takes several weeks of valuable time from the working period of the chisels and adds to the expense of shipment and actual repair. To save this expense and trouble I provide according to my invention each chisel with a removable point, which, when repair is needed, may be detached and sent to the shop without unmounting the chisel. Each chisel moreover may have more than one point, so that while one point is at the shop another may be fixed in its place and the chisel thus kept busy.

The invention consists of the construction hereinafter set forth.

In the drawings, in which like letters designate similar parts throughout the several views, Figure 1 is a side elevation of the lower end of a rock-breaking chisel embodying my invention. Fig. 2 is a longitudinal sectional elevation of the point of the chisel as con-

nected to the body of the chisel. Fig. 3 is a longitudinal sectional elevation taken on the line 3—3 of Fig. 2. Fig. 4 is a similar view to Fig. 2, the parts being disconnected and the lower end of the body of the chisel being turned through a right angle. Fig. 5 is a transverse sectional view on the lines 5—5, of Fig. 3, showing the parts in locked position, and Fig. 6 is a sectional view on the same line as Fig. 5 but showing the parts in unlocked position.

Referring more specifically to the drawings, A is the removable point and B is the shank of a chisel embodying my invention. The point A has a cutting tip *a*, preferably wedge-shaped and is provided with a steel core C, extending upward from the cutting tip and welded into the iron body of the point. This core is preferably flat and extends laterally through the point. The opposite end of the point A is provided with a socket D, adapted to receive the stud E of the shank B. The stud and socket are provided with corresponding projections and recesses, which when the stud is inserted within the socket and turned through a right angle, interlock and unite the shank and point rigidly together. As shown in the drawings, the stud has four segmental projections, *b b', c c'*. The projections *b* and *c* are on one side of the stud and separated by the recess *d*, and the projections *b'* and *c'* are on the opposite side and separated by the recess *d'*. The extreme lower end *e* of the stud is tapered or made conical. The socket D, which is made to correspond with the stud has a tapering socket *f* to receive the end *e*, and four segmental projections *g, g', h, h'*. The stud has an aperture *k* and the socket has corresponding countersunk apertures *l* and *l'* for the reception of a locking bolt F.

In connecting the point and shank of the chisel, the stud E is brought opposite the open end of the socket D, and turned so that the projections *b, c* and *b', c'*, register with the recesses between the projections *g, h* and *g', h'*. The stud may then freely enter the socket. When it has been pushed in to the bottom the shank and stud are turned through a right angle, so that the projections *b, c* and *b', c'* fit respectively beneath projections

g, h and *g', h'*, the projections *g, g'* of the socket filling the recesses *d d'* of the stud. This brings the apertures *k, l* and *l'* into register and the bolt can then be passed through them to firmly lock the parts together. I prefer to solder the head and nut of the bolt in their countersinks, to hold the bolt rigidly in place and prevent wear.

By means of the projections and recesses with which the stud and socket are provided as herein shown and described, it will be seen that a very large extent of wearing surface is provided for these parts which will effectually distribute the impact when the chisel falls.

Various changes which will readily suggest themselves to one skilled in the art might be made without departing from the spirit of my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a sub-aqueous rock-breaking chisel, the combination of a long heavy shank provided with a stud at its lower end, a removable point provided with a socket adapted to receive the stud of the shank, the socket and stud having projections and recesses which, when the stud is inserted within the socket and turned through a given angle, are adapted to interlock, and means for maintaining the parts in locked position whereby the point and shank are rigidly and detachably united, substantially as set forth.

2. In a sub-aqueous rock-breaking chisel, the combination of a long heavy shank provided with a stud at its lower end, a removable point having at one end a cutting tip and provided with a welded in steel core extending upward from the tip and at its other end provided with a socket adapted to receive the stud of the shank, the socket and stud having projections and recesses which, when the stud is inserted within the socket and turned through a given angle, are adapted to interlock, and means for maintaining the parts in locked position whereby the point and shank are rigidly and detachably united, substantially as set forth.

3. In a sub-aqueous rock breaking chisel, the combination of a long heavy shank pro-

vided with a stud at its lower end, a removable point provided with a socket adapted to receive the stud of the shank, the socket and stud having projections and recesses which, when the stud is inserted within the socket and turned through a given angle, are adapted to interlock, and a removable bolt passing through the socket and stud for maintaining the parts in locked position whereby the point and shank are rigidly and detachably united, substantially as set forth.

4. In a sub-aqueous rock breaking chisel, the combination of a long heavy shank provided with a stud at its lower end, a removable point having at one end a cutting tip and provided with a welded in steel core extending upward from the tip and at its other end provided with a socket adapted to receive the stud of the shank, the socket and stud having projections and recesses which, when the stud is inserted within the socket and turned through a given angle, are adapted to interlock, and a removable bolt passing through the socket and stud for maintaining the parts in locked position whereby the point and shank are rigidly and detachably united, substantially as set forth.

5. In a sub-aqueous rock-breaking chisel, the combination of a long, heavy shank provided with a stud *E* at its lower end, a removable point *A* provided with a socket *D* adapted to receive the stud of the shank, the socket having projections *g g'* and *h h'* and corresponding recesses, and the stud having projections *bb'*, and *cc'* and recesses *dd'* which, when the stud is inserted within the socket and turned through a given angle, are adapted to lock, and a removable bolt *F* passing through the socket and stud for maintaining the parts in a locked position whereby the point and shank are rigidly and adjustably united, substantially as set forth.

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

WILLIAM L. ROSS.

Witnesses:

F. H. VINSON,

WILLIAM B. ELY.