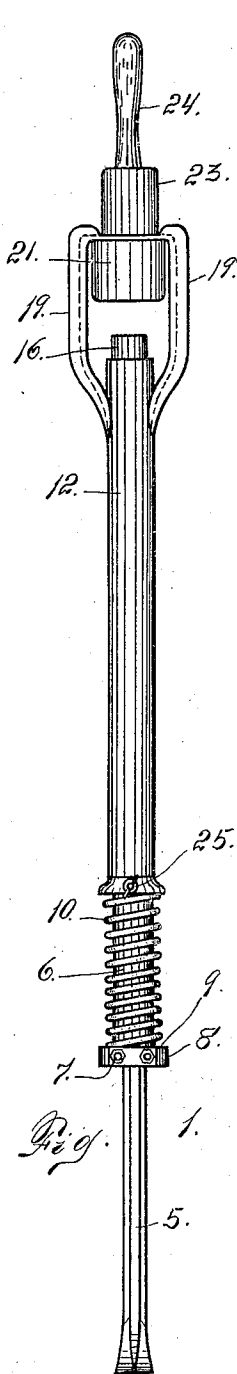


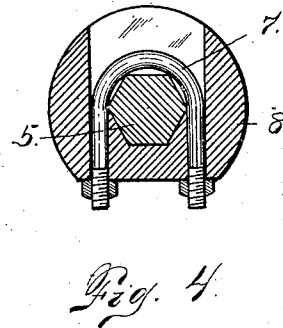
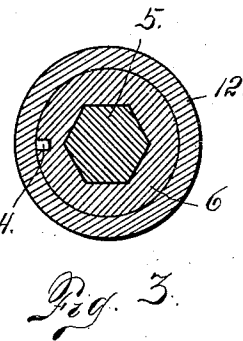
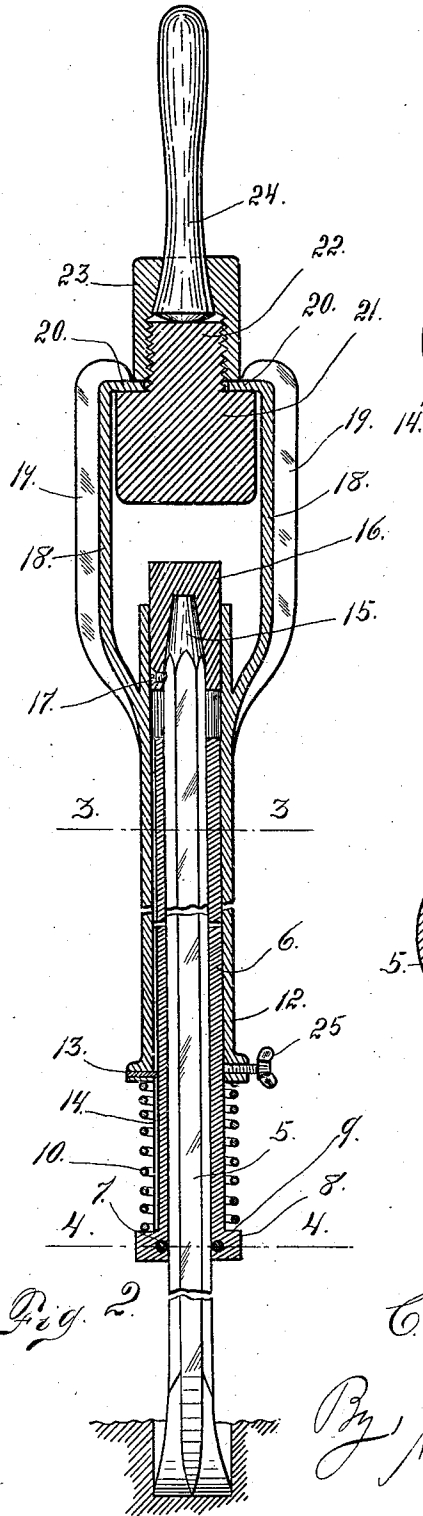
No. 874,499.

PATENTED DEC. 24, 1907

C. H. GUNN.
HAND ROCK DRILL.
APPLICATION FILED DEC. 3, 1906.



Witnesses
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UNITED STATES PATENT OFFICE.

CHARLES H. GUNN, OF OROVILLE, CALIFORNIA.

HAND ROCK-DRILL.

No. 874,499.

Specification of Letters Patent.

Patented Dec. 24, 1907.

Application filed December 3, 1906. Serial No. 346,184.

To all whom it may concern:

Be it known that I, CHARLES H. GUNN, a citizen of the United States, residing at Oroville, in the county of Butte and State of California, have invented certain new and useful Improvements in Hand Rock-Drills; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in hand rock drills, my object being to provide a simple and effective construction of this class, whereby it becomes practicable for the operator to perform the drilling function by simply raising and lowering a hammer connected in operative relation with the drill bit.

The invention will now be described in detail reference being made to the accompanying drawing in which is illustrated an embodiment thereof.

In this drawing, Figure 1 is a side elevation of my improved construction. Fig. 2 is a sectional view of the same with the parts shown on a larger scale. Figs. 3 and 4 are sections taken on the lines 3—3 and 4—4 respectively of Fig. 2.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate the drill bit; 6 the sleeve surrounding the drill bit and connected therewith by means of a U-bolt 7 inserted in the chuck extremity 8 of the sleeve 6. This chuck extremity, of the sleeve is enlarged having an offset or shoulder 9 which is engaged by the lower extremity of a coil spring 10, the upper extremity of the spring bearing against the lower extremity of a casing 12, the sleeve and casing being so constructed that the casing slides freely upon the sleeve. This casing is connected with the sleeve by a pin 13 which enters a longitudinal groove 14 formed in the exterior surface of the sleeve. The upper extremity of the drill bit is tapered as shown at 15 and protected by a cap 16 of hardened steel to prevent the upsetting of the drill bit during the operation of the drill. This cap is connected with the drill bit by a screw 17. The upper part of the casing is bifurcated and consists of two arms 18 reinforced by beads 19, the said arms at their upper extremities

being turned inwardly at right angles as shown at 20. Between the upper portions of these arms is located a hammer 21 having a reduced upper extremity 22 exteriorly threaded to receive a cap 23 which is interiorly threaded for the purpose. This cap is screwed down upon the extremities 20 of the arms 18. A hand piece 24 is connected with the upper extremity of the cap 23, the said handle or hand piece passing through an opening formed in the cap above the reduced part 22 of the hammer. It will thus be observed that the casing 12, the hammer 21 and the handle 24 are connected to reciprocate in unison. The drill bit as shown in the drawing is hexagonal in cross section and the sleeve is provided with an opening of similar shape through which the drill bit passes, thus making it practicable for the drill bit to move longitudinally independently of the sleeve.

The spring 10 is preferably of such strength that it will normally support the hammer and the casing with which it is connected above the cap 16 of the drill bit. When the device is in operation, the operator grasps the handle 24 and forces the same downwardly causing the hammer 21 to come forcibly in contact with the cap 16, thus driving the cutting extremity of the drill bit against and into rock. As the casing is forced downwardly, the spring 10 is compressed and when the downward pressure ceases to act, the recoil of the spring lifts the casing and hammer to the position shown in Figs. 1 and 2 of the drawing. The casing and hammer are again forced downwardly until the hammer comes in contact with the cap 16 after which the operation is continued.

A set bolt or screw 25 may be employed, to lock the sleeve 6 in any desired position of longitudinal adjustment with reference to the casing. In other words if desired the sleeve may be forced into the casing to its limit of movement whereby the spring 10 is compressed into a small compass. By tightening the set screw, the casing and sleeve may be locked in the said position.

By virtue of the connection between the sleeve 6, and the drill bit 5, and the same sleeve in the casing, the drill bit may be given a partial rotary movement by the operator every time the casing moves upwardly in response to the recoil of the spring 10. It will be understood that this drill like any other must be rotated, in order to prevent

the cutting extremity of the bit from sticking in the hole.

In my improved construction no means are illustrated for automatically rotating the drill bit. It is however, thoroughly practicable in a hand device such as illustrated and described, for the operator to give a partial rotary movement to the entire mechanism including the drill bit every time the hammer is given the upward movement.

Having thus described my invention, what I claim is:

1. The combination with a drill bit, of a sleeve through which the drill bit passes, a casing surrounding the sleeve and reciprocable thereon, a spring engaging the sleeve at one extremity and the casing at the opposite extremity, a hammer connected with the upper extremity of the casing, the latter being provided with a handle to permit a reciprocating movement of the casing upon the sleeve whereby the hammer is brought forcibly in contact with the upper extremity of the drill bit which lies in the path of the hammer.

2. The combination of a drill bit provided with a cap at its upper extremity, a sleeve

through which the drill bit passes, the sleeve and drill bit being connected to move longitudinally independently of each other but arranged to rotate in unison, a casing which engages the sleeve and is reciprocable thereon, the casing being provided with a hammer, a coil spring interposed between the sleeve and the lower extremity of the casing whereby the latter is normally held in such position that its hammer is above the upper extremity of the drill bit.

3. The combination with a drill bit, of a sleeve through which the drill bit passes, a casing surrounding the sleeve and reciprocable thereon, a hammer connected with the upper extremity of the casing, the hammer being in alinement with the upper extremity of the drill bit and adapted to be brought into forcible contact therewith, the casing, sleeve and drill bit being connected to rotate together, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES H. GUNN.

Witnesses:

J. C. THOMAS,
J. L. HOWARD.