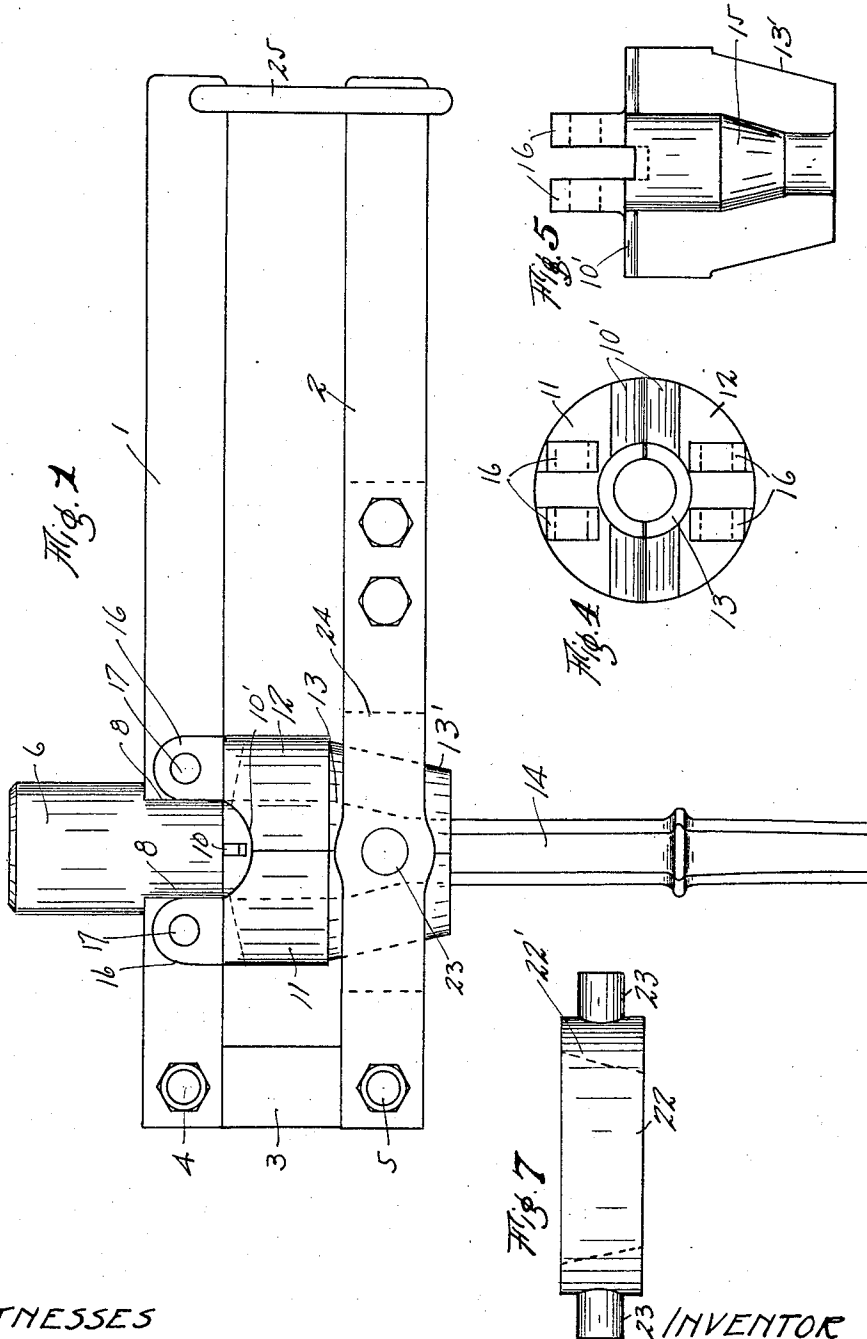


J. C. THOEN.
 DRILL SHARPENER, SHAPER, AND GAGER.
 APPLICATION FILED AUG. 31, 1912.

1,056,856.

Patented Mar. 25, 1913.

3 SHEETS-SHEET 1.



WITNESSES
 Harold C. S. Cantelero
 Paul B. Warren

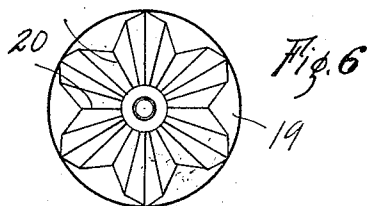
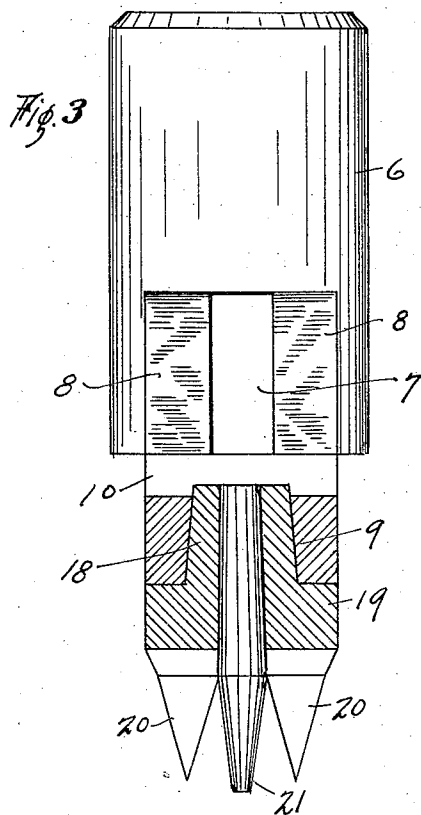
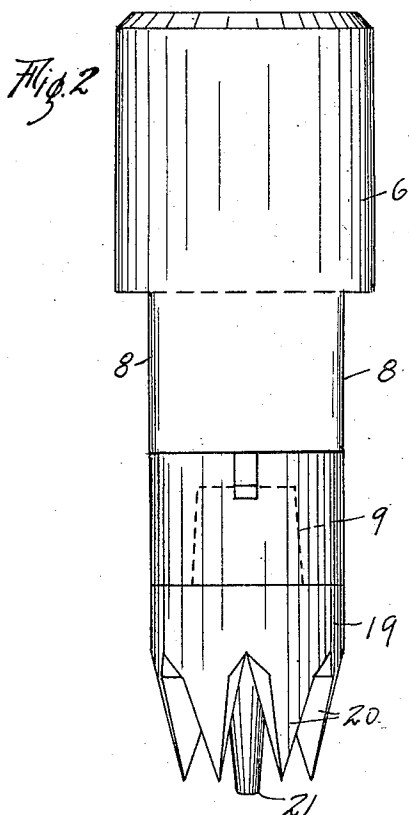
BY

INVENTOR
 John Christen Thoen
 Herbert E. Smith
 his ATTORNEY

J. C. THOEN.
 DRILL SHARPENER, SHAPER, AND GAGER.
 APPLICATION FILED AUG. 31, 1912.

1,056,856.

Patented Mar. 25, 1913.
 3 SHEETS—SHEET 2.



WITNESSES
 Harold C. Scantlebury
 Paul B. Warren

BY

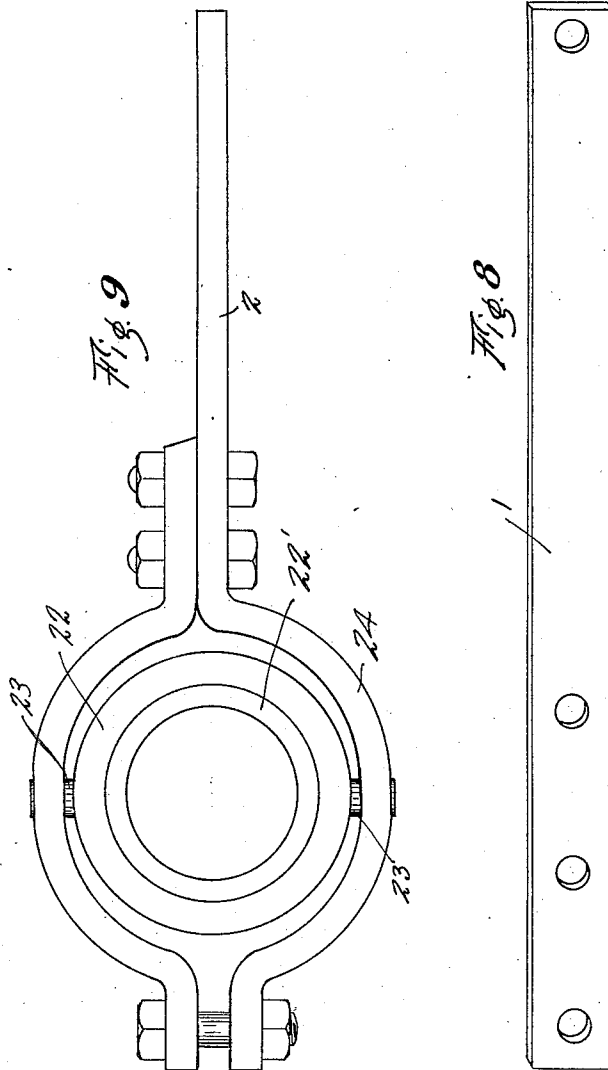
INVENTOR
 John Christen Thoen
 Herbert E. Smith
 his ATTORNEY

J. C. THOEN.
DRILL SHARPENER, SHAPER, AND GAGER.
APPLICATION FILED AUG. 31, 1912.

1,056,856.

Patented Mar. 25, 1913.

3 SHEETS—SHEET 3.



WITNESSES

Harold C. Scantlebury

Paul B. Warren

BY

INVENTOR

John Christen Thoen

Herbert E. Smith
his ATTORNEY

UNITED STATES PATENT OFFICE.

JOHN CHRISTEN THOEN, OF BURKE, IDAHO.

DRILL SHARPENER, SHAPER, AND GAGER.

1,056,856.

Specification of Letters Patent.

Patented Mar. 25, 1913.

Application filed August 31, 1912. Serial No. 718,016.

To all whom it may concern:

Be it known that I, JOHN CHRISTEN THOEN, a citizen of the United States, residing at Burke, in the county of Shoshone and State of Idaho, have invented new and useful Improvements in Drill Sharpeners, Shapers, and Gagers, of which the following is a specification.

My present invention relates to devices for sharpening, shaping and gaging drill bits of rock drills, and more particularly to such devices adapted to be manipulated by hand.

The principal objects of my invention are to provide a device whereby the several elements coacting to form the matrix for the drill head may be held in operative relation to each other by levers which serve as handles for manually holding and bodily transporting the device, as to the source of power for forming the head; by the disposition of parts, to enable a drill having a flared edge to be removed from the matrix forming members by withdrawing or moving the finished drill in a direction counter to that in which the metal stock was inserted into the matrix, and, in general, to provide a device simple in construction and efficient in action, for either sharpening and gaging the heads of an existing drill, or forming, sharpening and gaging new drill heads.

In the drawings, forming a part of this specification: Figure 1 is a side elevation of a device embodying my invention, showing a drill rod in operative relation thereto. Fig. 2 is a view in elevation of a head and dolly used in connection with my device. Fig. 3 is a view in elevation, of the members disclosed in Fig. 2, looking at right angles to such figure, parts being shown in central vertical section to disclose details of construction. Fig. 4 is a top plan view of die members used in connection with my device. Fig. 5 is an elevation of one of the die members disclosed in Fig. 4. Fig. 6 is a bottom plan view of the dolly disclosed in Fig. 2. Fig. 7 is a side elevation of a collar used in connection with my device. Fig. 8 is a perspective view of a lever carrying the head disclosed in Figs. 2 and 3. Fig. 9 is a plan view of a lever carrying the collar disclosed in Fig. 7.

Similar characters refer to similar parts throughout the several views.

Two levers, 1 and 2, are adapted to swing toward or from each other. This may be accomplished in any suitable manner, such as

by providing a link 3 pivotally connecting the adjacent ends of the levers as at 4 and 5.

The lever 1 carries, intermediate its ends, a head 6, preferably slotted as at 7 to receive the lever 1, and having flat faces 8, which are disposed laterally at right angles to the said lever when the same is inserted into slot 7. The head 6 is provided with a tapered socket 9 which faces lever 2, this socket being traversed by an aperture 10 for a purpose to be subsequently disclosed.

Pivoted to lever 1, at each side of head 6, are parts 11 and 12 of a sectional die designated generally by 13. The parts 11 and 12 are formed complementary to each other to embrace a drill rod 14, the interior of the die being flared and shaped in cross section, as at 15, corresponding to the desired flare and cross section of the finished drill head. The outer lower portion of the die is tapered, as at 13' for a purpose to be subsequently described, and each part 11 and 12, is provided with lugs 16 at their tops, disposed laterally of lever 1 and pivotally connecting the parts thereto, as by pins 17. The lugs are preferably rounded at the top and lie next adjacent to the flat faces of the head 6, to hold the same in a predetermined position upon lever 1, but permitting the die parts to be swung from or toward each other. The die parts are also recessed, as at 10', to permit access to aperture 10 in the head 6, whereby a calking tool or the like may be inserted into said aperture.

The tapered socket 9 of head 6 is adapted to receive a complementary portion 18 of the dolly 19, adapted to coact with die 13, constituting a matrix for the drill head. This dolly conforms in shape to the flared die recess 15 and has its inner end provided with any desired form or number of matrices 20, according to the shape of disk it is desired to provide. A tapering mandrel 21 may be carried by dolly 19 to lie in axial alinement with the opening in die 13, when the parts 11 and 12 are disposed complementary to each other to form the matrix.

In order to provide simple and efficient means for rigidly holding the parts 11 and 12 of die 13 in operative relation to each other, and to the dolly 19, to form the matrix, lever 2 carries a collar 22, having its inner periphery tapered as at 22' or formed complementary to the tapered portion 13' of the die. This collar is, as by trunnions 23, pivoted to an annulose 24

formed in lever 2, and so disposed that when the levers 1 and 2 are swung toward each other the collar 22 engages the tapered portion 13' of the die 13, and pressure upon the levers to draw the same toward each other, produces a constantly increasing binding force upon the parts 11 and 12 of the die. The levers 1 and 2 are held in a position with the collar 22 binding parts 11 and 12 together, as by link 25, carried by either lever, and embracing the other adjacent end of the opposite lever. The operation of the device is as follows:—A dolly of the form to produce the desired configuration at the end of the drill rod is inserted into the socket of head 6, the drill rod having its drill head brought to a suitable temperature is then placed to be embraced by die parts 11 and 12, the levers 1 and 2 being drawn toward each other and so retained as to hold the die parts in operative relation to the dolly to provide a matrix for the drill head. The device with the drill rod may then be manually transported and held so that the head 6 may receive suitable concussive action, as by a sledge hammer or a machine hammer, which condenses the heated end of the drill rod to the desired form according to the matrix provided.

The mandrel 21 serves to prevent a hollow drill from being contracted or closed up during the condensing or shaping operation, or to give clearance in a solid drill.

When it is desired to remove the finished drill, the levers 1 and 2 are swung apart from each other permitting the die parts 11 and 12 to swing apart from each other, whereby the drill head may be drawn from the device.

A calking tool may be driven into aperture 10 in head 6, to engage the upper portion 18 of dolly 19, to drive the same from said head.

I claim:—

1. In a device for sharpening, shaping and gaging drills, the combination of two levers adapted to swing toward or from each other, a dolly carried by one of said levers, two die parts pivotally carried by the said lever carrying the dolly, and coacting with the latter to form a matrix, said die parts being adapted to swing out of coaction with said dolly and having tapered lower ends, and a collar carried by the other lever adapted to produce a constantly increasing binding force upon the said tapered portions of said die parts, when said levers are drawn toward each other, to retain the die parts in coacting relation to said dolly, substantially as and for the purpose set forth.

2. In a device for shaping, sharpening and gaging drills, the combination of two levers adapted to swing toward or from each other, a head, carrying a dolly, having a slot for the reception of one of said levers, two die parts adapted to coact with said dolly to form a matrix, means pivoting said die parts at both sides of said head, to the said lever by which it is carried, whereby said die parts may be swung out of coaction with said dolly, and means carried by the other lever adapted to normally retain said die parts in coaction with said dolly to form a matrix.

3. In a device for sharpening, shaping and gaging drills, the combination of two levers pivotally connected adjacent their ends to swing toward or from each other, a matrix carried by one of said levers intermediate its ends, and including two complementary die parts adapted to move from coacting matrix forming relation to each other, and means carried by the other lever, intermediate its ends, adapted to hold said die parts in matrix forming relation to each other when said levers are swung toward each other.

4. In a device for shaping, sharpening and gaging drills, the combination of two levers pivotally connected adjacent their ends to swing toward or from each other, a matrix carried by one of said levers intermediate its end, and including two complementary die parts adapted to move from coacting matrix forming relation to each other, means carried by the other lever, intermediate its ends, adapted to hold said die parts in matrix forming relation to each other when the said levers are swung toward each other, and mechanism for retaining said levers in rigid relation to each other, substantially as and for the purpose set forth.

5. In a device for shaping, sharpening and gaging drills, the combination of two levers adapted to swing toward or from each other, a matrix carried by one of said levers and including complementary die parts adapted to move from coacting matrix forming relation to each other, and means carried by the other lever adapted to retain said die parts in coacting relation to each other, substantially as and for the purpose set forth.

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

JOHN CHRISTEN THOEN.

Witnesses:

RALPH WOMACOTT,

FRANK J. LUEDKE.