No. 648,096. Patented Apr. 24, 1900.

G. K. BENNER & U. G. HUBLEY.

DRILL JAR.

(Application filed Oct. 19, 1899.)

(No Model.)

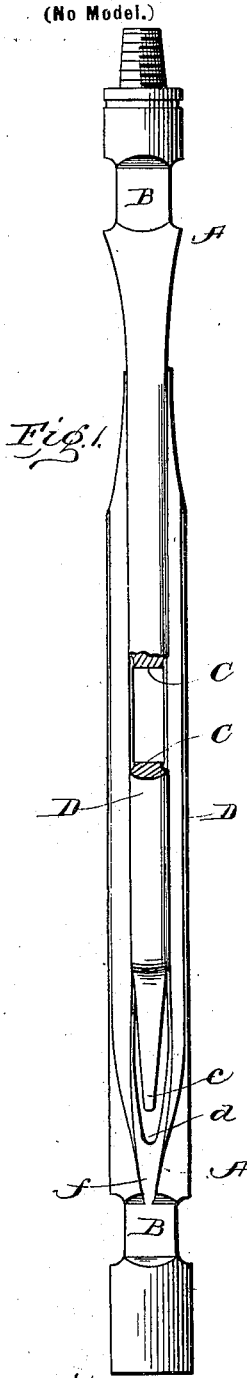

Fig. 1.

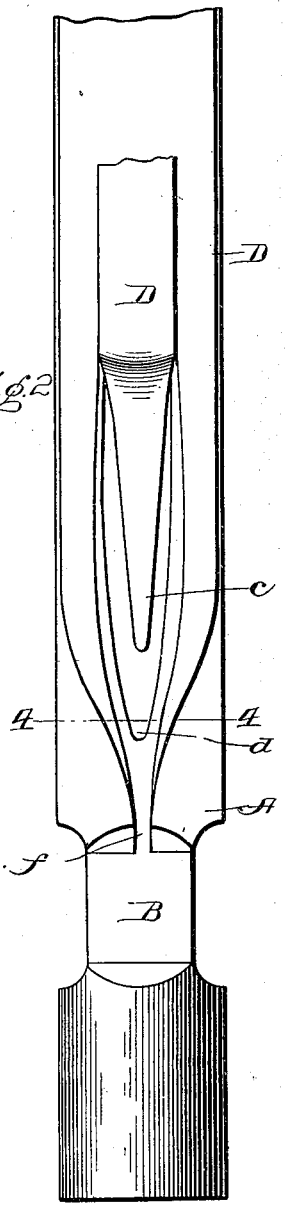

Fig. 2.

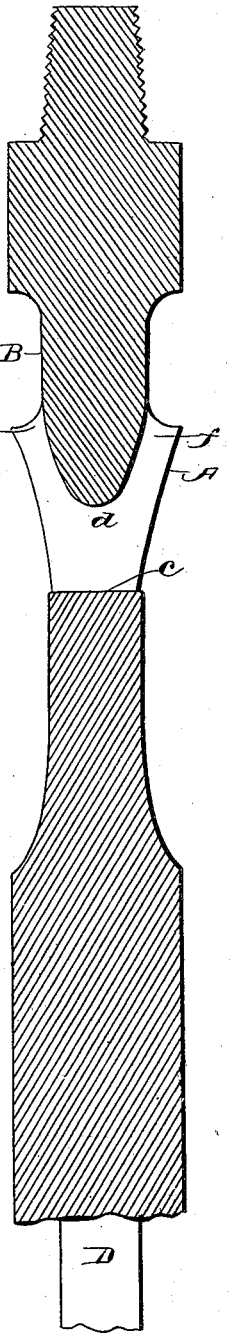

Fig. 3.

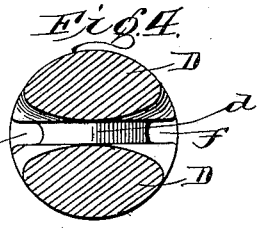

Fig. 4.

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UNITED STATES PATENT OFFICE.

GEORGE K. BENNER AND ULYSSES GRANT HUBLEY, OF PITTSBURG, PENNSYLVANIA, ASSIGNORS TO THE OIL WELL SUPPLY COMPANY, OF SAME PLACE.

DRILL-JAR.

SPECIFICATION forming part of Letters Patent No. 648,096, dated April 24, 1900.

Application filed October 19, 1899. Serial No. 734,106. (No model.)

To all whom it may concern:

Be it known that we, GEORGE K. BENNER and ULYSSES GRANT HUBLEY, citizens of the United States, residing at Pittsburg, in the county of Allegheny, State of Pennsylvania, have invented certain new and useful Improvements in Drill-Jars; and we hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a view in elevation of a drill-jar embodying our invention, portions of one rein being broken away to show the anvils or knockers. Fig. 2 is an enlarged view in elevation of one end of said drill-jar, showing the head and wrench-square of one section and the anvil or knocker portion of the other section of the drill-jar. Fig. 3 is an enlarged longitudinal central section of the head, wrench-square, &c., of one section and the anvil or knocker portion of the other section of the drill-jar; and Fig. 4 is a transverse sectional view of one section of the jar, taken on the line 4 4, Fig. 2, where the reins unite with or spring from the head.

Like symbols refer to like parts wherever they occur.

Our invention relates to the construction of that class of devices used in drilling Artesian and oil wells for the purpose of imparting to the drill a jar or shock to free or loosen the same preparatory to the lift thereof and the next stroke of the drill, and commonly termed "drill-jars."

Drill-jars may be said to consist of two interlinked sections which are counterparts except as to the ends, one of which is furnished with a pin and the other a box for connection with the rope-socket and auger-stem between which the drill-jar is interposed.

Generally stated, each section of the drill-jar may be said to consist of a head, (or shank,) a knocker or anvil, and reins which connect the head and knocker, and as heretofore commonly constructed the reins where they join the head or shank have been continuous or coextensive with the head, and the crotches formed by the reins have been equal in extent to the diameter of the head. Experience has shown that with such a construction square corners are formed the entire depth of the crotches by the blows of the tongues or wedge-shaped free ends of the sections, and that in course of time there is a cracking or breaking of the jar-reins adjacent to the heads.

The object of the present invention is to reduce to a minimum the formation of square corners and to limit the same within the reins, so that all tendency of the reins to break or crack will be obviated, and this we effect by recessing or slotting the crotches longitudinally where the reins unite with the heads which confine the crotches proper within the reins and reduce the same in thickness or depth, and such a construction embodies our invention.

We will now proceed to describe our invention more fully, so that others skilled in the art to which it appertains may apply the same.

In the drawings, A A indicate the heads of the drill-jar; B B, the usual wrench-squares; C C, the anvils or knockers terminating in the wedge-shaped free ends or tongues *c c;* D D, the reins which connect the heads with the anvils or knockers, and *d d* the crotches formed by the union of the reins with the heads.

Heretofore the reins have been coextensive with the head at their junction therewith, and the bottom of the crotch has been substantially flat and extended the entire thickness or diameter of the head. Consequently the square corners formed in course of time by the striking of the tongues *c c* on the bottom of the crotches *d d* has tended to crack the reins at their junction with the head, and this has been augmented by the tendency to crystallization of the metal produced by the vibration incident to the blow. To overcome these difficulties, we recess or slot the heads longitudinally, as at *f f*, at the junction therewith of the reins D D, and thus reduce the crotch proper or that portion which is struck by the tongue *d* to a minimum, so that any fin or square corners formed will be well within and against the body of the reins, where there is a body of metal to support it, and not at or near the outer edges of the reins, where a tendency to crack or break exists,

and whence if once formed the cracks will rapidly extend into the body of the reins. This slotting or recessing of the head A A at *f f* must extend a distance below the apex of the crotch, which is struck by the tongue *d*, and preferably extends, as will be noted, from the crotch *d* to the wrench-square B, thus also affording an outlet which, it is thought, in addition to its other function of confining the crotch proper within the reins, serves to relieve the reins D D of much of the vibration incident to the blow of the tongue in the crotch, and which tends to induce crystallization in the reins where they unite with the head A, which crystallization of the metal is thought to be one cause of the cracking and fracturing of the reins.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. A drill-jar having the crotch formed by the union of the reins with the head, limited within the reins, substantially as and for the purposes specified.

2. A drill-jar having its reins at their union with the head separated by slots or recesses which restrict the crotch proper to points within the free edges of the reins, substantially as and for the purposes specified.

3. A drill-jar having a head, reins which spring from the head and form a crotch, the reins being separated at their points of union with the head by longitudinal recesses or slots which extend to the wrench-square; substantially as and for the purposes specified.

In testimony whereof we affix our signatures, in presence of two witnesses, this 17th day of October, 1899.

GEORGE K. BENNER.
ULYSSES GRANT HUBLEY.

Witnesses:
E. H. GOODWIN,
JOHN EATON.