C. A. Read,

Rock Drill Jar.

No. 51,217. Patented Nov. 28, 1865.

Fig. 1.

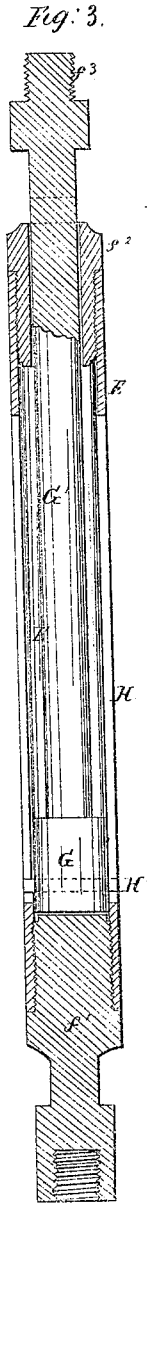


Fig. 3.

Fig. 4.

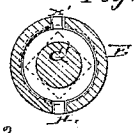
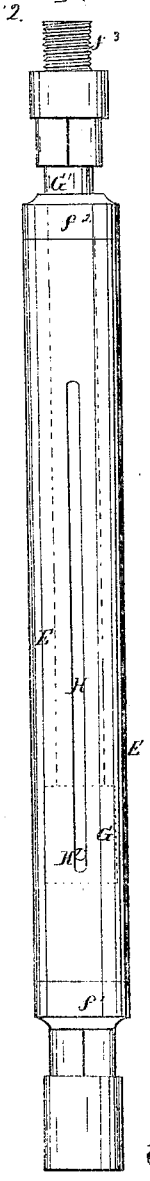


Fig. 2.



Witnesses;
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AM. PHOTO-LITHO. CO. N.Y. (OSBORNE'S PROCESS)

UNITED STATES PATENT OFFICE.

CHAS. A. READ, OF LOCKPORT, NEW YORK.

IMPROVED DRILL-JAR.

Specification forming part of Letters Patent No. **51,217**, dated November 28, 1865.

To all whom it may concern:

Be it known that I, CHARLES A. READ, of Lockport, in the county of Niagara and State of New York, have invented a certain new and Improved Drill-Jar; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure I is an elevation of a set of drilling-tools, such as are commonly used in boring oil or Artesian wells, with my improved jar connected therewith. Fig. II is an elevation of the jar disconnected and by itself. Fig. III is a longitudinal section of same; and Fig. IV is a cross-section of same.

My improved drill-jar consists, essentially, of a cylindrical barrel connected to the auger-stem, within which is placed a vertically-moving head or piston connected with the sinker-bar, which piston, in the upward movement of the drill-rope, strikes against the barrel-head and gives the required blow or jar to the barrel and tools connected therewith, to loosen them, the moving piston being entirely protected within the barrel as against any possible clogging or wedging of the same.

Letters of like name and kind refer to like parts in each of the figures.

A set of boring-tools for sinking oil or other Artesian wells commonly consists of a center-bit, auger-stem, drill-jar, and sinker-bar, to which the drill-rope is connected by a rope-socket, the jar being located between the auger-stem and sinker-bar. (See Fig. I.)

E represents the cylinder or barrel of my improved drill-jar, made of heavy wrought-iron tubing of less diameter than the bore of the well, so that it will move freely therein. It has a screw-plug and socket, f', at its lower end, by which it is connected to the auger-stem, and at its upper end a screw-head, f^2, bored for the passage of the piston-rod.

G represents the piston-head, forged upon the end of the piston-rod G′, and fitting the barrel E and moving snugly therein, the rod working through the screw-head f^2, and connected with the sinker-bar by a screw-socket, f^3.

H H represent vertical slots cut in the cylinder diametrically opposite each other, in which a guide-pin, H′, inserted through the piston-head slides, its office being to prevent the turning of the piston within the cylinder, so that the rotation of the drill-rope will be communicated to the cutting-tool.

The operation of the jar is as follows: The length of the drill-rope being so regulated that the drill or cutting-tool will strike before the walking-beam or other operating device completes its downward motion, after such striking of the drill a certain amount of slack in the rope will be produced, which will be taken up by the weight of the sinker-bar, moving the piston downward into the cylinder, so that at the next upward stroke the drill-rope, sinker-bar, and piston will move some distance before lifting the drill and auger-stem, which will not move until the piston strikes the cylinder-head. It is the sudden blow or jar produced by this striking of the piston which loosens the cutting tool (which by its previous blows will have become jammed or tight in the well) and saves the extreme expenditure of power, with danger of breaking connections which would be required to lift it by a dead pull.

The principal advantages of my improved jar over those in common use are—

First, greater strength and durability, with less cost of construction.

Second, a much greater striking-surface is obtained, and without the tendency to split and spread the jar, which exists in the common tool. In the common drill-jar there is only one and one-quarter inch striking surface. In this there is five and one-half inches.

Third, the absolute protection of the moving or striking part, (*i. e.*, the piston,) by the cylinder or barrel, against any chance of wedging or clogging.

In the common form of jar, both parts being alike, the striking part is liable to jam or wedge when the hole bored gets out of round or flattened, and then it can be loosened only by a dead pull, which will frequently break the connections and leave the tools, or part of them, in the well. This can never occur in my improved jar, since, however tightly the barrel may become wedged, the piston will always be free to move, and the blow or jar may be applied to loosen and free the cylinder, as well as to loosen and free the drill.

The blow of the common jar has a constant tendency to split the link, and consequently

to widen and wedge it in the well. My improvement wholly avoids this difficulty.

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

A drill-jar for Artesian-well boring, consisting of the full cylinder E, including the slots H, piston G, including the guide-pins H′, piston-rod G′, screw-plug and socket f', and screw-head f^2, substantially as set forth.

CHARLES A. READ.

Witnesses:
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