G. F. BELL.

DRILL JAR.

APPLICATION FILED FEB. 6, 1913.

1,068,844.

Patented July 29, 1913.

Fig. 1.

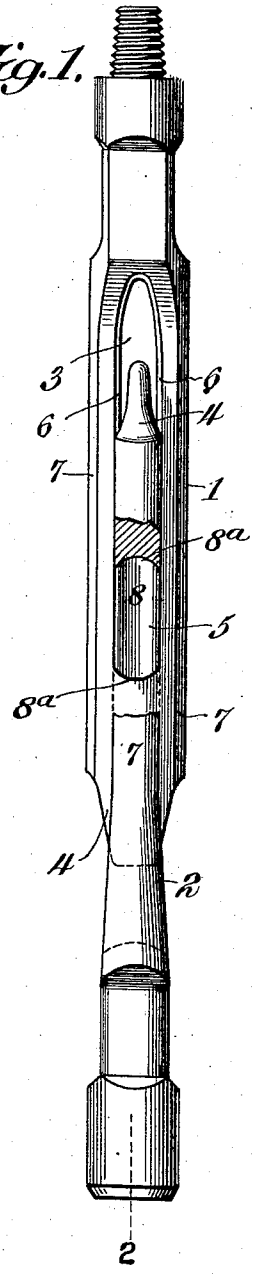


Fig. 3.

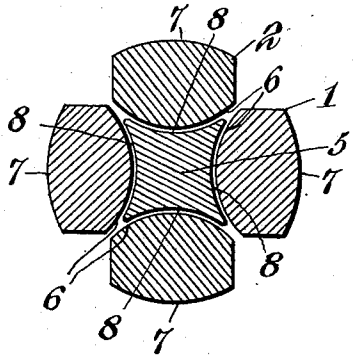


Fig. 4.

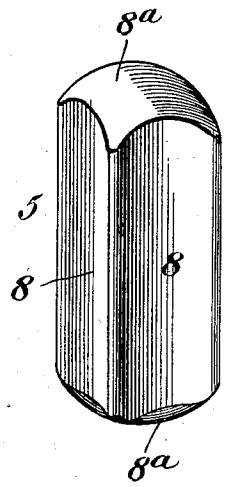
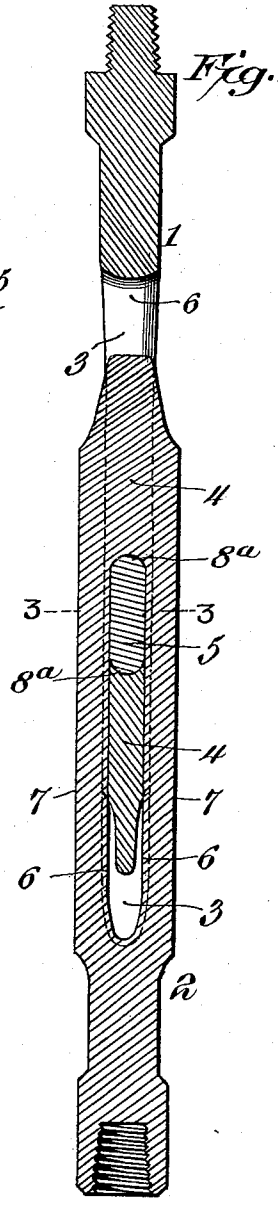


Fig. 2.



WITNESSES

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DRILL-JAR.

1,068,844. Specification of Letters Patent. Patented July 29, 1913.

Application filed February 6, 1913. Serial No. 746,643.

To all whom it may concern:

Be it known that I, GEORGE F. BELL, a citizen of the United States, residing at Crafton, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Drill-Jar, of which the following is a specification.

The invention relates to improvements in drill jars for fishing and drilling gas, oil and water wells.

It is well known that the drill jars or reins are the weakest portion of a string of tools and cause the most trouble. It is almost impossible to obtain steel that will withstand the blows incident to the operation of the jars or reins. If the steel is too soft it batters and locks the jars and renders them useless, and if too hard they break and become inoperative.

The object of the present invention is to eliminate the aforesaid difficulties and to provide a simple, inexpensive and efficient device, adapted to be readily applied to drill jars or reins, and capable of maintaining the links in a straight condition and of preventing them from wabbling and of equalizing the strain on the links and thereby prolong the life thereof.

A further object of the invention is to enable the drill jars or reins to be constructed of much softer material than heretofore, and by interposing a relatively hard block or plug between the striking heads or anvils to prevent the links from battering and locking.

With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawing, and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawing: Figure 1 is a side elevation of a drill jar, constructed in accordance with this invention. Fig. 2 is a central longitudinal sectional view of the same on the line 2—2 of Fig. 1. Fig. 3 is a transverse sectional view on the line 3—3 of Fig. 2. Fig. 4 is a detail perspective view of the loose guide block or plug.

Like numerals of reference designate corresponding parts in all the figures of the drawing.

In the accompanying drawing in which is illustrated the preferred embodiment of the invention, 1 and 2 designate upper and lower drill jar links having spaced side portions forming intervening slots or spaces 3 and connected by striking heads or anvils 4, between which is interposed a loose guide block or plug 5. The links, which are coupled together in the usual manner, are of the ordinary construction, and the spaced sides have curved inner and outer faces 6 and 7, and the guide block or plug 5, which is substantially rectangular in cross section, has grooved side faces 8 to conform to the configuration of the inner side face 6. The slidably engaged or guiding portions of the inner faces of the spaced sides of the links of the drill jars or reins are absolutely parallel, and the side faces of the slidable guide block are also parallel.

The guide block is assembled or placed in position in the slots or openings of the links before the striking heads or anvils are welded between the terminals of the spaced sides. The guide block or plug, which has convex upper and lower faces 8^a, is interposed between the striking heads or anvils, and it is designed to be constructed of considerably harder steel than the links. The links of the drill jar are constructed of proper length to afford the necessary movement of the parts to enable a sufficient jar to be imparted to the drilling tool to loosen it and allow it to be raised in position for delivering another blow, and in the relatively slidable movement of the upper and lower links, the guide block or plug plays or slides in the slots or openings and guides the links, maintains the same in a straight condition, and prevents wabbling. At the same time the relatively harder metal of the guide block or plug prevents the links from battering and locking and greatly increases the durability and efficiency thereof. The relatively soft material of the links eliminates the danger of breakage incident to the employment of too hard a steel in their construction. The block or plug guides the drill jars or reins and in sliding in the longitudinal slots between the absolutely parallel guiding faces thereof, it equalizes and greatly diminishes the strains on the drill jars or reins and eliminates the possibility of an irregular or unusual strain at

any point on the same, and the efficiency or strength of the drill jars or reins is greatly increased.

While it is preferred to construct the links and the guide block or plug of steel of different degrees of hardness, the links and the guide block or plug may be constructed of any suitable material.

What is claimed is:—

1. A drill jar including upper and lower links coupled together and having striking heads or anvils, and means interposed between the heads or anvils to receive the blows thereof and constructed of a material of a different degree of hardness from the material of the links.

2. A drill jar comprising upper and lower links having spaced sides and provided with striking heads or anvils connecting the sides, and a guide slidable between the sides of the links and arranged to receive the blows of the striking heads or anvils and adapted to maintain the links in a straight condition to prevent them from battering and locking.

3. A drill jar comprising upper and lower links coupled together and having spaced sides and connecting heads or anvils, and a guide block or plug arranged between the sides of the links and interposed between the striking heads or anvils.

4. A drill jar comprising upper and lower links provided with slots or openings and having striking heads or anvils and coupled together, said links being constructed of relatively soft material, and a guide block or plug arranged within the slots or openings of the links and interposed between the striking heads or anvils and constructed of a material relatively harder than that of the links.

5. A drill jar comprising upper and lower links having spaced side portions provided with curved inner faces, said links being also provided with striking heads or anvils connecting the said portions, and a guide block or plug arranged between the sides of the links and interposed between the striking heads or anvils and having grooved side faces conforming to the configuration of the inner faces of the sides of the links.

6. A drill jar comprising upper and lower links coupled together and having spaced sides provided with parallel inner guiding faces, and a slidable guide block or plug arranged between the spaced sides of the said links and having parallel side faces and movable longitudinally of the said links to guide the same.

7. A drill jar comprising upper and lower links coupled together and having spaced sides and connecting heads or anvils, a guide block or plug arranged between the sides of the links and interposed between the striking heads or anvils and provided with upper and lower convex end faces.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

GEORGE FRANCIS BELL.

Witnesses:
G. C. HABEL,
ERNEST PAYNE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."