

J. C. EASTMAN.  
DRILL JAR.

No. 66,816.

Patented July 16, 1867.

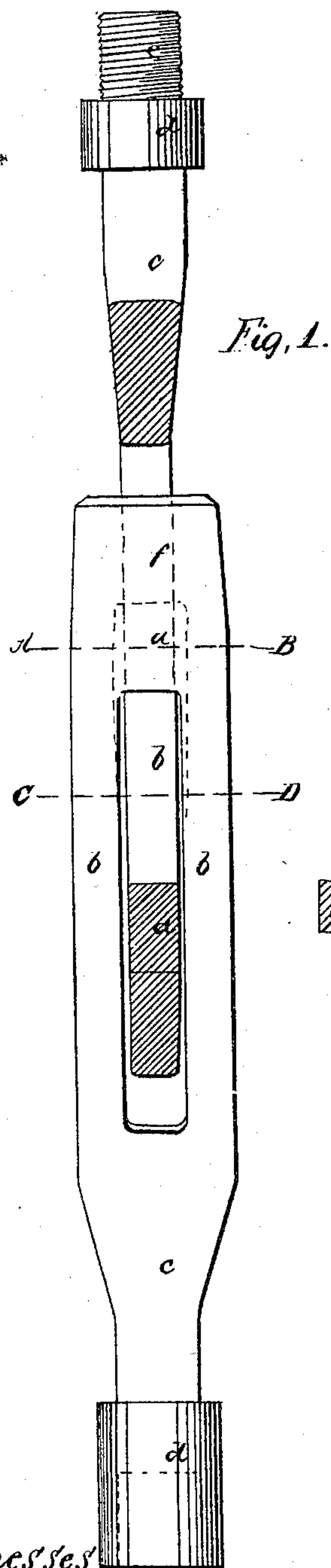


Fig. 1.

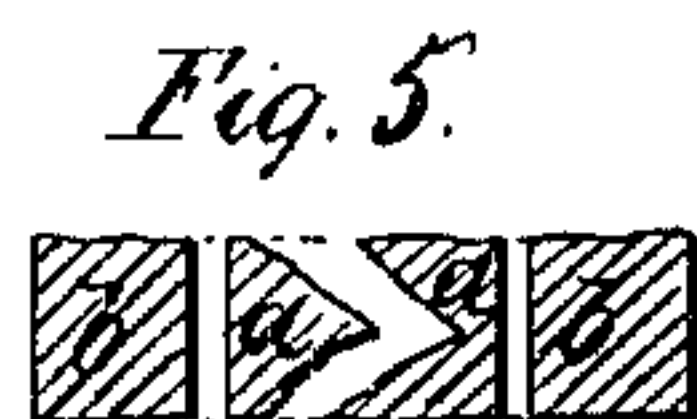


Fig. 5.

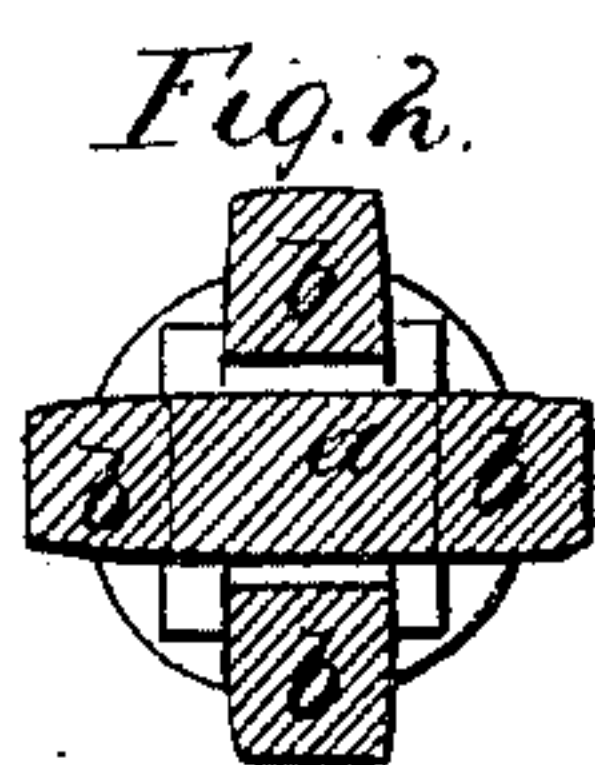


Fig. 2.

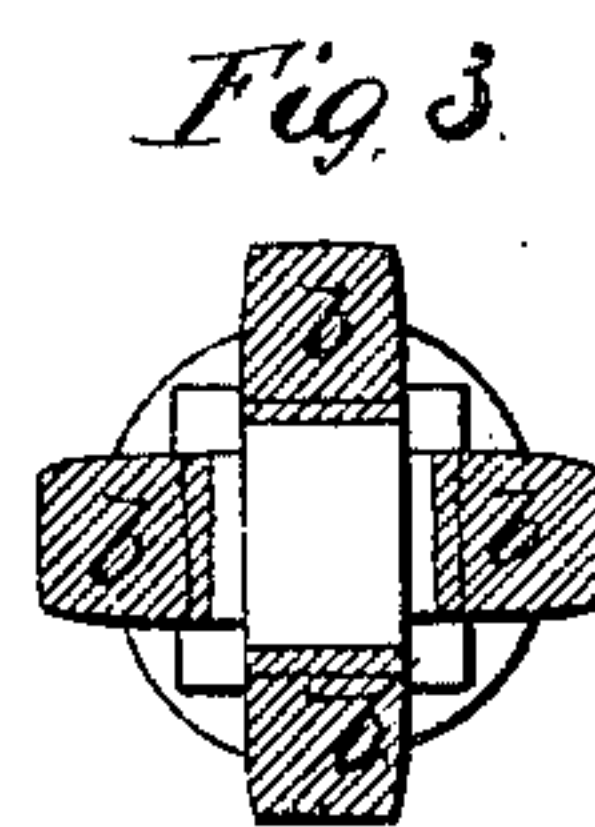


Fig. 3.

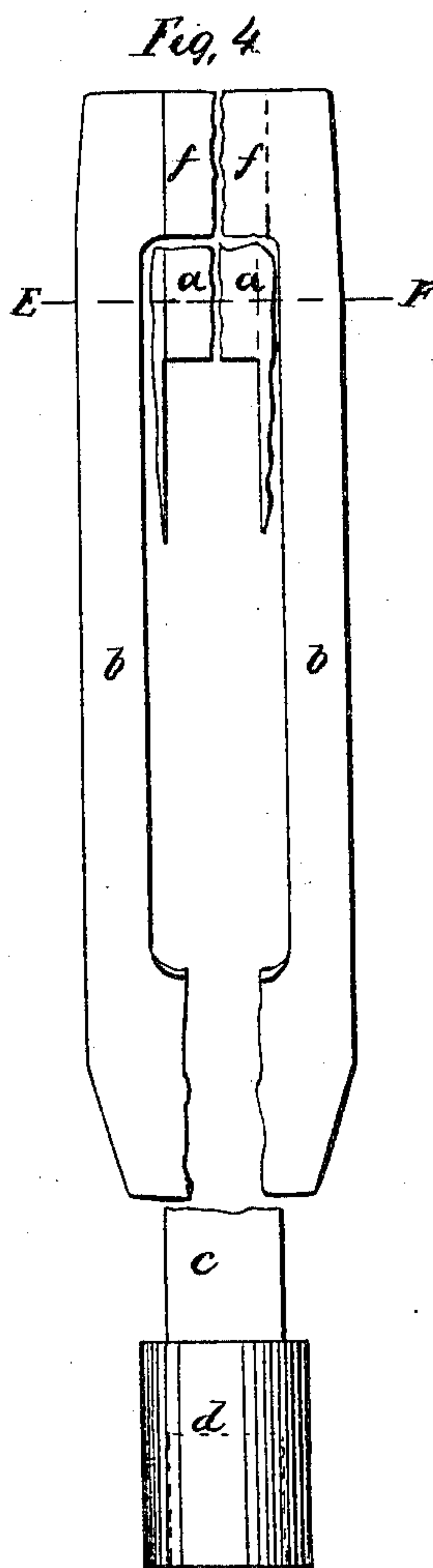


Fig. 4.

Fig. 6.



Witnesses  
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JAMES C. EASTMAN, OF TITUSVILLE, PENNSYLVANIA.

*Letters Patent No. 66,816, dated July 16, 1867.*

## IMPROVEMENT IN DRILL-JARS.

*The Schedule referred to in these Letters Patent and making part of the same.*

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, JAMES C. EASTMAN, of the city of Titusville, county of Crawford, and State of Pennsylvania, have invented a new and improved Method of Constructing Jars for use in drilling oil-wells, &c.; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings which form a part of this specification, and in which similar letters represent similar parts in all the views.

The jars usually attached to a set of tools for drilling oil and other artesian wells have a very peculiar service to perform, the sides or bars of the links having to sustain great tensile strain, tending to tear them asunder, while the head of the link gives and receives a severe blow, tending to batter or upset the same. At each stroke the jar must lift or jerk a set of tools weighing from five hundred to twelve hundred pounds, at the rate of from thirty to forty blows per minute, and when tools become fast in a well it is frequently necessary to "jar" them constantly for days and even weeks, while the breaking or cracking of a jar link in a well may necessitate its abandonment. They are now constructed mostly or wholly of wrought iron, and with continual rough usage, as in the case of jarring upon tools when fast in the well, the heads of the jars soon become bruised or upset, and the links become locked together and inoperative. In this condition they can only be got out by lowering and attaching another set of tools and jars, which in turn are equally liable to the same misfortune, and one of the very worst mishaps which a well-operator has to contend with is a broken or imperfect pair of jars fast in the well. If constructed wholly or mostly of steel they would be liable to break at any moment. The object of my improvement, therefore, is to so combine iron and steel in manufacturing jars as to avail myself of the toughness, tenacity, and durability of wrought iron in those parts of the jar subjected to tensile strain, and the hardness of steel in the parts which give and receive the blow, thus insuring greater durability with less risk of breakage or burring.

The accompanying drawings illustrate my invention, representing a pair of jars, and the portions of the same to which I apply the iron and steel.

Figure 1 is a sectional and side view of the jars, with the collars or shoulders, and pins, to which the upper and lower bars of the tools are attached.

Figures 2 and 3 are sections taken on lines A B and C D.

*a* represents the head or portion of the link which gives and receives the blows, and which I make of solid steel. In most cases I also face the inside or wearing edge of the link near the head with steel, as indicated. The remaining parts of the link, including the bars *b*, the shank *c*, the collar *d*, the pin *e*, and the outer end of the jar-head *f*, all of which are subjected to a tensile strain, I make of the best of wrought iron. The steel head-piece *a* is thus embraced and held in place by the wrought-iron bars and head, to which it is properly welded, the end of the head *f* being of wrought iron, to give additional strength and retain the steel in place.

In manufacturing jars for drilling-tools the greatest care must be taken that every part is swaged to a uniform degree of hardness, to facilitate which each part should be made separately.

Figure 4 represents the detached pieces of the link as first swaged out, previous to welding and finishing, Figure 5 being a cross-section on line E F.

Figure 6 represents a complete pair of jars, as applied to a set of drilling-tools.

The light tints represent steel, and the dark tints wrought iron in all the drawings.

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

A pair of jars, applied to drilling-tools and other similar uses, constructed of wrought iron and steel, combined and applied substantially as represented, and for the objects herein set forth.

Dated at Titusville, Pennsylvania, this fourth day of March, A. D. 1867.

Witnesses:

E. A. S. ROBERTS,  
GEO. W. ANGIER.

J. C. EASTMAN.