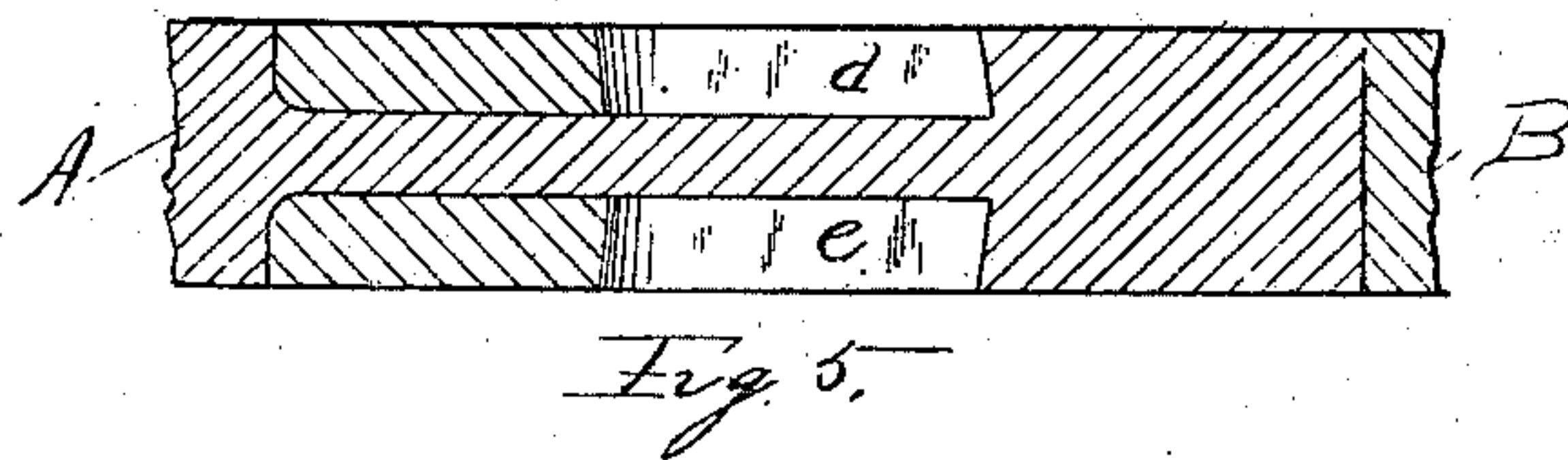
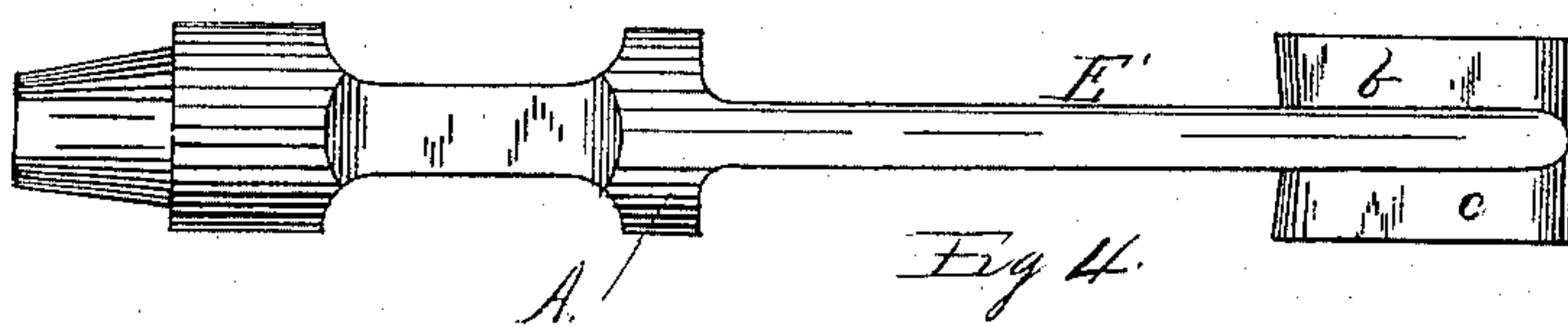
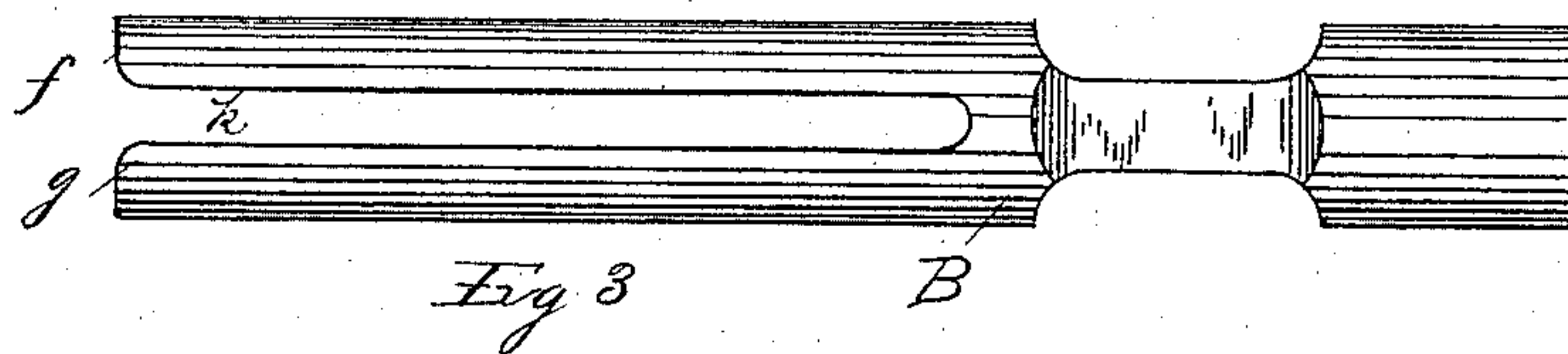
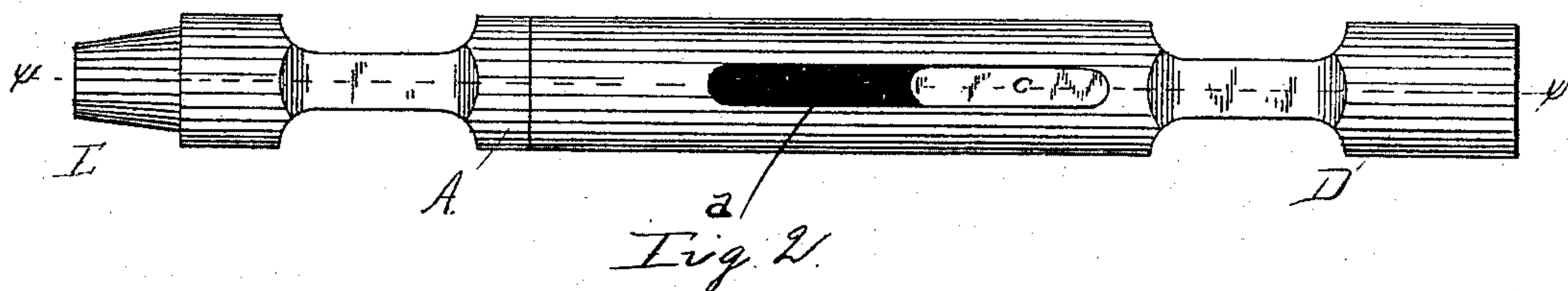
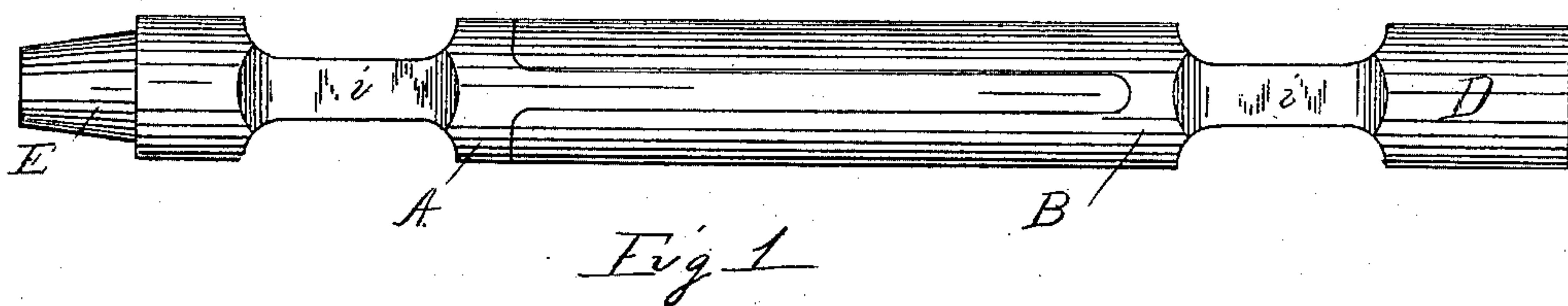


(No Model.)

E. LLOYD.
JAR FOR WELL BORING.

No. 369,726.

Patented Sept. 13, 1887.



WITNESSES:

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INVENTOR

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UNITED STATES PATENT OFFICE.

EVAN LLOYD, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR OF TWO-THIRDS TO JUNIUS A. McCORMICK AND WILLIAM JOHNSTON, BOTH OF SAME PLACE.

JAR FOR WELL-BORING.

SPECIFICATION forming part of Letters Patent No. 369,726, dated September 13, 1887.

Application filed August 13, 1886. Serial No. 210,791. (No model.)

To all whom it may concern:

Be it known that I, EVAN LLOYD, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Jars for Well-Boring; and I do hereby declare the following to be a full, clear, and exact description of the invention, reference being had to the accompanying drawings, which form part of this specification.

This invention has relation to improvements in jars for well-boring, and has for its object to provide a jar which shall be simple in form and construction, and less liable to become broken or fractured than the jars now in use.

It will be understood that this jar is not intended to aid in imparting a blow to the tool, but simply to loosen the same from its impression in the stone. Various devices have been constructed to accomplish this end, but have been unsuccessful for the reason that they have been imperfectly made. In most cases the jars have been formed in several pieces, and the long steel sides joined to the pins and boxes (usually made of iron) by welding. At this point it has been found in practice that the jar will break, causing an untold amount of trouble in fishing the tool out of the well and a great expenditure of time and money.

The liability of the jar to break is usually the result of welding two strips of steel into one common head, which produces more or less straining in one of the sides; hence whenever a weld of this character is made the jar is weakened accordingly.

I propose to avoid all the above-named difficulties by forming a jar out of two solid pieces of steel, each forged to the proposed shape, and uniting the two portions in such a manner that there will be no danger of the same becoming separated, or by forming the boxes and eyes of iron and welding on the square, where there will be no danger of the weld in any manner weakening the tool.

Referring to the accompanying drawings, illustrating my improvements, Figure 1 is a side view of my improved jar; Fig. 2, a similar view showing the grooves in which the lugs are free to play; Figs. 3 and 4, views show-

ing the two portions separated for the sake of clearness; and Fig. 5, a sectional view on line *x x* of Fig. 2, showing only a portion of the jar.

In accordance with my invention I construct the jar in two solid pieces and forge each to the approximate form required for connection and practical use. That portion, member, or section of the jar to which the sinking-bar is to be attached, and which is designated by letter A, I form by reducing a bar to an elongated cylindrical shape of suitable dimensions, having the square neck *i* and the eye or socket E. I then flatten that portion which is to be coupled to the other portion of the jar, so as to produce a web, E', with lugs or flanges *b c* extending laterally therefrom at or near the lower end of said web. These flanges or lugs take the place of the pins usually employed, and being made integral with the web are stronger and less liable to break or bend than the pins. The other member or section of the "jar," (designated by letter B,) after being forged to a cylindrical shape and reduced to form the neck *i*, is split or cut in the direction of its length, and on a diametrical line from its upper end to a point near its neck *i*, as shown at *k*, and if required the kerf is slit or expanded by means of a mandrel or expanding-tool. In the sides of the section B, at right angles to the kerf *k*, longitudinal slots *d e* are formed for the reception and play of the lugs *b c*. The two members are now united by springing the walls or sides *f g* of the section B apart while the latter is in a heated condition, and then inserting the web portion E' into the kerf *k*, and fitting the lugs *b c* into the slots *d e*. When the section B cools, the two members will be closely united; but sufficient play will be allowed to permit the one to work a short distance independently of the other, as required in the operation of jars.

Should it be found desirable, the box D and eye E may be formed separate from their respective sections and welded on the square at the points lettered *i* to the jar members A B, the rest of the jar being formed substantially as before described, the boxes and eyes, however, being made of iron, which can be readily welded at the points *i i* without danger of

weakening the jar. This modification is proposed for the reason that the box in which is secured the stem and the eye which forms the connection for the sinking-bar may, under the
5 constant jarring caused by the successive lifting and dropping, sometimes become crystallized if formed of solid steel, while an iron box or eye will not be so affected.

It will be seen from the foregoing that a jar
10 constructed as hereinbefore described will possess great advantages over those now in use. The jar proper is formed of solid steel and its members united, so as to avoid all possibility of their separating, while the box and pin, if
15 formed separate, are welded at a point where there is no danger of weakening the tool by such a connection.

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

20 1. The method of connecting or coupling together the slotted member B, having kerf *k*, to the member A, having the web *E'* and lugs *b c*, which consists in heating the kerfed or slotted member, springing its sides apart
25 while heated, and then inserting the webbed member in place, substantially as described.

2. As an improved article of manufacture, a jar for well-boring apparatus forged in two pieces out of solid steel and united by apply-

ing heat to the kerfed or slotted member, and
30 springing its sides over the flanged portion of the other member, substantially as described.

3. In a jar for well-boring, the combination, with the portion A, having the head and neck
35 formed substantially as described, the lugs *b c*, formed integral therewith, and the portion B, having kerf *k*, and grooves *d e*, adapted to receive and retain the lugs, as set forth.

4. In a jar for well-boring apparatus, the combination of the portion A, forged in a solid
40 piece, and the portion B, formed in like manner, having the kerf *k*, formed by slitting the body, and further shaping the same upon a mandrel, substantially as described.

5. As an improved article of manufacture,
45 a jar for well-boring formed by forging the jar proper out of solid steel, and having the box and eye made of iron and connected to the body by welding at the necks, substantially as
50 described.

In testimony that I claim the foregoing I have hereunto set my hand this 12th day of August, 1886.

EVAN LLOYD.

Witnesses:

A. A. MOORE,
JNO. F. ATCHESON.