

No. 881,923.

PATENTED MAR. 17, 1908.

C. M. HEETER.
JAR FOR DRILLING WELLS.
APPLICATION FILED MAR. 17, 1905.

Fig. 1.

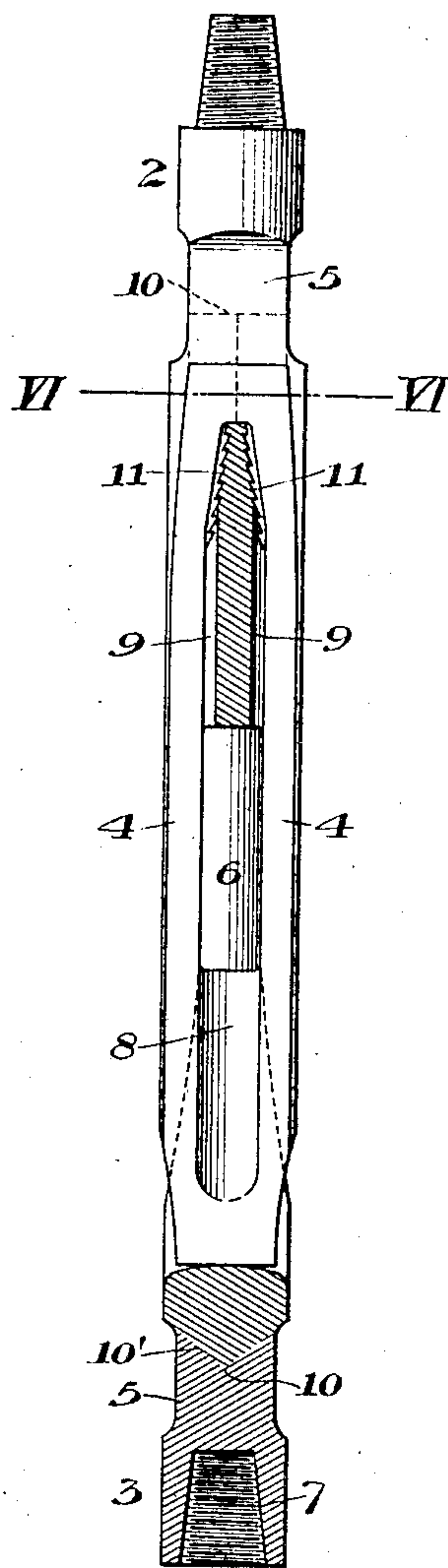


Fig. 2.

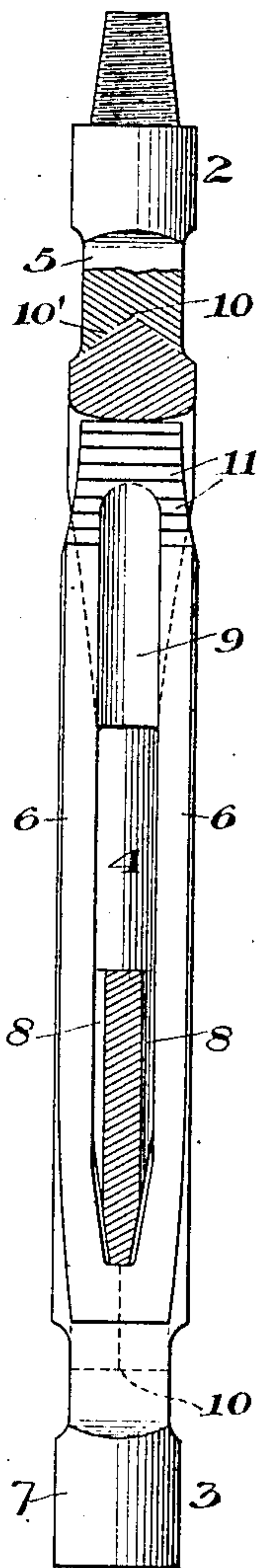


Fig. 3.

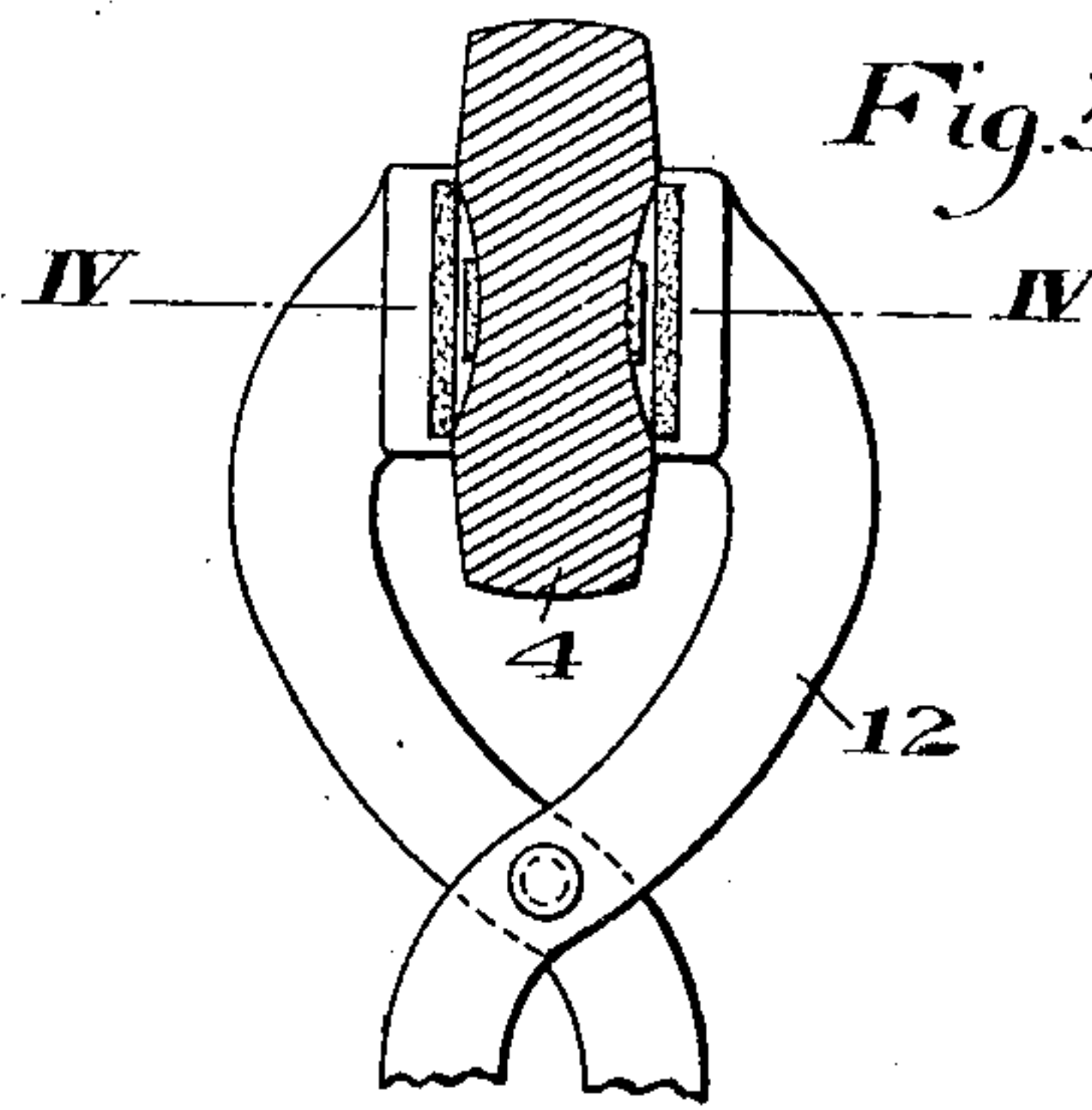


Fig. 4.

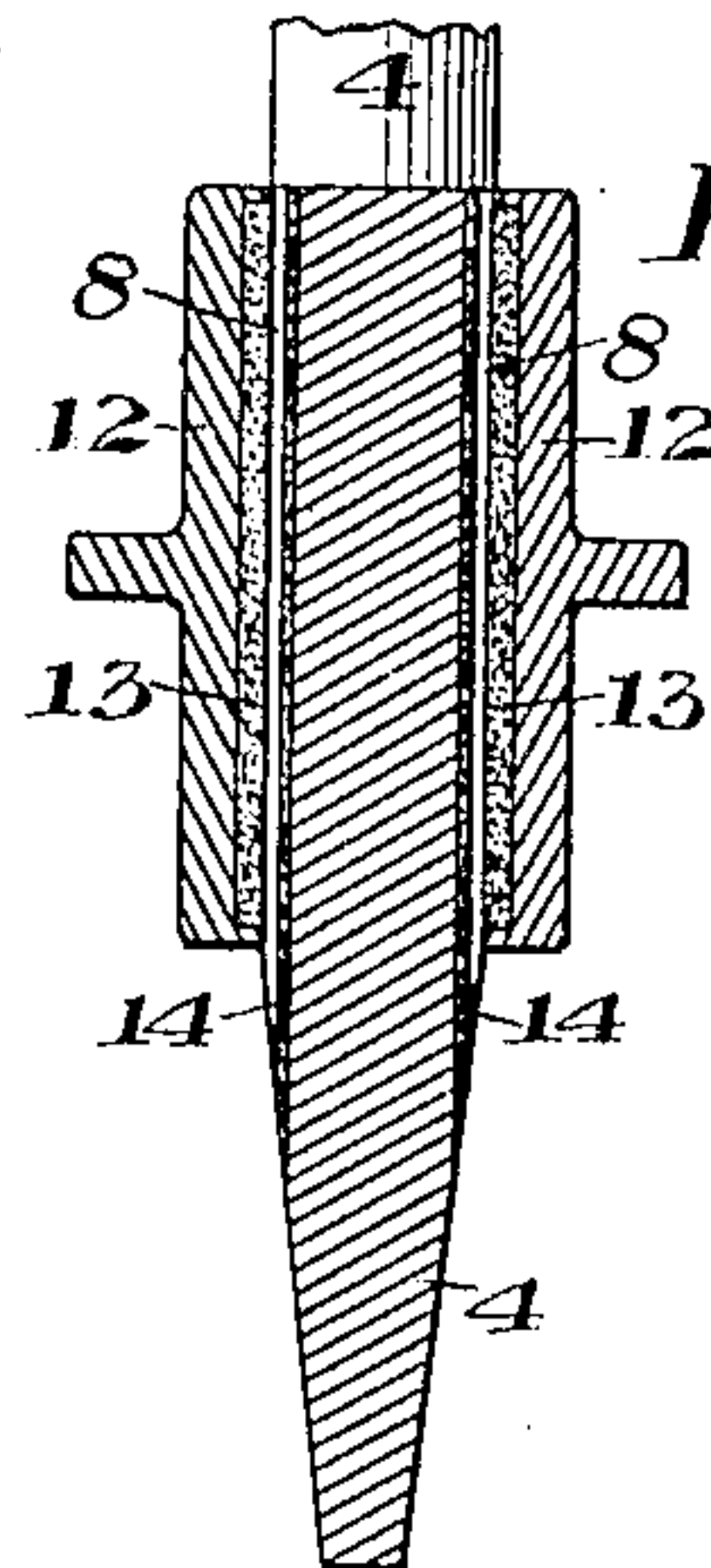


Fig. 5.

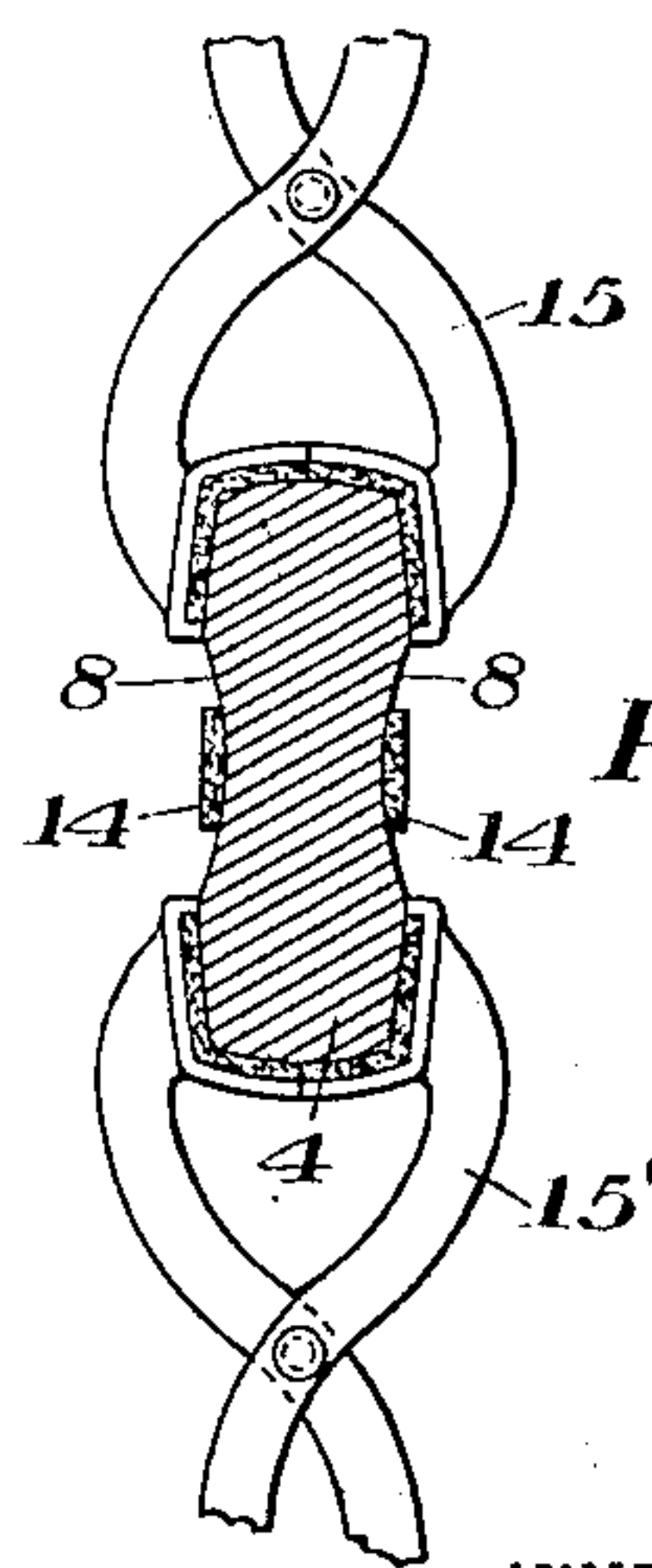
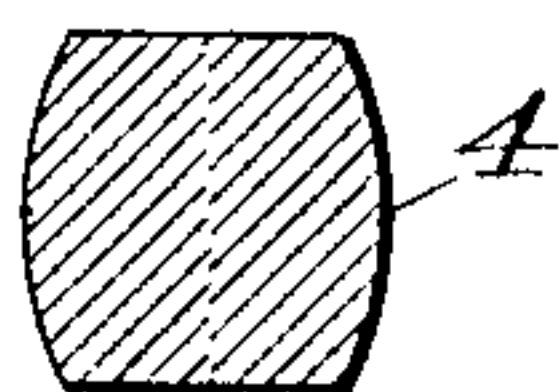


Fig. 6.



WITNESSES

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JAR FOR DRILLING WELLS.

No. 881,923.

Specification of Letters Patent.

Patented March 17, 1908.

Application filed March 17, 1905. Serial No. 250,537.

To all whom it may concern:

Be it known that I, CHARLES M. HEETER, of Butler, Butler county, Pennsylvania, have invented a new and useful Jar for Drilling Wells, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an elevation of my jar partly in vertical section; Fig. 2 is an elevation viewed at right angles to Fig. 1, also in vertical section; Fig. 3 is a plan view of the tongs applied to one of the reins of the jar which is shown in horizontal section; Fig. 4 is a vertical section on the line IV—IV of Fig. 3; Fig. 5 is a view similar to Fig. 3 showing other means for hardening the reins; and Fig. 6 is a section on the line VI—VI of Fig. 1.

The purpose of my invention is to provide a jar for use in drilling wells of greatly improved construction and durability.

In the drawing, 2 represents the upper member of the jar and 3 the lower member. The upper member is provided with steel reins 4, 4 and a pin 5, and the lower member with reins 6, 6 and a box or socket 7 in the usual way. These two members are inter-fitted, the reins of the lower member being seated at right angles to the plane of the reins of the upper member, and at the lower part of the upper member 2 where the reins interfit and at the upper part of the lower member 3 these members are grooved as at 8, 9 along the sides.

Instead of as heretofore beveling the extreme upper ends of the reins of the upper member and abutting them laterally only at the beveled portions, and uniting them by welding the pin of soft steel or iron thereto, I form the hard steel reins so that at the place where they abut laterally at their upper ends they shall be of substantially the full thickness of the reins, tapering thence preferably to an edge as shown at 10 in Fig. 2. The reins are heated at these upper end portions and are then firmly welded, and united by means of the iron or soft steel pin 5 which is forked as at 10' so as to fit over the beveled edge 10 and is then welded thereto. I am thus enabled to make the reins of full thickness of hard steel from end to end, and by doing so and welding the soft steel or iron pin to them, I secure a much stronger structure less liable to break or crack than has heretofore been possible. I thus greatly improve the construction of the jar.

Another point of novelty of the jar consists in roughening or forming teeth 11, at the upper end of the lower member of the jar. These teeth project laterally beyond the sides of the lower member of the jar, and in case any part of the jar should break, or if the jar should otherwise become detached from the string of tools, these teeth afford means by which the jar can be grasped by a fishing tool and drawn from the well. In this way I prevent the serious consequences which follow when the jar becomes detached, since heretofore as there have been no means of satisfactorily engaging a fishing tool the jar has sometimes become lodged so tightly as to require the abandonment of the well.

The third feature of novelty in my jar consists in constructing the members or either of them at the meeting end or ends with the middle portion 8 of hardened steel, while the reins adjacent thereto are hardened or relatively hardened. The consequence of this is that I secure a durable wearing surface for the members of the jar without weakening the reins. I accomplish this preferably by the means shown in Figs. 3 and 4. After the members of the jar have been made I take tongs 12 having jaws, which are preferably faced with asbestos packing 13 or other material, and are adapted to extend along the grooved portion of the end of the jar-member so that when the tongs are applied to the jar-member they will afford at the sides thereof pockets or cavities. The metal of the jar is heated to the degree required for hardening, and then the hardening liquid, either water or oil, is poured into these pockets, and coming into contact with the middle portion of the jar-member, and being excluded from contact with the reins, it hardens the middle portion leaving the reins in their original unhardened condition.

For the purpose of preventing the evil which has heretofore existed in the use of these jars, of excessive wear coming upon the sides of the grooves of the jar, and thus causing them to wear irregularly, I prefer to so harden one of them that the middle of the grooves is softer than the sides. For this purpose I employ strips of asbestos packing 14 or similar material along the middle portions of the grooves extending lengthwise, so that when the jar-member has been heated for the purpose of hardening and the cooling fluid applied, it shall be excluded by the strips of packing from the middle portions of

the grooves. The wear on the jar is thus naturally taken up along the middle portions and is directed and guided so that irregular wear of the parts is prevented.

5 Instead of using the tongs shown in Figs. 3 and 4 for the purpose of affording the pockets for the hardening liquid, I may accomplish the result in the manner illustrated in Fig. 5 by constructing tongs 15, 15' so that
10 they will inclose the reins leaving the middle portion 8 exposed, and then dip the heated tool into the hardening liquid; or the apparatus may be modified in other ways so as to afford access of the liquid to the middle while
15 excluding it from the reins.

The advantages of hardening the middle portion without hardening the reins are, in addition to the advantages named above that it enables me to make the jar of lower
20 carbon steel than heretofore, with equal or better results so far as wear is concerned, and with greatly improved durability and strength. The use of the lower carbon steel also enables me to get a better weld than
25 where a steel of high carbon is employed.

I claim:—

1. A jar for drilling tools, comprising reins having edge-abutted end portions of substantially full thickness, and the abutted
30 portions beveled to an edge, and a head or pin of softer metal having a forked portion fitted over and separately welded to the

beveled faces of the edge-abutted portions; substantially as described

2. A jar for drilling tools, comprising reins 35 connected at their ends, the middle portion being liquid-hardened, and the lateral portions of the reins being left unhardened; substantially as described.

3. A jar for drilling tools, comprising reins 40 united at their ends and having grooves, the metal at the bottom of the middle portion of the grooves being softer than that at the lateral portions thereof; substantially as described. 45

4. A jar for drilling tools, comprising reins having edge-abutted end portions of substantially the full thickness of the reins, and a forked head of softer metal fitted over and welded to said abutted end portions; sub- 50 stantially as described.

5. A jar for drilling tools, comprising reins having end portions of substantially full thickness welded together, and a head or pin of softer metal having a forked portion fitted 55 over and welded to the welded end portions of the reins; substantially as described.

In testimony whereof, I have hereunto set my hand.

CHARLES M. HEETER.

Witnesses:

JOHN MILLER,
H. M. CORWIN.