L. P. WHITAKER.

CLAMPING RING FOR PIPE COUPLINGS.

APPLICATION FILED DEC. 21, 1910.

992,464. Patented May 16, 1911.

2 SHEETS—SHEET 1.

FIG. 1

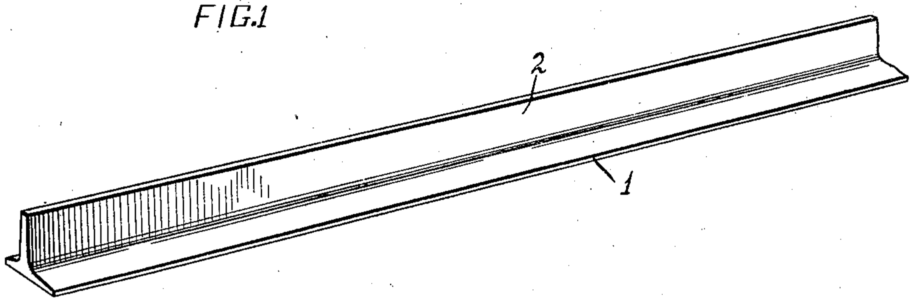


FIG. 2

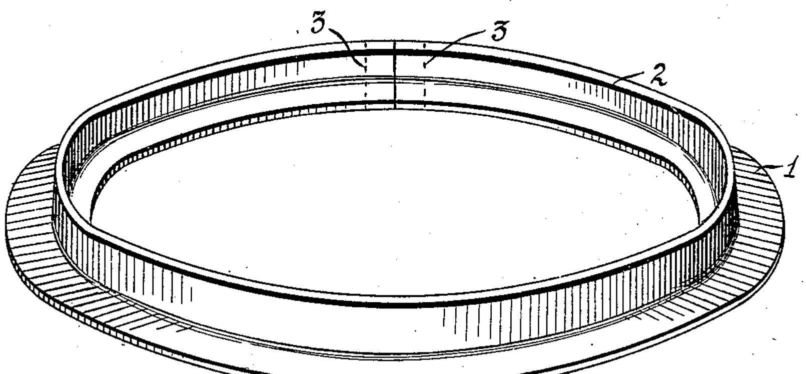
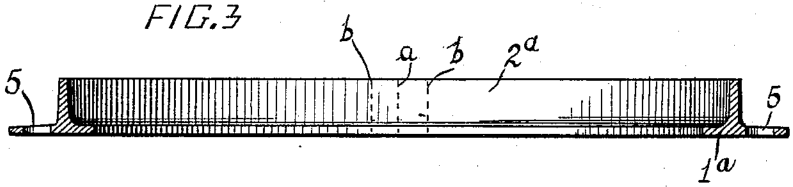


FIG. 3



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2 SHEETS—SHEET 2.

FIG. 4

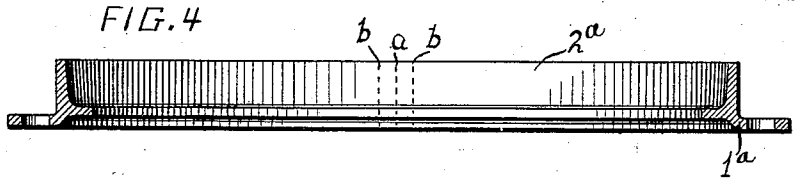


FIG. 5

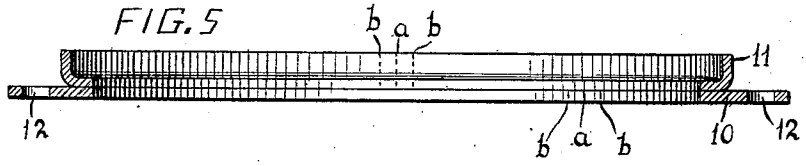


FIG. 6

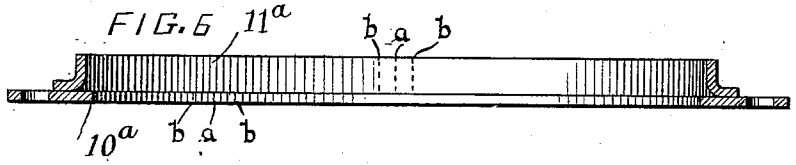


FIG. 7

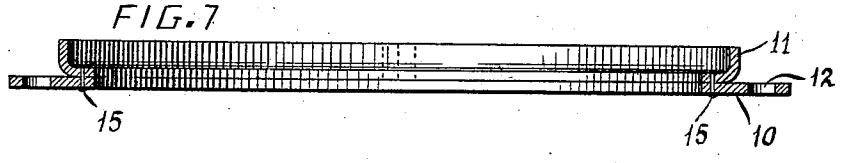
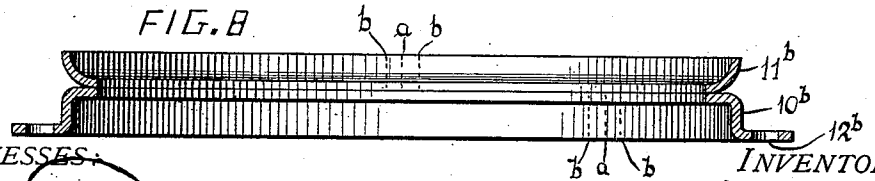


FIG. 8



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UNITED STATES PATENT OFFICE.

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CLAMPING-RING FOR PIPE-COUPLINGS.

992,464. Specification of Letters Patent. Patented May 16, 1911.

Application filed December 21, 1910. Serial No. 598,626.

To all whom it may concern:

Be it known that I, LOUIS P. WHITAKER, citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Clamping-Rings for Pipe-Couplings; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention consists in the novel features hereinafter described reference being had to the accompanying drawings which show several embodiments of the invention selected by me for purposes of illustration.

In the said drawings, Figure 1 represents a form of blank which can be advantageously employed in the manufacture of a ring embodying my invention. Fig. 2 represents the blank bent into ring form and welded. Fig. 3 is a sectional view of a completed ring embodying my invention. Fig. 4 is a sectional view of a ring of slightly different cross section, embodying my invention. Figs. 5, 6, 7 and 8 are similar views of two part rings embodying my invention.

The object of my invention is to produce a ring of wrought metal (preferably steel) in which the yield point of the metal is raised above the normal yield point of the metal employed, whereby the ring will stand greater stress before bending or yielding than a ring of the same cross section in which the yield point has not been so raised, or whereby a ring of less sectional area embodying my invention will stand the same or greater stress without bending than ring of greater sectional area in which the yield point has not been raised.

In the accompanying drawings I have shown my invention embodied in a clamping ring for rubber packed pipe couplings of the type known in the art as the "Dresser pipe coupling" and illustrated for example in Letters Patent of the United States No. 884,371 dated April 14, 1908.

In Figs. 1, 2 and 3 I have shown one form of clamping ring which I have selected for purposes of illustration. In these figures, Fig. 1 shows a longitudinal bar of inverted T-shape in cross section, which is formed (preferably by rolling) in any desired lengths, and from which a portion is cut off in any desired way, to form a blank from which the ring is made, the bar being of such length as to make any desired number of such blanks. The blank or bar is provided with a flat plate member indicated at 1, and a longitudinally disposed flange member indicated at 2, and disposed substantially perpendicularly to the plate member.

The bar or blank is bent into ring form at such a temperature that the yield point of the metal will be raised, and the ends are brought into close proximity for welding as shown in Fig. 2. It is known that above a certain temperature, which for convenience of reference is termed in the art the "critical temperature," and which may be described with sufficient definiteness as a "red heat visible in daylight," the molecules of steel remain equiaxed (or having all their axes equal) during changes of form. If, however, the metal is operated upon below the critical temperature the grain of the metal is distorted, the molecules become inequiaxed, and the yield point of the metal is raised very considerably above normal, thereby increasing the stiffness of the metal.

In Fig. 2 the blank is shown with its ends cut off squarely to form a butt weld but the bar or blank may be so formed as to make a lap weld or other form of weld if desired. The welding operation is preferably performed by electricity in a well known way so that only a small part of the bar at each side of the weld is raised above the "critical temperature" as indicated by the dotted lines 3—3 in Fig. 2. The welding may be performed in other ways, however, as by heating the meeting ends only of the blank in a gas furnace, taking care to raise as small a portion on each side of the weld above the critical temperature as possible.

As the effect of raising any portions of the metal adjacent to the weld above the "critical temperature" is to cause them to return to the normal or annealed condition, and restore the yield point of such annealed portions to normal the parts of the ring so raised above the "critical temperature" in welding are thereafter treated or worked by hammering or rolling or other suitable treatment after they have cooled below the critical temperature. This working of the metal again raises the yield point and makes the

portions of the ring adjacent to the weld substantially as stiff as the other portions of the ring. The resulting ring illustrated in Fig. 3 is then finished by perforating the outer portion of the plate member with bolt holes which are preferably punched while the metal is below the "critical temperature." As will be seen in Fig. 3, the ring is provided with an annular plate member 1^a, an annular flange member 2^a. The weld is represented at *a* and the portion between the dotted lines *b*, *b* represents the part which is reworked after the welding operation. The bolt holes are indicated at 5, 5. This ring will be found to have much greater stiffness than a ring of the same section formed by operations conducted while the metal is above the "critical temperature."

In Fig. 4 I have shown a clamping ring for pipe couplings having a slightly different cross section, embodying my invention, the parts of the ring being indicated by numerals corresponding to those in Fig. 3.

In Fig. 5 I have shown a ring made in two separately formed parts, a plate member 10 and a flange or cup member 11, either or both of which have the yield point of the metal composing the same raised above the normal. The plate member is preferably formed in the manner hereinbefore described by bending a blank into ring form below the critical temperature, welding the ends as at *a*, and reworking below the critical temperature the portions indicated between dotted lines *b*—*b*, which were heated above the critical temperature during the welding. The flange or cup member may be made in the same manner as shown (or it may be made from an annular flat blank and cupped or pressed into the shape shown while the metal is below the "critical temperature".) In placing the two members together the welded portion of one may be placed out of alinement with the other as indicated if desired. The plate member is provided with bolt holes 12, 12.

In some instances the members 10 and 11 may be permanently united as by means of rivets 15, 15, as indicated in Fig. 7, or in any other suitable manner which will not lower the yield point.

Fig. 6 illustrates another two part ring in which the plate member 10^a is formed as previously described with reference to Fig. 5 and the flange member 11^a is provided with an outwardly extending flange engaging the plate member instead of an inwardly extending flange.

Fig. 8 shows another form of two part ring comprising a plate member 10^b having an outwardly extending flange provided with bolt holes 12^b, and an inwardly extending flange to engage the cup or flange member 11^b, the two flanges of the plate member being connected by an annular portion disposed parallel to the axis of the ring. The cup or flange member 11^b is similar to the cup or flange member 11^a previously described. Each of the parts 10^b and 11^b are preferably formed by bending, welding and reworking the parts adjacent to the weld, as hereinbefore described, but they may be made by pressing annular blanks of sheet metal at a temperature below the "critical temperature," if desired.

While I have described and illustrated my preferred method of forming the ring, it will be obvious to those skilled in the art that the ring may be made by other methods, as by forming, forging or die pressing operations performed upon the metal below the critical temperature.

What I claim and desire to secure by Letters Patent is:—

1. A clamping ring for pipe couplings, formed of wrought metal, and provided with a packing engaging portion and with a plate member having bolt holes therein, portions of the metal of said ring having its yield point raised.

2. A clamping ring for pipe couplings formed of wrought metal and provided with a plate member disposed substantially perpendicularly to the axis of the ring, and a flange member disposed substantially perpendicularly to the plate member and located between the inner and outer edges of the plate member, the metal of the plate member having its yield point raised.

3. A clamping ring for pipe couplings formed of wrought metal and provided with a plate member disposed substantially perpendicularly to the axis of the ring, and a flange member disposed substantially perpendicularly to the plate member and located between the inner and outer edges of the plate member, the metal forming the said flange and plate members having the yield point thereof raised.

4. The herein described clamping ring for pipe couplings formed of wrought metal and provided with a plate member disposed substantially perpendicularly to the axis of the ring, and a flange member disposed substantially perpendicularly to the plate member and located between the inner and outer edges of the plate member, the said plate and flange members being united, and the metal forming said members having the yield point thereof raised.

5. The herein described clamping ring for pipe couplings, formed from a single piece of wrought metal bent into ring form and having its ends welded together, said ring having a plate portion disposed perpendicularly to the axis of the ring, and an annular flange member projecting from one face of the plate member, between the inner and outer edges of the plate member, the

metal of said ring throughout its entire extent having the yield point thereof raised.

6. The herein described clamping ring for pipe couplings, formed from a single piece of wrought metal bent into ring form and having its ends welded together, said ring having a plate portion disposed perpendicularly to the axis of the ring and an annular flange member projecting from one face of the plate member between the inner and outer edges of the plate member, the metal of said ring having its molecular structure distorted so as to bring the molecules thereof into an inequiaxed condition and thereby raising the yield point of the ring.

In testimony whereof I affix my signature, in the presence of two witnesses.

LOUIS P. WHITAKER.

Witnesses:
J. K. MOORE,
ROBT. E. QARRY.