

(No Model.)

F. BARNHART.
PIPE COUPLING.

No. 592,681.

Patented Oct. 26, 1897.

Fig. 1.

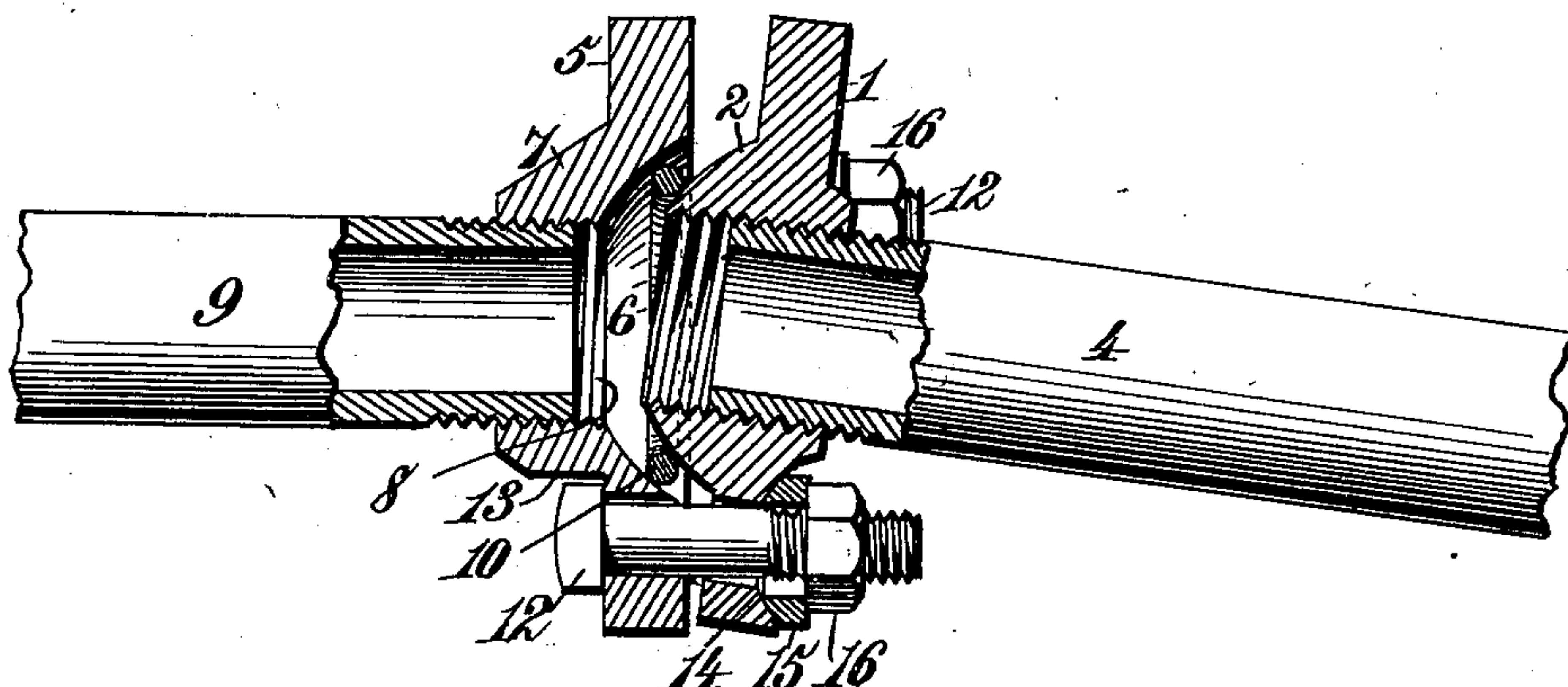


Fig. 2.

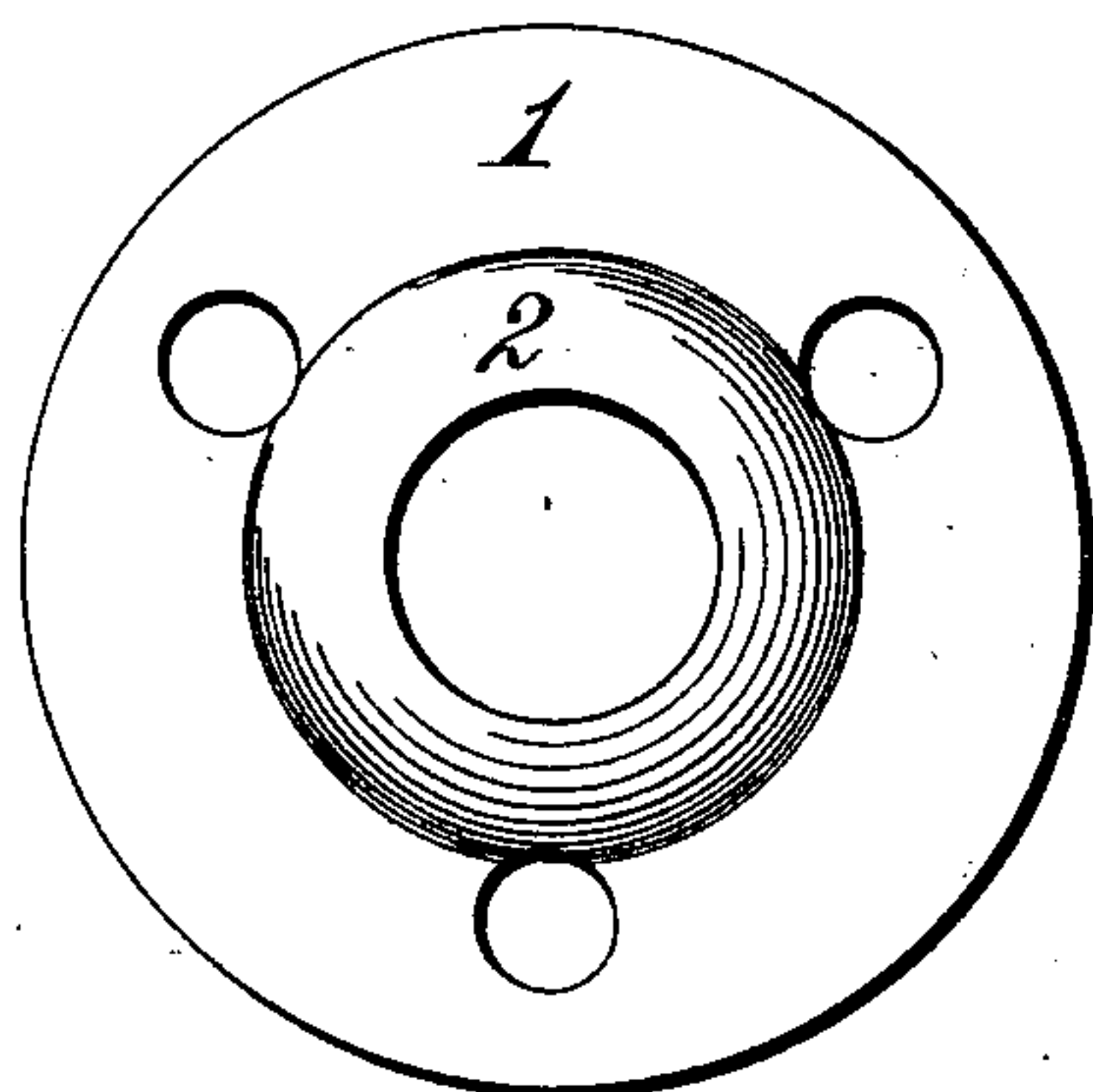


Fig. 3.

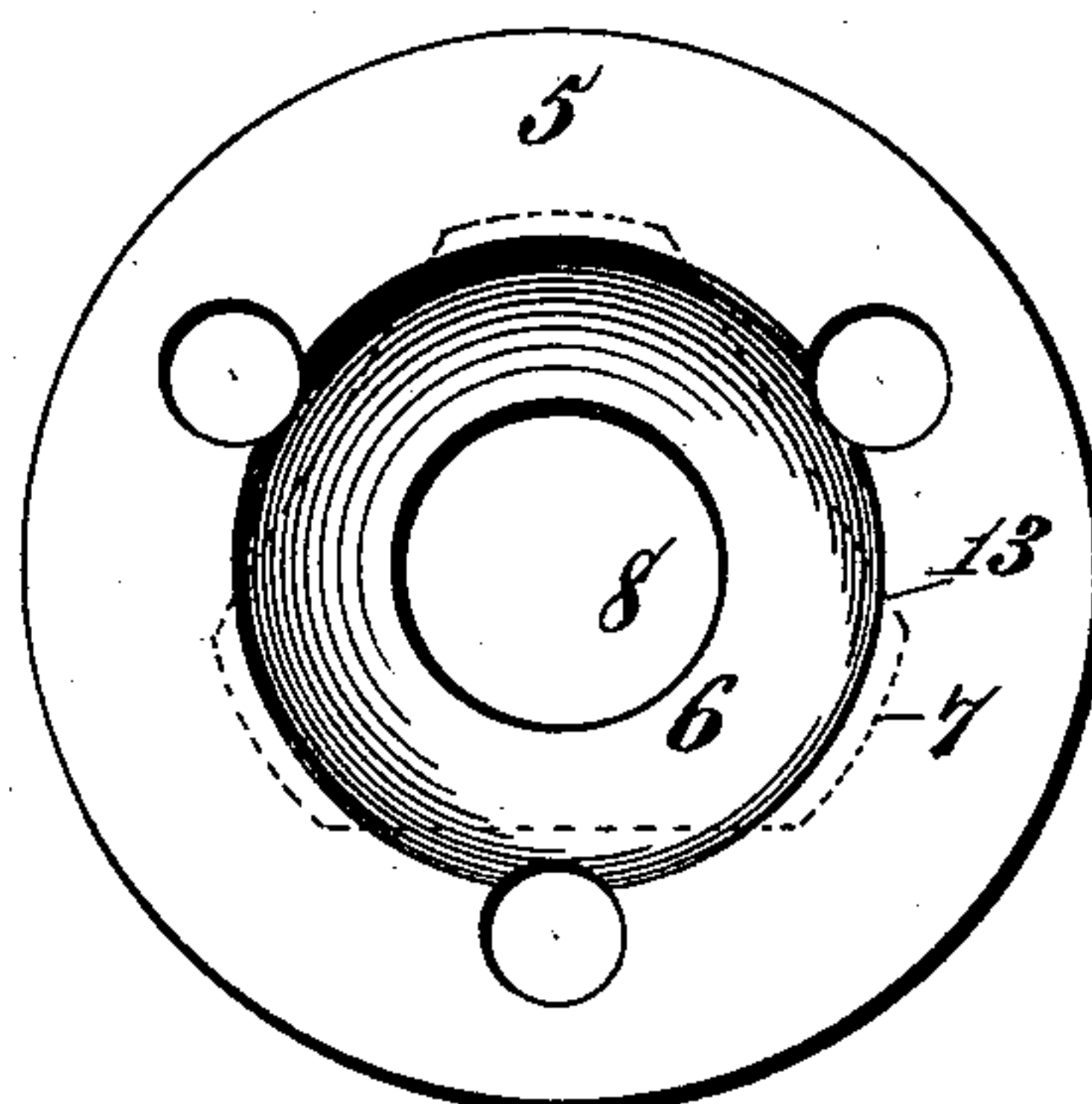
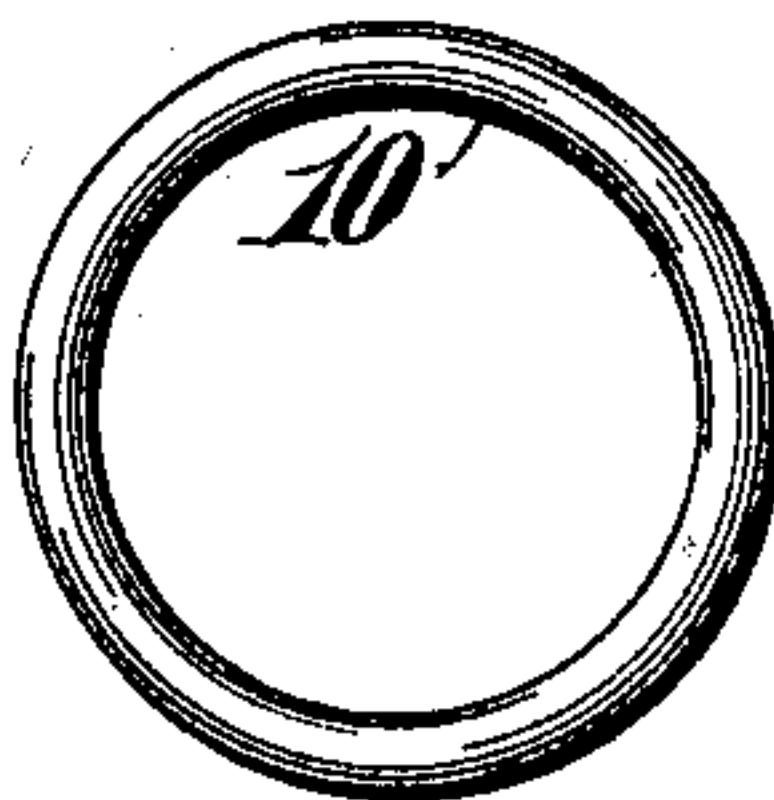


Fig. 4.



Witnesses.
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UNITED STATES PATENT OFFICE.

FRANK BARNHART, OF WARREN, PENNSYLVANIA.

PIPE-COUPLING.

SPECIFICATION forming part of Letters Patent No. 592,681, dated October 26, 1897.

Application filed January 28, 1897. Serial No. 621,097. (No model.)

To all whom it may concern:

Be it known that I, FRANK BARNHART, a citizen of the United States, residing at Warren, in the county of Warren and State of Pennsylvania, have invented new and useful Improvements in Pipe-Couplings, of which the following is a specification.

My invention relates to certain improvements in universal ball-joint flange-couplings for pipes, my purpose being to provide a coupling of this type which can be manufactured at a much lower cost than those now in common use, its simplicity of construction being increased to a marked degree and the number of parts of which it is composed diminished, whereby it can be detached or attached more easily and quickly than heretofore and requires a less degree of mechanical skill for this purpose.

It is a further object of my invention to provide such a pipe-coupling with a novel construction whereby the joint can be made at any angle permitted by the projecting flanges and at any such angle will pack itself without requiring any especial adjustments of the intermediate metallic packing-ring, which is interposed between the unfinished convex and concave faces of the coupling.

My invention also has a further purpose, which is to enable the washers upon which the nuts of the connecting-bolts rest to find their proper level, so that the nuts as they are turned up will draw squarely and in the line of the bolts.

The invention consists, to these ends, in the novel features of construction and new combinations of parts hereinafter fully described, and then particularly pointed out in the claims which conclude this specification.

To enable those skilled in the art to which my said invention pertains to fully understand the same, I will proceed to describe said invention in detail, and for this purpose reference will be had to the accompanying drawings, in which—

Figure 1 is a section taken in the axial line of the coupling. Fig. 2 is a plan view of the male portion of the coupling, showing the unfinished convex face. Fig. 3 is a plan view showing the unfinished concave face of the female portion. Fig. 4 is a detail view of the metallic packing-ring.

The reference-numeral 1 in said drawings indicates the male portion of the coupling, which consists of a disk of suitable diameter and thickness provided with a projecting portion 2, which rises from one of its flat faces and is concentric with the disk. A central opening passes through both the disk and projection, a female thread being formed therein to enable the end of a section of pipe 4 to be screwed therein. The outer face of the part 2 is convex and constitutes, practically, a surface of a sphere included between two parallel planes. The parts of the coupling are formed by casting, and the convex face last mentioned can be left in the condition in which it comes from the mold, as it is not necessary to dress this surface off and give it a finish, as has usually been done heretofore. This fact enables me to manufacture the coupling at a considerable reduction in cost. The unfinished face does not detract from the appearance of the coupling, as it lies so close to the other member of the coupling that it is practically concealed.

The second member 5 of the coupling consists of a disk of the same diameter and thickness as the other part or member. It is provided upon one of its flat faces with a central concave recess 6, the diameter of which is greater than the diameter of the projecting portion 2 on the other part of the coupling, the two surfaces, however, being parallel when the two members of the coupling are brought into proper relations. The formation of the concave recess 6 produces a corresponding projection 7 upon the other face of the disk, and a central opening 8 is provided, having a female thread, so that the section of pipe 9 may be attached by screwing its threaded end into said opening.

In uniting the two parts of the coupling a packing-ring 10, formed of malleable cast-copper, is laid in the concave recess 6, the diameter of the ring being such that it can lie in said recess at a point between the opening 8 and the face of the disk in which said recess is formed. The male projection 2 is then placed in the packing-ring 10, and the parts are secured by bolts 12, which are inserted through openings in both members of the coupling. The square heads of the bolts lie against flat faces 13, formed by removing por-

tions of the projection 7 next to the bolt-openings. This construction answers all the purposes of a bolt-lock, as it effectually prevents the bolts from turning in either direction.

5 The threaded ends of the bolts 12 pass through openings in the disk 1, which are surrounded by concentric concavities 14. In these concavities are placed washers 15, their seating-faces being convex to correspond with
10 the concave depressions in which they seat. By this construction the washers can have a universal adjustment in their seats, and when the nuts 16 are turned upon the threaded ends of the bolts 12 until they bear upon the
15 washers 15 with force the latter will readily seek a position in which the nut will bear uniformly upon its face, and thus exert its strain in the longitudinal line of the bolt.

The invention, as will be seen, consists of
20 very few parts, all having great simplicity of construction. It can be manufactured at a very small expense, as I avoid the necessity of dressing off and finishing the two adjacent or engaging faces of the two parts composing
25 the coupling.

What I claim is—

1. A pipe-coupling, consisting of two disks having bolt-holes, one disk formed integral with a central convex projection having a
30 central screw-threaded opening into which the end of one pipe is screwed, and the other disk formed integral with a corresponding central concavity having a central screw-threaded opening into which the end of the
35 other pipe is screwed, a metallic packing-ring arranged in the concavity and bearing against the convex projection, and clamping-bolts passing through the bolt-holes of said disks at points around the concavity and concave

projection, for drawing the parts together and
40 compressing the metallic packing-ring, substantially as and for the purposes described.

2. In a pipe-coupling the combination with two disks one having a convex projection and a section of pipe entering an opening through
45 said projection, and the other having a concave recess of greater diameter than the convex projection and provided with a similar section of pipe, a packing-ring of malleable
50 cast-copper arranged between the concave and convex surfaces, bolts passing through openings in both disks, the openings around the threaded ends being surrounded by concentric concavities, washers having convex
55 faces to seat in said concavities, and nuts turned on the bolts and against said washers, substantially as described.

3. In a pipe-coupling the combination with two sections of pipe of disks on the ends of said pipes, one of said disks having a convex
60 projection and the other disk having a concave recess of greater diameter, a metallic packing-ring interposed between the concave and convex surfaces bolts inserted through openings in said disks, their angular heads
65 lying close to flat faces in a projection on one disk to prevent turning, washers having convex faces seated in concentric concavities surrounding the openings that receive the threaded ends of the bolts, and nuts turned
70 on the latter, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

FRANK BARNHART.

Witnesses:

C. E. BORDWELL,
D. I. BALL.