

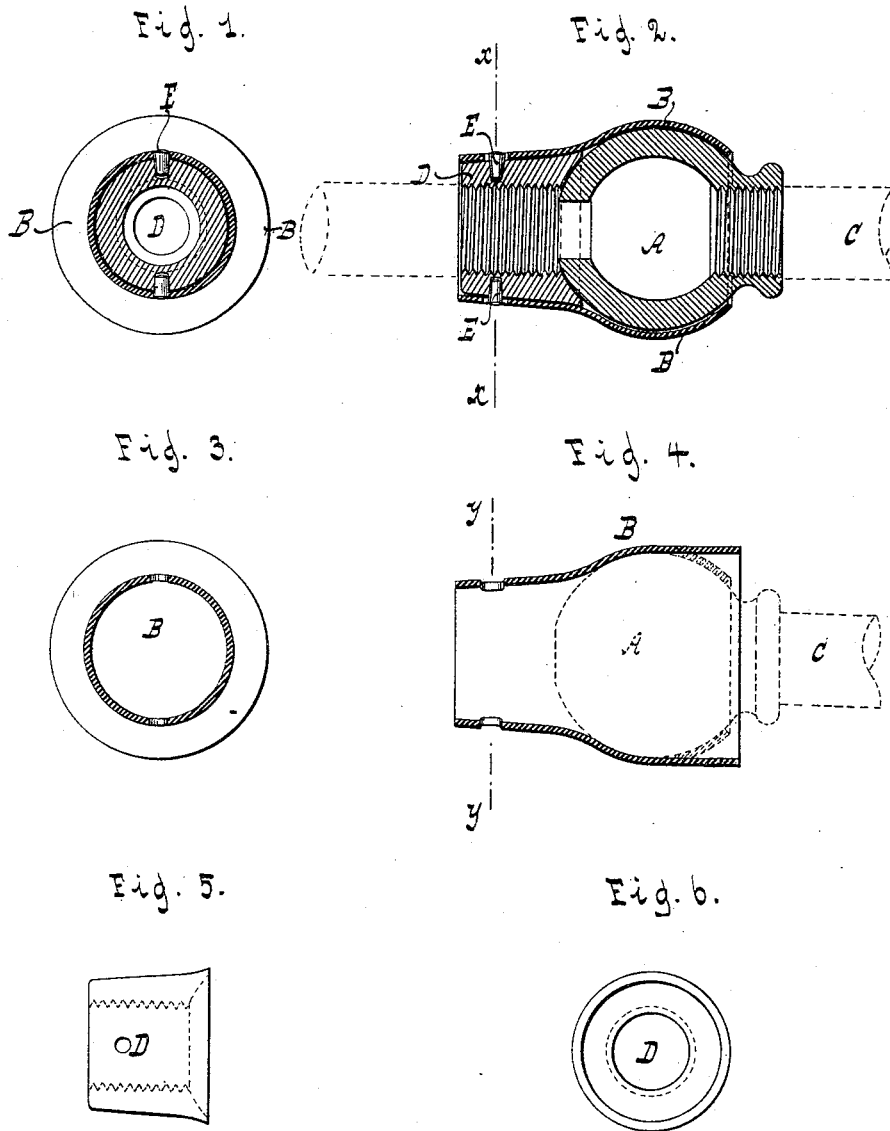
(No Model.)

J. T. ROBB.

BALL JOINT.

No. 344,202.

Patented June 22, 1886.



WITNESSES:

*Alfred du Rouff*  
*William Miller*

INVENTOR

James T. Robb.  
BY  
*Van Bentworth & Hauck*  
his ATTORNEYS

# UNITED STATES PATENT OFFICE.

JAMES THOMPSON ROBB, OF NEW YORK, N. Y., ASSIGNOR OF ONE-THIRD  
TO JOSEPH A. BUNNELL, OF SAME PLACE.

## BALL-JOINT.

SPECIFICATION forming part of Letters Patent No. 344,202, dated June 22, 1886.

Application filed April 15, 1886. Serial No. 198,967. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES THOMPSON ROBB, a subject of the Queen of Great Britain, residing at New York, in the county and State of New York, have invented new and useful Improvements in Ball-Joints, of which the following is a specification.

The object of this invention is to provide a ball-joint which is free from leakage, and which can be readily and cheaply manufactured. This object I accomplish in the manner and by the means hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a section in the plane  $x x$ , Fig. 2. Fig. 2 is a longitudinal central section. Fig. 3 is a section in the plane  $y y$ , Fig. 4. Fig. 4 illustrates the formation of the socket. Fig. 5 is a detail side view of a bushing, thimble, or inlet. Fig. 6 is a plan view of Fig. 5.

Similar letters indicate corresponding parts.

The letter A indicates the ball, the letter B the socket, and the letter C the stem or shank of the ball.

As seen in Figs. 2 and 4, the socket is provided with a taper, the smaller end of the taper being turned away from the ball. The socket can be drawn or suitably formed from a tube, cylinder, or other blank of metal or suitable material. The socket, before being finished, can be formed as shown by full lines in Fig. 4. A bushing, inlet, or thimble, D, is inserted into the taper of the socket B. By inserting or forcing the thimble or bushing D into the larger end of the taper said bushing D can be brought into close contact with the walls of the taper, and said bushing cannot pass out at the smaller end of the taper. By giving a taper form to the thimble or bushing D a close contact between the taper and the bushing can be secured, thus producing a tight joint. By providing the thimble or bushing D with a screw-thread said thimble can be attached as desired—as, for example, to a gas-pipe. After the bushing or thimble D is inserted into the taper, the ball A is inserted into the socket, as shown in dotted lines in Fig. 4. After the ball has been inserted, the socket is

spun so as to sit closely about the ball A. In Fig. 4 is indicated by dotted lines the form assumed by the socket after being spun about the ball. The spinning of the socket causes the latter to sit closely about the ball and produce a tight joint. Any pull or strain that is brought upon the stem C or ball A in my device tends to force the thimble D only more firmly into its seat in the taper, and in case the ball A is forced against the thimble D the tendency also will be to force the thimble and the taper into close contact, and leakage between the thimble D and its seat is prevented.

To prevent the thimble or bushing D from turning in its seat, said bushing may be fastened or soldered to the socket. One or more lugs or pins, E, may be used to produce such fastening, said pins being inserted into the socket B and into the bushing D. By allowing the lugs E to pass only partly into the sides or walls of the bushings the bushings will not have their walls perforated, thus preventing leakage that might occur in case of such perforation. By making the holes in the sockets for the passage of the lugs E of elongated form, or in the shape of slots, the thimbles D are allowed to slide or move into such position in the taper as to obtain a firm seat, while at the same time the thimbles are prevented from turning independently of the sockets. By denting the sides of the taper at one or more points said thimble will be jammed in the taper, and in this way, also, turning of the thimble independently of the socket is prevented. By drawing the socket or blank B casting is avoided, and the manufacture of the device is cheapened.

What I claim as new, and desire to secure by Letters Patent, is—

1. A ball-joint consisting of a ball, A, and a socket, B, said socket being provided with a taper and a bushing or thimble fitted into said taper, substantially as set forth.

2. A ball-joint consisting of a ball, A, and a socket, B, said socket being provided with a taper, a bushing or thimble fitted into said taper, lugs or pins E, and slots or elongated

holes in the socket for the passage of said lugs or pins, substantially as set forth.

3. The method of producing a ball-joint by providing a tube or blank with a taper, fitting  
5 into said taper a thimble or bushing, inserting into said tube or blank a ball, and spinning said tube or blank about said ball, substantially as set forth.

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

JAMES THOMPSON ROBB. [L. S.]

Witnesses:

W. HAUFF,

W. C. HAUFF.