(No Model.)

J. A. BARHYDT.

JOINT FOR STEAM OR WATER PIPES.

No. 523,615. Patented July 24, 1894.

Fig. 2.

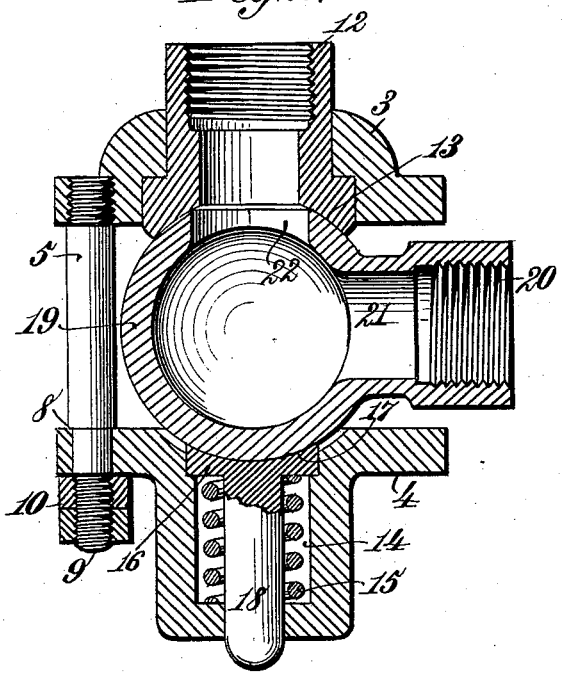


Fig. 1.

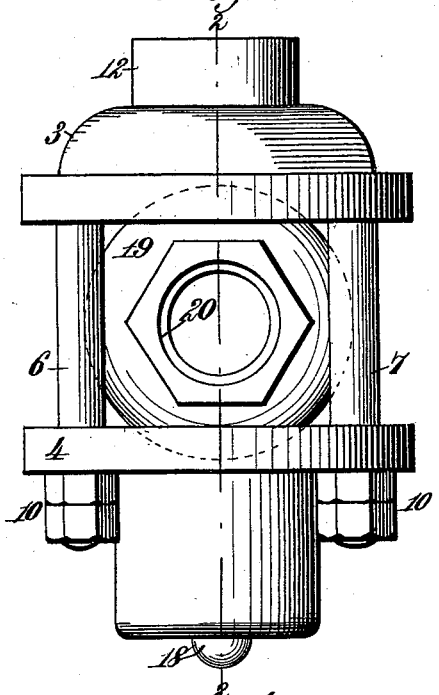


Fig. 3.

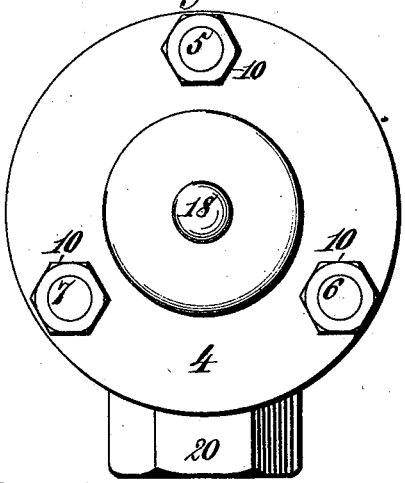
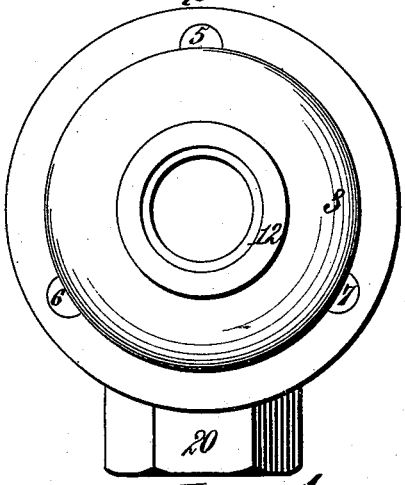


Fig. 4.



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UNITED STATES PATENT OFFICE.

JAMES A. BARHYDT, OF LIMA, OHIO, ASSIGNOR TO THE LIMA LOCOMOTIVE AND MACHINE COMPANY, OF SAME PLACE.

JOINT FOR STEAM OR WATER PIPES.

SPECIFICATION forming part of Letters Patent No. 523,615, dated July 24, 1894.

Application filed March 23, 1894. Serial No. 504,828. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. BARHYDT, a citizen of the United States, residing at Lima, in the county of Allen and State of Ohio, have invented new and useful Improvements in Couplings or Joints for Steam and Water Pipes, of which the following is a specification.

This invention relates to devices for flexibly connecting the ends of pipes designed to conduct or convey steam, water, or other fluid; and the object of the invention is to run the pipe sections substantially at right angles, or at any other angle, and connect their communicating ends by a new and improved universal coupling, which provides a perfect steam or water joint, while permitting one pipe section to move or be moved in any direction within certain limits relatively to the other pipe section.

To accomplish this object the invention consists in the features of construction and the combination or arrangement of devices hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a side elevation of the improved coupling or joint. Fig. 2 is a sectional view taken on the line 2—2, Fig. 1. Fig. 3 is a bottom plan view; and Fig. 4 is a top plan view.

In order to enable those skilled in the art to make and use my invention, I will now describe the same in detail, referring to the drawings, wherein—

The numerals 3 and 4 indicate collars or disks connected together and permanently held separated a determined distance through the medium of bolts 5, 6, and 7, each screwed, or otherwise secured at one end to the collar or disk 3, and having near the opposite end a shoulder 8 abutting the collar or disk 4. From the shoulder 8 the bolt extends through the collar or disk 4 in the form of a screw-threaded portion 9, to receive suitable nuts 10 by which the collar or disk 4 is detachably secured in position. By attaching the bolts 5, 6, and 7 at one end to the collar or disk 3, and providing the bolts at the opposite end portions with shoulders 8, screw-threaded portions 9, and screw-nuts 10, the two collars or disks are not only connected together, but they are rigidly held a fixed distance apart.

The upper disk 3 is provided with a central orifice or recess, in which is seated a thimble or pipe connection 12 having its inner end provided with a concave seat 13.

The lower disk 4 is provided with a pocket or chamber 14 containing a spiral or other suitable spring 15 which bears at one end against the bottom wall of the pocket or chamber 14, and at the opposite end against a follower or socket piece 16 having a concave seat or face 17. The follower or socket 16 is preferably provided with a stem 18 extending through the spiral or other spring 15, and through the bottom wall of the pocket or chamber 14.

The axial bore of the thimble or pipe connection 12 is coincident with the axis of the stem 18, and between the follower or socket 16 and the thimble 12 is arranged a hollow ball or sphere 19 having a projecting socket or shank 20, and an orifice or passage 21. The side of the ball or sphere directly opposite the orifice or passage 21 is closed or imperforate, and in the side of the ball or sphere which lies in contact with the concaved seat 13 of the thimble or pipe connection 12 is formed an orifice or passage 22, by which communication is established between the bore of the thimble or pipe connection 12 and the interior of the ball or sphere. By this construction the orifice or passage 22 is lateral as regards the socket or shank 20, and consequently it is possible to connect two pipes or pipe sections with the thimble 12 and the socket or shank 20, so that such pipe or pipe sections lie substantially at right angles, or at any other angle relatively to one another.

The two tie-bolts 6 and 7 are directly opposite one another, as clearly shown in Fig. 3.

The collars or disks 3 and 4 limit the vertical rotation of the ball or sphere by the socket or shank 20, striking one or the other collar or disk.

The pair of shouldered bolts 6 and 7 limit the horizontal or lateral rotation of the ball or sphere independent of the collars or disks, by reason of the socket or shank 20 striking

one or the other of the said pair of bolts. By this means the socket or shank 20 can move or be moved in any direction; but the range of movement is limited, so that the lateral orifice or passage 22 is preserved in proper communication with the pipe-attaching thimble or connection 12.

Obviously the coupling as a whole can be made to turn a complete revolution, because the collar or disk 3 is swiveled to the thimble 12, and if the latter stands stationary and the socket or shank 20 be turned horizontally, the socket or shank will strike either bolt 6, or bolt 7, and then by continuing the movement of the socket or shank the connected collars or disks will be turned on the thimble 12, as a center.

I have described the parts as so relatively arranged that the collars or disks 3 and 4 lie one above the other, but the position of the parts may be varied, and in fact depends on the position the coupling is to occupy in actual use.

The follower or socket 16 bears against the ball or sphere 19, and the action of the spring 15 is such that the follower or socket constantly presses against one side of the ball or sphere, and forces the opposite side, which contains the orifice or passage 22, snugly against the concaved seat or face 13 of the thimble or pipe connection 12, thus preserving a steam or water-tight joint, while permitting the joint to be adjusted to meet any condition that may be required.

I do not confine myself to the employment of the spiral or other spring for pressing the follower or socket 16 against the ball or sphere, as any other suitable device for this purpose may be employed. I prefer the spring, in that it yieldingly presses the follower or socket, and thus enables the ball or sphere to be more readily rotated in adjusting the pipe connections into varying positions.

The improved construction of universal coupling renders it possible to flexibly connect the ends of pipes for conveying steam, water, or other fluid, while the pipe sections can be caused to run at right angles, or any other angle relatively to one another, a perfect steam or water joint is obtained, and the rotation of the ball or sphere is confined within certain limits.

Having thus described my invention, what I claim is—

1. The combination in a pipe coupling or joint, of two independent collars or disks, bolts connecting the collars or disks together and holding them separated a determined distance apart, a thimble seated in one of the collars or disks extending therethrough and having a screw-threaded outer end to connect with a pipe, a follower or socket carried by the other collar or disk, a hollow ball or sphere seated against the thimble and follower and having two orifices, one to connect with a pipe section and the other to communicate with the thimble, and means for pressing the follower against one side of the ball or sphere to force the opposite side of the latter against the thimble, substantially as described.

2. The combination in a pipe-coupling or joint, of collars or disks 3 and 4, shouldered bolts 5, 6, and 7 connecting the collars or disks together and holding them separated a determined distance apart, a thimble or pipe connection 12 seated in one of the collars or disks and having a concaved inner end 13, a concaved follower 16 carried by the other collar or disk, a hollow ball or sphere 19 seated in said concaved thimble and follower and having two orifices 21 and 22 substantially at right angles to one another, one orifice for communicating with a pipe section, and the other for communicating with the said thimble, and means for pressing the follower against that side of the ball or sphere which is opposite the orifice communicating with the thimble, substantially as described.

3. The combination in a pipe-coupling or joint, of two independent collars or disks 3 and 4, bolts 5, 6, and 7 connecting the collars or disks together and holding them separated a determined distance apart, a concaved thimble 12 seated in one of the collars or disks and having a screw-threaded portion to connect with a pipe, a concaved follower 16 carried by the other collar or disk, a hollow ball or sphere 19 seated in said concaved thimble and follower and having two orifices 21 and 22 substantially at right angles to one another, and a shank 20 adapted to strike the bolts 6 and 7 for limiting the lateral or horizontal motion of the ball or sphere, and means for pressing the follower against that side of the ball or sphere opposite the orifice communicating with the thimble, substantially as described.

4. The combination in a pipe-coupling or joint, of the collars or disks 3 and 4, the bolts 5, 6, and 7 connecting the collars or disks and holding them separated a determined distance apart, the thimble 12 seated in one of the collars or disks and having a concaved inner end 13, the concaved follower 16 having a guide stem 18, a ball or sphere 19 seated against the concaved thimble and follower and having a socket or shank 20 and two orifices 21 and 22 substantially at right angles to one another, and a spring 15 encircling the said guide stem and acting to press the follower against that side of the ball or sphere directly opposite the orifice therein which communicates with the thimble, substantially as described.

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

JAMES A. BARHYDT.

Witnesses:
W. V. AGENTER,
R. A. HICKEY.