No. 677,869. Patented July 9, 1901.

G. B. KINSLER.

UNIVERSAL JOINT.

(Application filed Nov. 15, 1900.)

(No Model.)

Fig. 1.

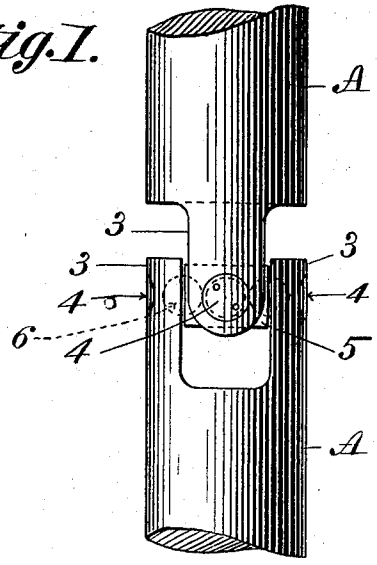


Fig. 2.

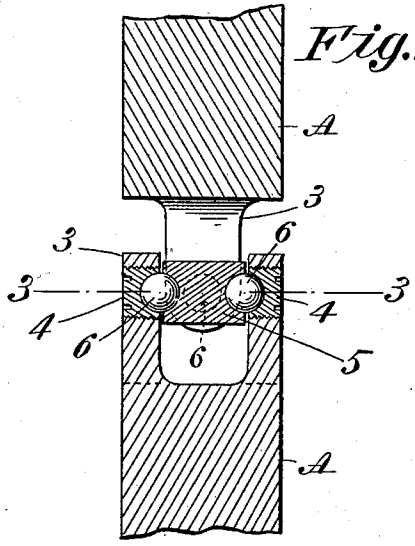
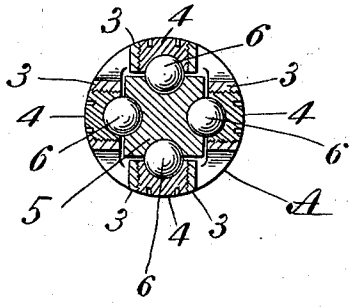


Fig. 3.



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UNITED STATES PATENT OFFICE.

GEORGE B. KINSLER, OF HARTFORD, CONNECTICUT, ASSIGNOR OF ONE-HALF TO JOSEPH A. BENNETT, OF SAME PLACE.

UNIVERSAL JOINT.

SPECIFICATION forming part of Letters Patent No. 677,869, dated July 9, 1901.

Application filed November 15, 1900. Serial No. 36,548. (No model.)

To all whom it may concern:

Be it known that I, GEORGE B. KINSLER, a citizen of the United States of America, residing at Hartford, in the county of Hartford and State of Connecticut, have invented new and useful Improvements in Universal Joints, of which the following is a specification.

This invention relates to the construction of universal joints, the object being to provide an improved article of this class which is adapted to be used between parts of shafting and in other devices where a greater angle of incline is desired between the joint-connected parts than has heretofore been attainable, and, furthermore, to provide a joint of this class in which the torsional strain between the parts thereof at all points in the movements of the same is equal; and the invention consists in the peculiar construction and arrangement of the parts of the device, all as hereinafter described and more particularly pointed out in the claims.

In the drawings forming part of this specification, Figure 1 is a side elevation showing my improved universal joint applied to and uniting two sections of shafting or metal bars. Fig. 2 is a longitudinal section of the parts shown in Fig. 1. Fig. 3 is a transverse section on line 3-3, Fig. 2.

Referring to the drawings, A A indicate two pieces of metal bars or shafting, each of which has two parallel ball-engaged arms 3 projecting from one end thereof, whose outer sides are preferably in the plane of the surface of said shaft parts and whose inner walls are parallel, thus providing a suitable space between said arms for the introduction of ball-bearing devices, as below described. Each of said four arms 3 has a nut 4 fitted therein which is adjustable toward and from a center-line between said arms. Said nuts have sockets in their outer ends to receive a toothed wrench for turning them, or, if preferred, they may be slotted for a screw-driver. Each of said nuts has in its inner end a semispherical ball-recess. A ball-engaging metal block 5, of suitable dimensions to enter freely between the extremities of said four arms 3, has semispherical recesses in its side walls opposite the like recesses in said nuts, and when said block is so placed, with a ball 6 interposed, as shown in Fig. 3, between each of said nuts and the adjoining side of said block and each nut screwed up to proper contact with its ball the operative connection between the said two pairs of arms 3 is completed.

It will be noted by referring to Fig. 3 that when the block 5 is in position between the arms 3 of the shaft-section said block is of slightly smaller dimension than the area inclosed by said arms. The object of this construction is to leave a little room for the adjustment of the nuts 4 toward the side of said block to take up the wear, either of the balls or the sockets in which they rest, should it become necessary to do so.

A great advantage in making a joint as above described lies in the fact that the block 5, the balls 6, and the screws 4 may all be hardened, and, furthermore, any one of the balls or screws may easily be removed and replaced without disturbing the others. Furthermore, the balls, which are, in effect, loose spherical bearings for the shaft-sections to swing on, permit said sections to be moved freely in any direction of inclination one to the other within the limits of the construction without receiving any increase of effort in effecting the rotation of said sections.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. A universal joint comprising two shaft-sections, two oppositely-located arms on each of the sections, a loose block located between the ends of said arms, balls interposed between said arms and said block and supported partly in each, whereby said balls may serve as movable bearings for said shaft-sections, and together with said block as interlocking means therefor, substantially as described.

2. A universal joint comprising two shaft-sections, two oppositely-located arms on each of said sections, a screw in the end of each arm, the axis of which screws are at right angles to the axis of the shaft-sections, a ball-recess in the end of said screws, a ball-receiving block located between the said arms, ball-recesses in said block opposite the ends

of said screws, and balls lying partly in the recesses in said screws and partly in those in said block, substantially as described.

3. A universal joint comprising two shaft-sections, two oppositely-located arms on each of said sections, a ball-receiving block located between the arms of the latter and having ball-recesses therein, balls in said recesses, and means in said arms for holding said balls in the recesses in the block, in the same plane whereby said balls may serve as pivotal points for the latter, and as interlocking means between said shaft-sections, substantially as described.

4. A ball-bearing connection between parts of shafting or similar structural elements comprising two ball-engaging arms on each of said shaft parts, a ball-engaging block intermediate of said arms, and a bearing-ball intermediate of each of said arms and the adjoining side of said block, substantially as described.

5. A ball-bearing connection between parts of shafting or similar structural elements, comprising two ball-engaging arms on each of said shaft parts, a ball-engaging block intermediate of said arms, and a bearing-ball intermediate of each of said arms and the adjoining side of said block, and means for adjusting the contact pressure of said ball-engaging parts thereagainst, substantially as described.

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