F. BURTT.

UNIVERSAL JOINT.

APPLICATION FILED APR. 16, 1917.

1,256,871.

Patented Feb. 19, 1918.

2 SHEETS—SHEET 1.

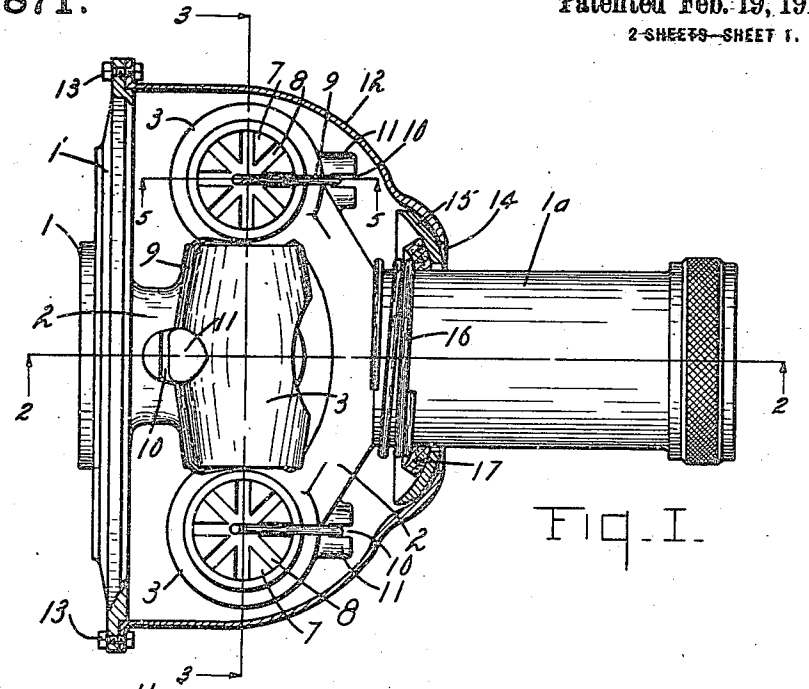


Fig. I.

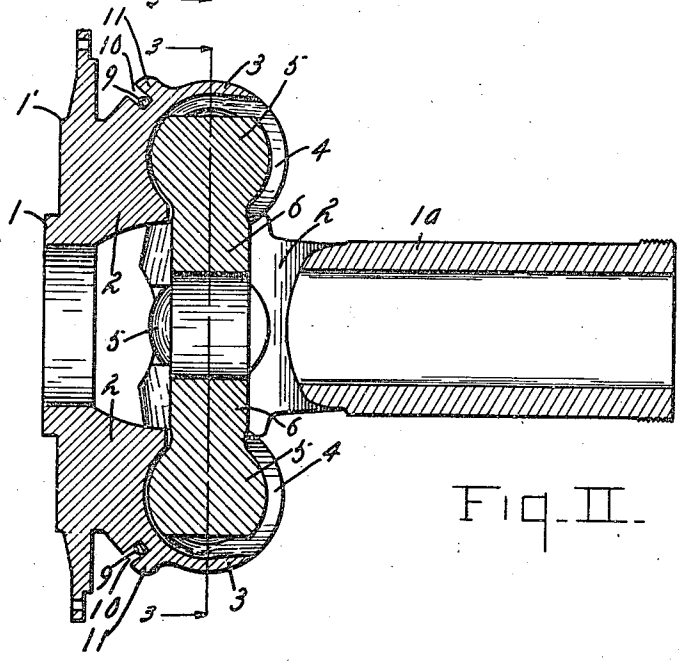


Fig. II.

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2 SHEETS—SHEET 2.

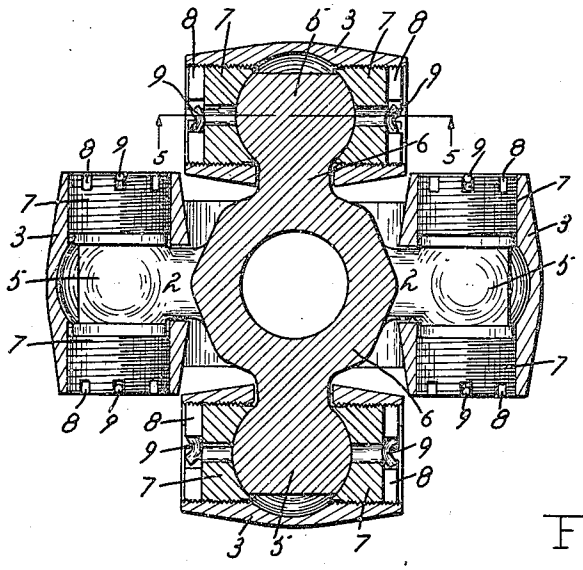


Fig. III.

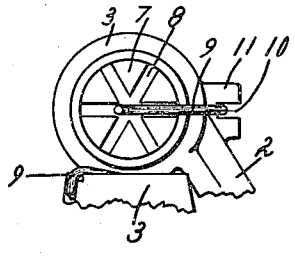


Fig. IV.

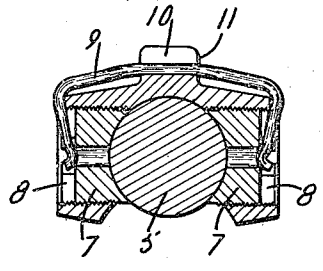


Fig. V.

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UNITED STATES PATENT OFFICE.

FRANK BURTT, OF KALAMAZOO, MICHIGAN, ASSIGNOR TO WILLIAM L. FITZGERALD AND ALBERT TEN BUSSCHEN, BOTH OF KALAMAZOO, MICHIGAN.

UNIVERSAL JOINT.

1,256,871. Specification of Letters Patent. Patented Feb. 19, 1918.

Application filed April 16, 1917. Serial No. 162,481.

To all whom it may concern:

Be it known that I, FRANK BURTT, a citizen of the United States, residing at Kalamazoo, in the county of Kalamazoo and State of Michigan, have invented certain new and useful Improvements in Universal Joints, of which the following is a specification.

This invention relates to improvements in universal joints.

The main objects of this invention are:

First, to provide an improved universal joint having adjustable bearings permitting adjustment in assembling and to take up wear.

Second, to provide an improved universal joint which is very strong and durable.

Third, to provide an improved universal joint having these advantages which is quite economical in its parts and one in which the parts are easily assembled and disassembled as occasion requires.

Further objects, and objects relating to structural details, will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification. The invention is clearly defined and pointed out in the claims.

A structure which is a preferred embodiment of my invention is clearly illustrated in the accompanying drawing forming a part of this specification, in which:

Figure I is a side elevation of my improved universal joint a portion of one member and the casing being in section.

Fig. II is a longitudinal section on the line corresponding to line 2—2 of Fig. I.

Fig. III is a transverse section on a line corresponding to line 3—3 of Figs. I and II, the casing being omitted from this view and parts of the bearing and journal members being shown in full lines.

Fig. IV is a detail side elevation opposite that of Fig. I.

Fig. V is a sectional view taken on a line corresponding to line 5—5 of Fig. I.

In the drawing, similar reference characters refer to similar parts throughout the several views, and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

Referring to the drawing, the reference characters 1 and 1^a indicate the driving and driven members of my improved joint. It should be understood that either member may be used as the driving member. The member 1 is provided with a disk-shaped flange 1′ which is adapted to be bolted or otherwise connected to a flange on one section of the shaft or other part to be coupled. The member 1^a is adapted to slidably receive the end of the other shaft section The shaft members of the embodiment illustrated are provided with cross arms 2 terminating in cylindrical heads 3. These heads have openings 4 in their inner sides adapted to receive the spherical bearing members 5 of the coupling member 6. This coupling member 6 is in the form of a cross, its arms terminating in the spherical bearing members 5. The bearing members 7 are threaded into the heads 3 of the shaft members and are provided with concave bearing faces coacting with the spherical bearings of the coupling member, as clearly shown in Fig. III.

The ends of the bearing members 7 are preferably provided with radial notches 8 adapted to receive locking keys. The yoke-shaped locking keys 9 are formed of pieces of wire. The central portions of the locking keys are engaged in slots formed in the bosses 11 formed on the cylindrical heads. The arms of the locking keys are engaged in the notches 8 under spring tension so that they are not likely to become accidentally disengaged. As many of the key notches 8 may be provided as desired. One bearing member of each pair in the structure illustrated is provided with eight of the key notches and the other with six, see Figs. I and IV. By this arrangement the locking keys can be effectively mounted on the shaft members and the bearing members securely retained in their adjusted positions. The adjustment is such as to provide for accuracy in the assembling of the parts and the taking up of wear.

I provide my improved joint with a cup-shaped casing 12, the edge of which is flanged and bolted to the flange 1′ by means of bolts 13. The casing is provided with a central opening 14 through which the shaft member 1^a projects. A curved annular cap 15 is carried by the member 1^a and closes the opening between the casing 12 and the member 1^a. The cap 15 is urged against the casing by means of the spring 16, a felt packing 17 being interposed between the end of the spring and the cap 15.

My improved universal joint is capable of sustaining very severe strains and is very durable and may be successfully operated at a considerable angle. I have illustrated my improved joint in detail in an embodiment which I consider very practical. I have not attempted to illustrate or describe certain modifications in structural details which I contemplate and which might be desirable under certain working conditions as I believe the disclosure made will enable those skilled in the art to which my invention relates to embody or adapt the same as conditions may require.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a universal joint, the combination of shaft members provided with cross arms terminating in cylindrical heads having central inwardly facing openings adapted to receive the arms of a cross journal member, said cylindrical heads having locking key supporting studs, a cross journal member having spherical bearing members at the ends of its arms disposed in said openings of said heads, bearing blocks threaded into said heads in opposed pairs and having concave bearing faces coacting with said spherical bearing members of said journal member, the outer ends of said bearing members being provided with radial locking key notches, and spring locking keys mounted on said studs on said cylinder heads with their arms engaged under tension in the notches of said bearing members.

2. In a universal joint, the combination of shaft members provided with cross arms terminating in cylindrical heads having central inwardly facing openings adapted to receive the arms of a cross journal member, a cross journal member having spherical bearing members at the ends of its arms disposed in said openings of said heads, bearing blocks threaded into each of said heads in opposed pairs transversely of said journal member arms and having concave bearing faces coacting with said spherical bearing members of said journal member.

3. In a universal joint, the combination of shaft members provided with openings adapted to receive the arms of a cross journal member, said shaft members having locking key supporting studs, a cross journal member having bearing members at the ends of its arms disposed in said openings of said shaft members, bearing blocks threaded into said heads in opposed pairs to coact with said bearing members of said journal member, the outer ends of said bearing members being provided with radial locking key notches, and spring locking keys mounted on said studs on said shaft members with their arms engaged in the notches of said bearing members.

4. In a universal joint, the combination of shaft members provided with openings adapted to receive the arms of a cross journal member, a cross journal member having bearing members at the ends of its arms disposed in said openings of said shaft members, bearing blocks threaded into said heads in opposed pairs to coact with said bearing members of said journal member, the outer ends of said bearing members being provided with radial locking key notches, and locking keys mounted on said shaft members and engaged in the notches of said bearing members.

5. In a universal joint, the combination of shaft members provided with openings adapted to receive the arms of a cross journal member, a cross journal member having bearing members at the ends of its arms disposed in said openings of said shaft members, bearing blocks threaded into said shaft members in opposed pairs and having bearing faces coacting with said bearing members of said journal member, the outer ends of said bearing members being provided with radial locking key notches, and spring locking keys mounted on said shaft members and engaged in said notches of said bearing members.

6. In a universal joint, the combination of shaft members provided with openings adapted to receive the arms of a cross journal member, a cross journal member having bearing members at the ends of its arms disposed in said openings of said shaft members, bearing blocks threaded into said shaft members in opposed pairs transversely of said journal member arms and having bearing faces coacting with said bearing members of said journal member.

7. In a universal joint, the combination of shaft members provided with openings adapted to receive the arms of a cross journal member, a cross journal member having spherical members at the ends of its arms disposed in said openings of said shaft members, and bearing blocks threaded into said shaft members in opposed pairs transversely of said journal member arms and having concave bearing faces coacting with said bearing members of said journal member.

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

FRANK BURTT. [L. S.]

Witnesses:
LUELLA G. GREENFIELD,
MARGARET L. GLASGOW.