

Dec. 8, 1931.

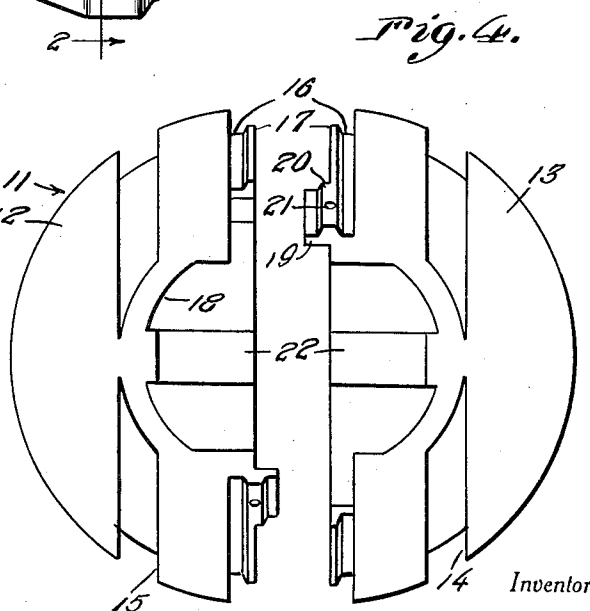
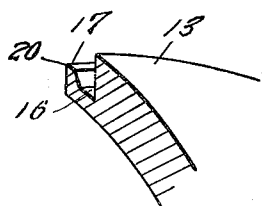
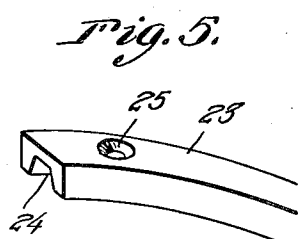
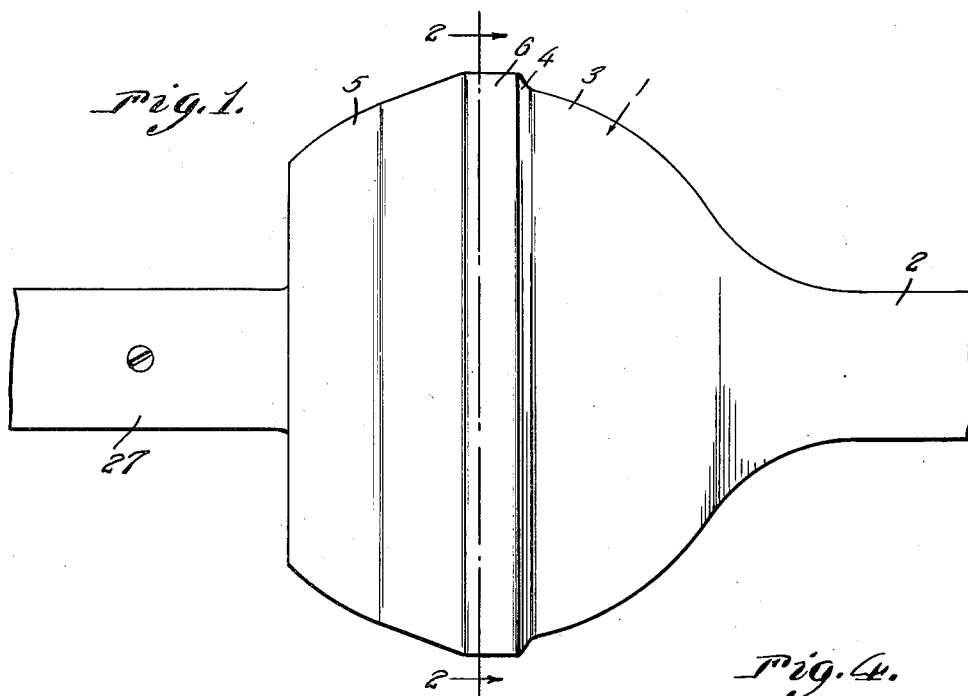
E. WILLIAMS

1,835,684

UNIVERSAL JOINT

Filed May 26, 1930

2 Sheets-Sheet 1



Eldon Williams

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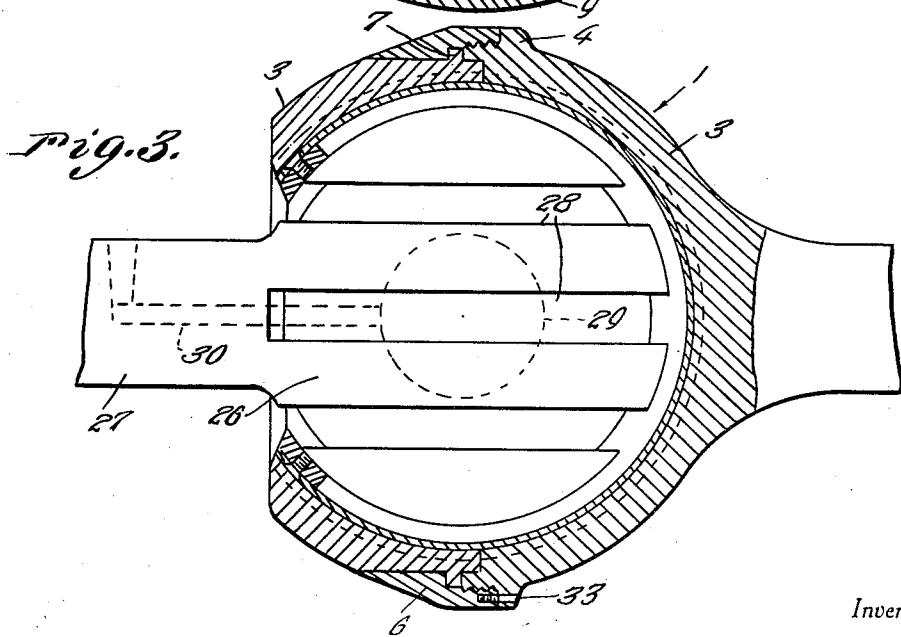
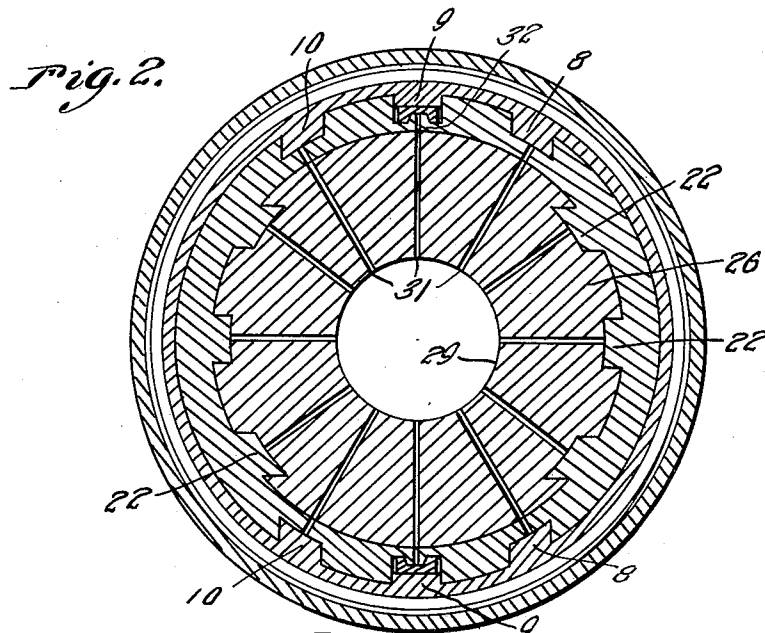
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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UNIVERSAL JOINT

Application filed May 26, 1930. Serial No. 455,731.

This invention relates to new and useful improvements in universal joints and an important feature of the invention resides in the provision of an outer sectional casing or housing in which is operatively mounted a ball and between which is mounted an inner socket or shell providing a novel construction and arrangement of parts whereby a comparatively large working radius of the joint is had.

Other objects of the invention are to provide a universal joint of the character described which will be comparatively simple in construction, which may be expeditiously assembled or disassembled, which will be strong, durable, efficient in its use and which may be manufactured at comparatively low cost.

All of the foregoing and still further objects and advantages of this invention may become apparent from a study of the following specification, taken in connection with the accompanying drawings wherein like characters of reference designate corresponding parts throughout the several views, and wherein:

Figure 1 is a view in side elevation of a universal joint construction in accordance with this invention,

Figure 2 is a vertical cross sectional view taken substantially on the line 2—2 of Figure 1 looking in the direction indicated by the arrows,

Figure 3 is a vertical longitudinal sectional view taken through the universal joint.

Figure 4 is a detail view in front elevation showing the sectional shell with the complementary halves constituting same separated,

Figure 5 is a fragmentary detail view in perspective showing one end portion of the clamping band through the medium of which the halves of the shell are secured together,

Figure 6 is a detail sectional view in perspective showing a corner portion of one of the sections of the shell.

Referring to the drawings in detail, it will be seen that the reference numeral 1 designates generally a housing formed on one end of the shaft 2 and comprising the threaded section 3 having an integral flange mower thereon and upon which is removably secured the section 5 through the medium of the clamping ring 6 engaged with the integral abutment 7 extending circumferentially on said section 5, as illustrated to advantage in Figure 3 of the drawings. The interior of the housing 1 has formed therein the integral longitudinally extending ribs 8, 9 and 10 on the upper and lower walls thereof. As clearly seen in Figure 2, the intermediate ribs 9 are of less heights than the outer ribs 8 and 10.

A shell designated generally by the reference numeral 11 in Figure 4 of the drawings comprises a pair of complementary half sections 12 and 13 having channels 14 and 15 therein respectively for the reception of the ribs 8 and 10. The opposed sides of the sections 12 and 13 have formed integrally thereon the inwardly offset extension 16 having the upstanding circumferentially extending flanges 17 thereon.

One end of the extension 16 and the flange 17 on the section 12 of the shell terminates in spaced relation to the shaft receiving opening 18 and the corresponding end of the extension 16 and the flange 17 of the section 13 of the shell 11 has formed integrally thereon a protuberance 19 having the raised portion 20 therein and further having a threaded diagonal socket 21 therein. The portion 19 constitutes an extension for the extension 16 on the section 12 and the portion 20 constitutes an extension for the flange 17 on said section 12 when the sections of the shell are in assembled position, as clearly seen in Figure 4, the opposite ends of the extension 16 and the flanges 17 are identical in construction with the exception that the order is reversed.

The sections 12 and 13 of the shell 11 have formed integrally on their inner sides the

aligned horizontally disposed ribs 22 which, of course, are integral with said sections 12 and 13. A coupling band 23 is provided for detachably and rigidly securing the sections 12 and 13 of the shell 11 together in assembled relation, their coupling band being provided with a tapered channel 24 on its inner side for the reception of the flanges 17 and also for the reception of the enlarged portions 20 on the opposite end of the flanges of each section.

The opposite end portions of the coupling band 23 are further provided with countersunk openings 25 for the passage of securing screws to be threaded into the socket 21 in a manner to secure the clamping bands in place. As will be apparent, the projections 19 will abut the adjacent ends of the extension 16 of the opposite section and thus relative rotary movement of said section is positively prevented and the coupling band 23 secures the sections together.

The sections 12 and 13 comprising the shell 11 are adapted to be assembled on a ball 26 mounted on one end of the shaft 27. The ball 26 has formed therein in the channels 28 for the reception of the ribs 22 on the interior of the shell 11. A lubricant chamber 29 is provided centrally in the ball 26 to which the lubricant is supplied through the medium of the passage 30 in the shaft 27. Oil distributing ports 31 communicate with the chamber 29 and radiate therefrom to the periphery of the said ball, certain of said ports preferably discharging into the channels 28 in the ball as illustrated to advantage in Figure 2 of the drawings and the remainder of the ports communicating with passages 32 provided in the shell 11 for conducting the lubricant into the channels in the outer surface of said shell.

As also clearly seen in Figure 2 of the drawings, the comparatively short intermediate rib 9 is disposed between the inner sides of the sections 12 and 13 which constitute the shell 11, said rib being disposed closely adjacent the outer side of the coupling band 23. It should be also here stated that anchoring screws 33 are threaded through the flange 4 on the section 3 of the housing into the clamping ring 6 in a manner to secure said ring in position and prevent the accidental unthreading of same.

In assembling a universal joint constructed in accordance with this invention, the sections 12 and 13 of the shell 11 are mounted in position on the ball and secured together through the medium of the coupling band 23. The housing 1 is then mounted or assembled on the shell 11 by placing the sections 3 and 5 of said housing in position over said shell and thereafter threading the clamping ring 6 home after which the anchoring screws 33 are inserted.

It is believed that the many advantages of the universal joint constructed in accordance

with this invention it will be readily understood, and although the preferred embodiment of the invention is as illustrated and described, it is to be understood that changes in the details of construction may be had which will fall within the scope of the invention as claimed.

What is claimed is:

1. A universal joint of the character described comprising a housing, a ball disposed in the housing, and means for operatively connecting the housing to the ball, said means including a shell interposed between the housing and ball and splined to said housing and ball, the shell comprising a pair of complementary half sections having reduced, abutting marginal portions, outwardly extending ribs on the free marginal portions of the reduced portions, a split band extending around the reduced portions and secured thereto, said band having a channel in its inner periphery for the reception of the ribs, the band constituting means for detachably securing the shell sections together.

2. A universal joint of the character described comprising a housing, a ball disposed in the housing, and means for operatively connecting the housing to the ball, said means including a shell interposed between the housing and ball and splined to said housing and ball, the shell comprising a pair of complementary half sections having reduced, abutting marginal portions, outwardly extending ribs on the free marginal portions of the reduced portions, a split band extending around the reduced portions and secured thereto, said band having a channel in its inner periphery for the reception of the ribs, the band constituting means for detachably securing the shell sections together, and lateral projections formed integrally on one end portion of each of the reduced portions and disposed for abutting engagement with the adjacent end of the other reduced portion in a manner to retain the shell sections against relative rotation.

3. A universal joint of the character described comprising a housing, a ball disposed in the housing, and means for operatively connecting the housing to the ball, said means including a shell interposed between the housing and ball and splined to said housing and ball, the shell comprising a pair of complementary half sections having reduced, abutting marginal portions, outwardly extending ribs on the free marginal portions of the reduced portions, a split band extending around the reduced portions and secured thereto, said band having a channel in its inner periphery for the reception of the ribs, the band constituting means for detachably securing the shell sections together, and lateral projections formed integrally on one end portion of each of the reduced portions

and disposed for abutting engagement with the adjacent end of the other reduced portion in a manner to retain the shell sections against relative rotation, the projections each having a raised portion thereon disposed in alignment with the ribs on said other reduced portions, the raised portions merging with the ribs of the reduced portions from which the projections extend.

10 In testimony whereof I affix my signature.
ELDON WILLIAMS.

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