

PATENT SPECIFICATION

301,276

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COMPLETE SPECIFICATION.

Universal Shaft Coupling.



We, THE ALVIS CAR & ENGINEERING COMPANY LIMITED, a British company, and GEORGE THOMAS SMITH-CLARKE, a British subject, both of Holyhead Road, Coventry, Warwickshire, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

10 This invention relates to universal shaft couplings, of the kind in which one member of the joint is a spherically ended shaft having on opposite sides of the sphere a trunnion on each of which is rotatably and slidably mounted a ball, these three balls engaging in parallel longitudinal bores in the other member of the joint, the centre bore being coaxial with the member and breaking into the two other bores.

15 In use, especially where the deflection is considerable, there is a severe load between the movable balls and trunnions, and as difficulty is experienced in supplying adequate lubrication to them, the object of the present invention is to provide a simple and effective construction which is not liable to suffer under these conditions.

20 According to this invention, an annular recess is provided between the ball and trunnion and this is packed with anti-friction rollers which lie between the ends of the recess when the ball is assembled and are thus retained in position.

25 This arrangement, therefore, will work well on heavy loads and at high rotational speeds and at large angles of deflection, even when lubricant is only sparsely supplied, whilst at the same time there is less frictional resistance both to angular and sliding movements of the ball, and no danger of any of the parts coming adrift.

30 In the accompanying drawings, which illustrate a form of coupling suitable for driving a steerable road wheel of a motor vehicle,

35 Figure 1 is a sectional elevation, and Figure 2 is a sectional plan on the line II, II of Figure 1.

40 The shaft 2 forming one member of the joint has a spherical end 3 through which extends, at right angles to the shaft, a pin 4. The projecting ends constitute

[Price 1/-]

trunnions and upon them are slidably and rotatably mounted balls 5. 55

An annular recess 6 is formed in the bore of each ball leaving shoulders 7 at the end of each recess. Prior to mounting the balls on their trunnions, anti-friction rollers 8 are packed in the recesses, being retained endwise therein by the shoulders 7 so that they cannot possibly become detached during the normal range of sliding movements of the balls 5. 60 65

The second member of the joint comprises a hub 9 having an enlarged end part 10. In this are formed three parallel bores 11, 12 and 13 extending in the direction of the hub axis, the centre one 11 being concentric therewith and receiving the spherical end 3 on the shaft 2. The bores 12 and 13 on opposite sides of the bore 11 each receive a ball 5, and break into the bore 11. The hub 9, in this example, carries a steerable driven road wheel (not shown) for which a brake drum may be provided as indicated at 14. 70 75

The provision of the roller bearing avoids destructive wear between the balls 5 and their trunnions even if lubrication is considerably restricted. Furthermore it reduces considerably the friction of sliding as well as of rotating, and in use is perfectly safe at very high speeds or heavy loads, and for large angles of deflection as would occur in driving a steerable wheel. 80 85

Obviously the annular recesses for the rollers 8 could be provided in the trunnions instead of in the balls. 90

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:— 95

1. In a universal joint of the kind referred to, the combination of a spherical ended shaft forming one member of the joint, a trunnion extending from opposite sides of the sphere, and, mounted on each trunnion free to slide and rotate a ball between which and the trunnion is an annular recess packed with anti-friction rollers, substantially as and for the purpose described. 100 105

2. The complete universal shaft coup-

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ling, substantially as described or as illustrated in the accompanying drawings.

Dated this 2nd day of May, 1928.
ERIC W. WALEORD,
Fellow of the Chartered Institute of
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19, Hertford Street, Coventry,
Agent for the Applicants.

[This Drawing is a reproduction of the Original on a reduced scale.]

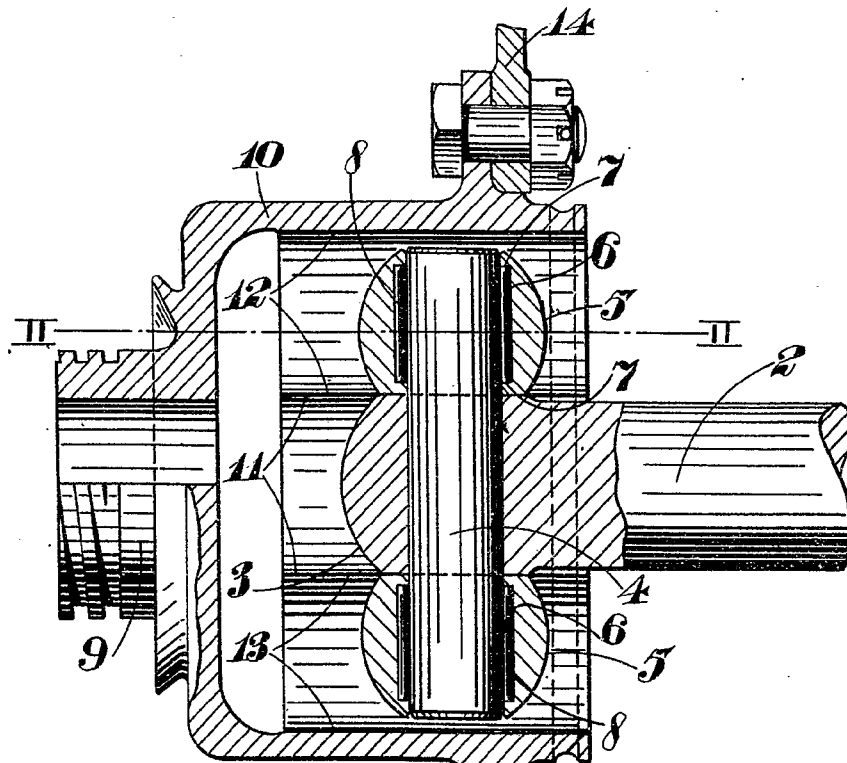


Fig. 1.

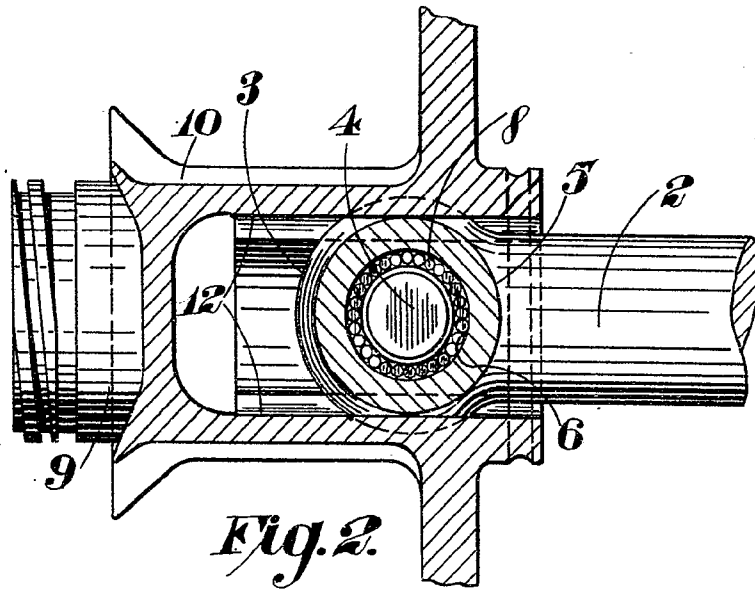


Fig. 2.