N° 12,492 A.D. 1912

(*Under International Convention.*)

Date claimed for Patent under Patents and Designs Act, 1907, being date of first Foreign Application (in Italy), 15th July, 1911

Date of Application (in the United Kingdom), 25th May, 1912

At the expiration of twelve months from the date of the first Foreign Application, the provision of Section 91 (3) (a) of the Patents and Designs Act, 1907, as to inspection of Specification, became operative

Accepted, 13th Feb., 1913

COMPLETE SPECIFICATION.

Improvements in or relating to Universal Elastic Joints for Motor-cars.

We, LANCIA AND CO., of 99, Via Monginevro, Turin, Italy, 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:—

The present invention relates to a universal elastic joint of the type used in transmission gears for motor cars and enabling the clutch to be mounted therein so as not only to render possible the regular transmission between two shafts inclined relatively to each other, but also to deaden the shocks brought about by a sudden manipulation of the clutch or by braking before unclutching.

The invention consists principally in the fact that the springs connecting the two parts of the joint are secured to one of the said parts at points situated alternately in different parallel planes, while the other securing point of each spring, *i.e.* the one corresponding to the other part of the joint, is in a plane intermediate to the said planes, in order to reduce the tendency of the said springs, when one of the shafts of the transmission is inclined relatively to the other shaft, to draw them back to their normal position.

Figure 1 shows diagrammatically the arrangement of the two parts, one of which is secured to the driving shaft, and the other to the driven shaft, when the two shafts are in alignment.

Figure 2 shows the position of the said parts when the driven shaft is inclined relatively to the driving shaft.

Figure 3 is a front elevation of the part,

Figure 4 shows two springs in plan, in development,

Figures 5 and 6 show respectively a front elevation and longitudinal section of an ordinary disc clutch arranged according to this invention.

As shown in Figures 1—4, the driving shaft 1 has secured to it a cup 2 with which engages the cup 3 secured to the driven shaft 4. The cup 3 has an external spherical surface, so as to enable it to rotate in the cup 2 and to allow the shaft 4 to take any inclination relatively to the shaft 1.

To the cup 3 are secured two or more projecting rods 5, diametrically opposite each other in couples, and the cup 2 is in its turn provided with two or more pairs of anchor-shaped rods 6 having two opposite hooks arranged at the sides of the plane in which are arranged the rods 5. The rods 5 secured to the driven

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shaft, and the rods 6 secured to the driving shaft, are connected together by means of helical springs, an elastic joint thus being formed.

When the driven shaft takes an inclined position, as shown for instance in Figure 2, the arms 5 of the element 3 are displaced with regard to a perpendicular central plane of the clutch and take the position shown in dotted lines in Figure 4. Now as the arms 6 of the element 2 keep their position with regard to the perpendicular central plane, one of the springs 7 connecting one arm 5 to the two adjacent arms 6 is lengthened and the other shortened.

These springs 7 are all in tension and when the arm 5 is moved, one of them is compelled to lengthen, and the other is shortened while still remaining in tension.

The degree of elasticity of the connection is of course determined by the tension of the springs, and is consequently easily adjustable.

Figures 5 and 6 show an example of a practical application of the system with a disc clutch of the type generally used in motor-cars, but the type of this clutch can be varied.

In the said figure, the cup 2 secured to the driving shaft 1, is inserted into the fly wheel 8, and the rods 6 are secured to the inner rim of the fly wheel and have the shape of double hooks to which are connected the ends of the springs 7, whilst the rods 5 secured to the spherical cup 3, terminate in rings. The springs 7, the tension of which can be adjusted by means of nuts 7^1, connect all the hooks 6 to the rings 5 and form an elastic system as previously described.

The cup 3 is closed by a front wall 3^1 used for fitting it to the end of the driven shaft 4, whilst at the opposite end the said cup is secured to a disc 9 mounted on a sleeve 10 secured to the drum 11 provided on its outer surface with longitudinal keys for keying the discs 12 intended to engage with the discs 12^1 keyed to the inner surface of the cup 3 by means of corresponding keys.

The sleeve 10 can as usual be shifted longitudinally for bringing about the throwing into and out of gear.

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:—

1. A universal elastic joint for motor cars in which a part secured to the driving shaft is connected by means of springs to a part which is secured to the driven shaft, characterised by the points of application of the springs being arranged in an alternate manner on one of the parts in different parallel planes whereas on the other part these points of application are on a plane which is intermediate to the said planes.

2. A universal elastic joint as set forth in Claim 1, characterised by the part secured to the driven shaft having a cylindrical extension inside which a head with a spherical surface is mounted, which is secured to the driven shaft and is provided with radial arms, connected by means of springs to radial arms secured to the driven shaft, a clutch of any known kind being mounted inside the said spherical head.

3. The universal elastic joint for motor cars substantially as described and illustrated in Figures 1, 2 and 4.

4. The universal elastic joint and clutch substantially as described with reference to Figures 5 and 6.

Dated this 25th day of May, 1912.

BOULT, WADE & TENNANT,
111 & 112, Hatton Garden, London, E.C.,
Chartered Patent Agents.

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LANCIA & CO.'S Complete Specification.

(1 SHEET)

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

Fig. 1

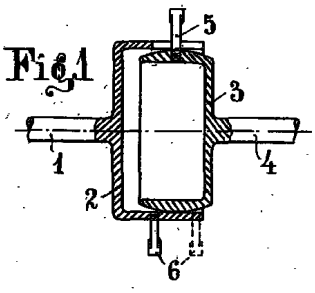


Fig. 2

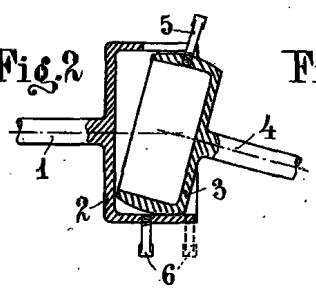


Fig. 3

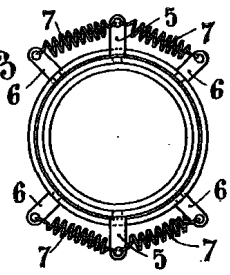


Fig. 4

Fig. 5

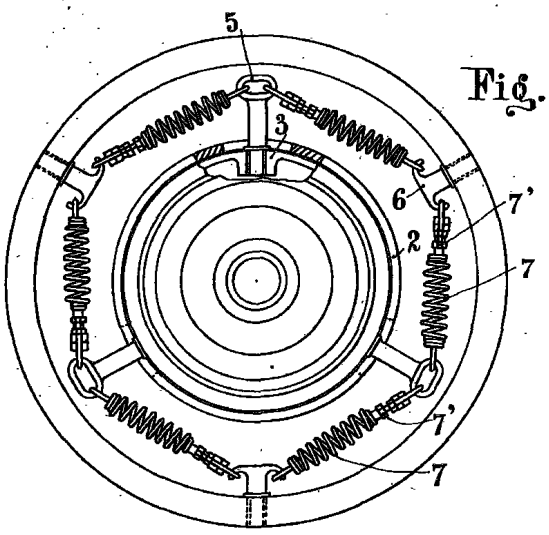
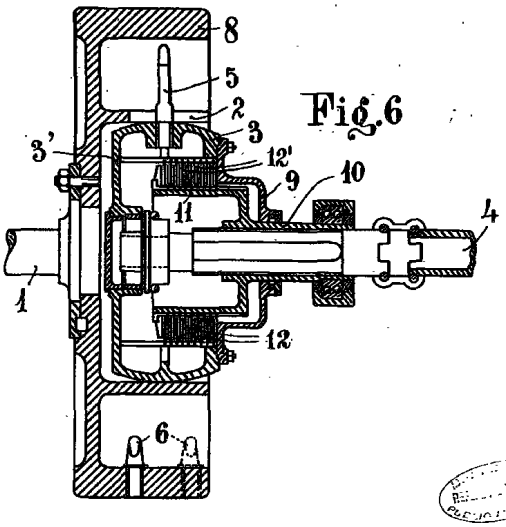


Fig. 6



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A.D. 1912. May 25. No. 12,492.
LANCIA & CO.'S Complete Specification.

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

Fig.1

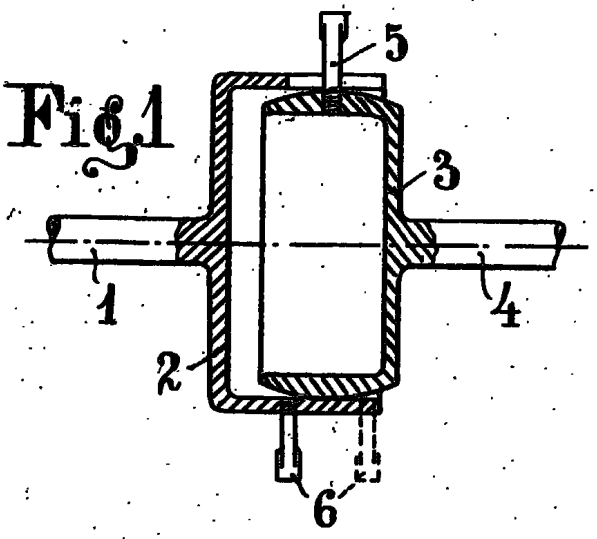


Fig.2

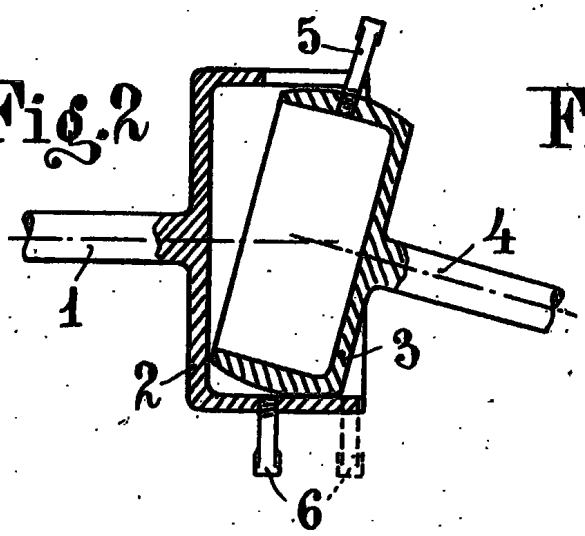
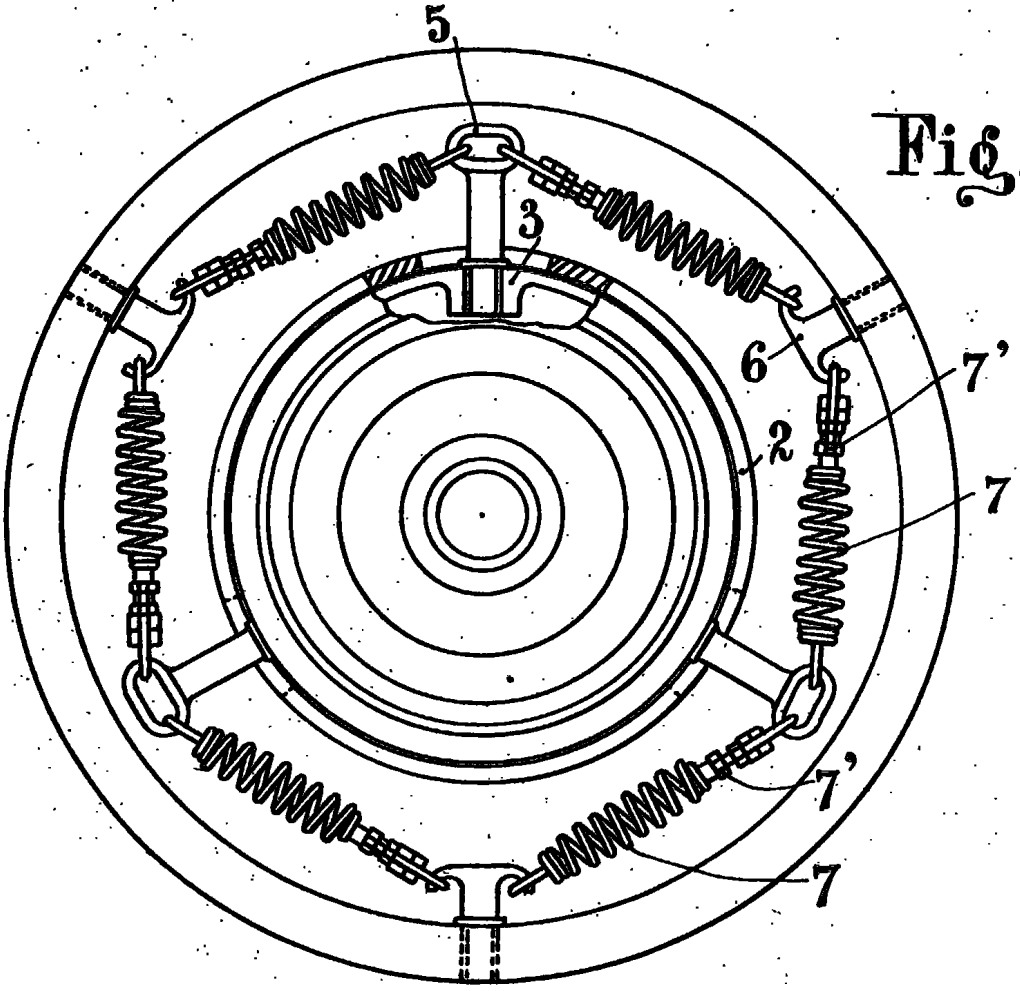


Fig.

Fig.5



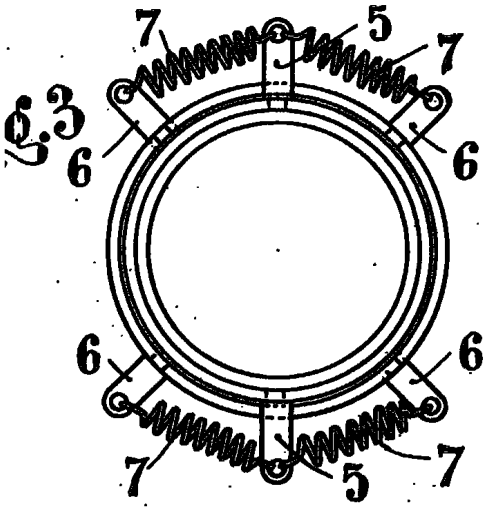


Fig. 3

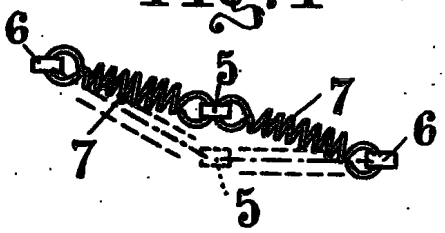


Fig. 4

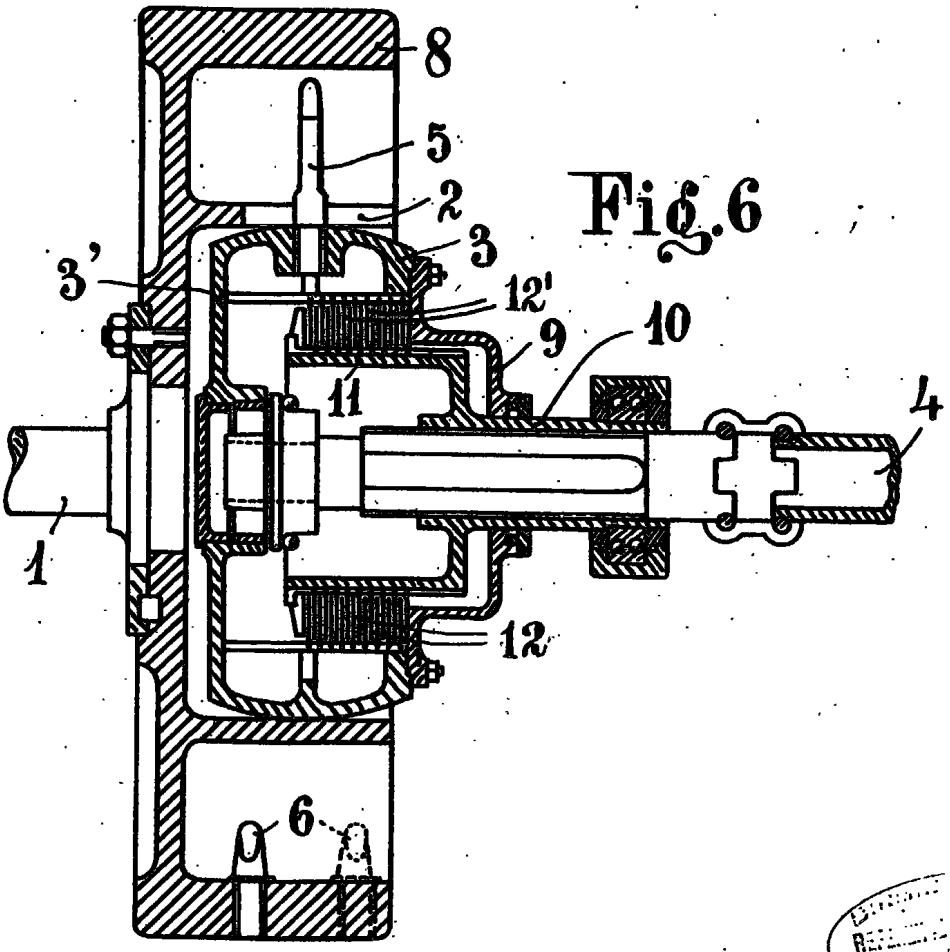


Fig. 6

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