June 19, 1923. 1,459,223

G. LANZIUS

ELASTIC SHAFT CONNECTION

Filed June 26, 1920

Fig. 6.

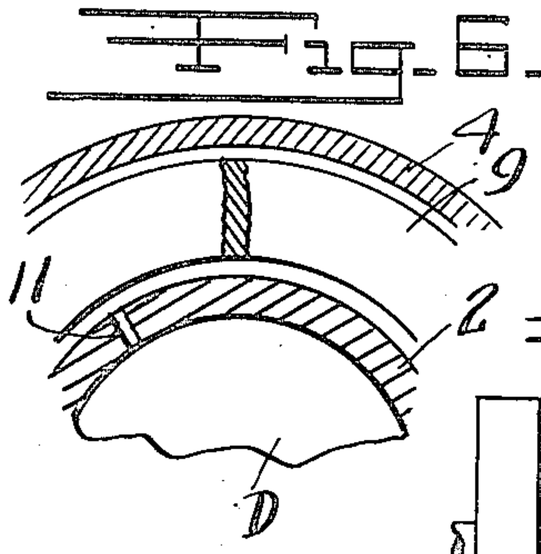


Fig. 1.

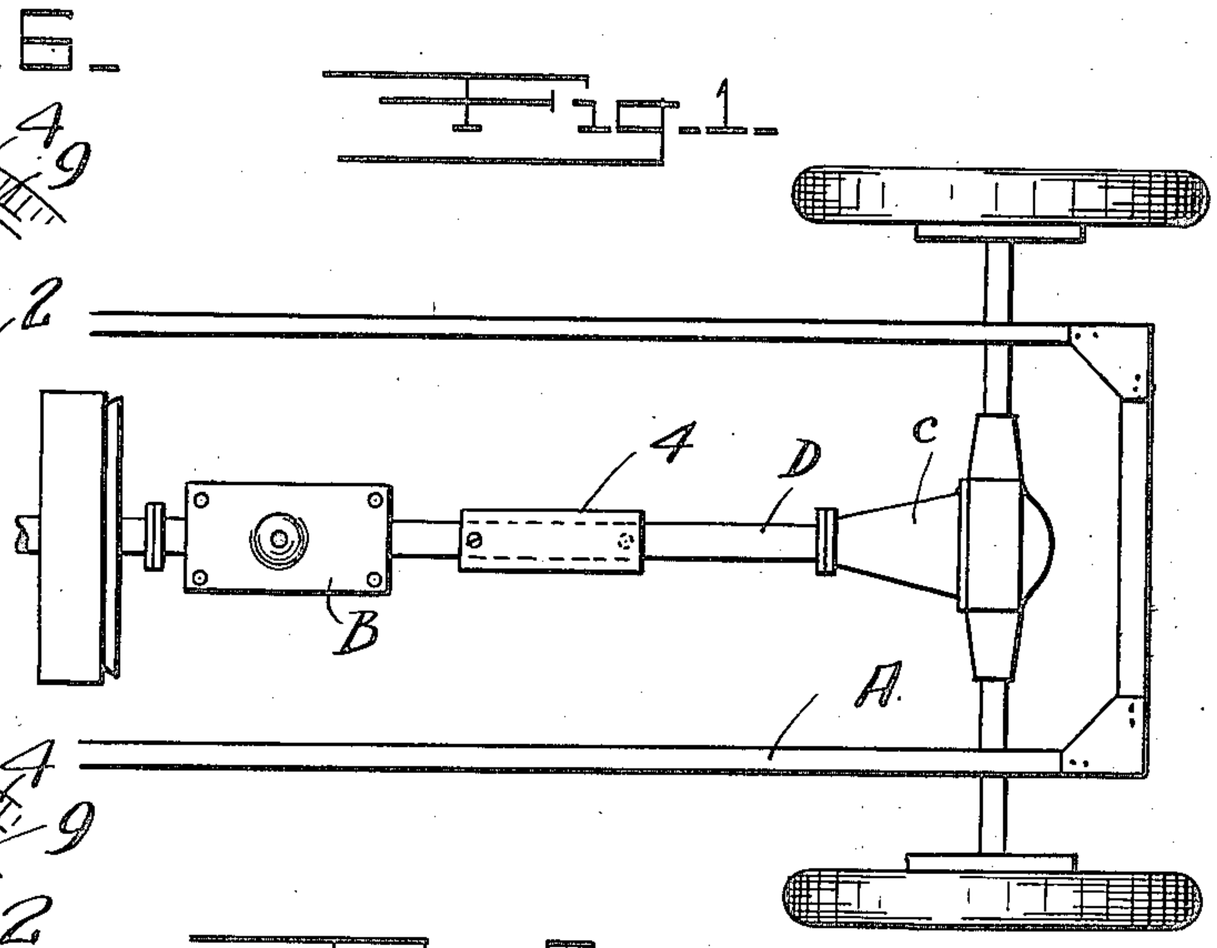


Fig. 7.

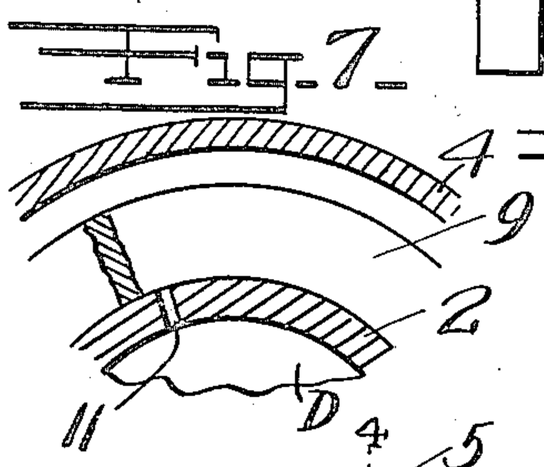


Fig. 2.

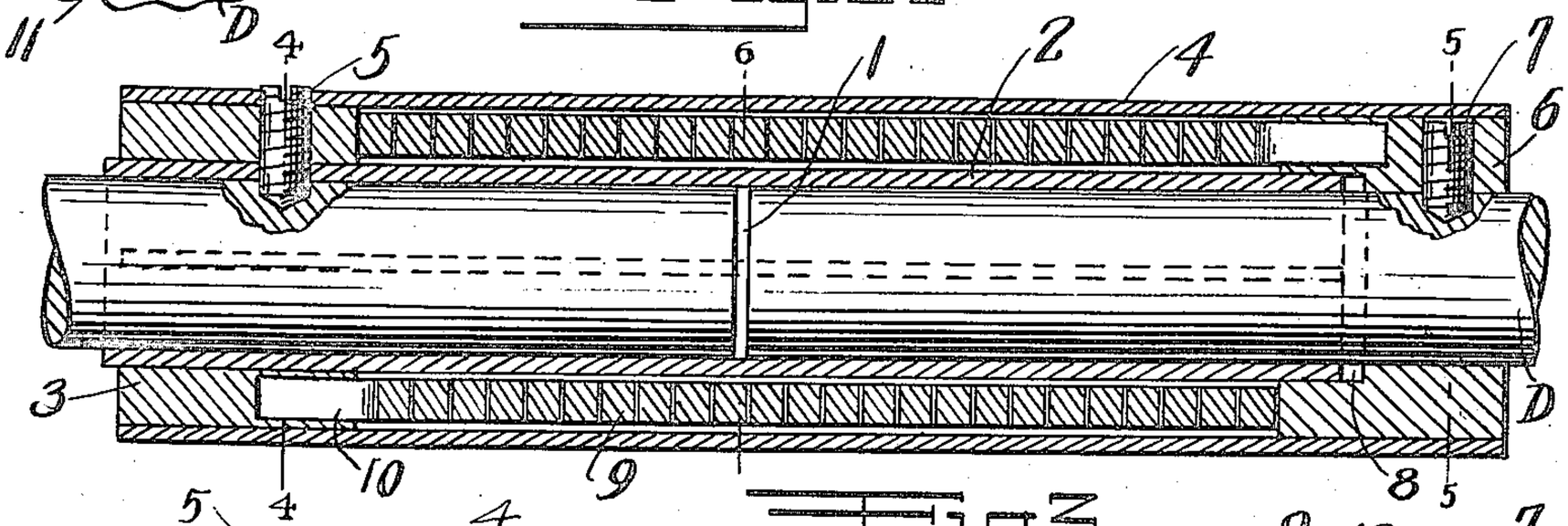


Fig. 3.

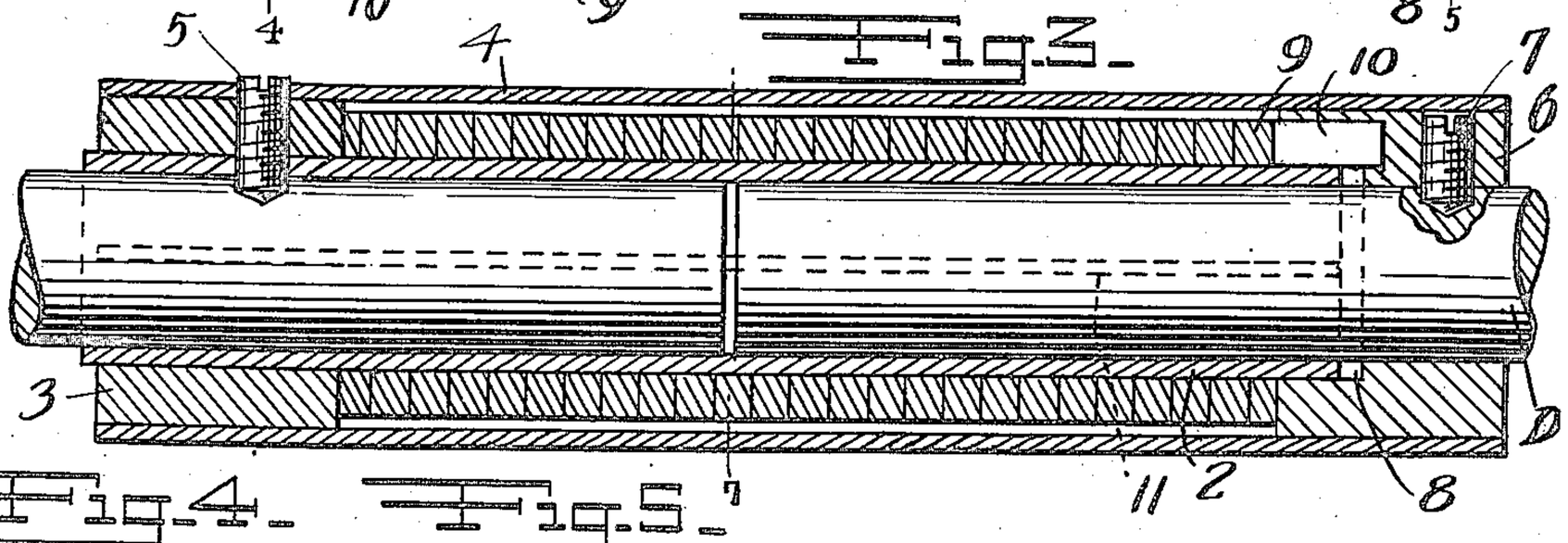


Fig. 4.

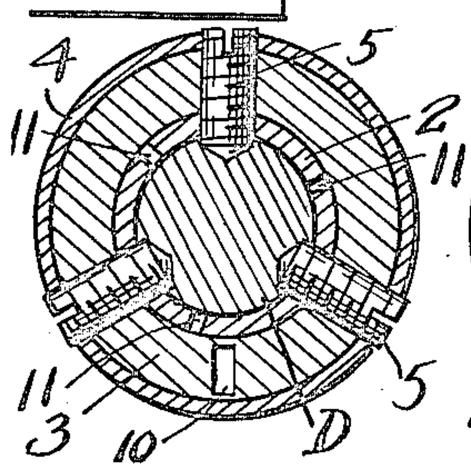
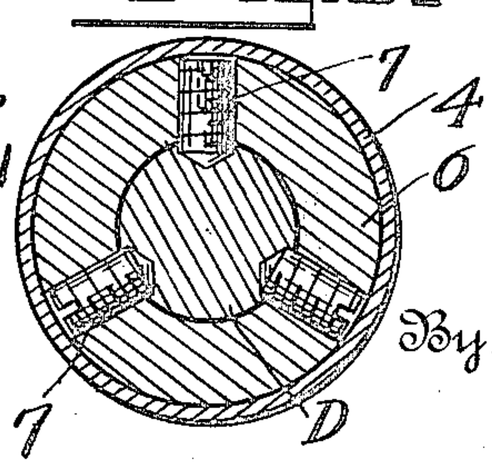


Fig. 5.



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By his Attorney
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UNITED STATES PATENT OFFICE.

GEORGE LANZIUS, LATE OF NEW YORK, N. Y.; EVELYN ELIZABETH FAIRBANKS LANZIUS EXECUTRIX OF SAID GEORGE LANZIUS, DECEASED.

ELASTIC SHAFT CONNECTION.

Application filed June 26, 1920. Serial No. 391,986.

To all whom it may concern:

Be it known that I, GEORGE LANZIUS, a citizen of United States of America, residing at 9 East 39th Street, city, county, and State of New York, have invented new and useful Improvements in Elastic Shaft Connections, of which the following is a specification.

This invention relates to elastic shaft connection arranged to be placed intermediate of a driving element and a driven element for the purpose of maintaining the two elements in alignment and at the same time serving to reduce the strain upon one or the other of said elements by reason of the unbalanced condition between the power applied by the driving element and the resistance produced by the work accomplished by the driven element.

One of the objects of the invention is to provide means for limiting the torsional strain in either direction on a resilient element forming part of the invention and at the same time to provide a certain gripping of the driven and driving element.

A further object of the invention is to provide a resilient gripping member which surrounds the ends of the driving and driven elements so that these respective elements are released when the power ceases to be applied. One of the objects of this invention is to provide means for cushioning the shock which accompanies such transmission of motion or arresting of motion from one part to the other so as to reduce wear and prevent damage to the parts of the mechanism to which it is applied, and in the drawing I have illustrated the invention in one form of embodiment as applied to the drive shaft of an automobile.

The invention consists of the construction, combination and arrangement of parts, as herein illustrated, described and claimed.

In the accompanying drawing, forming part hereof, is illustrated a form of embodiment of the invention, in which drawings similar reference characters designate corresponding parts and which:

Figure 1 is a plan view showing the application of the invention to a common form of motor driven vehicle;

Figure 2 is a longitudinal section taken through the device as applied to a drive shaft and in normal position;

Figure 3 is a longitudinal section through the device applied to a drive shaft, showing the position of the parts when power has been applied to the driven element of the shaft;

Figure 4 is a transverse section taken approximately on line 4—4 of Figure 2;

Figure 5 is a transverse section taken approximately on line 5—5 of Figure 2;

Figure 6 is a transverse section between the abutting ends of the shaft, showing the normal position of the resilient member of the device or before the power is applied; and,

Figure 7 is a transverse section taken between the abutting ends of the shaft showing the position of the resilient member after power is applied.

Referring to the drawings, a shaft D may be cut as at 1 to form two separate parts. A sleeve 2 is disposed over the abutting ends of the shaft D and in the embodiment shown in this application is loosely disposed over one abutting end but is secured to the other section of the shaft as by means of a collar 3 and a set-screw 5. However, the sleeve 2 may be loose with relation to both ends of the shaft.

An outer sleeve 4 is also secured with relation to one end of the shaft by means of the set-screw 5 and collar 3. The section of the shaft opposite that to which the collar 3 is secured has disposed thereon a collar 6, which is fixed with relation to the latter section as by means of a set-screw 7 and the collar 6 is provided with an annular recess 8 arranged to receive the free end of the sleeve 2.

A coil spring 9 is disposed around the sleeve 2 and inside of the sleeve 4. The ends of the coil spring are disposed in recesses 10 formed in the collars 3 and 6 respectively. The sleeve 2 is provided with a plurality of longitudinal slits 11 permitting the expansion and contraction of the sleeve, which is made slightly larger than the diameter of the shaft D so that normally it does not grip the shaft.

In the form of application of the invention as shown in the drawings it is shown as applied to an ordinary wheeled chassis A having the ordinary form of transmission B, differential C and drive shaft D.

In the operation of the invention, the sleeve 2 is made of an interior diameter slightly larger than the exterior diameter of

the shaft D to which it is applied. The resilience of the sleeve caused by the slits 11 permits the sleeve to be contracted against the shaft D and to tightly grip the same. The coil spring 9 is disposed around the sleeve 2 so that normally no contracting effect is had. The ends of the coil spring 9 being secured to the collars 3 and 6, when one of the sections of the shaft D is driven the coil spring is contracted so as to contract the sleeve 2 and firmly grip the shaft, when one of the sections is rotated in one direction. When rotated in the other direction the spring 9 would expand but its limit of expansion is fixed by the interior diameter the outer sleeve 4, so that in neither case is more strain put on the coil spring 9 than it can bear.

Having thus described the invention what is claimed as new and desired to be secured by Letters Patent is:

1. In combination with a driving and a driven element, means operated by the driving member for keeping the elements in alignment and means for compressing the alignment keeping means on the elements.

2. In combination with a driving and a driven element, means for keeping the elements in alignment and resilient means for compressing the alignment keeping means on the elements.

3. In combination with a driving and a driven element, constant means for keeping the elements in alignment and a member wound around the alignment keeping means and having its ends secured to the driving and driven elements respectively.

4. In combination with rotatable driving and driven shafts, a resilient sleeve disposed over the abutting ends of the shafts and means for compressing the sleeve on the shafts by rotation of either shaft.

5. In combination with rotatable driving and driven shafts, a resilient sleeve provided with longitudinal slits disposed over the abutting ends of the shafts and means operable by rotation of the shafts for compressing the sleeve on the shafts.

6. In combination with rotatable driving and driven shafts, a resilient sleeve disposed over the abutting ends of the shafts and a coil spring disposed around the sleeve and having its ends fixed with relation to the shafts.

7. In combination with rotatable driving and driven shafts, a resilient sleeve disposed over the abutting ends of the shafts, means for compressing the sleeve on the shafts and means for limiting the action of the compressing means.

8. In combination with rotatable driving and driven shafts, a resilient sleeve disposed over the abutting ends of the shafts, a coil spring disposed around the sleeves and having its ends fixed with relation to the shafts and means for limiting the action of the coil spring.

9. In combination with rotatable driving and driven shafts, a resilient sleeve disposed over the abutting ends of the shafts, a coil spring disposed around the sleeve and having its ends fixed with relation to the shafts, and a sleeve secured on one end of the shafts and disposed around the coil spring.

10. In combination with a driven and a driving shaft, collars on the shafts, a resilient sleeve connected with one collar and working under the other collar, an outer sleeve connected with one collar only and surrounding the inner sleeve, and a coil spring disposed intermediate of the sleeve and having its ends connected to the collars, the spring being disposed inside of one sleeve and outside of the other.

In testimony whereof I have signed my name to this specification.

GEORGE LANZIUS.