

PUBLISHED
APRIL 27, 1943.
BY A. P. C.

J. F. PAULSEN
ELASTIC CONNECTING MEMBERS
Filed Feb. 26, 1942

Serial No.
432,515

Fig. 1

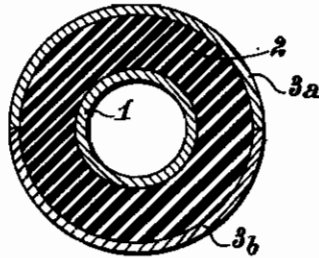


Fig. 3

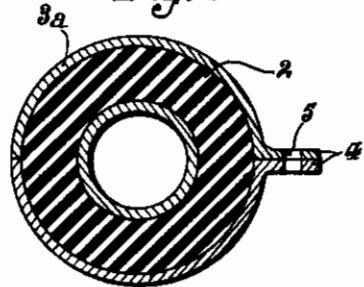


Fig. 2



Fig. 5

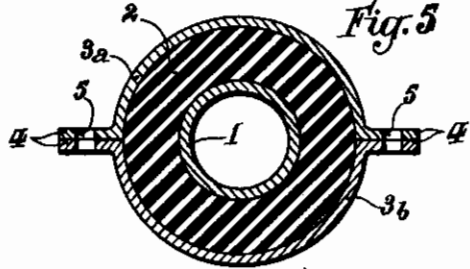


Fig. 4

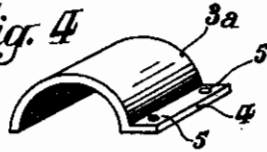


Fig. 7

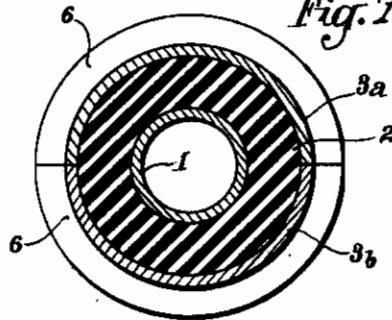


Fig. 6

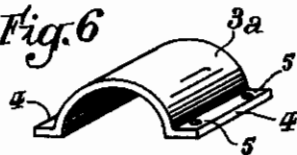


Fig. 9

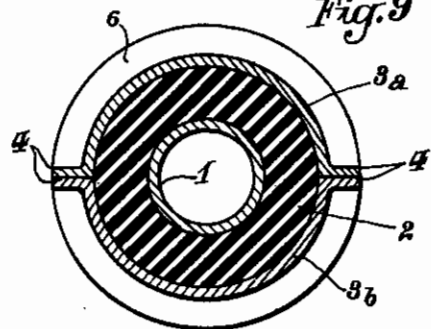


Fig. 8



Fig. 10



INVENTOR:-
Jean Felix Paulsen
By Alexander Dell
ATTORNEYS

ALIEN PROPERTY CUSTODIAN

ELASTIC CONNECTING MEMBERS

Jean Felix Paulsen, Saint-Genis-Laval, France;
vested in the Alien Property Custodian

Application filed February 26, 1942

My invention refers to elastic connecting members of the kind comprising two co-axial metallic cylinders assembled by an annular mass of rubber vulcanized in position. Such members permit elastic displacements of the cylinders with respect to each other, mainly in an axial or angular direction, displacements in any other direction being much more limited under the same conditions.

The rubber assembling the two metallic parts contracts during the vulcanizing process and is therefore under tension, mainly in the radial direction. The relative displacements of the cylinders and the tension of the intermediate rubber mass tend to separate the latter from the metal surfaces and more particularly from the inner surface of the outer cylinder or sleeve, where a perfect adhesion is in general difficult to obtain when the sleeve is long with respect to its diameter.

Elastic articulations are known in which this drawback is obviated by making the outer sleeve in two semi-cylindrical parts with their corresponding longitudinal edges spaced from each other. These articulations are however essentially different from those with the outer sleeve in one piece. When the vulcanizing operation is finished, the rubber is untensioned owing to the possibility for the two semi-cylindrical parts to move towards each other without, however, coming into mutual contact. When such an articulation is engaged into a cylindrical housing or bore, the rubber is compressed and the articulation is only retained by the radial reaction of the rubber mass. It also follows that the dimensions of the articulation are not the same before and after mounting.

With the articulations comprising an outer sleeve in one piece, the latter is generally ground to exact diameter and may be forced into the housing or bore in such a manner as to obtain a positive clamping action without any possibility of rotating under the action of the torsional stresses. Moreover the outer diameter of the articulation is the same before and after mounting.

The drawbacks of the known elastic articulations comprising an outer sleeve in two parts may therefore be summarized as follows:

The dimensions of the finished article depend upon the degree of contraction of the rubber layer.

It is impossible to grind the outer sleeve on the finished member.

It is impossible to obtain a really cylindrical

member, the outer shape being dependent on the rubber contraction.

It is impossible to adjust exactly the degree of clamping of the member within its housing, this clamping being a function of the volume of the rubber mass, which depends on the characteristics of the mixture used, on the temperature of vulcanization and also on the stresses applied to the articulation, since the torsional stresses tend to wind up the rubber and to reduce the diameter of the member.

My invention has for its object a connecting member of the character described wherein the outer metallic sleeve is in two semi-cylindrical parts in mutual contact before vulcanization of the rubber layer.

Another object of my invention is a connecting member as above specified, provided with flanges, collars or the like.

In the annexed drawings:

Fig. 1 is a section of a connecting member according to my invention.

Fig. 2 is a perspective view at a reduced scale of a semi-cylindrical element of the member according to Fig. 1.

Figs. 3 and 4 represent in the same manner a connecting member provided with a lateral flange.

Figs. 5 and 6 show a member with two lateral flanges.

Figs. 7 and 8 show a member provided with a flanged end.

Figs. 9 and 10 show a member having a flanged end and two lateral flanges.

The member according to my invention comprises an inner tubular core 1, an intermediate annular rubber mass 2 and an outer sleeve made of two semi-cylindrical parts 3a and 3b in mutual contact. Such a member is manufactured by disposing core 1 and sleeve 3a—3b co-axially within a mould, by forcing rubber into the intermediate annular space and by vulcanizing the same. The inner core 1 may also be coated with rubber and maintained while the two parts 3a and 3b are radially pressed into position. In any case vulcanisation is effected when parts 3a and 3b are in contact and the contraction of mass 2 causes the rubber to be tensioned between the two sleeves.

The member thus manufactured has many advantages. It is a known fact that the adhesion of rubber is more easily obtained on plane surfaces or on semi-cylindrical parts than on the inner wall of a tube. My member therefore obviates the drawback resulting from the perma-

ment tension of the rubber in the known articulations with the outer sleeve in one piece, since the degree of adhesion is materially increased.

The member according to my invention also possesses the advantage that it is easy to provide collars or flanges on the outer sleeve. With a sleeve in one piece such collars or flanges are difficult to realise; with a sleeve in two parts in spaced mutual relation collars or flanges would be useless since the two parts are not rigidly connected with each other and should be fixed separately and independently from each other.

It is also to be noted that the member according to my invention may be ground, when finished, to the exact diameter required and may thus be forced into its housing and positively clamped in position. The degree of clamping is accurately determined by the diameter of the outer sleeve after grinding and is quite independent of the characteristics of the rubber mass.

As shown in the annexed drawing it is easy to manufacture parts such as those of Figs. 4

to 10. For instance a member according to my invention may be provided with a lateral longitudinal flange 4 (Figs. 3 and 4) which may be fixed on an appropriate support by means of bolts passed through holes 5, such bolts forming at the same time a rigid connection between parts 3a and 3b. Flange 4 is easily obtained by pressing. The member may be provided with two opposed longitudinal flanges (Figs. 5 and 6). By means of parts as shown in Fig. 8, it is possible to obtain a member with a flanged end 6. The flanged end and the longitudinal flanges may be combined (Figs. 9 and 10). The member may have two flanged ends.

It will be readily understood that the details of construction may be varied within the scope of my invention. The inner metallic core 1 may be plain and project at one end or at both ends. Its inner section or its inner and outer sections may be polygonal.

JEAN FELIX PAULSEN.