Dec. 29, 1936. R. E. S. GEARE 2,066,266

V-BELT

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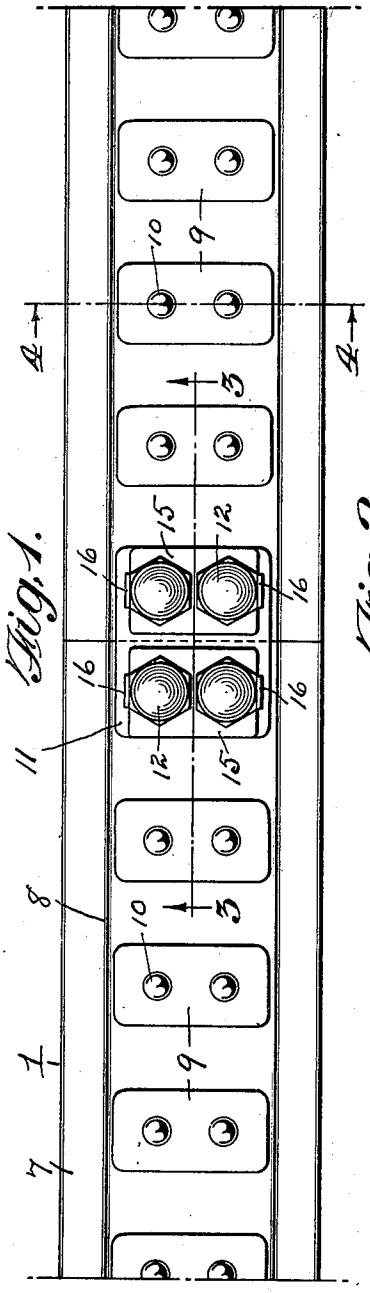


Fig. 1.

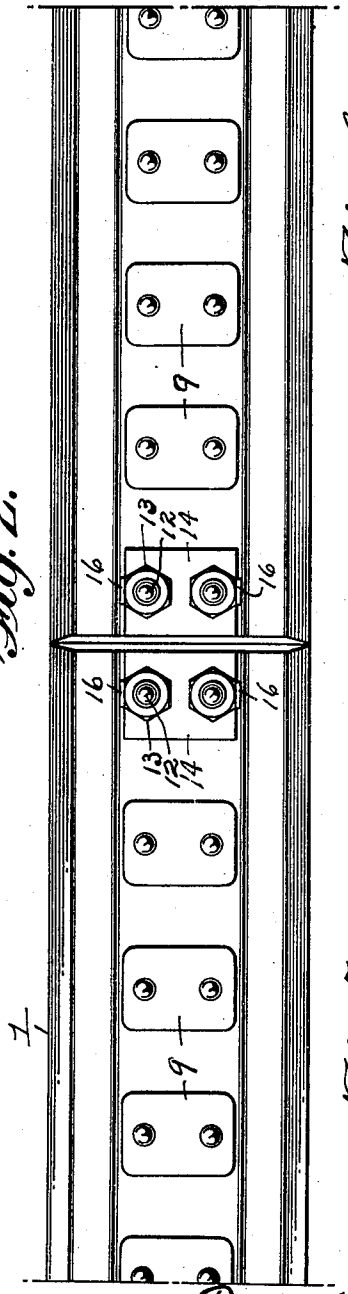


Fig. 2.

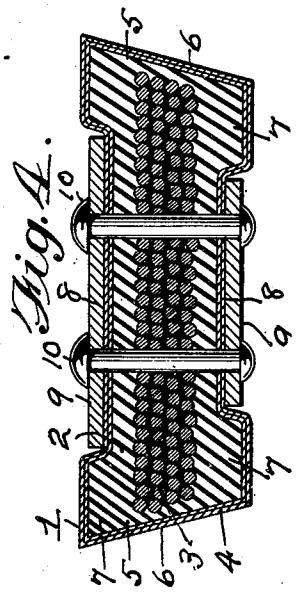


Fig. 4.

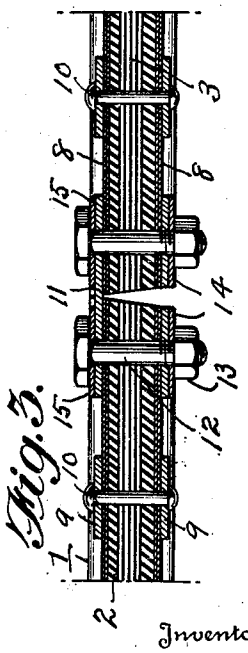


Fig. 3.

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V-BELT

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3 Claims. (Cl. 74—233)

This invention relates to improvements in the construction of V-belts.

One object of the invention is to provide a V-belt which is relatively thinner in proportion to its width than V-belts of ordinary type, and therefore more flexible perpendicularly, but which is of a predetermined crosswise rigidity for a thin section of belt, so that it is prevented from buckling or curling, whereby it is better adapted for use in connection with small diameter pulleys and in speed changing devices where the pulley diameters vary and where the use of belts of ordinary type do not, because of their degree of stiffness, give highly efficient results.

Another object of the invention is to provide an improved V-belt construction which strengthens the belt transversely and builds up a crosswise rigidity for a thin section of belt, whereby a belt is produced which while thin and of high flexibility is nevertheless strong and durable and capable of pulling a heavy load.

Still another object of the invention is to provide a V-belt which while thin and flexible is so constructed as to be proof against bowing or buckling, so that a belt of most efficient pulling properties is produced.

The invention consists of the features of construction, combination and arrangement of parts, hereinafter fully described and claimed, reference being had to the accompanying drawing, in which:—

Fig. 1 is a top plan view of a portion of a V-belt constructed in accordance with my invention.

Fig. 2 is a bottom plan view of the same.

Fig. 3 is a longitudinal section, on line 3—3 of Fig. 1, through the meeting ends of the belt.

Fig. 4 is an enlarged cross-section on line 4—4 of Fig. 1.

Referring now more particularly to the drawing, 1 designates my improved V-belt which comprises a body or core 2 formed of mold rubber having invested therein superposed rows of parallel pull cords or fabric pulling piles 3, said body or core being preferably enclosed in a bias fabric jacket 4. The pulling elements 3 may be of regular belting duck sufficiently strong to carry a fairly heavy load. The belt is of split or non-endless type and is made comparatively thin, that is, of a depth or vertical extent between its outer and inner faces materially less than its width or transverse extent between its lateral margins 5. These lateral margins are made of greater depth or thickness than the intermediate portion of the belt, so that a thin belt body is produced having lateral portions of somewhat greater depth to provide inclined belt gripping faces 6 of adequate extent. The said margins 5 with their gripping faces 6 project laterally beyond and above and below the lateral margins of the pulling elements 3, allowing such margins 5 to be compressed to an effective degree for a reliable belt gripping action. The greater depth of the margins 5 is secured by extending the lateral margins of the rubber body 2 upwardly and downwardly in the form of ribs 7 at the sides of the upper and lower faces of said body, providing between them channels 8 extending longitudinally along the upper and lower surfaces of the belt.

This construction provides a belt which is of normal width conforming to that of a belt of a certain conventional or standard size, but of reduced thickness, relative to a standard belt of that size with respect to its width, the belt being sufficiently thin and flexible to travel readily about small pulleys which can not be traversed or which are traversed with difficulty by the thicker and stiffer V-belts of ordinary type. My invention, therefore, provides a belt which may be used with great efficiency as a drive belt in speed changing and in other connections where some of the pulleys are of very small diameter and where it has hitherto been found impossible to use V-belts at all or with any material degree of success. In an ordinary type of V-belt the depth of the belt is almost equal to its width. Thus in building a regular type of V-belt of 2" width its thickness, in accordance with conventional practice, would be 1⅜", such a belt being too thick to give sufficient flexibility to allow the belt to pass around very small or ordinarily small pulleys without slipping. In producing a 2" width belt according to my invention the thickness is reduced to a material degree, for example, to a thickness of ⅝", at which reduced thickness in relation to its width the belt is rendered capable of flexing about very small diameter pulleys.

In order to give crosswise rigidity sufficient to strengthen and prevent bowing of this thin belt, the belt is provided at spaced points throughout its length with reinforcing or stiffening members 9. These consist of thin metallic plates of light but strong metal, such as duralumin, said plates being arranged in pairs with the opposed and coacting plates of each pair lying in the channels 8 at the outer and inner sides of the belt. The plates of each pair are connected to each other and to the belt by suitable fastenings, such as headed rivets 10, passing through the belt and plates. The spacing of the pairs of plates is such that the belt is stiffened at points suffi-

ciently close for that purpose but remote enough to allow adequate perpendicular flexibility of the intervening portions of the belt for bending actions about even very small pulleys. These stiffening plates and the headed ends of their fastening rivets lie substantially within the recesses 8 so that they are protected from liability of injury or causing injury from contact with extraneous objects.

The ends of the belt are coupled together by means of a connector plate 11 which bridges over the joint between the belt ends. But a single connector plate is employed at the outer side of the belt only, leaving the ends at the inner side free so as to avoid interference at this side with the flexibility of the belt. This bridge plate may be secured in position by rivets, but fastening bolts 12 and nuts 13 are preferably used. These bolts pass at the inner side of the belt through lock plates 14, which take the place of stiffening plates at this point, and may pass at the outer side of the belt through thin lock plates 15 overlying the bridge plate. The plates 14 and 15 are provided with retaining tongues 16 bent upward therefrom and engaging the bolt heads and nuts, thus preventing the bolts and nuts from turning and becoming loose or disengaged. By this means a secure connection between the belt ends is provided which allows ample flexibility at the junction point between the belt ends. The construction described gives crosswise rigidity to the belt. This crosswise rigidity insures against bowing or buckling of the belt and maintains the belt in a horizontal plane of pull. Yet, because of the thinness of the belt section, the belt itself will flex over very small diameter pulleys.

From the foregoing description, taken in connection with the drawing, the construction of my improved V-belt will be readily understood and its advantages appreciated by those versed in the art without a further and extended description. While the construction disclosed is preferred, it will, of course, be understood that changes in the arrangement, construction and form of the parts may be varied from those shown within the scope of the appended claims without departing from the spirit of the invention.

What I claim is:—

1. A flexible V-belt having its central portion of less thickness than its lateral margins and integral therewith, providing longitudinally extending channels in the outer and inner sides of the belt, sets of stiffening plates arranged entirely within said channels in spaced relation equidistantly from each other longitudinally of the belt, and fastenings passing through the belt and connecting the opposed stiffening plates of the sets together.

2. A V-belt comprising a core of molded rubber having rows of pull cords invested therein, said core having lateral margins of greater thickness than its body portion, providing longitudinal channels or recesses in the outer and inner faces of said core, a jacket enveloping the core, and stiffening members disposed in said channels at spaced points longitudinally of the belt.

3. A V-belt including a core of molded rubber, said core having lateral margins of greater thickness than its body portion providing longitudinal channels, or recesses, in the outer and inner faces of said core, a jacket eveloping the core, and stiffening members disposed in said channels at spaced points longitudinally of the belt.

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