PATENT SPECIFICATION

Convention Date (France): June 5, 1920.

164,321

Application Date (in United Kingdom): May 27, 1921. No. 14,809/21.

Complete Accepted: Aug. 17, 1922.

COMPLETE SPECIFICATION.

Improvements in or relating to Self-laying Track Belts for Vehicles.

I, ADOLPHE KEGRESSE, formerly of Beaucourt (Belfort Territory) France, but now of 28, Avenue de Tourville, Paris, France, a citizen of the Republic of France, 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:—

This invention relates to improvements in self-laying track belts for vehicles.

It is well known that flexible track belts for vehicles must have special qualities which are not demanded from ordinary belts. For instance, they must have great strength, great resistance to wear on all faces, and the greatest flexibility for facilitating winding on the driving pulley and on the pulley supporting and stretching the belt.

Various constructions have been proposed with a view to providing a satisfactory track belt. For example, it has been suggested to provide a flexible endless track comprising a band of rubber reinforced with canvas and longitudinal ribs having an outer covering of hard rubber and a core of soft rubber containing a number of thick cords each enclosed in an envelope of plaited textile fibre.

The flexible track belts according to the present invention comprise a core composed of a vegetable cellular material such as compressed cork, paper, canvas, wood or the like, which is enclosed in several layers of canvas. The invention also consists in various details of construction hereinafter described and specifically pointed out in the claims.

The accompanying drawings show by way of example various constructions of a track belt according to the invention.

Figures 1—3 show respectively in cross-section on the line A B D of Figure 2, in elevation partly in section, and in plan, a track belt of heavy type for any ground.

Figures 4 and 5 show respectively in cross-section and in plan, a modified construction of track belt chiefly built for moving or loose ground such as sand, fields, marshy ground, *etc.* and

Figures 6—8 are respectively a cross-section and two elevations, one of which is partly in section, showing a track belt for hard ground, applicable to light weight vehicles.

In the constructions shown in Figures 1—5 a central rib extends throughout the whole length of the track belt and serves to guide and drive the belt and the said rib is provided transversely with openings 1 (Figure 2) of triangular shape. Between the said openings are arranged cores 2 of a vegetable cellular material (Figures 1, 2 and 4). These cores are enclosed in canvas on all their faces.

The supporting rollers *a* of the machine rest with great bearing surface on flat parts 3 (Figures 1 and 4) which are parallel to the axes of the said rollers, which axes are inclined to the ground and intersect at the point O (Figure 1).

The face of the track belt coming in contact with the ground is constituted, in the construction shown in Figures 1—3, by two continuous treads 4 (Figures 1 and 3) transversely connected together by ribs 5, the arrangement of which can vary in an infinite manner. These ribs 5 can be provided inside with strong canvas; an arrangement of which is shown diagrammatically in Figure 2. The interior of the treads 4 is constituted by a strengthening core which may either be the edges of the canvas folded several times as shown at 6 (Figure 1) or be a

round or oval cable 7 (same figure) of metal, hemp or other suitable material protected by the canvas.

Between each layer of canvas is interposed a small thickness of rubber. The outer surface of the whole belt is also covered with rubber, the quantity and quality of which vary with the functions that each element of the belt has to fulfil.

As may be seen, the desired strength of the belt is ensured by a judicious arrangement of the hereinbefore mentioned canvas and cables. The wear is counteracted by the size of the bearing surfaces formed by the treads 4 and the ribs 5 (Figure 1).

Flexibility during winding on large pulleys or drums is not in doubt, as the thin parts 8 (Figure 2) made of flexible canvas, can be folded about themselves without any difficulty.

The "braking" or limitation of flexibility in the other direction is obtained by means of the same thin parts 8 which this time are exposed to elongation and do not allow the belt to assume, between two rollers, any injurious deformation. In other words, the belt is perfectly flexible or supply only in one direction namely that of winding on the large drums; in the other direction, deformation could take place only on a greater length.

It will be readily understood that for the same reason the "floating" of the upper section is reduced because, in short, it can take place only in one direction.

The driving is effected, as is known, by the projecting part, the inner cores 2 of which resist the lateral pressure of the driving system.

As regards lateral friction, it is practically eliminated owing to the inclination of the bearing surfaces 3 (Figures 1 and 4) which, under the action of the load transmitted to the rollers *a*, always have the tendency to maintain the endless band in the normal plane of movement. When turning corners, lateral friction being nevertheless unavoidable, it is reduced to a minimum, as the inner cheeks of the rollers forming with the corresponding faces of the guide blocks of the belt a fairly great angle, it follows that no contact can take place except at the base of the guide blocks, that is to say at a point very close to the circumference of the rollers.

The track belt illustrated in Figures 4 and 5 has ribs 9 comprising a central portion 9^a substantially at right angles to the edges of the track belt and two inclined portions 9^b connecting the said central portion to a strengthening flange 10 (Figure 4), containing as before a canvas core or a cable, on each of the edges of the track belt. The belt could be further strengthened by means of other cables 11, which may be surrounded and/or connected together by canvas, any desired number and arrangement of cables being provided.

The track belt shown in Figures 6—8 is characterised by the arrangement of guide-blocks 15 which rest direct on the ground and are "grafted" on several layers of endless canvas surrounding the core 2 of the track belt. This canvas, lined with rubber which insulates the various layers from each other forms the track for the rollers *a*. The surface of the said track can be flat as shown at 12 or have a double inclination as shown dotted at 13 in Figure 6. In the latter case, the supporting rollers are constituted by two half-rollers, the axes of which intersect each other as in the preceding belts.

The face of the blocks in contact with the ground can be of course provided with any desired pattern in relief or in intaglio in order to increase the adhesion. The base of the said blocks could be without angles as shown in Figures 6—8, rounded off *etc.*

Flanges 14 shown dotted in Figure 6 could be provided for increasing the bearing surface on loose ground, without their working when on hard ground. It will be understood in fact that the said flanges raised above the outer surface of contact of the blocks, will automatically become operative as soon as the lower portion of the blocks begins to sink in.

In all the belts, the outer treads could be strengthened by metal parts, such as for instance studs.

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

1. A flexible track belt for vehicles characterised by a core composed of a vegetable cellular material such as compressed cork, paper, canvas, wood or the like, which is enclosed in several layers of canvas.

2. A flexible track belt as claimed in Claim 1 characterised by a central rib which extends throughout the whole length of the belt and which is provided with transverse openings between which openings the said cores are arranged.

3. A flexible track belt as claimed in Claim 1 or Claim 2 having parts constituting tracks for the supporting rollers of the machine, the said tracks being either parallel or inclined to the ground.

4. A flexible track belt as claimed in any of the preceding claims characterised by continuous tread portions provided either with a core of coiled rubbered canvas or with a core of metal, hemp, or other suitable material protected by layers of canvas between which is interposed a thin layer of rubber.

5. A flexible track belt as claimed in any of the preceding Claims 1—3 characterised in that the face of the belt which contacts with the ground is provided with ribs comprising a central portion substantially at right angles to the edges of the belt and two inclined portions connecting the said central portion to a strengthening flange provided on each edge of the belt and containing a core of coiled canvas or a core of metal, hemp, or other suitable material protected by layers of canvas separated by a thin layer of rubber.

6. A flexible track belt as claimed in Claim 1 characterised in that the outer tread is formed of guide blocks in which the said cores are enclosed.

7. A flexible track belt as claimed in Claim 6 provided with flanges for increasing the bearing surface on loose ground and which automatically become operative as soon as the said guide blocks begin to sink in the ground.

8. A flexible track belt as claimed in any of the preceding claims in which the outer treads of the belt are strengthened by metal parts such as studs.

9. A flexible track belt substantially as described or substantially as illustrated in the accompanying drawing.

Dated this 27th day of May, 1921.

BOULT, WADE & TENNANT,
111/112, Hatton Garden, London,
E.C. 1,
Chartered Patent Agents.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1922.

Fig.1.

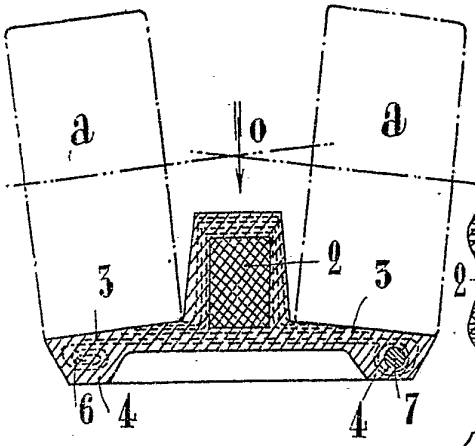


Fig.2.

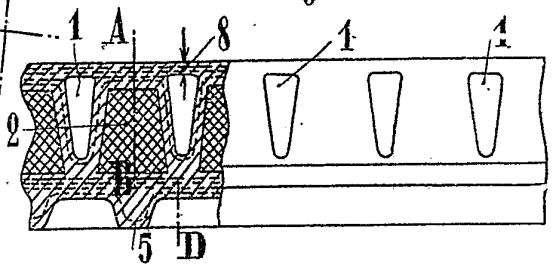


Fig.3.

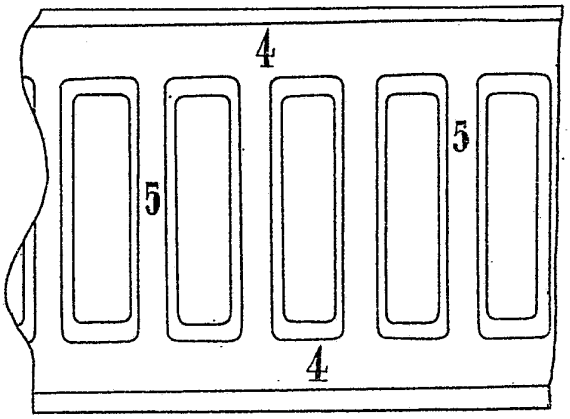


Fig.4.

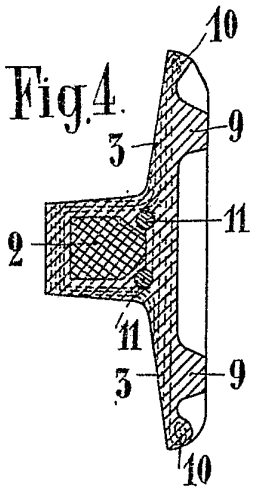
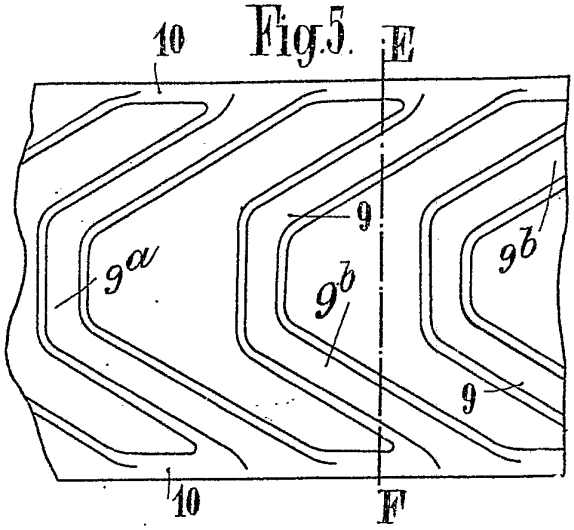
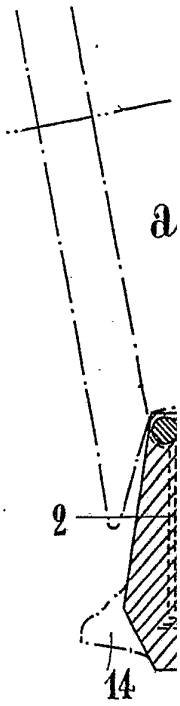


Fig.5.





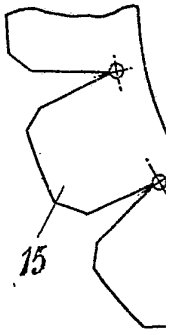


Fig. 6.

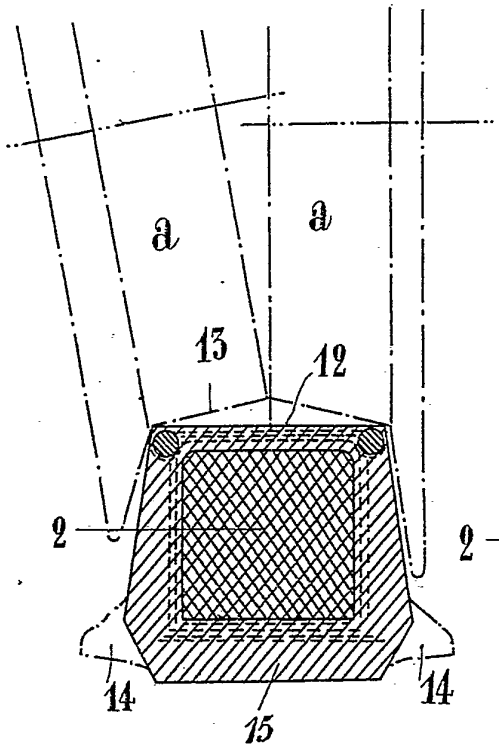


Fig. 7.

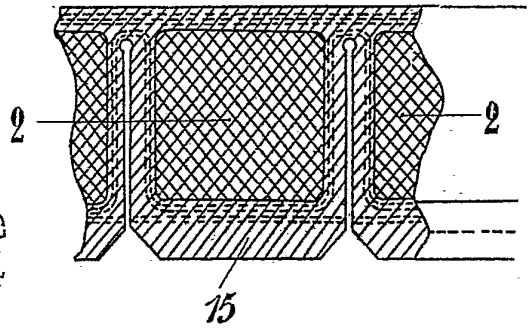
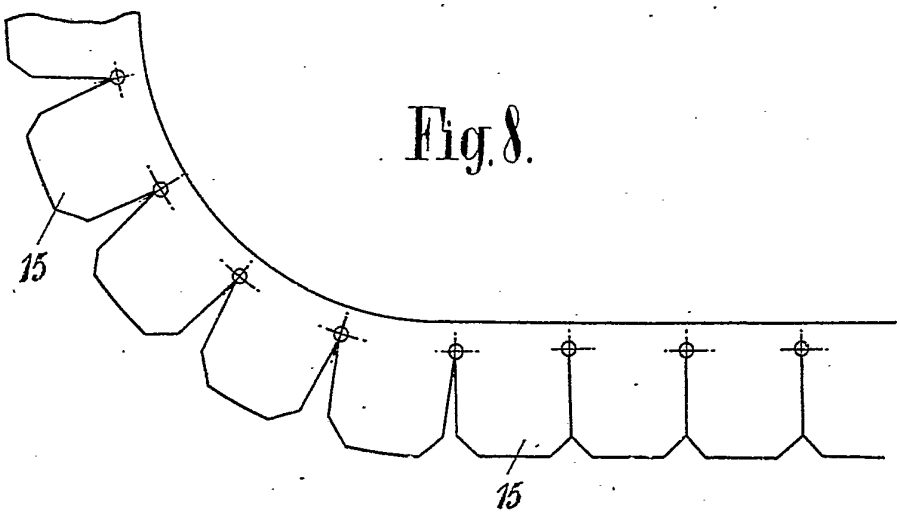


Fig. 8.



Malby&Sons, Photo-Litho.

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

Fig.1.

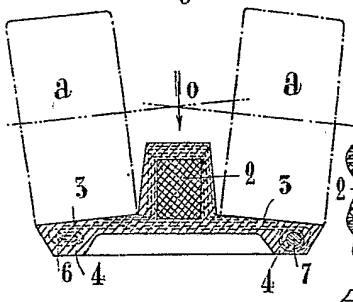


Fig.2.

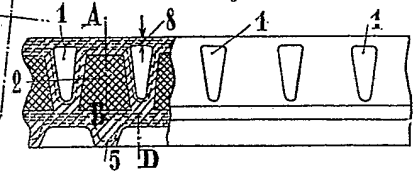


Fig.3.

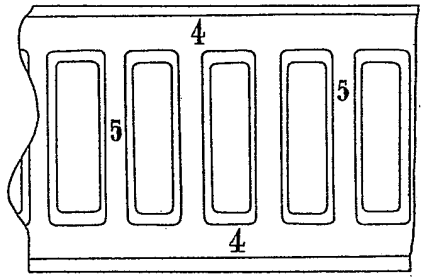


Fig.4.

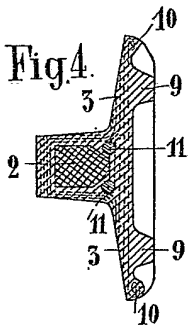


Fig.5.

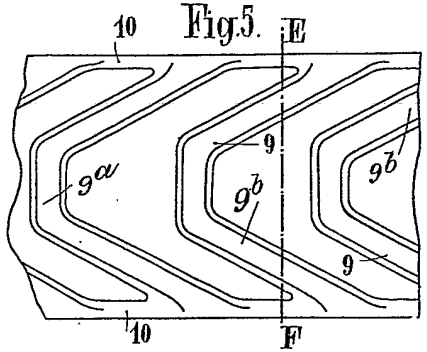


Fig.6.

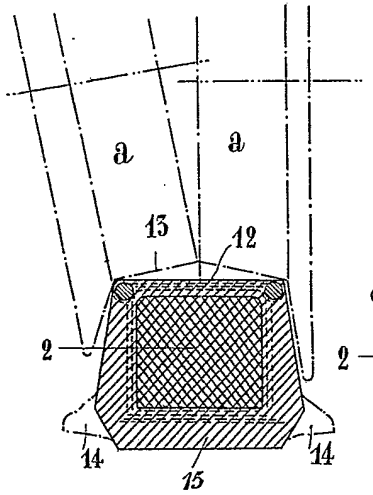


Fig.7.

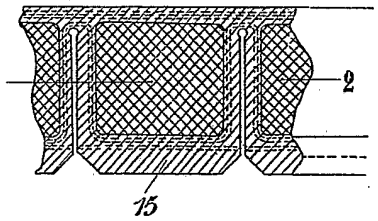
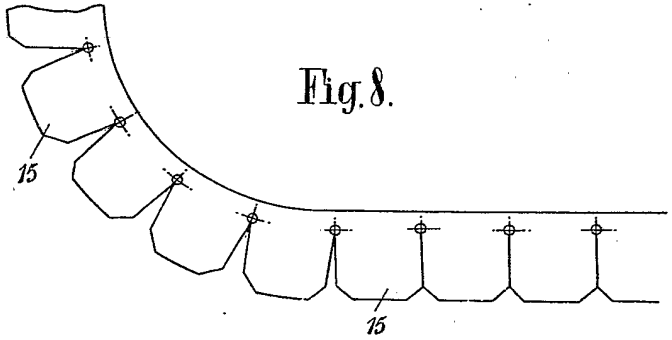


Fig.8.



Malby&Sons, Photo-Litho.