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(54) **FLEXIBLE CATERPILLAR**

(57) **Abstract:**

(54) **CHENILLE DE VOITURE**

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Hitherto, the endless tyres or caterpillars of T section and offering continuous treads have been constituted by an inseparable whole made of rubberized canvas, so that if only a part of the tyre happened to become spoilt yet the remainder of the caterpillar was rendered useless.

Rubberized canvas is a very costly material and offers no high resistance, consequently, in order to obtain caterpillars adapted to stand fairly heavy traction stresses, the canvas layers had to be multiplied to such a degree that construction of the caterpillar became both delicate and expensive.

The object of my invention is to provide a new flexible tyre wherein, in order to do away with the above set forth inconvenience the guiding, driving and traction are built on the caterpillar's core which carries the continuous treads for the rollers on the tyre and the ground treads, said guiding, driving and traction elements being unioned with the core of the caterpillar by suitable devices.

In the drawings appended hereto and merely as examples:

Figures 1, 2, 3 and 4 illustrate in section a few of the embodiments that can be contemplated to reach the intended purpose.

Figure 5 is a view in elevation of the whole tyre corresponding at a, b, c, and d respectively to the sections of Figures 1, 2, 3 and 4.

Figures 6 and 7 relate to a modification: of these two last. Figures, Figure 6 is an elevation, while Figure 7 is a section through the middle of one of the beads of Figure 6.

In said Figures 1, 2, 3 and 4 the core of the caterpillar is constituted by some flexible tissue 1, made of cotton, hemp, metal, etc., the inner face 2 of which, on either side of the guide-blocks 3, serves as a continuous tread for the vehicle-carrying rollers (not shown). The outer face of the core carries the ground treads made of some plastic material, say rubber, vulcanized on the very core of the tyre.

5 The guiding and driving elements can be secured on in a great number of fashion. The means described hereinafter are given merely as instance or examples for the purpose of clearly defining the character of my invention, while, quite obviously, the latter can be performed, without, however departing from the scope thereof, by means of other devices calculated to achieve the same result.

In the middle of the inner face of the caterpillar and along the whole length thereof is provided a longitudinal rib (Figures A and 5a) constituted by the very canvasses of the caterpillar's core and cut away at 6 (Figure 5) according to a predetermined pitch. On said rib 5 and between indentations 6 are mounted the guiding and driving blocks 3, made of suitably thick sheet-iron or of any other suitable material. Said blocks 3 are secured through their base on the longitudinal rib 5 by means of rivets 7 (Figures 1 and 5a). They may be or not be furnished or lined on their outer faces with some suitable material 8, say rubber, calculated to facilitate riving and to damp noise.

In Figure 2 the guiding and driving blocks are not secured on the longitudinal rib 5 of the caterpillar's core by means of rivets, but hooked thereon. For this purpose the longitudinal rib (Figure 2) is manufactured in one piece forming two grooves 9, opposite back, into which engages the base 10 of the guide-blocks 3 (Figure 2) which thus grip the rib 5. Said rib the section of which offers a double groove can as well be indented, as indicated at 6 (Figure 5b) in order to preserve the flexibility of the tyre. With this device, as will be apparent, the action of the driving pulleys which is exerted by laterally tightening the guiding and driving blocks, has the effect of increasing the initial pressure of the heels of the blocks on the rib 5 of the caterpillar.

In Figure 3 the caterpillar is composed, as in the preceding cases, of a canvas core carrying the ground treads. The face 2 opposite said treads and on which roll the carrier-rollers, is, in this embodiment, plain and devoid of any cen-

tral rib. On its middle part and along its whole length are secured, at equal spacings and by means of special bolts 11 (Figures 3 and 5c) the guiding and driving blocks 3, the base of which 12 bears on the endless tyre's core itself.

In view of heavy traction stresses, I provide between the guiding and driving blocks 3 and the core 1 of the caterpillar (Figure 4) endless cables or ribbons 13 made of metal or of other resisting and flexible material. Said cables or ribbons, energetically, clamped between blocks 3 and core 1 by bolts 11, are thus rendered integral with the tyre. Their high resistance and low expansion (elongation) ensure traction of the caterpillar, which traction they receive from the guiding and driving blocks and transmit to the core 1 of the endless tyre. The latter has, therefore, no more to bear the tension stresses between the caterpillar-carrying pulleys.

Said flexible and endless cables or ribbons may be welded to the guiding and driving blocks or secured thereto in any other manner independently from the securing on the caterpillar's core itself. They thus constitute, together with the guiding and driving blocks, an endless element secured on the treads by bolts 11 and nut 14 (Figure 4). I thus obtain a caterpillar made up of two main elements quite distinct from one another, to wit:

- 1° Continuous treads for rollers and on the ground;
- 2° Guiding, driving and traction device.

These two elements can be readily dismantled and made part of other tyres according to requirements.

The positioning of bolts 11 is so designed that their jutting part (Figures 3 and 4), in this case nut 14, gets housed between the ground treads 4 without at any moment interrupting the latter's continuity.

In all the foregoing combinations the guiding and driving blocks may be, according to cases, furnished or not on their outer face with some suitable material 8 (Figure 1) cal-

culated to damp noise and to, in certain cases, improve the drive.

As will be apparent, with all the above described devices continuity of tread is ensured since the vehicle-carrying rollers roll upon the Faces 2 (Figures 1, 2, 3 and 4) of the endless tyre, which faces offer perfect continuity.

On the other hand, it will be apparent too (Figures 1, 2 and 3) that the guiding and driving blocks are independant from the treads, since they are constituted by parts removable from the latter. I am therefore enabled to replace either of the constituents of the tyre while keeping the one still in a condition to serve.

Figures 6 and 7 relate to a modification wherewith the bead or heel is constituted by some fibrous material, wood for instance, encircled by a metal band, the whole being secured to the flexible tyre by means of bolts, rivets, etc.

In Figure 6, 3 denotes the fibrous mass constituting the bead 3' the encircling of said bead, while the bolt 11, which passes through the bead, serves to unite the whole.

As can be seen from Figure 7, the faces of the bead offering the fibrous or such like material serve for driving and guiding. The two other faces, which offer metal surfaces, serve only to maintain the fibrous material.

As will be apparent, with this construction I am enabled to get a bead having its surfaces made partly of fibrous material and partly of metal. I achieve this by fashioning the encircling metal part of same dimensions as the fibrous part. This last feature may be of interest for travelling over certain grounds where the fibrous part would not be adequate to ensure proper preservation of the bead. The metal part then intervenes to limit wear or crushing of the bead.

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

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Having thus described my invention, I claim:

(1) An endless tire for vehicles of the caterpillar type comprising a flexible core, and driving and guiding elements detachably connected to the said core.

(2) An endless tire of the character described comprising a continuous flexible core, a longitudinal rib formed on to said core, and traction elements detachably connected to the said rib.

(3) An endless tire of the character described comprising a flexible core, a rib formed on to said core, driving elements detachable connected to said rib, and a flexible chain connecting said elements adapted to absorb the stress thereof.

(4) An endless tire of the caterpillar type comprising a continuous flexible core, driving elements detachably connected to said core and on one side thereof, a resilient lining positioned on the reverse side of said core, and a flexible element connecting cable removably secured to the core.

(5) An endless tire as described in Claim 4 including a ground engaging lining arranged on one side of the core to reduce skidding of the tire.

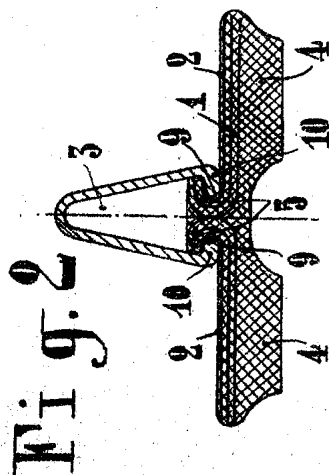


Fig. 2

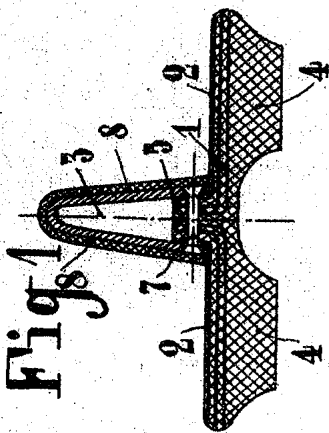


Fig. 1

Fig. 4

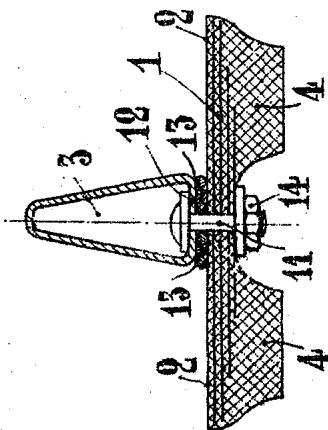
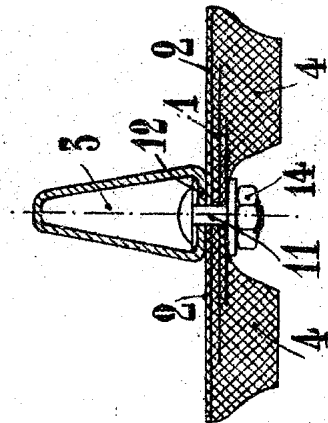


Fig. 3



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Witnesses:-

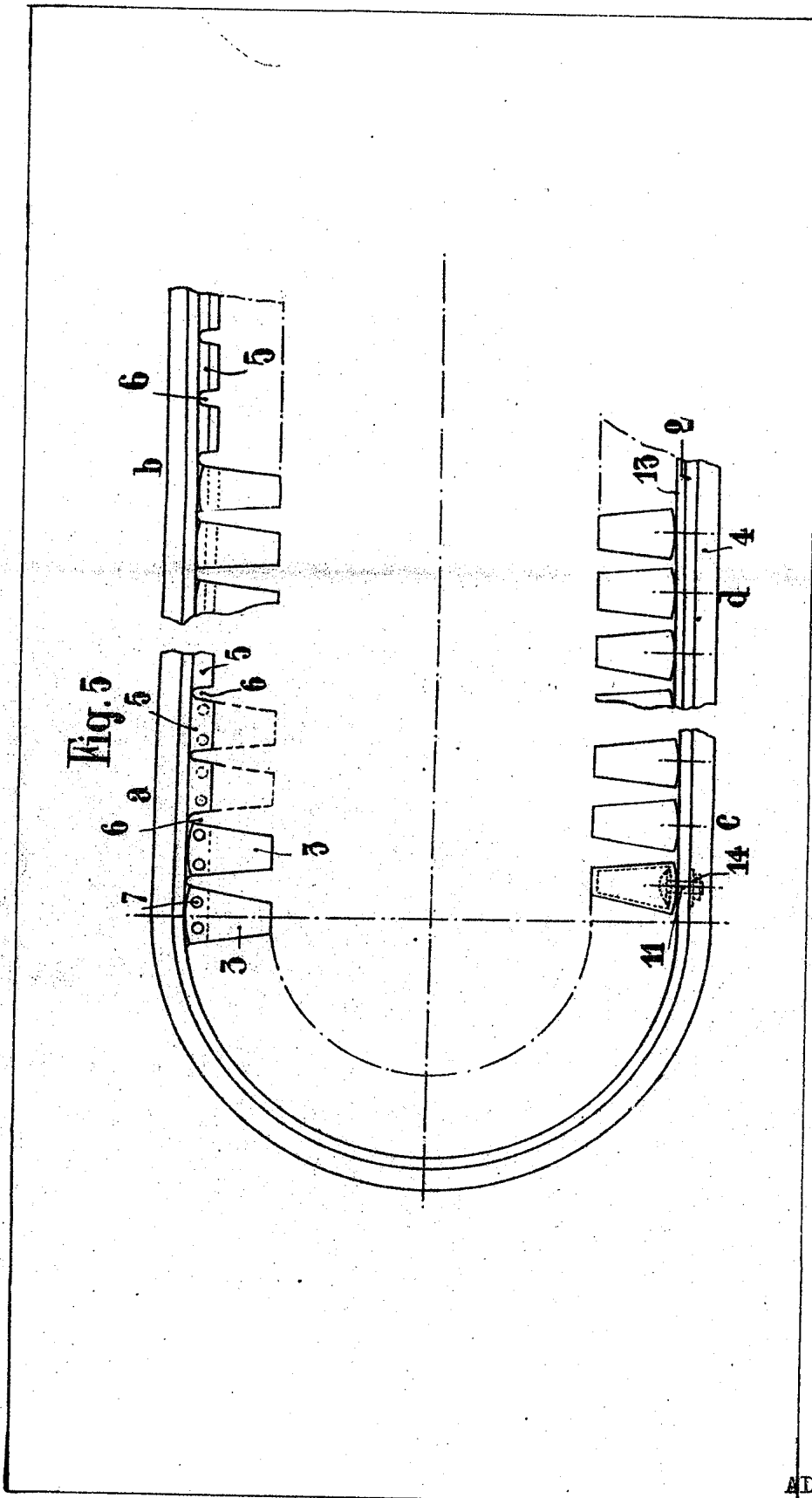
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Fig. 6

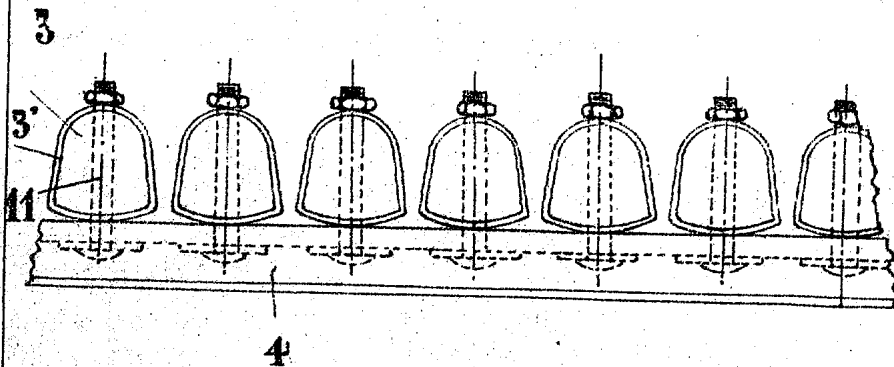
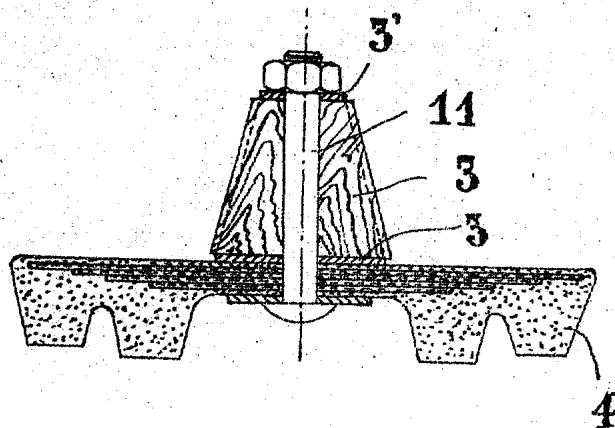


Fig. 7



Witnesses:-

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Certified to be the drawings referred to in the specification hereunto annexed.
MONTRÉAL, August 2nd, 1926.-

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