(19) Canadian Intellectual Property Office / Office de la Propriété Intellectuelle du Canada

An Agency of Industry Canada / Un organisme d'industrie Canada

(11) CA 346602 (13) A

(40) 11.12.1934

(12)

(21) Application number: 346602D

(22) Date of filing: ..

(51) Int. Cl:

(71) Applicant: KEGRESSE ADOLPHE.

(72) Inventor: KEGRESSE ADOLPHE ().

(54) ENDLESS TRACK BELT

(54) CHENILLE DE VOITURE

(57) Abstract:

The invention relates to a sectioned belt for the tyres of endless track vehicles and provides for the ready dismantling or interchanging of the elements of the tyre.

The known metal-rubber tyres usually employed for endless track vehicles comprise in combination metal plates, tread blocks of plastic material and guiding and driving elements, the whole being assembled by means of bolts on an endless-belt.

Although all the aforementioned elements are detachable and independent of each other, this cannot be said of the belt, which is formed of one piece. This is evidently a very considerable disadvantage, because if any portion of the belt is damaged, the latter will have to be discarded within a short time. It even happens sometimes that breaks occur in the belt of a new or almost new tyre, which involves not only the rejection of the belt itself, but also a fairly considerable expenditure of labour for dismounting and recovering the detachable elements of the tyre which are themselves undamaged.

This lack of absolute reliability of the endless belt comprising a single piece of material obliges the users of vehicles employing such belts to have a spare complete tyre always available in case of an emergency.

There is therefore a very considerable interest in endeavouring to provide a belt composed of detachable elements which, as in the metal tyres for endless track vehicles, are adapted to engage each other in some manner so that they can be assembled or taken apart according to requirements.

In other branches of industry, use has always been made of transmission belts assembled by many different mechanical means. Sewn belts are also employed.

Unfortunately, none of these known means is applicable in the present instance, the conditions in which the belts are employed being quite different from those under which transmission belts operate. In fact, whereas in these other industrial applications, the belts are employed merely for transmission by non-positive drive namely by simple friction, in the present application belts are subjected to far more severe conditions.

Endless track vehicle belts must ensure traction. Experience has shown that for this purpose a positive drive is essential, whence the absolute necessity for a very uniform elongation in order to keep the pitch of the teeth on the belt quite regular. Furthermore the belt must offer under the rollers an absolutely continuous rolling track without irregularities at the risk of shocks incompatible with correct working, while at the same time allowing of high working speeds of the order of 20 metres or more per second.

In addition, the belt must be flexible, in order to ensure a high efficiency, be silent in operation, not require any maintenance, not be injured by mud, sand or snow, be of an accessible price and so on.

All these desiderata, which heretofore it has only been possible to obtain by endless belts (which moreover are being employed more and more in industry when considerable efforts have to be transmitted at high speeds) showing the real difficulty there is in providing

a belt having detachable elements for driving endless track vehicles.

This also explains why heretofore the said sectional belts have not been found in tyres for endless track vehicles which must moreover be light, of simple construction and of low cost.

The present invention comprises a sectioned belt, in a single piece or with separate, detachable and interchangeable elements, which satisfies all the desiderata enumerated in the foregoing.

The accompanying drawings and the following description show by way of example one method of carrying the invention into effect. This means will be sufficiently characteristic to limit the scope of the invention in precise manner.

Figure 1 shows by way of example, in part section, an arrangement according to the invention, affecting merely a single element of the tyre.

Figure 2 is a plan view of Figure 1.

Figure 3 shows in part section another form of practical construction, the device being applied to a tyre element.

Figure 4 is a plan view of Figure 3.

If the mode of working of a metal-rubber tyre for an endless track vehicle of the type disclosed for example by the French Patent N° 640.138 or its second Addition N° 34.697 is examined closely, it is found that the endless belt is jammed on each metal plate to which is attached the corresponding tread block and driving tooth, along a line perpendicular to its

longitudinal axis by the bolts which secure the guiding and driving elements. This jamming acts over a certain length, that is to say over several centimetres, on either side of the aforesaid line, thus creating an area which is termed hereinafter the "neutral or clamping zone" over which area the belt possesses no flexibility.

One of the features of the present invention is to make use of this "clamping zone" to effect the assembling of the constituent elements of the belt. Another no less important feature is the utilisation of the guiding and driving elements, the metal plates appropriate for this purpose and their securing bolts to effect the assembling of the ends of the belt elements to each other.

In Figure 1, the elements comprising the belt are denoted by 1. As will be seen in the Figure, these elements are arranged to touch each other end to end on the clamping line 2 (Figure 2). The metal plates 3 and the supports for tread blocks 4, carry a series of studs 5 (Figure 1) which are fixed to the plates 3 by any known means.

By way of example, Figure 1 shows one of the studs 5 screwed to the plate 3, while the other adjacent stud 5 is fitted with a taper and rivetted or welded. Of course, the number of the studs 5 and their arrangement and the method of securing the same may vary. In Figure 2, they are arranged in offset relationship, but they are all in the neutral zone and on either side of the clamping line 2 (Figure 2).

The ends of the belt sections are provided with holes 6 through which pass the clamping bolts of the guiding elements 7 and driving elements 8 (Figure 1).

The said elements being fixed in position, it will be quite readily appreciated that the belt ends will be assembled together without detriment to the flexibility of the system, which will remain the same as in the case of an endless tyre belt formed in a single piece.

It is also possible to provide belt sections with reinforced ends, which are shown by way of example in Figure 3 and 4. It will be seen that the belt section 1 has been reinforced at its ends 9 (Figure 3), the plates 3 being provided with recesses into which fit the corresponding reinforcements 9 of the ends of the belt 1.

It will likewise be seen in these Figures that the belt section 1 carries two sets of elements : plates, blocks, guiding and driving elements and so on.

The studs 5 are shown tapered in Figure 3. In this way, they enable the use of smaller holes in the belt.

In addition, the reinforcement 9 prosesses the considerable advantage of serving as a support for the belt end against the corresponding part 10 (Figure 3) of the metal plate 3. This support may be provided for example along a more or less obtuse angle. In the case shown in Figure 3, it will be seen that the bolts of the guiding and driving elements cause the reinforcement 9 to bear strongly against the plate 3, and it follows that the inclined part 10 participates to a considerable extent in the traction efforts of the belt 1, thus relieving the studs 5, the number and size of which may accordingly be reduced.

The inclined plane 10 (Figure 3) has also the effect of rendering it possible to obtain a tension on the belt sections at the moment the bolts for the guiding and driving elements are tightened.

It will be in fact appreciated that, since adjacent plates 3 have to be mounted to touch each other, it would be difficult to obtain from the belt element, at the moment of assembling, the necessary tension for its satisfactory working. The inclined plane 10 provides the means for obtaining this tension automatically.

The studs 5 may be extended upwardly to form a projecting part 11 (figure 3) which engages the guiding and driving elements. This, while increasing the strength of the studs 5, which are thus anchored at both ends, serves as a stop for the guiding and driving elements to prevent the same from turning about their securing bolts.

The invention may be applied equally well to tyres, in which the belt is in one piece, but not endless and joined together as described, and to tyres in which the belt comprises a plurality of elements connected together, according to the present invention.

In this order of ideas, it is quite possible to conceive a tyre for endless track vehicles, which tyre would have as many belt elements as there are metal plates and guiding and driving elements.

It is likewise possible to construct a tyre composed for example of ten belt elements for forty guiding and driving elements; plates and shoes, each

belt element thus carrying four plate-guiding and driving elements. It will be appreciated that the invention renders it possible to provide all desired combinations. The choice of the latter will be guided by questions of a practical nature affecting above all the cost price and the weight, which will vary furthermore with the size of the tyre.

10

Having thus described my invention, I claim:-

1. A tire belt for endless track vehicles, comprising one or more belt sections, and driving and guiding elements mounted on said belt sections, the joint being made at the neutral zone where the elements are connected to the belt.

2. A belt as claimed in claim 1, wherein the section ends are connected to each other by means of metal plates.

3. A belt as claimed in claim 1, comprising securing means connecting the section ends to metal plates, said securing means being further reinforced by connection to the driving and guiding elements.

4. A belt as claimed in claim 1, comprising reinforcements at the section ends.

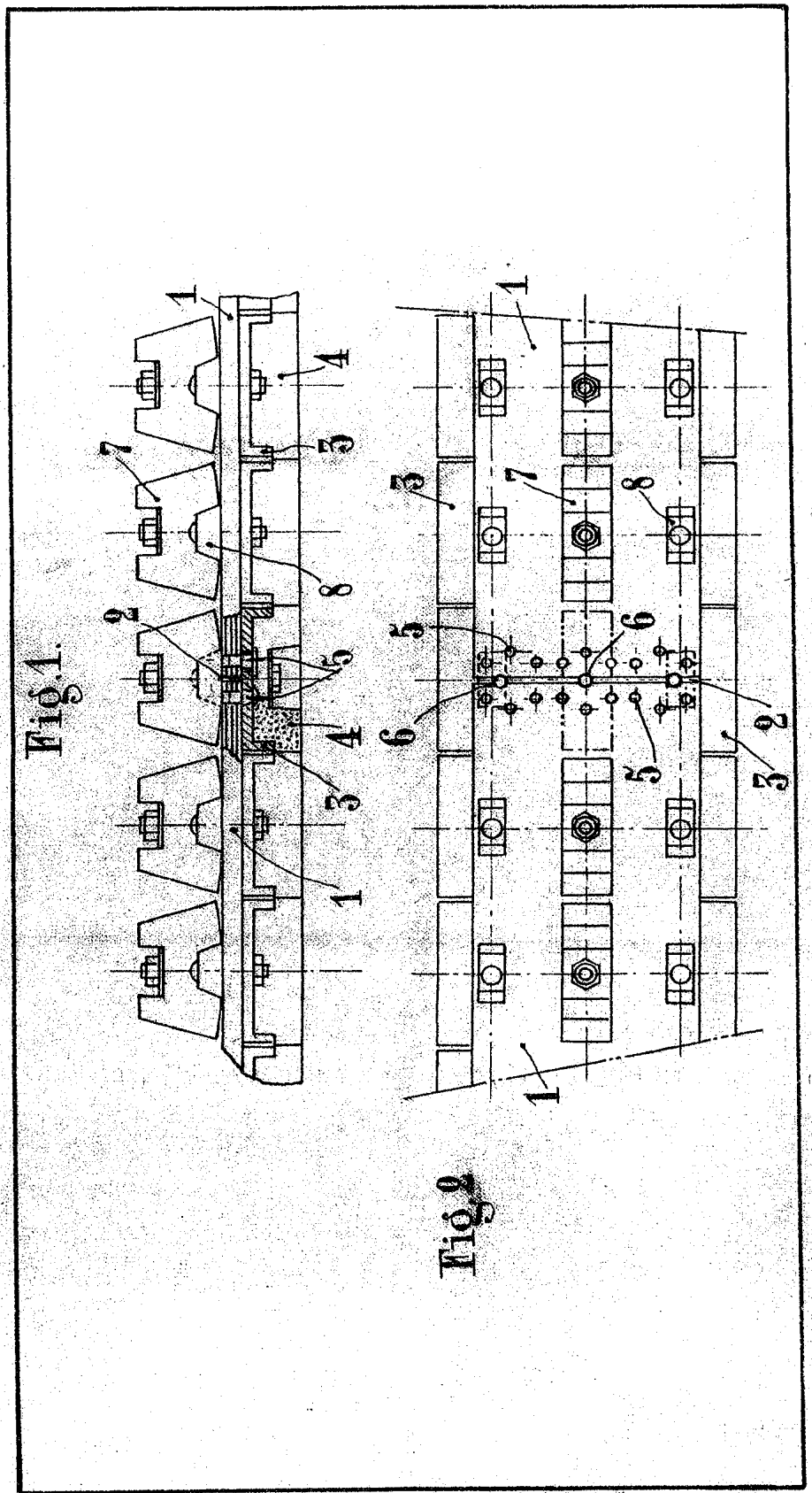
5. A driving belt of the character described, including guiding, driving and tread elements, comprising one or more sections constituting the belt proper, and means to secure said section ends together at the neutral points of the belt, said means comprising reinforcements at the section ends, said ends fitting into depressions bounded on two sides by inclined planes of the tread elements, and securing means between the tread elements, section ends and driving and guiding elements.

for the Types of Endless Tracks for Vehicles

346602

(2) 1.

12



Certified to be the drawings referred to in the specification hereunto annexed.-

MONTREAL, August 4th, 1933.

INVENTOR:

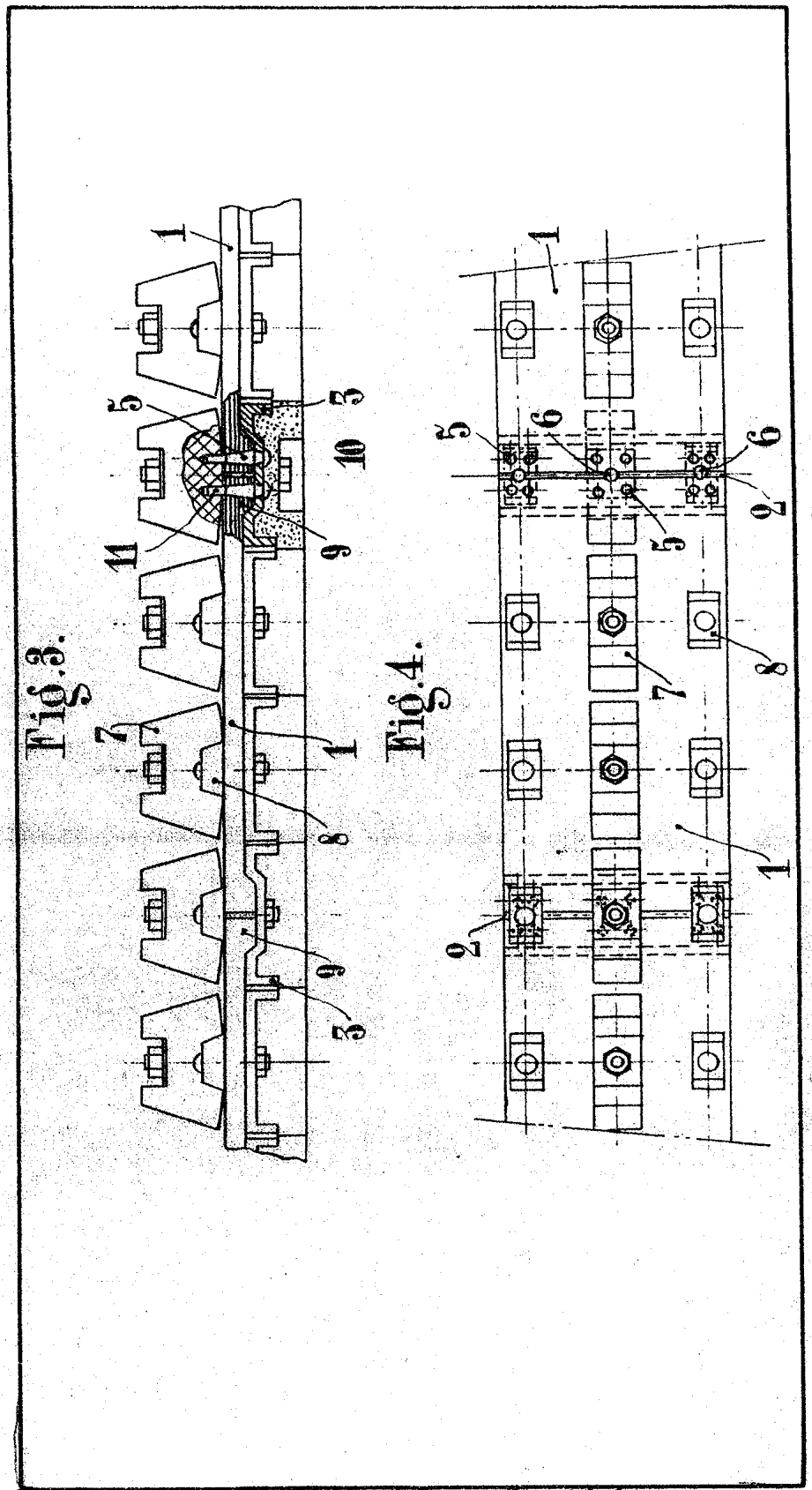
ADOLPHE KEGRESSE

BY Marion & Marion

Attorneys.

346602.

346602 (2) 2.



Certified to be the drawings referred to in the specification hereunto annexed.-

MONTREAL, August 4th, 1933.

INVENTOR

ADOLPHE KEGRESSE

BY

Marion & Marion

Attorneys