PATENT SPECIFICATION

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441,595

Application Date (in United Kingdom) : May 22, 1935. No. 14962/35.

Complete Specification Accepted : Jan. 22, 1936.

COMPLETE SPECIFICATION

Improvements in Endless Tracks for Vehicles

I, ADOLPHE KEGRESSE, a French Citizen, of 48, rue du Théâtre, Paris (Seine) 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:—

The endless tracks having shoes assembled by means of pivots, as constructed heretofore, necessitate frequent lubrication, which is a lengthy operation on account of the number of elements constituting the track.

In addition, the pivot and its bearings have to be very hard, and hence have to be made of treated steel in order to resist the wear. They must be fitted with precision in order not to be noisy. If they are badly lubricated, and above all if the machine is operating on dusty and wet ground, the pivots rapidly wear, and this results in noise and defective meshing with the driving "sprocket." Rust, which is inevitable when the machine remains inactive for some time, exerts its fatal effect on the parts in frictional engagement, that is to say, on the pivot and its bore.

It will be understood without difficulty that pivots working under such difficult conditions have a low efficiency. This explains the excessive fuel consumptions shown by endless track vehicles, as compared with those of wheeled vehicles of the same size.

Furthermore, since the pivots are subjected to shearing stresses, breakage thereof is fairly frequent, despite the high quality of steel employed.

All this contributes in increasing the cost of manufacture and the running expenses, thereby very considerably restricting the use of endless track vehicles of this type.

The present invention relates to a new endless track, in which the elements are each provided with two sockets, each of the sockets being in the form of a hollow semi-cylinder the axis of which is parallel to the axis of the carrying pulleys and the open faces of the semi-cylinders being opposite each other to form with the adjacent element a housing for a pivot. The pivots connecting adjacent elements are therefore free, that is to say they are not fitted, and are subjected exclusively to compression, and no longer to shearing stresses, so that it is possible to employ non-metallic materials for their construction, thereby eliminating the disadvantages mentioned in the foregoing.

The accompanying drawings will make the features of the track understood. It is obvious that other modifications may also be constructed, by changing for example the form of the shoes, while remaining within the scope of the invention.

Figure 1 shows in elevation a number of elements connected together to form a track.

Figure 2 shows a single element partly in elevation and partly in section along the line A-B in Figure 3, which is a view in plan of the same element.

Figure 4 is likewise a view in plan of the element but seen from the face which runs in contact with the ground.

Figure 5 is a profile view sectioned along the line C-D in Figure 3.

Figure 6 is also a profile view, sectioned along the line E-F in Figure 3.

Figure 7 shows on a large scale two assembled elements each partly in section along the line C-D in Figure 3.

Figure 8 shows a pivot.

Figures 9 and 10 show a resilient cushion.

Each element 1 (Figure 1) of the track is assembled to its neighbour by means of a cylindrical pivot 2 (Figures 1, 8). The element itself (Figures 2, 3, 4, 5, 6, 7) comprises two flat parts 3 (Figures 2, 3, 6) on which roll the carrying rollers. On the inner face, that is to say, the face which passes over the carrying pulleys, appropriate ribs 4 (Figures 2, 3) serve as guide. On the opposite face, other ribs 5 and 6 (Figures 2, 4, 5, 6) are provided for contacting with the ground.

Between the rolling tracks 3 (Figures 2, 3) for the rollers, and on each side of the element seen in profile, there are provided longitudinal sockets 7 and 8 (Figures 2, 3, 4, 5, 6, 7) which have a semi-circumferential section (Figures 5, 6) and have their open sides facing each other. The socket 7 of one element is adapted to form with the socket 8 of the adjacent element a cylindrical housing in

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which the pivot 2 (Figures 7, 8) engages for forming the connection between the said elements.

It will be seen that with this arrangement, the longitudinal forces of traction are exerted from one element to the other (Figure 7) through the solid faces of the sockets 7 and 8, of semi-circumferential section, compressing the pivot 2 to the exclusion of all shearing stresses.

In order that this pivot 2 shall be able to resist without damage the stresses to which the carrying rollers may subject it, during the passage from one element to the other, the free edges of the sockets 7 and 8 (Figures 2, 3, 4, 5, 6) are provided with teeth 9 (Figures 2, 3, 4, 5, 6) arranged to mesh with one another. This feature, the effect of which is that the pivot is enveloped over its entire circumference, causes it to be stressed in a uniform manner.

One of the two ribs 5 of each element is provided at both its ends with two recesses 10 (Figures 2, 4, 6) occupied by the resilient cushions 11 (Figures 7, 9, 10).

The position of the sockets 7 and 8 has been determined in such a manner that, in the travelling position on plane ground, the ribs 5 in contact with the ground crush the resilient cushion 11 (Figure 7) to a certain extent. This feature renders it possible automatically to eliminate the play between two adjacent elements on plane ground, and to correct the slight deviations of manufacture of unmachined parts.

When the track passes over its carrying pulleys, it will be seen that the effect of the resilient cushions 11 ceases to exist, since the rib 5 of each element which—on plane ground—was in contact with the resilient cushion 11, forms on the pulleys a certain angle (Figure 1) between it and the said cushion, thus liberating the resilient cushion. This feature affords the considerable advantage of rendering the pivots 2 free to a certain extent on passing over the carrying pulleys, and of thus improving the mechanical efficiency of the band to an appreciable extent.

It has been seen that the pivots 2 are subjected exclusively to compression. They cannot therefore break. The tractive force being distributed in compression over the entire surface of the pivots the stress per unit area is very small.

This renders it possible to employ pivots made of non-metallic material, which do not require lubrication, are completely noiseless and are insensitive to oxidation.

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. Endless track composed of separate elements each provided with two sockets, each of the said sockets being in the form of a hollow semi-cylinder the axis of which is parallel to the axis of the carrying pulleys, and the open faces of the semi-cylinders being opposite each other to form with the identical adjacent element a housing for a pivot.

2. Endless track elements as claimed in Claim 1, characterised in that the edges of the semi-cylindrical sockets are provided with teeth arranged so that they mesh with one another.

3. Endless track as claimed in Claim 1 characterised by the provision of a resilient cushion bedded in the body of each element and, on plane ground, bearing against the adjacent element so as to eliminate the play between these elements and to provide freedom of the hinge pivot on passing over the carrying pulleys.

4. Endless track as claimed in Claim 1 characterised by the provision of connecting pivots of non-metallic material.

5. Endless tracks for vehicles, substantially as described or substantially as shown in the accompanying drawings.

Dated this 22nd day of May, 1935.

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London, E.C.1,
Chartered Patent Agents.

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Fig.1.

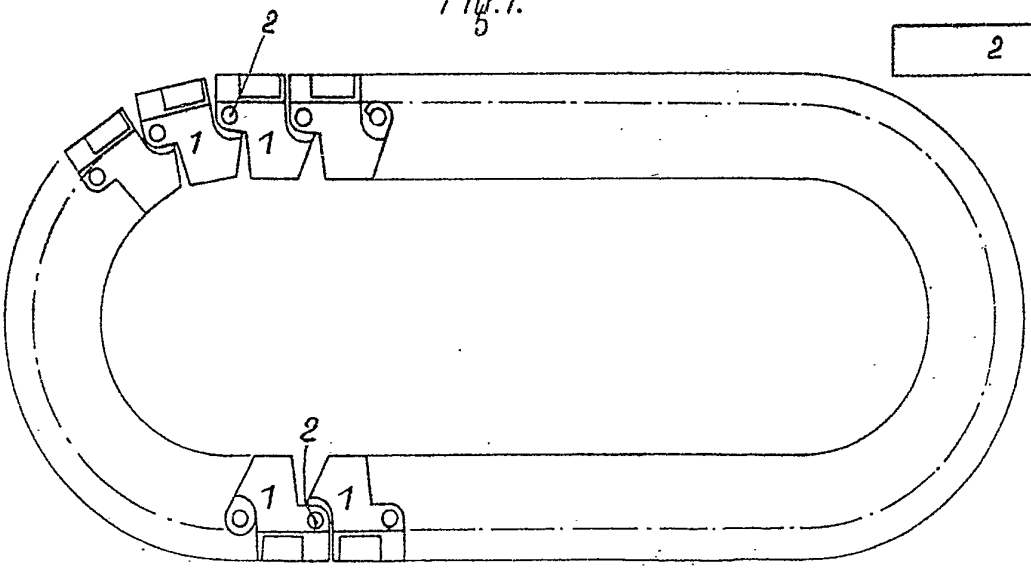


Fig.8.

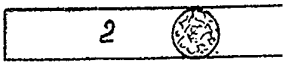


Fig.

Fig.

Fig.5.

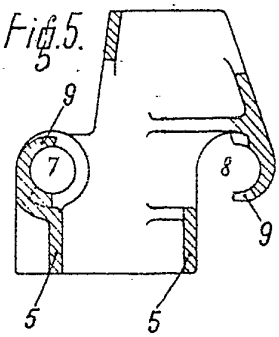


Fig.6.

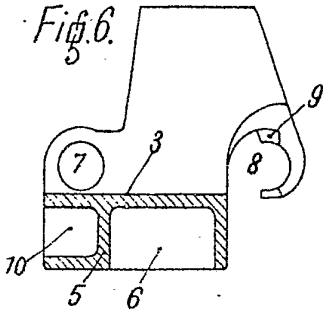


Fig.7.

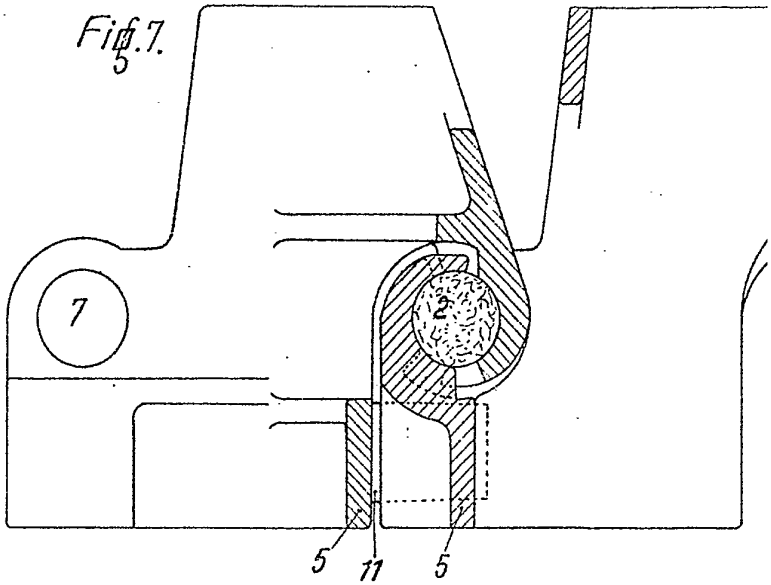


Fig. 8.

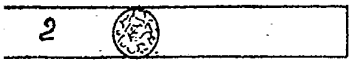


Fig. 9.

Fig. 10.

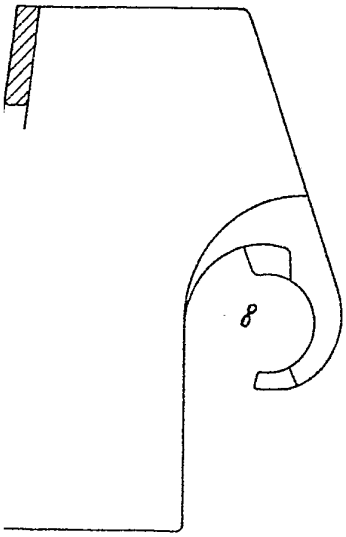


Fig. 2.

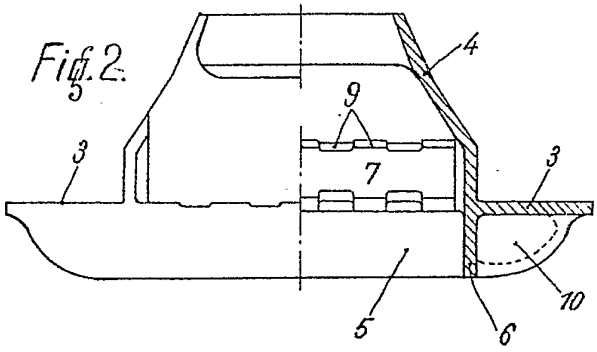


Fig. 3.

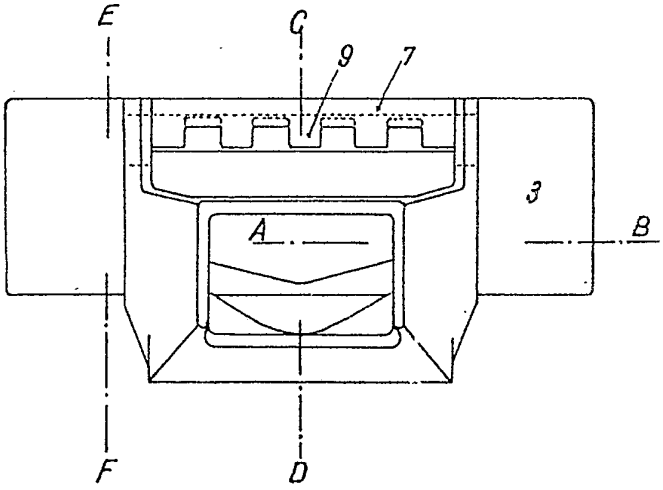
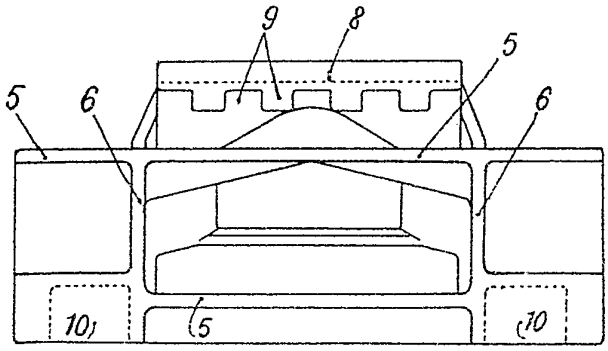


Fig. 4.



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2 SHEETS

SHEET 1

SHEET 2

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

Fig.1.

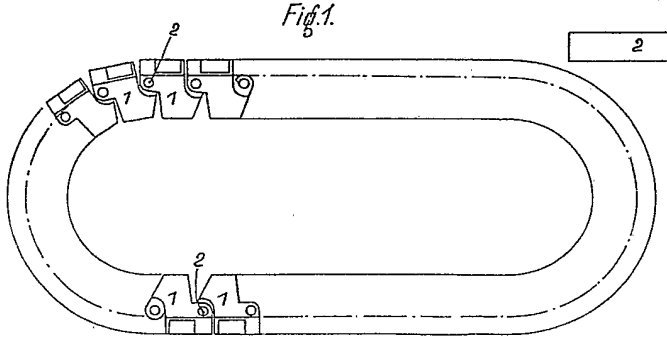


Fig.8.

Fig.9.

Fig.10.

Fig.5.

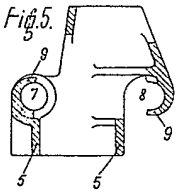


Fig.7.

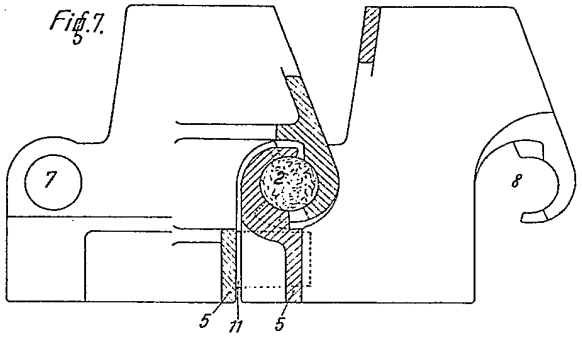


Fig.6.

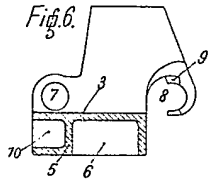


Fig.2.

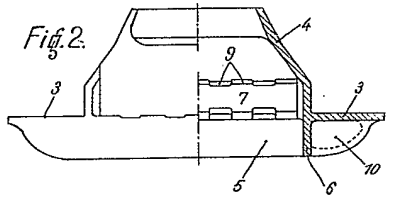


Fig.3.

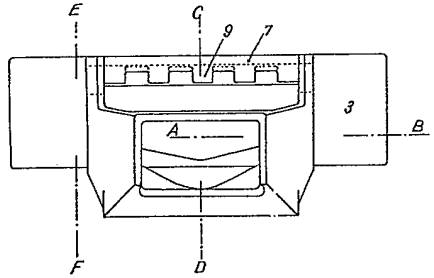
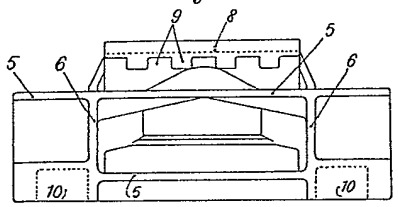


Fig.4.



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