Nov. 24, 1959 H. L. L. A. DUCLOT 2,914,360

CONTINUOUS TRACK FOR TRACK-LAYING VEHICLES

Filed April 3, 1957 3 Sheets-Sheet 1

Fig. 1

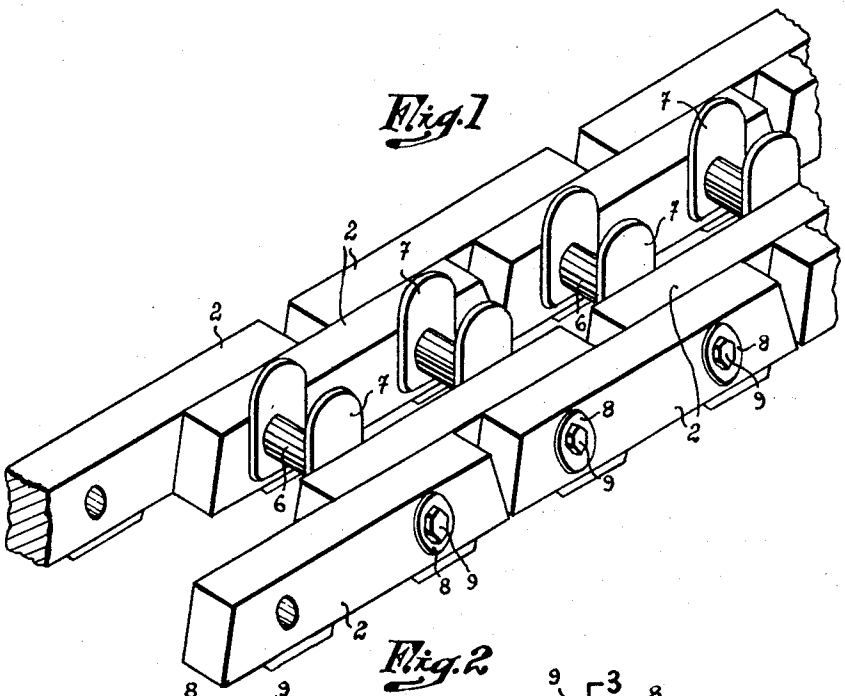


Fig. 2

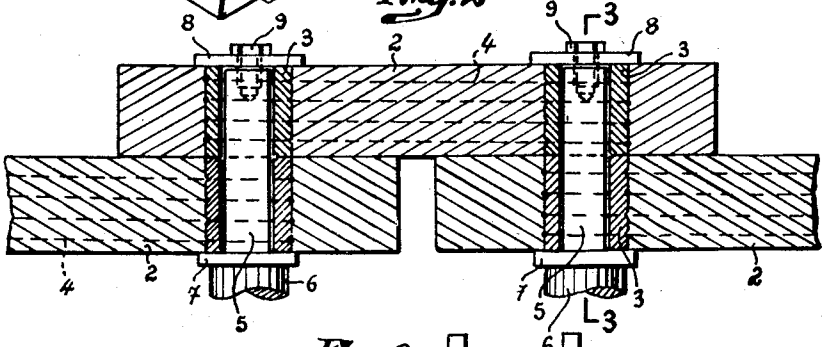
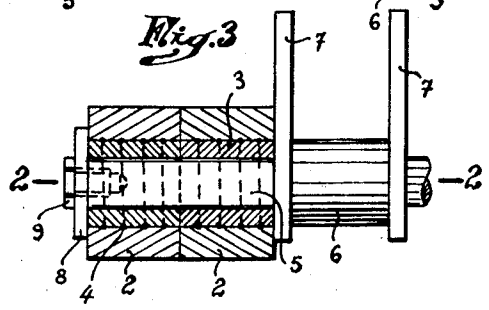


Fig. 3



Nov. 24, 1959 H. L. L. A. DUCLOT 2,914,360

CONTINUOUS TRACK FOR TRACK-LAYING VEHICLES

Filed April 3, 1957 3 Sheets-Sheet 2

Fig. 4

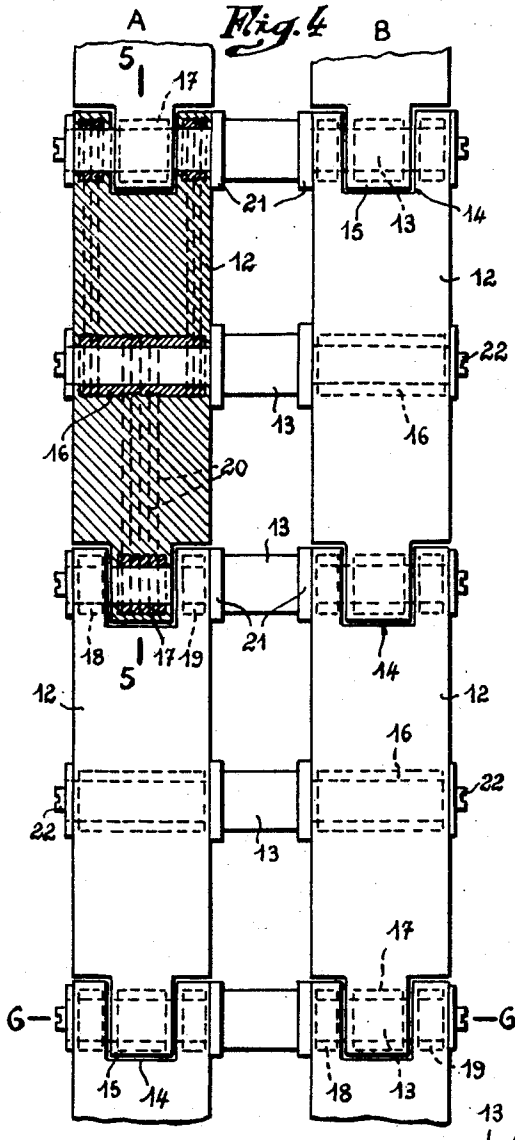


Fig. 5

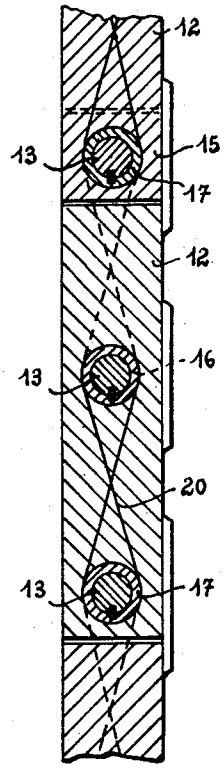
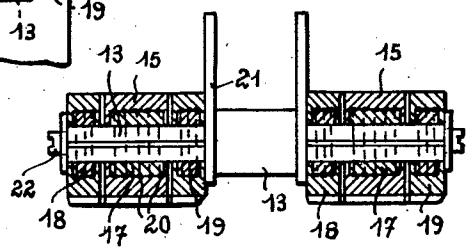


Fig. 6



Nov. 24, 1959 H. L. L. A. DUCLOT 2,914,360

CONTINUOUS TRACK FOR TRACK-LAYING VEHICLES

Filed April 3, 1957 3 Sheets-Sheet 3

Fig. 7

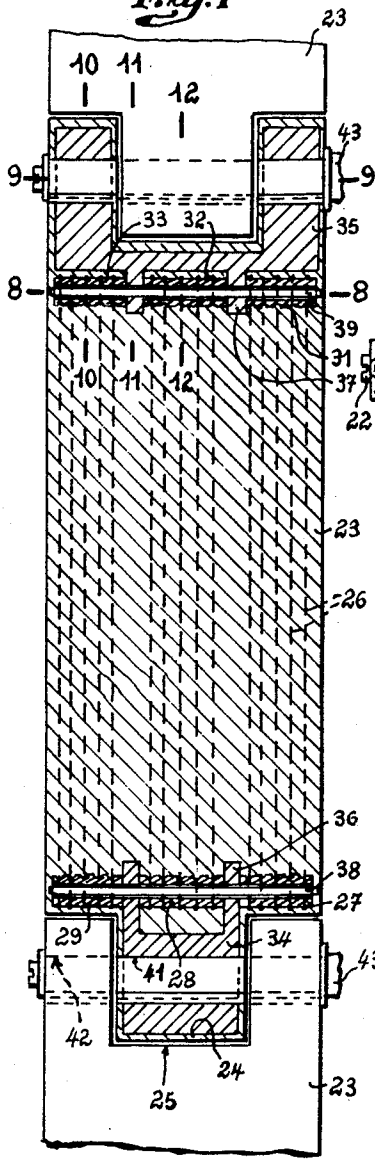


Fig. 8

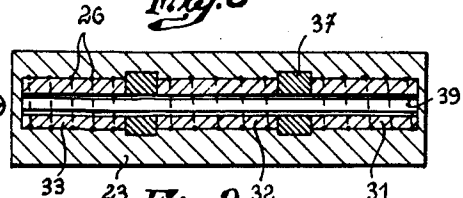


Fig. 9

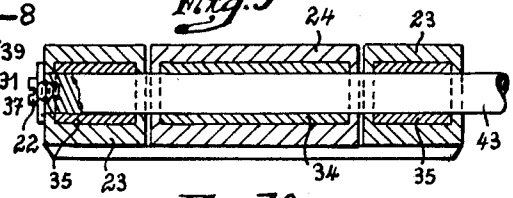


Fig. 10

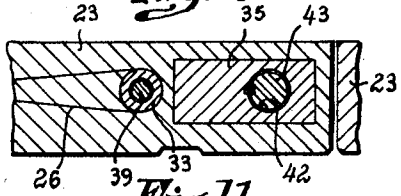


Fig. 11

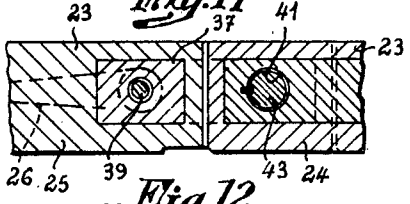
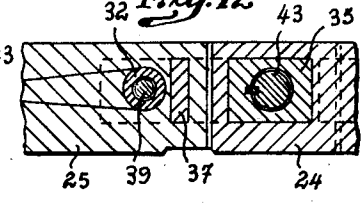


Fig. 12



United States Patent Office 2,914,360 Patented Nov. 24, 1959

2,914,360

CONTINUOUS TRACK FOR TRACK-LAYING VEHICLES

Henri Léon Louis Alexandre Duclot, Lyon, France

Application April 3, 1957, Serial No. 650,351
Claims priority, application France April 5, 1956
3 Claims. (Cl. 305—38)

My invention has for its object a track intended for any type of vehicles whether tractors or trailers and whether carriers or otherwise. My improved track for track-laying vehicles includes a series of separate molded shoes or links of a yielding material in which are embedded during the molding at least two sockets located near their ends and interconnected through a deformable non extensible armature, said sockets being designed so as to be fitted over the spindles of the track whereby its deformation is due no longer to the oscillations of said sockets over said spindle but to the flexion of the body of each shoe.

The only metal elements to wit the sockets and possibly the reinforcements which are embedded inside the rubber or the like yielding material forming the body of the shoe are thus protected against moisture and water and also against any contact with outer parts and this, in association with the fact that the sockets of each shoe are rigidly fitted over the spindles of the track, cuts out the necessity of any periodical upkeep.

According to a preferred embodiment, the track forming the object of the invention is constituted by shoes of the type mentioned hereinabove aligned along two parallel rows over the same spindles so as to form a sort of ladder the uprights of which are constituted by the rows of shoes and are consequently deformable while the rungs are constituted by the spindles of the track.

The reinforcement of each shoe may therefore be constituted in any suitable manner, for instance by means of wires, cables or plaited wires of steel, by threads or plaited threads of cotton or the like material whether natural, synthetic or artificial or again by any fabric or canvas or by a strip of steel or the like material. Thus, according to a particular embodiment of my invention, each shoe may be reinforced by a steel wire wound so as to pass over the sockets of the shoe and to form thus two sheets which are embedded in the molding of the shoe inside the rubber forming the latter.

In order furthermore to cut out any differences between the tensioning of the two sheets when the shoe bends, the wire or thread forming the reinforcement is wound so as to form instead of two parallel sheets two sheets crossing each other at mid-distance between the two sockets forming their bearing surfaces.

In order to avoid furthermore any movement towards or away from each other of the wire convolutions in each sheet during the flexion of the shoe, and to prevent said convolutions from contacting, each socket is provided throughout its length with a helical or the like groove extending through at least a section of the periphery of the socket and inside which the reinforcing wire is guided so as to be held fast with reference to the socket.

Obviously, the position and the number of sockets inside each shoe are not critical and depend on the type of vehicle which is to be carried by the track.

My invention will be understood more clearly from the reading of the following description, reference being

made to the accompanying diagrammatical drawings illustrating by way of example and by no means in a limiting sense, three embodiments of my improved track. In said drawings:

Fig. 1 is a perspective view showing a fraction of a track in accordance with a first embodiment.

Figs. 2 and 3 are sectional views of an enlarged scale respectively through line 2—2 of Fig. 3 and 3—3 of Fig. 2.

Fig. 4 is a partial view from above of a modified embodiment of said track.

Fig. 5 is on an enlarged scale a longitudinal sectional view through line 5—5 of Fig. 4.

Fig. 6 is on an enlarged scale a transverse sectional view through line 6—6 of Fig. 4.

Fig. 7 is a plan view of a third embodiment, said view showing a fraction of a track adapted to equip a large power tractor.

Figs. 8, 9, 10, 11, 12 are sectional views respectively through lines 8—8, 9—9, 10—10, 11—11 and 12—12 of Fig. 7.

The track illustrated in Figs. 1 to 3 is constituted chiefly by a series of separate shoes 2 having a parallelopipedic outline. Each of said shoes is made of molded rubber in which are embedded two transverse sockets 2 and a longitudinal reinforcement. The sockets 3 are arranged in parallelism and are located at short distances from the ends of the shoe and each of them is provided with a helical groove drawn over at least a part of its periphery. The reinforcement is constituted by a steel wire 4 which is wound over the two sockets 3 inside their grooves so as to form two sheets crossing each other at mid-distance between the two sockets.

The mounting of a track incorporating such shoes 2 is executed as follows: a spindle 5 provided in its central section with a larger diameter 6 carries at each end and to either side of its central section 6 two shoes 2 of which one is fitted over the spindle through its front socket while the other is fitted over it through its rear socket so that the spindle may act as a connecting member between these two shoes. The latter are held fast on the spindle through a screwing of a screw 9 inside a tapped hole formed coaxially in the end of the spindle 5 while a washer 8 is fitted between the head of said screw and the end of the socket in the outer shoe 2. Keys or the like means provide for the locking of the shoe sockets on the corresponding spindles.

After this mounting, the track assumes the shape illustrated in Fig. 1. It should be remarked that in its medial longitudinal section, the chain formed by the track includes not only means for driving the track through the sprocket wheel but also means for guiding the track over the pulleys. These driving means are as a matter of fact constituted by the central larger section 6 of the track spindle while the guiding means are constituted by collars or plates 7 secured over said spindle to either side of its central section 6.

In the embodiment illustrated in Figs. 4 to 6, my improved track includes chiefly two series of separate shoes 12 aligned endwise in two parallel rows A and B and assembled together through the spindles 13 passing through the sleeves or sockets in the shoes and guided over the tractor pulleys and sprocket wheel.

Each shoe is made of molded rubber and its outline is apparent from inspection of Fig. 4: one of its ends forms a strap shown at 14 as including two lugs provided with perforations in register, while the other end forms a central perforated end-piece 15 adapted to engage the opening between the lugs of the strap 14 in the adjacent shoe.

As in the preceding case, each shoe carries sleeves or sockets and a metal reinforcement embedded in it.

There are four sockets illustrated of which one shown at **16** extends transversely throughout the medial section of the shoe while of the three other shorter sockets **17**, **18** and **19**, the socket **17** is positioned within the projecting perforated central end-piece **15** and the sockets **18** and **19** extend transversely and coaxially through the perforated lugs forming the strap **14**.

Each of said sockets **17**, **18** and **19** is provided over a section of its periphery and throughout its length with a helical groove, the part played by which consists in ensuring the engagement and the securing of a steel wire **20** forming the reinforcement of the shoe.

As a matter of fact, when the four sockets **16**, **17**, **18** and **19** have been laid inside the mold at the location to be occupied by them, inside of the shoe **12**, when molded, steel wires 20 are wound in succession over the sockets **18** and **16**, then over the sockets **16** and **17**, and finally over the sockets **16** and **19** said winding providing for the passage of the wire **20** inside the groove on each socket. It should however be remarked that, as illustrated in Fig. 5, said winding is performed cross-wise; in other words, the two sheets formed by each wire **20** cross each other at mid-distance between the two sockets over which said sheets bear.

The mounting of this track on a tractor or the like vehicle can be executed very simply. It is sufficient, as a matter of fact, to locate the shoes **12** endwise while engaging the central end piece **15** of each shoe between the lugs of the strap **14** on the next shoe and to form thus two rows of interengaging shoes of this type as shown at A and B, the corresponding shoes in the two rows being fitted over the same spindles **13** which extend through the aligned sockets **18**, **19** in one of the two corresponding shoes and **17** of the second shoe.

It should be remarked that, as in the preceding case, the sockets are keyed to said spindles in a manner such that when the track progresses, its flexion is due by no means to the oscillations of the sockets round the spindles **13** but only to the actual flexion of the body **12** of the shoe which latter is made of yielding material.

This feature due to the fact that the sockets **16**, **17** **18** and **19** and the reinforcing wires **20** are embedded inside the shoes provides a track which requires no periodical upkeep.

A further advantage of this improved track resides furthermore in the fact that, in the case of any accident occurring to one of its shoes, it is sufficient to proceed with the change of this single shoe.

Obviously, the outline of the lower surface of the shoe is irrelevant and depends primarily on the intended use of the track. Its upper surface is, in contradistinction, smooth so as to serve as a running surface for the guiding and carrying rollers.

A further advantage of this track is constituted by the fact that, if required, it is an easy matter to associate it with means for engaging the ground such as projecting teeth or the like. These means are fitted between the ends of the spindles **13** and the screws providing for the securing of the corresponding shoe on said spindle.

The track described hereinabove and illustrated in Figs. 1 to 6 are however suitable only in the case of vehicles propelled by comparatively small power units. As a matter of fact their reinforcements extend, it is true, throughout the length of each shoe, but they act only over one half of the breadth of the latter.

To this end, it is of advantage, in the case of high power vehicles, to resort for the execution of the track to a somewhat different shoe such as that illustrated in Figs. 8 to 12.

Said shoe designated by the reference number **23** carries respectively at its ends a rigid perforated projecting end-piece **24** and a strap **25** including two lateral perforated lugs, the perforations in the terminal lugs at one end of each strap registering with the perforation in the central terminal and-piece of the next shoe so as to allow the passage through said perforations of the associated connecting and carrier spindle. There are furthermore more embedded inside the shoe, and in addition to the reinforcing wire **26**, six sockets shown respectively at **27**, **28**, **29**, **31**, **32**, **33** and two metal members of which one shown at **34** has an outline matching that of the strap **25** on the same shoe but of a slightly smaller size so as to fit inside same while the other member **35** matches, the outline of the central perforated end-piece of the shoe and is slightly smaller so as to fit inside same.

Each of said two members **34** and **35** includes two inwardly directed projections shown respectively at **36** for the member **34** and at **37** for the member **35**.

This arragnement including the above mentioned sockets is designed in a manner such that, the supplementary members **34** and **35** being located in the mold at the locations they are to occupy in the finished shoe, the sockets **27**, **29** and **28** may be positioned to either side of and between the inner arms or projections **36** of the member **34** while the sockets **31**, **30**, **33** and **32** are located to either side and between the projections **37** of the member **35**. The arms **36** and **37** are perforated and assembling spindles shown respectively at **38** and at **39** are inserted through the two rectilinear channels constituted on the one hand by the socket **27**, perforation in one arm **36**, the socket **28**, the perforation in the other arm **36**, the socket **29** and on the other hand by the socket **31**, the perforation in one arm **37**, the socket **32**, the perforation in the other arm **37** and the socket **33**. Reinforcing wires **26** are then stretched over and between the above mentioned sockets.

The arrangement described being thus positioned inside the mold, it is sufficient to cast the actual shoe **23** inside the mold, the rubber or the like yielding material forming the shoe embedding all the metal parts referred to hereinabove while only the transverse passageways **41** and **42** formed respectively in the member **34** and in the member **35** are left free and allow the insertion of the connecting and carrier spindles **43** in said passageways so as to assemble the shoe considered with the two adjacent shoes.

Obviously, my invention is by no means limited to the three embodiments illustrated hereinabove of a track shoe, which embodiments are disclosed by way of a mere exemplification, and it covers in contradistinction all the modifications thereof falling within the scope of the accompanying claims.

What I claim is:

1. A track for tracklaying vehicles, comprising a succession of independent shoes all identical with each other and arranged along at least one pair of parallel lines, the projections of any two successive shoes on a longitudinal plane parallel therewith overlapping each other, each shoe including an elongated molded body of yielding material, two socket means arranged transversely of said body near each end thereof and slightly spaced from the terminal longitudinal surface of said body, said two socket means being embedded adhesively in said body, and a deformable reinforcement of a constant length connecting the socket means at each end of the body with each other and entirely embedded inside the yielding body, the socket means at the rear end of each shoe registering transversely with the socket means at the front end of the next shoe, spindles extending transversely through the cooperating socket means at the rear end and front end of any two successive shoes, and means rigidly securing the spindles to the cooperating socket means.

2. A track for tracklaying vehicles, comprising a succession of independent shoes all identical with each other and arranged along at least one pair of parallel lines, the projections of any two successive shoes on a longitudinal plane parallel therewith overlapping each other, each shoe including an elongated molded body of yield-

ing material, two socket means arranged transversely of said body near each end thereof and slightly spaced from the terminal longitudinal surface of said body, said two socket means being embedded adhesively in said body, and a deformable reinforcement of a constant length connecting the socket means at each end of the body with each other and entirely embedded inside the yielding body, said reinforcements being constituted by wires wound over and extending between the socket means at both ends of the shoe body, the socket means at the rear end of each shoe registering transversely with the socket means at the front end of the next shoe, spindles extending transversely through the cooperating socket means at the rear end and front end of any two successive shoes, and means rigidly securing the spindles to the cooperating socket means.

3. A track for tracklaying vehicles, comprising a succession of independent shoes all identical with each other and arranged along at least one pair of parallel lines, the projections of any two successive shoes on a longitudinal plane parallel therewith overlapping each other, each shoe including an elongated molded body of yielding material, two socket means arranged transversely of said body near each end thereof and slightly spaced from the terminal longitudinal surface of said body, said two socket means being embedded adhesively in said body,

said socket means being provided throughout their length and over at least a section of their periphery with a substantially helical groove, and a deformable reinforcing wire of a constant length engaging the grooves in said cooperating socket means to be held fast therein, and to connect said socket means with each other, said wire being entirely embedded inside the yielding body, the socket means at the rear end of each shoe registering transversely with the socket means at the front end of the next shoe, spindles extending transversely through the cooperating socket means, at the rear end and front end of any two successive shoes, and means rigidly securing the spindles to the cooperating socket means.

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