March 6, 1945. R. I. SCHONITZER 2,371,071

TREAD BLOCK CORES FOR ENDLESS TRACKS AND THE LIKE

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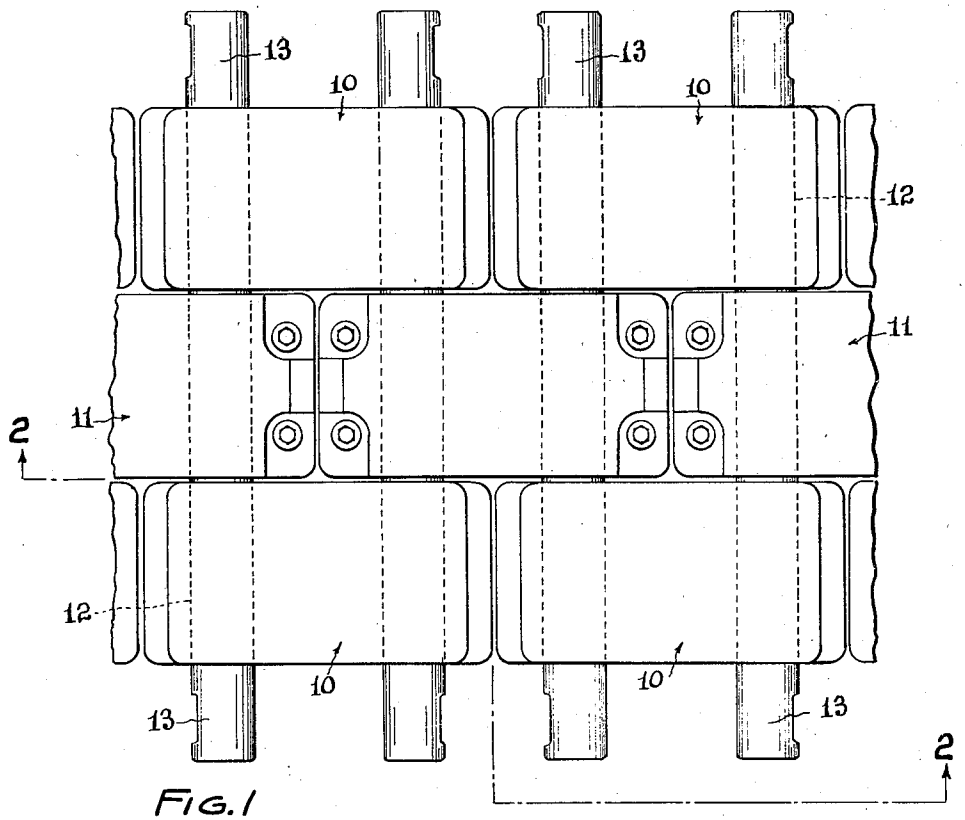


FIG. 1

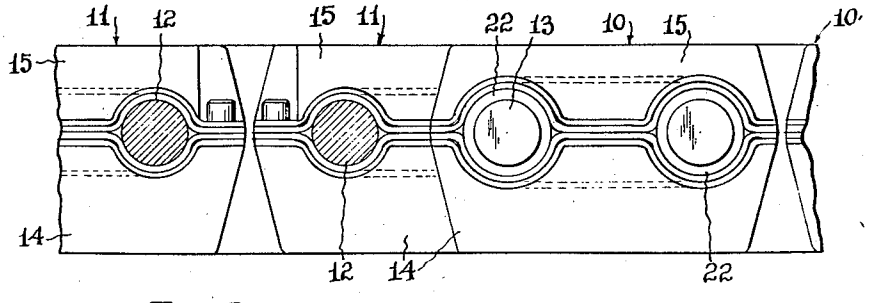


FIG. 2

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March 6, 1945. R. I. SCHONITZER 2,371,071

TREAD BLOCK CORES FOR ENDLESS TRACKS AND THE LIKE

Filed Jan. 14, 1942 10 Sheets-Sheet 2

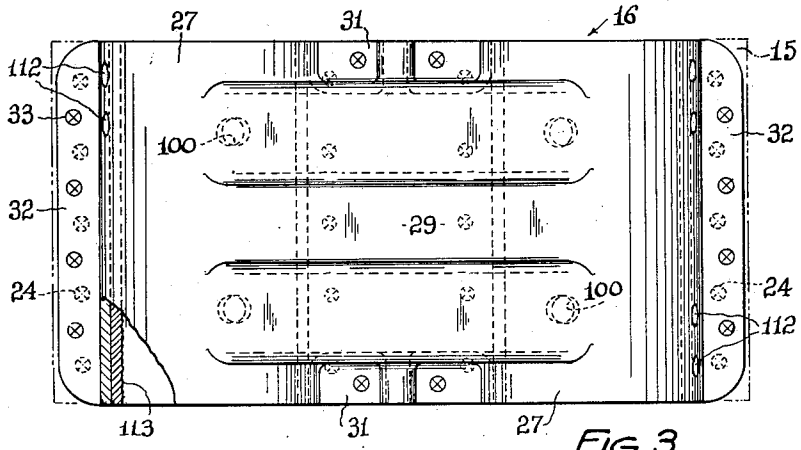


FIG. 3

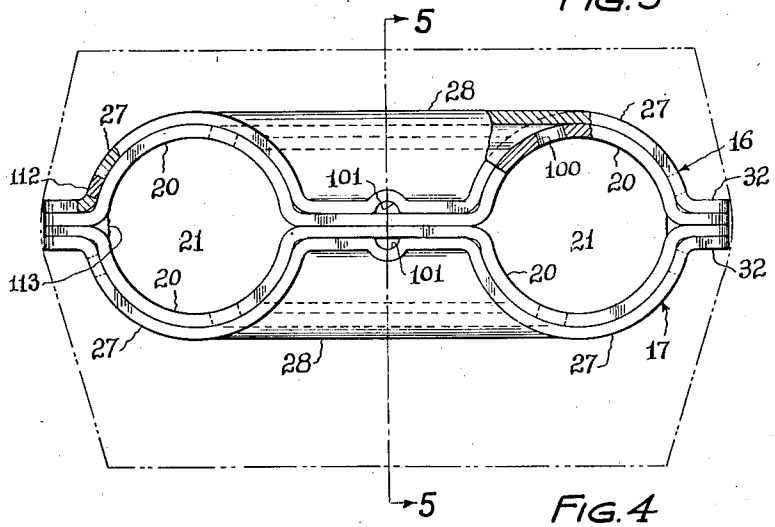


FIG. 4

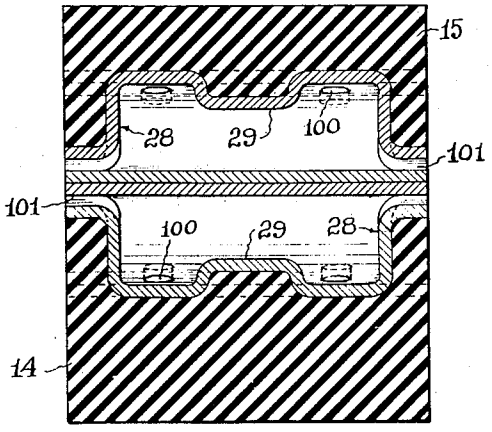


FIG. 5

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March 6, 1945. R. I. SCHONITZER 2,371,071

TREAD BLOCK CORES FOR ENDLESS TRACKS AND THE LIKE

Filed Jan. 14, 1942 10 Sheets-Sheet 3

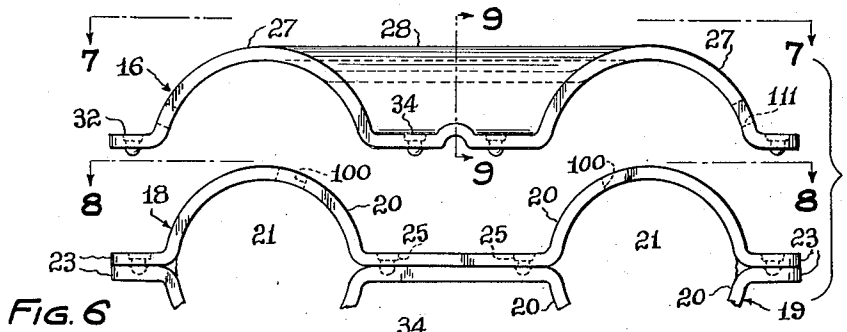


FIG. 6

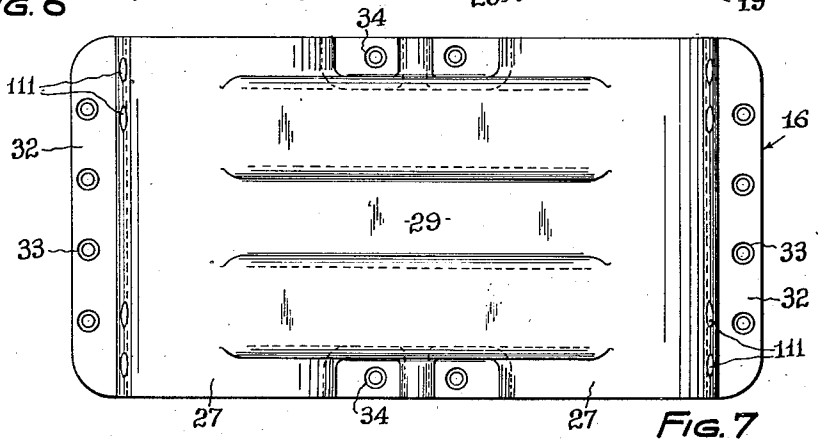


FIG. 7

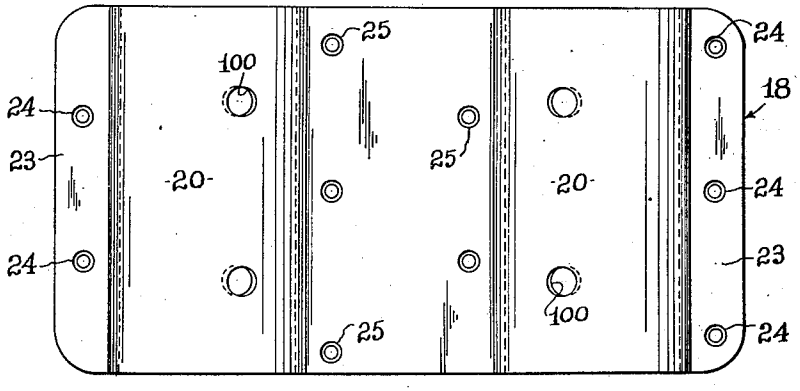


FIG. 8

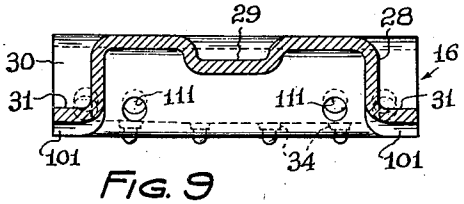


FIG. 9

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March 6, 1945. R. I. SCHONITZER 2,371,071

TREAD BLOCK CORES FOR ENDLESS TRACKS AND THE LIKE

Filed Jan. 14, 1942 10 Sheets-Sheet 4

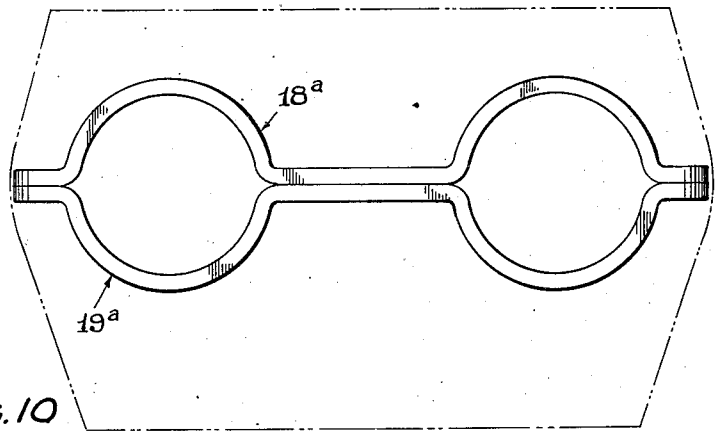


FIG. 10

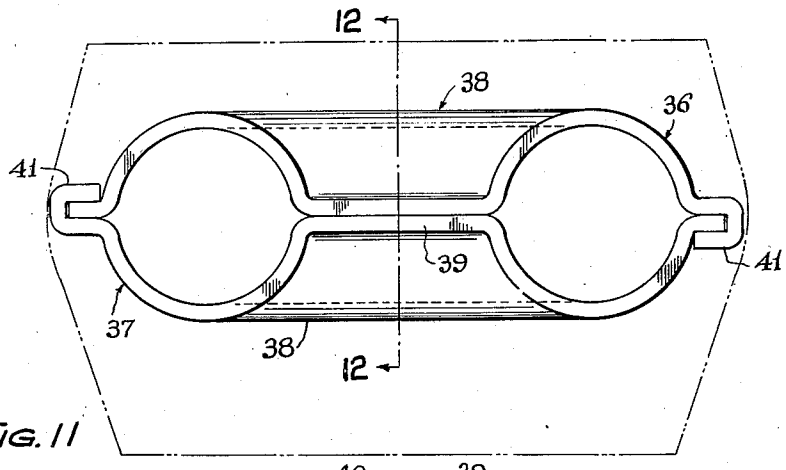


FIG. 11

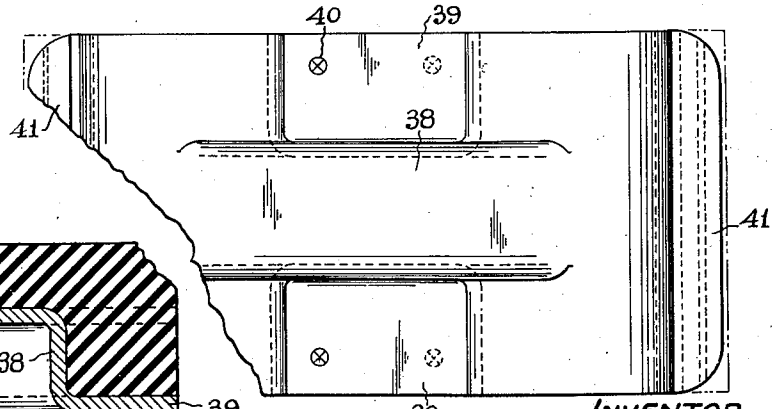


FIG. 13

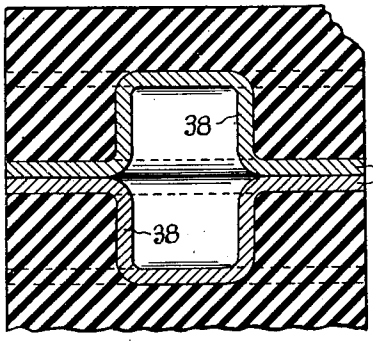


FIG. 12

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March 6, 1945. R. I. SCHONITZER 2,371,071

TREAD BLOCK CORES FOR ENDLESS TRACKS AND THE LIKE

Filed Jan. 14, 1942 10 Sheets-Sheet 5

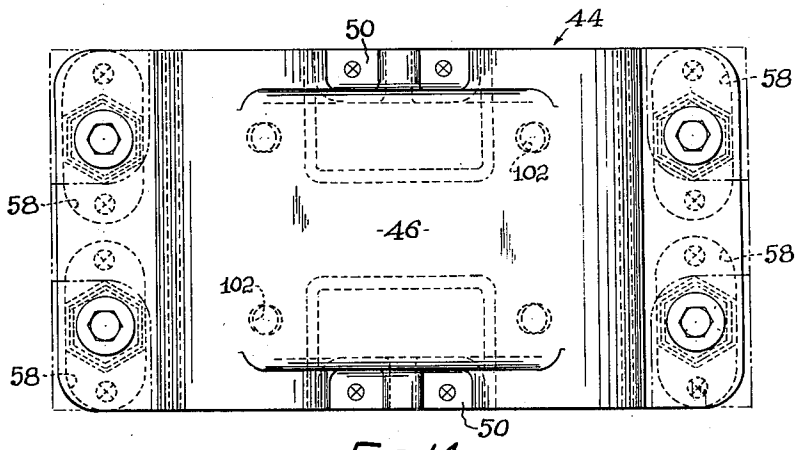


FIG. 14

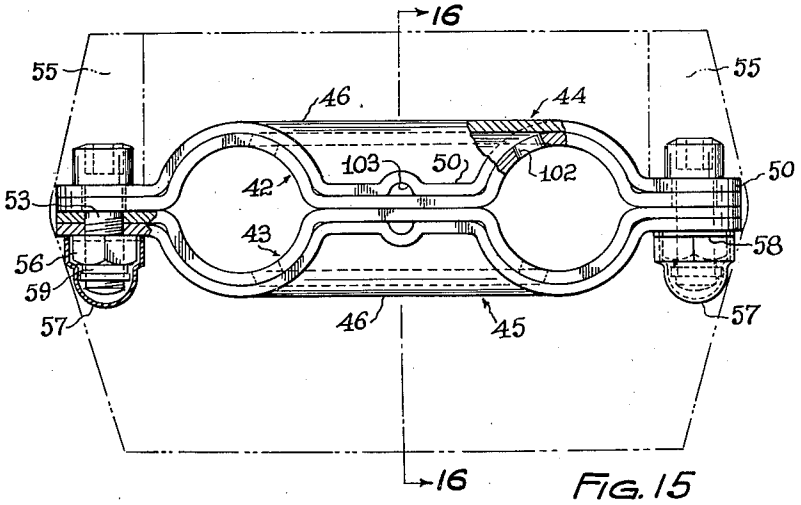


FIG. 15

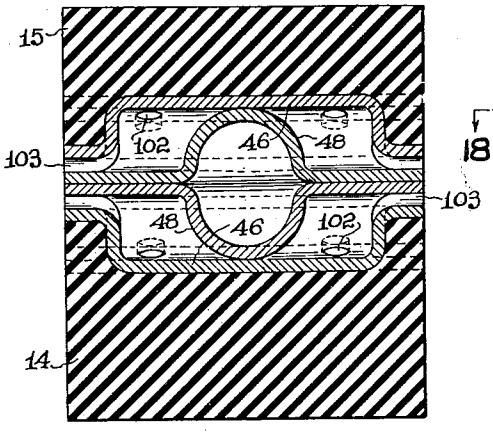


FIG. 16

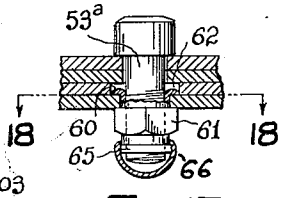


FIG. 17

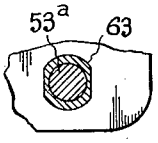


FIG. 18

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March 6, 1945. R. I. SCHONITZER 2,371,071

TREAD BLOCK CORES FOR ENDLESS TRACKS AND THE LIKE

Filed Jan. 14, 1942 10 Sheets-Sheet 6

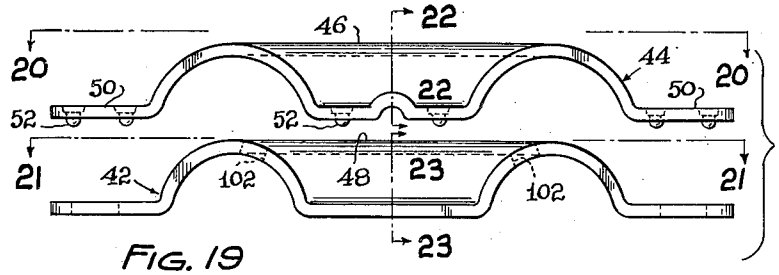


FIG. 19

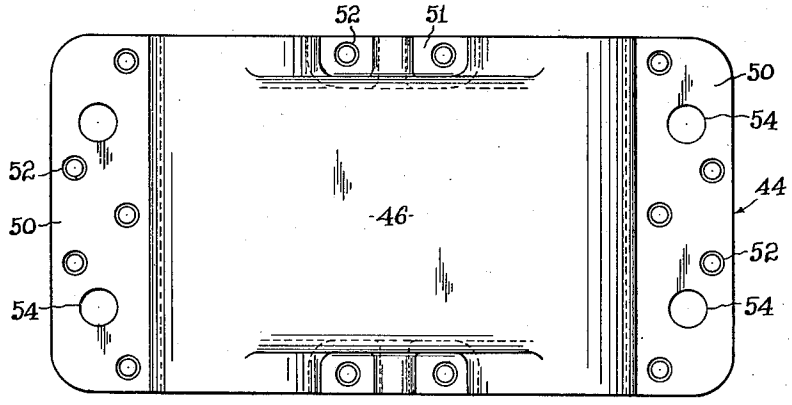


FIG. 20

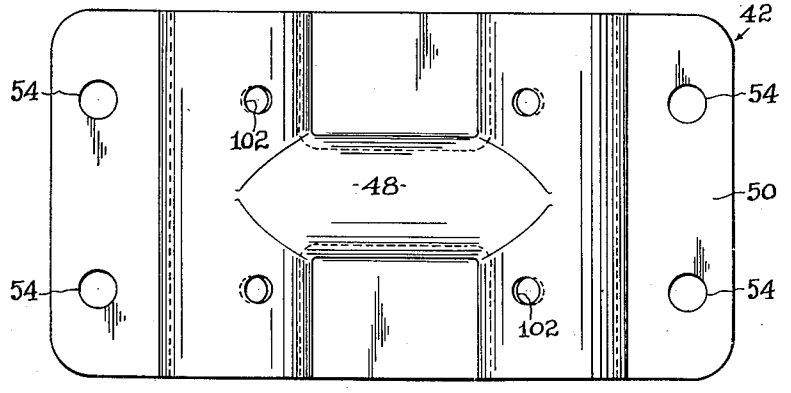


FIG. 21

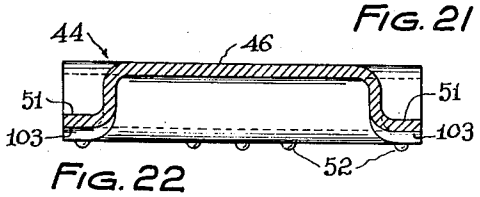


FIG. 22

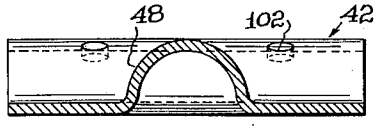


FIG. 23

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March 6, 1945. R. I. SCHONITZER 2,371,071

TREAD BLOCK CORES FOR ENDLESS TRACKS AND THE LIKE

Filed Jan. 14, 1942 10 Sheets-Sheet 7

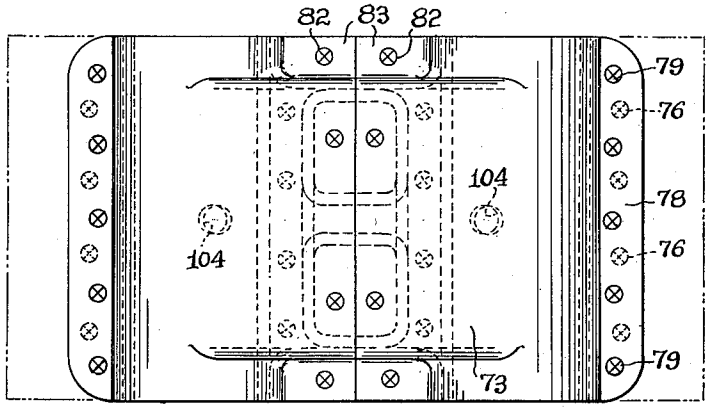


FIG. 24

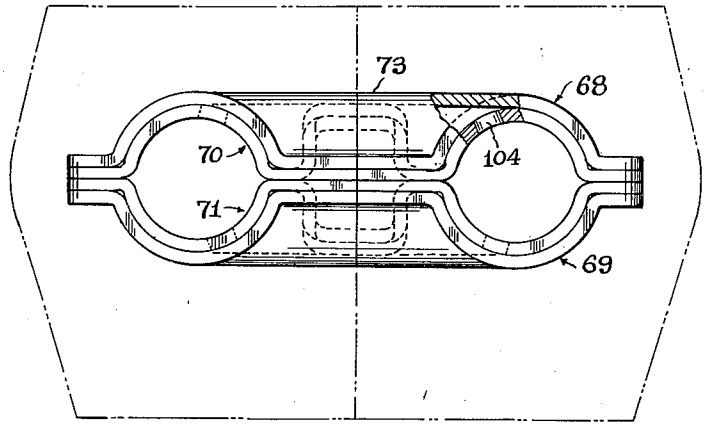


FIG. 25

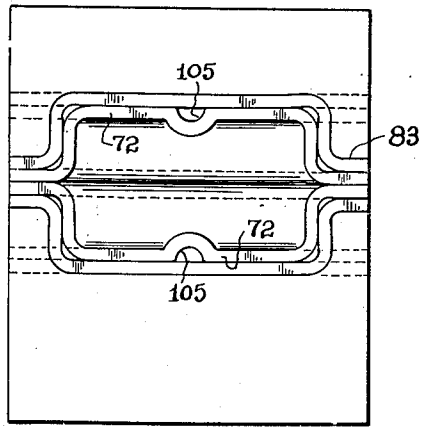


FIG. 26

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March 6, 1945. R. I. SCHONITZER 2,371,071

TREAD BLOCK CORES FOR ENDLESS TRACKS AND THE LIKE

Filed Jan. 14, 1942 10 Sheets-Sheet 8

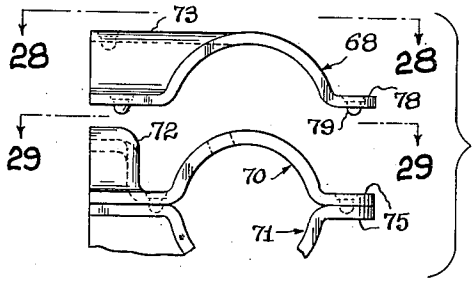


FIG. 27

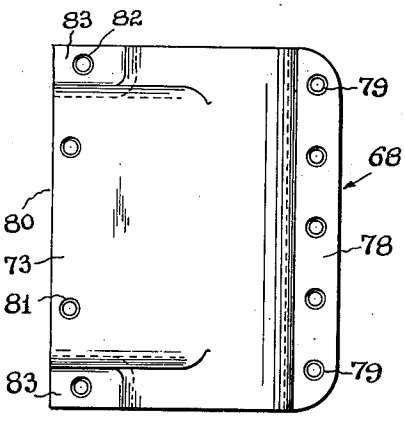


FIG. 28

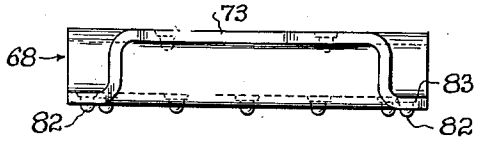


FIG. 30

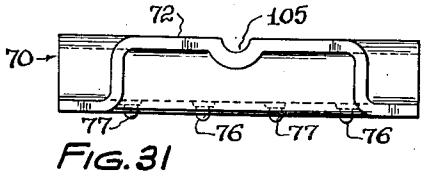


FIG. 31

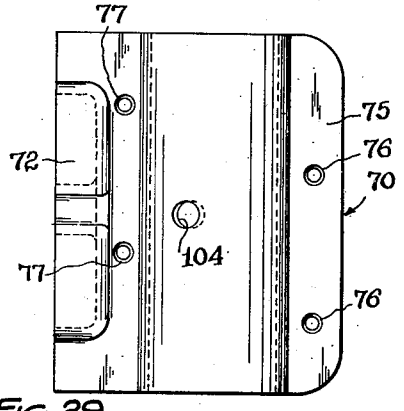


FIG. 29

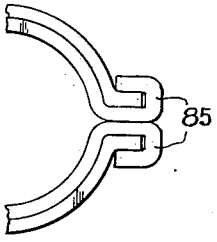


FIG. 32

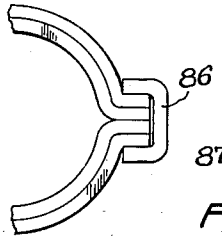


FIG. 33

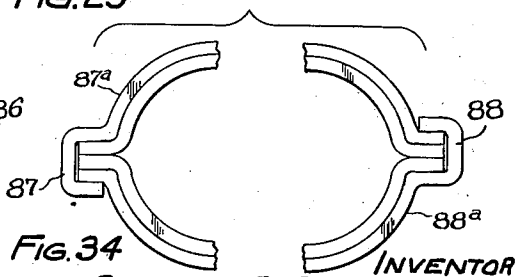


FIG. 34

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March 6, 1945. R. I. SCHONITZER 2,371,071

TREAD BLOCK CORES FOR ENDLESS TRACKS AND THE LIKE

Filed Jan. 14, 1942 10 Sheets-Sheet 9

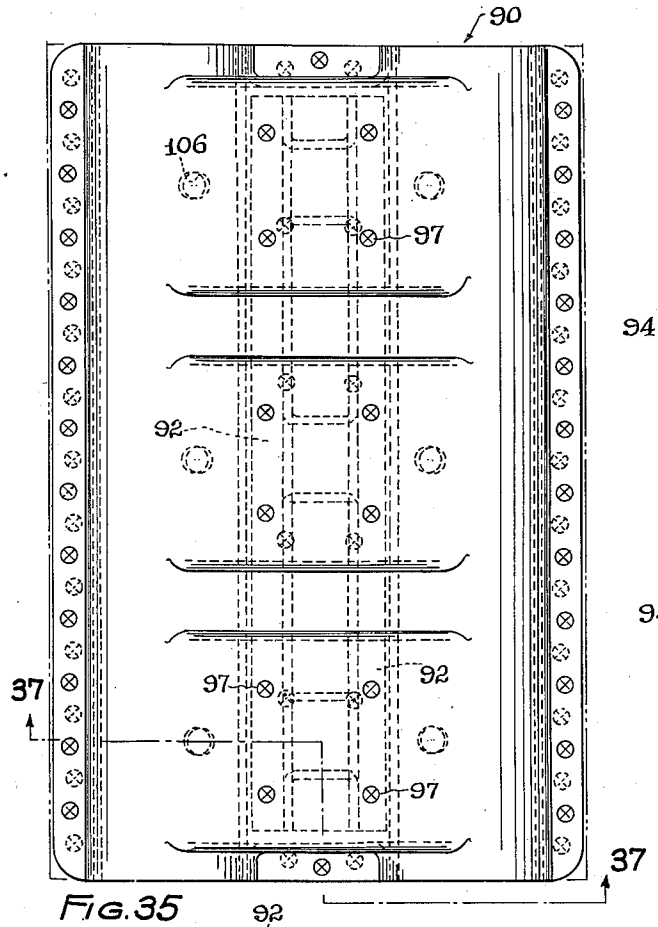


FIG. 35

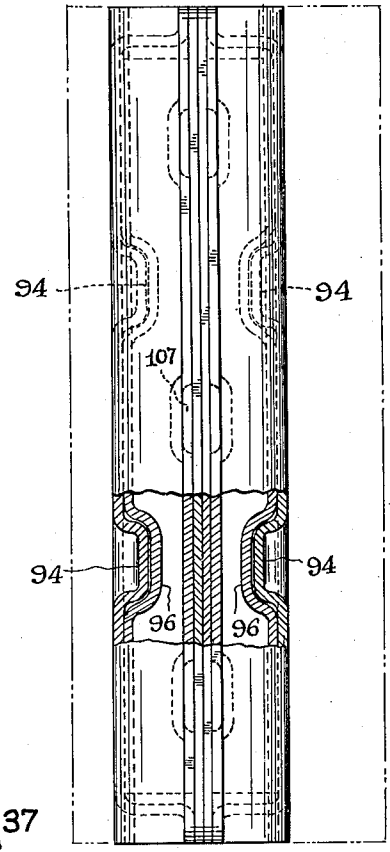


FIG. 36

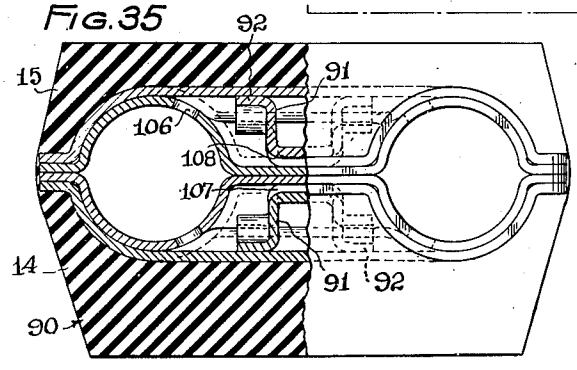


FIG. 37

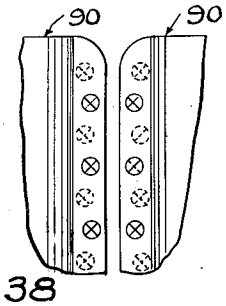


FIG. 38

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March 6, 1945. R. I. SCHONITZER 2,371,071

TREAD BLOCK CORES FOR ENDLESS TRACKS AND THE LIKE

Filed Jan. 14, 1942 10 Sheets-Sheet 10

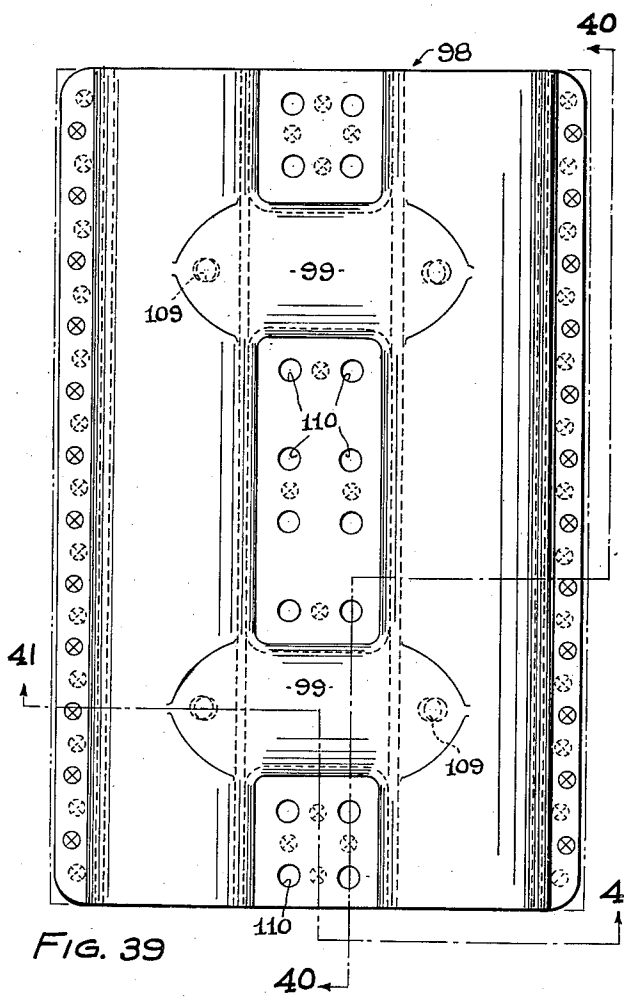


FIG. 39

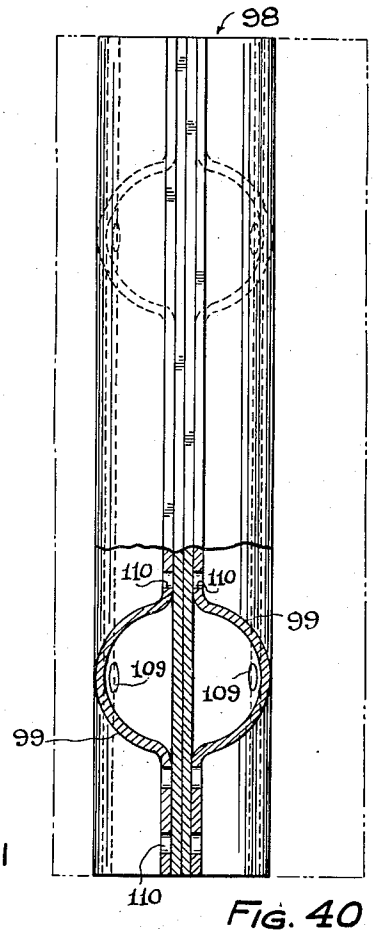


FIG. 40

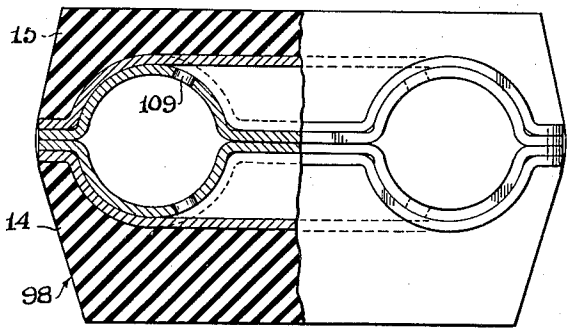


FIG. 41

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Patented Mar. 6, 1945 2,371,071

UNITED STATES PATENT OFFICE

2,371,071

TREAD BLOCK CORE FOR ENDLESS TRACKS AND THE LIKE

Rudolph I. Schonitzer, Shaker Heights, Ohio

Application January 14, 1942, Serial No. 426,666

31 Claims. (Cl. 305—10)

This invention relates to endless tracks for vehicles such as tanks, tractors and the like. More particularly, the present invention relates to improvements in the re-enforcing cores for the rubber tread blocks of such tracks.

The type of tread block core with which the present invention is concerned is one having generally cylindrical passageways adjacent, and substantially parallel with the front and rear edges thereof, for the extension therethrough of cross rods by means of which a set of tread blocks, containing cores of the character here involved, may be connected to form an endless track, the laterally projecting end portions of said cross rods being provided, on each side of the track, with suitable means which not only maintain the tread blocks in assembled, track-forming relation but which also cooperate in the driving and guiding of the track. Heretofore, it has been the practice to embed within the rubber of the tread blocks transversely disposed seamless tubing, for the reception of the cross rods, and spacing strips for such tubing, a type of tread block core which has not been satisfactory.

The present invention therefore has for its general object the provision of novel and improved cores for the rubber tread blocks of endless tracks, the re-enforcing character of said cores enabling rubber tread blocks provided therewith to successfully withstand the severe abuse to which such blocks are subjected in use in endless tracks, particularly the tread blocks of the endless tracks of heavy armored tanks and the like.

A more specific object of the present invention is the provision of tread block cores which are made of simple and inexpensive sheet metal parts, portions of which are constructed to provide cylindrical passageways through the tread blocks for the reception of the aforesaid cross rods, and which sheet metal cores, although of relatively light weight, have surprisingly great strength, rigidity and ruggedness for the effective re-enforcement of the rubber of the tread blocks.

Other objects of the present invention will appear from the following description of several tread block cores embodying said invention, reference being had to the accompanying drawings, in which

Fig. 1 is a top plan view of a section of one form of endless track having rubber tread blocks provided with cores embodying the present invention, the means which connect and which are mounted upon or carried by the laterally projecting ends of the cross rods which extend through the blocks of said track being omitted;

Fig. 2 is a view, partly in vertical section and partly in side elevation, of the track section of Fig. 1, the view being on the line 2—2, Fig. 1;

Fig. 3 is a top plan view of the core of one of the side tread blocks of the track of Figs. 1 and 2, the slightly projecting end portions of the two layers of rubber which are bonded to the opposite faces of said core to form a tread block being indicated in dot-dash lines;

Fig. 4 is a side elevational view of said core, and showing in dot-dash lines the outer peripheries of the two layers of rubber which are bonded thereto;

Fig. 5 is a cross sectional view of a side tread block containing the core of Figs. 3 and 4, the view being in the plane of the line 5—5, Fig. 4;

Fig. 6 is an exploded type of view, showing in side elevation three of the four sheet metal members which make up the core of Figs. 3, 4 and 5, the fourth and other outer member of the core, not shown in Fig. 6, being identical with the outer core member shown at the top of Fig. 6;

Fig. 7 is a top plan view of the outer core member shown in Fig. 6, as viewed from the line 7—7, Fig. 6, the view also being illustrative of the other outer core member not shown in Fig. 6;

Fig. 8 is a top plan view of one of the two inner core members, as viewed from the line 8—8, Fig. 6, the view also being illustrative of the other inner core members, inasmuch as the two inner core members are identical;

Fig. 9 is a cross sectional view of one of the outer core members, the view being on the line 9—9, Fig. 6;

Fig. 10 is a view similar to Fig. 4, but showing a two piece core, which may be used in either the side or the middle tread blocks of the track of Figs. 1 and 2;

Fig. 11 is a view similar to Figs. 4 and 10, but showing a modified form of two-piece core, which may be used in the side tread blocks of the track of Figs. 1 and 2;

Fig. 12 is a cross sectional view of a side tread block containing the core of Fig. 11, the view being in the plane of the line 12—12 Fig. 11;

Fig. 13 is a top plan view of the core of Fig. 11, and showing in dot-dash lines the slightly projecting end portions of the two layers of rubber which are bonded to opposite faces of said core to form the tread block of Fig. 12;

Fig. 14 is a top plan view of the core of each of the middle tread blocks of the track of Figs. 1

and 2, the slightly projecting end portions of the rubber layers of such block being indicated in dot-dash lines;

Fig. 15 is a side elevational view of the core of Fig. 14, and showing in dot-dash lines the outer peripheries of the two layers of rubber which are bonded to the opposite faces of said core to form a tread block;

Fig. 16 is a cross sectional view of a middle tread block containing the core of Figs. 14 and 15, the view being in the plane of the line 16—16, Fig. 15;

Figs. 17 and 18 are detail views showing a slightly modified form of fastening means for sheet metal core members of the type shown in Figs. 14, 15 and 16, the bottom two core members of Figs. 15 and 16 having their bolt-receiving apertures slightly enlarged to receive the anchoring portion of a lock nut—Fig. 17 being a view partly in vertical transverse section and partly in side elevation, and Fig. 18 being a horizontal cross sectional view on the line 18—18, Fig. 17;

Fig. 19 is an exploded type of view, showing in side elevation an outer core momber and an inner core member, said two members constituting one of the two duplicate sub-assemblies of the core of Figs. 14, 15 and 16;

Fig. 20 is a top plan view of the outer core member of Fig. 19, as viewed from the line 20—20, Fig. 19;

Fig. 21 is a top plan view of the inner core member of Fig. 19, as viewed from the line 21—21, Fig. 19;

Fig. 22 is a cross sectional view of the outer core member of Fig. 19, the view being on the line 22—22, Fig. 19;

Fig. 23 is a cross sectional view of the inner core member of Fig. 19, the view being on the line 23—23, Fig. 19;

Fig. 24 is a top plan view of a transversely split form of core for a correspondingly split form of alternate middle tread block, the projecting end portions of the two sections of rubber which such block includes being indicated in dot-dash lines;

Fig. 25 is a side elevational view of the two sectional core of Fig. 24, and showing in dot-dash lines the outer peripheries of the two sections of rubber in which said core sections are embedded;

Fig. 26 is an end elevational view of one of the two duplicate core sections of the core of Figs. 24 and 25 and the section of rubber in which said core section is embedded;

Fig. 27 is an exploded type of view, showing in side elevation three of the four sheet metal members of a section of the core of Figs. 24 to 26 inclusive the fourth and other outer member of said core section, not here shown in Fig. 27, being identical with the outer core member shown at the top of this view;

Fig. 28 is a top plan view of the outer member of Fig. 27, as viewed from the line 28—28, Fig. 27;

Fig. 29 is a top plan view of the adjacent inner member of Fig. 27, as viewed from the line 29—29, Fig. 27; the view also being illustrative of the other inner member of the core section, inasmuch as the two inner members of each core section are identical;

Fig. 30 is an end elevational view of the outer core member of Fig. 28;

Fig. 31 is an end elevational view of the inner core member of Fig. 29;

Fig. 32 is a fragmentary view, showing in side elevation the front end portion of a somewhat modified form of core, in which the front end flanges of the two inner core members are bent outwardly over the corresponding flanges of the two outer core members;

Fig. 33 is a similar view of another modified form of core wherein the front end flanges of the four inner and outer core members are maintained in assembled relation by a sheet metal channel;

Fig. 34 is a fragmentary view, showing in side elevation the front and rear end portions of a modified form of four-piece core, wherein each outer core member has one of its end flanges bent over the adjacent end flanges of the other core members;

Fig. 35 is a top plan view of a core of a tread block which extends entirely across the endless track in which it is used, the projecting front and rear edge portions of the layers of rubber which are bonded to the opposite faces of said core to form said tread block being indicated in dot-dash lines;

Fig. 36 is a front elevational view of the core of Fig. 35, with a part of such core broken away to show interior construction, the outer peripheries of the two layers of rubber which are bonded to the opposite faces of said core to form a tread block being indicated in dot-dash lines;

Fig. 37 is a view partly in vertical section and partly in side elevation of a tread block containing the core of Figs. 35 and 36, the view being on the line 37—37, Fig. 35;

Fig. 38 is a top plan view of portions of two of the tread blocks of Figs. 35, as assembled in endless track relation;

Fig. 39 is a top plan view of a modified form of core of a tread block of the type which extends across the endless track in which it is used, the projecting front and rear portions of the layers of rubber which are bonded to opposite faces of said core to form said tread block being indicated in dot-dash lines;

Fig. 40 is a view of the core of Fig. 39, partly in front elevation and partly in vertical section, on the line 40—40 of Fig. 39, the outer peripheries of the two layers of rubber which are bonded to said core to form a tread block being indicated in dot-dash lines; and

Fig. 41 is a view, partly in vertical section and partly in side elevation, of a tread block containing the core of Figs. 39 and 40, the view being on the line 41—41 of Fig. 39.

Before the present invention is described in detail, it is to be understood that such invention is not limited to the details of construction or the specific arrangement of parts herein illustrated or described, as the invention obviously may take other forms. It also is to be understood that the phraseology or terminology herein employed is for purposes of description and not of limitation, the scope of the present invention being indicated by the appended claims.

In Figs. 1 and 2 is shown a section of an endless track which comprises three rows of generally rectangular, longitudinally disposed rubber tread blocks, each containing a sheet metal core embodying the present invention, there being two laterally spaced rows of side tread blocks 10 and a row of middle tread blocks 11, the middle tread blocks being staggered with respect to the side tread blocks. The tread blocks of the three rows are maintained in substantially contiguous relationship and in endless track form by cross rods 12 suitably connected at their ends in pairs by means not here shown, inasmuch as said con-

necting means forms no part of the present invention. For the purpose of this application, it is sufficient to point out that two such cross rods extend through the end portions of a middle tread block and through the side tread block end portions which overlap said middle block. As a result, and as an examination of Fig. 1 will make evident, each middle tread block is connected to four side tread blocks (two on each side thereof), and each side tread block is connected to two middle tread blocks, inasmuch as each side tread block is overlapped by the end portions of two middle tread blocks. It may also be pointed out that the laterally projecting end portions 13 of the cross rods 12 not only carry the means which connect said rods in pairs but also carry parts which cooperate in the driving and guiding of the track. However, inasmuch as said driving and guiding parts are not involved in the present invention, they have not been illustrated and no further reference to them will be made.

Inasmuch as the side tread blocks 10 of the track of Figs. 1 and 2 are of identical construction, a description of the sheet metal core of one of such blocks will suffice for all. Similarly, as the middle tread blocks 11 of said track are of identical construction, it will be necessary to describe the core of but one of those blocks, the cores of the side and middle tread blocks 10 and 11 differing somewhat, as will hereinafter more fully appear.

Each of the tread blocks 10 and 11 includes, as indicated in the accompanying drawings, two layers of rubber between which the core is located, said layers of rubber being bonded or caused to firmly adhere to the outer faces of the core. Usually, the ground-engaging layer of rubber, herein designated by the reference numeral 14, has a somewhat greater thickness than that of the other layer of rubber, herein designated by the reference numeral 15, as here shown.

Referring now to the core which is used in each of the side tread blocks 10, it will be noted from an examination of Figs. 3 to 9 inclusive that said core is made up of fours simple and inexpensive sheet metal members of generally rectangular form in plan view. These four core members may, and here do, have the same width and length, and they are assembled in stacked relation, one above another, in a unitary structure, with their peripheries in alignment, as clearly shown in Figs. 4 and 5. Also as there shown, the width and length of the assembled core members substantially correspond to the width and length of the two layers of rubber 14 and 15 which are suitably bonded to the outer faces of the core, with the consequent re-enforcement of such layers of rubber throughout their entire area. For manufacturing economy and simplicity of assembly, the two outer core members 16 and 17 (the top and bottom core members, as viewed in the drawings) are preferably identical and therefore interchangeable. Similarly, the two inner core members 18 and 19 are preferably identical and thus interchangeable, although it is to be understood that the sheet metal core for the side tread blocks 10 may be of the form in which no two members are duplicates.

As best shown in Figs. 4 and 6, each of the two inner core members 18 and 19 is provided adjacent each end thereof with a transversely disposed semi-cylindrical corrugation 20. As a result, when the two inner core members are assembled in superposed relation, with their corrugations oppositely disposed and matching, two transverse passageways 21 of cylindrical form are provided, one for the reception of each of the two cross rods 12 which extend through each side tread blocks. If desired, and as here shown, the diameter of the core passageways thus formed may be somewhate greater than that of the cross rods 12, in order that such passageways may be provided with rubber linings 22 (see Fig. 2), although, obviously, said passageways may be made of such size as to just receive said cross rods, as will be readily understood.

As here shown, welding is used to unite the two inner core members in superposed relation, the character of the welding and the location of the welded areas being such as to securely and effectively unite said members. Preferably, said inner core members are welded to each other along their overlapping end flanges 23, and along their overlapping middle portions between the corrugations 20. For the connection by welding of the two inner core members, the two end flanges 23 of each such member are here provided with transversely spaced welding projections 24, and the middle portion of each such core member is provided with two rows of transversely spaced welding projections 25, one row alongside each of the corrugations 20. The welding projections 24 and 25 of each inner core member extend in the direction opposite to that of the corrugations 20 thereof, and when the two inner core members are first superimposed, they are, of course, spaced apart by these welding projections.

In order to space the welding projections of one inner core member from the corresponding welding projections of the other, inasmuch as the two inner core members here shown are of duplicate form, and to properly distribute the welded areas, each such inner core member has its two sets of welding projections 24 suitably staggered, with a corresponding staggering of its two sets of welding projections 25. As here shown, each inner core member has one of its end flanges 23 provided with a row of two welding projections 24 and its other end flange provided with a row of three welding projections 24. Similarly, each inner core member has two welding projections 25 in one of its rows, and three welding projections 25 in its other row, all as clearly shown in Fig. 8. The two inner core members are so assembled that unlike end flanges are brought together, the "two projection" flange of one member lying opposite the "three projection" flange of the other. The transverse spacing of the welding projections 24 and 25 of each inner core member is such that when said two core members are thus assembled, there is a row of five transversely spaced welding projections 24 between each pair of end flanges 23 and two rows of five transversely spaced welding projections 25 between the middle portions of such core members.

The type of welding preferably used for the uniting of the two inner core members is the well known resistance welding, the welding projections 24 and 25 being melted in the welding operation by the heat caused by the resistance of the electric current. The two inner core members are thus united in a particularly effective and durable manner.

As indicated in Figs. 6 and 8, the welding projections 24 and 25 not only are spaced across the entire width of the inner core members but are located as close as possible to the corrugations 20 therebetween, the effect of which is to mini-

mize any tendency of the two inner core members to separate or become disconnected even under severe conditions of use.

As best shown in Fig. 4, the two outer sheet metal core members 16 and 17 (the top and bottom core members, as viewed in Figs. 4 and 5) are also provided adjacent their end flanges with transversely disposed corrugations of semi-cylindrical form, the corrugations 27 of such outer core members fitting over the corresponding corrugations 20 of the two inner core members when the outer core members are assembled therewith on opposite faces thereof. For strengthening and therefore re-enforcing purposes, each of the two outer core members (such members being of duplicate form, as heretofore pointed out) is provided between its two transverse corrugations 27 with a centrally disposed, longitudinally extending rib 28 of generally channel shape in cross section. As evidenced by Fig. 4, the ends of the rib 28 of each outer core member merge with the side walls of the corrugations 27 thereof, the top wall of such rib being substantially flush with the tops of such corrugations. As a result of the longitudinal bridging of the two transverse corrugations of each of the outer core members, the layers of rubber 14 and 15 are effectively re-enforced between the corrugations of said core members, as will be readily understood. If desired, and as here shown (see Fig. 4), the top wall of the rib 28 of each outer core member may be provided with a longitudinally disposed channel 29, which not only strengthens and rigidifies such core member but also, aids in the anchoring thereto of the appropriate rubber layer 14 or 15.

The two outer core members 16 and 17 are each provided, on opposite sides of its longitudinal rib 28 and between its transverse corrugations 27, with flat side edge portions 31, which contact the middle portions of the inner core members adjacent their side edges when the two outer core members are assembled with the two inner core members, on opposite faces thereof. As a result of the provision of the ribs 28, the core is of box-like form in cross section (see Fig. 5) and hence, one which is of exceptionally strong and rugged character, as will be readily understood. The provision of the ribs 28 of the outer core members also is of material assistance in the transverse anchoring to such core members of the layers of rubber 14 and 15, and inasmuch as the end portions of said layers of rubber extend around the corrugations 27 of said core members to the end flanges 32 thereof, as clearly shown in Fig. 4, a longitudinal anchoring of the layers of rubber to such core members is also effected. To bond or bring about a secure adherence of said layers of rubber to the outer faces of the outer core members, any suitable means may be utilized, such as the copper plating of such faces, for example.

Inasmuch as the outer core members 16 and 17 here shown are of duplicate form, no special care need be exercised in assembling them with the two inner core members on opposite faces thereof. To maintain such assembly, resistance welding is here utilized, and for that purpose, the front and rear flanges 32 of the outer core members, and the flat side edge portions 31 thereof, are provided with welding projections, there being four welding projections 33 spaced in a row along each of the end flanges 32 and two welding projections 34 spaced along each of the side edge portions 31. In the welding operation, the welding projections 33 and 34 are melted by the heat caused by the resistance of the electric current, and the outer core members are thus caused to be rigidly and firmly united to the two inner core members on opposite faces thereof. As best shown in Fig. 3, the welding projections 33 of the end flanges 32 of the outer core members are not only staggered with respect to the welding projections 24 of the end flanges 23 of the inner core members but also, are located nearer to the aligned end edges of the two sets of flanges, namely, by a distance corresponding to the thickness of the metal of which the outer core members are made.

From the foregoing description of the core which is here used in each of the side tread blocks 10 of the track of Figs. 1 and 2, it will be evident that said core, of sturdy box-like form in cross section, is well adapted to effectively re-enforce the rubber layers of such block, and thus enable said block to successfully withstand the severe abuse to which it is frequently subjected in use. It will be equally evident that the four sheet metal members which comprise said core, although of relatively light weight and capable of being easily and cheaply made, are so constructed as to give them great strength and rigidity, so as to enable the two inner core members to receive the cross rods 12 which extend therethrough (thus making wholly unnecessary the use of seamless tubing and spacing strips therefor); and so as to enable the layers of rubber to be effectively anchored to the outer faces of the outer core members, etc.

If desired, however, the core of the side tread blocks 10 may be one which consists of but two sheet metal members, such as the core illustrated in Fig. 10. Inasmuch as the two duplicate members 18a and 19a of the core of Fig. 10 are identical with, and are united in stacked relation by welding in the same manner as, the two duplicate inner core members 18 and 19 of the core illustrated in Figs. 3 to 9 inclusive and heretofore described, no further description of the core of Fig. 10 is believed to be necessary.

Another form of two-piece core which may be used in each of the side tread blocks 10, and which is of box-like form in cross section, is illustrated in Figs. 11 to 13 inclusive. The two duplicate sheet metal members 36 and 37 of this core are substantially the same as the outer members 16 and 17 of the core of Figs. 3 to 9 inclusive. It will be noted, however, particularly from a comparison of Figs. 12 and 5, that the longitudinal ribs 38 of core members 36 and 37 are somewhat narrower than the corresponding ribs 28 of core members 16 and 17, and that the top walls of ribs 38 are not channeled, although they obviously may be, if desired. It also will be noted that although the contacting side edge portions 39 of the core members 36 and 37 are united by welding, (for which purpose, each of said side edge portions is provided with a welding projection 40) the front and rear end flanges 41 of such members are connected by bending one of the end flanges of each member over the adjacent end flange of the other member, a type of inter-lock which effectively prevents, of course, endwise separation of such members. As to this form of core, no further description is believed to be necessary.

Referring now to the core of each of the middle tread blocks 11 of the track of Figs. 1 and 2, it will be noted from an examination of Figs. 14, 15 and 16 and Figs. 19 to 23 inclusive that such core comprises four sheet metal members, there being two inner members 42 and 43 of duplicate

form and two outer members 44 and 45 of duplicate form. It also will be noted that these four core members are each provided adjacent its end flanges with transverse, semi-cylindrical corrugations corresponding to the corrugations of the members of the core of Figs. 3 to 9 inclusive, and that the two corrugations of each of the outer core members 44 and 45 are bridged by a centrally disposed, longitudinally extending rib 46 which differs from the ribs 28 of the aforesaid core only in that its top wall is not channeled, although it obviously may be. Instead of being flat, as are the middle portions of the inner members 18 and 19 of the aforesaid core, the middle portion of each of the inner core members 42 and 43 is provided with a centrally disposed, longitudinally extending rib 48 of semi-circular cross section (see Fig. 16). As best shown in Figs. 15 and 19, the ends of the rib 48 of each inner core member merge with the side walls of the transverse corrugations thereof, the top wall of the rib being flush with the tops of such corrugations and contacting, in the core sub-assemblies hereinafter referred to, the top wall of the rib 46 of one of the outer core members.

To facilitate their assembly with the cross rods 12 of the track of Figs. 1 and 2, the middle tread blocks 11, including their cores, are of longitudinally split form, the inner section of each such block comprising a layer of rubber 15, an outer core member 44 and an inner core member 42, and the outer or ground-engaging section of each such block comprising a layer of rubber 14, an outer core member 45 and an inner core member 43. As will hereinafter appear, the two core members of each such suction are rigidly and permanently united, by welding as here shown, in a sub-assembly and bolts and nuts are utilized to releasably connect the two sub-assemblies.

As shown in Figs. 19, 20 and 22, the front and rear end flanges 50 of the outer core member 44, and the flat side edge portions 51 thereof, are provided with welding projections 52 for the welding of such core member to the inner core member 42 in a rigid sub-assembly, the type of welding used being preferably resistance welding. In a similar manner, the outer core member 45 and the inner core member 43 are welded together in a rigid sub-assembly. By copper plating the outer faces of the outer core members 44 and 45, or by the use of any other suitable means, the layers of rubber 14 and 15 are bonded or caused to securely adhere to such core faces, thereby uniting each core sub-assembly with its layer of rubber, as will be readily understood.

For releasably connecting the two core sub-assemblies and their respective layers of rubber, four bolts 53 are here utilized, two for each set of end flanges, said flanges being provided, of course, with suitable apertures 54 for the reception of such bolts. As shown in Figs. 14 and 15, but more clearly in Figs. 1 and 2, the recessed heads of the bolts 53 lie within suitable recesses 55 at the corners of the layer of rubber 15 of the inner block section, said recesses affording convenient access at all times to the heads of said bolts. Embedded within the layer of rubber 14 of the outer or ground-engaging block section are nuts 56 for said bolts and also, cup-shaped sheet metal covers 57 for said nuts and the projecting ends of said bolts, said covers being of such cross sectional shape and size as to prevent the turning of the nuts therein. As best shown in Fig. 14, said covers are provided with transversely disposed, oppositely extending flanges 58 which are suitably connected to the outer surfaces of the end flanges of the outer core member 45, said cover flanges, if desired, being welded to the end flanges of said core member during the welding operation by which such core member and the inner core member 43 are rigidly united in a sub-assembly. If desired, and as here shown, each of the nuts 56 may be provided with a short treaded extension 59 of reduced size and of slightly elliptical shape, the binding of the threads of such extension with those of the bolt 53 extending through said extension producing sufficient resistance to prevent undesired unloosening of said bolt, as will be readily understood.

From the foregoing description of the longitudinally split core of the correspondingly split middle tread blocks 11, it will be evident that such core, of double box-like form in cross section, is well adapted for its intended purpose. It also will be evident that the simple and inexpensive sheet metal members of such core are of exceptionally strong and sturdy construction, and are united into two rugged sub-assemblies, which are releasably connected in a particularly effective and durable manner. Moreover, the longitudinally split form of the middle tread blocks 11 enables them to be readily applied to and removed from an endless track in the field, if and when necessary, as will be readily understood.

If desired, nuts and sheet metal covers of the form illustrated in Figs. 17 and 18 may be used in the releasable connection of the two core sub-assemblies just described in place of the nuts 56 and the sheet metal covers 57. If that is done, the bolt-receiving apertures 54 of the rigidly united end flanges of the core members 43 and 45 will have to be somewhat enlarged, in the manner shown in Fig. 17, for the reception of the inner tubular anchoring portion 60 of the lock nut 61 of Fig. 17. As there shown, the aperture 62 in the end flange of the inner core member for the reception of the bolt 53*a* is somewhat larger than the bolt-receiving aperture 63 in the end flange of the outer core member, in order that the inner end of such nut anchoring portion may be peened or headed over the flange of said outer core member for the anchoring of such nut. As best shown in Fig. 18, the aperture 63 of the end flange of the outer core member, and that part of the nut anchoring portion which extends through said aperture, are of non-circular form, the effect of which is to prevent turning of the nut, as will be readily understood. For bolt-locking purposes, the nut of Fig. 17 is here provided with a threaded extension 65 corresponding to the extensions 59 of the nuts 56 of Fig. 15. The sheet metal cover 66, for the protection of the projecting end of the bolt 53*a* from the layer of rubber in which it is to be located, is a simple cup-shaped member, having its upper end crimped into an annular groove of the nut extension 65, as shown in Fig. 17.

In Figs. 24 to 29 inclusive is shown an alternate form of middle tread block containing a sheet metal core embodying the present invention. As best shown in Figs. 24 and 25, this alternate form of middle tread block, including its sheet metal core, is of transversely split form, the two sections thereof being duplicates and being disposed (as shown in Figs. 24 and 25) in abutting relation when in use.

As best shown in Fig. 25, this transversely split core comprises two duplicate outer sheet metal core members 68 and 69, each of two-piece form, and two duplicate inner sheet metal core members 70 and 71, each of two-piece form. It will

be evident from a comparison of Figs. 25 and 15, Figs. 26 and 16 and Figs. 30 and 22, that the outer core members 68 and 69 of the same construction (except for their two-piece form) as the two outer core members 44 and 45 of the longitudinally split core heretofore described. It also will be evident from a comparison of Figs. 25 and 15, Figs. 26 and 16 and Figs. 27 and 19, that the two inner core members 70 and 71 differ in construction from the two inner members 42 and 43 of said longitudinally split core only in the character of their centrally disposed, longitudinally extending ribs 72 (the two part form of said inner core members 70 and 71, of course, being excepted). As best shown in Figs. 25, 27 and 29, the ends of the ribs 72 of the inner core members 70 and 71 do not merge into the side walls of their transverse corrugations (as do the hollow ribs 48 of the inner core members 42 and 43) but terminate in spaced relation thereto; and furthermore, the width of said ribs 72 is such that their side walls, as well as their top walls, engage the corresponding walls of the ribs 73 of the outer core members 68 and 69.

For the rigid connection in stacked relation of the four core parts of each section of this transversely split core, welding is here utilized, the welding being preferably of the resistance type. For the connection of the two inner core parts 70 and 71 of each core section, each such core part is provided along its end flange 75 with two welding projections 76 and across the space between its transverse corrugation and the closed end of its rib portion 72 with two welding projections 77. During the welding operation, these projections are melted by the heat caused by the resistance of the electric current, with the consequent rigid connection of the two core parts, as will be readily understood. As heretofore pointed out, the inner core members 70 and 71 are of duplicate form, and in order to properly distribute and space the welded areas of each connected pair of parts thereof, the two welding projections 76 along one of the end flanges of each inner core member are staggered with respect to the two welding projections 76 along the other end flange thereof. Similarly, the two welding projections 77 adjacent one of the transverse corrugations of each inner core member are staggered with respect to the two welding projections 77 adjacent the other transverse corrugation thereof. As a result, the two inner core parts of each core section are rigidly united by a row of four equally spaced welding projections 76 and by a row of four equally spaced welding projections 77, as indicated in Fig. 24 and as will be readily understood.

For the connection to each pair of inner core parts, on opposite faces thereof, of a pair of outer core parts, welding is here used. For such purpose, each outer core part is provided along its end flange 78 with welding projections 79 (five, as here shown) and across the top wall of its rib portion 73, adjacent the free edge 80 thereof, with welding projections 81 (two, as here shown). Each such core part is also provided with a welding projection 82 on each of the two flat portions 83 thereof which lie on opposite sides of its longitudinal rib portion 73, as best shown in Figs. 28 and 30. By the use of these welding projections 79, 81 and 82, which melt by the heat caused by the resistance of the electric current in the welding operation, each pair of inner core parts has united therewith, in a rigid and unitary assembly, a pair of outer core parts, said outer core parts engaging opposite faces of said inner core parts, as shown.

For the formation of a tread block section, each such assembly of core parts has suitably bonded thereto a mass of rubber, the outer faces of the outer core parts of each block section being copper plated or otherwise suitably treated to cause the rubber to securely adhere thereto. As best shown in Fig. 25, the rubber of each block section extends around the end flanges 75 and 78 of the core parts thereof, although, if desired, the rubber of each block section may be in the form of two layers, with the core parts of said section disposed between said layers, as will be readily understood.

From the foregoing description of the transversely split core of this correspondingly split alternate form of middle tread block, it will be evident that such core, like those heretofore described, is well suited for the effective re-enforcement of such tread block. Each of the sheet metal members of said core, although of simple and inexpensive construction and of relatively light weight, possesses great strength and rigidity, and when united to form a two sectional core, afford the type of re-enforcement required for a tread block of this character. Inasmuch as the two cross rods 12 which extend through this tread block (one through each block section) are connected at their end portions 13, the two block sections are tightly held together in the abutting relationship shown in Figs. 24 and 25, and any tendency of a block section to turn about its cross rod is effectively resisted.

Inasmuch as the cross rods 12 must be pushed endwise through the transverse passageways of the two sections of the transversely split tread block of Figs. 24 to 29 inclusive, and inasmuch as the end portions of said cross rods may, and preferably do, fit tightly in the corresponding passageways of the side tread blocks (the latter passageways being rubber-lined, if desired), replacement in the field of sections of the tread blocks of Figs. 24 to 29 inclusive can best be made by the use of factory assembled replacement units. Each such unit will comprise a connected pair of cross rods 12 on which are mounted two side tread blocks and two middle tread block sections, said sections constituting, when in a track, the adjacent sections of two adjacent middle tread blocks. The substitution of such a unit for a damaged one can be easily made in the field, all as will be readily understood.

In Figs. 32, 33 and 34 are illustrated modified arrangements for uniting the end flanges of cores which comprise four core members. In Fig. 32, the contacting end flanges 85 of the two inner sheet metal core members are bent around the adjacent end flanges of the outer core members. It is thus necessary to unite by welding or other suitable means only the end flanges of the inner core members to maintain the four core members in assembly. In Fig. 33, the end flanges of all four core members are maintained in stacked relation by welding thereabout a sheet metal locking strip 86 of channel-shaped cross section. In Fig. 34, the two duplicate outer core members each has an assembly-maintaining end flange, the rear end flange 87 of the outer core member 87a being bent around the rear end flange of the outer core member 88a and the rear end flanges of the two inner core members, and the front end flange 88 of the outer core member 88a being bent around the front end flange of the outer core member 87a and the front end

flanges of the two inner core members. With such a connection of the end flanges of these four core members, no welding or the like is necessary.

If desired, the end flanges of the core members of the side tread blocks 10 and the end flanges of the transversely split core members of the alternate form of middle tread block may be connected by any of the arrangements shown in Figs. 32, 33 and 34. The arrangement of Fig. 32 (but not those of Figs. 33 and 34) is also suitable for the end flanges of the two core sub-assemblies of the longitudinally split core of the middle tread blocks 11 if the connection of the end flanges of the two middle core members is effected by bolts and nuts or other fastening means of the releasable or detachable type, rather than by welding, inasmuch as the two core sub-assemblies of the middle tread blocks 11 must be capable of convenient separation, as heretofore pointed out.

In Figs. 35 to 37 inclusive is shown a tread block 90 which is transversely disposed in the endless track in which it is used, the track being formed by a series of such blocks arranged side by side, as indicated in Fig. 38, with each block having a length co-extensive with the width of the track. Like the tread blocks heretofore described, the tread blocks 90 also are adapted to have extended therethrough suitable cross rods (not shown) by which they are maintained in endless track form, the projecting end portions of said cross rods being connected in pairs by means not necessary to be here illustrated or described.

As best shown in Fig. 37, the layers of rubber 15 and 14 of the tread block 90 are separated by a sheet metal core embodying the present invention. As such view clearly shows, said core comprises six sheet metal members, there being a pair of duplicate outer members, a pair of duplicate inner members, and a pair of duplicate members 91 of generally channel-shaped cross section, said channel core members being disposed on opposite sides of the inner core members and having at the free ends of their side walls oppositely extending flanges 92 which engage the outer core members, as shown.

As will be evident from a comparison of Figs. 35 and 3 and Figs. 37 and 4, the two outer members and the two inner members of the core of the tread blocks 90 are of substantially the same construction, and are welded together in the same manner, as the corresponding members of the core of the side tread blocks 10. The only structural difference therebetween is that each of the outer members of the core of the tread blocks 90 is provided with two transversely spaced channels 94, rather than with a single channel (the channel of each of the outer members of the core of the tread blocks 10 being designated by the reference numeral 29).

As clearly shown in Figs. 36 and 37, the oppositely extending flanges 92 of the generally channel-shaped members 91 of the core of the tread blocks 90 are provided with suitable depressions 96 to receive the channels 94 of the outer members of such core. It also will be noted from an examination of Fig. 35 that said outer core members are provided with welding projections 97 for use in uniting to such members the flanges 92 of the channel core members 91. From an examination of Figs. 35 and 36, it will be noted that the channel core members 91 are of slightly less length than that of their associated core members.

The core of Figs. 35 to 37 inclusive is therefore well suited for the re-enforcement of a tread block having a length coincident with the track width, the channel members 91 of said core insuring for said core great strength and rigidity, as will be readily understood.

In Figs. 39, 40 and 41 is shown a tread block 98 of the type of the tread block 90 just described, namely, a tread block which is transversely disposed in the endless track in which it is used and which block has a length co-extensive with the width of such track.

The tread block 98, like the other tread blocks heretofore described, contains a core embodying the present invention. As best shown in Figs. 39 and 40, the core of this tread block 98 comprises four sheet metal members, there being a pair of duplicate outer core members, and a pair of duplicate inner core members. As will be evident from a comparison of Figs. 41 and 37, the two inner members of the core of the tread block 98 are of the same construction as the two inner members of the core of the tread blocks 90. It also will be evident from an examination of Figs. 39, 40 and 41, that the two outer members of the core of the tread block 98 differ from the inner members of such core only by the two laterally spaced ribs 99 with which such outer core members are provided between their two corrugations. From an examination of Fig. 39, it will be evident that the four members of the core of the tread block 98 are united by welding, the front and rear flanges of such core members, and those portions thereof lying between their corrugations, being provided with suitable welding projections for such purpose. As best shown in Fig. 40, the ribs 99 of the outer core members are of generally semi-circular cross section. When arranged in matching pairs, they form generally tubular re-enforcement parts which afford great strength against torsional stresses, as will be readily understood.

No further description of the core of the tread block 98 is believed to be necessary, although it may be pointed out that such core enables the layers of rubber of such block to have material thickness (between the corrugations of such core) throughout substantially the entire length of the block. This produces substantial cushioning effect between the core corrugations, as will be readily understood.

As heretofore pointed out, the outer faces of the tread block cores here illustrated and described may be, and here are, copper plated to enable the rubber of the tread blocks to be bonded to such core faces. In the copper plating of said core faces, which takes place after the cores are formed, the use of several solutions is necessary, and in order to avoid any liability of the co-mingling of such solutions, by the travel of the cores from one solution to another, the "four member" cores here illustrated are provided with suitable drainage apertures and/or drainage passageways, as will hereinafter appear. No drainage apertures or drainage passageways are necessary in the "two member" cores here illustrated (the core of Fig. 10 and the core of Figs. 11 to 13 inclusive), inasmuch as their constructions are such that any excess solution picked up by them will readily drain therefrom before they reach the next solution into which they are to be immersed.

As will be evident from an examination of Figs. 3 to 9 inclusive, the sheet metal core of the side tread blocks 10 is here provided with both drainage apertures and drainage passageways, al-

though either such apertures or such passageways may be omitted, if desired. The drainage apertures of this core are formed in the two inner core members 18 and 19, there being two such apertures 100 in each of the four transverse corrugations 20 thereof. As best shown in Fig. 4, these apertures are so located that they communicate with the ends of the hollow ribs 28 of the outer core members 16 and 17, and thus permit any solution which enters the hollows of said ribs (from between the spaced welded areas by which the two outer core members 16 and 17 are united with the two inner core members 18 and 19) to readily drain into the open ended transverse passageways 21 formed by the corrugations 20 of the inner core members. The drain passageways of this core are formed in the flat side portions 31 of the outer core members 16 and 17, there being one such drainage passageway in each such portion 31, as clearly shown in Figs. 3 and 7. Inasmuch as these drainage passageways 101 communicate at their inner ends with the hollows of the ribs 28 of the outer core members, and are open at their outer ends, any solution in the hollows of such ribs will readily drain therefrom through such passageways. As heretofore pointed out, the use of both the drainage apertures 100 and the drainage passageways 101 are not necessary, although the use of both enables the core to be readily drained in any position in which it is suspended during its travel from one solution to the next, as will be readily understood.

As will be evident from an examination of Figs. 14, 15 and 16 and Figs. 19 to 23 inclusive, the longitudinally split core of the middle tread blocks 11 is provided with drainage apertures 102 and drainage passageways 103 identical with those of the core of the side tread blocks 10. As a result, no further reference to the drainage apertures and the drainage passageways of the core of the middle tread blocks 11 is necessary.

In the transversely split core of the alternate form of middle tread block, illustrated in Figs. 24 to 29 inclusive, a drainage aperture 104 is provided in the transverse corrugation of each part of the two inner core members 70 and 71. As best shown in 25, such apertures communicate with the ends of the hollow ribs 73 of the outer core members 68 and 69 and thus permit any solution in the hollows of said ribs to be drained therefrom. If desired and as here shown, the top wall of the rib 72 of each of the inner core members may be provided with a drainage passageway 105, the provision of the passageways establishing communication between those portions of the hollow of each rib 73 which lie on opposite sides of the rib 72 therein, as will be evident from an examination of Fig. 25.

In the core of the tread block 90 of Figs. 35 to 37 inclusive, three drainage apertures 106 are provided in each of the corrugations of the inner core members for the drainage of the hollows of the channeled ribs of the outer core members. Drainage passages 107 also may be provided, if desired and as here shown, in the base portions 108 of the generally channel-shaped core members 91, the result of which is to establish communication between those portions of the hollow of each rib of the outer core members which are disposed on opposite sides of the core member 91 therein.

In the tread block core of Figs. 39 to 41 inclusive, drainage apertures 109 are provided in the corrugations of the inner core members for draining the ribs 99 of the outer core members. If desired, and as here shown, drainage apertures 110 also may be provided in the outer core members, between their corrugations, to permit the escape of any solution which may find its way between those portions of the inner core members which lie between their corrugations and the corresponding portions of the outer core members.

As heretofore pointed out, the outer members 16 and 17 of the core of Figs. 3 to 9 inclusive have their front and rear flanges 32 spot welded to the corresponding flanges 23 of the inner members 18 and 19 of said core. In order to supplement the spot welds which thus unite said flanges, the corrugations 27 of the outer core members 16 and 17 may be, and here are, suitably brazed to the corresponding corrugations of the inner core members 18 and 19. For purposes of such brazing, the outer corrugations 27 are provided with suitable apertures 111 providing access to the inner corrugations 20 and receiving more or less of the brass or spelter 112 utilized in the brazing operation, said apertures being located, preferably, as close as possible to the front and rear flanges 32 of the outer core members. Although the number of apertures 111 with which each corrugation 27 is provided may be such as to enable them to be spaced along the full length of said corrugation, each such corrugation 27 is here provided with four such apertures, two adjacent each end of said corrugation, as clearly shown in Figs. 3 and 7.

Also, if desired, and as here shown, the spot welds by which are united the two front flanges 23 and the two rear flanges 23 of the inner members 18 and 19 of the core of Figs. 3 to 9 inclusive may be supplemented by further welding of such flanges, such as at the rear edges of the front pair of flanges and at the front edges of the rear pair of flanges, as clearly shown at 113 in Figs. 3, 4 and 6. Such additional welding, of either the gas or arc type, may extend the full length of such flanges or, if desired, only along the end portions thereof, as will be readily understood.

Supplemental welding like that designated by the reference numeral 113 may also be used, if desired, in connection with the two members of the core of Fig. 10, and in connection with the inner members of the cores of Figs. 24 to 29 inclusive, Fig. 32, Figs. 35 to 38 inclusive and Figs. 39 to 41 inclusive. Similarly, the outer members of the cores of Figs. 24 to 29 inclusive, Figs. 35 to 38 inclusive and Figs. 39 to 41 inclusive may be provided with apertures, like those designated by the reference numeral 111, in order that such outer core members may be brazed to the inner core members with which they are associated, all as will be readily understood.

Further features and advantages of the present invention will be readily apparent to those skilled in the art to which it relates.

What I claim is:

1. A core for the rubber tread block of an endless track of the type in which the tread blocks of such track have cross rods extending laterally therethrough, said core comprising a pair of sheet metal members rigidly connected in stacked relation and provided adjacent each of the front and rear edges thereof with a pair of oppositely extending and laterally disposed matching corrugations coextensive with the length of such edges, each pair of such matching corrugations providing a laterally disposed passageway between said core members for a correspondingly

disposed track cross rod, the two passageways being in generally parallel relationship, the front passageway being closed along its front side and the rear passageway being closed along its rear side, the two core members between the front and rear passageways being substantially in abutting relationship.

2. A core for the rubber tread block of an endless track of the type in which the tread blocks of such track have cross rods extending therethrough, said core comprising a pair of sheet metal members rigidly connected in stacked relation and provided with overlapping flanges at each of the front and rear edges thereof, said pair of connected core members also being provided adjacent the overlapping flanges at each of the front and rear edges thereof with a pair of oppositely extending matching corrugations coextensive with the length of such edges, each pair of such matching corrugations providing a passageway between said core members for a track cross rod.

3. A core for the rubber tread block of an endless track of the type in which the tread blocks of such track have cross rods extending therethrough, said core comprising a pair of sheet metal members arranged in stacked relation and provided at the front and rear edges thereof with rigidly connected overlapping flanges, said pair of connected core members also being provided adjacent the overlapping flanges at each of the front and rear edges thereof with a pair of oppositely extending matching corrugations coextensive with the length of such edges, each pair of such matching corrugations providing a passageway between said core members for a track cross rod.

4. A core for the rubber tread block of an endless track of the type in which the tread blocks of such track have cross rods extending therethrough, said core comprising a pair of sheet metal members arranged in stacked relation and provided adjacent each of the front and rear edges thereof with a pair of oppositely extending matching corrugations coextensive with the length of such edges, each pair of such matching corrugations providing a passageway between said core members for a track cross rod, said core members being rigidly connected by the connection of those portions of each member lying on opposite sides of each of the corrugations thereof to the corresponding portions of the other member.

5. A core for the rubber tread block of an endless track of the type in which the tread blocks of such track have cross rods extending therethrough, said core comprising a pair of sheet metal members rigidly connected in stacked relation and provided in the region of each of the front and rear edges thereof with a pair of oppositely extending matching corrugations coextensive with the length of such edges, each pair of such matching corrugations providing a passageway between said core members for a track cross rod, at least one of said core members being provided with a strengthening rib extending between and substantially normal to the corrugations thereof.

6. A core for the rubber tread block of an endless track of the type in which the tread blocks of such track have cross rods extending therethrough, said core comprising a pair of sheet metal members rigidly connected in stacked relation and provided in the region of each of the front and rear edges thereof with a pair of oppositely extending matching corrugations coextensive with the length of such edges, each pair of such matching corrugations providing a passageway between said core members for a track cross rod, said core members also being provided between and substantially normal to the two pairs of corrugations thereof with a pair of oppositely extending matching ribs.

7. A core for the rubber tread block of an endless track of the type in which the tread blocks of such track have cross rods extending therethrough, said core comprising a pair of sheet metal members rigidly connected in stacked relation and provided in the region of each of the front and rear edges thereof with a pair of oppositely extending matching corrugations coextensive with the length of such edges, each pair of such matching corrugations providing a passageway between said core members for a track cross rod, at least one of said core members being provided with a strengthening rib extending substantially normal to the two corrugations thereof and having its ends merging with the side walls of such corrugations.

8. A core for the rubber tread block of an endless track of the type in which the tread blocks of such track have cross rods extending therethrough, said core comprising a pair of sheet metal members arranged in stacked relation and provided with flange portions at each of the front and rear edges thereof, said pair of core members also being provided adjacent the flange portions at each of the front and rear edges thereof with a pair of oppositely extending matching corrugations coextensive with the length of such edges, each pair of such matching corrugations providing a passageway between said core members for a track cross rod, the front and rear flange portions of each of said core members, and the side edge portions thereof between its corrugations, being in contacting relationship with and being rigidly connected to the corresponding flange and side edge portions of the other core member.

9. A core for the rubber tread block of an endless track of the type in which the tread blocks of such track have cross rods extending therethrough, said core comprising a pair of inner sheet metal core members rigidly connected in stacked relation and provided in the region of each of the front and rear edges thereof with a pair of oppositely extending matching corrugations coextensive with the length of such edges, each pair of such matching corrugations providing a passageway between said inner core members for a track cross rod, and a pair of outer sheet metal core members rigidly connected with said inner core members and disposed on opposite faces thereof.

10. A core for the rubber tread block of an endless track of the type in which the tread blocks of such track have cross rods extending therethrough, said core comprising a pair of inner sheet metal core members rigidly connected in stacked relation and provided in the region of each of the front and rear edges thereof with a pair of oppositely extending matching corrugations coextensive with the length of such edges, each pair of such matching corrugations providing a passageway between said inner core members for a track cross rod, and a pair of outer sheet metal core members rigidly connected with said inner core members and disposed on opposite faces thereof, one of said outer core members being provided with a strengthening

rib extending substantially normal to the corrugations of said inner core members.

11. A core for the rubber tread block of an endless track of the type in which the tread blocks of such track have cross rods extending therethrough, said core comprising a pair of inner sheet metal core members rigidly connected in stacked relation and provided in the region of each of the front and rear edges thereof with a pair of oppositely extending matching corrugations coextensive with the length of such edges, each pair of such matching corrugations providing a passageway between said inner core members for a track cross rod, and a pair of outer sheet metal core members rigidly connected with said inner core members and disposed on opposite faces thereof, one of said outer core members being provided in spaced relation to its side edges with a strengthening rib extending substantially normal to the corrugations of said inner core members.

12. A core for the rubber tread block of an endless track of the type in which the tread blocks of such track have cross rods extending therethrough, said core comprising a pair of inner sheet metal core members rigidly connected in stacked relation and provided with spaced pairs of oppositely extending matching corrugations extending generally parallel with the front and rear edges of such core members and coextensive with the length of such edges, each pair of such matching corrugations providing a passageway between said inner core members for a track cross rod, and a pair of outer sheet metal core members rigidly connected with said inner core members and disposed on opposite faces thereof, said outer core members being provided with oppositely projecting strengthening ribs extending generally normal to the corrugations of said inner core members.

13. A core for the rubber tread block of an endless track of the type in which the tread blocks of such track have cross rods extending therethrough, said core comprising a pair of inner sheet metal core members rigidly connected in stacked relation and provided with overlapping flanges at each of the front and rear edges thereof, said pair of inner core members also being provided adjacent the flanges at each of the front and rear edges thereof with a pair of oppositely extending matching corrugations coextensive with the length of such edges, each pair of such matching corrugations providing a passageway between said inner core members for a track cross rod, and a pair of outer sheet metal core members rigidly connected with said inner core members and disposed on opposite faces thereof, said outer core members being provided at their front and rear edges with flanges contacting the flanges of said inner core members and also being provided with strengthening ribs extending generally normal to the corrugations of said inner core members.

14. A core for the rubber tread block of an endless track of the type in which the tread blocks of such track have cross rods extending therethrough, said core comprising a pair of inner sheet metal core members rigidly connected in stacked relation and provided in the region of each of the front and rear edges thereof with a pair of oppositely extending matching corrugations coextensive with the length of such edges, each pair of such matching corrugations providing a passageway between said inner core members for a track cross rod, and a pair of outer sheet metal core members rigidly connected with said inner core members and disposed on opposite faces thereof, said outer core members being provided with strengthening ribs extending generally normal to the corrugations of said inner core members, the top wall of at least one of said ribs being longitudinally channeled.

15. A core for the rubber tread block of an endless track of the type in which the tread blocks of such track have cross rods extending therethrough, said core comprising a pair of sheet metal core members rigidly connected in stacked relation and provided in the region of each of the front and rear edges thereof with a pair of oppositely extending matching corrugations coextensive with the length of such edges, each pair of such matching corrugations providing a passageway between said core members for a track cross rod, and a supplemental sheet metal core member rigidly connected in stacked relation with said first mentioned core members, said supplemental core member being provided with a strengthening rib extending generally normal to the corrugations of said first mentioned core members.

16. A core for the rubber tread block of an endless track of the type in which the tread blocks of such track have cross rods extending therethrough, said core comprising a pair of sheet metal core members rigidly connected in stacked relation and provided in the region of each of the front and rear edges thereof with a pair of oppositely extending matching corrugations coextensive with the length of such edges, each pair of such matching corrugations providing a passageway between said core members for a track cross rod, and a supplemental sheet metal core member rigidly connected in stacked relation with said first mentioned core members, said supplemental core member and one of said first mentioned core members being each provided with a strengthening rib extending generally normal to the aforesaid corrugations.

17. A core for the rubber tread block of an endless track of the type in which the tread blocks of such track have cross rods extending therethrough, said core comprising a pair of sheet metal core members rigidly connected in stacked relation and provided in the region of each of the front and rear edges thereof with a pair of oppositely extending matching corrugations coextensive with the length of such edges, each pair of such matching corrugations providing a passageway between said core members for a track cross rod, and a supplemental sheet metal core member rigidly connected in stacked relation with said first mentioned core members, said supplemental core member being provided with a strengthening rib extending generally normal to the aforesaid corrugations and one of said first mentioned core members being provided with a correspondingly extending strengthening rib disposed within the rib of said supplemental core member.

18. A core for the rubber tread block of an endless track of the type in which the tread blocks of such track have cross rods extending therethrough, said core comprising a pair of sheet metal core members rigidly connected in stacked relation and provided in the region of each of the front and rear edges thereof with a pair of oppositely extending matching corrugations coextensive with the length of such edges, each pair of such matching corrugations providing a passageway between said core members for a track

cross rod, and a supplemental sheet metal core member rigidly connected in stacked relation with said first mentioned core members, said supplemental core member being provided with a strengthening rib extending generally normal to the aforesaid corrugations and one of said first mentioned core members being provided with a correspondingly extending strengthening rib disposed within and engaging the rib of said supplemental core member.

19. A core for the rubber tread block of an endless track of the type in which the tread blocks of such track have cross rods extending therethrough, said core comprising a pair of sheet metal core members disposed in stacked relation and provided in the region of each of the front and rear edges thereof with a pair of oppositely extending matching corrugations coextensive with the length of such edges, each pair of such matching corrugations providing a passageway between said core members for a track cross rod, a supplemental sheet metal core member disposed in stacked relation with said first mentioned core members and connected to one of them, and means for releasably connecting the two first mentioned core members.

20. A core for the rubber tread block of an endless track of the type in which the tread blocks of such track have cross rods extending therethrough, said core comprising a pair of sheet metal core members disposed in stacked relation and provided in the region of each of the front and rear edges thereof with a pair of oppositely extending matching corrugations coextensive with the length of such edges, each pair of such matching corrugations providing a passageway between said core members for a track cross rod, a supplemental sheet metal core member disposed in stacked relation with said first mentioned core members and permanently connected to one of them, and bolt means for releasably connecting the other of said first mentioned core members to the two permanently connected core members.

21. A core for a two sectional rubber tread block of an endless track of the type in which the tread blocks of such track have cross rods extending therethrough, said core comprising a pair of sheet metal members rigidly connected in stacked relation and provided in the region of each of the front and rear edges thereof with a pair of oppositely extending matching corrugations coextensive with the length of such edges, each pair of such matching corrugations providing a passageway between said core members for a track cross rod, said core members being separated between their pairs of corrugations to provide a two sectional core, with each core section having a pair of matching corrugations.

22. A core for a two sectional rubber tread block of an endless track of the type in which the tread blocks of such track have cross rods extending therethrough, said core comprising a pair of sheet metal members disposed in stacked relation and provided with rigidly connected overlapping flanges at each of the front and rear edges thereof, said core members also being provided adjacent the flanges at each of the front and rear edges thereof with a pair of oppositely extending matching corrugations coextensive with the length of such edges, each pair of such matching corrugations providing a passageway between said core members for a track cross rod, said core members being separated between their pairs of corrugations to provide a two sectional core, with each core section having a pair of matching corrugations.

23. A core for the rubber tread block of an endless track of the type in which the tread blocks of such track have cross rods extending therethrough, said core comprising a pair of sheet metal core members rigidly connected in stacked relation and provided in the region of each of the front and rear edges thereof with a pair of oppositely extending matching corrugations coextensive with the length of such edges, each pair of such matching corrugations providing a passageway between said core members for a track cross rod, a supplemental sheet metal core member rigidly connected in stacked relation with said first mentioned core members, said supplemental core member being provided with a hollow strengthening rib, and drainage means for the hollow of said rib.

24. A core for the rubber tread block of an endless track of the type in which the tread blocks of such track have cross rods extending therethrough, said core comprising a pair of sheet metal core members rigidly connected in stacked relation and provided in the region of each of the front and rear edges thereof with a pair of oppositely extending matching corrugations coextensive with the length of such edges, each pair of such matching corrugations providing a passageway between said core members for a track cross rod, a supplemental sheet metal core member rigidly connected in stacked relation with said first mentioned core members, said supplemental core member being provided with a hollow strengthening rib, and drainage means in one of said first mentioned core members for the hollow of said rib of said supplemental core member.

25. A core for the rubber tread block of an endless track of the type in which the tread blocks of such track have cross rods extending therethrough, said core comprising a pair of sheet metal members arranged in stacked relation and provided with overlapping interlocked flanges at each of the front and rear edges thereof, said pair of connected core members also being provided adjacent the overlapping interlocked flanges at each of the front and rear edges thereof with a pair of oppositely extending matching corrugations coextensive with the length of such edges, each pair of such matching corrugations providing a passageway between said core members for a track cross rod.

26. A core for the rubber tread block of an endless track of the type in which the tread blocks of such track have cross rods extending therethrough, said core comprising a pair of duplicate sheet metal members arranged in stacked relation and provided at the front and rear edges thereof with overlapping flanges, the front flange of one of said core members being bent over the front flange of the other core member and the rear flange of said last mentioned core member being bent over the rear flange of the other core member, whereby the two core members are rigidly connected in such stacked relation, said pair of connected core members also being provided adjacent the overlapping and interlocked flanges at each of the front and rear edges thereof with a pair of oppositely extending matching corrugations coextensive with the length of such edges, each pair of such matching corrugations providing a passageway between said core members for a track cross rod.

27. A core for the rubber tread block of an endless track of the type in which the tread blocks of such track have cross rods extending therethrough, said core comprising a pair of sheet metal members arranged in stacked relation and provided at each of the front and rear edges thereof with flanges spot welded in overlapping relationship, the front flanges being also united by welding along their rear edges and the rear flanges being also united by welding along their front edges, said pair of rigidly united core members also being provided adjacent the overlapping flanges at each of the front and rear edges thereof with a pair of oppositely extending matching corrugations coextensive with the length of such edges, each pair of such matching corrugations providing a passageway between said core members for a track cross rod.

28. A core for the rubber tread block of an endless track of the type in which the tread blocks of such track have cross rods extending therethrough, said core comprising a pair of sheet metal core members rigidly connected in stacked relation and provided in the region of each of the front and rear edges thereof with a pair of oppositely extending matching corrugations coextensive with the length of such edges, each pair of such matching corrugations providing a passageway between said middle core members for a track cross rod, and a supplemental sheet metal core member rigidly connected with said first mentioned core members, said supplemental core member being provided with apertures providing access to the adjacent one of the first mentioned core members for the brazing of said supplemental core member to such adjacent one of said first mentioned core members.

29. A shoe structure for a self-laying track, said structure comprising sheet metal bent to provide spaced-apart hollow portions extending substantially the width of the shoe for housing means to interconnect said structure with adjacent shoes and to provide a spacing and interconnecting web portion integral and substantially coextensive in width with said hollow portions and disposed centrally of the depth thereof, said interconnecting portion including a tubular strut element bent therefrom for stiffening said portions against forces tending to distort said structure.

30. A shoe structure for a self-laying track, said structure comprising a plate element having spaced-apart depressed portions extending transversely substantially the width of the shoe and a web portion spacing and interconnecting said depressed portions, a second plate element of like form opposedly mounted with respect to the first said plate element to provide hollow portions for housing means to interconnect said structure with adjacent shoes, said web portions of said plate elements being secured to each other for providing a double web portion disposed substantially centrally of the depth of said hollow portions, and means for stiffening said plate elements against forces tending to distort said structure.

31. A shoe structure for a self-laying track, said structure comprising a plate element having spaced-apart depressed portions extending transversely substantially the width of the shoe and a web portion spacing and interconnecting said depressed portions, a second plate element of like form opposedly mounted with respect to the first said plate element to provide hollow portions for housing means to interconnect said structure with adjacent shoes, said web portions of said plate elements being secured to each other for providing a double web portion disposed substantially centrally of the depth of said hollow portions, and stiffening means for resisting distortion of said structure, said stiffening means comprising overlapping marginal extensions of said depressed portions.

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