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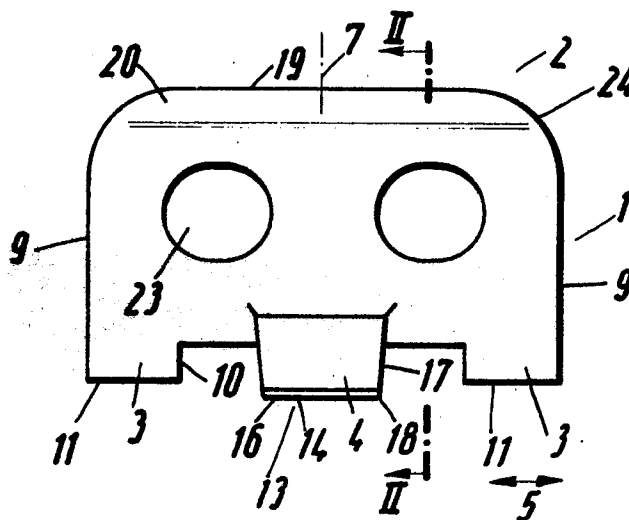
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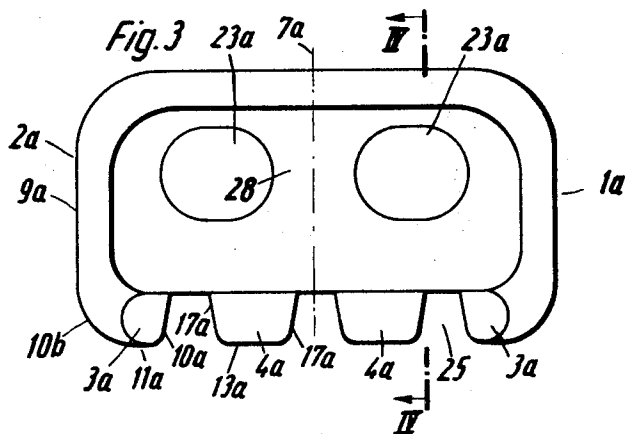
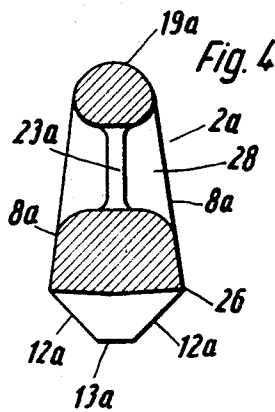
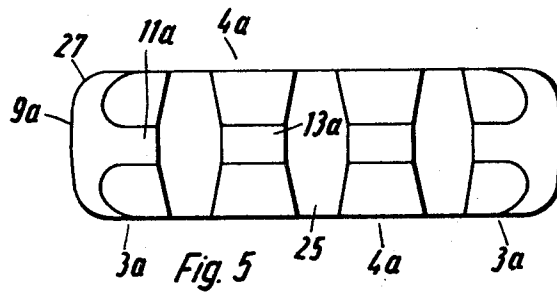
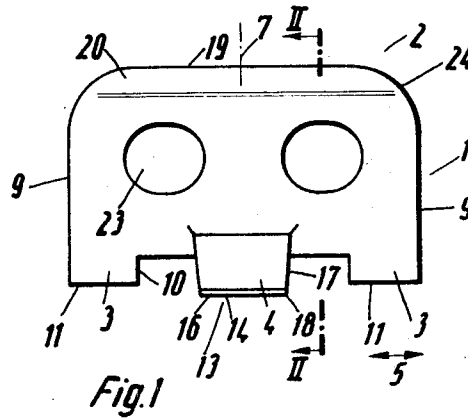
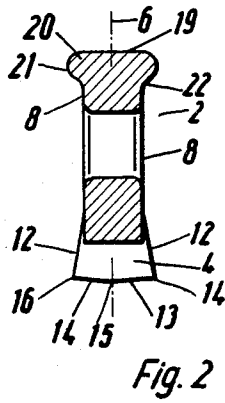
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[54] **WEB MEMBER FOR TIRE PROTECTIVE CHAINS**
21 Claims, 5 Drawing Figs.

[52] U.S. Cl..... **152/243**
 [51] Int. Cl..... **B60c 27/20**
 [50] Field of Search..... **152/243**

ABSTRACT: The invention concerns a weblike traction member for a tire chain which has a weblike body that is apertured for receiving connecting links of the chain and with the roadway engaging edge of the body being provided with protruding regions distributed therealong and with at least one of said regions having inclined lateral walls and sharp edges about the periphery of the face thereof that engages the roadway.





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WEB MEMBER FOR TIRE PROTECTIVE CHAINS

The present invention relates to a web member for tire protective chains with supporting members provided at the bottom side of said web member and extending in longitudinal direction one behind the other, said supporting members forming the bottom running surface while an intermediate supporting member which protrudes beyond the outer supporting members has inclined lateral surfaces which are, for instance, plane surfaces.

It is an object of the present invention to provide a web member of the above-mentioned type which will be so designed that it will also have a sufficient gripping effect on particularly smooth and hard roads.

It is another object of this invention to provide a web member as set forth in the preceding paragraph, which will be suitable for specific fields of employment, as for instance in connection with the mining of potash, minerals, and the like.

These and other objects and advantages of the invention will appear more clearly from the following specification in connection with the accompanying drawing, in which:

FIG. 1 illustrates a view of a web member according to the present invention.

FIG. 2 is a section taken along the line II-II of FIG. 1.

FIG. 3 illustrates a view of a web member somewhat modified over than of FIG. 1.

FIG. 4 is a section taken along the line IV-IV of FIG. 3.

FIG. 5 is a bottom view of the web member of FIG. 3.

The web member according to the present invention which is provided with supporting members arranged at the bottom side of said web member one behind the other while an intermediate supporting member protrudes beyond the outer supporting members and has, for instance, plane lateral surfaces, is characterized primarily in that the said lateral surfaces are inclined so as to taper in a direction away from the bottom toward each other. In this way, the lateral edges of the supporting members will form sharp edges formed by surfaces arranged at an acute angle with regard to each other which in addition to having a high wear resistance will assure a sufficient grip even on smooth and hard ground over which the web member moves. When the bottom surface of the supporting members wears there will, in contrast to heretofore known web members of the type involved, not exist the danger that the edges will become rounded by such wear. Instead the edges form self-sharpening and therefore always sharp edges with the necessary or desired safe gripping effect.

According to another embodiment of the web member according to the invention, which is particularly suitable for tire protective chains of large vehicles and which may have some of the above-mentioned features, a plurality of supporting members, when seen in the longitudinal direction of the web member, have an approximately trapezoidal contour while the bottom running surface is narrower than the thickness of the link member.

Referring now to the drawing in detail, FIG. 1 illustrates a web member 1 according to the invention which has a plate or web-shaped link body 2. The running side of the web member 1 is provided with three supporting members 3, 4 which, when viewed in the longitudinal direction of the web member as indicated by the arrow 5, are located one behind the other. The web member 1 is symmetric not only to its longitudinal central plane 6 but also to a plane 7 perpendicular to said longitudinal central plane 6. The two outer supporting members 3 are thus equally spaced from the intermediate supporting member 4 which as far as the running side of the web member 1 is concerned protrudes beyond the outer supporting members 3 and thereby has a greater gripping effect.

The lateral surfaces 8 of the link body 2 are substantially plane and are parallel to each other. The lateral surfaces of the outer supporting members 3 are located in the plane of the lateral surfaces 8 of the link body 2 while the outer supporting members 3 each have a common end face with the link body

2. The other end face 10 of each outer supporting member 3 is parallel to the end face 9 of the link body 2 so that the outer supporting members 3 in side view as well as in end view have a simple rectangular shape. Those surfaces 11 of the outer supporting members 3 which are located on the running side of the web member 1 are arranged in a common plane which is vertical to the longitudinal central plane 6 and to the plane of symmetry 7.

The lateral surfaces 12 of the intermediate supporting member 4 are inclined toward each other at an acute angle. The lateral surfaces 12 are inclined away from the running surface of the web member 1 and are plane over their entire height and length so that in any state of wear approximately the same conditions are obtained with regard to gripping the road. The distance between the lateral surfaces 12 is so selected that within the range of the lateral surfaces 8 of the link body 2 they protrude beyond the link member 2 in such a way that the supporting member 4 within the range of the link body 2 partially has a greater width than the thickness of the link body 2 and has a high wear resistance at low weight, and small dimensions of the link will be assured. The bottom surface 13 of the supporting member 4 is formed by two individual surfaces 14 which have the same size and form an acute angle with each other in a rooflike manner. The line of intersection of said inclined surfaces 14 is located in the central longitudinal plane 6 of the web member 1 so that a rounding of the bottom running surfaces in view of wear can even be better avoided. The web member which is arranged on a tire protective chain in a kind of netlike manner or the like has in view of its relatively inaccurate connection with the adjacent link members a so-called tilting play which makes it possible for the web member to assume two tilting positions which are oppositely inclined with regard to the driving plane. These two tilting positions are possible under the influence of the axle pressure to be absorbed thereby and pertaining to the motor vehicle so that the web member, i.e. when contacting the road, will not be completely perpendicular to the plane of the road but will be slightly inclined relative thereto. If now the individual surfaces are inclined at an angle corresponding to the tilting positions of the bottom running surface, in each of the two tilting positions of the web member one individual plane of the bottom running surface will be parallel to the plane of the road so that this individual surface will substantially over its entire surface have contact with the road and therefore will wear uniformly. Advantageously, the individual surfaces which are inclined relative to each other at an angle of approximately 170° are symmetrical to the longitudinal central plane of the link whereby for both tilting positions of the web member equal conditions are present and a special arrangement of the web member for the assembly is not required. The individual surfaces 14 are located relative to the adjacent surface 12 of the supporting member 4 at an angle of slightly less than 90° so that the supporting member 4 will have sharp side edges 16.

According to a side view of FIG. 1, the intermediate supporting member 4 has a trapezoidal shape because its plane end surfaces 17 extend relative to the bottom surface 13 at an acute angle so that the magnitude of the bottom running surfaces will be only immaterially changed in view of the wear of the intermediate supporting member. The end faces 17 thus together with the bottom running surface 14 form obtuse angled edges 18. The distance of the intermediate supporting member 4 with regard to the adjacent supporting member 3 amounts to more than half of the longitudinal extension of the intermediate supporting member 4.

As will furthermore be seen from FIGS. 1 and 2, the tire engaging surface 19 of the web member 1 which faces away from the running surface is in order to save the tire formed by a broadened portion 20 of the link body 2 which broadened portion extends approximately over the entire length of the link. The broadened portion 20 has semicircularly rounded lateral surfaces 21 while the tire-engaging surface 19 is plane. The lateral surfaces 21 through concave rounded areas 22 merge

with the lateral surfaces 8 of the link body 2. As will be evident from FIG. 2, the broadened portion 20 of the link body 2 is slightly wider than the intermediate supporting member 4 at its widest portion so that too large tilting movements of the link body will be avoided.

In the link body 2 and symmetrically arranged with regard to the transverse plane 7 there are provided two oblong chain link openings 23 which within the area of their passage through the lateral surfaces 8 of the link body 2 have their diameter rounded and widened. The magnitude of the openings 23 is with regard to the chain portions to be suspended therein and pertaining to a tire protective chain so selected that the web member 1 will be able to tilt in both possible directions perpendicular to its central plane 6 to such an extent that always one of the individual surfaces 14 pertaining to the running surface 13 will be parallel to the ground or driving road when contact with the bottom is established.

The end faces 9 of the link body 2 merge through strong quarter circle roundings 24 with the tire installation surface 19.

With the embodiment shown in FIGS. 3-5 and particularly suitable for tire protective chains for large vehicles, two intermediate supporting members 4a and two outer supporting members 3a are arranged symmetrically with regard to the transverse plane 7a. The lateral surfaces 12a of all supporting members 3a, 4a are inclined toward each other and with regard to the bottom running surfaces 11a, 13a at an angle of 90° while the running surfaces 11a, 13a of all of the supporting members 3a, 4a are located in a common plane for reducing the surface pressure.

The end faces 17a of the intermediate supporting members 4a are inclined with regard to the bottom running surfaces 13a at an acute angle and toward each other. Those end faces 10a of the outer supporting members 3a which are located opposite the end faces 17a are inclined with regard to the running surface of the web member and away from the end faces 17a at an acute angle. The outer end faces 10b of the outer web members 3a are formed by rounded portions 10b rounded over a quarter of a circle.

Due to the fact that the supporting members on all sides have surfaces inclined with regard to the bottom running surface and toward each other, a large casehardened surface is obtained so that the life of the web member will be increased. If the supporting members are worn, between the merging areas of the supporting members in the link bodies hardened surfaces are obtained so that the web member nevertheless has a relatively great wear resistance.

The lateral surfaces 8a of the link body 2a are inclined toward the tire-engaging surface 19a toward each other at an acute angle while the largest distance between the lateral surfaces 8a in the merging area in the supporting members 3a, 4a corresponds to the width of the base thereof. The lateral surfaces 8a thus within the area of the gaps 25 between the supporting members 3a, 4a merge through sharp edges 26 which means surfaces which are at an acute angle with each other, with the bottom surfaces of the gaps 25. As a result thereof, also the web member according to the invention will even after the supporting members have worn, still have a relatively good grip because in this instance the bottom running surface together with the lateral surfaces forms sharp edges. The tire engaging surface 19a is according to the cross section of FIG. 4 rounded over a portion of a circle. The rounded areas 27 are also provided at the merging areas between the end faces 9a and the lateral surfaces 8a. These rounded areas 27 are guided by the outer supporting members 3a into the rounded tire engaging surfaces 19a. The lateral surfaces of the separating web 28 which pertains to the link body 2a and is located between the chain link openings 23a are arranged in the plane of the respective associated lateral surface 8a of the link body 2a so that the lateral surfaces of the separating web 28 likewise gradually merge with the tire-engaging surface 19a.

The web member according to the embodiment of FIGS. 3-5 has a good gripping effect and lateral stability when being employed on soft roads or the like.

It is, of course, to be understood that the present invention is, by no means, limited to the particular showing in the drawing but also comprises any modifications within the scope of the appended claims.

I claim:

1. A weblike traction member adapted for use in a tire chain and comprising: a weblike body which is apertured to receive connecting links of the chain so the body is supported in such a manner than it is presented edgewise to a roadway when the chain is mounted on a tire, said body on its roadway-engaging side having support portions protruding therefrom and spaced along the body in the longitudinal direction thereof, and at least one intermediate support member protruding from the said roadway-engaging side of said body and having lateral surfaces which are inclined toward each other in a direction away from said road-engaging side of said body.

2. A traction member according to claim 1, in which said lateral surfaces incline relative to the central longitudinal plane of the body which passes through said roadway-engaging side of said body.

3. A traction member according to claim 2, in which said lateral surfaces protrude laterally outwardly beyond the lateral surfaces of said body and at the region of greatest width of said intermediate support member are spaced apart laterally about one and one-half times the lateral width of the said body.

4. A traction member according to claim 3, in which the roadway-engaging side of said support member is formed by two plane surfaces parallel to the length of said body and converging in a direction facing away from said body.

5. A traction member according to claim 4, in which the said plane surfaces on the roadway-engaging side of said intermediate support member are each inclined to the said central longitudinal plane of said body at such an angle that each will be parallel to the roadway in a respective tilted position of said body.

6. A traction member according to claim 4, in which the said plane supporting surfaces on the roadway-engaging side of said intermediate support member are symmetrically arranged with respect to said central longitudinal plane of said body and have an included angle of about 170° therebetween.

7. A traction member according to claim 2, in which said intermediate support member includes end faces extending transversely to the length of said body and converging in a direction toward the roadway-engaging side of said body.

8. A traction member according to claim 7, in which the roadway-engaging side of said intermediate support member defines a sharp edge with each of the said lateral surfaces and end faces of said intermediate support member.

9. A traction member according to claim 8, in which said support portions when viewed in a direction longitudinally of said body and also when viewed laterally thereof are substantially rectangular and are about equal in lateral width to the lateral width of said body.

10. A traction member according to claim 9, in which said body has a said support portion near each end thereof and said intermediate support member is located in about the middle of the length of said body, the spacing between said support member and each of said support portions being less than the longitudinal length of said support member but greater than one-half the length thereof.

11. A traction member according to claim 10, in which said body on the side opposite the roadway-engaging side thereof has a tire engaging surface, said body being laterally widened at said tire engaging surface.

12. A traction member according to claim 11, in which the laterally widened region of said body on the tire engaging side thereof is rounded at its side edges.

13. A traction member according to claim 11, in which the widened tire engaging region of said body is at least as wide as the greatest width of said intermediate support member.

14. A traction member according to claim 2, in which the body has end faces substantially perpendicular to the length of the body, and also has a tire engaging surface substantially

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parallel with the length of the body on the side of the body opposite the roadway-engaging side thereof, the corners of said body at the juncture of said tire engaging surface with said end surfaces being rounded.

15. A traction member according to claim 1, in which the said body is provided with two longitudinally spaced apertures for receiving chain links of the tire chain, said apertures being elongated in the direction of the length of said body and being symmetrically located with respect to the longitudinal center of said traction member.

16. A traction member according to claim 1, in which said body has the said support portions located at the opposite ends thereof and a plurality of said support members distributed along said body between said support portions, each of said support members and support portions when viewed in the direction of the length of said body being a substantially trapezoidal contour with the roadway-engaging side substantially narrower than the base side which is adjacent said body.

17. A traction member according to claim 16, in which all of said support portions and support members have their outer

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roadway-engaging ends substantially coplanar

18. A traction member according to claim 17, in which the lateral surfaces of said support portions and support members form an included angle of about 90° therebetween.

19. A traction member according to claim 18, in which the lateral width of the base side of each of said support portions and support members is greater than three times the width of the roadway-engaging side thereof.

20. A traction member according to claim 19, in which the lateral sides of said body taper inwardly toward the tire engaging side thereof.

21. A traction member according to claim 20, in which said body has end faces substantially perpendicular to the length of said body, and the end corners of said body adjacent said support portions being rounded off to about a quarter circle when viewed from the side of the body and merging the roadway-engaging sides of said support portions with said end faces of said body.

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