

Crawler track or crawler track segment

The invention relates to a crawler track for a crawler tracked vehicle according to the preamble of claim 1. A
5 crawler track of this kind is known from DE 602 19 697 T2.

The crawler track in DE 602 19 697 T2 has a plurality of guide horns arranged behind one another on the
10 central longitudinal axis of its inner wheel contact side. These guide horns form a virtually continuous wall which fits into the hollows formed in the drive wheel, the idler and the bogie wheels. The fit of the guide horns in the hollows enables the crawler track to
15 be guided during movement of the crawler track vehicle. In addition, the crawler track in DE 602 19 697 T2 has a plurality of projections, which are referred to as traction pegs and are arranged along each side of the crawler track. These traction pegs are designed in such
20 a manner that they engage in a fitting manner with corresponding hollows in the drive wheel. They thereby guarantee the transfer of power from the engine of the crawler tracked vehicle to the crawler track. Between the guide horns and the traction pegs is located a flat
25 running surface on which the bogie wheels of the crawler tracked vehicle run and support the weight of the crawler tracked vehicle.

Even if this crawler track works well, it nevertheless
30 has the disadvantage that it is relatively heavy and reduces the agility of the crawler tracked vehicle due to its high inertia.

The problem addressed by the invention is therefore
35 that of providing a crawler track in which the disadvantages described above are removed or at least mitigated.

This problem is solved by a crawler track or a crawler track segment as claimed in claim 1. Advantageous embodiments of this crawler track or this crawler track segment are indicated in the dependent claims.

5

The present invention relates both to a crawler track and also to a crawler track segment. This means that all the features and properties described below can be applied both to a continuous, self-contained crawler track, and also to a crawler track segment of a segmentable crawler track. For easier reading, the comments below will relate only to the embodiment in the case of a crawler track, although this does not mean that these embodiments cannot also be applied in the case of a crawler track segment.

According to the invention, cavities are provided in the flat surface on the inner wheel contact side of the crawler track or the crawler track segment for the engagement of drive pegs of the drive wheel. In this way, the traction pegs customary hitherto in the state of the art can be dispensed with. This leads to a weight saving compared with the state of the art and therefore to a lighter, more agile track, which can therefore be accelerated more easily. This represents a great advantage compared with a conventional crawler track with traction pegs, particularly when starting and braking the crawler tracked vehicle.

According to a preferred embodiment of the present invention, the crawler track exhibits cavities in the form of holes. This means that the cavities penetrate the crawler track from the wheel contact side to the ground contact side. The configuration of the cavities in the form of holes has the advantage that drive pegs of the drive wheel which are relatively large or tall in design can engage particularly deeply with the flat surface on the inner wheel contact side of the crawler

track. This is advantageous, particularly during the starting and sharp acceleration of the crawler tracked vehicle, as a deep engagement of this kind means that a high torque can be transferred from the drive wheel to the crawler track.

However, it may also be advantageous if the crawler track only exhibits cavities that do not penetrate as far as the ground contact side from the wheel contact side. The advantage of this is high structural integrity of the crawler track. It is particularly advantageous, however, if the crawler track has both cavities in the form of holes and also cavities which do not penetrate as far as the ground contact side from the wheel contact side. This means that both a high torque transmission and also a high structural integrity of the crawler track are achieved. In addition, the non-penetrating cavities in conjunction with smaller or lower drive pegs of the drive wheel effectively support the propulsion of the crawler tracked vehicle, particularly when traveling faster (without greater acceleration).

The cavities not penetrating as far as the ground contact side preferably exhibit the shape of channels which have at least one directional component perpendicular to the longitudinal axis of the crawler track. The channels are therefore oriented obliquely to the longitudinal axis of the crawler track. It is particularly advantageous if the channels are oriented perpendicularly to the longitudinal axis of the crawler track, as in this case the power transmission to the crawler track is maximal.

The channels may run over a part or parts of the entire width of the crawler track. It is particularly advantageous, however, if the channels extend between the guide horns over the entire width of the crawler

track. This means, on the one hand, that the driving force can be distributed onto the entire width of the crawler track via correspondingly wide drive pegs of the drive wheel, said drive pegs engaging with the channels, which helps prevent slippage, particularly during starting and acceleration. On the other hand, yet another positive synergy effect is also achieved however, as the crawler track becomes thinner in the region of the channels, which results in easier bendability of the crawler track in the region of the channels. This means that the crawler track can run via the drive wheel and the idler more easily without any great resistance where the deflection angle of the crawler track is greatest.

According to a particularly preferred embodiment of the invention, one or a plurality of holes is/are connected at the level of the gap between two guide horns on the one side alongside the central longitudinal axis of the crawler track via one of the channels described above to one or a plurality of holes at the level of the gap between these two guide horns on the other side alongside the central longitudinal axis of the crawler track. Since the holes lie on a line with the channels, the bendability of the track is increased still further in this region, so that in addition to the great agility of the crawler track due to the weight saving, optimum rollability of the crawler track via the drive wheel and the idler also results.

The crawler track is produced substantially of polymer, preferably elastic materials such as rubber and/or other elastomers. For structural reinforcement of the crawler track or segments thereof, inserts made of metal and/or fabric are preferably incorporated.

Metal strips are preferably incorporated between the holes parallel to the central longitudinal axis of the

crawler track into the flat surface and into the perforated wall. This measure means that the service life of the crawler track according to the invention can be significantly increased, since the load of the surfaces in the engagement region of the longer drive
5 pegs of the drive wheel engaging with the holes is particularly high, on account of the particularly great torque load.

10 Running cams or running ribs are preferably arranged on the outer ground contact side of the crawler track, which can be optimized depending on form for traction between the crawling track and the base and/or to protect the base surface (road).

15 According to a further preferred embodiment of the present invention, the lateral side of the guide horns pointing to the longitudinal axis of the vehicle is chamfered in the upper region at the front and/or back.
20 In this way, the tendency of the crawler track to be thrown when transverse forces act on the running wheels (so particularly during quick cornering) can be reduced.

25 Further advantageous embodiments and improvements of the invention result from the description below of preferred exemplary embodiments of the invention. It is pointed out that the invention also comprises further embodiments which result from the combination of
30 features listed separately in the patent claims and/or in the description and the figures.

The invention is explained in greater detail below with the help of its advantageous embodiments with reference
35 to the drawings.

In the drawings:

Figure 1 shows a plan view of a preferred embodiment of a crawler track segment according to the invention,

5 Figure 2 shows a bottom view of the crawler track segment depicted in Figure 1,

Figure 3 shows a sectional view of the crawler track segment depicted in Figure 1 along the
10 sectional line C-C depicted in Figure 1,

Figure 4 shows a sectional view of the crawler track segment depicted in Figure 1 along the
15 sectional line B-B depicted in Figure 1,

Figure 5 shows a sectional view of the crawler track segment depicted in Figure 1 along the
sectional line or partial side view line A-A depicted in Figure 1,

20 Figure 6 shows a sectional view of the crawler track segment depicted in Figure 1 along the sectional line D-D depicted in Figure 1,

25 Figure 7 shows a sectional view of the crawler track segment depicted in Figure 1 along the sectional line E-E depicted in Figure 1 and

Figure 8 shows a side view of the deployment of a
30 crawler track according to the invention on a crawler tracked vehicle with a drive wheel, bogie wheels and idler.

Figure 8 shows a crawler track 10 according to the
35 invention being deployed on a crawler track vehicle 100. The crawler track 10 is set up to run via a drive wheel 110, via bogie wheels 120 and an idler 130.

As can be seen from the different views and sectional views in Figures 1 to 7, the crawler track 10 or the crawler track segment 1 has an outer ground contact side 2 and an inner wheel contact side 3. The inner
5 wheel contact side 3 exhibits a flat surface 4, from which a plurality of guide horns 5 projects to guide the crawler track 10 or the crawler track segment 1 during the movement of the crawler tracked vehicle 100. At least parts of the flat surface 4 serve as the
10 running surface for the bogie wheels 120. In the flat surface 4, cavities 6, 6a, 6b are provided for the engagement of drive pegs 111 of the drive wheel 110.

The guide horns 5 are arranged on the central
15 longitudinal axis of the crawler track 10 or of the crawler track segment 1. The flat surface 4 extends over the entire width of the crawler track 10 or of the crawler track segment 1.

20 The crawler track segment 1 in Figures 1 to 7 exhibits cavities in the form of holes 6A which penetrate the crawler track segment 1 from the wheel contact side 3 as far as the ground contact side 2. The holes 6A exhibit a substantially rectangular cross section in
25 the plan view. The hole edges running perpendicular to the central longitudinal axis of the crawler track segment 1 are chamfered, so that the drive pegs 111 of the drive wheel 110 can engage with the holes 6A during the rolling process of the crawler track segment 1 on
30 the drive wheel 110.

In addition, the crawler track segment 1 exhibits cavities 6B which do not penetrate as far as the ground contact side 2 from the wheel contact side 3. These
35 cavities 6B are in the form of channels which are oriented perpendicular to the longitudinal axis of the crawler track segment 1. The channels 6B run between the guide horns 5 over the entire width of the crawler

track segment 1. In this case, a hole 6A is connected in each case at the level of the gap between two guide horns 5 on the one side alongside the central longitudinal axis of the crawler track segment 1 via a channel 6B to a hole 6A in each case at the height of the gap between these two guide horns 5 on the other side alongside the central longitudinal axis of the crawler track segment 1. It is also possible, however, for two or more holes 6A to be arranged at the level of the gap between two guide horns 5 on one side alongside the central longitudinal axis of the crawler track segment 1 and these holes 6A are aligned with the channel 6B. In addition, it is also possible for the holes 6A not to be at the level of the gap between two guide horns 5, but between the channels 6B at the level of the guide horns 5. A combination of these two arrangement possibilities of the holes 6A is also possible, wherein it is advantageous when the holes 6A are arranged at the level of the gaps between two guide horns 5 and the holes 6A at the level of the guide horns 5 are arranged offset laterally to one another.

Running ribs 20 are arranged on the outer ground contact side 2, which are optimized for improved traction and/or to protect the base surface. The crawler track segment 1 is substantially made of polymer, preferably of elastic materials such as rubber and/or other elastomers. Inserts 9 made of metal and/or fabric are incorporated into the crawler track segment 1 for structural reinforcement. The inserts or reinforcing means 9 may be in the form of cables, fibers, metal sheets, and/or other formed components.

As shown in the middle in Figure 3 by way of example, metal strips 7 can be incorporated into the flat surface 4 and the perforated wall 8 between the holes 6A parallel to the central longitudinal axis of the crawler track segment 1.

As can be seen from Figures 1 and 5, the lateral side of the guide horns 5 pointing towards the longitudinal axis of the vehicle may be chamfered in the upper region at the front and/or back.

5

The channels described above may, but need not, be completely used for the drive, both in terms of the number of channels and also the length thereof. In this way, individual channels can be left out of the drive design entirely; with other channels, in turn, only the inner part (between hole 6A and the guide horn 5), for example, or only the outer part (from the hole 6A to the outer edge of the crawler track segment 1) can be used for the drive.

15

Even if the present invention is not limited to completely dispensing with traction pegs on the inner wheel contact side 3 of the crawler track 10, it still remains to be established that the crawler track 10 according to the invention or else the crawler track segment 1 according to the invention still functions even without any traction pegs or other projections from the running surface.

20

List of reference numbers

- 1 Crawler track segment
- 2 Outer ground contact side (of 1)
- 3 Inner wheel contact side (of 1)
- 4 Flat surface (of 3)
- 5 Guide horn
- 6 Cavity (in 4)
- 6A Hole
- 6B Channel
- 7 Metal strip
- 8 Perforated wall (of 6A)
- 9 Insert
- 10 Crawler track
- 20 Running cam or running rib
- 100 Crawler track vehicle
- 110 Drive wheel
- 111 Drive peg (of 110)
- 120 Bogie wheel
- 130 Idler

Patent claims

1. A crawler track (10) or crawler track segment (1)
for a crawler tracked vehicle (100) which is
5 suitable for running via a drive wheel (110) and
via bogie wheels (120),
wherein the crawler track or the crawler track
segment has an outer ground contact side (2) and
an inner wheel contact side (3),
10 wherein the inner wheel contact side (3) exhibits
a flat surface (4), from which a plurality of
guide horns (5) projects to guide the crawler
track or the crawler track segment during the
movement of the crawler tracked vehicle,
15 wherein at least parts of the flat surface (4)
serve as the running surface for the bogie wheels
(120),
characterized in that
in the flat surface (4), cavities (6, 6a, 6b) are
20 provided for the engagement of drive pegs (111) of
the drive wheel (110)
wherein the crawler track or crawler track segment
exhibits cavities (6B) that do not penetrate as
far as the ground contact side (2) from the wheel
25 contact side (3),
wherein the cavities (6B) are in the form of
channels which are oriented perpendicular to the
longitudinal axis of the crawler track or the
crawler track segment, and
30 wherein the channels (6B) extend between the guide
horns (5) over the entire width of the crawler
track or crawler track segment.
2. The crawler track or crawler track segment as
35 claimed in claim 1,
wherein the guide horns (5) are arranged on the
central longitudinal axis of the crawler track or
of the crawler track segment.

3. The crawler track or crawler track segment as claimed in one of the preceding claims,
wherein the flat surface (4) extends over the entire width of the crawler track or of the crawler track segment.
4. The crawler track or crawler track segment as claimed in one of the preceding claims,
wherein the crawler track or crawler track segment exhibits cavities in the form of holes (6A) which penetrate the crawler track or the crawler track segment from the wheel contact side (3) as far as the ground contact side (2).
5. The crawler track or crawler track segment as claimed in claim 4,
wherein one or a plurality of holes (6A) is/are connected at the level of the gap between two guide horns (5) on the one side alongside the central longitudinal axis of the crawler track or crawler track segment via one of the channels (6B) to one or a plurality of holes (6A) at the level of the gap between these two guide horns (5) on the other side alongside the central longitudinal axis of the crawler track or the crawler track segment.
6. The crawler track or crawler track segment as claimed in one of the preceding claims,
wherein the crawler track or crawler track segment is produced substantially of polymer, preferably elastic materials such as rubber and/or other elastomers, in which inserts (9) made of metal and/or fabric are preferably incorporated for structural reinforcement.
7. The crawler track or crawler track segment as claimed in claim 6,

5 wherein metal strips (7) are incorporated into the flat surface (4) and into the perforated wall (8) between the holes (6A) parallel to the central longitudinal axis of the crawler track or the crawler track segment.

10 8. The crawler track or crawler track segment as claimed in one of the preceding claims, wherein running cams or running ribs (20) are arranged on the outer ground contact side (2).

15 9. The crawler track or crawler track segment as claimed in one of the preceding claims, wherein the lateral side of the guide horns (5) pointing to the longitudinal axis of the vehicle is chamfered in the upper region at the front and/or back.