

SPROCKET WHEEL ASSEMBLY, POLYMERIC TRACK SYSTEM HAVING
SAME AND METHOD FOR ADJUSTING A COUPLER OF A
TRANSMISSION SYSTEM

REFERENCE TO RELATED APPLICATION

- 5 [0001] The present application claims priority to United States Provisional Patent Application No. 63/153,293, filed February 24, 2021 entitled “*Sprocket Assembly Having a Removable Part for Granting Access to a Transmission Coupler*”, which is incorporated by reference herein in its entirety.

TECHNICAL FIELD

- 10 [0002] The present technology generally relates to sprocket wheel assemblies and track systems comprising same, polymeric track systems and track systems comprising same, and methods for adjusting a coupler of a transmission system.

BACKGROUND

- [0003] Certain vehicles, such as, for example, military vehicles (e.g., tanks),
15 agricultural vehicles (e.g., harvesters, combines, tractors, etc.) and construction vehicles (e.g., bulldozers, front-end loaders, etc.), are used to perform work on ground surfaces that are soft, slippery and/or uneven (e.g., soil, mud, sand, ice, snow, etc.)

- [0004] In some instances, these vehicles can be equipped with track systems to increase traction when compared to tires. Sometimes, these vehicles can be equipped with
20 steel track systems. These steel track systems can be heavy, energy-consuming and can have long down-time periods for various activities, such as maintenance.

- [0005] These steel track systems can sometimes be replaced with polymeric track systems, which can be lighter and more energy efficient. To replace the steel track systems with polymeric track systems, their sprocket wheel assemblies (i.e., left and right sides)
25 have to be replaced. Sprocket wheel assemblies designed for polymeric track systems can be larger than sprocket wheel assemblies for steel track systems. This can result in the

sprocket wheel assembly of a polymeric track obstructing a coupler of a transmission system from moving between engaging and disengaging positions.

[0006] In view of the foregoing, there is a need for a sprocket wheel assembly that addresses at least some of these drawbacks.

5 SUMMARY

[0007] It is an object of the present technology to ameliorate at least some of the inconveniences present in the prior art.

[0008] According to one aspect of the present technology, there is provided a sprocket wheel assembly for a polymeric track system. The sprocket wheel assembly
10 includes a sprocket wheel body and a sprocket wheel removable part. The sprocket wheel body includes a hub portion, an intermediate portion extending radially from the hub portion, and a rim portion connected to the intermediate portion. The rim portion has a plurality of engaging members and a connecting section. The rim portion defines a cavity generally aligned with the connecting section. The sprocket wheel removable part is at least
15 partially receivable in the cavity, and is selectively connectable to the sprocket wheel body at the connecting section.

[0009] In some embodiments, at least one of the sprocket wheel body and the sprocket wheel removable part comprises a positioner for positioning the sprocket wheel body relative to the sprocket wheel removable part.

20 [0010] In some embodiments, the positioner assists in transferring load from the sprocket wheel removable part to the sprocket wheel body.

[0011] In some embodiments, the plurality of engaging members extends generally parallel to a rotation axis of the sprocket wheel body.

[0012] In some embodiments, the sprocket wheel removable part includes at least
25 one engaging member similar to the plurality of engaging members, such that when the sprocket wheel removable part is connected to the sprocket wheel body, the engaging

members of the sprocket wheel body and the engaging members of the sprocket wheel removable part are continuous.

[0013] In some embodiments, the connecting section and the cavity are defined between two engaging members, such that the sprocket wheel removable part is receivable
5 between two engaging members.

[0014] In some embodiments, the sprocket wheel removable part is a first sprocket wheel removable part, and the sprocket wheel assembly further includes a second sprocket wheel removable part.

[0015] In some embodiments, the sprocket wheel removable part is a first sprocket
10 wheel removable part, the connecting section is a first connecting section, the sprocket wheel assembly further includes a second sprocket wheel removable part and the sprocket wheel body further includes a second connecting section for selectively at least partially receiving the second sprocket wheel removable part.

[0016] In some embodiments, the sprocket wheel assembly is a replacement for a
15 sprocket wheel assembly for a track system.

[0017] In some embodiments, the track system is a metallic track system.

[0018] In some embodiments, when the sprocket wheel removable part is connected to the sprocket wheel body, the sprocket wheel body is configured to at least partially obstruct a coupler of a transmission of a vehicle, thereby preventing the coupler
20 from moving between an engaging position and a disengaging position. When the sprocket wheel removable part is disconnected from the connecting section and the cavity is aligned with the coupler, the sprocket wheel body is configured to provide clearance for the coupler to move between the engaging position and the disengaging position.

[0019] In some embodiments, the sprocket wheel removable part is complementary
25 to the sprocket wheel body.

[0020] In some embodiments, the sprocket wheel removable part is mechanically interlocked to the sprocket wheel body.

[0021] In some embodiments, the cavity is sized to provide an extra margin of clearance for manipulating the coupler.

[0022] According to another aspect of the present technology, there is provided a polymeric track system for a vehicle including a support frame, the sprocket wheel assembly according to the above aspect or according to the above aspect and one or more of the above embodiments operatively connected to the support frame, a plurality of support wheel assemblies operatively connected to the support frame, and a polymeric endless track surrounding the support frame, the sprocket wheel assembly, the idler wheel assembly and the plurality of idler wheel assemblies.

10 [0023] In some embodiments, the polymeric endless track has a plurality of lugs on an inner surface, and the plurality of lugs are configured to be received in a plurality of recesses defined in the sprocket wheel assembly.

[0024] According to another aspect of the present technology, there is provided a vehicle including a chassis, a transmission system and at least two of the polymeric track systems according to the above aspect or according to the above aspect and one or more of the above embodiments. The motor is supported by the chassis. The transmission system includes a driving axle and a coupler. The driving axle is selectively operatively connected to the motor by moving the coupler to an engaging position, and the driving axle is selectively operatively disconnected from the motor by moving the coupler to a disengaging position. The at least two polymeric track systems are operatively connected to the motor via the transmission system. When the sprocket wheel removable part is connected to the sprocket wheel body, the sprocket wheel assembly at least partially obstructs the coupler from moving between the engaging and disengaging positions. When the sprocket wheel removable part is disconnected from the sprocket wheel body and the cavity is generally aligned with the coupler, the coupler is accessible to be adjusted between the engaging and disengaging positions.

[0025] In some embodiments, the coupler is a transmission gear shaft.

[0026] In some embodiments, the vehicle is a military vehicle.

[0027] According to another aspect of the present technology, there is provided a method for adjusting a coupler of a transmission system of a vehicle between an engaging position and a disengaging position, where the coupler is at least partially prevented from being adjusted between the engaging position and the disengaging position by a sprocket wheel assembly having an sprocket wheel body defining a cavity, and a sprocket wheel removable part selectively receivable in a connecting section of the sprocket wheel body. The method includes rotating the sprocket wheel assembly about a rotation axis until the sprocket wheel removable part is generally aligned with the coupler, selectively disconnecting the sprocket wheel removable part from the sprocket wheel body for providing access to the coupler, and moving the coupler from the engaging position to the disengaging position.

[0028] In the context of the present specification, unless expressly provided otherwise, the words “first”, “second”, “third”, etc. have been used as adjectives only for the purpose of allowing for distinction between the nouns that they modify from one another, and not for the purpose of describing any particular relationship between those nouns.

[0029] It must be noted that, as used in this specification and the appended claims, the singular form “a”, “an” and “the” include plural referents unless the context clearly dictates otherwise.

[0030] As used herein, the term “about” in the context of a given value or range refers to a value or range that is within 20%, preferably within 10%, and more preferably within 5% of the given value or range.

[0031] As used herein, the term “and/or” is to be taken as specific disclosure of each of the two specified features or components with or without the other. For example, “A and/or B” is to be taken as specific disclosure of each of (i) A, (ii) B and (iii) A and B, just as if each is set out individually herein.

[0032] For purposes of the present application, terms related to spatial orientation when referring to a vehicle and components in relation to the vehicle, such as “vertical”,

“horizontal”, “forwardly”, “rearwardly”, “left”, “right”, “above” and “below”, are as they would be understood by a driver of the vehicle sitting thereon in an upright driving position, with the vehicle steered straight-ahead and being at rest on flat, level ground.

[0033] Implementations of the present technology each have at least one of the
5 above-mentioned objects and/or aspects, but do not necessarily have all of them. It should be understood that some aspects of the present technology that have resulted from attempting to attain the above-mentioned object may not satisfy this object and/or may satisfy other objects not specifically recited herein.

[0034] Additional and/or alternative features, aspects, and advantages of
10 implementations of the present technology will become apparent from the following description, the accompanying drawings, and the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0035] For a better understanding of the present technology, as well as other aspects
and further features thereof, reference is made to the following description which is to be
15 used in conjunction with the accompanying drawings, where:

[0036] Figure 1A is a perspective view of a sprocket wheel assembly according to an embodiment of the prior art interfering with a coupler of a transmission system;

[0037] Figure 1B is close-up side elevation view of the sprocket wheel assembly of Figure 1;

20 [0038] Figure 2 is a schematic perspective view taken from a top, rear, left side of a vehicle having a track system according to an embodiment of the present technology;

[0039] Figure 3 is a close-up left side elevation of part of the vehicle of Figure 2;

[0040] Figure 4 is a partially exploded perspective view taken from a bottom, rear, left side of a sprocket wheel assembly of the vehicle of Figure 2;

[0041] Figure 5 is an exploded perspective view of the sprocket wheel assembly of Figure 4;

[0042] Figure 6 is a perspective view taken from a top of the sprocket wheel assembly of Figure 4;

5 [0043] Figure 7 is a perspective view taken from a rear, left side of the sprocket wheel assembly of Figure 4;

[0044] Figure 8 is a perspective view taken from a top of the sprocket wheel assembly of Figure 4 with a sprocket wheel removable part being omitted;

10 [0045] Figure 9 is a perspective view taken from a bottom of the sprocket wheel removable part of the sprocket wheel assembly of Figure 4;

[0046] Figure 10 is an exploded perspective view of a sprocket wheel assembly according to an alternate embodiment of the present technology; and

15 [0047] Figure 11 is a close-up perspective view taken from a top, rear, left side of the sprocket wheel assembly of Figure 10 with a coupler of a transmission system being in a disengaging position.

DETAILED DESCRIPTION

[0048] The present disclosure is not limited in its application to the details of construction and the arrangement of components set forth in the following description or illustrated in the drawings. The disclosure is capable of other embodiments and of being
20 practiced or of being carried out in various ways. Also, the phraseology and terminology used herein is for the purpose of description and should not be regarded as limiting. The use of “including”, “comprising”, or “having”, “containing”, “involving” and variations thereof herein, is meant to encompass the items listed thereafter as well as, optionally, additional items. In the following description, the same numerical references refer to
25 similar elements.

[0049] Referring to Figures 2 to 4, the present technology will be described with reference to a vehicle 20, partially shown schematically in Figure 2. The vehicle 20 is a military vehicle. More precisely, the vehicle 20 is a tank. It is contemplated that the vehicle 20 could be another vehicle such as an agricultural vehicle or an industrial vehicle. The vehicle 20 has a chassis 22 (shown schematically) which supports a motor 24 (shown schematically). The vehicle 20 further includes a transmission system 25 having a driving axle 26 and a coupler 28. In some embodiments, the coupler 28 is a transmission gear shaft. The driving axle 26 is selectively operatively connected to the motor 24 by the coupler 28. More precisely, the coupler 28 can be moved between an engaging position and a disengaging position. As will be described in greater detail below, the coupler 28 is moveable between the engaging and disengaging positions by moving generally laterally to the vehicle 20. In the engaging position, the coupler 28 engages the motor 24 to the driving axle 26, such that the driving axle 26 is driven by the motor 24. In the disengaging position, the coupler 28 disengages the motor 24 from the driving axle 26, such that the driving axle 26 is no longer driven by the motor 24 (i.e., driving axle 26 is free to rotate about a rotation axis).

[0050] The vehicle 20 is a tracked vehicle, such that the vehicle 20 has left and right track systems 30 that are operatively connected to, respectively, the left and right sides of the vehicle 20. In some embodiments, the vehicle 20 was originally provided with steel track systems, which have been replaced with polymeric track systems according to the present technology. Since the left and right track systems 30 are generally similar (symmetrical about a longitudinal plane passing through a center of the vehicle 20), only the left track system 30 (shown in Figure 2) will be described herewith.

[0051] The track system 30 includes a support frame 32 (shown schematically) that is operatively connected to vehicle 20.

[0052] The track system 30 also includes a plurality of wheel assemblies. More specifically, the plurality of wheel assemblies includes a sprocket wheel assembly 34 and a plurality of support wheel assemblies 36. The sprocket wheel assembly 34 is operatively connected to both the support frame 32 and the drive axle 26. The sprocket wheel assembly

34 will be described in greater detail below. The plurality of support wheel assemblies 36 are operatively connected to the support frame 32. Although only two support wheel assemblies 36 are shown in Figure 2, it is understood that the track system 30 could include additional support wheel assemblies. Furthermore, in some embodiments, one or more of the support wheel assembly 36 could be an idler wheel assembly.

[0053] The track system 30 further includes a polymeric endless track 40. The polymeric endless track 40 has an inner surface 42 that is configured to engage with portions of the sprocket wheel assembly 34 and portions of the support wheel assemblies 36. Projecting from the inner surface 42, the polymeric endless track 40 has central lugs 44 and lateral lugs 46. The central and lateral lugs 44, 46 are configured to be drivingly engaged by the sprocket wheel assembly 34, as will be described in greater detail below. In some embodiments, the central lugs 44 and/or the lateral lugs 46 could be configured to guide the endless track 40. It is contemplated that in some embodiments, the configuration of the endless track 40 could be different. For instance, there could be only one of the central and lateral lugs 44, 46. The polymeric endless track 40 also has an outer surface 48 that is configured to engage the ground. Projecting from the outer surface 48, the polymeric endless track 40 has traction lugs 50 for engaging the ground. It is understood that the polymeric endless track 40 could have some different features without departing from the scope of the present technology.

[0054] The track system 30 also includes a tensioner (not shown) for adjusting a tension in the polymeric endless track 40. The tensioner adjusts the tension in the polymeric endless track 40 by moving a position of an idler wheel assembly relative to the support frame 32.

[0055] Referring to Figures 5 to 9, an embodiment of the sprocket wheel assembly 34 will now be described in greater detail. In some embodiments, the sprocket wheel assembly 34 replaces a sprocket wheel assembly of the steel track system. When the sprocket wheel assembly 34 is operatively connected to the support frame 32 and the driving axle 26, the sprocket wheel assembly 34 can partially obstruct the coupler 28, as

shown in Figure 3, thereby preventing the coupler 28 from moving between the engaging and disengaging positions.

[0056] Indeed, as shown in Figures 1A and 1B, according to the prior art, when a conventional sprocket wheel assembly 34' designed for polymeric track systems is used to replace sprocket wheel assemblies for steel track systems, the sprocket wheel assembly 34' obstructs the coupler 28 from moving between the engaging and disengaging positions. In such prior art embodiments, to move the coupler 28 between the engaging and disengaging positions, the sprocket wheel assembly 34' has to be fully disconnected and removed from the driving axle 26 and the support frame 32, so as to not obstruct the coupler 28. It is understood that disconnecting and removing the sprocket wheel assembly 34' increases down-time of the vehicle.

[0057] As will be described below, according to the present technology, the sprocket wheel assembly 34 is configured to enable the coupler 28 to move between the engaging and disengaging positions without requiring the whole sprocket wheel assembly 34 to be disconnected from the driving axle 26 and the support frame 32.

[0058] As shown at least in Figure 5, the sprocket wheel assembly 34 includes sprocket wheel bodies 100, 101 connected to one another and a sprocket wheel removable part 102 that is selectively connectable to the sprocket wheel body 100. The sprocket wheel bodies 100, 101 are generally similar, thus only the sprocket wheel body 100 will be described herewith. It is contemplated that in some embodiments, the sprocket wheel body 101 could be omitted. As will be described below, it is contemplated that in some embodiments of the present technology, the sprocket wheel assembly 34 could have two or more sprocket wheel removable parts 102.

[0059] Focusing first on the sprocket wheel body 100, the sprocket wheel body 100 has a hub portion 110, an intermediate portion 112 and a rim portion 114.

[0060] The hub portion 110 defines a hub aperture 111 that is configured to receive the driving axle 26 therein. The hub aperture 111 defines a rotation axis 104, about which

the sprocket wheel assembly 34 is configured to rotate. In the present embodiment, the rotation axis 104 is generally aligned with the driving axle 26.

[0061] The intermediate portion 112 extends radially away from the hub portion 110, and includes a plurality of spokes. It is contemplated that in some embodiments, the intermediate portion 112 could have on single spoke, instead of multiple spokes.

[0062] The rim portion 114, which is connected to the intermediate portion at an end opposite to the hub portion 110, has a plurality of circumferentially spaced engaging members 120 (i.e., teeth) that extend generally parallel to the rotation axis 104. The sprocket wheel body 100 further defines a plurality of recesses 122. More specifically, recesses 122 are defined between two adjacent engaging members 120. The engaging members 120 and the recesses 122 are configured to engage with the lateral lugs 46, such that the recesses 122 are configured to receive the lateral lugs 46 therein. It is contemplated that in some embodiments of the present technology, the configuration of the sprocket wheel body 100 could be different. For example, in some embodiments, the engaging members 120 could extend in a radial direction instead of a lateral direction. In some other embodiments, the engaging members 120 and the recesses 122 could be configured to engage with the central lugs 44.

[0063] The rim portion 114 has a connecting section 130, which enables the sprocket wheel removable part 102 to be connected to the sprocket wheel body 102 in a continuous manner. The rim portion 114 defines a cavity 132 at the connecting section 130. As will be described in greater detail below, the cavity 132 provides clearance, thereby enabling the coupler 28 to move between the engaging and disengaging positions. Thus, the cavity 132 can provide an accessibility zone (shown in dotted lines in Figure 4) for moving and manipulating the coupler 28.

[0064] As will be described below, in some embodiments, the connecting section 130 and the cavity 132 could both provide clearance and enable the sprocket wheel removable part 102 to be connected to the sprocket wheel body 102. As will be elaborated below, the shape, depth, and size of the connecting section 130 and the cavity 132 assist in minimizing the impact thereof on structural properties of the sprocket wheel body 100.

[0065] Referring particularly to Figure 8, the connecting section 130, which is configured to at least partially receive the sprocket wheel removable part 102 therein, will now be described in greater detail. The connecting section 130 is recessed so that when the sprocket wheel removable part 102 is received therein, the sprocket wheel body 100 and the sprocket wheel removable part 102 are flush with one another. That is to say that the shape and form of the sprocket wheel removable part 102 is complementary to the connecting section 130, so that the sprocket wheel removable part 102 can be received therein, and when the sprocket wheel removable part 102 is received in the connecting section 130, the sprocket wheel body 100 and the sprocket wheel removable part 102 form a generally continuous plane (i.e., a radially outer surface of the sprocket wheel removable part 102 is generally radially aligned with a radially outer surface of the sprocket wheel body 100).

[0066] The rim portion 114 further defines interlocking apertures 133a, 133b, 133c and has reinforcing members 134a, 134b at the connecting section 130. It is contemplated that in some embodiments, there could be more or fewer than three interlocking apertures, and/or there could be more or fewer than two reinforcing members. The reinforcing member 134a extends circumferentially, whereas the reinforcing member 134b extends generally perpendicular to the reinforcing member 134a. The reinforcing member 134a extends radially outwardly relative to side portions 131 of the connecting section 130. The reinforcing member 134b extends radially outwardly relative to the reinforcing member 134a. However, in this embodiment, the reinforcing members 134a, 134b are still radially inwardly relative to a radial outer surface of the rim portion 114. It is contemplated that in some embodiments, the reinforcing member 134a and/or the reinforcing member 134b could be a ridge, an emboss, a dovetail, a keyway, a dowel pin, of the like, without departing from the present technology. As will be described below, in addition to reinforcing the sprocket wheel body 100, the reinforcing members 134a, 134b can assist in positioning the sprocket wheel removable part 102 in the connecting section 130. On each end of the reinforcing member 134a, the rim portion 114 defines a positioner 136. The positioners 136 can also assist in positioning the sprocket wheel removable part 102 in the connecting section 130. In some embodiments, the positioners 136 can assist in reducing chances of mistakes during connection of the sprocket wheel removable part 102 and the

sprocket wheel body 100. Furthermore, the rim portion 114 defines five connecting apertures 138 configured to receive fasteners 108 (shown in Figure 5 and 6) therein. It is contemplated that in other embodiments, more of less than five connecting apertures may be used without departing from the present technology.

5 [0067] Referring to Figures 5, 7 and 9, the sprocket wheel removable part 102 will now be described in greater detail. The sprocket wheel removable part 102 is generally arcuate so as to complement the circular profile of the sprocket wheel body 100. A top surface of the sprocket wheel removable part 102 is generally smooth, so that, as mentioned above, when the sprocket wheel removable part 102 is connected to the sprocket wheel
10 body 100, the sprocket wheel removable part 102 and the sprocket wheel body 100 are flush with one another.

[0068] At an underside of the sprocket wheel removable part 102, there is defined a recess 140 and an inner recess 142. The recess 140 is complementary to the reinforcing member 134a such that the recess 140 defines at each end thereof positioner sections 146
15 that are complementary to the positioners 136. The inner recess 142 is complementary to the reinforcing member 134b. The sprocket wheel removable part 102 further has, still at the underside of the sprocket wheel removable part 102, a protrusion 144 configured to be received in the interlocking aperture 133a. The sprocket wheel removable part 102 further defines five connecting apertures 148 that are configured to receive the fasteners 108
20 therein.

[0069] On one lateral side thereof, the sprocket wheel removable part 102 has two engaging members 150 (i.e., teeth) that are similar to the engaging members 120, that is the engaging members 150 have the same size, length, and width as the engaging members 120. It is contemplated that in some embodiments, the engaging members 150 could be
25 different from the engaging members 120. Between the two engaging members 150, the sprocket wheel removable part 102 defines a recess 151 configured to engage with the lateral lugs 46, such that the recess 152 is configured to receive the lateral lugs 46 therein. It is contemplated that in some embodiments, there could be more or less than two engaging members 120. For instance, in some embodiments, there could be three engaging members

150, and in other embodiments, there could be none. The sprocket wheel removable part 102 is configured so that when connected to the sprocket wheel body 100, there is no discontinuity between the engaging members 130 and the engaging members 150. This may reduce vibrations and/or prevent uneven wear, which may extend life of various components of the track system 30 such as the endless track 40.

[0070] On the other lateral side, the sprocket wheel removable part 102 has protrusion 152 for being received in the cavity 132 (best seen in Figure 7).

[0071] To connect the sprocket wheel removable part 102 to the sprocket wheel body 100, the sprocket wheel removable part 102 is partially received in the connecting section 130. The complementary configuration between the connecting section 130 and the sprocket wheel removable part 102 facilitates the positioning and interlocks the sprocket wheel removable part 102 relative to the sprocket wheel body 100. More specifically, the reinforcing member 134a is received in the recess 140, the positioners 136 are received in the positioner sections 146 of the recess 140, the reinforcing member 134b is received in the inner recess 142, the protrusion 144 is received in the interlocking aperture 133a and the protrusion 152 is received in the cavity 132. This complementary configuration can assist in transferring load from the sprocket wheel removable part 102 to the sprocket wheel body 100. When the sprocket wheel removable part 102 is received in the connecting section 130, the connecting apertures 138 of the sprocket wheel body 100 and the connecting apertures 148 of the sprocket wheel removable part 102 are aligned. Then, the sprocket wheel removable part 102 can be fastened to the sprocket wheel body 100 by using the fasteners 108. The fasteners 108 enable a removable connection between the sprocket wheel removable part 102 and the sprocket wheel body 100 using simple tools. It is contemplated that the sprocket wheel removable part 102 could be connected to the sprocket wheel body 100 differently, for example by clamping or by mechanical interlocking.

[0072] As mentioned above, the sprocket wheel assembly 34 is configured so that when the sprocket wheel removable part 102 is connected to the sprocket wheel body 100, the sprocket wheel body 100 and the sprocket wheel removable part 102 are continuous.

In some cases, in order to achieve this continuity, the sprocket wheel removable part 102 is molded with the sprocket wheel body 100 as one integral piece, and then the sprocket wheel removable part 102 is machined from the sprocket wheel body 100. The sprocket wheel body 100 and the sprocket wheel removable part 102 being continuous may result in uniform wear of the sprocket assembly 34 and the endless track 40, among other things.

[0073] Referring to Figures 10 and 11, an alternate embodiment of the sprocket wheel assembly 34, namely sprocket wheel assembly 35, will be described. Features of sprocket wheel assembly 35 that are similar to those of the sprocket wheel assembly 34 have been labeled with the same reference numerals, and will not be described in detail again.

[0074] In this embodiment, the connecting section 130 and the cavity 132 are defined between two engaging members 120 (i.e., aligned with one of the recesses 122). The rim portion 114 defines, at the connecting section 130, two connecting apertures 138 configured to receive two fasteners 108. A sprocket wheel removable part 102' defines two connecting apertures 148 configured to receive two fasteners 108 therein. The sprocket wheel removable part 102' has a generally smooth underside, as the sprocket wheel body 100 does not have any of the interlocking apertures 133a, 133b, 133c, the reinforcing members 134a, 134b or the positioners 136. In this embodiment, as shown in Figure 11, the clearance provided by removing the sprocket wheel removable part 102' has a shape and size complementary to the shape and size of the coupler 28 so as to accommodate the coupler 28. In the present embodiment, the sprocket wheel removable part 102' is configured to be as small as possible to minimize discontinuity of the sprocket wheel body 100.

[0075] Though the following method of operation will be described with reference to the sprocket wheel assembly 34, it is understood that the following also generally applies to the sprocket wheel assembly 35. As described above, in some instances, it is desired to move the coupler 28 between the engaging position and the disengaging position (i.e., it is desired for the driving axle 26 to rotate freely and no longer be operatively connected to the motor 24 or vice-versa), without having to remove the entire sprocket wheel assembly

34. However, when the sprocket wheel removable part 102 is connected to the sprocket wheel body 100, the sprocket wheel assembly 34 obstructs the coupler 28 from moving between the engaging and disengaging positions. Thus, to move the coupler 28 between the engaging and disengaging positions, the sprocket wheel removable part 102 is to be disconnected from the sprocket wheel body 100. A method for adjusting the coupler 28 between the engaging and disengaging positions will now be described in greater detail.

[0076] The method includes rotating the sprocket wheel assembly 34 about the rotation axis 104, until the sprocket wheel removable part 102 (and thus, the connecting section 130 and the cavity 132) are generally aligned with the coupler 28. This can be done, for example, by operating the vehicle 20 in a forward or rearward direction. In some embodiments, since the cavity 132 is larger than the coupler 28, the connecting section 130 and the cavity 132 do not have to be in perfect alignment with the coupler 28. In some embodiments, the cavity 132 has an extra margin, which results in an extra angular margin of about 5 to 10 degrees (shown in Figure 4). For example, the extra margin could be of about 0.125 inch. It is understood that other margins are contemplated.

[0077] Then, the method includes disconnecting the sprocket wheel removable part 102 from the sprocket wheel body 100. This can be done by unfastening the fasteners 108 using conventional tools.

[0078] Then, the method includes moving the coupler 28 from the engaging position to the disengaging position (Figures 4 and 11). The coupler 28 can be moved therebetween, as the cavity 132 provides clearance for the coupler 28. In other words, with the sprocket wheel removable part 102 disconnected and removed from the connecting section 130 of the sprocket wheel body 100, and due to the cavity 132 defined in the sprocket wheel body 100, the coupler 28 is no longer obstructed. Additionally, with the sprocket wheel removable part 102 being removed, there is space to manipulate tools required to adjust the coupler 28 between one position to the other.

[0079] Then, the sprocket wheel removable part 102 can be re-connected to the sprocket wheel body 100. At this point, the vehicle 20 can be towed or be serviced, as required.

[0080] The above method is particularly useful to reduce “down-time” of the vehicle 20, as it is not necessary to fully remove the sprocket wheel assembly 34.

[0081] It is understood that according to embodiments of the present technology, the sprocket wheel assembly 34 could include two or more sprocket wheel removable parts 5 102, and the sprocket wheel body 100 could be configured to connect to two or more sprocket wheel removable parts 102. This would, *inter alia*, facilitate adjustment of the coupler 28, as there would be more connecting sections 130 and cavities 132 (i.e., sprocket wheel assembly 34 does not have to be rotated as much). Furthermore, having multiple connecting sections 130 and cavities 132 (i.e., multiple sprocket wheel removable parts 10 102), can result in a more uniform sprocket wheel body 100, which can improve structural properties thereof. Furthermore, maintenance is facilitated and is cost effective, since worn out sprocket wheel removable parts 102 can be replaced, instead of replacing the whole sprocket wheel body 100.

[0082] Modifications and improvements to the above-described embodiments of 15 the present invention may become apparent to those skilled in the art. The foregoing description is intended to be exemplary rather than limiting. The scope of the present invention is therefore intended to be limited solely by the appended claims.

What is claimed is:

1. A sprocket wheel assembly for a polymeric track system, the sprocket wheel assembly comprising:

a sprocket wheel body comprising:

5 a hub portion;

an intermediate portion extending radially from the hub portion; and

a rim portion connected to the intermediate portion, the rim portion having a plurality of engaging members and a connecting section and, the rim portion defining a cavity generally aligned with the connecting section;

10 a sprocket wheel removable part at least partially receivable in the cavity, the sprocket wheel removable part being selectively connectable to the sprocket wheel body at the connecting section.

2. The sprocket wheel assembly of claim 1, wherein at least one of the sprocket wheel body and the sprocket wheel removable part comprises a positioner for positioning the sprocket wheel body relative to the sprocket wheel removable part.

3. The sprocket wheel assembly of claim 2, wherein the positioner assists in transferring load from the sprocket wheel removable part to the sprocket wheel body.

4. The sprocket wheel assembly of claim 1, wherein the plurality of engaging members extends generally parallel to a rotation axis of the sprocket wheel body.

20 5. The sprocket wheel assembly of claim 1, wherein the sprocket wheel removable part includes at least one engaging member similar to the plurality of engaging members, such that when the sprocket wheel removable part is connected to the sprocket wheel body, the engaging members of the sprocket wheel body and the engaging members of the sprocket wheel removable part are continuous.

6. The sprocket wheel assembly of claim 1, wherein the connecting section and the cavity are defined between two engaging members, such that the sprocket wheel removable part is receivable between two engaging members.
7. The sprocket wheel assembly of claim 1, wherein the sprocket wheel removable part is a first sprocket wheel removable part, the connecting section is a first connecting section, the sprocket wheel assembly further includes a second sprocket wheel removable part and the sprocket wheel body further includes a second connecting section for selectively at least partially receiving the second sprocket wheel removable part.
8. The sprocket wheel assembly of claim 1, wherein the sprocket wheel assembly is a replacement for a sprocket wheel assembly for a track system.
9. The sprocket wheel assembly of claim 8, wherein the track system is a metallic track system.
10. The sprocket wheel assembly of claim 1, wherein:
when the sprocket wheel removable part is connected to the sprocket wheel body, the sprocket wheel body is configured to at least partially obstruct a coupler of a transmission of a vehicle, thereby preventing the coupler from moving between an engaging position and a disengaging position; and
when the sprocket wheel removable part is disconnected from the connecting section and the cavity is aligned with the coupler, the sprocket wheel body is configured to provide clearance for the coupler to move between the engaging position and the disengaging position.
11. The sprocket wheel assembly of claim 1, wherein the sprocket wheel removable part is complementary to the sprocket wheel body.
12. The sprocket wheel assembly of claim 1, wherein the sprocket wheel removable part is mechanically interlocked to the sprocket wheel body.

13. The sprocket wheel assembly of claim 1, wherein the cavity is sized to provide an extra margin of clearance for manipulating the coupler.
14. A polymeric track system for a vehicle comprising:
- a support frame;
- 5 the sprocket wheel assembly of claim 1 operatively connected to the support frame;
- a plurality of support wheel assemblies operatively connected to the support frame;
- and
- a polymeric endless track surrounding the support frame, the sprocket wheel assembly, the idler wheel assembly and the plurality of idler wheel assemblies.
- 10 15. The polymeric track system of claim 14, wherein the polymeric endless track has a plurality of lugs on an inner surface, and the plurality of lugs are configured to be received in a plurality of recesses defined in the sprocket wheel assembly.
16. A vehicle comprising:
- a chassis;
- 15 a motor supported by the chassis;
- a transmission system including a driving axle and a coupler, the driving axle being selectively operatively connected to the motor by moving the coupler to an engaging position, and the driving axle being selectively operatively disconnected from the motor by moving the coupler to a disengaging position;
- 20 at least two of the polymeric track systems of claim 14 operatively connected to the motor via the transmission system; and
- wherein:

when the sprocket wheel removable part is connected to the sprocket wheel body, the sprocket wheel assembly at least partially obstructs the coupler from moving between the engaging and disengaging positions, and

5 when the sprocket wheel removable part is disconnected from the sprocket wheel body and the cavity is generally aligned with the coupler, the coupler is accessible to be adjusted between the engaging and disengaging positions.

17. The vehicle of claim 16, wherein the coupler is a transmission gear shaft.

18. The vehicle of claim 16, wherein the vehicle is a military vehicle.

10 19. A method for adjusting a coupler of a transmission system of a vehicle between an engaging position and a disengaging position, where the coupler is at least partially prevented from being adjusted between the engaging position and the disengaging position by a sprocket wheel assembly having an sprocket wheel body defining a cavity and a sprocket wheel removable part selectively receivable in a connecting section of the sprocket , the method comprising:

15 rotating the sprocket wheel assembly about a rotation axis until the sprocket wheel removable part is generally aligned with the coupler;

selectively disconnecting the sprocket wheel removable part from the sprocket wheel body for providing access to the coupler; and

moving the coupler from the engaging position to the disengaging position.