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Vehicle tire changing apparatus

Abstract

A vehicle tire changing apparatus that is operable to assist a user in the tire changing process on a vehicle. The present invention includes a base platform member that is movably mounted onto four wheels in the corners thereof. The base platform member has a first post member and a second post member secured to the upper surface thereof that extend upward therefrom. A tire support member is movably coupled to the base platform member and is superposed thereto. The tire support member will move in an upwards-downwards movement along the first post member and second post member. The tire support member includes a first roller assembly and a second roller assembly secured to the upper surface. The first roller assembly and second roller assembly are configured to provide rotational movement of a tire engaged therewith.

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Background/Summary

FIELD OF THE INVENTION

(1) The present invention relates generally to vehicle maintenance apparatus, more specifically but not by way of limitation, a vehicle tire changing apparatus that is configured to facilitate changing of a tire wherein the present invention provides lifting of the tire and alignment thereof so as to improve installation of a tire/wheel assembly onto a vehicle.

BACKGROUND

(2) Millions of people have to change a vehicle tire every year. Whether the tire is required to be changed as a result of a flat, routine maintenance or for weather related reasons, changing of a tire is very common. It is more common for those individuals that live in climates wherein it is either desirable or a legal requirement to change tires more suited for snow and ice conditions. Regardless of the reason it is quite a cumbersome and somewhat physically challenging experience to change a tire. The average passenger car tire and rim can weigh between fifty and sixty pounds. Larger all terrain tires and snow tires will weigh even more. This weight makes it quite difficult to change a tire and can present a potential physically hazardous situation for some people.

(3) As is known in the art, during the changing of a tire, the vehicle or a portion thereof is elevated utilizing a car jack or similar device. The vehicle must be elevated at a sufficient level so as to be able to place the new tire onto the lug nuts. The aforementioned requires that the vehicle be positioned such that it will be required for an individual to both lift the tire and rotationally align the lug holes with the lugs on the vehicle. It is this lifting requirement that can be potentially dangerous for an individual due to the height and rotational manipulation requirements for successful positioning of a replacement tire/wheel assembly. While vehicle jacks are readily available, existing technology is deficient for tools or apparatus that assist with the lifting and positioning of a tire/wheel assembly for installation on a vehicle.

(4) Accordingly, there is a need for an apparatus that can assist a user in both the lifting and rotational alignment of a tire/wheel assembly so as to facilitate installation of the tire/wheel assembly onto a vehicle.

SUMMARY OF THE INVENTION

(5) It is the object of the present invention to provide a vehicle tire changing apparatus that is

configured to assist in changing of a tire wherein the apparatus of the present invention includes a base platform member.

(6) Another object of the present invention is to provide an apparatus configured to provide lifting and alignment of a tire/wheel assembly for installation onto a vehicle wherein the base platform member is movably mounted onto wheels so as to facilitate three hundred and sixty degree movement thereof.

(7) A further object of the present invention is to provide a vehicle tire changing apparatus that is configured to assist in changing of a tire wherein the upper surface of the base platform member includes a lever engagement notch along at least one edge thereof.

(8) Still another object of the present invention is to provide an apparatus configured to provide lifting and alignment of a tire/wheel assembly for installation onto a vehicle that further includes a tire support member wherein the tire support member is superposed the base platform member.

(9) An additional object of the present invention is to provide a vehicle tire changing apparatus that is configured to assist in changing of a tire wherein the tire support member further includes on the upper surface thereof a first roller assembly and a second roller assembly.

(10) Yet a further object of the present invention is to provide an apparatus configured to provide lifting and alignment of a tire/wheel assembly for installation onto a vehicle wherein the first roller assembly and second roller assembly are on opposing sides of the tire support member.

(11) Another object of the present invention is to provide a vehicle tire changing apparatus that is configured to assist in changing of a tire wherein the apparatus further includes a first post member and a second post member.

(12) Still an additional object of the present invention is to provide an apparatus configured to provide lifting and alignment of a tire/wheel assembly for installation onto a vehicle wherein the first post member and the second post member are secured to the upper surface of the base platform member and extend upward therefrom.

(13) Yet another object of the present invention is to provide a vehicle tire changing apparatus that is configured to assist in changing of a tire wherein the tire support member is operably coupled to the first post member and second post member and is configured to travers upwards-downwards with respect thereto.

(14) To the accomplishment of the above and related objects the present invention may be embodied in the form illustrated in the accompanying drawings. Attention is called to the fact that the drawings are illustrative only. Variations are contemplated as being a part of the present invention, limited only by the scope of the claims.

Description

BRIEF DESCRIPTION OF THE DRAWINGS

(1) A more complete understanding of the present invention may be had by reference to the following Detailed Description and appended claims when taken in conjunction with the accompanying Drawings wherein:

(2) FIG. 1 is an end view of the present invention; and

(3) FIG. 2 is a top view of the tire support member of the present invention; and

(4) FIG. 3 is a perspective view of the present invention; and

(5) FIG. 4 is a perspective view of the present invention in an exemplary use.

DETAILED DESCRIPTION

(6) Referring now to the drawings submitted herewith, wherein various elements depicted therein are not necessarily drawn to scale and wherein through the views and figures like elements are referenced with identical reference numerals, there is illustrated a vehicle tire changing apparatus **100** constructed according to the principles of the present invention.

(7) An embodiment of the present invention is discussed herein with reference to the figures submitted herewith. Those skilled in the art will understand that the detailed description herein with respect to these figures is for explanatory purposes and that it is contemplated within the scope of the present invention that alternative embodiments are plausible. By way of example but not by way of limitation, those having skill in the art in light of the present teachings of the present invention will recognize a plurality of alternate and suitable approaches dependent upon the needs of the particular application to implement the functionality of any given detail described herein, beyond that of the particular implementation choices in the embodiment described herein. Various modifications and embodiments are within the scope of the present invention.

(8) It is to be further understood that the present invention is not limited to the particular methodology, materials, uses and applications described herein, as these may vary. Furthermore, it is also to be understood that the terminology used herein is used for the purpose of describing particular embodiments only, and is not intended to limit the scope of the present invention. It must be noted that as used herein and in the claims, the singular forms “a”, “an” and “the” include the plural reference unless the context clearly dictates otherwise. Thus, for example, a reference to “an element” is a reference to one or more elements and includes equivalents thereof known to those skilled in the art. All conjunctions used are to be understood in the most inclusive sense possible. Thus, the word “or” should be understood as having the definition of a logical “or” rather than that of a logical “exclusive or” unless the context clearly necessitates otherwise. Structures described herein are to be understood also to refer to functional equivalents of such structures. Language that may be construed to express approximation should be so understood unless the context clearly dictates otherwise.

(9) References to “one embodiment”, “an embodiment”, “exemplary embodiments”, and the like may indicate that the embodiment(s) of the invention so described may include a particular feature, structure or characteristic, but not every embodiment necessarily includes the particular feature, structure or characteristic.

(10) Referring in particular to the Figures submitted as a part hereof, the vehicle tire changing apparatus **100** includes a base platform member **10**. The base platform member **10** is planar in manner and rectangular in shape. The base platform member **10** is manufactured from a rigid lightweight material such as but not limited to wood or metal. The base platform member **10** includes an upper surface **11** and a lower surface **12**. The lower surface **12** includes wheel cavities **15** wherein the wheel cavities **15** are formed in the lower surface **12** proximate each corner **18** of the base platform **10**. The wheel cavities **15** are recessed into the lower surface **12** of the base platform **10** so as to reduce the overall height resulting from the installation of the wheels **20**. The wheels **20** in a preferred embodiment are configured to move three hundred and sixty degrees so as to provide full rotational movement of the base platform member **10**. This facilitates the ability for a user to correctly position the tire **99** during the mounting process. It is contemplated within the scope of the present invention that the wheels **20** could be manufactured in various embodiments. Furthermore, while four wheels **20** are present in a preferred embodiment, it is contemplated within the scope of the present invention that the base platform member **10** could employ more or less than four wheels in order to achieve the desired movement of the base platform member **10** during use of the vehicle tire changing apparatus **100**.

(11) The base platform member **10** includes a lever engagement notch **25** formed in the upper surface **11**. The lever engagement notch **25** provides the necessary void between the upper surface **11** of the base platform member **10** and the lower surface **31** of the tire support member **30**. The lever engagement notch **25** is centrally positioned intermediate the longitudinal edges of the base platform member **10** so as to facilitate upwards movement of the tire support member **30**. During use of the vehicle tire changing apparatus **100** a user will leverage a conventional pry bar or other suitable element in the lever engagement notch **25** so as to facilitate the required upper movement of the tire support member **10** in order to properly position the tire **99**. It should be understood

within the scope of the present invention that while one lever engagement notch is illustrated herein, it is contemplated within the scope of the present invention that the vehicle tire changing apparatus **100** could have more than one lever engagement notch **25** placed in alternate locations. Additionally, it is contemplated within the scope of the present invention that the vehicle tire changing apparatus **100** could employ motorized movement of the tire support member **30** in place of utilizing a pry bar and the lever engagement notch.

(12) The base platform member **10** has extending upward therefrom a first post member **40** and a second post member **50**. The first post member **40** and second post member **50** extend upward from the upper surface **11** and are secured to the base platform member **10** utilizing suitable techniques. The first post member **40** and second post member **50** are manufactured from suitable rigid material such as but not limited to metal rods. The first post member **40** and second post member **50** provide two functions within the scope of the vehicle tire changing apparatus **100**. First, the first post member **40** and second post member **50** provide the structural elements for which the tire support member **30** can traverse in an upwards-downwards movement. Additionally, the first post member **40** and second post member **50** are mounted with a spacing therebetween that provides support for a tire **99** adjacent thereto and inhibits the tire **99** from falling off of the tire support member **30**. It should be understood within the scope of the present invention that the first post member **40** and second post member **50** could be provided in alternate heights. Furthermore, it is contemplated within the scope of the present invention that the first post member **40** and second post member **50** could be releasably secured to the base platform member **10** so as to facilitate removal thereof for easier storage of the vehicle tire changing apparatus **100** when not in use.

(13) The tire support member **30** includes upper surface **32** onto which the first roller assembly **60** and second roller assembly **70** are mounted. The tire support member **30** has a surface area generally equivalent to the base platform member **10** and is configured to receive a tire **99** thereon. The first roller assembly **60** and second roller assembly **70** are identically constructed and located on opposing ends of the tire support member **30**. The first roller assembly **60** and second roller assembly **70** include rollers **61,71** that are movably mounted to mounts **65**. The rollers **61,71** operably engage the tire **99** as shown herein in FIG. **4** to facilitate rotational movement of the tire **99** in order to provide proper alignment of the tire **99** to facilitate the installation thereof. It should be understood within the scope of the present invention that the first roller assembly **60** and second roller assembly **70** could be configured in alternate manners and achieve the desired objective discussed herein. This is to include but not be limited to an alternate quantity of roller assembly and various placement configurations thereof.

(14) In the preceding detailed description, reference has been made to the accompanying drawings that form a part hereof, and in which are shown by way of illustration specific embodiments in which the invention may be practiced. These embodiments, and certain variants thereof, have been described in sufficient detail to enable those skilled in the art to practice the invention. It is to be understood that other suitable embodiments may be utilized and that logical changes may be made without departing from the spirit or scope of the invention. The description may omit certain information known to those skilled in the art. The preceding detailed description is, therefore, not intended to be limited to the specific forms set forth herein, but on the contrary, it is intended to cover such alternatives, modifications, and equivalents, as can be reasonably included within the spirit and scope of the appended claims.

Claims

1. An apparatus operable in combination with a pry bar to assist a user install a tire on a vehicle wherein the apparatus comprises: a base platform member, said base platform member being planar in manner and rectangular in shape, said base platform member having an upper surface and a lower surface, said base member platform configured to be movable, wherein said base platform

member further includes a lever engagement notch, said lever engagement notch being formed in the upper surface of said base platform, said lever engagement notch forming a void to accommodate an end of the pry bar therein; at least one post member, said at least one post member operably coupled to said upper surface of said base platform member, said at least one post member extending upward from said upper surface, said at least one post member being proximate a longer longitudinal edge of said base platform member; a tire support member, said tire support member being superposed said upper surface of said base platform member, said tire support member being a solid surface which is planar in manner, said tire support member operably coupled with said at least one post member and said tire support member is movable in an upwards-downwards movement along said at least one post member; and a first roller assembly and a second roller assembly, said first roller assembly and said second roller assembly being secured to an upper surface of said tire support member, said first roller assembly and said second roller assembly being located on opposing ends of said tire support member such that said at least one post member is positioned in an area between the first roller assembly and the second roller assembly, wherein the tire support member is moveable via lever action upon the pry bar when the pry bar is inserted into the lever engagement notch.

2. The apparatus operable to assist a user install the tire on the vehicle as recited in claim 1, wherein said base platform member further includes a plurality of wheel cavities, said plurality of wheel cavities formed in the lower surface of said base platform member.

3. The apparatus operable to assist a user install the tire on the vehicle as recited in claim 2, and further including a plurality of wheels, said plurality of wheels mounted within said plurality of wheel cavities, said plurality of wheels operable to move said base platform member.

4. The apparatus operable to assist a user install the tire on the vehicle as recited in claim 3, wherein said first roller assembly includes a roller, said roller being movably secured between two mounts.

5. The apparatus operable to assist a user install the tire on the vehicle as recited in claim 4, wherein said second roller assembly includes a roller, said roller of said second roller assembly being movably secured between a first mount and a second mount.

6. A tire changing apparatus operable in combination with a pry bar to assist a user install a tire on a vehicle wherein the apparatus comprises: a base platform member, said base platform member being planar in manner and rectangular in shape, said base platform member having an upper surface and a lower surface, said base member platform being rectangular in shape having four corners, said base platform member having a plurality of wheel cavities formed in the lower surface thereof, wherein said base platform member further includes a lever engagement notch, said lever engagement notch being formed in the upper surface of said base platform, said lever engagement notch forming a void to accommodate an end of the pry bar therein; a first post member and a second post member, said first post member and said second post member operably coupled to said upper surface of said base platform member, said first post member and said second post member extending upward from said upper surface, said first post member and said second post member being proximate a longer longitudinal edge of said base platform member having a void therebetween; a tire support member, said tire support member being superposed said upper surface of said base platform member, said tire support member being a solid surface which is planar in manner and rectangular in shape, said tire support member operably coupled with said first post member and said second post member and being configured to traverse in an upwards-downwards movement thereon; and a first roller assembly and a second roller assembly, said first roller assembly and said second roller assembly being secured to an upper surface of said tire support member, said first roller assembly and said second roller assembly being located on opposing ends of said tire support member such that said first post member and second post member are positioned in an area between the first roller assembly and the second roller assembly, wherein the tire support member is moveable via lever action upon the pry bar when the pry bar is inserted into

the lever engagement notch.

7. The tire changing apparatus operable to assist a user install the tire on the vehicle as recited in claim 6, and further including a plurality of wheels, said plurality of wheels mounted within said plurality of wheel cavities, said plurality of wheels operable to move said base platform member.

8. The tire changing apparatus operable to assist a user install the tire on the vehicle as recited in claim 7, wherein said second roller assembly includes a roller, said roller of said second roller assembly being movably secured between a first mount and a second mount.

9. The tire changing apparatus operable to assist a user install the tire on the vehicle as recited in claim 8, wherein said first roller assembly includes a roller, said roller of said first roller assembly being movably secured between a first mounting member and a second mounting member.
