

[54] FRAME AND JACK ASSEMBLY

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[52] U.S. Cl. 254/134

[51] Int. Cl. B66f 3/00

[58] Field of Search..... 254/2, 8, 88, 89-92, 254/133, 134

[56] References Cited

UNITED STATES PATENTS

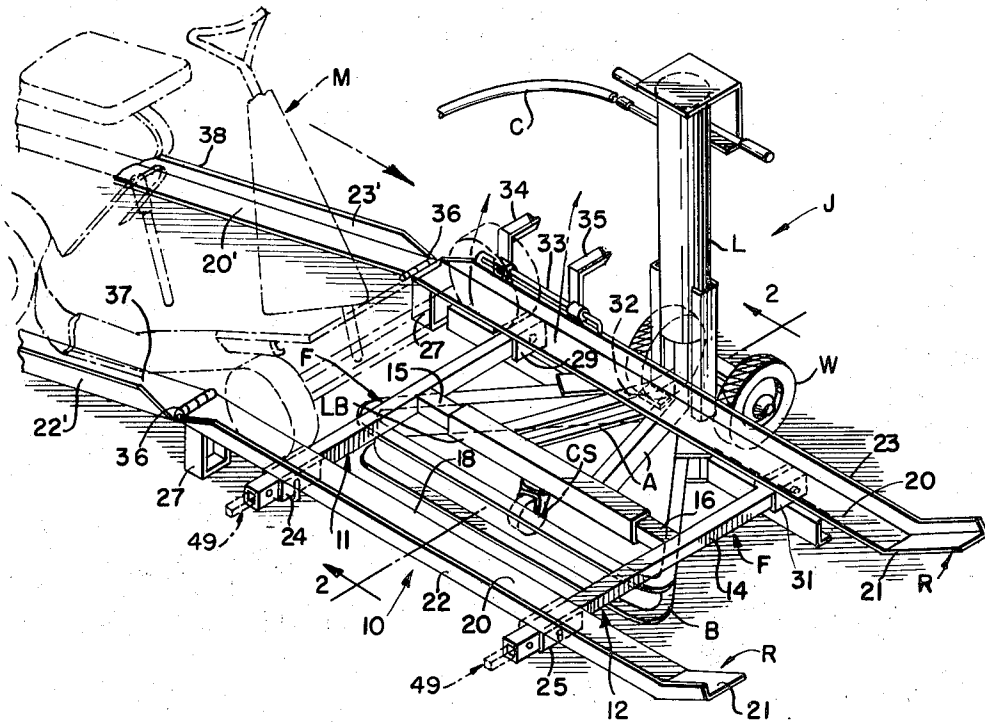
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Assistant Examiner—Robert C. Watson
Attorney—Luke A. Mattare et al.

[57] ABSTRACT

A frame and jack assembly, the frame being substantially rectangularly shaped and including spaced apart vehicle supporting tracks and spaced apart, transverse track supporting cross frame members connecting the tracks together, said jack including a forwardly extending, vertically movable lifting structure, said cross frame members secured to said lifting structure for movement therewith to elevate a vehicle supported on said tracks to a position to facilitate the performance of work thereon.

20 Claims, 11 Drawing Figures



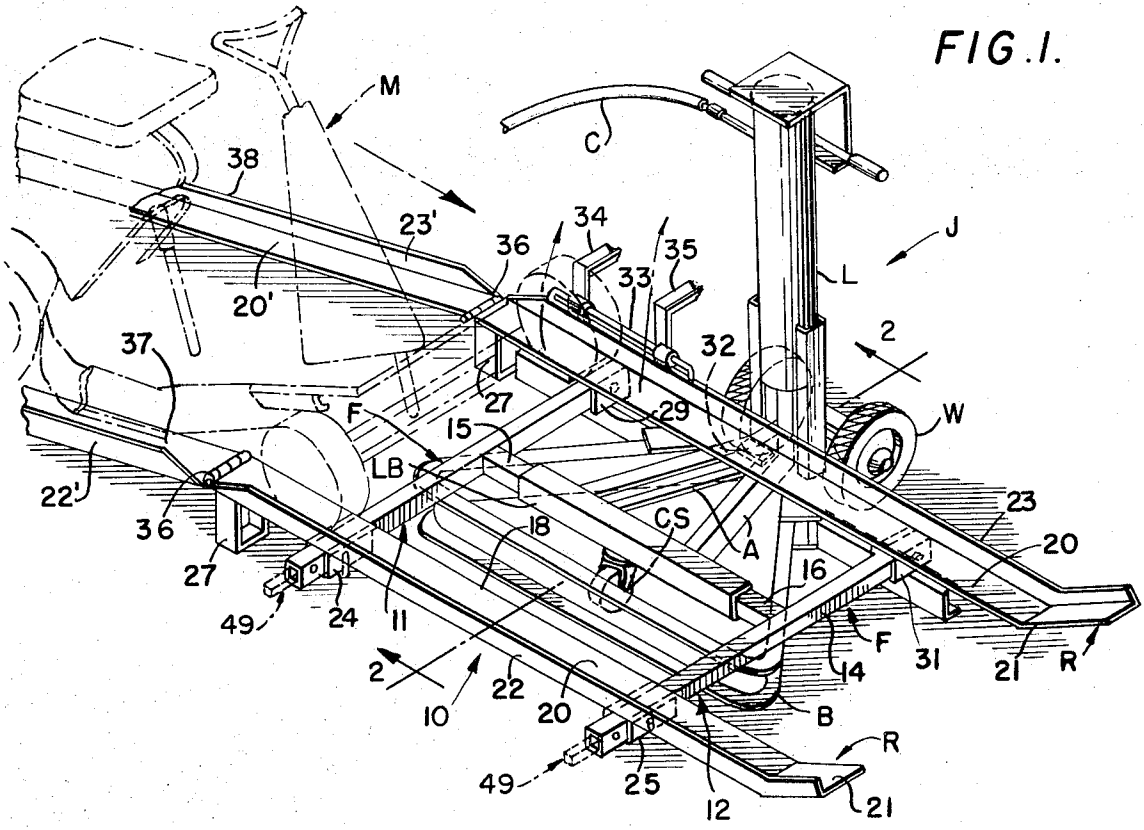


FIG. 1.

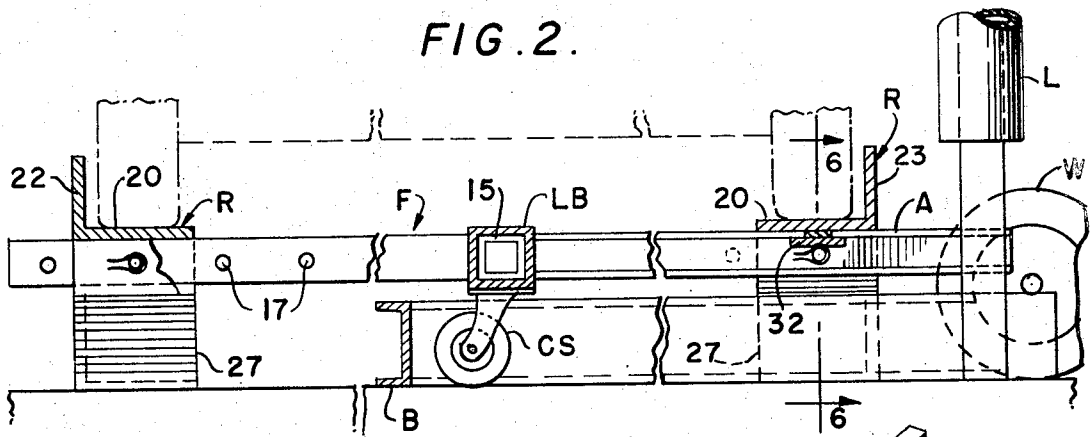


FIG. 2.

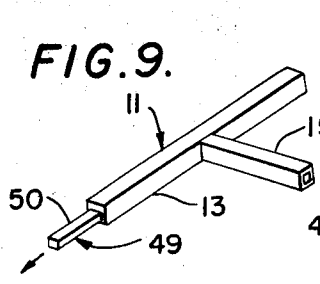


FIG. 9.

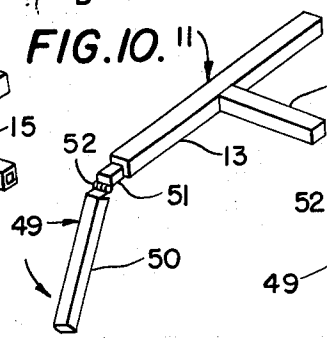


FIG. 10.

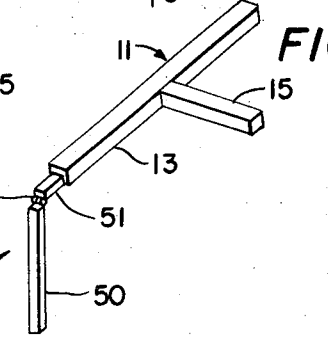


FIG. 11.

FIG. 3.

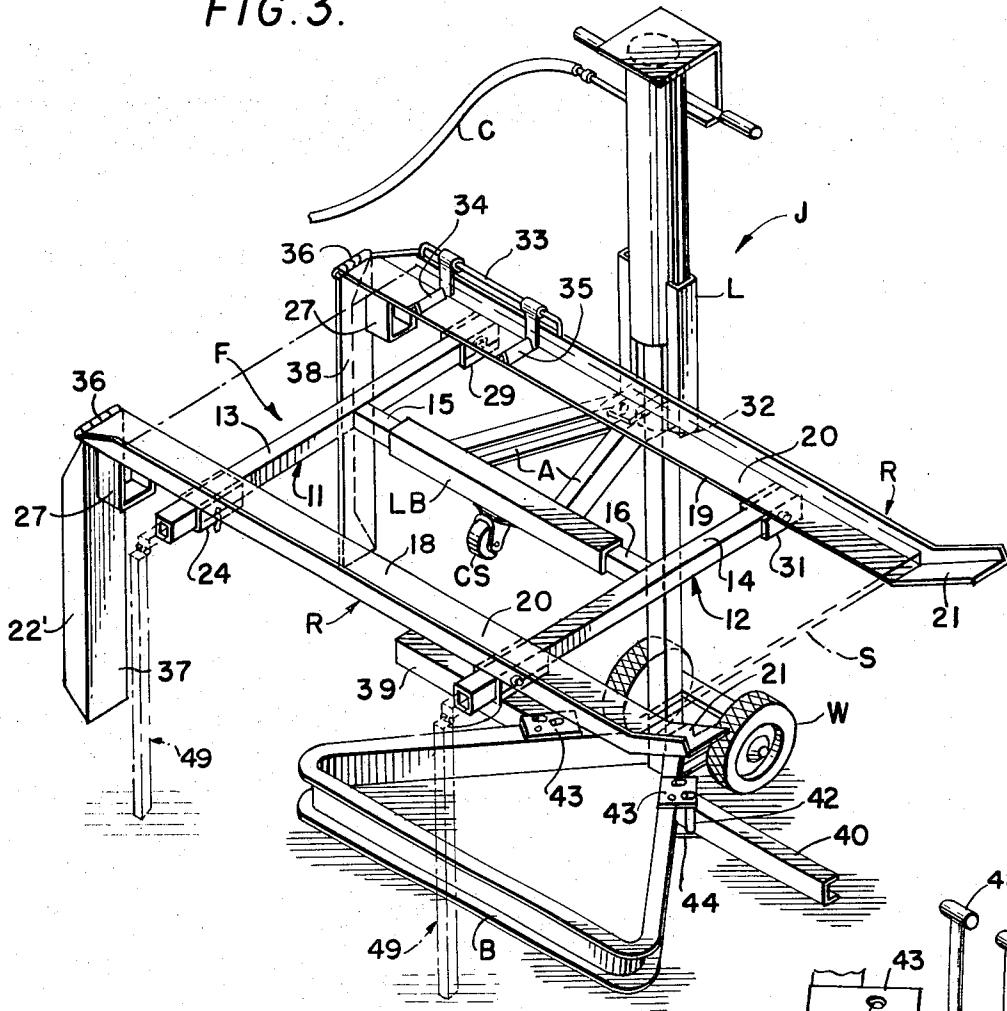


FIG. 5.

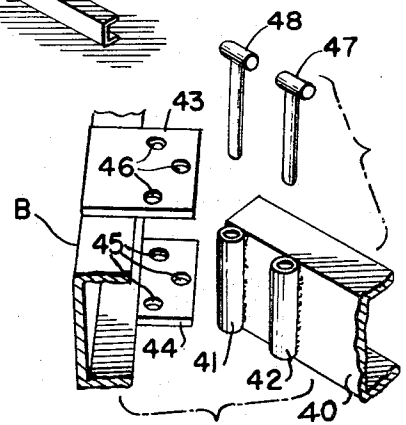
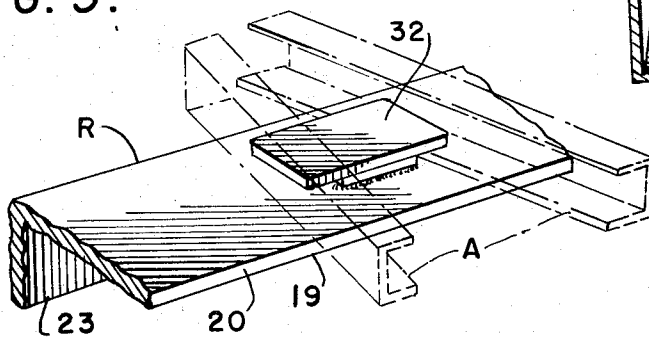


FIG. 4.

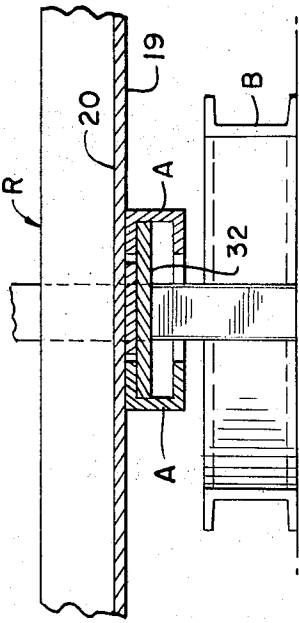


FIG. 6.

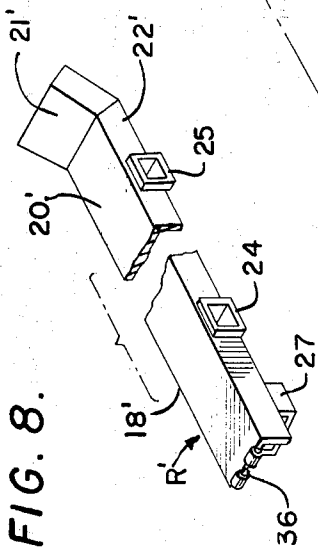


FIG. 8.

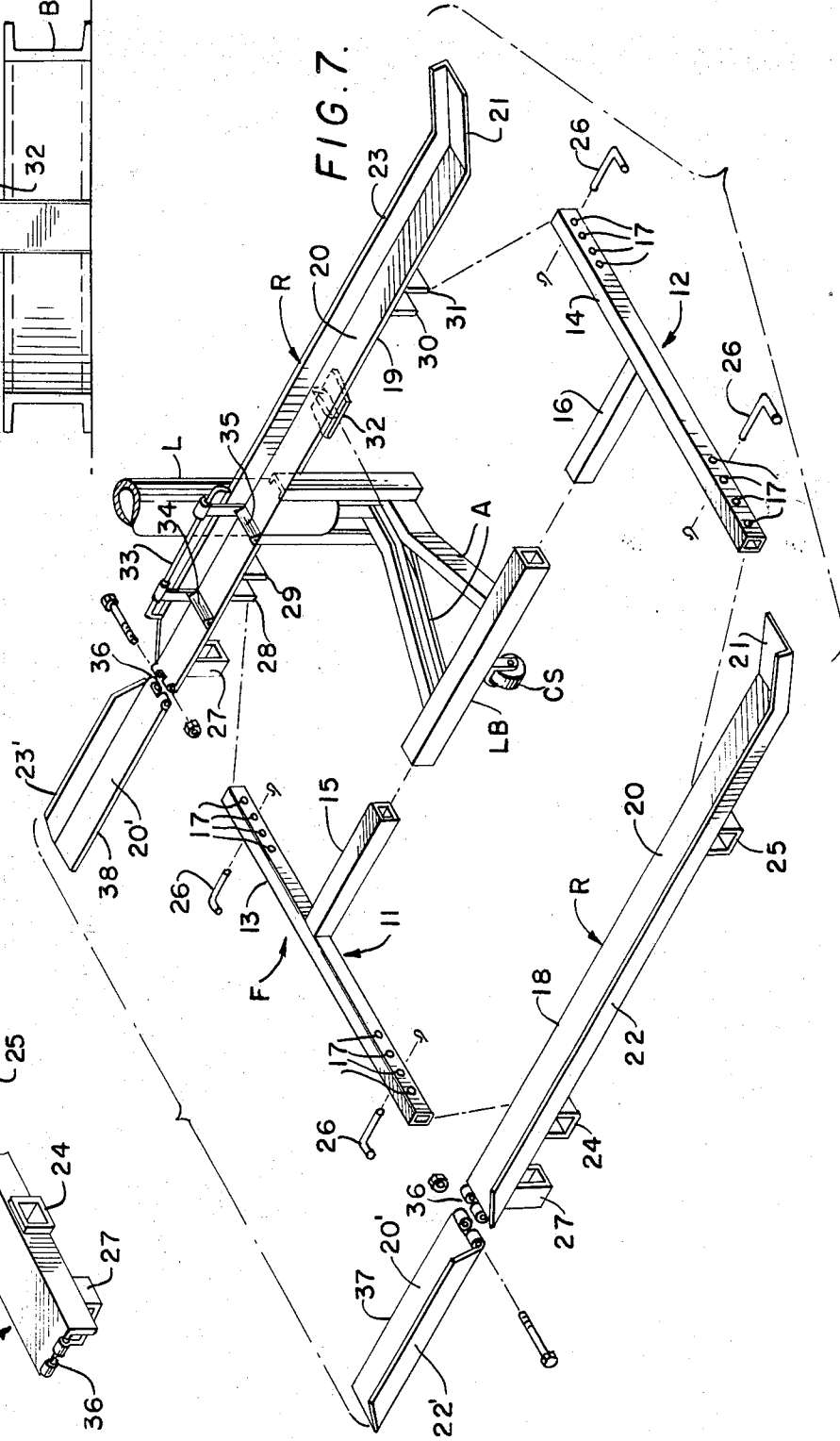


FIG. 7.

FRAME AND JACK ASSEMBLY

BACKGROUND OF THE INVENTION

This invention relates to a frame and jack assembly or to an attachment for a conventional jack or the like for supporting an article such as a riding lawnmower, a snowmobile, a motorcycle, a golf cart or any other similar article in an elevated position so that work may be more readily performed on such article.

The number of snowmobiles, riding lawnmowers and motorcycles and the like has increased rapidly in recent years, and more equipment and trained personnel are accordingly required for performing necessary maintenance and repair thereon. Because of the size and structure of such articles, it is difficult to perform repairs and normal maintenance thereon when the articles are resting in their normal position on the ground. Therefore, it is desirable to provide means for elevating such articles to enable a mechanic or other person to more easily perform repairs or maintenance on the articles. Since riding lawnmowers, golf carts, snowmobiles and motorcycles and the like generally weigh at least several hundred pounds, they cannot be readily lifted to an elevated position so as to gain access to the underside thereof. Conventional jacks and the like are not suitable because the structure of such articles is not compatible with the structure of conventional jacks, so that a safe and secure engagement therebetween cannot be effected.

According to the present invention, a simple and economical lift attachment or frame is provided for a conventional pneumatic or hydraulic jack or the like on which articles such as riding lawnmowers, snowmobiles, golf carts and motorcycles and the like can be readily positioned and then elevated to a position to facilitate performance of maintenance or repair thereon.

More particularly, the present invention provides a frame means which is readily attachable and removable from a pneumatic or hydraulic jack or the like, the frame means including support tracks for supporting an article such as a riding lawnmower or snowmobile or the like thereon to elevate the lawnmower or snowmobile or the like to a position whereby a mechanic or other person can more easily effect repairs or maintenance thereon.

The construction of the frame means is such that it can be sold as a part of a pneumatic or hydraulic jack or the like or it can be sold as a separate kit applicable to existing conventional pneumatic or hydraulic jacks or the like.

OBJECTS OF THE INVENTION

It is an object of this invention to provide a frame and jack assembly for lifting an article such as a snowmobile or riding lawnmower or golf cart or the like to an elevated position to facilitate repairs or maintenance thereon.

Another object of this invention is to provide an attachment for a pneumatic or hydraulic jack or the like wherein the attachment includes a frame means having vehicle supporting tracks readily attachable to and removable from said jack and wherein an article such as a golf cart or snowmobile or riding lawnmower or the like may be positioned thereon and supported at an elevated position to facilitate repairs or maintenance on the riding lawnmower or golf cart or the like.

A further object of the invention is to provide a frame and jack assembly including at least two vehicle supporting tracks, and on which a platform or sheet of relatively rigid material may be placed to support a two wheel vehicle such as a motorcycle or the like.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a top perspective view of a frame and jack assembly in accordance with the present invention and showing a riding lawnmower or the like in phantom lines being positioned on the frame and jack assembly.

FIG. 2 is an enlarged sectional view, partly broken away, taken along line 2—2 in FIG. 1.

FIG. 3 is a top perspective view of the frame and jack assembly of FIG. 1 with the lifting bracket and frame shown in elevated position.

FIG. 4 is an exploded fragmentary enlarged view of a portion of the stabilizing means of the jack of FIG. 3.

FIG. 5 is a bottom perspective view of a portion of one of the track means and the means for wedging it to the lifting bracket of the jack.

FIG. 6 is a fragmentary enlarged sectional view of the attaching means of FIG. 5 and is taken along line 6—6 in FIG. 2.

FIG. 7 is an exploded perspective view of the frame means and the lifting bracket of a conventional jack.

FIG. 8 is a perspective view, with a portion thereof broken away, of a modified track or ramp.

FIG. 9 is a perspective view of one of the cross arms of the frame and a further stabilizing means associated therewith, the cross arm being shown in a lowered position.

FIG. 10 is a perspective view similar to FIG. 9, with the cross arm in partially raised or elevated position and with the stabilizing means being placed in operative position.

FIG. 11 is a perspective view similar to FIGS. 9 and 10, with the cross arm in raised or elevated position and the further stabilizing means in operative position.

DETAILED DESCRIPTION OF THE INVENTION

In the drawings, wherein like reference numerals indicate like parts throughout the several views, a conventional pneumatic or hydraulic jack or the like is indicated generally at J in FIG. 1 and comprises a generally triangular shaped stabilizing base B, an upstanding pneumatic or hydraulically operated piston and cylinder or similar lift L, wheels W and a lifting bracket or arms A operatively connected with the lift L for vertical movement therewith. A conduit C communicates with the lift L for supplying a suitable pneumatic or hydraulic power means.

The lift bracket includes a transversely extending horizontal box beam or lift beam LB suitably permanently attached to the outer ends of the arms A as by welding or the like. A caster support CS is connected to the underside of the lift beam LB intermediate the ends thereof for supporting the lift bracket when in its lowered position as seen in FIG. 1.

The frame means is indicated generally at 10 in FIGS. 1, 3 and 7 and comprises a frame F and support tracks R. The frame F comprises a pair of similar, generally T-shaped frame adaptors or cross arms 11 and 12 having elongate, transverse cross frame members or track supports 13 and 14, respectively, and attachment arms 15 and 16, extending perpendicularly to the cross frame members 13 and 14, respectively, and received

in the opposite ends of the lift beam LB. The attaching arms 15 and 16 may be loosely telescopically received in the opposite ends of the lift beam LB or they may be detachably connected thereto, as desired, to permit easy adjustment of the frame adaptors 11 and 12 relative to the lift bracket. The opposite ends of each of the track supports 13 and 14 have a plurality of holes or openings 17 therethrough for connecting the tracks to the track supports in different adjusted positions.

The tracks R comprise a front track 18 and a rear track 19, and each track comprises an elongate flat rectangular bottom plate 20 having an upturned end 21 thereon. An upstanding flange 22 is integral with the bottom plate 20 on the front edge of the front track 18 and an upstanding flange 23 is on the back edge of the bottom plate 20 of the rear track 19. A pair of box shaped track support engaging brackets 24 and 25 are welded or otherwise suitably secured to the underside of the bottom plate 20 of the front track 18 adjacent the opposite ends thereof for receiving the outer or forward ends of the track supports 13 and 14, respectively. Suitable pin means 26 extend through aligned holes in the sides of the brackets 24 and 25 and an adjacent hole 17 in the end of the track supports 13 and 14 for holding the front track 18 to the track supports in an adjusted position therealong.

A downwardly extending channel or box shaped support 27 is welded or otherwise suitably secured to the bottom of bottom plate 20 of front track 18 on the end thereof opposite the upturned end 21 for supporting the front track in a substantially horizontal position and for relieving the strain thereon when an article such as a riding mower M or the like is placed thereon, as seen in FIG. 1, for example.

Two pairs of spaced apart depending flanges 18, 29 and 30, 31 are welded or otherwise suitably secured to the underside of bottom plate 20 of rear support track 19 adjacent the opposite ends thereof in alignment with the brackets 24 and 25 on the front support track 18 for attaching the rear support track to the track support means 13 and 14. Aligned holes are formed through the depending flanges for receiving pins 26 therethrough to attach the rear support track to the track supporting means 13 and 14 in a manner identical to that in which the front support track is attached to the track support means 13 and 14, and a depending support 27 is provided at the end of the rear track 19 opposite the upturned end 21 for maintaining the rear track in a generally horizontal position while a riding mower M or the like is being loaded thereon. A clamping plate 32 is welded or otherwise suitably secured to the underside of bottom plate 20 of rear track 19 intermediate the ends thereof and in downwardly spaced relationship thereto for wedging engagement between the lift arms A beneath the opposed facing top flanges thereof.

As seen in FIG. 6, an elongate horizontally extending rail or bar 33 is welded or otherwise suitably connected to the top of flange 23 of rear track 19 adjacent the left end thereof as viewed in the figures, and a pair of spaced apart wheel chocks 34 and 35 are freely pivotally mounted thereon for disposition of the wheel chocks in horizontal transverse engagement on top of the bottom plate 20 of the rear track 19.

A suitable hinge means 36 is formed on the ends of the front and rear tracks opposite the upturned ends 21 thereof for attachment thereto of loading and unloading ramps 37 and 38, respectively, and each comprising

a bottom plate 20' and having upstanding flanges 22' and 23' thereon.

If desired, a third vehicle support track (not shown) may be connected to the frame between tracks 18 and 19 for supporting a three wheel vehicle or the like. This third track, or any additional tracks may be secured to the cross arms or cross frame members in any suitable way, such as used to secure tracks 18 and 19, for example.

In order to stabilize the jack when an article such as a riding mower M or snowmobile or the like is supported on the frame 10, a pair of stabilizing arms or outriggers 39 and 40 are provided pivotally connected to the base B on opposite sides thereof adjacent the wheels W. The stabilizing arms 39 and 40 are channel shaped in cross section in a preferred embodiment thereof although they could have any other configuration to have sufficient strength to prevent tilting of the jack. A pair of spaced apart tubular sockets or pipes 41 and 42 are welded or otherwise suitably connected adjacent one end of each stabilizing arm and a pair of plates 43 and 44 are welded or otherwise suitably connected to the top and bottom, respectively, of the base B for receiving said one end of said stabilizing arms therebetween. A plurality of aligned openings or holes 45 and 46 are formed through the plates 44 and 43, respectively, for alignment with the tubular sockets or pipes 41 and 42 to receive suitable pins or the like 47 and 48 therethrough to lock the stabilizing arms in either collapsed or extended positions.

If desired for additional stability, a pair of tubular, pull-out stabilizing bars or legs 49 may be telescopically positioned in the tubular cross arms 11 and 12, and when the frame 11 is elevated the stabilizing legs may be simply pulled out and dropped down as shown in FIGS. 9, 10 and 11. The stabilizing legs include a first, elongate vertical portion 50 hingedly joined to a horizontal portion 51 by suitable hinge means 52. When the legs 50 are pulled out and dropped down to the position shown in FIG. 11, the hinge means 52 automatically locks the legs in vertical position.

A slightly modified track R' is illustrated in FIG. 8 and is of substantially the same construction as the tracks previously described except that the flange 22' on the outer edge of the front track 18' is turned downwardly rather than upwardly as in the previously described embodiment. This form of invention is used, for example, on an enlarged frame means wherein the cross frame members or track supports 13 and 14 of the frame are extended in length and the tracks R' are made longer in length to accommodate larger articles. The downturned flange 22' permits the wheels of such larger articles to extend outwardly over the forward or outer edge of the front track 18' and also provides a clear space for a mechanic or the like to gain access to the underside of the article supported thereon.

In use, the lifting pads, not shown, which are normally received in the outer ends of the lift beam LB, are removed, and the attaching arms 15 and 16 of the frame F are inserted into the opposite ends of the lift beam LB. The rear track 19 is then positioned on the track supports or cross frame members 13 and 14 with the flanges 28 and 29 received on opposite sides of the track support 13 and the flanges 30 and 31 received on opposite sides of the track support 14. The locking plate 32 is positioned between the arms A of the lifting bracket and the rear track is then pushed rearwardly

toward the lift L until the locking plate 32 wedges between the arms A. The pins 26 are then inserted through the aligned holes in the depending flanges and in the track supports 13 and 14 to positively connect or attach the track to the frame. The front track 18 is then positioned on the track supports 13 and 14 with the ends of the track supports telescopically received through the brackets 24 and 25. The front track is positioned along the track supports to a desired adjusted position, and the pins 26 then placed through the aligned holes to securely attach the front track in a desired adjusted position.

The wheel chocks 34 and 35 on the rear track 19 are lifted upwardly away from the bottom plate 20 and an article such as a riding mower M or the like is then driven onto the front and rear tracks as depicted in phantom lines in FIG. 1. After the riding mower M or the like is generally centrally positioned on the tracks, the wheel chocks 34 and 35 are swung down into position in front of and behind one of the wheels of the riding mower M or the like to prevent the riding mower M or the like from moving on the tracks. The jack is then operated to raise the lift L and the lift beam LB and frame and riding mower M or the like to an elevated position so as to make it readily accessible to a mechanic or the like performing maintenance or repairs thereon. The frame and tracks of the invention may be made of steel or other metal or any other suitable material having sufficient strength and rigidity to securely support an article such as a riding mower M or snowmobile or golf cart or the like thereon.

As indicated in phantom lines in FIG. 3, a large rectangular board or sheet S of material such as plywood or the like may be placed on the tracks in spanning relationship thereto for supporting an article such as a two wheel vehicle, as for example, a motorcycle or the like.

In summation, a unique, relatively inexpensive and simple to operate frame and jack assembly is provided for supporting and raising a vehicle or the like thereon to an elevated position so as to facilitate the performance of work on the vehicle or the like. The assembly includes a substantially rectangularly shaped frame including a pair of cross frame members or frame adaptors secured to a lifting bracket of the jack and a pair of vehicle supporting tracks secured to the cross frame members.

As this invention may be embodied in several forms without departing from the spirit or essential characteristics thereof, the present embodiment is therefore illustrative and not restrictive, since the scope of the invention is defined by the appended claims rather than by the description preceding them, and all changes that fall within the metes and bounds of the claims or that form their functional as well as conjointly cooperative equivalents, are therefore intended to be embraced by those claims.

What is claimed is:

1. A frame and jack assembly for lifting and supporting a wheeled vehicle such as a snowmobile, golfcart, riding lawnmower, motorcycle and the like, in an elevated position for repairs or maintenance thereon, comprising a lifting jack means, jack support means on a lower portion of the jack means to support the jack means in an operative position, a vertically movable lifting bracket means carried by the jack means proximate the jack support means, substantially horizontal

frame adaptor means removably connected to said lifting bracket means for vertical movement therewith and adjustable relative to said lifting bracket means in a first horizontal direction, and substantially flat, elongate, horizontal, vehicle wheel engaging and supporting track means removably and adjustably connected to said frame adaptor means and horizontally adjustable in a second direction relative to said lifting bracket means, to support wheeled vehicles of different size thereon.

2. A frame and jack assembly as in claim 1, wherein said frame adaptor means and said track means comprise an attachment for a conventional jack.

3. An attachment for a jack as in claim 2, wherein said frame adaptor means includes a pair of frame adaptors connected to said lifting bracket means on opposite sides thereof and each having a generally T-shaped configuration, said frame adaptors each including an attachment arm for attachment to said lifting bracket means and a transverse cross frame member connected intermediate its ends to one end of said arm, said track means being supported on said cross frame members.

4. An attachment for a jack as in claim 3, wherein said support track means includes a pair of elongate tracks supported on the opposite ends of the cross frame members in spanning relationship to the cross frame members at opposite sides of the lifting bracket.

5. An attachment for a jack as in claim 4, wherein said tracks each include a flat rectangular bottom plate and bracket means on the underside thereof for at least partially embracing the cross frame members to properly locate and hold the tracks in position on the cross frame members.

6. An attachment for a jack as in claim 5, wherein the tracks include a front track and a spaced rear track, the bracket means on the front track comprising tubular brackets having a rectangular cross-sectional configuration and telescopically received over the adjacent ends of the cross frame members.

7. An attachment for a jack as in claim 6, wherein the bracket means on the rear track comprises a pair of depending flanges adjacent each end of the track and in substantial alignment with the brackets on the front track, said flanges of each pair being positioned on opposite sides of a respective cross frame member.

8. An attachment for a jack as in claim 7, wherein a plurality of openings are through the opposite end portions of each of said cross frame members.

9. An attachment for a jack as in claim 8, wherein pin means extend through aligned openings in the bracket means and an adjacent one of the openings in the cross frame members to secure the tracks in adjusted position on the cross frame members.

10. An attachment for a jack as in claim 9, wherein said track has an upturned end thereon.

11. An attachment for a jack as in claim 10, wherein the other end of each track has a hinge means thereon and an inclined loading ramp hingedly connected thereto.

12. An attachment for a jack as in claim 11, wherein a support bracket is connected to the underside of each track adjacent said other end thereof for supporting and maintaining the tracks in substantially horizontal position during loading and unloading of an article thereon.

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13. An attachment for a jack as in claim 6, wherein a locking plate is secured to the underside of the rear track for wedging engagement with the lifting bracket to lock the rear track in position.

14. An attachment for a jack as in claim 5, wherein a pair of wheel chock means are pivotally connected to the rear track, and positionable over the bottom plate in transverse relationship thereto to block the wheel of an article received on the track.

15. An attachment for a jack as in claim 14, wherein the front track has an upturned flange along the front or outer edge thereof, and the rear track has an upturned flange along the back edge thereof.

16. An attachment for a jack as in claim 14, wherein the front track has a downturned flange along the outer edge thereof and the rear track has an upturned flange along the back edge thereof.

17. An attachment for a jack as in claim 4, wherein

a large rectangular platform or sheet of material is placed on the tracks in spanning relationship thereto to support an article thereon.

18. An attachment for a jack as in claim 16, wherein a large rectangular platform sheet of material is placed on the tracks in spanning relationship thereto to support an article thereon.

19. An attachment for a jack as in claim 1, wherein a pair of swing-out stabilizer arms are pivotally connected to opposite side portions of a base of said jack to prevent tipping of said jack.

20. An attachment for a jack as in claim 3, wherein stabilizing means are telescopically received in the forward ends of said cross frame members, said stabilizing means including a vertical support leg hingedly joined to a horizontal connecting member telescopically received in the forward end of the cross frame members.

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