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Chopra

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(54) **FOLDABLE TIRE DOLLY**

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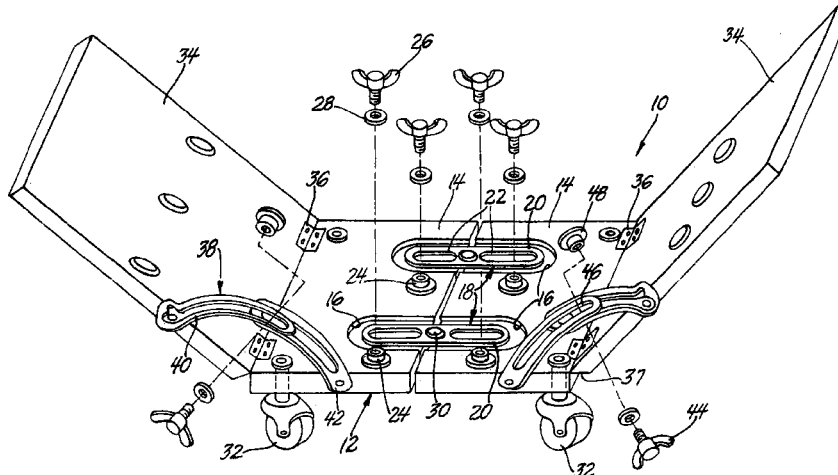
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(57) **ABSTRACT**

A foldable dolly for moving and positioning a vehicle tire assembly is formed with a rectangular base member mounted on a plurality of casters. Two wings are hinged to opposite ends of the rectangular member and have adjustable positioning members having one end attached to the base member and the other end attached to one of the wings. A plurality of bearings at least one bearing being mounted on each wing and one on the rectangular base member allow rotation of the tire assembly on the dolly and easy withdrawal of the dolly when the tire is mounted on a vehicle.

2 Claims, 2 Drawing Sheets



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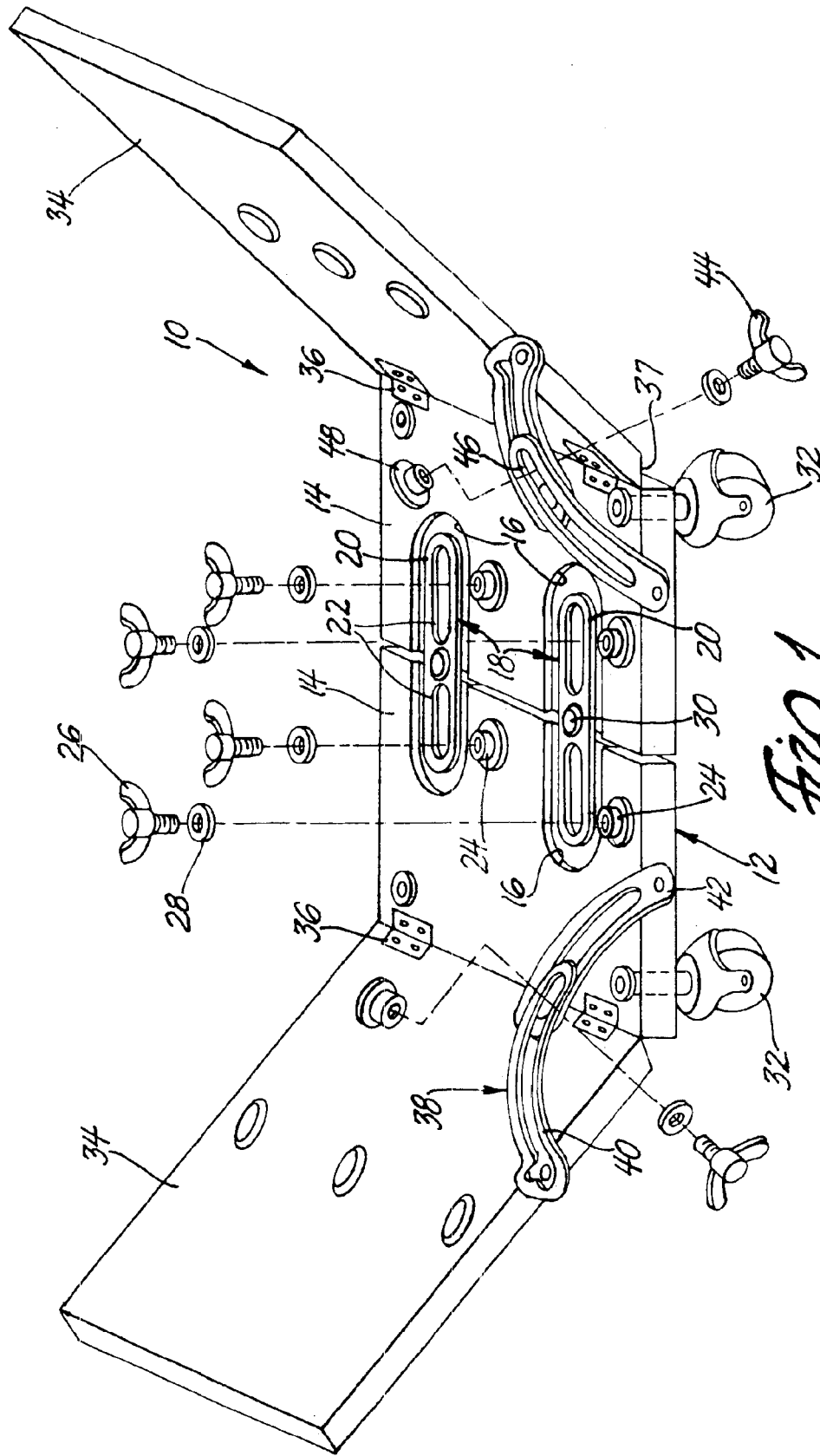


Fig. 1

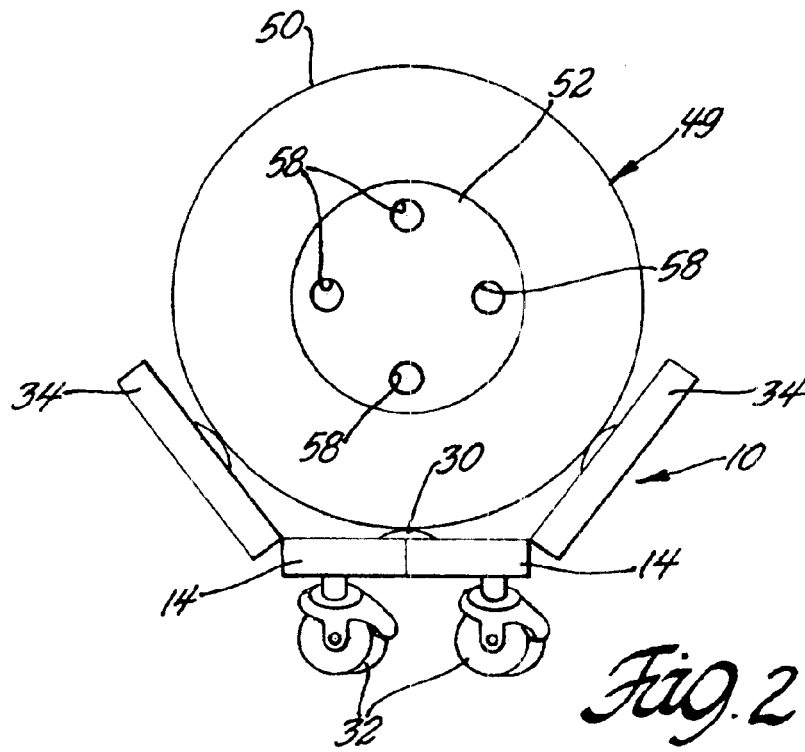


Fig. 2

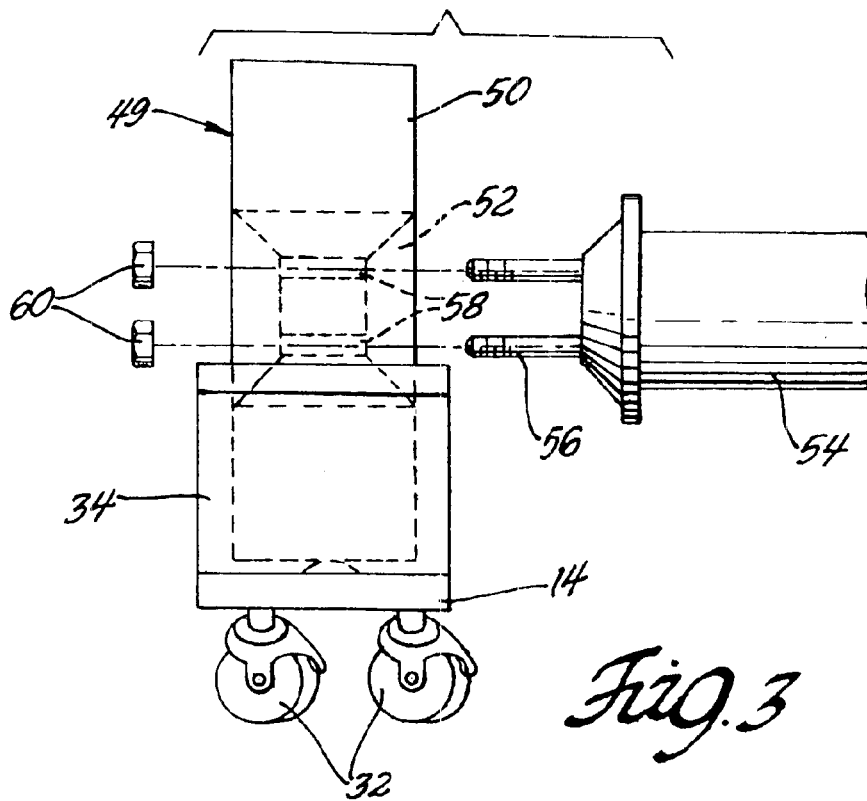


Fig. 3

1

FOLDABLE TIRE DOLLY**GOVERNMENT INTEREST**

The invention described herein may be made, used and licensed by and for United States Government purposes without paying me any royalty.

BACKGROUND OF THE INVENTION

This invention relates to dollies useful for the removal, moving and mounting of vehicle tires. More particularly, the dolly is useful in mounting and unmounting large vehicle tires from a vehicle.

The military uses a variety of tactical ground vehicles, all of which use large truck tires. When changing or rotating the tires the troops are required to lift and position the tires, which is a difficult and time-consuming job. It is particularly difficult for the smaller members of the armed services who may lack both the strength and height necessary to position the large tires on an axle which is a substantial height above ground level. Wheeled dollies useful for removing or mounting vehicle wheels are known in the art. Generally such devices are constructed with a mainframe having upright standards and a second frame supported on the mainframe, which holds a tire assembly and is movable vertically on the upright standards to lift and position the tire. Such devices are by nature heavy and bulky. The combination of weight and storage space required by such structures makes them unsuitable for use in military units, which are deployed throughout the world.

It would be desirable to have a folding, lightweight tire dolly that can be easily stored as part of the equipment for tire changing and rotation on a military vehicle. Such a device should be of simple construction, collapsible to minimum space requirement, and allow for easy loading of the tire on the dolly for transport. The dolly should also have means to allow the tire to be rotated on the dolly into a position where the holes in the wheel rim are aligned with the threaded axle studs on which the tire assembly is mounted.

SUMMARY OF THE INVENTION

The present invention provides a foldable tire dolly having the desired characteristics outlined above. The dolly is useful for moving and positioning a vehicle tire assembly consisting of a tire mounted on a normal wheel rim which is designed to be attached to the threaded studs of an axle assembly. The dolly of this invention has a rectangular base member, preferably adjustable in length, designed to accommodate tires of various sizes. The rectangular base member is further mounted on a plurality of casters that can be used to move the dolly over a variety of surfaces.

The rectangular base member has a pair of adjustable wings, which are hinged to opposite ends of the rectangular base member. The hinges allow one of the wings to be positioned to form a ramp so that a tire can be easily rolled onto the rectangular base member and the wing raised to a supporting position where in combination with the wing on the opposite end of the rectangular base member the vehicle tire assembly will be held in a centered position on the base member. Adjustable positioning members are associated with the wings and rectangular base member with one end of the positioning member being attached to the base member and the other end attached to one of the wings. The positioning members can be adjusted so as to hold the wings in contact with the tire to keep the tire from excessive

2

movement on the base member. The positioning members also intersect the angle between the associated wing and the base member to hold the tire in position on the dolly during movement of the dolly with the tire.

The tire dolly of this invention has a plurality of bearing surfaces with at least one bearing surface being mounted on each wing and one bearing surface on the rectangular base member to allow rotation of the tire into position so the wheel rim can engage the threaded studs on the axle.

BRIEF DESCRIPTION OF THE DRAWINGS

In the accompanying drawing:

FIG. 1 is a perspective view of one embodiment of this invention;

FIG. 2 is a side view of one embodiment of this invention with a vehicle tire assembly thereon; and

FIG. 3 is side view of FIG. 2 showing the vehicle tire assembly aligned with the threaded axle studs.

DETAILED DESCRIPTION

Referring to the accompanying drawing in which like numerals refer to like parts and initially to FIG. 1, a foldable tire dolly according to this invention is designated generally **10**. The dolly has a rectangular base **12** composed or formed of two separate pieces **14** which abut each other near the centerline of the rectangular base **12**. The two separate pieces **14** have two semi oval slots **16** incised into their upper surfaces so that when the pieces of the base member are brought into abutment there is an oval depression **18** formed in the upper surface of the rectangular base member **12**. A complimentary oval shaped adjustable brace **20**, sized slightly smaller than the oval depression **18**, is nested in each of the oval depressions. Each of the oval braces **20** has two longitudinal oval apertures **22**, one oval aperture being formed on each end of the individual oval brace. The longitudinal oval apertures **22** engage complementary internally threaded studs **24** located in and extending upward from the bottom surface of the oval depressions **18**. The oval adjustable braces **20** can be secured in position by means of complementary threaded fasteners **26** and associated washers **28**, by inserting the fasteners into the internally threaded studs **24** and tightening. As shown, the threaded fasteners **26** can be of a design to be tightened by hand obviating the need for special tools. When the threaded fasteners **26** are loosened, the two base pieces **14** can be moved closer together or further apart in order to adjust the rectangular platform **12** to the desired length. In this embodiment, each of the adjustable oval braces **20** has a bearing member **30** located near its center. The bearing member **30** shown is a sphere mounted in a complimentary housing located in the adjustable brace **20**.

The rectangular base **12** is mounted on a plurality of casters **32**, which allow the tire dolly **10** to be moved over the ground while carrying the tire assembly. The type of caster or wheel chosen can be determined by the ground over which the dolly is to be moved, softer soils generally requiring a wider caster to allow movement.

The rectangular base **12** has two wings **34** attached to the rectangular base member **12** one wing being attached to each end of the rectangular base. The wings **34** are fastened to the rectangular base **12** by means of hinges **36**, which allows the wings to rotate inward towards the rectangular base **12** to a point where the wing is in contact with the tire assembly loaded on the dolly **10**. The wings **34** also have the edge hinged to the base undercut **37** so that the wing can rotate

3

outward past horizontal to a position where the end of the wing opposite the hinge touches the ground this forms a ramp allowing a tire assembly to be rolled up the ramp on to the base member **12**. This will eliminate lifting of heavy tire assemblies and thereby improves safety and lessens the chance of injury. Each of the wings **34** has at least one bearing member **30** on its surface to allow a tire assembly on the dolly **10** to be rotated on the dolly; this allows the wheel rim to be rotated so the holes in the rim align with the threaded studs on the axle.

A pair of adjustable arcuate braces **38** are formed of curved arms **40, 42**. Arm **40** has one end firmly attached to its associated wing **34**, and arm **42** has one end attached to its associated base member **14**. Once the rectangular base **12** has been adjusted for width and the wings **34** are positioned so they are juxtaposed the tire, threaded fasteners **44** can be placed in a slot **46** in the arms **40, 42** and secured with a complimentary nut **48**. The resulting arcuate braces **38** not only position the wings **34** but provide a side support for the tire assembly to help keep the tire assembly on the dolly **10** as it is moved.

In FIG. 2, the dolly **10** of FIG. 1 is shown with a tire assembly **49** held in position with a tire **50** mounted on a wheel rim **52** ready for installation. The dolly **10** is then moved next to an axle **54**, shown in FIG. 3, the axle having a plurality of threaded studs **56** to be used in mounting the wheel rim **52** on the axle. If the apertures **58** in the wheel rim **52** do not align with the threaded studs **56** the tire assembly **49** can be rotated to align the studs and the dolly **10** moved towards the axle **54** until the threaded studs extend through the wheel rim. Complimentary threaded nuts **60** are then

4

tightened on the threaded studs **56** to hold the tire assembly in position. The dolly **10** can then be withdrawn as the bearing members **30** allow easy withdrawal.

Various alterations and modifications will become apparent to those skilled in the art without departing from the scope and spirit of this invention and it is understood this invention is limited only by the following claims.

What is claimed is:

1. A foldable dolly for moving and positioning a vehicle tire assembly having a tire mounted on a rim to be attached to a vehicle comprising:

a rectangular base member, formed of two separate base pieces with two adjustable slides mounted longitudinally on the base with one end of the slide firmly attached to each of the base pieces, the base member being mounted on a plurality of casters;

a pair of wings hinged to opposite ends of the rectangular member;

adjustable positioning members having one end attached to the base member and the other end attached to one of the wings; and

a plurality of bearings at least one bearing being mounted on each wing and at least one bearing on the rectangular base member.

2. The foldable dolly of claim 1 where at least one wing is hinged to the rectangular base so it can be rotated to a position to form a ramp allowing the tire assembly to be rolled onto the rectangular base member.

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