United States Patent [19]

Clarke

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[54] **RESILIENTLY TILTABLE VEHICLE JACK BASE**

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[52] **U.S. Cl.** **254/101;** 254/DIG. 1

[51] **Int. Cl.** **B66f 13/00**

[58] **Field of Search** 254/DIG. 1, 101

[56] **References Cited**

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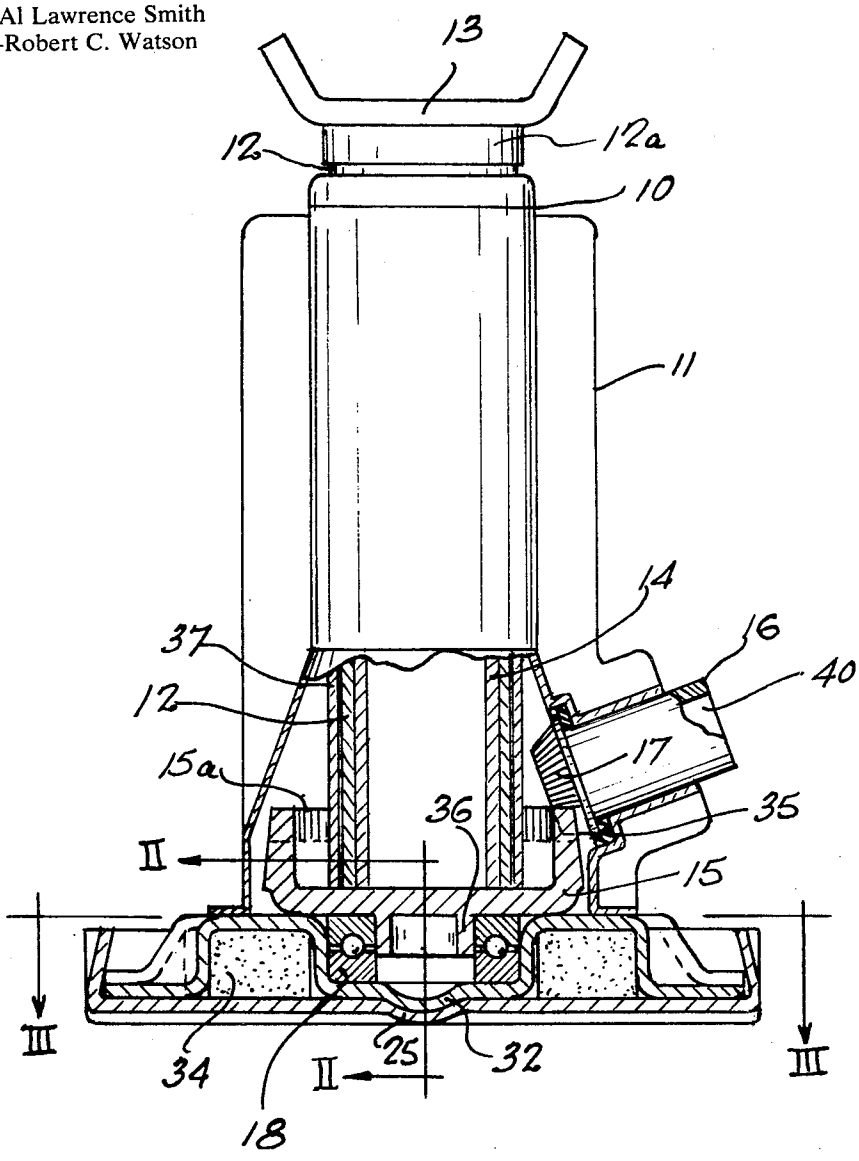
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Primary Examiner—Al Lawrence Smith
Assistant Examiner—Robert C. Watson

[57] **ABSTRACT**

A resiliently tiltable load supporting base for vehicle jacks is described. The base has a ground engaging plate having a substantially flat bottom with upturned peripheral edges and a rounded depression in a central region of the bottom. A load receiving plate having a substantially flat top with down-turned peripheral edges is mounted within the ground engaging base. A generally spherical socket extends downwardly in a central region of the top of the load receiving plate and this socket has a generally flat bottom with a downwardly directed rounded projection which mates with the rounded depression in the ground engaging base. An elastomeric means, e.g. a hard rubber block, is mounted between the ground engaging base and the load receiving plate in a region between the central socket and downturned peripheral edges. This hard rubber is positioned on all sides of the socket and maintains the two parts of the base in paralled relationship while permitting some resilient tilting of a screwjack post and the load receiving plate with respect to the ground engaging member.

5 Claims, 5 Drawing Figures



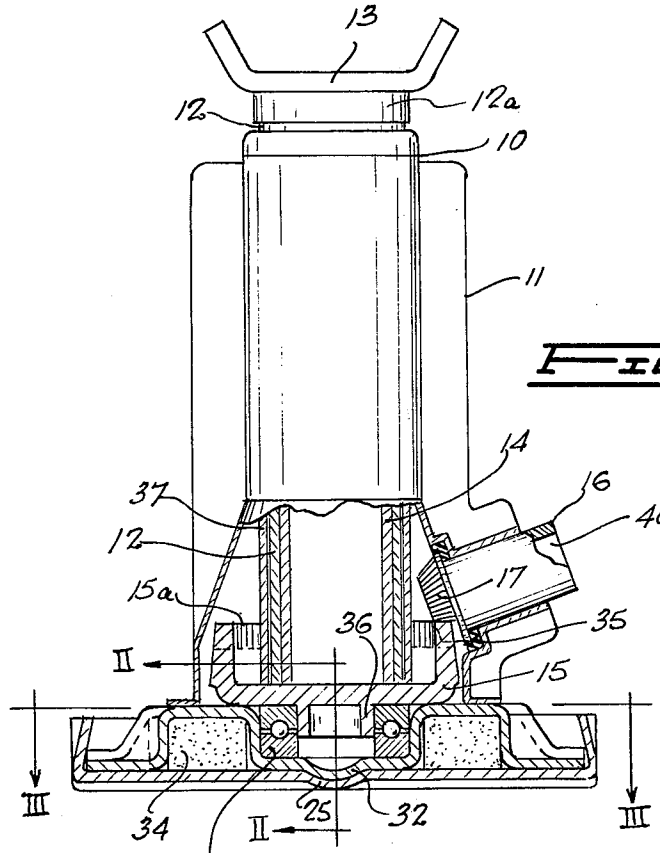

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Fig. 1.

Fig. 3.

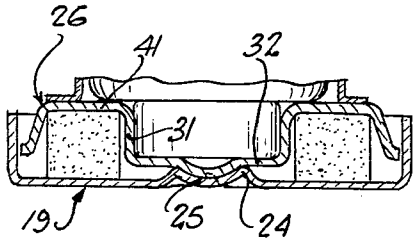


Fig. 2.

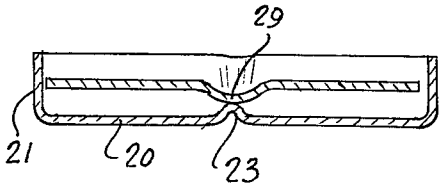


Fig. 4.

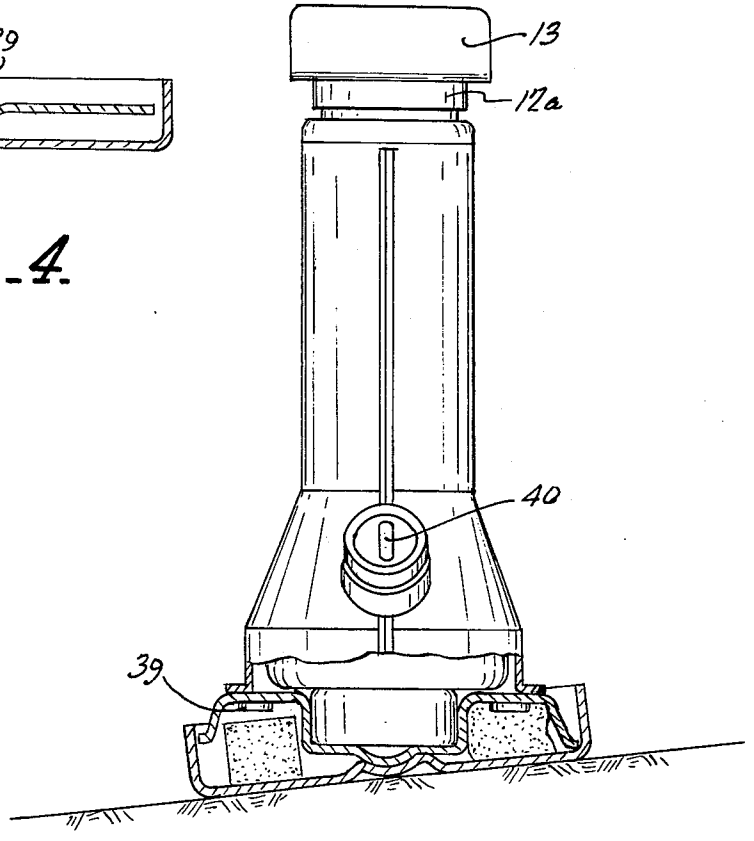


Fig. 5.

RESILIENTLY TILTABLE VEHICLE JACK BASE

This invention relates to a resiliently tiltable load supporting base for vehicle jacks.

The mechanical advantage of vehicle jacks is usually obtained by screw, lever or hydraulic action. Thus, the screw jack has a threaded screw fitted to a gear wheel which is a part of the base of the jack. This gear wheel engages a pinion gear which is manually turned by means of a handle or crank. The screw jack is widely used as a light weight vehicle jack.

The jack is usually mounted on a flat floor or ground engaging base with the post of the jack mounted perpendicularly to this base. One difficulty that has been encountered with the usual jack of the above type is that the support surface is not always level and this may result in jamming of the elevating portion of the jack within the encasing elevator tube.

It is the object of this invention to provide a novel resiliently tiltable base which can compensate for these irregularities and thereby prevent any tendancy for binding within the elevator tube.

Thus, in accordance with the present invention there is provided a resiliently tiltable load supporting base for vehicle jacks. It comprises an outer metallic base having a substantially flat bottom for engaging the ground or floor with upturned peripheral edges and a rounded depression in a central region of the bottom. Mounted within this space is an inner metallic load receiving plate having a substantially flat top with downturned peripheral edges. A socket extends downwardly in the central region of the top and this socket is adapted to receive a jack tube and also has in the bottom thereof a downwardly directed rounded projection which mates with the rounded depression in the outer base member. Also mounted between the outer base member and the inner load receiving plate in the region between the central socket and the downturned peripheral edges is an elastomeric slab means which urges the outer base member and inner plate into parallel relationship. Thus, the inner load receiving plate is resiliently tiltable with respect to the outer base member along a substantially horizontal axis.

According to a preferred embodiment, the outer base member is of a rectangular configuration and has a rounded, upwardly projecting ridge extending along a central axis, this ridge being bifurcated at a central region to form a central dish-shaped depression. This is the abovementioned depresion which mates with the projection on the bottom of the socket in the inner load receiving plate. The load receiving plate is also preferably rectangular with the peripheral edges terminating in a narrow peripheral flange. This flange preferably has downwardly directed, rounded projections in midpoints of opposite ends such that they rest on the ridge of the outer base member, thereby permitting rocking only on one horizontal axis.

The elastomeric slab means is preferably in the form of a hard synthetic or natural rubber block or blocks, e.g. of 60 to 70 durometer hardness. For convenience, four such blocks can be used, these being positioned adjacent the four corners of the load receiving plate.

The base according to this invention can be adapted for use with any kind of vehicle jack but is particularly well adapted for use with the usual screw jack having an elevator screw engaging a gear wheel mounted on a vertical axis in the lower end of a jack elevator tube.

With this arrangement a bearing support for the gear wheel is mounted in the socket of the load receiving plate.

Constructional forms of the invention will now be described, but way of example only, with reference to the accompanying drawings, in which:

FIG. **1** is a side elevation in partial section showing details of the jack base of the invention;

FIG. **2** is an end elevation in partial section;

FIG. **3** is a plan view of the base only;

FIG. **4** is a sectional view of the base only; and

FIG. **5** is an end elevation of the entire jack as it appears on uneven ground.

Referring now particularly to FIG. **1**, it will be seen that the jack portion has a tubular outer casing **10** in the form of two semicylindrical halves joined by flanges **11**. These flanges **11** are spot-welded together.

Within this case **10** is an elevator tube **12** which can typically be cold drawn seamless mechanical steel and a cap member **12***a* is mounted on the top end of tube **12**. Mounted on cap **12***a* is a substantially U-shaped load support **13** and this load support is rotatably mounted on the cap **12***a* by a central pivot.

The internal mechanism of the jack structure has not been shown in detail but it includes the usual components of a typical screw jack assembly including a sleeve **37**, the elevator tube **12**, elevator screw **14** and a central drive screw, details of which are not shown. The screw mechanisms are rotated by way of gear member **15** having gear teeth **15***a* and supported by annular flange member **36** within a bearing member **18**. The gear member **15** is in turn driven by pinion gear **16** having teeth **17** which mesh with the gear teeth **15***a*. The outer end of pinion gear **16** has a slot **40** for receiving a handle. The pinion gear **16** is mounted within a friction bearing **35** which can conveniently be of a material such as that available under the trademark "DERLIN."

Looking now at the base of the jack, it will be seen that this includes an outer member **19** and an inner member **26**. The outer member **19** has a ground engaging flat bottom portion **20** and upturned peripheral side edges **21** and upturned peripheral end edges **22**, these upturned edges being joined by a rounded corners as can be seen from FIG. **3**.

Extending along the length of plate **20** in a central region is an upwardly projecting rounded ridge **23**. As can be seen from the broken lines in FIG. **3**, this ridge is bifurcated in a central region, forming a pair of semicircular portions **24**. Within these semi-circular portions **24** is a dish-shaped depression **25** serving as a bearing support.

The inner base member **26** has upper flat base portions **41** which peripherally merge into downwardly inclined edge portions **28** which finally merge into narrow flat peripheral edge flange **27**. Downwardly projecting ridge portions **29** are formed in the end flanges **27** and **28** and these can be seen in the best detail in FIG. **4**. These downwardly directed projections **29** rest upon the upwardly projecting ridge **23** in plate **20** providing a pivot point between the two plates.

In a central region of base plate **26** is a downwardly pressed cylindrical socket having side walls **31** and a substantially flat bottom **32**. In a central region of the bottom **32** is a rounded depression **33** which mates with the dish-shaped depression in the central region of plate **20**. The socket **30** serves as the main holding and

support portion for the jack cylinder and these dish portions **25** and **33** serve as a pivotal direct contact between the two plates.

Holes **38** are provided in plate **26** and the jack portion is rigidly fixed to the plate **26** by way of rivets **39** extending through the holes **38.**

Mounted within the gap formed between the inclined flanges **28** and the socket **30** of inner plate member **26** are four rubber blocks **34.** These rubber blocks **34** completely fill the vertical space between plates **19** and **26** as can be seen from FIGS. **1** and **2** so that the rubber blocks tend to hold these plates in a parallel relationship. However, when the jack is mounted on an irregular floor or uneven ground, it will be seen from FIG. **5** that the jack cylinder portion can tilt with respect to the base by compressing one of the rubber blocks **34.** Of course, since these rubber blocks are quite hard, e.g. **60** to **70** durometer hardness, it will be seen that a considerable load is necessary before this tilting occurs and the degree of tilt is limited by the length of the side flanges **28.** When the load on the jack is released, the resiliency of the rubber blocks causes the plates **19** and **26** to return from the position shown in FIG. **5** to the position shown in FIG. **2.**

The embodiments of the invention in which an exclusive property or privelege is claimed are defined as follows:

1. A resiliently tiltable load supporting base for vehicle jacks, comprising (a) a rectangular metallic base member having a substantially flat bottom with upturned peripheral edges and a rounded ridge extending along a central axis thereof, said ridge being bifurcated at a central region to form a central dish-shaped depression in said bottom, (b) a metallic load receiving plate having a substantially flat top with downturned peripheral edges terminating in a narrow peripheral flange, said flange having downwardly directed, rounded projections in mid-points of opposite ends, said projections being adapted to rest on said base member ridge and a socket extending downwardly in a central region of said top, said socket being adapted to receive a jack tube and having in the bottom thereof a downwardly directed rounded projection which mates with said dish-shaped depression in the base member and (c) elastomeric slab means mounted between said base member and load receiving plate in a region between the central socket and downturned peripheral edges, whereby the load receiving plate is resiliently tiltable with respect to the base member along a substantially horizontal axis.

2. A device according to claim **1** wherein the socket is substantially cylindrical with a flat bottom having a downwardly directed central, dish-shaped projection.

3. A device according to claim **1** wherein said elastomeric slab means comprises hard synthetic or natural rubber blocks.

4. A device according to claim **3** wherein four elastomeric blocks are positioned at four corners beneath said load receiving plate.

5. A device according to claim **1** having a screw jack post mounted in said socket.

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