S. P. BARKER.

ROLLER BASE LIFTING JACK.

APPLICATION FILED JUNE 20, 1918. RENEWED JAN. 28, 1919.

1,400,931. Patented Dec. 20, 1921.

2 SHEETS—SHEET 1.

Fig. 1.

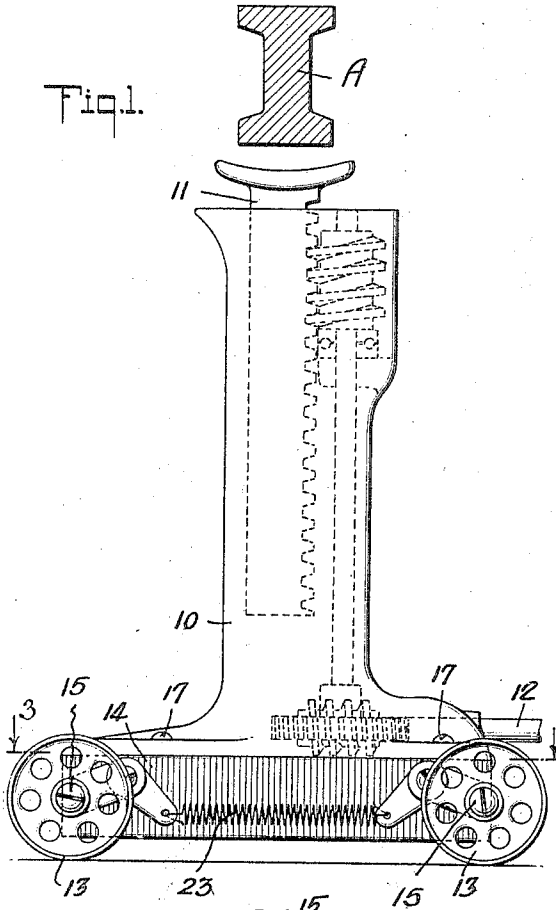


Fig. 2.

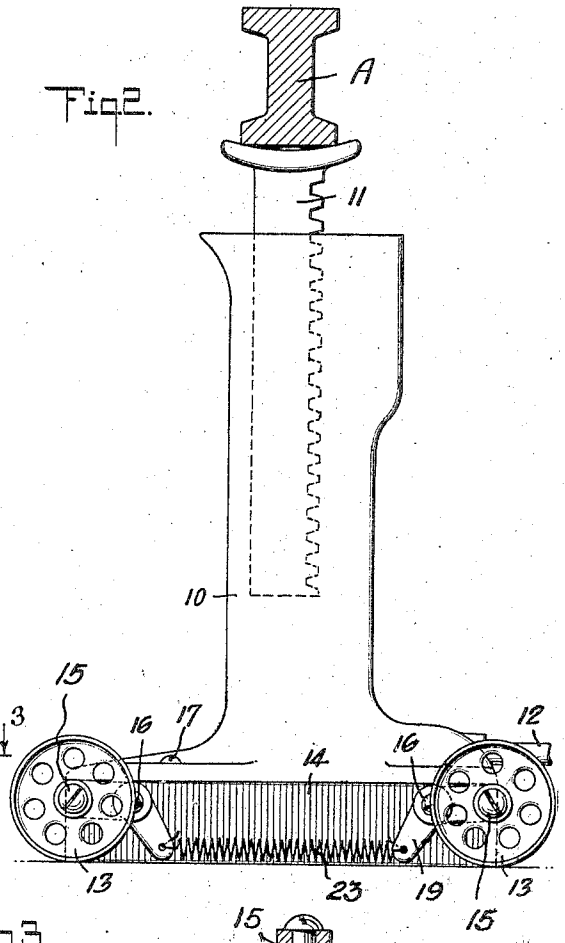
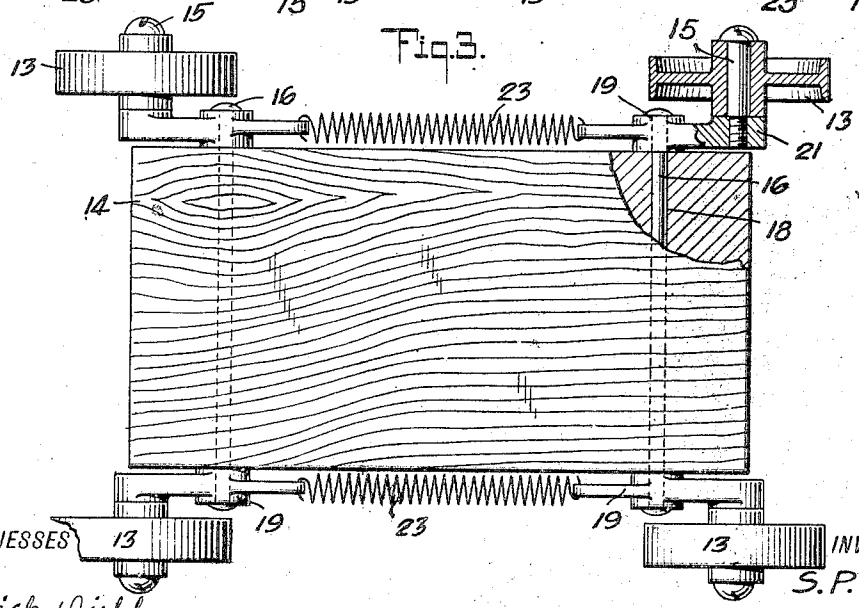


Fig. 3.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 4.

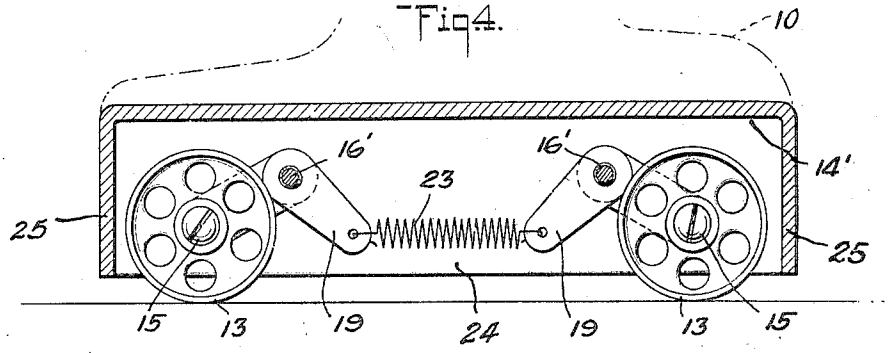


Fig. 5.

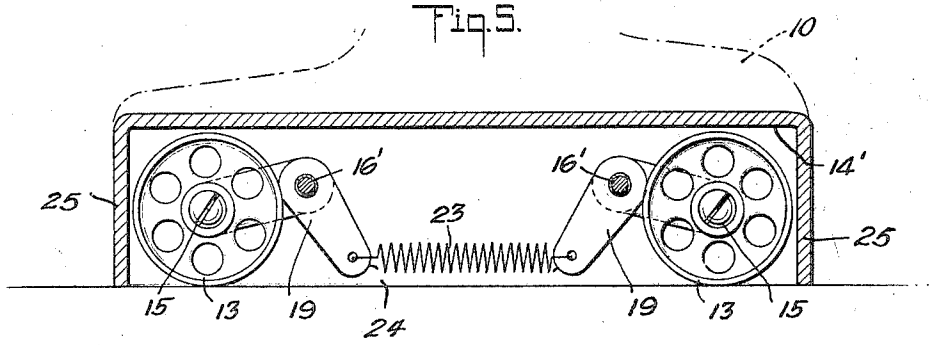
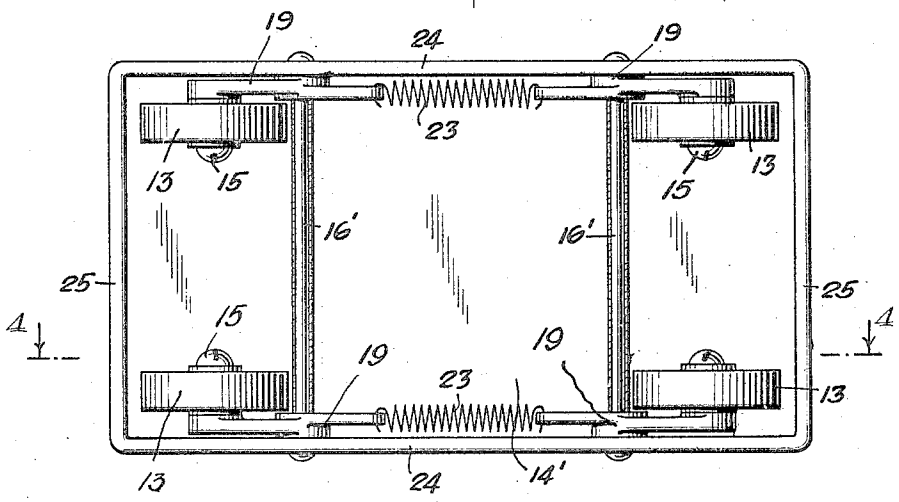


Fig. 6.



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UNITED STATES PATENT OFFICE.

SYDNEY P. BARKER, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO ARROW GRIP MANUFACTURING CO., INC., OF GLENS FALLS, NEW YORK, A CORPORATION OF NEW YORK.

ROLLER-BASE LIFTING-JACK.

1,400,931. Specification of Letters Patent. Patented Dec. 20, 1921.

Application filed June 20, 1918, Serial No. 240,976. Renewed January 28, 1919. Serial No. 273,690.

To all whom it may concern:

Be it known that I, SYDNEY P. BARKER, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Roller-Base Lifting-Jack, of which the following is a full, clear, and exact description.

This invention relates to lifting jacks of the type adapted especially for hand operation in the manipulation of automobile wheels or tires, and has particular reference to anti-friction supporting means for a jack whereby the jack may be easily put into or taken out of place beneath the vehicle axle or the like without requiring the operator to stoop or reach beneath the vehicle. While I show and refer herein to the device as a hand operated lifting jack it is to be understood that the field of usefulness of the improvement is not to be restricted unnecessarily.

Stated more particularly I provide a lifting jack with a base, or a base to be attached to a lifting jack, roller supporting means movable relatively to the base and resilient means acting on the roller supporting means and the base, the elements specified being so combined and arranged that the roller supporting means normally acts on the ground and the jack and base derive their normal support from the roller supporting means and are normally held above or free from the ground, thus providing for the easy transportation or manipulation of the jack in placing the same beneath the axle or other load to be lifted or while removing the same from the operating position, but permitting the base to move downward relatively to the roller supporting means into positive and direct engagement with the ground when the load is brought to bear upon the jack, the resilient means acting automatically to restore the roller supporting means to normal or jack supporting position when the load is relieved from the jack.

The mechanism for accomplishing the foregoing objects may be represented in various ways, and hence I do not wish to be limited to any of the specific details illustrated so long as the broad aspects of the invention obtain, but in order to illustrate one or more practical embodiments of my improvement reference is made to the accompanying drawings, similar reference characters being applied to like parts throughout the several figures and of which—

Figure 1 is a side elevation of one form of my improvement in its normal position as when the jack is being rolled beneath the vehicle axle or other load to be hoisted and supported.

Fig. 2 is a similar view but indicating the change of position of the jack at the moment the axle is about to be lifted, the base having been forced down into direct, positive and frictional engagement with the ground.

Fig. 3 is a plan view of the base attachment as it would be seen from the plane of the line 3—3 of Fig. 1, a corner portion of the structure being broken away to more clearly indicate the manner of assemblage.

Fig. 4 is a vertical longitudinal section of a modification on the line 4—4 of Fig. 6, the anti-friction rollers being indicated in the same relative position to the base as in Fig. 1.

Fig. 5 is a view similar to Fig. 4, but showing the changed position of the parts as in Fig. 2; and

Fig. 6 is a bottom plan view of the same.

Referring now more specifically to the accompanying drawings, 10 represents a lifting jack of any suitable or approved design or construction having a plunger 11, an operating member 12, and any suitable power multiplying devices acting between the operating member and the vertically movable plunger.

According to the usual practice in order to position a lifting jack beneath an axle, such as indicated at A and representing any load to be supported, it is necessary for the operator to stoop or crawl well beneath the vehicle body, especially if the jack is a heavy and cumbersome one. It will thus be appreciated that it is highly desirable for a jack for transportation purposes or for shoving it beneath the object to be lifted or removing it from such position, to be provided with anti-friction roller supporting means and with means in conjunction with said supporting means normally to hold the jack free and clear from the ground, thereby rendering it an easy matter for the operator through the manipulation of the operating

member to roll the jack from place to place or into or out of hoisting position. It is also essential that the anti-friction means should be so supported as to yield to the load brought to bear upon the jack in order to insure positive, direct and frictional contact between the base of the jack and the ground. In the construction shown and as preferred, the anti-friction roller supporting means consists of four rollers 13 which are movably associated with the base portion of the jack, either directly or with a supplemental base 14 detachably connected to the main portion of the jack, one of the rollers being arranged adjacent each corner of the base. In the specific embodiment disclosed the axle 15 of each roller is so mounted or connected to the base 14 as to swing with its roller around the axis of a pivot connection 16 whereby the roller is adapted to move up and down with relation to the base 14.

The structure in the first three figures is one in which the auxiliary base 14 is made of a solid block of material such as wood whereby the jack is adapted to be supported upon the ground with a minimum amount of slippage while sustaining the load. Being made of wood the base 14 may readily be attached to the main portion of the jack by means of screws 17 or the like. This base is transversely bored at 18 adjacent and parallel to the ends thereof.

The wheels 13, constituting the only members that touch the ground while the jack is unloaded and in portable condition, are all severally journaled on oscillating arms or bell cranks 19 which in turn are pivoted upon the pivot rods or connections 16 extending through the parallel holes 18. As shown in Fig. 3 each of the bell cranks is tapped at one end 21 to receive the journal or axle 15 on which the adjacent wheel is journaled for free rotation. The axle 15, however, is preferably permanently fixed to the threaded end of the bell crank so as to prevent unscrewing of the axle and displacement or loss of the wheel thereon. The bell cranks 19 are arranged in pairs, the members of each pair being mounted upon the ends of the pivot connection 16. One bell crank of each pair may be said to be paired with the bell crank of the other pair that lies on the same side of the base 14. In other words for convenience of description the rollers may be regarded as arranged in end pairs and also in side pairs. The rollers 13 are acted on by resilient means which normally project their lower portions below the under surface of the base 14, and yet permit said base to bear down squarely and directly upon the ground under the pressure of the load upon the jack. In the embodiment disclosed the end members of the bell cranks of each side pair of bell cranks are directed more or less toward each other and connecting them is a coil spring 23, the ends of the spring being hooked or otherwise engaged in or to the extreme ends of these members of the bell cranks. The contractile force of the springs tends to throw the rollers downward with respect to the base or to elevate the base with respect to the bottom of the rollers, said force being sufficient to sustain the weight of the jack when unloaded free from the ground. As soon, however, as any load is brought to bear upon the jack in the ordinary operation thereof the springs are put under tensile strain while the bell cranks oscillate around the axes of the pivot connections 16 and rise relatively while the spring-connected ends of the bell cranks swing downward toward the ground.

The yielding action of each roller is preferably independent of the others. For example and in the embodiment disclosed each wheel support or bell crank is free to rotate around the pivot connection 16 except as above described, that is to say, any of the rollers may oscillate around the axis of the pivot 16 independently of the others so if the jack should be operated over cobble stones or any other uneven surface the rollers will naturally accommodate themselves to such surface without material resistance. The rollers of each side pair, however, being actuated by the same spring will always tend to swing downward below the lower surface of the base 14 to substantially the same extent.

Instead of making the base 14 of wood and attaching it to the main portion of the jack by screws or the like it may be made of metal either as a separate part or as a part of the main portion of the jack as may be found most suitable. In Figs. 4, 5 and 6 I represent the improvement as constituting an integral part of the jack base or casing, the base 14′ being in the nature of a hollow rectangle open at the under side and of sufficient strength to sustain any load that may be brought to bear upon the jack, the same being shown as including side and end flanges 24 and 25 deep enough to house the rollers 13 and the oscillating members upon which they are journaled. The bell cranks 19 are or may be substantially the same as those already described and hence are similarly indicated by reference characters as well as the springs 23 constituting the direct connections between the side pairs of roller supports. By this form of construction I provide a jack base that occupies no more extent in length or width than the ordinary jack base and with but slight additional height. Hence for the purpose of storage in the tool box, the form shown on the second sheet of drawings is much more compact than that on the first sheet although for some purposes the first form indicated may

be preferable in that a wider rolling support for transportation of the jack along the ground is afforded by the wooden base having the rollers pivoted thereto on the outside. The pivot connections 16 are connected to the metal base simply by drilling pairs of alined holes in the side flanges 24. The bell cranks and the rollers are so proportioned in this construction as to afford ample freedom of movement of the rollers with respect to the portions of the pivot connections within the open space in the base. The operation of this form of the invention is essentially the same as that already described.

I claim:

1. In a lifting jack, a rigid base adapted to bear directly upon the ground and so sustain the load brought upon the jack, a series of anti-friction rollers adjacent to the corners of the base, and means connecting said rollers resiliently to the base, said connecting means including a series of oscillating members, one for each roller, and spring means acting upon the oscillatory members and serving to elevate the base free from the ground when the jack is unloaded.

2. In a lifting jack, the combination of a base adapted to bear directly upon the ground and so support the entire load brought to bear upon the jack, a plurality of bell cranks, pivot means connecting the bell cranks to the base on horizontal axes, an anti-friction roller journaled on one end of each bell crank and movable in a vertical plane with the bell crank around the pivot thereof, and spring means acting constantly upon the other end of each bell crank tending to swing the roller downward below the bottom of the base.

3. In a lifting jack, the combination of a rectangular base having holes formed therethrough parallel to the ends of the base, a pair of pivot members extending through said holes, an end pair of bell cranks mounted upon each pivot connection and adapted to oscillate in vertical planes adjacent to the corners of the base, an anti-friction roller carried by one arm of each bell crank, and coil springs connected to the arms of the bell cranks remote from the ends supporting the rollers and tending to project the rollers downward below the bottom of the base but yielding under the weight of the load brought to bear upon the jack to allow the base to bear directly and frictionally upon the ground.

4. The herein described base for a lifting jack comprising a strong rigid load supporting member adapted to engage directly and frictionally with the ground when loaded, a series of anti-friction rollers for the base, said rollers being disposed as side and end pairs, movable arms on which the rollers are journaled, pivot connections between the arms and the base, the arms of each end pair of rollers being pivoted on the same axis, and a spring acting upon the arms of each side pair of rollers, substantially as set forth.

5. A lifting jack base adapted under a load to bear directly and frictionally upon the ground, horizontal pivot members carried thereby, anti-friction rollers mounted to oscillate in vertical planes upon said pivot members, and resilient means acting upon the rollers tending to project them below the bottom surface of the base.

6. In a portable load-supporting jack, a hollow rectangular jack-carrying base open at its under side and formed for stable engagement with the ground, a plurality of rollers movably mounted within the base, one adjacent each corner thereof and movable through the open under side and resilient means acting between the rollers and base normally to hold the base free from the ground and also to permit the base to move downward into contact with the ground consequent to the application of loading pressure on the jack whereby under the pressure of the load said base will assume the function of supporting the jack in a position to which it may be moved on the rollers, each roller being yieldable relatively to the base independently of the other rollers.

7. In a portable load-supporting jack, a hollow rectangular jack-carrying base open at its under side and formed for a stable engagement with the ground, a plurality of rollers movably mounted within the base, one adjacent each corner thereof and movable through the open under side and resilient means acting between the rollers and the base normally to hold the base free from the ground and also to permit the base to move downward into direct contact with the ground consequent to the application of loading pressure on the jack whereby under the pressure of the load said base will assume the function of supporting the jack in a position to which it may be moved on the rollers.

SYDNEY P. BARKER.