Aug. 26, 1952 J. F. PALKA 2,608,382

LIFTING JACK

Filed April 27, 1948

Fig. 1

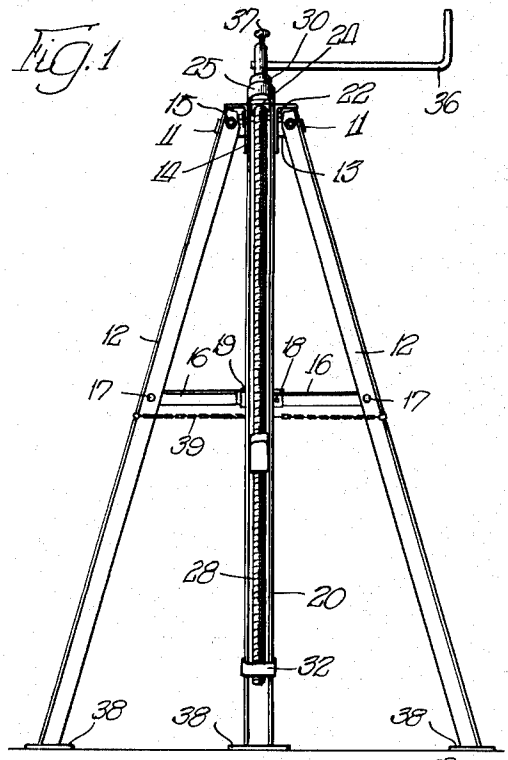


Fig. 2

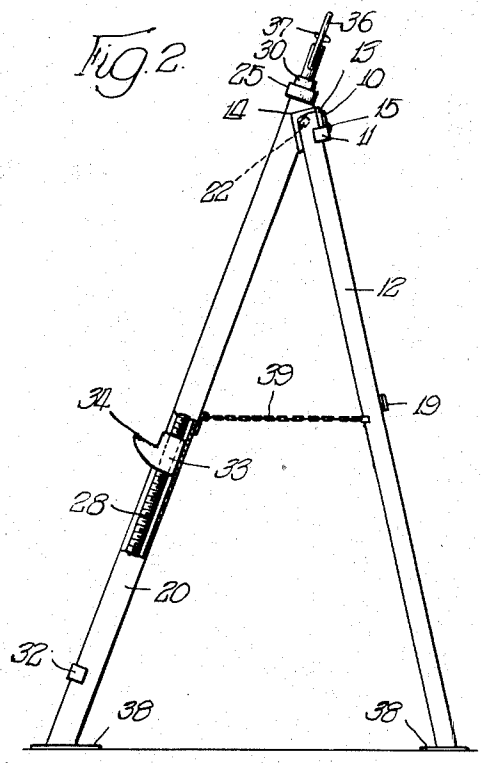


Fig. 3

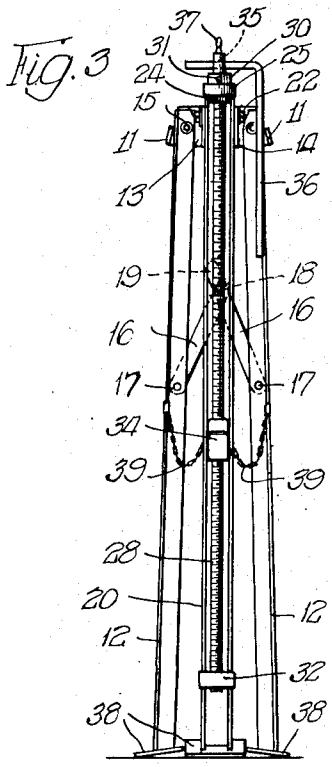


Fig. 4

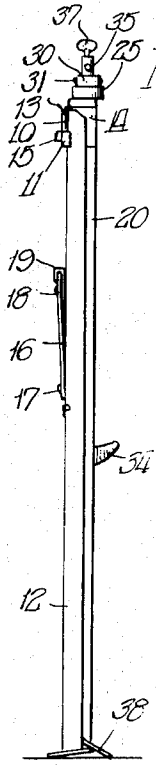
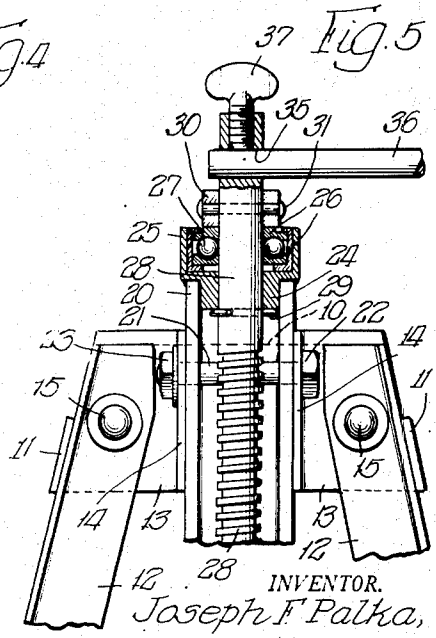


Fig. 5



INVENTOR.
Joseph F. Palka,
BY
B. Pelechowicz
Attys.

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LIFTING JACK

Joseph F. Palka, Chicago, Ill.

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4 Claims. (Cl. 254—99)

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The present invention relates to automobile jacks and has for its main object the provision of a jack in the form of a tripod wherein one leg thereof may be provided with a shiftable member for engaging and elevating an object such as a bumper or any other part of an automobile.

A still further object of the present invention is the provision of a jack of the character indicated wherein the legs thereof may be pivotally connected at their one ends and wherein the same may be shifted into open or folded positions.

Another object of the present invention is the provision of a jack in a form of a tripod wherein two legs thereof may open or fold along one plane with the third leg thereof, which carries a jack member, opening or folding along a plane which is substantially in a perpendicular relation with the first plane, thereby facilitating the engagement of the jack with the object to be lifted, and permitting the legs to fold into a compact bundle.

Another object of the present invention is the provision of a jack in a form of a tripod wherein one leg thereof, carrying the lifting mechanism, is hingedly connected with the remaining two legs, and wherein said leg may be disconnected from the other two legs and used independently of the latter as a complete jack.

Another object of the present invention is to generally improve a jack.

With the above general objects in view and others that will appear as the invention is better understood, the same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated in the accompanying drawing and pointed out in the appended claims.

In the drawing forming a part of this application, and in which like designating characters refer to corresponding parts throughout the several views:

Fig. 1 is a front elevational view of the jack, with legs thereof in an open position;

Fig. 2 is a similar view taken at substantially ninety degrees of that at which the view of Fig. 1 was taken;

Fig. 3 is a face elevational view of the jack with legs thereof in a folded position;

Fig. 4 is an edge elevational view of the jack with legs in a folded position; and

Fig. 5 is an enlarged elevational view, partly in section, of the head at which the legs of the jack are pivotally connected, with mechanism for shifting a jack member associated with one of the legs.

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Referring in detail to the present drawing there is shown a jack which includes head plate 10, shown in the form of a trapezoid, provided at its ends with integrally formed and perpendicularly disposed tongues 11 which are at opposed inclines corresponding to the angle of a pair of side legs 12 when the same are shifted into an open position. These tongues constitute means for limiting the outward shifting of said legs 12 into an open position, as is clearly seen in Fig. 5.

Welded or otherwise rigidly affixed to each end of said head plate 10 is plate 13 provided with a perpendicularly disposed wing 14 at its inner edge. Two of said wings 14 are in a spaced parallel relation, perpendicularly and substantially centrally disposed with relation to said head plate 10.

Each of said side legs 12 is made of an angle bar, substantially L-shaped on transverse cross-section, with one side thereof pivotally affixed to said head plate 10 with plate 13 interposed therebetween, by means of rivet 15 or other suitable means. The other side of each of said side legs 12 remains substantially in parallelism with wings 14 when said legs are in a closed position, illustrated in Fig. 3.

Substantially centrally thereof each leg 12, at its co-planar side, has arm 16 pivoted thereto, as at 17. Both arms 16 are at their inner ends connected by pivot 18, and one arm 16 is extended past said pivot 18 and is there provided with overhanging buckle 19 which prevents said arms from folding in a downward direction, but permit folding thereof into an upward direction when legs 12 are shifted toward each other, as is seen in Fig. 3.

Receivable within said wings 14 is a retaining member comprising a third leg 20 which is substantially U-shaped on transverse cross-section, with its central portion disposed toward said head plate 10, and which may be in a spaced relation with said head plate 10 for permitting angular shifting movement with relation thereto as will be later apparent.

Passed through said wings 14 and sides of legs 20 is bolt 21 which is provided at one of its ends with head 22 in contact with one wing 14. The opposite end of said bolt 21 is threaded and receives nut 23 in contact with the opposite wing 14. By virtue of this arrangement said leg 20 is clamped within wings 14 and hingedly suspended upon bolt 21 for angular shifting movement with relation to said head plate 10 and said side legs 12.

Leg 20 is spaced to some extent from plate 10 in order to permit the same to make angular

shifting motion, without obstruction from plate 10, as is seen in Fig. 2.

The upper end of leg 20 extends above said plate 10, plates 13 and wings 14, and provided therein is a substantially square block 24, which is welded or otherwise firmly attached therewithin. Integrally formed with said block 24 and seated upon the upper termination of leg 20 is a closure member comprising an annular head 25 which is provided with a bore for receiving races 26 with a ring of ball bearings 27 interposed therebetween. Passed through said block 24 and head 25 is post 28 with which said ball bearings 27 contact and facilitate its rotation. Cotter pin 29 passed through post 28 is in contact with the lower end of block 24 for preventing upward shifting movement of said post 28. Collar 30 rigidly affixed to said post 28 by means of pin 31 rests upon the uppermost race 26 and prevents the downward longitudinal shifting of said post 28. If preferred, said collar 30 may be rigidly affixed to the uppermost race 26 for rotating the latter upon ball bearings 27 when a rotary movement to post 28 is imparted.

The upper end of said post 28 which reposes within block 24, races 26 and collar 30 is smooth. The remaining portion of said post 28, below cotter pin 29 is threaded. Cross brace 32 affixed to the free edges of the sides of said leg 20, adjacent the lower end of the latter, prevents outward flexing of post 28. Said post 28 is in a spaced relation with the sides and with the central portion of said leg 20. The space between said post 28 and the central body portion of said leg 20 accommodates said bolt 21.

By virtue of the above described arrangement post 28 is capable of rotary movement in either direction, being guided in that movement by block 24, but is incapable of bodily shifting in an upright direction, being prevented from that latter shifting by means of cotter pin 29 and collar 30.

Receivable in a threaded relation upon post 28 is block 33, which is substantially square on a transverse cross-section, three sides of which contact with the sides and the central wall of leg 20, whereby said block 33 is prevented from rotary shifting movement, but is permitted to make longitudinal shifting movement within said leg 20 and upon post 28, when the latter rotates. Integrally formed with said block 33 and laterally extending from the fourth open face thereof is extension 34 which extends out of and beyond leg 20. This extension 34 is for the purpose of engaging the underface of any object to be lifted, such as an automobile bumper preparatory to the shifting of said block 33 and extension 34 by the action of post 28 for lifting the engaged object.

The upper end of post 28 which extends above collar 30 is provided with a transverse bore 35 for interchangeably receiving therewithin the longer or the shorter end of L-shaped handle 36. Thumb screw 37 entering a threaded bore made in the upper end of post 28 in a longitudinal direction therewith, is driven in a transverse relation with bore 35 for rigidly engaging and clamping the longer or the shorter end of said handle 36 when inserted in said bore 35.

Rigidly mounted to the lower ends of legs 12 and 20 are supporting plates 38, which are at an incline with relation to the longitudinal axis of said legs in order that the same may conform to and rest upon horizontal plane of the ground upon which the jack is intended to be supported when said legs are angularly shifted into an open position, as seen in Figs. 1 and 2.

Affixed to leg 20, substantially at a central point thereof, is a pair of chains 39, each of which is connected by its opposite end with each leg 12, for the purpose of limiting the outward shifting movement of leg 20 and legs 12 with relation to each other as said leg 20 is shifted away from the plane of said legs 12.

When handle 36 is affixed by its longer end to post 28 by means of thumb screw 37, the shorter end thereof, directed upwardly constitutes means whereby post may be rotated, when said legs 12 and 20 are in an open position, as seen in Figs. 1 and 2. The rotation of post 28 in either direction shifts block 33 and extension 34 in either direction, for the purpose of lifting the object engaged by said extension 34 or of permitting the same to shift downwardly, depending on the direction to which said post 28 is caused to rotate by means of said handle 36.

To fold the jack into a comparatively compact bundle, as illustrated in Figs. 3 and 4, legs 12 are shifted toward each other, on first directing arms 16 into an upward direction in order that they may fold. Thereupon leg 20 is shifted towards the plane of said legs 12, until the former assumes a substantially co-planar relation with said legs 12. When said legs 12 and 20 are folded as aforesaid, handle 36 may then be inserted by its shorter end within post 28, with its longer end downwardly depending. In that position of handle 36, as seen in Fig. 3, the shorter end of said handle 36 constitutes a bar which may be manually grasped for carrying the folded jack.

In a folded position of legs 12 and 20, chains 39 loosely hang therefrom, as is seen in Fig. 3.

Although the tripod arrangement of the jack disclosed herein permits firm support of the jack upon the ground while in use, I do not exclude the possibility of the use of leg 20 alone, on first disconnecting the same from wings 14 on removing nut 23 and bolt 21 from said wings 14 and from the sides of leg 20. This will release leg 20 from the tripod arrangement of the jack, after of course disconnecting chains 39 from said leg 20. Leg 20 thus released from the tripod assembly may still be used as a jack, because post 28, block 24, races 26, cotter pin 29 and collar 30 would still remain in the assembly of said leg 20 for shifting block 33 and extension 34 for lifting action.

Block 24 maintains post 28 centered with relation to leg 20. The faces of block 33 being in contact with the inner faces of the sides of said leg 20, prevent rotary shifting movement of said block 33 and its extension 34 when post 28 rotates, but permit longitudinal sliding movement thereof with relation to leg 20 and upon post 28. The outer free edges of the sides of said leg 20 define a recess through which extension 34 extends and within which the same shifts. Cross brace 32 prevents the lower end of post 28 to spring out of the said recess, due to any centrifugal flexing of said post 28 when a swift rotary movement is imparted thereto by handle 36, thereby also preventing said block 33 from shifting outwardly of the leg through said recess.

When extension 34 is in engagement with the object to be lifted the weight of the latter is distributed from said extension 34 and post 28 to collar 30 and the uppermost race 26. Due to the weight strong frictional contact between said collar 30 and the uppermost race 26 is engen-

dered, if they are not otherwise rigidly connected, permitting the rotation of said uppermost race 26 on rotating said collar 30 with post 28 by means of handle 36. Ball bearings 27 supporting said uppermost race 26 permit easy rotation of the latter when post 28 is rotated.

While there is described herein a preferred embodiment of the present invention, it is nevertheless to be understood that minor changes may be made therein without departing from the spirit and scope of the invention as claimed.

What I claim as new is:

1. A lifting jack comprising a head plate, a pair of legs, pivot means connecting each of said legs to said head plate, said legs angularly shifting along a plane substantially in parallel alignment with said plate into an open or folded position, a third leg pivotally connected to said head plate at a point intermediately of said first named legs, said third leg angularly shifting into an open or folded position on a plane which is substantially in a perpendicular relation to the plane upon which said first named legs shift, a lifting member supported by said third leg for longitudinal shifting movement, means for imparting a shifting movement to said lifting member, a pair of rigid arms pivoted together at one end, said arms being pivoted at their opposite ends to each of the pair of legs intermediate the ends of said legs, and a pair of flexible members connected at one end to the third leg, one of said flexible members being connected at its opposite end to one of the pair of said legs and the other flexible member being connected at its opposite end to the other leg of the pair of legs.

2. A lifting jack comprising retaining means and bracing means, said retaining means including an elongated member and having opposite sides spaced apart, a threaded post extending lengthwise of said member between the sides thereof, an element threaded on said post and engaging said opposite sides, means on one end portion of said elongated member and overlying the threaded post for holding said post in said elongated member, a journal head secured to the opposite end portion of said elongated member and having the post extending therethrough, means connected with the extended portion of the post for rotating said post, said bracing means including a pair of legs, and means connecting the retaining means and bracing means together including a head member extending on each side of the elongated member and having wings connected therewith portions of which embrace opposite sides of the elongated member, and pivots connected with the wings of opposite sides of the elongated member about which the legs swing relative to said elongated member.

3. A lifting jack comprising retaining means and bracing means, said retaining means including an elongated member U-shaped in cross-section, with opposite sides spaced apart, a threaded post extending lengthwise of said member between the sides thereof and substantially throughout the length of said member, an element threaded on the post between the sides of the member and projecting out of the member for supporting a device thereon, means on one end portion of said elongated member and overlying the threaded post for holding said end portion of the post in said elongated member, a journal head secured to the opposite end portion of said elongated member and having the threaded post extending therethrough and journaled therein, means connected with the extended portion of the post for rotating the post relative to the journal head, said bracing means including a pair of legs, and means connecting the retaining means and bracing means toegther including a head member extending on each side of the elongated member and having wings connected therewith embracing opposite sides of the elongated member, and pivots connected with the wings at opposite sides of the elongated member about which the legs swing relative to said elongated member.

4. A lifting jack comprising retaining means and bracing means, said retaining means including an elongated member and having opposite sides spaced apart, a threaded post extending lengthwise of said member between the sides thereof, an element threaded on said post and engaging said opposite sides, means on one end portion of said elongated member and overlying the threaded post for holding said post in said elongated member, a journal head secured to the opposite end portion of said elongated member and having the threaded post extending therethrough, means connected with the extended portion of the post for rotating said post, said bracing means including a pair of legs, means connecting the retaining means and bracing means together including a head member extending on each side of the elongated member and having wings connected therewith portions of which embrace opposite sides of the elongated member, a pivot connected with the wings at opposite sides of the elongated member to provide for relative swinging movement between the legs and said elongated member, and additional pivot means connected with the legs and mounting the legs on the connecting means for swinging movement laterally in opposite directions relative to each other.

JOSEPH F. PALKA.

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