

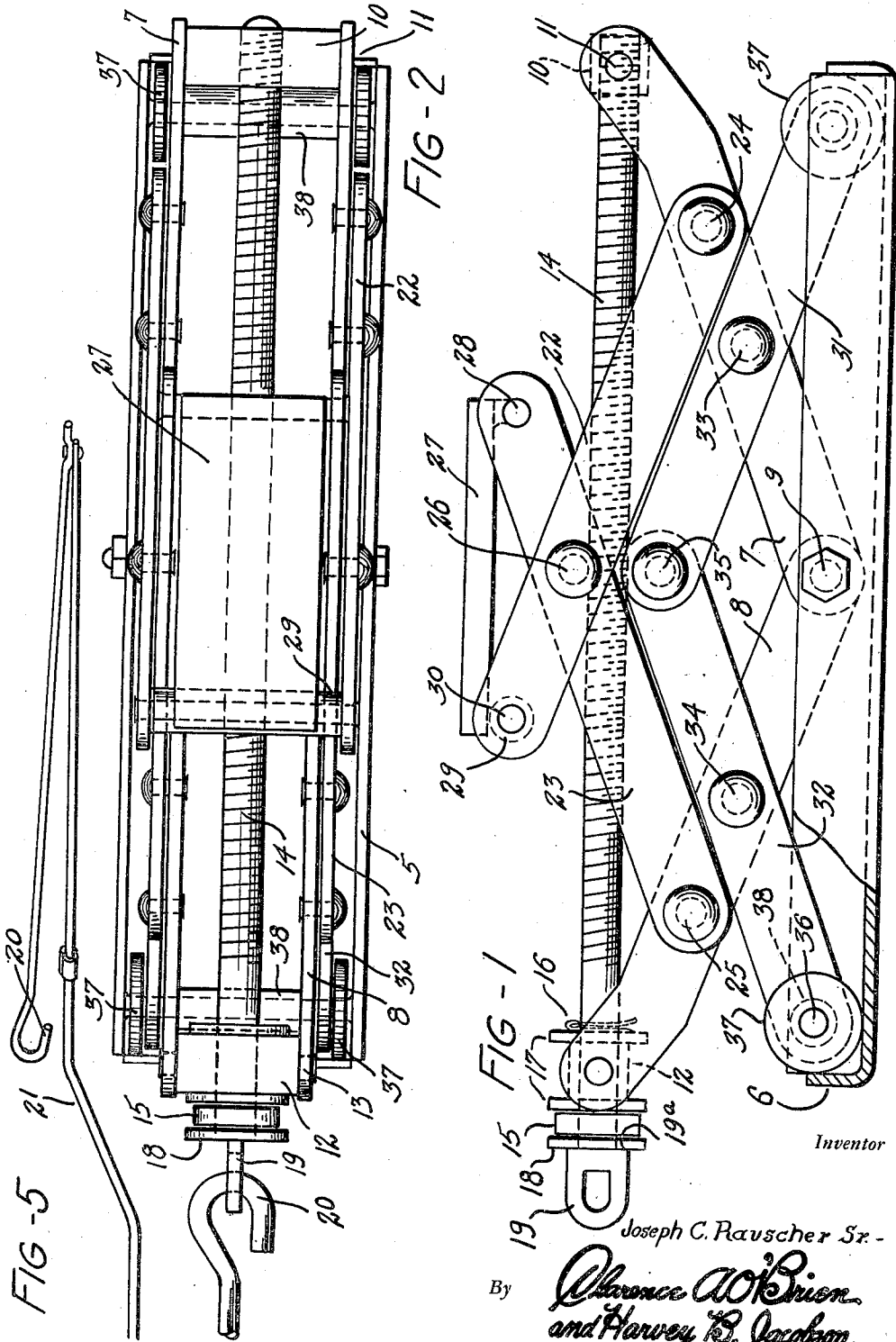
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J. C. RAUSCHER, SR
PORTABLE LIFTING JACK

2,557,465

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2 Sheets-Sheet 1



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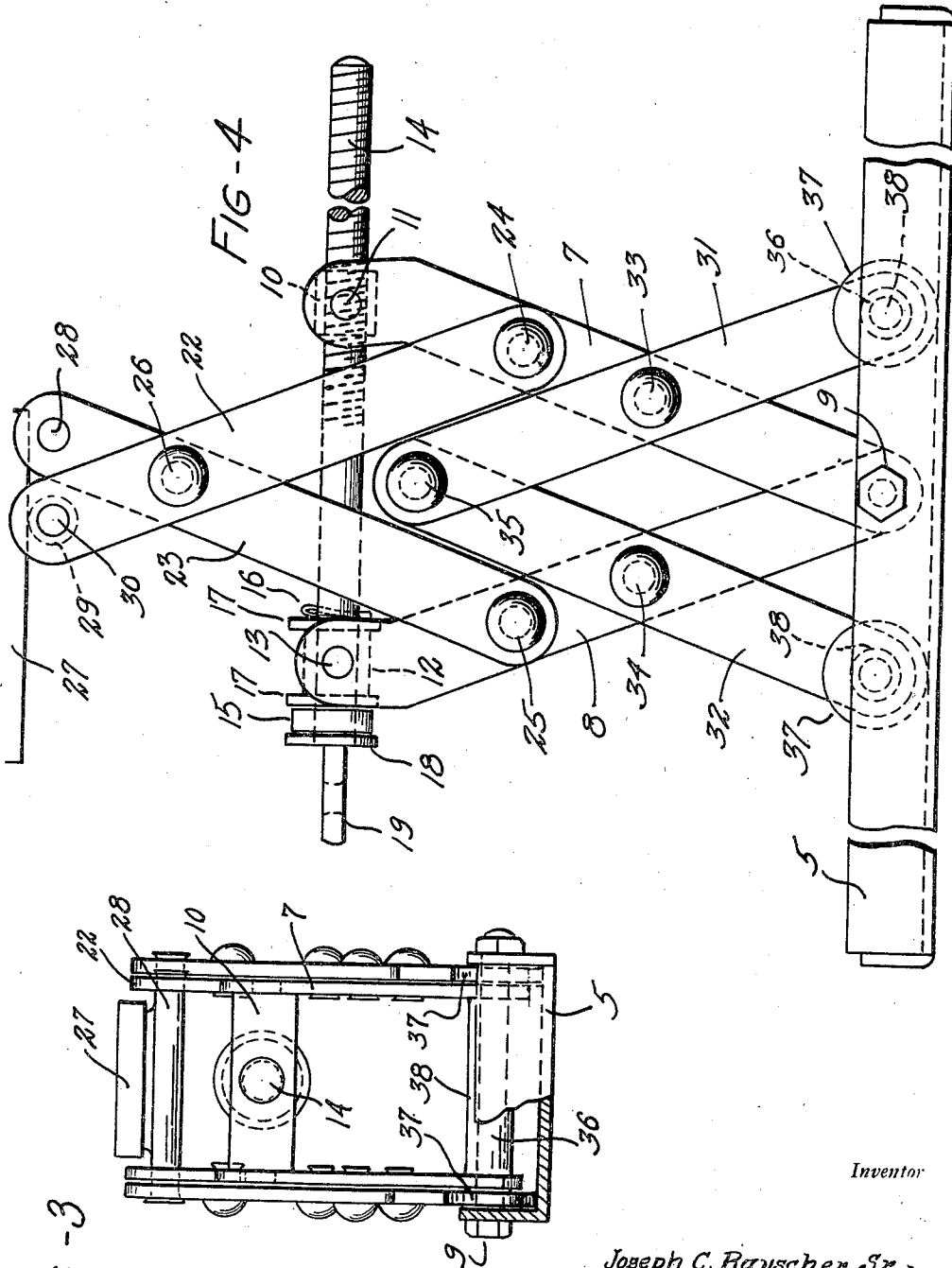


FIG-3

FIG-4

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UNITED STATES PATENT OFFICE

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PORTABLE LIFTING JACK

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7 Claims. (Cl. 254-122)

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The present invention relates to new and useful improvements in jacks, and more particularly to a portable jack adapted for use in jacking the wheels of an automobile or other motor vehicle as well as for use in jacking the wheels of farm machinery and for other purposes.

An important object of the present invention is to provide a jack including a relatively elongated base forming a track on which lifting members with rollers travel and which prevents the jack from sinking into soft ground.

A further object of the invention is to provide a jack embodying sets of hinged links operating similarly to a lazy-tong including lifting arms pivoted to the base and providing screw-operated means for raising and lowering top and bottom tong members.

Another object is to provide an extensible, foldable handle for operating the screw of the jack and by means of which the jack may be raised and lowered by a person in a standing position in front of or behind the vehicle.

Another object is to provide a jack of this character of simple and practical construction, which is strong and durable, efficient and reliable in operation, relatively inexpensive to manufacture, and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like reference numerals refer to like parts throughout, and in which:

Figure 1 is a side elevational view of the jack in its lowered position and with parts broken away,

Figure 2 is a top plan view of Figure 1,

Figure 3 is an end elevational view with parts of the base broken away,

Figure 4 is a side elevational view showing the jack in its raised position, and

Figure 5 is a perspective view of the foldable handle.

Referring now to the drawings in detail, wherein, for the purpose of illustration, I have disclosed a preferred embodiment of the invention as consisting of four main parts, namely a table or top member, a middle or actuating member, a bottom or leg member and a base member. The numeral 5 designates the base or track of channel shaped construction and having its ends closed by upstanding end walls 6, the base comprising a substantially elongated tray-like construction.

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Front and rear pairs of lifting arms 7 and 8 constitute the actuating member and have their lower ends pivoted loosely on a transverse pin 9 secured in an enlarged opening in the central portion of the side flanges of the base 5, each pair of arms being disposed in transverse, parallel relation to each other and extending upwardly from the base. A block 10 internally threaded is positioned between the upper ends of the pair of the front lifting arms 7 and pivoted thereto by means of trunnions 11. A similar block 12 but smooth bored is positioned between the upper ends of the rear lifting arms 8 and is also pivoted thereto by means of trunnions 13. A screw 14 extends parallel above the base 5, is threaded in the front block 10, the rear end of this screw being journaled freely in the rear block 12. The lifting arms 7 and 8 are bent toward one another as shown, thereby permitting a shorter screw 14 to be used than would be required if the lifting arms were straight for their full length. The centers of the trunnions 11 and 13 are, therefore, out of line with the centers of the pins 24, 33 and 9 and of pins 25, 34 and 9, respectively. A washer 18 is placed on the screw against the shouldered eye 19 at the rear end and is positioned rearwardly of the block 12. A removable pin 16 extends transversely of the screw in front of the block 12 to prevent longitudinal movement of the screw in said block 12. Washers 17 are positioned between the thrust bearing 15 and the block 12 and between the pin 16 and the block 12. A washer 18 is positioned between the bearing 15 and the eye 19 formed with abutment shoulders 19a at the rear end of the screw, the eye being adapted for engagement by a universal hook 20 on one end of a foldable handle 21 and by means of which the screw may be rotated to cause a movement of the upper ends of the pairs of arms 7 and 8 toward and away from each other in a manner as will be apparent.

The table member consists of front and rear links or tong arms 22 and 23 which are pivoted at their lower ends some distance from the upper ends of the lifting arms 7 and 8, respectively, by means of rivets or pins 24 and 25. The upper ends of the links or tong arms 22 and 23 are crossed and pivoted to each other by means of pins or rivets 26. The top member further comprises a table or platform 27 provided with laterally projecting trunnions 28 at one end and below the platform, the trunnions being pivoted in the upper ends of the arms 23. The rear end of the table or platform 27 is slidably supported on a sleeve 29 rotatably mounted on a

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transverse pin 30 extending between the upper ends of the arms 22.

The third or lower part of the jack consists of front and rear legs or links 31, 32 which are pivoted intermediary to the lifting arms 7 and 8, respectively, below the pivots 24 and 25 by means of rivets or pins 33 and 34. The upper ends of the legs 31 and 32 are pivotally connected to each other at each side of the jack by means of rivets or pins 35. A transverse pin 36 is mounted on the lower ends of each of the legs 31 and 32 and on the protruding ends of which rollers 37 are journaled outside of the legs which are retained in spaced relation by means of a spacing sleeve 38 mounted on the pin.

As will be seen from the drawings, the center of pivot pin 9 is equidistant from the centers of pivot pins 24 and 25, and the center of pivot pin 25 is also equidistant from the centers of pivot pins 24 and 25. Likewise, the center of pivot pin 9 is equidistant from the centers of pivot pins 33 and 34, and the center of pivot pin 35 is equidistant from the centers of pivot pins 33 and 34. The distances 9-33, 9-34, 33-35, and 34-35 are smaller, however, than the distances 9-24, 9-25, 24-26, and 25-26. This structure permits collapsing of the jack to lowest possible position as shown in Fig. 1, and extension of the jack to maximum height as shown in Fig. 4.

In the operation of the device, the jack is placed under the vehicle to be lifted after the hook 20 of the handle 21 has been placed in the eye 19 to rotate the screw 14 whereby to swing the lifting arms 7 and 8 toward each other on the stationary pivot pin 9 and thus raise the platform 27 through the lazy-tong members 22, 23 and 31, 32 into the position as shown in Figure 4 of the drawings. At the same time, the roller ends of the legs 31 and 32 travel inwardly along the base 5 to remain in supporting position with the lifting arms. As the upper ends of the links or tong arms 22 and 23 move toward each other, the free end of the platform or table 27 rides on the sleeve 29 parallel to the track 5.

The trough or tray-like construction of the base track 5 prevents the jack from sinking into soft ground and prevents the accumulation of dirt on the inside of the base to interfere with the free travel of the rollers 37.

In view of the foregoing description taken in conjunction with the accompanying drawings, it is believed that a clear understanding of the construction, operation and advantages of the device will be quite apparent to those skilled in this art. A more detailed description is accordingly deemed unnecessary.

It is to be understood, however, that even though I have herein shown and described a preferred embodiment of my invention that the same is susceptible to certain changes fully comprehended by the spirit of the invention as herein described and the scope of the appended claims.

What I claim is:

1. A lifting jack comprising a trough or channel-shaped base closed at each side and end, front and rear lifting arms pivoted freely at their lower ends by a common pivot member which is mounted in the sides of the base, screw means connecting the upper ends of the lifting arms for raising and lowering movement of the jack, upper pairs of tong members arranged in pivoted relation to said lifting arms, said upper tong members being pivotally connected together

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intermediate their ends and being pivoted at their lower ends to the lifting arms at points below the points of connection of the lifting arms with the screw, a table pivotally connected to the upper end of one of the upper tong members, means carried by the other upper tong member on which said table is slidably mounted, and lower pairs of tong members slidably supported at their bottom ends on said base and pivoted intermediate their ends to said lifting arms and to each other at their upper ends.

2. A lifting jack comprising a track or channel-shaped base closed at each side and end, front and rear lifting arms pivoted freely at their lower ends by a common pivot member which is mounted in the sides of the base, a screw connecting the upper ends of the lifting arms for raising and lowering movement of the jack, upper and lower pairs of tong members, the lower tong members carrying rollers at their bottom ends adapted for travel on said base track and being pivoted about midway of their lengths on said lifting arms and being pivotally connected to each other at their upper ends below said screw; said upper tong members having pivoted connection at their lower ends on said lifting arms at points above the points of pivotal connection of the lower tong members with the lifting arms and below the points of connection of the lifting arms with the screw; and a platform carried at the upper ends of said upper tong members.

3. A lifting jack comprising a track or channel-shaped base closed at each side and end, front and rear lifting arms pivoted freely at their lower ends by a common pivot member which is mounted in the sides of the base, a screw connecting the upper ends of the lifting arms for raising and lowering movement of the jack, upper and lower pairs of tong members, the lower tong members carrying rollers at their bottom ends adapted for travel on said base track and being pivoted about midway of their lengths on said lifting arms and being pivotally connected to each other at their upper ends below said screw; said upper tong members being pivotally connected to each other intermediate their ends and having pivoted connection at their lower ends on said lifting arms at points above the points of pivoted connection of the lower tong members to the lifting arms; and a platform carried at the upper ends of said upper tong members, and being hinged to one of said upper tong members and having sliding connection with the other of said members.

4. A portable lifting jack comprising a top, a middle and a bottom member of tong construction, together with a base member providing a track; said base member having trough shape with upturned side and end flanges enclosing a flat track portion; said bottom member comprising two pairs of links forming parallel letters V which are pivoted at their lower ends by a pivot that is movably mounted in the side flanges of the base member, a smooth bored block pivoted between the upper ends of two of said links, an internally threaded block similarly pivoted between the upper ends of the other two links, and an operating screw engaging in said blocks substantially parallel to said flat track for raising and lowering the jack, said middle member comprising two pairs of links forming letters A pivoted together at their upper ends and provided with roller bearings at their lower free ends for supporting the weight of the jack on said track, said links of the middle member

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being pivoted at intermediate points to said bottom member; said top member comprising two pairs of crossed links in the form of letter X and pivoted at their points of crossing, with their lower ends pivoted to said bottom member above the points of connection of the links of the bottom member with the links of the middle member, a platform pivoted at one end between two of the links of the top member and slidably supported by anti-friction means between the other two links of said top member thereby permanently maintaining a position parallel to the operating screw and said track.

5. In a lifting jack, a base, a pair of lifting members which are pivotally connected together at their lower ends, means for moving the lifting arms toward and from one another to raise and lower the jack, a pair of lower tong members pivotally connected together at their upper ends and having rollers mounted on the lower ends thereof to roll on said base, each of said lower tong members being pivotally connected intermediate its ends to one of the lifting arms intermediate the ends of that lifting arm, a pair of upper tong members which are pivotally connected together intermediate their ends, each of said upper tong members being pivotally connected to one of the lifting arms intermediate the ends of the lifting arm but above the point of connection with that lifting arm of a lower tong member, and a platform pivotally connected at one end to the upper end of one upper tong member and slidably mounted on the upper end of the other upper tong member.

6. In a lifting jack, a base, a pair of lifting arms pivotally connected together at their lower ends, means connected to the upper ends of the lifting arms for moving the lifting arms toward and from one another, a pair of lower tong members which are pivotally connected together at their upper ends and which have rollers secured to their lower ends to roll on the base and each of which is pivotally connected intermediate its ends to one of the lifting arms, a pair of upper tong members which are pivotally connected together intermediate their ends, each of the upper tong members being pivotally connected at its lower end to one of the lifting arms intermediate the ends of that lifting arm and above the point of pivotal connection of that lifting arm with a lower tong member, and a platform carried on the upper ends of the upper tong members.

7. A lifting jack comprising a base, a pair of

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lifting arms pivotally connected together at their lower ends, a rotary screw, a pair of blocks rotatably engaging said screw, means pivotally connecting the upper ends of the lifting arms to said blocks, a pair of lower tong members whose upper ends terminate below said screw and are pivotally connected together, said lower tong members being slidably mounted at their lower ends on the base and each being pivotally connected intermediate its ends to one of the lifting arms intermediate the ends of that lifting arm, and a pair of upper tong members which are pivotally connected together intermediate their ends, each of the upper tong members being pivotally connected at its lower end to one of the lifting arms intermediate the ends of that lifting arm but above the point of connection of the lower tong member with that lifting arm, and a supporting platform carried at the upper ends of the upper tong members, the distance of the pivot point of the lifting arms from the points of pivotal connection of the upper tong members with the lifting arms being equal to the distance of the point of pivotal connection of the upper tong members from said points of pivotal connection of the upper tong members with the lifting arms, and the distance of the point of pivotal connection of the lifting arms from the points of pivotal connection of the lower tong members with the lifting arms being equal to the distance of the point of pivotal connection of the lower tong members from said points of pivotal connection of the lower tong members with the lifting arms.

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