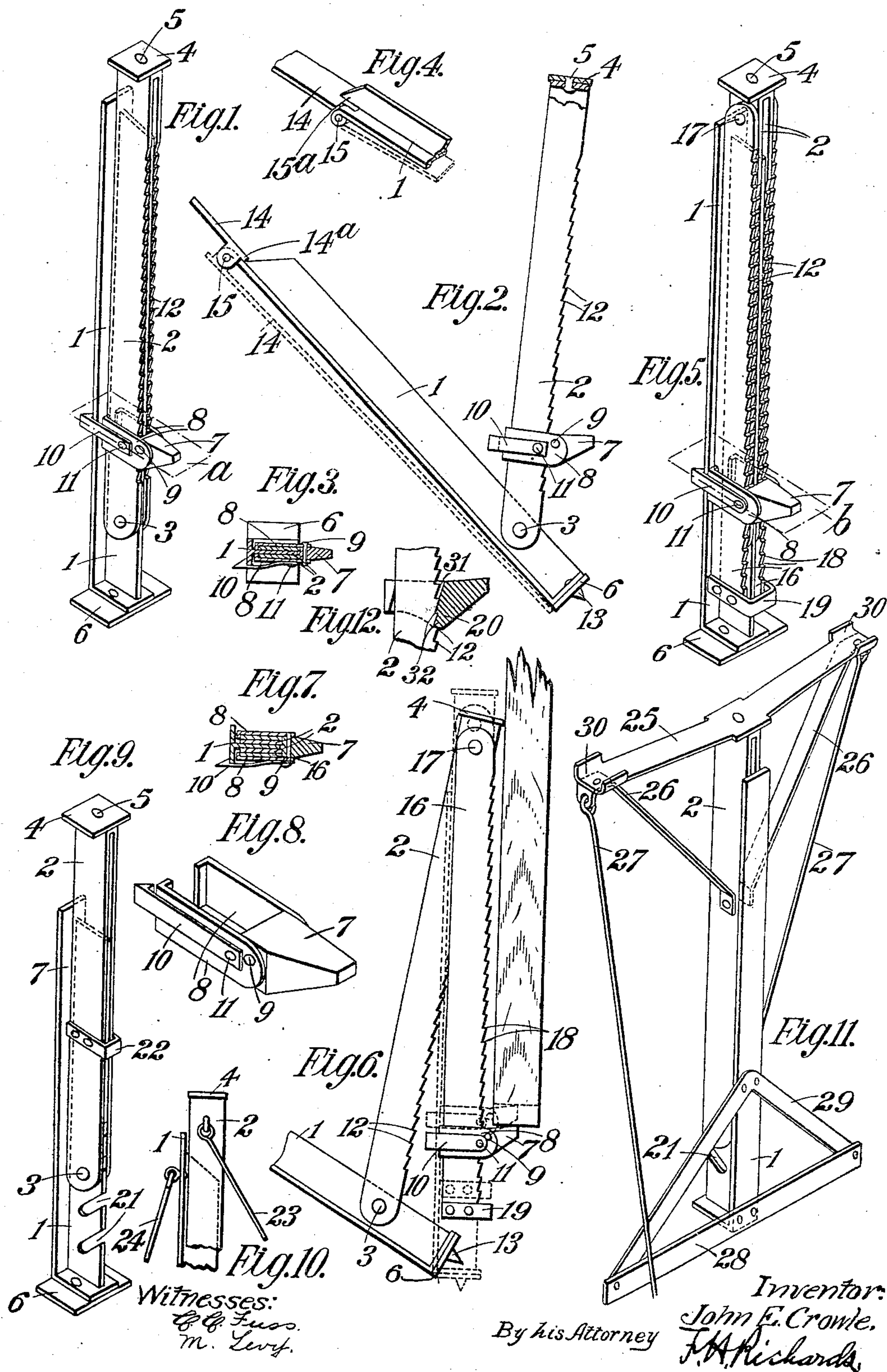


J. E. CROWLE.
LIFTING JACK.
APPLICATION FILED SEPT. 9, 1907.

936,309.

Patented Oct. 12, 1909.



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JOHN EDWIN CROWLE, OF BALLARAT, VICTORIA, AUSTRALIA.

LIFTING-JACK.

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Specification of Letters Patent.

Patented Oct. 12, 1909.

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To all whom it may concern:

Be it known that I, JOHN EDWIN CROWLE, a subject of the King of Great Britain, residing at 110 Windermere street south, Ballarat, in the State of Victoria, Commonwealth of Australia, have invented certain new and useful Improvements in Lifting-Jacks, of which the following is a specification.

10 The object of this invention is to provide in a handy and compact form an improved construction of lever-jack, which although specially suitable and applicable for the lifting of the axles and wheels of carriages, 15 wagons, motor-cars and the like, may be satisfactorily employed for general lifting operations.

The simplest form of the improved lever-jack consists of two levers—preferably of 20 metal—which can be adjustably and detachably connected together. One of these levers is bifurcated or divided and provided with a head piece or cap adapted to be placed under the object to be raised, and at or close 25 to its lower end it has a pin, rivet or such suitable connecting means passing through it whereby it can be conveniently and pivotally connected with a hand lever made of T shaped material and having in the web 30 thereof a series of notches or jaws positioned at regular intervals or at predetermined distances apart. The first mentioned lever is in operation positioned vertically under the object to be lifted, and is operated by the 35 second or hand-lever. The manner of connecting and disconnecting the two levers, together with modifications in the construction of the lever-jack, besides the mode of operation of their parts will be more easily 40 understood by reference being made to the accompanying sheet of drawings in which:—

Figure 1 is a perspective view showing one form of my lever-jack, the parts of which are interlocked. Fig. 2 is a side elevation of the lever-jack shown in Fig. 1, but 45 in its open position and with the addition of a folding or lengthening lever. Fig. 3 is a cross section on the plane *a* Fig. 1. Fig. 4 is a perspective view showing a modification in the means of attaching the lengthening lever to the hand-lever. Fig. 5 is a perspective view of a lever-jack in which the parts are locked together, said jack being 50 designed for use in such places and under such conditions as would render the use of that form illustrated in Fig. 1 unsatisfactory

or altogether useless. Fig. 6 is a side elevation of the lever-jack shown in Fig. 5 in its open position. Fig. 7 is a cross section on plane *b* Fig. 5. Fig. 8 is a perspective 60 view of an adjustable bracket or lifting piece adapted to engage with one of the levers, while being vertically movable thereon. Fig. 9 shows that form of the lever-jack in which the two levers are attachably and detachably connected together in relatively 65 different positions. Fig. 10 is a view of the upper portion of a lever-jack fitted with stays or supports for the purpose of retaining it rigidly when supporting a raised object or weight. Fig. 11 is a perspective view of a lever-jack designed specially to support the axle of a vehicle and simultaneously 70 raise two wheels thereof. Fig. 12 illustrates portion of one of the levers which is fitted with a modified form of adjustable bracket or lifting piece (shown in section). 75

The same reference numerals indicate similar parts in all the views.

The hand-lever 1 is constructed of T 80 shaped metal, and is pivotally connected to another lever 2 (hereinafter referred to as the lifting lever) by suitable means as a pin or rivet 3. The lifting lever 2 is bifurcated whereby it is adapted to fold over the web 85 of the hand-lever 1, and it is provided at its top with a head-piece or cap 4 pivotally attached thereto by means of the rivet 5.

7 indicates an adjustable bracket consisting of a step or supporting piece furnished 90 with arms 8, and which is adapted to slide up and down the lifting lever 2 and engage with it at a desired position. The step-piece 7 is pivotally connected to the arms 8 by the pin 9 passing through at a point above the 95 center line, while a flat spring 10 is ordinarily fastened by means of the rivet 11 to the side of one of the arms 8 of the step-piece 7, and being provided with a beveled projection at its end it is adapted to readily 100 engage with and lock the lifting-lever 2 securely to the hand-lever 1 when a weight is being supported and the parts are interlocked as shown in Fig. 1. The serrations 12 on the front edge of the lifting-lever 2 are 105 provided for the purpose of forming a secure grip for the back and lower edge of the step-piece 7 and prevent it slipping downwardly when a weight is placed thereon.

A foot or base 6 is riveted to the lower end 110 of the hand-lever 1, and in some cases it may be furnished with a spiked projection 13 in

order to obviate the liability of the said lever slipping when in operation.

When it is desired to secure longer and greater leverage than it is possible to obtain with the usual hand-lever 1, the lengthening lever 14 is pivotally attached to the end of the said lever 1 by such suitable means as the pin 15 forming a knuckle-joint, and it is so designed that it will fold out of the way against the back of the lever 1 (as shown by dotted lines Fig. 2), when the additional leverage is not required. When the lengthening lever 14 is fully opened, the projection 14^a on the end thereof bears against the top of the hand-lever 1 which prevents the further rotation of the said lever 14 except in conjunction with the lever 1. A modification in the construction of the lengthening lever consists in allowing the web of the hand-lever 1 to project slightly at the top end (see Fig. 4), so that when the said lever 14 is opened out to be in line with the hand-lever it bears against the projecting web 15^a and is thereby prevented from further pivotal upward movement.

When the weight or object to be raised rests upon or near the ground the bracket 7 is removed from the lifting lever 2 to which a third lever 16 (see Fig. 6) is then pivotally connected at or near the top by suitable means as a pin 17. This lever 16, which hangs downwardly and terminates a little above the base 6, has a U shaped connecting stay 19, and serrations 18 on its front edge while furnished with a vertically adjustable bracket 7 similar to but broader than that which operates on and has been removed from the second or lifting lever 2.

A simple and efficient form of my improved lever-jack is illustrated in Fig. 9, and it consists in constructing the web of the hand-lever 1 with a number of notches or jaws 21 placed at regular or required intervals apart. Each of these jaws is adapted to receive the pin 3 passing through the lower end of the lifting-lever 2, when the two levers are to be pivotally connected and adjusted in a desired relative position, the one with the other, according to the height of—and to which—the object is to be raised. The center of the pin 3 is placed somewhat in front of the line of the center of gravity, and owing to this the weight on top of the lifting lever 2 will tend to keep the levers closed or interlocked by forcing the one to bear against the other. 22 indicates that one or more U shaped stays may be provided to connect the two sides of and to strengthen the lifting lever 2. Stays or props 23 and 24 (see Fig. 10) are connected to the top of the hand and lifting levers, 1 and 2 respectively, by suitable means as eyebolts, and they are designed to retain the lifting jack rigidly in position when supporting a raised weight.

Fig. 11 illustrates a lever-jack devised specially for the raising of vehicle axles. The hand-lever 1 and the lifting lever 2 are preferably constructed in the detachable form illustrated in Fig. 9. 25 is a double cross-arm riveted at its center to the top of the lifting-lever 2 and having end pieces 30 furnished with upwardly extending flanges for the purpose of readily engaging or gripping the axle of a vehicle. These arms 25 are ordinarily supported by stays 26 which are connected at one end to the double arm 25 and at the other to the side of the lifting lever 2. A cross-bar or foot is riveted to the lower end of the hand-lever 1, and it is strengthened by the stay 29 that connects the ends thereof to the hand-lever 1 at any preferred point of the latter's height. The said cross-bar 28 aided by the stays or props 27 will retain in a perfectly secure and rigid manner the lifting-jack when supporting the raised axle and having the two of the vehicle wheels off the ground.

In Fig. 12 I have illustrated a modified form of bracket or lifting piece, which may be used in connection with the forms of lever-jacks shown in Figs. 1 and 5. This bracket 20 is made in one piece, and it has an inclined hole 31 therethrough, the sides of which hole are approximately parallel and the same distance apart as the width of the lifting-lever 2. The front end or step portion of the bracket is considerably heavier than the rear part, and the weight thereof always tends to keep the front and bottom edges on which there may if desired be one, two or more teeth 32, of the hole 31 engaged with the serrations 12. That part of the bracket 20, which passes around the back of the lever 2, is cut away at its center to enable it to readily pass over the web of the hand-lever 1, when the jack is closed and the levers interlocked. In order to raise or lower the bracket 20 on either of the levers 2 and 16, the front end is slightly raised until the hole 31 therein is in line with the said lever. It will then readily slip either up or down in this position, but immediately the bracket 20 is released the preponderancy of the front part causes it to again assume a horizontal position and engage with the serrations on the front of either of the said levers 2 and 16, to which it is slidably connected.

The manner of operating the lever-jack illustrated in Figs. 1 and 5 of the drawings is as follows:—The flat spring 10 is first disengaged from the hand-lever 1, and the foot-piece 6 on the lower end thereof is placed upon the ground immediately below the object to be raised. The pivotally connected lever 2 is then turned on the pin 3 and either the revoluble cap 4 on the top thereof or the lifting bracket 7—according to which is employed—is placed under the said object. The hand-lever 1 is then raised in a circu-

lar sweep until its web enters the space between the two sides of the lifting lever 2, when the spring 10 passes over the hand-lever and locks the two levers securely together. This motion of interlocking the levers or causing them to bear against each other raises the lifting lever 2 and consequently the weight or object supported by it. When the object to be lifted is on or in close proximity to the ground, the third lever 16 (see Figs. 5 and 6) is attached to the lever 2 by the pin 17 as before described, and the bracket 7 is slipped down to the bottom thereof. The base-piece 6 on the lever 1 is placed upon the ground as near as possible to the said object. The bracket 7 is positioned beneath the object, and the hand-lever 1 is given an upward movement thereby raising the levers 2 and 16—with which it becomes interlocked—and consequently the object supported upon the bracket or lifting-piece 7 is raised correspondingly.

The lifting-jacks illustrated in Figs. 9 and 11 are operated in a similar manner as that described with reference to Fig. 1, but in this case the adjustable bracket 7 is dispensed with, and adjustment is obtained by means of the relative positioning of the pin 3 in the lower end of the lifting lever 2 with the notches or jaws 21 in the web of the hand-lever 1, while the object to be raised is rested on the cap 4 in that form of jack illustrated in Fig. 9 and on the arm 25 provided with the lever-jack shown in Fig. 11. The upper surface of the head-piece or cap 4 is not necessarily flat, as it is in practice preferred to have it slightly concave for the lifting of circular articles as vehicle axles. It will be understood that this cap 4 being revoluble the lifting-jack may be operated from a number of convenient positions in which it would not be possible to operate it, if the cap were fixed. Owing to the hand-lever 1 being constructed of T shaped metal, and the lifting levers 2 and 16 being bifurcated, the lever-jacks are very durable and strong, although comparatively light. Moreover, as the lifting lever folds over the web of the hand-lever, it will be understood that when the object is raised, the two levers are interlocked and are automatically retained in this secure position.

What I claim as my invention and desire to secure by Letters Patent of the United States is:—

1. In a lifting jack, the combination with a hand lever, of a foot carried by said hand lever for engaging the ground, a second lever

pivotally connected at one end to said hand lever and embodying two side members, a third lever pivoted to the other end of said second lever, means adjustably carried by said third lever for engaging the object to be raised, and means for locking all of said levers together in parallel relation.

2. In a lifting jack, the combination with a hand lever provided with a longitudinally disposed web and having a foot for engaging the ground, of a second lever pivotally connected at one end to the web on said hand lever and embodying side members respectively situated at opposite sides of the web, means carried by said second lever for engaging the object to be raised, said side members being so connected to the web as to respectively fold up upon the respective sides thereof and in parallel relation with the same when the foot and object engaging means are most distantly separated.

3. In a lifting jack, the combination with a hand lever provided with a longitudinally disposed web, of a foot carried by said hand lever for engaging the ground, a second lever pivotally connected at one end to the web of said hand lever and embodying two side members, a third lever pivoted to the other end of said second lever, means carried by said third lever for engaging the object to be raised, said levers being connected for folding together in parallel relation when the foot and object engaging means are most distantly separated, and means for locking all of said levers together when in substantially parallel relation.

4. In a lifting jack, the combination with a hand lever provided with a longitudinally disposed web, of a foot carried by said hand lever for engaging the ground, a second lever pivotally connected at one end to said web and embodying two side members, a third lever pivoted to the other end of said second lever and embodying two side members located between the side members of the second lever and upon the respective sides of the said web, said levers being connected for folding together in parallel relation, and means adjustably carried by said third lever for engaging the object to be raised.

In witness whereof I have signed this specification in the presence of two witnesses.

JOHN EDWIN CROWLE.

Witnesses:

A. J. CALLINAN,
M. CALLINAN.