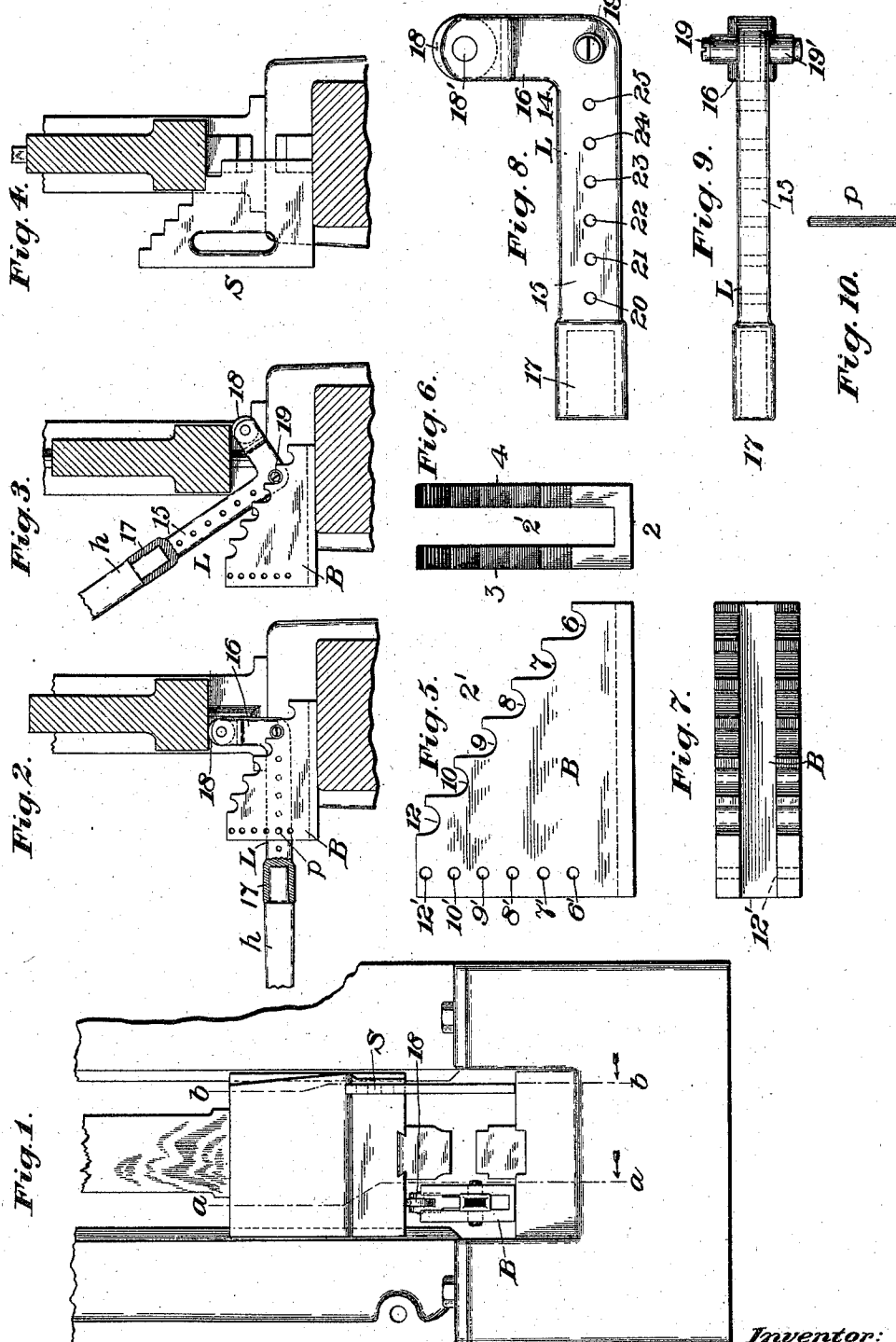


(No Model.)

F. LOMBARD.
LIFTING JACK.

No. 574,036.

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Witnesses:
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UNITED STATES PATENT OFFICE.

FRANK LOMBARD, OF HARTFORD, CONNECTICUT.

LIFTING-JACK.

SPECIFICATION forming part of Letters Patent No. 574,036, dated December 29, 1896.

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To all whom it may concern:

Be it known that I, FRANK LOMBARD, a citizen of the United States, residing in Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Lifting-Jacks, of which the following is a specification.

This invention relates to lifting-jacks, the object of the invention being to provide a simple, compact, and powerful lifting-jack that is especially adapted for use in connection with a drop-hammer for lifting and supporting the drop or hammer, as is necessary when it is desired to remove or replace the dies.

It is well known to those familiar with drop-hammers that the space between the hammer-dies and the side frames or hammer-runs is usually very narrow, and, so far as I am aware, it has been found impracticable to insert any known form of lifting-jack below the hammer and between the dies and side of the frame in convenient position to lift and support said hammer, and it has been customary to lift the hammer step by step by means of a crowbar and interpose blocks of successively-increased lengths to support the hammer after each successive lift until the same has been raised to the proper height. This method of lifting the hammers or drop-presses has not only been found tedious and difficult, but is expensive, owing to the time consumed in the operation, and it is the chief object of this invention to furnish a lifting-jack so constructed and organized that the same may be readily interposed below the hammer between the dies and side frame in position to lift said hammer, and whereby the hammer proper may be quickly lifted thereby to any requisite height and with very little exertion on the part of the operator.

In the drawings accompanying and forming part of this specification, Figure 1 is a front view of a portion of a drop-press or drop-hammer, showing my improved lifting-jack located in working position between the hammer and bed of the machine and showing the parts thereof in the positions they occupy when the lifting-lever of the jack is at the extreme end of its lifting position. Fig. 2 is a sectional view of a portion of the drop-press, taken

in dotted line *a a*, Fig. 1, and looking toward the left hand in said figure and showing the lifting-jack in the position thereof shown in Fig. 1. Fig. 3 is a sectional view similar to Fig. 2, showing the lifting-jack between the hammer and bed of the press and showing the lifting-lever in position to inaugurate the lifting movement of the hammer. Fig. 4 is a sectional view of a portion of the drop-press, taken in dotted line *b b*, Fig. 1, and showing a stepped supporting-block inserted between the hammer and bed of the press for supporting said hammer after the same has been lifted to the position shown in Figs. 1 and 2. Fig. 5 is a side view of the fulcrum-block or lever-supporting member of the lifting-jack. Fig. 6 is an end view of the fulcrum-block as seen from the right hand in Fig. 5. Fig. 7 is a plan view of the fulcrum-block as seen from above in Fig. 5. Fig. 8 is a side view of the lifting-lever. Fig. 9 is a plan view of said lifting-lever, and Fig. 10 is a side view of the pin by means of which the lever is locked against movement with relation to its fulcrum-block.

Similar characters designate like parts in all the figures of the drawings.

In the preferred embodiment of my invention (shown in the drawings) the lifting-jack comprises a substantially triangular longitudinally-recessed fulcrum-block (designated in a general way by B) having a series of stepped semiannular pin-bearings in the inclined faces of the side walls thereof and a lifting-lever (designated in a general way by L) having a laterally-disposed lifting-arm, and also having trunnions adapted to be removably seated in the stepped bearings of the fulcrum-block.

The fulcrum-block B, which is shown substantially triangular, is centrally recessed, as shown at 2', to form the horizontal base portion 2 and the two parallel side walls 3 and 4, which are adapted to receive between them the lifting-lever L, hereinafter described. In the inclined upper face of the block is formed a series of pairs of substantially semicircular bearings, (herein shown as six in number and designated by 6, 7, 8, 9, 10, and 12, respectively,) the successive bearings being at successively different heights with relation

to the base 2 of the block, as will be readily understood by reference to Figs. 5 and 6 of the drawings.

Formed through the two side walls 3 and 4 of the fulcrum-block, preferably in horizontal alinement with the axes of the successive bearings, are a series of pin-holes, which are herein shown as six in number and are designated by 6', 7', 8', 9', 10', and 12', respectively, into any one of which a locking device *p*—such as a pin—may be inserted when the parts of the lifting-jack are assembled for locking the lifting-lever in the position it occupies when supporting a hammer or other thing lifted.

The lifting-lever *L*, in the form thereof shown most clearly in Figs. 8 and 9 of the drawings, comprises a bar bent at 14 substantially at right angles to form the main or actuating arm 15 and the relatively short lifting-arm 16 at one end thereof. The actuating-arm 15 is shown having a socket 17 at the outer end thereof to receive a handle *h*, and the lifting-arm 16 of the lifting-lever *L* is preferably bifurcated at the outer end thereof to receive an antifriction-roll 18, which is pivoted at 18' between the arms of said bifurcated end. Said lever also has two oppositely-disposed trunnions 19 and 19', located at opposite side faces thereof and preferably at the point of intersection of the longitudinal axes of the actuating-arm 15 and the lifting-arm 16 of said lever. This lever also has formed transversely therethrough a series of pin-holes, (herein shown as six in number and designated by 20, 21, 22, 23, 24, and 25,) and which pin-holes are adapted, when the lever *L* is supported in different fulcrum-bearings in the block *B*, for registering with the pin-holes 6', 7', 8', 9', 10', and 12', respectively.

The lifting-lever *L*, when the parts of the lifting-jack are assembled for use, is supported with its trunnions in one of the bearings of the fulcrum-block *B*, with the lifting-arm 16 of said lever projecting upwardly, as shown in Fig. 3, the main body portion or bar 15 of said lever being of a thickness slightly less than the width of the recess 2' of the fulcrum-block and being adapted to have a movement between the side walls 3 and 4 of said block.

When it is desired to lift the hammer of a drop-press, the lifting-jack is supported upon a bed of the press at one side of the lower die and pushed inward, as shown in Fig. 3, until the fulcrum-lever—which lever has its actuating-arm 15 elevated, as shown in said figure—is located at the proper point below the hammer to permit a complete lifting movement of the arm 16 of said lever *L*, the antifriction-roll 18 being in position to engage the end face of the drop-hammer.

After the parts are in the position shown in Fig. 3 the actuating-arm 15 is, through the medium of the handle *h*, depressed, which raises the lifting-arm 16 to the position shown in

Fig. 2, with the longitudinal axis thereof in vertical alinement with the trunnions 19 and 19' and in the plane of vertical movement of the hammer, after which the locking device *p* (shown in Fig. 10) is passed through the registering pin-holes of the block and lever, which locks the lever in its hammer-supporting position.

After the hammer has been raised, as shown in Figs. 1 and 2, an ordinary stepped supporting-block *S* (see Figs. 1 and 4) may be inserted between the hammer and bed and the lifting-jack removed.

From the foregoing it will be apparent that to raise the hammer to different heights it is simply necessary to support the trunnions 19 and 19' of the lifting-lever in fulcrum-bearings whose axes are located at different heights with respect to the base-line of the fulcrum-block *B*. For instance, when the lever is supported with its trunnions in the bearings 6 the hammer will be lifted by the lever a relatively short distance, which distance may be increased as required by supporting the lever with its trunnions in the bearings 7, 8, 9, 10, or 12, as will be readily understood by reference to the drawings.

Having described my invention, I claim—
1. In a lifting-jack the combination, of a substantially triangular fulcrum-block having two parallel side walls connected at their lower edges by a base portion and having a series of substantially semicircular bearings formed in the inclined faces of said side walls, with their axes located one above the other and in different vertical planes; a lifting-lever having an angularly-disposed lifting-arm at one end thereof and also having two oppositely-disposed trunnions which are removably seated in one pair of fulcrum-bearings; and a locking device engaging the lifting-lever in horizontal alinement with the axis of movement of said lever and adapted for locking the same with its lifting-arm in a vertical position.

2. A lifting-jack comprising a fulcrum-block of substantially triangular form, having two vertically-disposed parallel side walls separated by a longitudinal recess and having a series of stepped bearings in the adjacent inclined faces of said walls and also having a series of transverse pin-holes extending through the said side walls of said block, each in horizontal alinement with a bearing; a lever having a rectangularly-disposed lifting-arm at one end thereof and having oppositely-disposed trunnions at the point of intersection of the longitudinal axes of the two angularly-disposed parts of the lever and having a series of transverse pin-holes at successively different distances from the axes of the trunnion, corresponding to the successively different distances of the fulcrum-block pin-holes from the axes of the successive pairs of bearings, and said lifting-lever being located between the side walls of the fulcrum-block and having its trunnions removably supported in one

of said bearings; and a locking device adapted to be extended through the registering pin-holes to lock the lever with its lifting-arm in a vertical plane.

5 3. In a lifting-jack, the combination of a substantially triangular fulcrum-block having a longitudinal lever-receiving recess and having a series of pairs of substantially semi-circular bearings formed in the side walls
10 thereof, with the axes of the successive pairs in different horizontal and vertical planes, and also having a transverse pin-hole in substantial alinement with each axis of each pair of bearings; an angle-lever having oppositely-

disposed trunnions located at the angle there- 15
of and normally seated in one of said bearings, and also having a series of pin-holes, each of which is adapted to register with a given pin-hole of the fulcrum-block when the lever is fulcrumed in a bearing; antifric- 20
tion-roll carried at the outer end of said lever; and a locking device adapted to be extended through the registering pin-holes, to lock the lever in its lifting position.

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