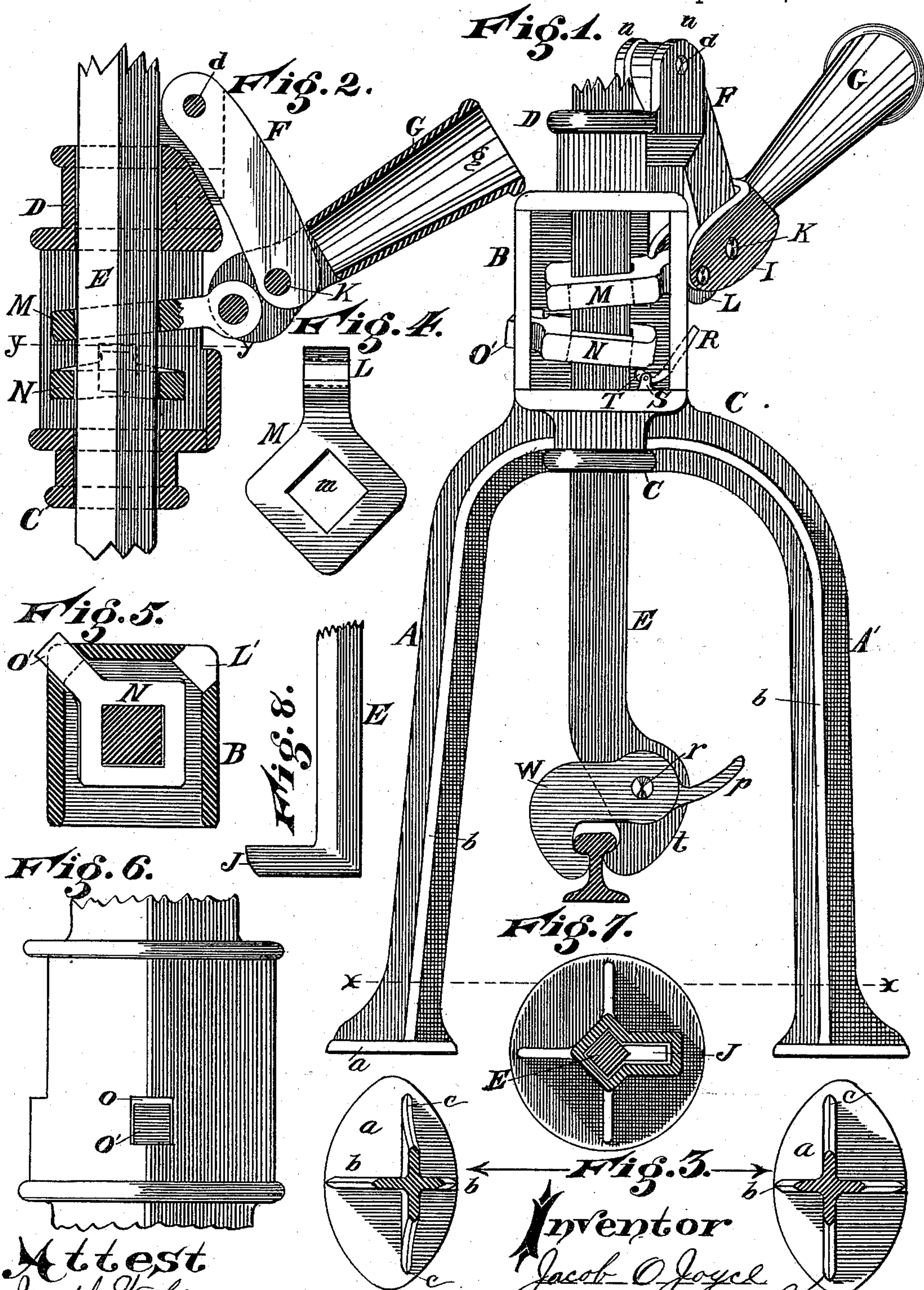


(No Model.)

J. O. JOYCE.
LIFTING JACK.

No. 305,392.

Patented Sept. 16, 1884.



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UNITED STATES PATENT OFFICE.

JACOB O. JOYCE, OF DAYTON, OHIO.

LIFTING-JACK.

SPECIFICATION forming part of Letters Patent No. 305,392, dated September 16, 1884.

Application filed August 7, 1884. (No model.)

To all whom it may concern:

Be it known that I, JACOB O. JOYCE, a resident of Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Lifting-Jacks, of which the following is a specification.

I have invented an improved lifting-jack which is primarily designed as a track-jack; but it may be advantageously used for other purposes.

The object of my invention is to provide a simple, strong, and durable device, which can be more quickly operated than other devices of this class for similar purposes, all of which will be fully set forth in the description of the accompanying drawings, forming a part of the specification.

Figure 1 is an elevation of my improvement. Fig. 2 is a sectional elevation of the lifting-lever, pawls, and frame. Fig. 3 is a section on line *x x*, Fig. 1. Fig. 4 is a plan view of the lifting-pawl; Fig. 5, a plan view of the holding-pawl in position in the housing. Fig. 6 is an elevation of the housing on the plane of the opposite lever. Fig. 7 is a plan view of the lifting-bar in a modified frame; Fig. 8, an elevation of the lifting-bar and foot.

Fig. 1 represents my improvement as applied to a track-jack which is provided with two legs, *A A'*, which span the track to be lifted.

a represents the foot attached to the legs *A A'*.

b b c c, Fig. 3, represent wings or ribs cast on and with the legs *A*. The object of making the legs in this + shape is to increase the strength of the legs or posts.

The feet *a* are preferably made circular, or with a broad base, so that the jack may rest firmly on its base.

B represents the housing in which the pawls work. It is cast on and with the frame. One side is left open, so as to provide means of easy access to the pawls.

C represents a guide pierced with a hole of the proper shape to fit the bar.

D represents a similar guide at the upper end of the frame above the housing. These guides may be at any convenient point in the frame above and below the pawls.

E represents a lifting-bar, which is shown as

made square, which is one feature of my invention.

F represents a link pivoted between ears *n*, which project up from the housing.

d represents a pivot hinging link *F* to the ears *n n*.

G represents a lifting-lever, which is preferably bifurcated, the forks *I I'* of which receive the link *F*.

K represents the pivot or fulcrum upon which the lever *G* moves.

L represents a pivot, which hinges the pawl *M* to the forks *I* of the lever. The pawl is pierced with a square opening, which is slightly larger than the area of the lifting-bar *E*, which passes through the same.

N represents the holding-pawl, which rests loosely in slot *O*, pierced through the housing.

O' represents a stem formed on pawl *N* and projecting through the slot *O*.

By making the bar square and the pawls with similarly-shaped orifices *m*, I obtain important results, as the pawl lifts or holds by the friction due to the angular position of the pawl relative to the plane of the lifting-bar. Much more surface or metal of the bar is in frictional contact with the sides of the pawl when the same is made polygonal or many-sided than when made round. Hence the lifting or holding of the pawls is much more positive in connection than when a round bar and similarly-shaped pawls are used, making the action of the jack much more positive, as well as more durable. The orifices in the pawls *M N* are pierced through at right angles to their faces, so that when the edges become worn by frictional contact with the lifting-bar these pawls can be reversed and new edges brought into use, greatly increasing the life of the pawl. These polygonal or square bars may be employed with a foot, as represented in Figs. 7 and 8.

J represents the ordinary foot, connected to the bar *E*, projecting from the angles of one corner, as shown in Fig. 7. This makes a much stronger foot or bar, as the strain upon the bar is diagonal from corner to corner, and hence a much lighter and smaller bar may be used when it is made square, with the foot connected, as here shown, than when the bar is made round.

For track-jacks I have devised a detachable clutch, adapted for lifting tracks or other similar objects, and to be readily detached by the foot.

5 *t* represents a hook-jaw formed upon the bar E.

U represents a hinge-jaw attached to the stationary jaw *t* by a pivot, *r*. The jaw U is preferably bifurcated or forked, one prong of
10 which fork passes upon each side of the bar E; or the jaws may be made in the ordinary form.

p represents an arm rigidly attached to the jaw U, and passing out a sufficient distance
15 beyond the pivot *r*, so as to form a fulcrum or lever, so that the jaws may be released by applying the foot to the lever *p*.

I have devised an improvement for releasing the holding-pawl, or holding it out of use. It is represented in Fig. 1 by lines R S T. S
20 represents ears or studs projecting up from the base of the housing B, under the outer end of lifting-pawl N. R represents a lever pivoted to said stud; T, a cam or upturned end.
25 When lever R is turned down, the cam T strikes the end of pawl N and raises it from contact with the bar E. This device is convenient for lowering a load by means of a lever and operating-pawl N in connection there-
30 with. The cam-lever T R is preferably so constructed that when the cam D is raised to hold the pawl N it is past the center, so as to form a lock and prevent the pawl coming into use until the lever R is raised. I do not de-
35 sire to limit myself to this particular form of lock for holding the pawl N out of engagement with the bar E.

The device is shown as having the lever G and its pawl M pivoted together anglewise
40 with reference to the housing. I do not wish to limit myself to this particular form of constructing the box, housing, and levers, and arranging the pawl, as a round housing may be used, instead of a square one, without mate-
45 rially affecting the operation of the pawls and lever. By having the space in the housing materially greater than the length of the pawl, and one side of the housing open, the pawls may be readily inserted and removed when
50 the lifting-bar is dropped out of its place, and this is a feature of my invention.

I am aware that a lifting-bar annular in cross-section has been combined with lifting friction-pawls having annular orifices for the bar, and
55 such I do not claim.

I claim—

1. The combination, in a lifting-jack, of the bar E, angular in cross-section, with the friction-pawls M N, having angular openings for the bar, substantially as and for the purposes de- 60 scribed.

2. In combination with the frame of a lifting-jack, a housing, B, provided with slots L and O, Fig. 5, through which the pawls work, substantially as specified. 65

3. The frame of a lifting-jack, composed substantially of the posts A A', provided with projecting wings B B C C, and feet *a*, and with the housing *b*, containing the operative parts, mounted upon the top of the posts, substan- 70 tially as specified.

4. In combination with the lifting-bar E, stationary jaw *t*, and pivot-jaw U, provided with the projecting arm *p* for releasing the clutch of the jaws, substantially as specified. 75

5. In combination with the polygonal bar E, the foot J, secured to the diagonal corner of the bar, substantially as specified.

6. In combination with the lever E, hinged to the frame of the lifting-jack, the pawl M, 80 pivoted to said lifting-lever and provided with the polygonal-shaped opening for clutching a similarly-shaped lifting-bar, substantially as specified.

7. In combination with the frame of a lifting-jack, a housing, B, pierced with the orifice O, which supports the stem of the clutch-pawl N, substantially as specified. 85

8. The housing B, secured to the frame of the lifting-jack, and of greater width in the opening than the length of the pawls, and pierced with orifices O for supporting the stem of pawl N, substantially as specified. 90

9. In combination with the lever G and lifting-bar E, the reversible pawl M, pivoted to 95 the lever and engaging the lifting-bar, substantially as specified.

10. In combination with the housing B, the reversible pawl M, supported therein and engaging the lifting-bar, substantially as and for 100 the purpose specified,

In testimony whereof I have hereunto set my hand.

JACOB O. JOYCE.

Witnesses:

EDW. BOYD,
JOHN L. H. FRANK.