

(No Model.)

3 Sheets—Sheet 1.

H. M. ANDERSON.
LIFTING JACK.

No. 514,893.

Patented Feb. 20, 1894.

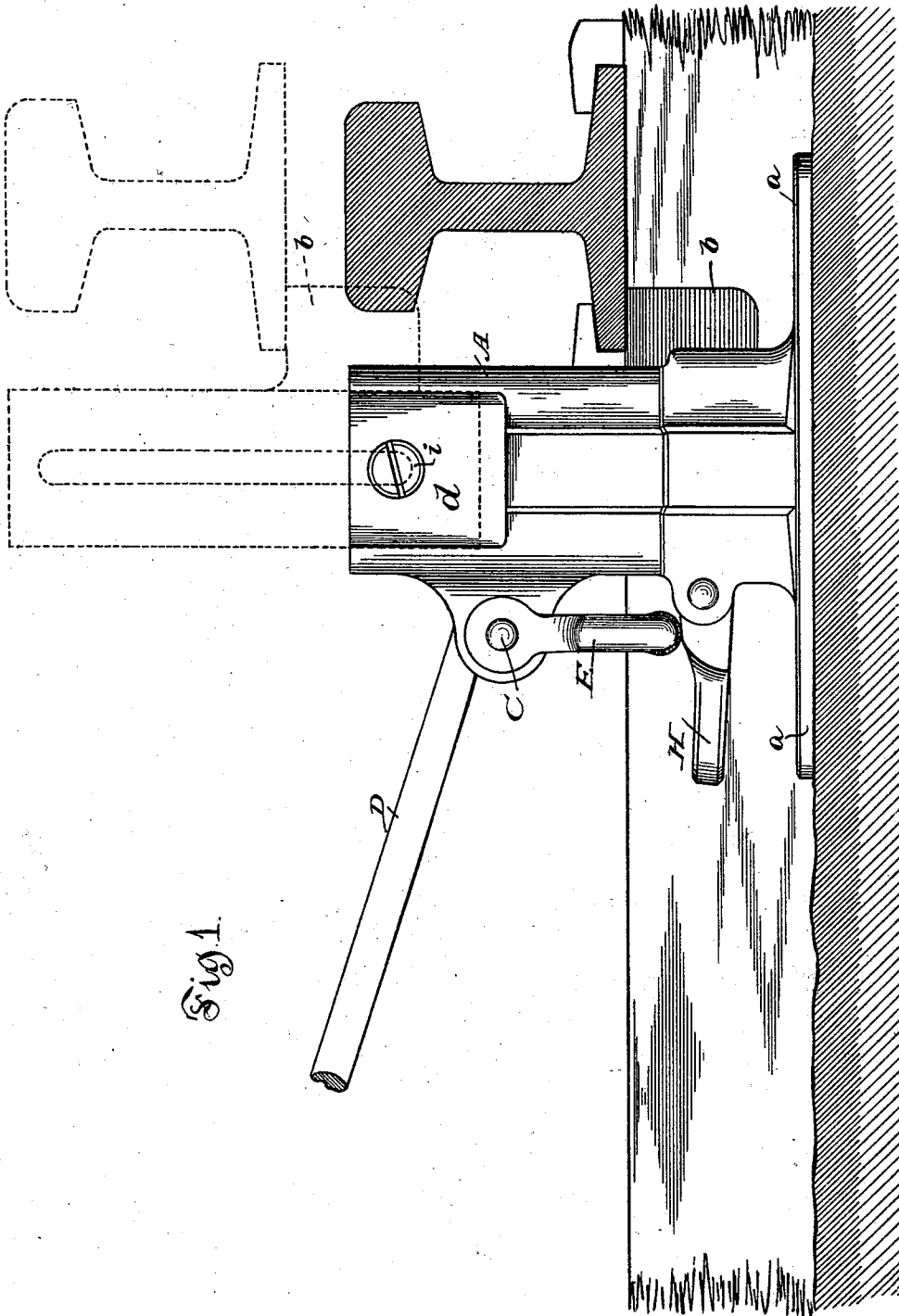


Fig. 1.

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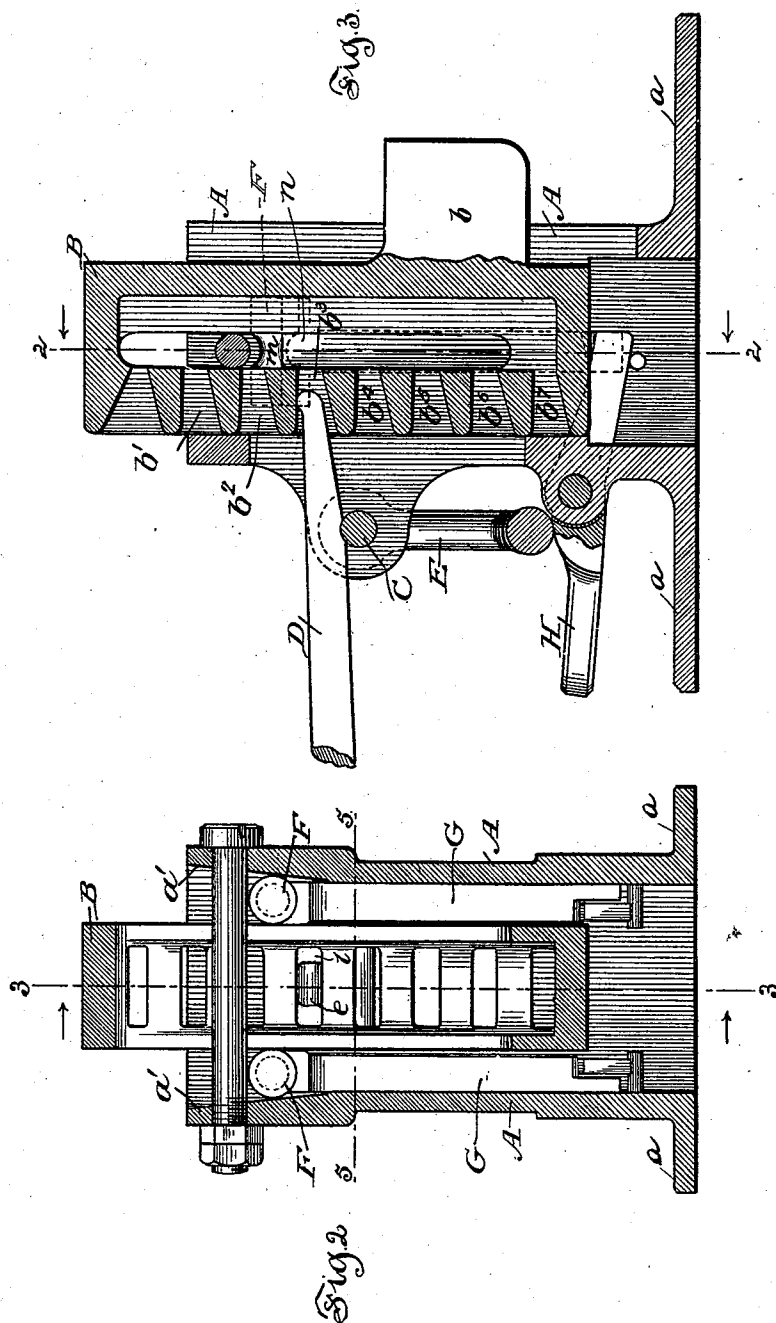
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3 Sheets—Sheet 3.

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Fig. 6.

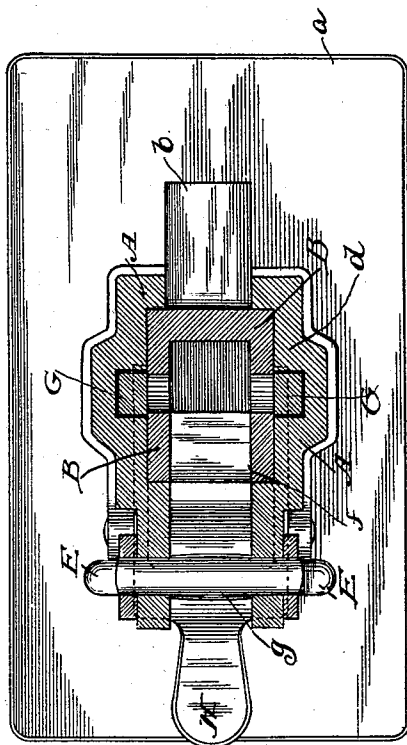
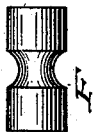
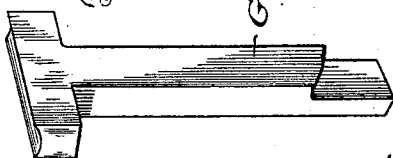


Fig. 5.

Fig. 4.



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UNITED STATES PATENT OFFICE.

HOLMAN M. ANDERSON, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO
JAMES J. BARKLEY, OF SAME PLACE.

LIFTING-JACK.

SPECIFICATION forming part of Letters Patent No. 514,893, dated February 20, 1894.

Application filed April 25, 1892. Serial No. 430,447. (No model.)

To all whom it may concern:

Be it known that I, HOLMAN M. ANDERSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Lifting-Jacks, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to lifting jacks of the class generally designated as track-jacks, which are designed more especially for use in leveling railroad tracks.

The object of my invention is to provide a track-jack which can be applied on the inside of the track, and which, when in use, will be wholly out of the way of passing trains.

My lifting jack, speaking generally consists of a lifting bar provided with a foot adapted to engage with the flange of a rail, said lifting bar being provided, on the side opposite to that carrying the foot, with notches adapted to be engaged by the end of an ordinary flat pointed bar or lever, said lifting bar being mounted in a standard which is provided on one side with a slot through which the foot of the lifting bar extends, and on the other side with a slot for the insertion of the lever or bar, said standard being also provided with a suitable fulcrum for the lever or bar, the lifting bar being retained in position by a frictional retaining device which is adapted to be released instantaneously through the agency of a tripping device.

The special features of novelty which constitute my invention are more particularly described and set forth in the claims.

My invention will be more readily understood by reference to the accompanying drawings, in which—

Figure 1 is a side elevation showing my lifting jack placed between the ties inside of the track with the foot under the base of the rail to be lifted, dotted lines indicating the position to which the rail may be raised. Fig. 2 is a partial sectional view of my lifting jack upon line 2—2 of Fig. 3. Fig. 3 is a partial sectional view thereof upon 3—3 of Fig. 2. Fig. 4 is a perspective view of one of the releasing tappets between the tripping lever

and the friction roller. Fig. 5 is a plan view of my lifting jack as seen from section line 5—5 of Fig. 2. Fig. 6 is an elevation of one of the friction rollers.

Like parts are indicated by similar letters of reference throughout the different figures.

Referring to Figs. 1, 2 and 3, it will be seen that the moving parts are mounted in a standard A, provided with base flange *a* on which the jack rests, between ties, when in use. The standard is made with a perpendicular opening fitted to guide a lifting bar B, and is provided with two vertical slots on opposite sides, one slot being for the foot *b* of the lifting bar and extending to and through the base of the standard, the other slot being for the admission of any suitable lever, or bar D, which may be used to pry up the lifting bar, said slot, however, not extending to the base of the standard. Below this slot the rear walls of the standard extend outward to provide a support, or fulcrum C, for the lever. The perpendicular opening in the standard is enlarged near the top for the insertion of frictional gripping devices, hereinafter described, and passages which may open into the perpendicular opening, serve to carry releasing tappets adapted to be actuated in a manner hereinafter described by a tripping lever pivoted to the standard. The standard is also provided with a handle E, for carrying the jack, which is preferably of a D shape, and the same is attached through the ends thereof to the side walls on each side of the slot provided for the admission of the hand lever; the bolt for attaching the handle may serve, when suitably supported, as the actual fulcrum, as shown.

As shown in Figs. 1 and 2, the lifting bar B is provided at one side with a foot *b*, which extends a suitable distance beyond the standard to engage with the flange of the rail to be lifted. Said foot is preferably of such proportions that when engaged with the rail flange there will be a sufficient space between the upper end of the standard and the head of the rail to allow the passage of the flanges of the wheels of cars that may be passing on the track. The opposite side of the lifting bar is provided with a series of indentations, openings or notches, *b'*, *b''*, *b'''*, &c., adapted to receive

the end of any suitable flat pointed bar, or lever, D, that may be used to pry up the lifting bar. It is the express intention to avoid such construction as would require a special form of lever to operate the jack, as the ordinary equipment of trackmen's tools always embraces a number of bars, or levers, suitable for this purpose. The length of lifting bar B is preferably equal to the height of the standard A.

As shown in Fig. 2, the perpendicular opening through the standard is enlarged at the upper end and formed with inclined side walls a' a' so as to leave a wedge shaped opening between said side walls and the sides of the lifting bar, in which opening are placed frictional gripping rollers F, which in their lower position will act to prevent the lifting bar, when once raised, from descending. The greater the weight on the lifting bar, the tighter will the rollers be wedged between the inclined side walls and the sides of the lifting bar. When, however, the lifting bar is moved upward there is practically no resisting friction upon the rollers to such upward movement. The mere starting of the lifting bar to descend always brings back the frictional engagement so that the downward movement is checked just as it begins. Thus, whatever the distance it is required to raise the rail, within the range of the jack, the lifting bar can be retained at precisely the required elevation, utilizing as many movements of the lever employed as may be necessary.

For the purpose of releasing the frictional gripping device and allowing the lifting bar to be lowered, I provide releasing tappets G carried in vertical passages in the standard. The upper ends of said releasing tappets are normally out of engagement with the friction rollers, but are enlarged suitably to engage the friction rollers and drive them upward when desired. The lower ends of said releasing tappets rest on the tripping lever H by means of which they are actuated. Thus, when it is desired to lower the lifting bar B the tripping lever H is struck, raising the releasing tappets G, thereby causing them to strike with considerable force against the friction rollers F, driving said rollers up to instantaneously release the lifting bar B, the latter being thereby permitted to descend instantly without impediment.

It should be noted that if the lifting bar has been at all raised the operation of lowering it can always be accomplished without regard to its particular position, and without regard to its position relative to the gripping device, in short, without manipulation or adjustment of any part except the tripping lever.

With the construction shown and described it is requisite to provide means to limit the movements of the lifting bar, also to limit the upward movements of the frictional gripping rollers, which may be accomplished preferably by a bolt extending through a slot pro-

vided in the lifting bar and through the walls of the standard A above the rollers; but modifications of this limiting device may be made without departing from the scope of my invention. It will also be practicable to modify the form of the rollers, since any rounded device which will, when left free, act by rolling to lock the lifting bar by exerting frictional pressure against the lifting bar, and which may be lifted from such frictional engagements by the releasing tappets, might be substituted for the rollers shown without departing from the scope of my invention.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The lifting bar, provided on one side with a foot, adapted to engage with the weight to be lifted, and on the opposite side with notches adapted to receive the end of a common lever, in combination with the standard, provided with a fulcrum for a common lever, and a frictional rolling gripping device adapted to retain said lifting bar at any place to which the same may be raised, substantially as described.

2. The slotted lifting bar, provided on one side with a foot adapted to engage weights to be lifted, and on the opposite side with notches adapted to receive the end of a common lever, in combination with the standard, and parts secured to said standard and entering the slotted lifting bar to limit the movement thereof, substantially as described.

3. In a lifting jack, the standard provided with a base flange, and with a vertical opening extending through the top and through the base, and adapted to guide the lifting bar, said standard being also provided with a vertical slot extending through the top and through the side thereof for the foot of the lifting bar, substantially as described.

4. In a lifting jack, the standard provided with a base flange, and a vertical opening extending through the base adapted to guide the lifting bar, and a vertical slot through one side of the standard extending to the top thereof for the foot of said lifting bar, and on the opposite side at the lower end of another vertical slot, a fulcrum adapted for use with a common lever, substantially as described.

5. In a lifting jack, the combination of the standard, having a vertical opening guiding a lifting bar, and provided with an enlargement of the vertical opening having inclined side walls, with the lifting bar, frictional gripping rollers, and releasing tappets normally out of engagement with said gripping rollers, substantially as described.

6. In a lifting jack, the standard with a vertical opening guiding a lifting bar, and interior passages guiding releasing tappets, in combination with frictional gripping rollers between and acting upon the inclined side walls of the standard and the lifting bar said rolls being on diametrically opposite sides of said standard, substantially as described.

7. In a lifting jack the standard with a vertical opening guiding a lifting bar, and interior vertical passages guiding lifting tappets, in combination with the lifting bar, the frictional gripping rollers acting between the surface of the lifting bar and the side walls of the standard, the lifting tappets normally out of engagement with the gripping rollers, and the tripping lever pivoted on the standard to act on the lifting tappets, substantially as described.

8. The combination in a lifting jack of a standard forming a guide for the lifting bar, of said lifting bar adapted to be raised and lowered therein, said standard being provided with an open slot through which a foot provided on the lifting bar projects, and a bolt passing through the upper portion of the standard to prevent the said open slot from spreading, the lifting bar being provided with a slot through which the said bolt passes, whereby the foot is adapted to be raised above the standard while the movement thereof is limited by the length of the slot in the lifting bar, substantially as described.

9. The combination with the standard forming the guide for the lifting bar, of said lifting bar adapted to be raised and lowered therein, the top of the lifting bar being, when in its lowest position, at substantially the same height as the top of the standard, said lifting bar being provided with a foot projecting laterally through a slot provided in the standard, whereby when the foot is under a rail to be lifted the train may pass over the track above the jack, substantially as described.

10. The combination with the standard provided with the base flange of the lifting bar placed in said standard and guided thereby, a lever adapted to be inserted in notches of the lifting bar to raise the same step by step, a pair of friction rollers on opposite sides of said lifting bar, and an upwardly flaring bearing surface for each of said rollers, and tripping mechanism for positively lifting said rollers simultaneously, substantially as described.

11. The combination with the standard having a slot open at the top, of a bolt passing through the upper portion of said standard to prevent the same spreading apart at the slot, the lifting bar guided by said standard and provided with a slot through which passes said bolt, means for raising and lowering the

lifting bar and automatically locking the same in any position to which it is moved, and the foot provided on said lifting bar and projecting through said slot, substantially as described.

12. The combination with the standard, of a vertical movable lifting bar placed thereon, the bolt of the handle adapted to serve as a fulcrum, a lever adapted to engage with notches on the lifting bar one after the other to raise the lifting bar when operated on said fulcrum, a foot provided on the lifting bar projecting laterally through a slot provided in the standard, said slot extending to the top of the standard, a bolt inserted through the standard near the top to prevent the same from spreading at the slot, said bolt also passing through a slot provided in the lifting bar, said slot in the lifting bar limiting the vertical movement thereof, and frictional gripping mechanism for locking the lifting bar in the position to which it is moved by the lever, and a tripping lever for positively moving the said frictional mechanism to unlock the lifting bar, substantially as described.

13. The combination with the vertical movable lifting bar and a guide for the same provided with beveled or angular bearing surfaces $a' a'$, of friction rollers $F F$ on opposite sides of said lifting bar adapted to bear against said surfaces $a' a'$, the tripping lever and the releasing tappets $G G$ between said tripping lever and said rollers, whereby the lifting bar is locked in position to which it is adjusted, and released by operating the tripping lever to raise the rollers, substantially as described.

14. In a lifting jack, the combination with the lifting bar, and lever mechanism for raising the same, of the standard having a bolt passing through the same and through the slot provided in the lifting bar, the friction rollers placed under said bolt on opposite sides of the lifting bar and provided each with a groove, said rollers being adapted to press against angular bearing surfaces $a' a'$, and with lever mechanism for positively and simultaneously raising the rollers to remove the friction thereof from the lifting bar, substantially as described.

In witness whereof I hereunto subscribe my name this 23d day of April, A. D. 1892.

HOLMAN M. ANDERSON.

Witnesses:

GEORGE P. BARTON,
GEORGE L. CRAGG.