J. S. KIRKWOOD.

Combined Track-Lifter and Spike-Puller.

No. 196,811. Patented Nov. 6, 1877.

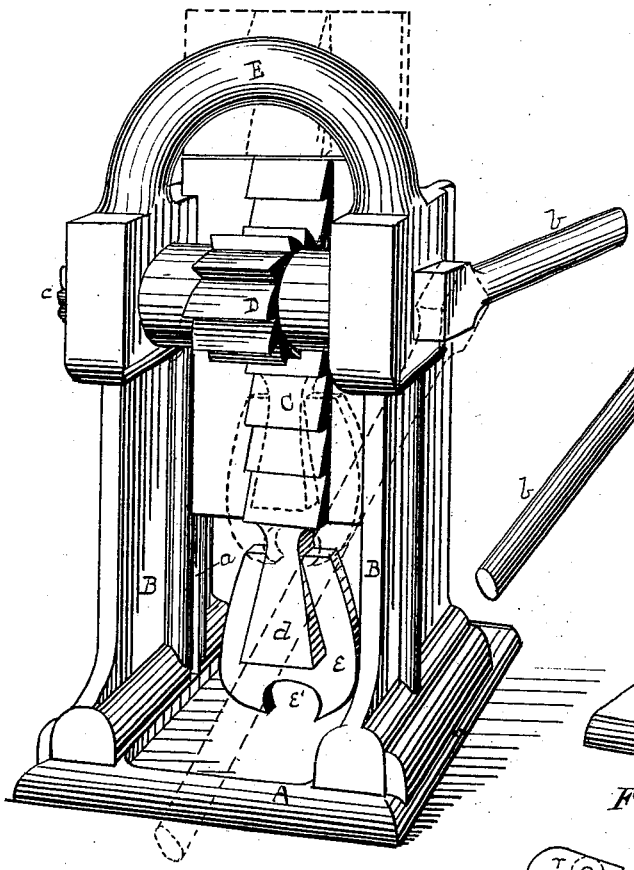


Fig. 2.

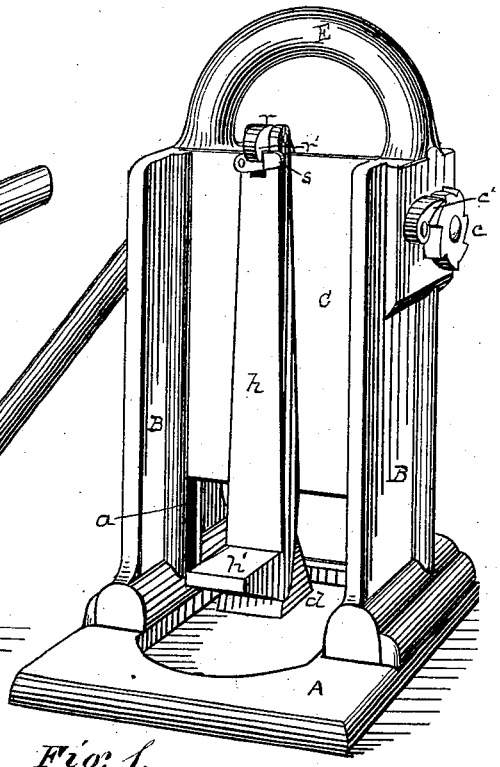


Fig. 1.

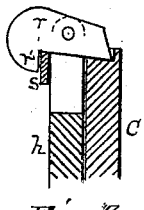


Fig. 3.

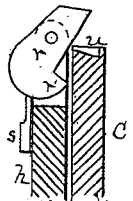


Fig. 4.

Witnesses
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# UNITED STATES PATENT OFFICE.

JOSEPH S. KIRKWOOD, OF McKEESPORT, PENNSYLVANIA, ASSIGNOR TO HIMSELF AND H. C. MYERS, OF SAME PLACE.

## IMPROVEMENT IN COMBINED TRACK-LIFTER AND SPIKE-PULLER.

Specification forming part of Letters Patent No. **196,811**, dated November 6, 1877; application filed September 28, 1877.

*To all whom it may concern:*

Be it known that I, JOSEPH S. KIRKWOOD, of McKeesport, county of Allegheny, State of Pennsylvania, have invented or discovered a new and useful Improvement in Combined Track-Lifter and Spike-Puller; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawing, making a part of this specification, in which—like letters indicating like parts—

Figure 1 is a rear perspective view of my improved track-lifter and spike-puller, showing more particularly the devices used in track-lifting. Fig. 2 is a front perspective view of the same, showing the devices used in drawing spikes; and Figs. 3 and 4 are detached views, partly in section, illustrating more fully the manner in which the track-lifting device is combined with the apparatus.

My present improvement relates to a device or combination of devices for drawing bolts and spikes generally, and more particularly the spikes which secure railroad-rails to the cross-ties, and also for lifting the rails and ties for the purpose of leveling or raising the track; and it consists in certain improvements on an apparatus for which a patent was granted to me September 4, 1877, No. 194,827.

By means of these improvements I not only better adapt the apparatus for drawing spikes, as described in said patent, but I also adapt it to the additional use of track-lifting, as already stated.

In my improved apparatus I make use of a base-plate, A, made open at the bottom, and two standards, B, a rack-bar, C, and pinion D, constructed and operating substantially as described in the patent referred to. I, however, connect the two standards B at the top by an oval cross head or tie, E, for the purpose of giving them increased strength and stability, and also to serve as a handle in using or moving the apparatus. The pinion D is made to gear into the rack-bar C and operate the same, the bar sliding in grooves *a* in the adjacent faces of the standards B. The teeth on the rack and pinion may be of any desired form, size, and length for giving the requisite strength. In order to operate the pinion D, I attach a lever or crank, *b*, to the shaft of the pinion at one end, and on the opposite end I fit a ratchet-wheel, *c*, and pivot a pawl, *c'*, to the standard B, in such manner that the pawl may engage the teeth of the ratchet-wheel, and thus hold the rack-bar C at the desired elevation. I prefer to make the rack C and pinion D of such relative proportions that, by a half or about a half turn of the pinion, the rack will pass nearly or quite its full range of motion, or at least far enough to draw the spike, so that a single motion of the operating-lever *b* will suffice for the purpose. The two positions of the devices with relation to this operation are shown by full and dotted lines in Fig. 2. The chief advantages of this construction over that shown and described in the patent referred to are rapidity and convenience in operation.

The draw-head *d* is made of the form of the frustum of an equilateral four-sided pyramid, the base or end of greatest area being downward. The removable and reversible claw *e* is made with a dovetail recess, the counterpart of the sides of a vertical section through the draw-head *d*, so that the claw may be slipped sidewise upon the draw-head, as shown in Fig. 2; and the sides of the draw-head being equal, the claw may be reversed or placed upon either two of the opposite faces of the draw-head, as convenience may suggest.

Instead of making the claw of two jaws hinged together, I now make it in one solid piece, and form a dovetail-shaped recess, *e'*, at the lower end, which may be slipped sidewise under the head of the spike to be drawn.

The devices for adapting this apparatus for track-lifting are shown in Figs. 1, 3, and 4, where *h* represents a lifting-bar, which is connected to the top of the rack-bar C by a dog or hook, *r*. This dog is pivoted in a slot to the upper end of the bar *h*, and a swinging key or toggle, *s*, is arranged so that it may be inserted between the bar *h* and the hook *r'* on the under side of the dog. The dog is thus locked on its pivot, so that when its opposite or free end is seated in the recess *u* in the upper end of the rack-bar the lifting-bar *h* will be supported thereby. The lower end of the lifting-bar is beveled off on its rear face, so

as to fit the adjacent face of the draw-head *d*, and this adaptation assists somewhat in supporting the lifting-bar. A hook or lug, *h'*, projects out from the lower end of the lifting-bar, which lug is placed under the rail, and lifts the track when the rack-bar C is raised, as before described.

If for any cause, as for a passing train, it is desired to remove the apparatus quickly, the locking-key *s* may, by a blow, be forced out from its locking position, when the dog *r* will release its hold on the bar C by turning on its pivot, as in Fig. 4. The apparatus will then be free from the track, and may be removed till the train has passed.

The devices described may be used for other kindred purposes to which they are adapted by their construction, or to which they may be made applicable by mechanical skill.

I claim herein as my invention—

1. The removable and reversible unjointed or solid claw *e*, in combination with the equilateral draw-head *d*, substantially as set forth.

2. The cross tie or handle E, in combination with standards, rack and pinion, operating-lever, ratchet, and pawl, as set forth.

3. In a combined spike-puller and track-lifter, a lifting-bar, *h*, having a hook or projection at its lower end to engage the track, and a swinging or pivoted dog or hook at its upper end, in combination with a removable key to lock and release the dog, substantially as set forth.

4. The lifting-bar *h*, having dog *r* and key *s*, in combination with rack-bar C, having a recess, *u*, substantially as described.

In testimony whereof I have hereunto set my hand.

J. S. KIRKWOOD.

Witnesses:

A. H. BOWMAN,

G. H. CHRISTY.