J. FOX.

Tire-Tightener.

No. 210,195. Patented Nov. 26, 1878.

Fig. 1

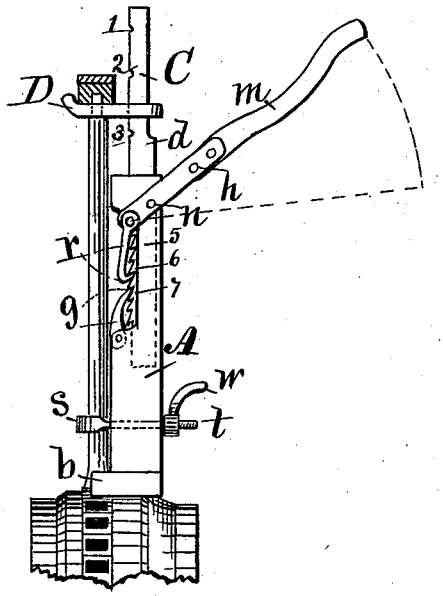
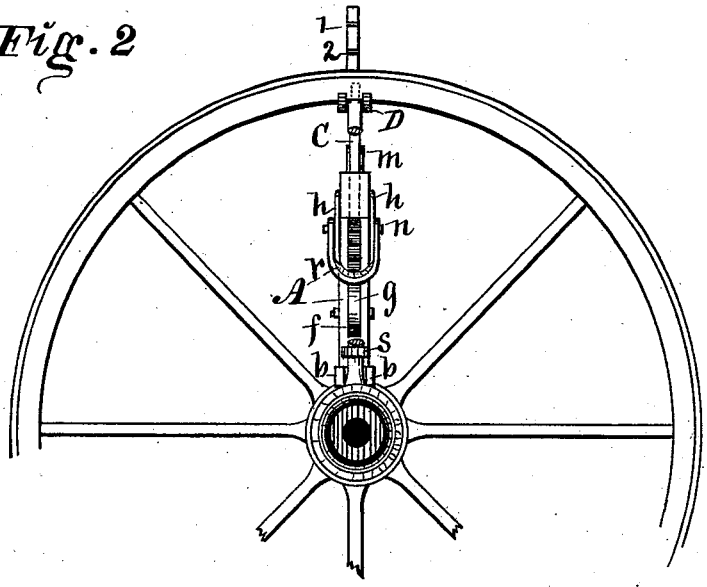


Fig. 2



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UNITED STATES PATENT OFFICE.

JOHN FOX, OF MONROE, IOWA.

IMPROVEMENT IN TIRE-TIGHTENERS.

Specification forming part of Letters Patent No. **210,195**, dated November 26, 1878; application filed October 21, 1878.

To all whom it may concern:

Be it known that I, JOHN FOX, of Monroe, in the county of Jasper and State of Iowa, have invented an Improved Tire-Tightener, of which the following is a specification:

The object of my invention is to provide a simple, strong, and durable tire-tightener that is complete in itself, and that can be readily adjusted and applied to wheels of various sizes, and easily operated by any person of ordinary mechanical skill to tighten the tire by raising the felly and placing washers on the tenons of the spokes.

Heretofore various similar devices have been used to accomplish the results contemplated; and my improvement consists in the manner of constructing, arranging, and combining a spoke-clamping device, a loop-formed pawl and forked lever, and a bifurcated sliding block with a common lifting-jack, as hereinafter fully set forth.

Figure 1 of the drawing is a side elevation of my jack. Fig. 2 is a side view of Fig. 1. Together they illustrate the construction, application, and operation of my complete invention.

A is the upright post of a jack and the base-piece of my tire-tightener. It may be cast complete in one piece or formed in sections, and the sections joined together with rivets or screw-bolts.

b b are enlargements at the bottom end of the post A, designed to produce an enlarged base and surface to engage the hub of the wheel upon which it is intended to rest, and also to form a bearing against which to rest the inner end of a spoke when clamped to the spoke. C is a rack-bar that slides up and down in a longitudinal mortise and bearing formed in the post A. D is a bifurcated block that has a mortise corresponding in size and form with the top end of the rock-bar C, upon which it slides up and down to engage the felly of the wheel. The mortise in this sliding block is slightly inclined to cause it to bind against the rack-bar, and to remain clamped thereto when subjected to the eccentric pressure caused by the resistance of the felly resting upon its extended and bifurcated end. 1 2 3 represent a series of notches formed in the edge of the top end of the rack-bar, to engage and support the sliding block at various points of elevation as required to suit wheels of various sizes. Its descent on the bar is limited and restricted by the shoulder *d* or its equivalent.

The lower end of the rack-bar has a series of ratchet-teeth, 5 6 7, that are exposed through the opening *f* formed in the side of the post A. A pawl, *g*, pivoted to the post, engages this rack or ratchet face of the bar C, and limits its descent in the supporting-post.

h h is the bifurcated end of a lever, *m*, of the first order. *n* is the pivot and fulcrum by means of which the lever *m* is connected with the post A. *r* is a loop-form pawl, hinged to the ends *h* of the lever *m* in such a manner that it will, by force of gravitation, engage the rack 5 6 7 of the bar C and lift it when power is applied to the long arm of the lever *m*. *s* is the curved end of an adjustable bolt, *t*, passed through suitable bearings formed in or attached to the post A, near its base, in such a manner that it can engage a spoke, and by means of a thumb-nut, *w*, be operated to clamp the post A rigidly to the spoke in the manner shown, and to thereby prevent the spoke from being loosened in the hub when pressure is applied to lift the felly on the outer end of the spoke.

In the practical operation of my invention my jack is placed on the top of the hub of a wheel, and the rack-bar C and its sliding block D adjusted so as to allow the projecting and bifurcated end of the block to rest against the top end of a spoke and against the inner and under side of the wheel-felly. By means of the clamping device *s t w* the complete jack is then rigidly fixed to the wheel in such a manner that the force applied to the lever *m* will be augmented and exerted in opposite directions. The loop-form pawl *r*, depending from the short arm of the lever and engaging the rack of the bar C, will lift it upward in the post A, and the same action of the lever will cause the combined post and spoke to press downward on the immovable central hub of the wheel. The elongation of the jack must therefore lift the wheel-felly resting on the top of the spoke to which the jack is rigidly clamped. When the felly is thus lifted an open washer, made of leather or other suitable material, can be readily placed upon the

shoulder and tenon at the top of the spoke to lengthen the spoke, and to thereby retain the felly pressed out tight against the tire. This operation can be successively performed on each spoke, or as many of them as will be necessary to tighten the tire on the outside surface of the felly, without shrinking the tire.

A simple, cheap, practical, and durable means is thus provided for keeping wheel-tires tight without taking them off to shrink them, and the damages and accidents incident to loose tires can be thereby readily avoided.

I claim—

1. The lever *m*, having the forks *h h*, and carrying the hinged loop-form pawl *r*, in combination with the post A, having the opening *f* and the pawl *g*, and the sliding rack-bar C, substantially as shown and described, for the purpose specified.

2. The improved tire-tightener, composed of the post A *b b*, having the opening *f*, pawl *g*, and clamping device *s t w*, the lever *m h h*, having the pendent pawl *r*, and the adjustable rack-bar C, carrying the sliding block D, substantially as shown and described, to be operated in the manner specified.

JOHN FOX.

Witnesses:

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