Aug. 4, 1942. J. R. GRIFFITH 2,291,893

BOLT AND SPIKE PULLING JACK

Filed June 21, 1940 2 Sheets-Sheet 1

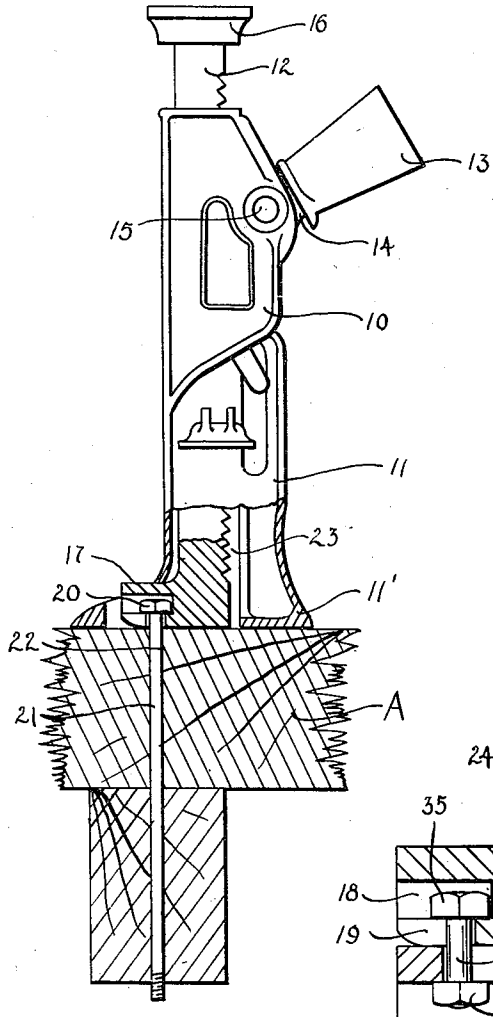


Fig 1

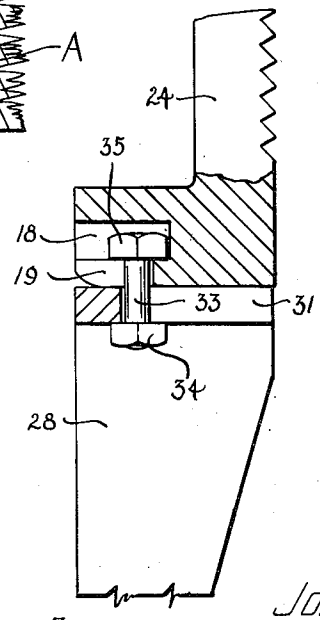


Fig 3

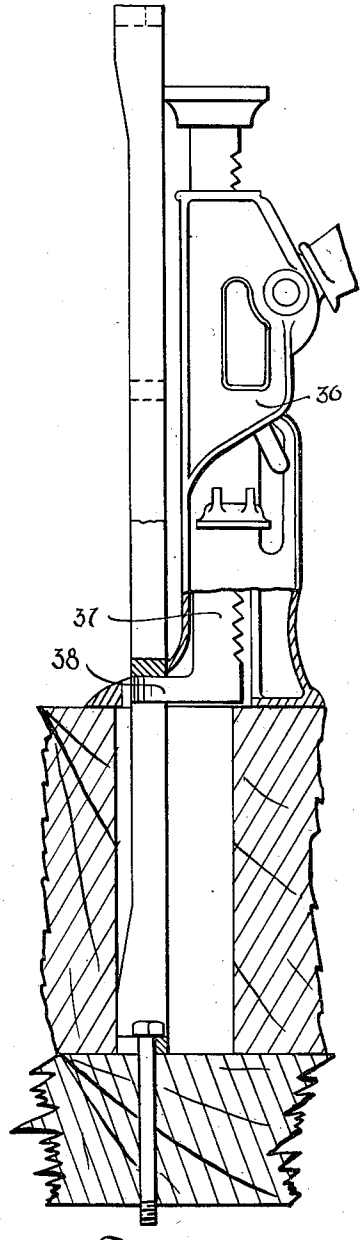


Fig 2

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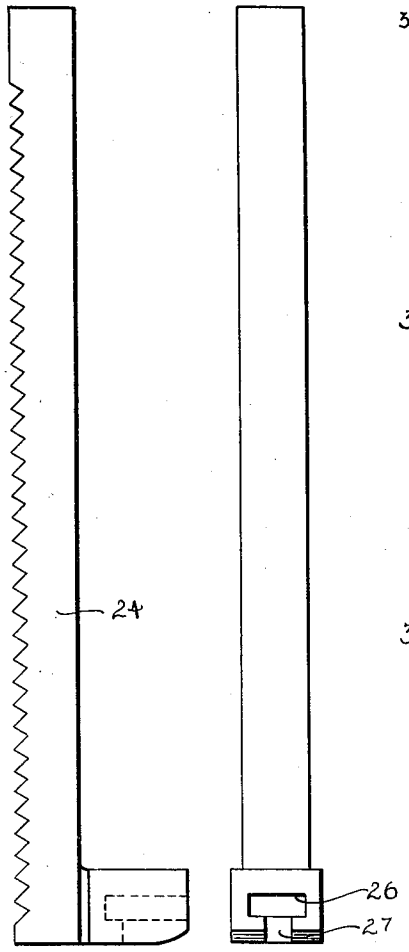


Fig 4

Fig 5

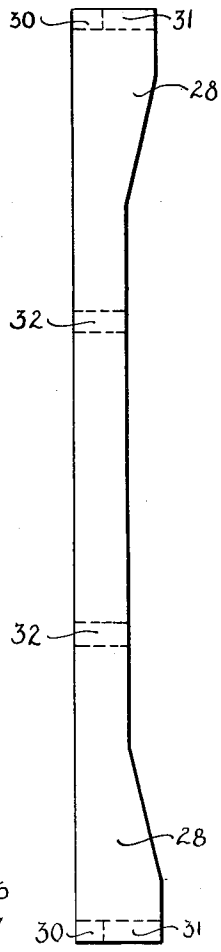


Fig 7

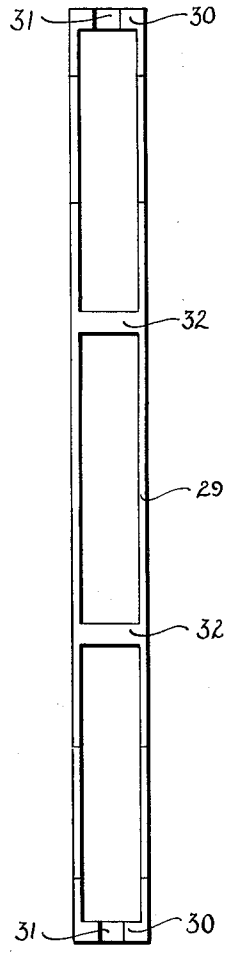


Fig 8

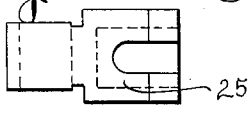


Fig 6

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UNITED STATES PATENT OFFICE

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BOLT AND SPIKE PULLING JACK

John R. Griffith, Smithville, Tex.

Application June 21, 1940, Serial No. 341,649

7 Claims. (Cl. 254—18)

This invention relates to new and useful improvements in bolt and spike pulling jacks.

It is a common practice to use bolts and spikes of considerable length in building bridges and other similar structures, and, in particular, in laying railroad rails upon crossties and trestles. The bolts and spikes are utilized to hold two or more members together, such as a railroad rail and a crosstie, or two bridge or trestle timbers. When it is desired to dismantle such structures, it is often found that slight shifting of the various members of the structure has caused the bolts and spikes to be wedged in position so that it is necessary to use considerable force to remove them. In addition, the bolts or spikes are often in such a location as to not be readily accessible to the usual type of bolt pulling jack.

It is, therefore, one object of this invention to provide an improved bolt jack adapted to engage the head of a bolt or spike disposed in a member, and to exert an upward pull upon the bolt or spike to remove the same from the member.

Another object of the invention is to provide an improved bolt jack whereby bolts and spikes may be pulled or removed from relatively inaccessible points.

A further object of the invention is to provide an improved bolt jack having means coacting with the jack so as to engage and exert an upward pull upon bolts or spikes which would be inaccessible to the ordinary type of bolt jack.

An important object of the invention is to provide an improved bolt jack having means coacting with the lifting foot of the jack rack for engaging and exerting an upward pull upon bolts or spikes disposed at various points below the base of said jack.

A construction designed to carry out the invention will be hereinafter described, together with other features of the invention.

The invention will be more readily understood from a reading of the following specification and by reference to the accompanying drawings, in which an example of the invention is shown, and wherein:

Figure 1 is a view, partly in elevation and partly in section, of a jack constructed in accordance with the invention, showing the jack resting upon a timber so as to pull a bolt,

Figure 2 is a similar view showing an auxiliary puller bar positioned upon an ordinary jack so as to pull a bolt disposed below the jack,

Figure 3 is an enlarged view, partly in section and partly in elevation, of a portion of the lifting foot and the puller bar, showing one method of connecting the foot and the bar,

Figure 4 is an enlarged elevation of an elongated rack adapted to be used with the jack,

Figure 5 is a view similar to Figure 4 taken at right angles thereto,

Figure 6 is a view of the under side of the rack,

Figure 7 is a side elevation of the auxiliary puller bar, and,

Figure 8 is a view in elevation taken at right angles to Figure 7.

In the drawings, the numeral 10 designates a jack of the ratchet type having a frame 11, a base 11' and an elongate toothed rack 12 disposed within the frame 11. The rack 12 is adapted to be moved longitudinally of the frame 11 in a vertical plane, being raised and lowered within said frame by means of a ratchet and detent mechanism (not shown) disposed within the frame. The ratchet mechanism is actuated by any suitable type of an elevating lever (not shown) which is inserted in an elevating lever socket 13 formed on the outer end of a lever 14. The lever 14 is mounted in the frame 11 upon a pin 15 so as to be free to undergo upward and downward motion. In this manner, a lever may be inserted in the socket 13 and moved up and down so as to actuate the lever 14, which in turn actuates the ratchet mechanism to raise and lower the rack 12.

A lifting head 16 is provided upon the extreme upper end of the rack 12, and a lifting foot 17 is formed upon the extreme lower end of the rack. The foot 17 is provided with a recess 18, rectangular in cross-section and extending horizontally from the forward end of the foot some distance thereinto. A slot 19 is formed in the bottom of the recess 18. The recess 18 receives the head 20 of a bolt 21 disposed in a timber A, while the slot 19 receives the shank 22 of said bolt. The slot is not of sufficient cross-section to accommodate the head 20 of the bolt 21, so that upward movement of the rack 12 and the foot 17 will exert an upward pull on the bolt to remove it from its position within the timber A. As is shown in the drawings, the lower side of the foot 17 is curved upwardly toward the forward end of the foot so as to allow the same to be readily placed beneath the head 20 of the bolt 21.

As will be noted in Figure 1, an opening 23 is formed in the base 11' of the frame 11 below the lifting foot 17. The opening 23 is of sufficient size as to receive the lifting foot and allow the same to be projected below the

base 11'. An auxiliary rack 24, having substantially the same elements and contour as the rack 12, is adapted to replace the rack 12 within the frame 11. The rack 24 is somewhat longer than the rack 12, and is designed to be used when the bolt to be pulled is not accessible to the rack 12 and lifting foot 17. The rack 24 is provided with a lifting foot 25 similar to the foot 17, and having a recess 26 and a slot 27 similar to the recess 18 and the slot 19. The additional length of the rack 24 allows the lifting foot 25 to be projected through the opening 23 below the jack so as to engage and pull bolts which are disposed in recesses or similar locations and cannot be reached by the rack 12.

An auxiliary extension or puller bar 28 is provided for extracting bolts which lie in very inaccessible locations. The bar is formed with a pair of elongate side members 29, joined by a pair of relatively short cross-members 30 at their upper and lower ends. Each of the members 30 carries a slot 31 similar to the slot 19 in the lifting foot 17 and extending from the forward edge of the member 30 to a point spaced from the rearward edge of the member. An additional pair of cross-members or webs 32 connect the side members 29 and are spaced substantially equidistant from each other and the cross-members 30.

A short bolt 33 (Figure 3), carrying a nut 34, is utilized to connect the puller bar 28 to the lower end of the rack 12 or the rack 24. For purposes of illustration, the rack 12 will be used. The head 35 of the bolt 33 engages in the recess 18, while the shank of the bolt extends through the slots 19 and 31. The nut 34 engages beneath the cross-member 30, thus securing the rack and the puller bar together. In this position, the lower end of the bar extends some distance below the jack 10, and may be utilized to extract bolts which would not be accessible to the lifting foot 17 due to the close proximity of timbers and members adjacent the bolt. When used in this capacity, the lower cross-member 30 and the slot 31 assume the function of the lifting foot 17, the member 30 being engaged beneath the head of the bolt to be extracted while the slot 31 receives the shank of the bolt.

An additional use of the bar 28 resides in its use with an ordinary jack 36, as is shown in Figure 2, having a rack 37 with a solid lifting foot 38. The jack 36 is similar to the jack 10 in all other respects. The solid lifting foot 38 is inserted between the side members 29 of the bar 28 and engaged beneath one of the cross-members 32 or the upper cross-member 30. Subsequent upward movement of the rack 37 and the foot 38 will obviously cause the bar 28 to be forced upwardly, thereby extracting the bolt or spike engaged thereby. Manifestly, any desirable number of cross-members 32 may be formed in the bar 28 so that a variety of working lengths are available to engage bolts lying at various distances below the jack 36.

With the different racks and the auxiliary extension or puller bar hereinbefore described, bolts and spikes may be extracted from many points that would render an ordinary bolt jack useless. Bolts may be extracted from points inaccessible to the ordinary jack.

Various changes, alterations and modifications may be made in the size, shape and arrangement of the herein described elements within the scope of the appended claims.

What I claim and desire to secure by Letters Patent is:

1. The combination with a bolt extracting jack having a rack, a lifting foot formed on said rack and extending laterally therefrom, said foot having a flat horizontal upper surface whereby the upper part of the foot may be used as a lifting surface, of an extension member adapted to be engaged by the lifting foot and to engage the bolt to be extracted, said extension member being formed of lateral members joined by cross-members, said cross-members being adapted to be engaged by the lifting foot.

2. The combination with a bolt extracting jack having a rack, a lifting foot formed on said rack and extending laterally therefrom, said foot having a flat horizontal upper surface whereby the upper part of the foot may be used as a lifting surface, of an extension member adapted to be engaged at points spaced along its length by the lifting foot, said member having means for engaging the bolt to be extracted and for transmitting an upward pull from the lifting foot to said bolt thereby extracting the latter and being formed of lateral members joined by cross-members.

3. The combination with a bolt extracting jack having a rack, and a lifting foot formed on said rack, of an extension member adapted to be engaged by the lifting foot and to engage the bolt to be extracted, said extension member being formed of lateral members joined by cross-members, said cross-members being adapted to be engaged by the lifting foot.

4. The combination with a bolt extracting jack having a rack and a lifting foot formed on said rack, of an extension member adapted to be engaged at points spaced along its length by the lifting foot, said member having means for engaging the bolt to be extracted and for transmitting an upward pull from the lifting foot to said bolt thereby extracting the latter, said extension member being formed of lateral members joined by cross-members.

5. The combination with a bolt extracting jack having a rack, a lifting foot formed on said rack and extending laterally therefrom, said foot having a flat horizontal upper surface whereby the upper part of the foot may be used as a lifting surface, of an extension member formed of lateral members joined by cross-members, said cross-members being adapted to be engaged by the lifting foot so that the extension member may be engaged at various points along its length, said member having a recess formed in its lower end for engaging the head of a bolt to be extracted, and having a slot extending a portion of the way across its lower end for receiving the shank of a bolt.

6. The combination with a bolt extracting jack having a rack, a lifting foot formed on said rack and extending laterally therefrom, said foot having a flat horizontal upper surface whereby the upper part of the foot may be used as a lifting surface, said foot having a recess extending horizontally thereinto below the upper surface thereof for receiving the head of the bolt being extracted, and having a slot extending downwardly therein from the recess for receiving the shank of the bolt, of an extension member adapted to be engaged by the lifting foot and to engage the bolt to be extracted, said extension member being formed of lateral members joined by cross-members, said cross-members being adapted to be engaged by the lifting foot, and said exten-

sion member having means at its upper end for engaging a connector bolt engaged by the lifting foot, whereby the extension member may be secured to the lifting foot in order to extract bolts.

7. The combination with a bolt extracting jack having a rack, a lifting foot formed on said rack, and bolt engaging means formed on said foot, of an extension member adapted to be engaged by the lifting foot and to engage the bolt to be extracted, said extension member being formed of lateral members joined by cross-members, said cross-members being adapted to be engaged by the lifting foot, and said extension member having means at its upper end for engaging a connector bolt engaged by the bolt engaging means of the lifting foot, whereby the extension member may be secured to the lifting foot in order to extract bolts.

JOHN R. GRIFFITH.