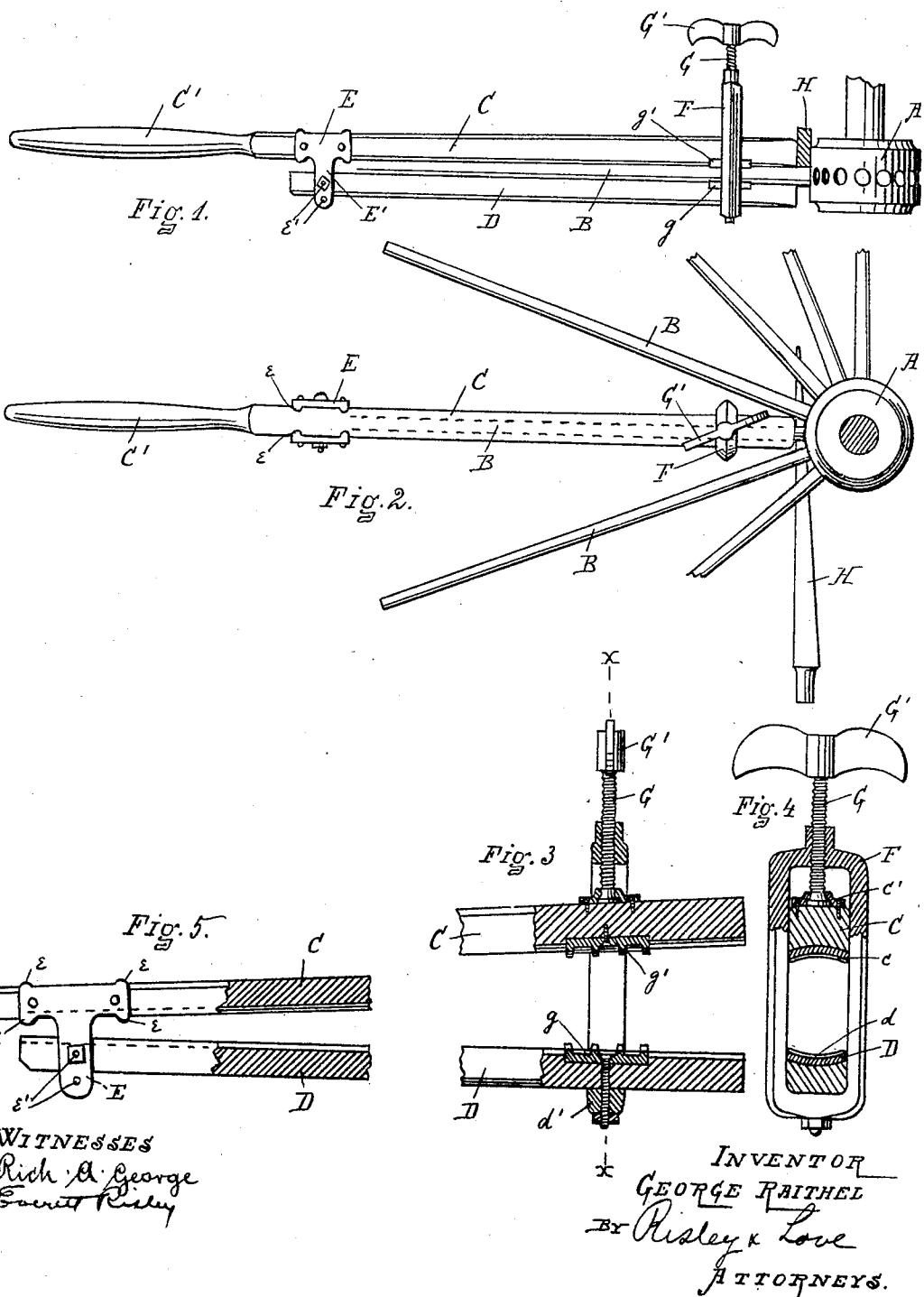


No. 809,397.

PATENTED JAN. 9, 1906.

G. RAITHEL,  
SPOKE EXTRACTOR.  
APPLICATION FILED APR. 11, 1904.



# UNITED STATES PATENT OFFICE.

GEORGE RAITHEL, OF MIDDLEVILLE, NEW YORK.

## SPOKE-EXTRACTOR.

No. 809,397.

Specification of Letters Patent.

Patented Jan. 9, 1906.

Application filed April 11, 1904. Serial No. 202,533.

*To all whom it may concern:*

Be it known that I, GEORGE RAITHEL, a citizen of the United States, residing at Middleville, in the county of Herkimer and State of New York, have invented certain new and useful Improvements in Spoke-Extractors, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to an improved spoke-extractor; and I declare that the following is a full, clear, concise, and exact description thereof sufficient to enable one skilled in the art to make and use the same, reference being had to the accompanying drawings, in which like letters refer to like parts throughout.

My device consists of a structure for withdrawing broken spokes from hubs or similar work and is constructed to employ force applied alternately in opposite directions, advantage being taken at each reversal of the results already accomplished. I have examined a large number of patents and different structures devised for this purpose, but observed nothing which applies force in this way and which is so simple and efficient in its operation as the device which I have invented. It is well known that a considerable degree of force is required to withdraw a spoke from a hub, as all means are employed to seat it firmly therein. It has often been attempted by means which employ force on a straight pull on the spoke. In my device, however, I employ a force applied on the side of the spoke, which is then changed on the reversal of the movement to an end pull, increasing by my device the leverage of each application.

Figure 1 is a side view of my device, showing it applied to a spoke and hub. Fig. 2 is a top view. Fig. 3 is a side view of a portion of the device in partial section. Fig. 4 is a section view on the line  $x-x$  of Fig. 3, and Fig. 5 is a detail view of another portion of the structure.

Referring to the figures more in detail, A represents a hub, and B spokes.

C is one member of my device which is grooved through a portion of its length, as shown at  $c$ , Fig. 4, to receive the spoke, and at its outer end it is provided with handle C'. It may be made of any suitable material, although I employ wood for the purpose. D is a second member of my device, which is similarly grooved, as shown at  $d$ . It is not

of the same length as the part C and at its outer end is connected with C by means of a bracket E, which is securely bolted or otherwise secured to part C. This bracket is 60 shown as consisting of two parts, one on each side of the member or arm C and provided with nubs  $e$  for its more secure mounting. It may be made in any suitable form and manner, care to be given, however, to its mounting, so as to secure the greatest strength without weakening arm C. The bracket has depending portions E', each of which is provided with bolt-holes  $e'$ , so that C and D can be adjusted with greater or less closeness, 70 according to the size of the spoke. At the other end parts C and D are surrounded by a stout metal collar F, to the lower part of which bar or arm D is secured by bolt  $d'$  or otherwise. The arm C passes through the 75 other end of the collar F and is provided with screw-seat  $c'$ , which in turn is engaged by the screw G, operated by the thumb-piece G'. The screw is threaded through the collar F, as indicated in Fig. 4, the purpose of which 80 arrangement is to permit the bar C to be screwed down in close contact to hold the spoke between itself and bar D. To make the grip of bars C and D on the spoke more 85 secure, I provide on the opposite faces of bars C and D the toothed or serrated clips  $g$   $g'$ , which may have some such construction as indicated, their function being to tightly hold the spoke when bars C and D are brought together against it.

H is a fulcrum block or wedge (shown in Fig. 2) and is to be crowded between the end of the bar C or of the bar D, as the case may be, when the device is applied to a spoke for extracting. The block may be made of iron 95 or wood; but I prefer the latter, as it will not mar the hub. In operation the bars are opened and thrust into the spoke, which is held between them substantially its entire length, the adjustment at  $e'$  having been 100 made to suit the case, so that if the spoke is splintered or broken the bars C and D bind it firmly, so that the force can be applied to the spoke for its entire length. The device is clamped onto the spoke a greater or less distance from the hub, which of course must be securely held in some way. Pressure is then exerted on handle C' up or down. This may be applied two or three times, if desired, before the fulcrum-block is used; but thereafter 110 when the handle has been pushed down the fulcrum-block is inserted between the end of

bar C and the hub, as shown in Fig. 1, and opposite pressure is applied to the handle, the effect of which is by long purchase to pull the spoke outward but slightly off a straight pull. 5 The handle can then be pressed down again and the block crowded in and then pulled up, as before. This operation can be repeated with the fulcrum-block on the same side of the spoke, or, if desired, two blocks can be 10 used or one alternately on either side.

It will be evident that my device can be made in a variety of ways so as to employ the same principle of operation, and I do not limit myself to the particulars illustrated and described. 15

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

1. In a device of the character described, 20 means provided to clutch a spoke, said means provided with an outwardly-extended handle and a block adapted to provide a fulcrum for the handle in its operation to and fro across the normal line of the spoke, substantially as described. 25

2. In a spoke-extractor, clutching means comprising two bars adjustably pivotally connected toward their outer end and adjustably connected at their inner end, adjustable 30 means provided between the end of the bars and the hub for applying side movement of the bars in extracting the spoke, in combination, substantially as shown.

3. In a device of the character described, 35 a member provided with means to clutch a spoke and extended substantially parallel with the spoke and adapted to receive and transmit an increased leverage applied thereto crosswise of the spoke and a block adapted 40 to provide a fulcrum for the said member, in swinging it to and fro across the normal line of the spoke.

4. In a device of the character described, a member having means adjustable to clamp a spoke and being adapted to receive and apply to the spoke increased leverage applied to the said member beyond the end and transverse the line of said spoke and a hand-block adapted to be placed between the hub and the said clamping member, for applying side 50 movement of the member in extracting the spoke. 45

5. In a device of the character described, a member adapted to clutch various sizes of spokes lengthwise thereof and secure an extended leverage for the application of side 55 pressure to the spoke and a fulcrum-block adapted to provide a fulcrum for the said member in swinging to and fro in extracting the spoke. 60

6. In a device of the character described, a member adapted to clutch various sizes of spokes lengthwise thereof and extending beyond the end of the spoke to transmit side pressure to the spoke and a hand-block adapted to be placed on alternate sides of the spoke 65 between the clutching member and the hub to provide a fulcrum for the clutching member in swinging it to and fro to withdraw the spoke. 70

7. In a spoke-extractor, a clamp and a key, the former being adapted to extend beyond the spoke for use of high leverage in applying reciprocating lateral pressure to the spoke and the latter being adapted to be inserted 75 between the clamp and the hub to employ said pressure in extracting the spoke, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE RAITHEL.

Witnesses:

MARINUS HERFKENS,  
FRED JONES.