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J. G. McKENNA

REAMING TOOL FOR RENEWING AXLE HORNS

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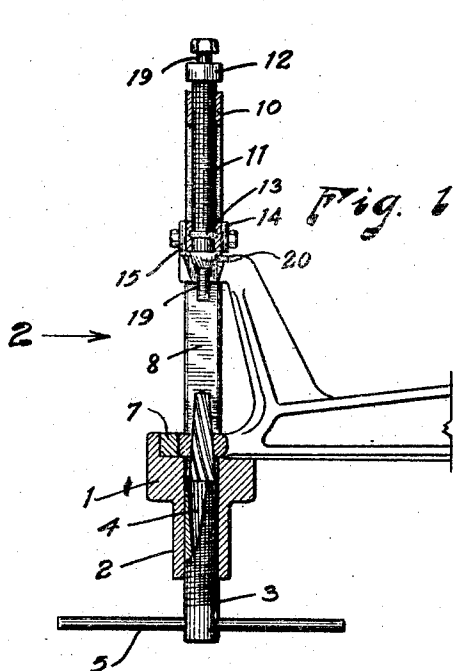
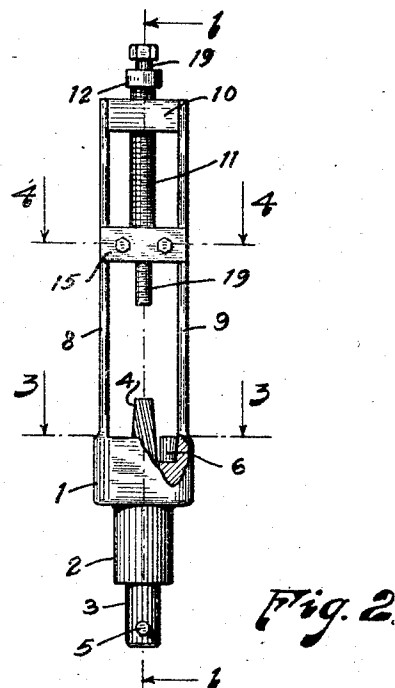
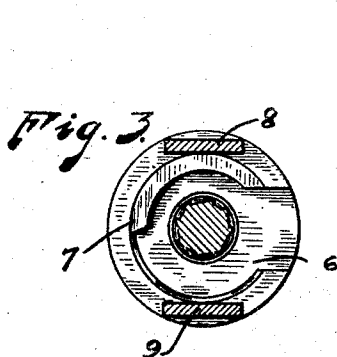
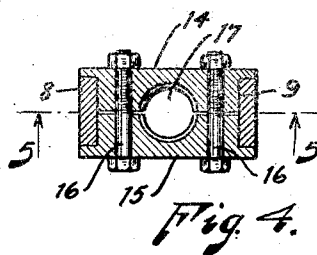
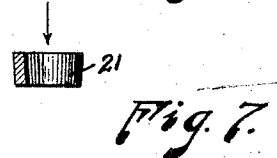
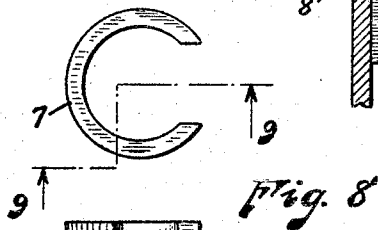
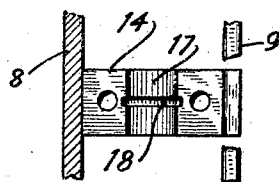


Fig. 5.
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UNITED STATES PATENT OFFICE.

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REAMING TOOL FOR RENEWING AXLE HORNS.

Application filed June 6, 1924. Serial No. 718,280.

To all whom it may concern:

Be it known that I, JAY G. McKENNA, a citizen of the United States, residing at Rawlins, county of Carbon, and State of Wyoming, have invented certain new and useful Improvements in Reaming Tools for Renewing Axle Horns; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in tools for renewing axle horns.

Experience has shown that if an automobile is not well taken care of the spindle bolt will often "freeze" fast to the spindle body, with the result that the bolt will begin to turn in the axle horns, which soon become badly worn. After the holes in the axle horns have been enlarged by wear, they must be bushed in order to make it practicable to further use the axle.

This is an operation that must be carefully performed if it shall produce satisfactory results. In order that the best results shall be obtained and that these shall not be dependent on the skill of the workman, I have produced a tool by means of which this operation can be conveniently performed and uniform results obtained, even when the operator has no particular training or skill.

My method also differs in material particulars from similar methods employed by others, particularly in this, that the bushings are given a standard Morse taper, the axle horns being reamed to a similar taper, after which the walls of the openings are knurled by means of a special tool. When the bushings are forced into place in these knurled openings, they become, in effect, an integral part of the axle horn as distinguished from similar methods where the bushings have a taper of substantially thirty degrees, which can be readily removed and which will rotate in the manner of ordinary cone bearings whenever they are subjected to sufficient torque.

My improved tool and the manner of using the same can be best described when

reference is had to the accompanying drawing in which the tool is shown detached and in actual operation, and in which:

Fig. 1 is a section taken on line 1—1, Fig. 2, and shows the tool applied to the axle horns;

Fig. 2 is a side elevation of the tool looking in the direction of arrow 2, Fig. 1, the axle being eliminated;

Fig. 3 is a section taken on line 3—3, Fig. 2;

Fig. 4 is a section taken on line 4—4, Fig. 2;

Fig. 5 is a section taken on line 5—5, Fig. 4;

Figure 6 is a plan view of the bushing shown in Fig. 7;

Fig. 7 is a side elevation, partly broken away, of the bushing shown in Fig. 6;

Fig. 8 is a plan view of the adapter; and Fig. 9 is a section taken on line 9—9, Fig. 8.

Numeral 1 designates what I shall designate the body member of the tool, which has an elongated central hub portion 2. The body member has a central threaded opening within which is rotatably mounted the tool holder 3. This has a tapered axial opening for the reception of the reamer 4 and is provided with a handle 5, by means of which it is rotated. The upper end of the body member has a recess 6 which is adapted to receive the end of one of the axle horns in the manner shown in Fig. 1. In order that it shall be possible to employ my improved tool with many different makes of axles, I have made the recess 6 large enough to take care of the largest axle and provided adapters 7 of various sizes, which are employed when the tool is employed in connection with smaller axles. Parallel side members 8 and 9 are connected with or formed integral with the body member 1 and extend upwardly therefrom. These side members are joined at their upper ends with a transverse portion 10 which is threaded for the reception of the tubular bolt 11. This bolt has a hexagonal head 12 and an annular outwardly extending flange 13 near the other end. The flange may be formed from a separate member held in place in a suitable groove in the bolt in order that the bolt may be passed through the member 10. A cross-head comprising two members 14 and

15 are adapted to be held together by means of bolts 16. Members 14 and 15 are each provided with a semi-circular recess 17 for the reception of the bolt 11. In each recess there is a groove 18 for the reception of the flange 13. Members 14 and 15 have their ends cut away so as to provide recesses for the reception of members 8 and 9 which form guides along which the cross-head travels as the bolt 11 is rotated.

The tool is applied to the axle in the manner shown in Fig. 1. The end of one of the axle horns is placed in the recess 6 and, if necessary, a spacer 7 is inserted in the manner indicated. The reamer 4 may then be projected into the opening. A bolt 19 is passed through the opening in the bolt 11 and to this the centering cone 20 is applied. The small end of the cone 20 projects into the hole in the axle horn and by rotating the bolt 11 the cross-head is moved downwardly forcing the cone 20 into contact with the edge of the opening. This centers the upper end of the tool and clamps it to the axle. When the tool is properly clamped in place the reamer 4 is rotated by means of the handle 5. After the opening in one horn has been reamed, the tool is reversed and the other opening is then reamed. After the holes have been given the proper taper by means of the reamer, the surfaces are knurled by means of a special tool, which has not been shown as it forms no part of this invention. The openings are now in condition to receive the bushings 21 which are constructed as shown in Figs. 6 and 7. These bushings are identical except for this, that the lower bushing is threaded for the reception of the threaded end of a spindle bolt. Owing to the fact that the holes and bushings have what is called a Morse taper, they will stick very tightly in the openings and function as though they were an integral part of the axle. The knurled surfaces of the holes serve to prevent the cones from rotating and from falling out. When the axle horns have been bushed in the manner described, they become as serviceable as new, wherefore the owner is saved the expense of a new part.

Having now described my invention, what I claim as new is:

1. A tool for reaming openings in axle horns comprising, in combination, a body member having a threaded opening extending longitudinally therethrough, a pair of parallel guide members secured to one end of said body member, one being located on each side of the axis of the opening, a transverse member joining the other end of said guides, said transverse member having a threaded opening, a cross-head slidably connected to the guide, and means comprising a threaded member operatively related to the cross-head and to the transverse member for

moving the cross-head along the guide members.

2. A tool for reaming openings in axle horns comprising, in combination, an elongated body member having a threaded opening extending axially therethrough, one end of said opening being enlarged so as to form a recess adapted to receive the end of an axle horn, a pair of parallel guide members extending from the recessed end of the body member, a transverse member connecting the ends of said guides opposite from the body member, said transverse member having a threaded opening, a cross-head slidably connected to the guides, and means for moving said cross-head along the guides, said means comprising a member threadedly connected to the transverse member and rotatably but non-slidably connected to the cross-head.

3. A tool for reaming openings in axle horns comprising, in combination, an elongated body member having a threaded opening extending axially therethrough, one end of said opening being enlarged so as to form a recess adapted to receive the end of an axle horn, a pair of parallel guide members extending from the recessed end of the body member, a transverse member connecting the ends of said guides opposite from the body member, said transverse member having a threaded opening, a cross-head slidably connected to the guides, means for moving said cross-head along the guides, said means comprising a member threadedly connected to the transverse member and rotatably but non-slidably connected to the cross-head, and a threaded member operatively mounted in the threaded opening in the body member, said threaded member having an opening for the reception of the shank of a reamer.

4. A tool for reaming openings in axle horns comprising, in combination, an elongated body member having a threaded opening extending axially therethrough, one end of said opening being enlarged so as to form a recess adapted to receive the end of an axle horn, a pair of parallel guide members extending from the recessed end of the body member, a transverse member connecting the ends of said guides opposite from the body member, said transverse member having a threaded opening, a cross-head slidably connected to the guides, means for moving said cross-head along the guides, said means comprising a member threadedly connected to the transverse member and rotatably but non-slidably connected to the cross-head, a threaded member operatively mounted in the threaded opening in the body member, said threaded member having an opening for the reception of the shank of a reamer, and means for centering the axle horns with respect to the tool.

In testimony whereof I affix my signature.
JAY G. McKENNA.