Aug. 8, 1950 F. NIELSEN 2,518,052

CAMBER ADJUSTING TOOL

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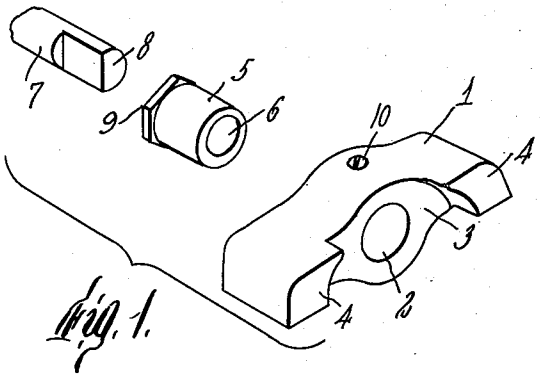


Fig. 1.

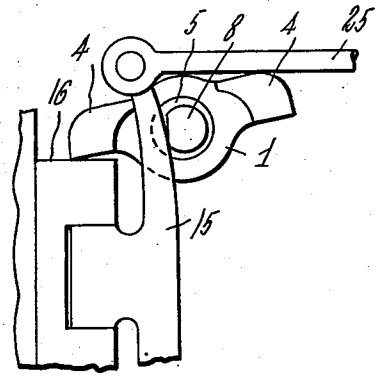


Fig. 2.

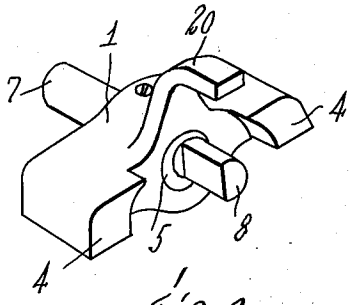


Fig. 3.

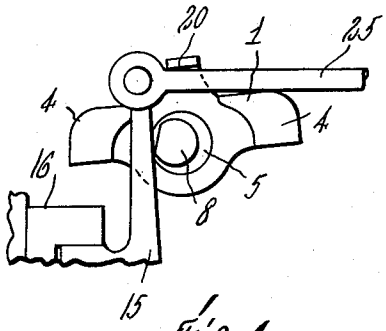


Fig. 4.

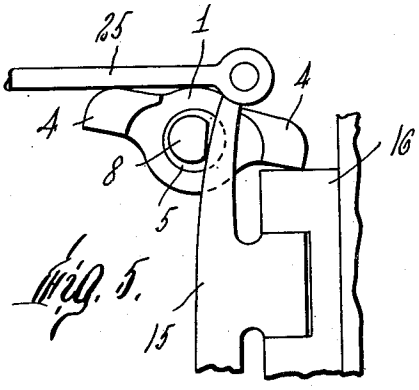


Fig. 5.

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CAMBER ADJUSTING TOOL

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9 Claims. (Cl. 153—32)

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This invention relates to tools for adjusting the camber of motor vehicle wheels, and more particularly when such wheels are individually spring supported, and it has for one object to provide a tool of simple construction applicable to adjust the camber of both left and right hand wheels.

A further object is to provide a camber adjusting tool having means for adjusting the normal spacing between the relatively movable portions of the tool by the relative motion of which the adjustment of camber is produced.

For a complete understanding of this invention, reference may be had to the accompanying drawings in which

Figure 1 is an exploded perspective view of certain elements of a camber adjusting tool constructed in accordance with this invention.

Figure 2 is a fragmentary front elevation showing the tool of Figure 1 applied to a left hand front wheel suspension.

Figure 3 is a perspective view of the operative portion of the tool showing a modification.

Figure 4 is a view similar to Figure 2 but showing a modification.

Figure 5 is a view similar to Figure 2, but showing the tool applied to a right hand front suspension.

Referring to Figures 1, 2 and 5, the tool comprises an elongated block 1 having a transverse hole 2 therethrough at substantially its central portion. From the face 3 of the block and adjacent to opposite ends thereof extend lugs 4 at diametrically opposite sides of the hole 2. The hole 2 is circular and may receive therein a bushing 5, shown detached in Figure 1, and having an eccentric bore 6 therethrough. Within this eccentric bore is journaled a shaft element 7 having an eccentric end portion 8, which when the parts are assembled, extends between the lugs 4.

The bushing 5 may be angularly adjusted in the hole 2, and for this purpose it is shown as provided at its rear end with a polygonal head 9 which may be grasped by a wrench and turned angularly, thereby to move the axis of the bore 6 within which the shaft 7 is journaled toward and from either of the lugs 4. This bushing 5 may be retained in angularly adjusted position as by tightening a set screw 10 threaded into the body 1 and bearing at its inner end against the bushing. The shaft 7 may be provided at its outer end remote from the eccentric portion 8 with suitable means (not shown) by which it may be turned, as, for example, it may be provided with a polygonal head to which a wrench may be

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applied, or it may be provided with any other suitable means by which it may be turned, as is well understood in the art.

This tool may be applied to adjust the camber of a vehicle wheel, it being shown in Figure 2 as applied to adjust the camber of the left front wheel, this view being taken from back of the suspension and looking forwardly. The tool is placed in position with respect to the knuckle support arm 15 as shown in this figure, one of the lugs 4 bearing on the upper face of the knuckle 16 and against the outer face of the knuckle support arm 15, while the eccentric portion 8 of the shaft 7 engages the inner face of the knuckle support arm, the bushing 5 having been adjusted angularly so as to permit the parts to take this position when the eccentric portion 8 is retracted from the arm 15 and engages this arm somewhat below the engagement thereon of the lug 4. By exerting a turning force on the shaft 7, the eccentric portion 8 so presses the knuckle arm so as to bend it slightly thus to adjust the camber. The other lug 4 engages with the under face of a link 25 extending inwardly from the upper end of the knuckle support arm 15, such engagement preventing the counterclockwise turning of the block 1 as the shaft 7 is being rocked. Since the lever arm of such engagement is long the pressure exerted on the link 25 is relatively small. It will be noted that the engagement between the knuckle arm support and the lug 4 is toward the upper end of the arm 15, while engagement of the eccentric thereon is on the opposite side and well below the engagement between the lug 4 and the arm.

When the tool is applied to the right front wheel, the other lug 4 to that shown in Figure 1 engages the knuckle 16 and the outer face of the arm 15 adjacent to its upper end, while the eccentric portion 8 engages the opposite side of the arm and below the engagement of the lug 4 thereon. Rocking of the accentric portion 8 is then effective to bend the upper portion of the knuckle arm, thus to adjust the camber, engagement of the other lug 4 against the link 25 preventing clockwise turning of the block 1 as the shaft 7 is being rocked.

In some cars the knuckle support arm extends so far above the knuckle that the tool body cannot engage its top face during the adjusting operation, and where this is so, the body 1 may be formed with a hook portion 20 extending over the eccentric portion 8 at such a distance that it may be engaged over the link 25. This is as shown in Figure 4. This holds the upper portion of

one of the lugs 4 up into position adjacent to the upper end of the supporting arm, while the eccentric portion 8 engages this arm at a point beneath the engagement between the lug 4 and the arm. It will be noted from an inspection of Figure 4 that this arm is so long that the lug 4 cannot engage the upper face of the knuckle 16 but the hook 20 retains the tool in its correct position for operation. The lower face of the lug 4 in the construction of Figures 2 and 5, and the hook 20 in the construction of Figure 4, act to support the tool in proper relation to the knuckle-support arm so that the bending thereof when the tool is actuated will occur at the desired portion of its length, the direction of turning of the shaft being such as to oppose the tendency of the tool to rock about the engagement of the lug of the tool on the knuckle support arm. The engagement of one of the lugs 4 against the link 25 prevents counterclockwise turning of the block 1.

From the foregoing description of certain embodiments of this invention it will be evident to those skilled in the art that various changes and modifications might be made without departing from its spirit or scope.

I claim:

1. A camber adjusting tool comprising an elongated block having a transverse hole therethrough and a pair of lugs projecting from one face of said block at diametrically opposite sides of said hole, and a shaft journaled in said hole and having an eccentric portion extending from said block face and between said lugs and between which and one of said lugs a knuckle support arm may be introduced and bent by rocking of said eccentric portion in contact with said arm while said block is in operative engagement with said arm.

2. A camber adjusting tool comprising an elongated block having a transverse hole therethrough and a pair of lugs projecting from one face of said block at opposite sides of said hole, a bushing journaled in said hole and having an eccentric bore therethrough, a shaft journaled in said bore and having an eccentric portion extending from said block face and between said lugs, and between which and one of said lugs a knuckle support arm may be introduced and bent by rocking of said eccentric portion in contact with said arm while said block is in operative engagement with said arm, and means for fixing said bushing in angularly adjusted position in said hole.

3. A camber adjusting tool comprising an elongated block having a transverse hole therethrough and a pair of lugs projecting from one face of said block at opposite sides of said hole, a shaft journaled in said hole and having an eccentric portion extending from said block face and between said lugs and between which and one of said lugs a knuckle support arm may be introduced and bent by rocking of said eccentric portion in contact with said arm, and a hook carried by said block and extending from said block face over said shaft and by which said block may be supported from a link extending from the upper end of said arm.

4. A camber adjusting tool comprising an elongated block having a transverse hole therethrough and a pair of lugs projecting from one face of said block at diametrically opposite sides of said hole, and a shaft journaled in said hole and having an eccentric portion extending from said block face and between said lugs and between which and one of said lugs a knuckle support arm may be introduced and bent by rocking of said eccentric portion in contact with said arm, said tool having an element positioned to engage a portion of the vehicle wheel support for correctly locating said tool with respect to said arm for the bending operation.

5. A camber adjusting tool comprising a block having a transverse hole therethrough and a lug projecting from a face of said block at one side of said hole, a bushing journaled in said hole and having an eccentric bore therethrough, a shaft journaled in said bore and having an eccentric portion extending from said block face and spaced from said lug and between which and said lug a knuckle support arm may be introduced and bent by rocking of said eccentric portion in contact with one face of said arm while said lug engages the opposite face of said arm spaced longitudinally of said arm from the engagement of said eccentric portion thereon, and means for fixing said bushing in angularly adjusted position in said hole.

6. A camber adjusting tool comprising a block having a transverse hole therethrough and a lug projecting from one face of said block spaced from said hole, a shaft extending from said hole and journaled in said hole and having an eccentric portion between which and said lug a knuckle support arm may be engaged at different lengthwise portions thereof to be bent by rocking of said shaft, said tool having means for supporting said block with said lug and eccentric portion in engagement with said arm at different longitudinal positions therealong.

7. A camber adjusting tool comprising an elongated block having a transverse hole therethrough and a pair of lugs projecting from one face of said block at diametrically opposite sides of said hole, and a shaft journaled in said hole and having an eccentric portion extending from said block face and between said lugs and between which and one of said lugs a knuckle support arm may be introduced and bent by rocking of said eccentric portion in contact with said arm while said block is in operative engagement with said arm and while the other of said lugs engages another portion of the wheel mounting and prevents rocking of said block.

8. A camber adjusting tool comprising an elongated block having a transverse hole therethrough and a pair of lugs projecting from one face of said block at opposite sides of said hole, a bushing journaled in said hole and having an eccentric bore therethrough, a shaft journaled in said bore and having an eccentric portion extending from said block face and between said lugs, and between which and one of said lugs a knuckle support arm may be introduced and bent by rocking of said eccentric portion in contact with said arm while said block is in operative engagement with said arm and while the other of said lugs engages another portion of the wheel mounting and prevents rocking of said block, and means for fixing said bushing in angularly adjusted position in said hole.

9. A camber adjusting tool comprising an elongated block having a transverse hole therethrough and a pair of lugs projecting from one face of said block at opposite sides of said hole, a shaft journaled in said hole and having an eccentric portion extending from said block face and between said lugs and between which and one of said lugs a knuckle support arm may be introduced and bent by rocking of said eccentric portion in contact with said arm and while the other of said lugs engages another portion of the wheel

mounting and prevents rocking of said block, and a hook carried by said block and extending from said block face over said shaft and by which said block may be supported from a link extending from the upper end of said arm.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,263,628	Hinton	Nov. 25, 1941
2,425,556	Nielsen	Aug. 12, 1947