No. 803,071. PATENTED OCT. 31, 1905.

C. T. SCHOEN.

ART OF MAKING CAR WHEELS.

APPLICATION FILED FEB. 28, 1905.

Fig. 1.

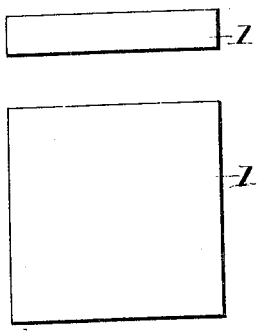


Fig. 2.

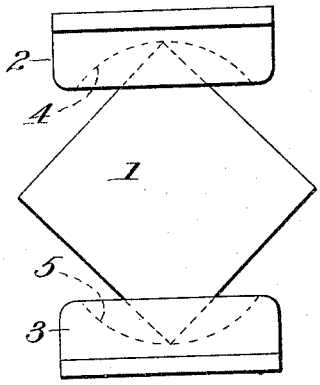


Fig. 3.

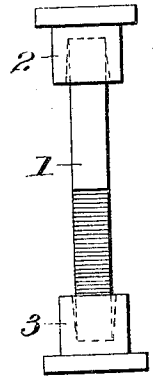


Fig. 4.

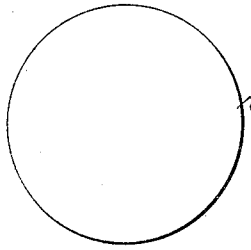


Fig. 5.

Fig. 6.

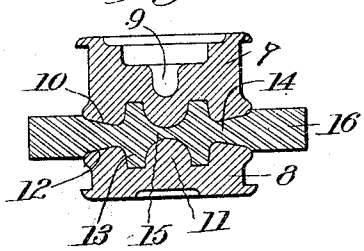


Fig. 7.

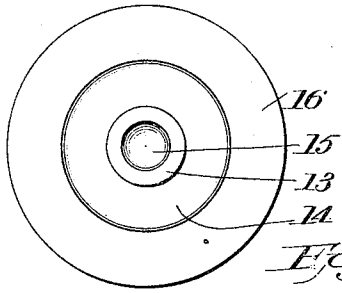


Fig. 8.

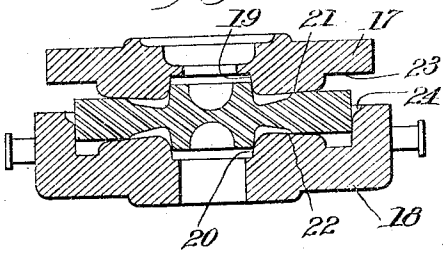


Fig. 9.

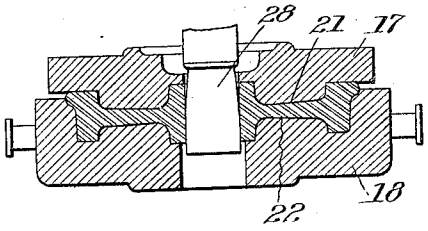
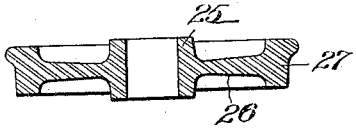


Fig. 10.



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ART OF MAKING CAR-WHEELS.

No. 803,071. Specification of Letters Patent. Patented Oct. 31, 1905.

Application filed February 28, 1905. Serial No. 247,684.

To all whom it may concern:

Be it known that I, CHARLES T. SCHOEN, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Improvement in the Art of Making Car-Wheels, of which the following is a full, clear, and exact description.

The object of this invention is to produce a forged car-wheel from a rolled slab or billet, preferably of steel. The desired blank is obtained from selected rolled stock free of pipings and other like defects likely to cause the wheel to scale or chip, and in its angular form it is subjected to the action of dies, which reduce it to a circular form of less diameter and maximum thickness than the finished wheel, and this blank is then subjected to the action of dies, which form a rudimentary closed hub, web, and rim, after which the rim is sheared to a substantially true circle, and then the thus-treated blank is subjected to the action of other dies, which finish the hub externally, reduce the web to its proper contour and thickness, and finish the rim, and then and while the plank is in the last-mentioned dies the hub is completed by punching out the closing web formed in the first dies. The thus-formed wheel may be trued and dished in any suitable way.

In the accompanying drawings, illustrating the invention, in the several figures of which like parts are similarly designated, Figure 1 represents in edge and plan views a slab or billet suitable for the purposes of this invention. Fig. 2 is an elevation of a pair of dies with the slab or billet in position for treatment. Fig. 3 is an edge view of Fig. 2. Fig. 4 is a plan view, and Fig. 5 is an edge view, of a blank produced in the dies of Figs. 2 and 3. Fig. 6 is a vertical section of the first-operation dies for treating the blank of Figs. 4 and 5. Fig. 7 is a plan view of the blank after treatment in the dies of Fig. 6. Fig. 8 is a vertical section, open, of a pair of dies for reducing the blank of Fig. 7 to the article shown in Fig. 9. Fig. 9 is a view similar to Fig. 8, but closed and with the hub-punch in position. Fig. 10 is a cross-section of the product of the dies of Figs. 8 and 9.

The blank 1 is a flat rectangular slab or billet of steel or other suitable metal, which should be selected from stock free from pipings or other defects likely to cause scaling or chipping in the finished wheel. This blank is placed between a pair of dies 2 3, having segmental matrices 4 and 5, which are capable of acting upon opposite angles of the blank and reducing them to segments of circles, after which the blank is turned in the same dies with the other and unreduced angles in the matrices and acted upon by the dies, and these operations are repeated as often as may be necessary to reduce the blank to the circular form shown in Figs. 4 and 5 and designated 6. The blank 6 is then subjected to the action of a pair of dies 7 and 8. The die 7 has an acorn-shaped projection 9 and a surrounding annular projection 10, and the lower die 8 is provided with similar projections 11 and 12, respectively, so that when these dies are brought to bear upon the blank 6 the rudimentary hub 13 and the web portion 14 are formed, the hub being closed by the web 15. The blank 16, Figs. 6 and 7, as it comes from the dies 7 8 is then subjected to the action of a pair of dies 17 and 18, having, respectively, the hub-receiving cavities 19 and 20, the web-forming projections 21 22, and the flanged-tread-forming flat 23, and cavity 24, so that when these dies are brought together about the blank 16 the hub 25, Fig. 9, is practically externally finished, as is also the web 26 and the flanged tread 27. As shown in Fig. 8, the dies 17 18 are provided with central perforations for the passage of a punch 28 for punching out the hub-closing web 15. By the dies described a wheel may be produced in a finished condition, or a wheel-blank may be produced requiring some rolling to finish its web and tread, or a wheel may be produced in which the only finishing necessary is to bore or turn off the flanged tread. Of course the blank is treated in a heated condition.

It is to be observed that the upsetting of the angular blank tends to condense the metal, and thus better fit it for the subsequent treatment in the shaping-dies. The acorn projections displace the metal into rudimentary hub form and leave the slight closing web which may be readily punched out without distorting or disturbing the preformed hub. Under the action of the dies, Fig. 6, the metal is reduced about the hub to form the web and stretched out radially, and of course this radial stretching imparts an irregular periphery, so that it is necessary to trim the blank for the next-operation dies. This trimming may be done by shears and while the blank is still in the dies. The punching, as indicated in Fig. 9, is done preferably while the product

is held between the dies and in sequence. As shown by comparison of Figs. 8 and 9, the second-operation dies act upon the blank coming from the first-operation dies to reduce its thickness in forming the web and shoving out the displaced metal into the rim-forming cavities.

What I claim is—

The process of forging car-wheels, which consists in subjecting a heated, flat, angular slab or billet of wrought metal to the action of dies and thereby reducing its angles to curves and forming a circular blank, then pressing out the hub and adjacent portions of the web, trimming the rim and finally die-finishing the hub, web and flanged tread.

In testimony whereof I have hereunto set my hand this 27th day of February, A. D. 1905.

CHARLES T. SCHOEN.

Witnesses:
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MEDWAY W. SILL.