E. E. SLICK.

FORGED METAL CAR WHEEL.

APPLICATION FILED NOV. 22, 1909.

965,040. Patented July 19, 1910.

Fig. 1.

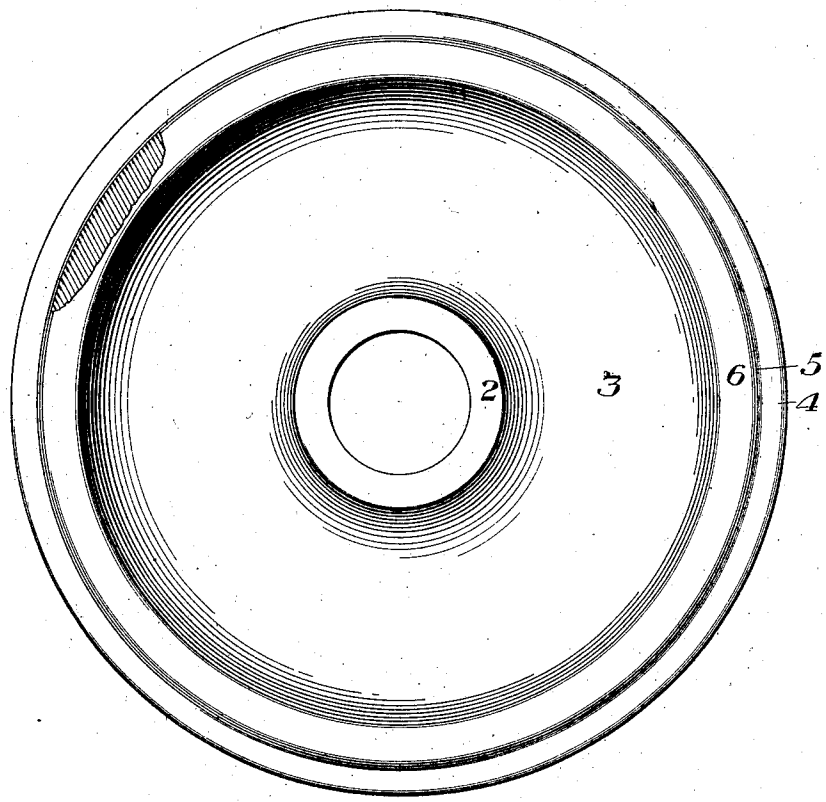
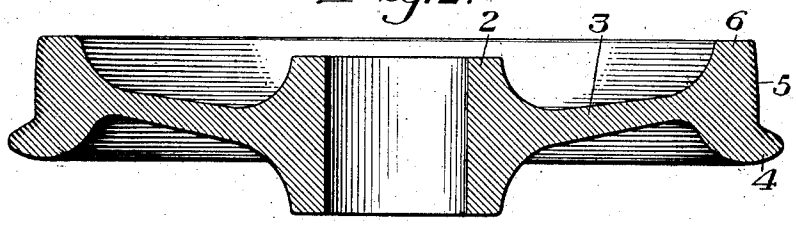


Fig. 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

EDWIN E. SLICK, OF PITTSBURG, PENNSYLVANIA.

FORGED-METAL CAR-WHEEL.

965,040. Specification of Letters Patent. Patented July 19, 1910.

Application filed November 22, 1909. Serial No. 529,159.

To all whom it may concern:

Be it known that I, EDWIN E. SLICK, of Pittsburg, Allegheny county, Pennsylvania, have invented a new and useful Improvement in Forged-Metal Car-Wheels, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation and Fig. 2 is a central sectional view of a car wheel constructed and arranged in accordance with my invention.

The invention relates to forged metal car wheels having hub and rim portions joined by a continuous web portion, and more particularly to wheels formed integral and having a hub, a web and a flanged tread or rim portion.

Heretofore, in the manufacture of forged metal wheels, an ingot or multiple length blank is elongated and reduced in cross section by rolling or forging into a multiple length slab, *i. e.* a multiple length blank having a width greater than its thickness. The reduced ingot is then cut transversely of its length into single slabs or rectangular blanks, and these blanks are formed into substantially circular wheel blanks, either by shearing off the corners of the slabs or by forging edgewise. Such circular blanks are then formed into wheels.

In reducing the ingot to a multiple length slab or blank the fibers extend in the same direction axially as in the cast ingot. In the operations which follow, however, the fibers of the metal in the single wheel blanks are caused to extend in a direction perpendicular to the axis of the blank corresponding to the axis of the forged wheel and the fibers of the metal in the finished wheel extend lengthwise across the diameter of the forged wheel.

The object of the invention is to provide a wheel which is formed, finished and is tempered or hardened in a series of related steps which start preferably with the casting operation and end with the completed wheel, by which a strong, durable wheel is obtained in which the wearing surfaces of the entire flange and tread portion of the wheel is formed of metal displaced from its original location in the surface of the cut side of the blank and the flange and tread portion formed of metal displaced from between the axial center and periphery of the blank.

A further object of the invention is to provide a wheel in which the fiber of the metal in the completed wheel is disposed in the same relative radial direction with respect to the axis of the wheel as the fiber is disposed relative to the longitudinal axis of the ingot or cast blank.

A still further object of the invention is to provide an improved wheel having the wearing portions of its flange and tread finished and hardened so as to impart superior wearing qualities to the wheels.

The invention consists in forming a cylindrical or cheese-shaped blank by severing the blank transversely from an ingot, then forging the blank between suitable dies and forming the flange and tread of the metal originally located between the periphery and axial center of the blank and forming the wearing surfaces of the wheel of metal in the cut face of the blank, and then finishing the blank to size and simultaneously tempering and hardening the flange and tread portions of the wheels.

The wheel forming operations are preferably carried out in the manner disclosed and claimed in my copending applications Serial No. 380,678, filed June 25, 1907 for the manufacture of wheels and No. 524,724, filed October 26, 1909, for a method of and apparatus for finishing flanged car wheels.

In the drawings, 2 represents the hub which is joined by the web 3 to the flange 4 and tread 5 of the wheel. In making this wheel by the steps as shown in my copending applications, an ingot is severed transversely of its axis into blanks of suitable size and weight, and the severed blanks are then heated and forged preferably as shown and claimed in my copending application Serial No. 380,678. In carrying out this forging operation, the blank is reduced in thickness and its periphery is bent or dished in the first steps of the forging operation, and the wearing surfaces of the flange and tread are then formed by displacing metal from between the periphery and axial center of the blank, the wearing surfaces being formed from the cut face of the blanks and the metal in the periphery of the blanks being displaced so as to form the outer annular surface 6 of the finished wheel. By this means the peripher surface of the blank,

in which the greater portion of any unsound or defective metal is located, is caused to locate in the finished wheel at the point where it will do the least damage and harm. After the forging operation has been completed, the hub or wheel is bored out to the desired size in the usual manner. The flange and tread of the bored wheel is then preferably finished to the desired diameter and contour by means of my improved method of finishing wheels as described in my co-pending application Serial No. 524,724. In this finishing operation, the flange and tread portions of the wheel are heated locally in the operation of reducing the wheel to size and removing the surplus metal, and water and other fluid is applied to the locally heated portions of the periphery of the wheel, in this way imparting a hard surface to the wearing surface of the wheels, and very greatly increasing the life of the wheels.

The wheels may be forged by my improved method, and finished in any desired manner, or wheels forged in any manner may be finished in the manner described within the scope of this invention.

I claim—

1. A forged steel wheel having a peripheral surface formed of metal displaced from between the axial center and peripheral surface of the ingot.

2. A forged steel wheel having its axis corresponding to the axis of the ingot and its tread portion formed from metal displaced from between the axial center and the peripheral surface of the ingot.

3. A forged steel wheel having its axis corresponding to the axis of the ingot and its wearing surface formed from metal located between the center and the outer surface of the cast ingot.

4. A forged steel wheel having its axis corresponding to the axis of the original ingot and its hardened tread portion formed of metal located originally intermediate between the center and the outer surface of the ingot.

In testimony whereof, I have hereunto set my hand.

EDWIN E. SLICK.

Witnesses:
R. D. LITTLE,
H. M. CORWIN.