Feb. 24, 1925. 1,527,418

E. A. LAUGHLIN

METHOD AND APPARATUS FOR HARDENING THE SURFACES OF CAR WHEELS

Filed July 28, 1923

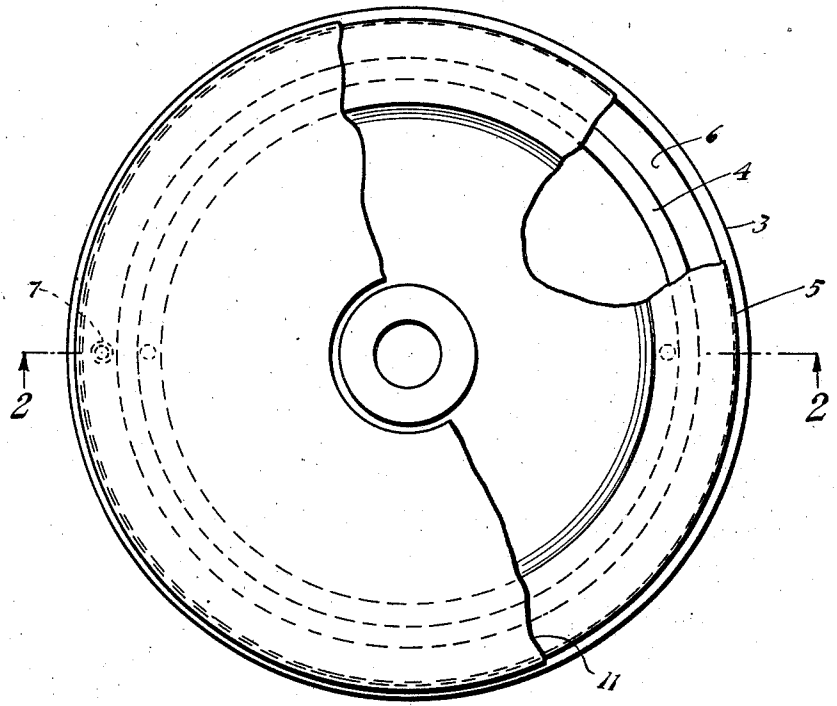


Fig. 1

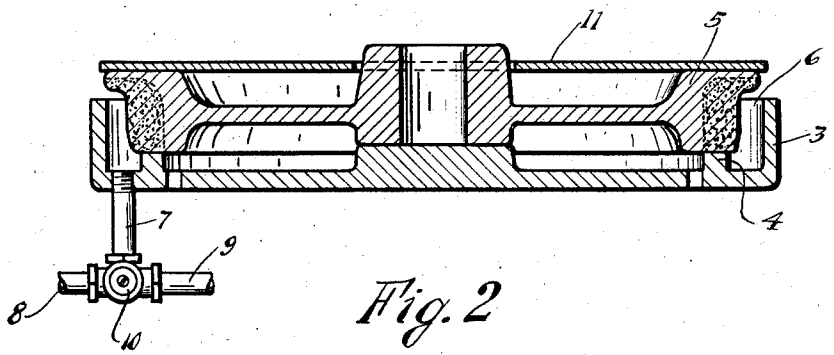


Fig. 2

Witnesses:

Inventor:
Elmyr F. Laughlin
By Joshua R. H. Potts
His Attorney

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UNITED STATES PATENT OFFICE.

ELMYR A. LAUGHLIN, OF OREGON, ILLINOIS, ASSIGNOR OF ONE-HALF TO HIMSELF AND ONE-HALF TO JOSHUA R. H. POTTS, OF CHICAGO, ILLINOIS.

METHOD AND APPARATUS FOR HARDENING THE SURFACES OF CAR WHEELS.

Application filed July 28, 1923. Serial No. 654,307.

To all whom it may concern:

Be it known that I, ELMYR A. LAUGHLIN, a citizen of the United States, and a resident of the city of Oregon, county of Ogle, and State of Illinois, have invented certain new and useful Improvements in Method and Apparatus for Hardening the Surfaces of Car Wheels, of which the following is a specification.

My invention relates to improvements in method and apparatus for hardening the surfaces of car wheels and has for its object the provision of an improved method and apparatus of this character by means of which the tread surfaces of car wheels may be made hard, tough and durable to resist wear while the interior of the wheel is substantially unaffected by the tempering process employed and remains tough and less brittle.

Other objects will appear hereinafter.

The invention consists in the combinations and arrangements of parts hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawings forming a part of this specification and in which,

Fig. 1 is a plan view with portions broken away of apparatus for carrying on the process; and

Fig. 2 is a section taken on line 2—2 of Fig. 1.

The preferred form of apparatus as illustrated in the drawings, comprises a pan-like vessel 3 having on its bottom an annular supporting rib or flange 4 adapted and arranged to support the car wheel 5 in said pan with a water space 6 surrounding the tread portions of the wheel. A pipe 7 leads into the bottom of the space 6 and is connected with a water supply pipe 8 and a drain pipe 9 through a suitable valve 10 and whereby water may be supplied to the space 6 or drained therefrom as desired. A suitable annealing plate 11 is arranged to rest upon the car wheel 5 during the tempering process and serves to cause slow and substantially uniform cooling of the interior or body portions of the wheel and thus prevents rendering the same brittle.

In carrying on the process, the car wheels are first heated for tempering in the usual manner and are placed in the vessel 3 with the annealing plate resting thereon. Then a supply of water is admitted to the space 6 through the valve 10 and permitted to overflow from the vessel 3. This supply of water is continued for a short period only usually from 15 to 30 seconds depending upon the depth of hardness desired in the tread portions of the wheel. Then the flow of water is discontinued and drained from the space 6 through the valve 10. This permits the tread portions of the wheel to reheat by conduction from the interior heat of the body of the wheel. This reheating of the tread surfaces is permitted for a period of about 10 seconds whereupon the tempering water is again supplied to the space 6 and permitted to flow until the body of the wheel is sufficiently cool. In this way the tread surfaces of the wheel will be suitably hardened to resist wear while the body portions thereof will remain tough, comparatively soft and therefore not brittle.

While I have illustrated and described the preferred method and apparatus for carrying on the invention these are capable of variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

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

1. The method of hardening the surfaces of car wheels which consists in first heating the same, then substantially uniformly and simultaneously quenching the entire tread surfaces of the wheel for a short time; then discontinuing the quenching for a sufficient length of time to permit said surfaces to reheat by conduction from the interior of the wheel; and then finally and completely quenching the same, substantially as described.

2. The method of hardening the surfaces of car wheels which consists in first heating the same, then substantially uniformly and simultaneously quenching the entire tread surfaces of the wheel by flowing water thereover for a short time; then discontinuing the flow of said water for a sufficient length of time to permit said surfaces to reheat by conduction from the interior of the wheel; and then finally and completely quenching the same, substantially as described.

3. Apparatus for hardening the tread surfaces of car wheels comprising a substantially pan-like vessel open at the top and arranged to contain a car wheel resting on its side, said vessel being somewhat larger than said car wheel to provide a space around the tread surfaces thereof; and means for filling said space with quenching fluid and withdrawing said fluid therefrom, substantially as described.

4. Apparatus for hardening the tread surfaces of car wheels comprising a pan-like vessel open at the top and arranged to contain a car wheel resting on its side, said vessel being somewhat larger than the car wheel to provide a space around the tread surfaces thereof and the sides of said vessel being of somewhat less height than the thickness of the car wheel; an annular supporting rib in the bottom of said vessel and located just within the periphery of said wheel; and means for filling said space with quenching fluid and withdrawing said fluid therefrom, substantially as described.

5. Apparatus for hardening the tread surfaces of car wheels comprising a pan-like vessel open at the top and arranged to contain a car wheel resting on its side, said vessel being somewhat larger than the car wheel to provide a space around the tread surfaces thereof and the sides of said vessel being of somewhat less height than the thickness of the car wheel; an annular supporting rib in the bottom of said vessel and located just within the periphery of said wheel; means for filling said space with quenching fluid and withdrawing said fluid therefrom; and an annealing plate to rest on said wheel, substantially as described.

6. Apparatus for hardening the tread surfaces of car wheels comprising a pan-like vessel of a circumference somewhat larger than the tread surfaces of the wheel and of a height somewhat less than the thickness of the wheel; an annular supporting rib in the bottom of said vessel just within the periphery of the wheel; a valved water supply pipe leading into said space and a valve drain pipe leading from said space; and an annealing plate to rest on said wheel, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ELMYR A. LAUGHLIN.

Witnesses:
FREDA C. APPLETON,
CLARENCE E. HEELY.