S. S. WALES.

APPARATUS FOR TREATING CAR WHEELS AND SIMILAR CIRCULAR BODIES.

APPLICATION FILED MAY 9, 1913.

1,105,116.

Patented July 28, 1914.

3 SHEETS—SHEET 1.

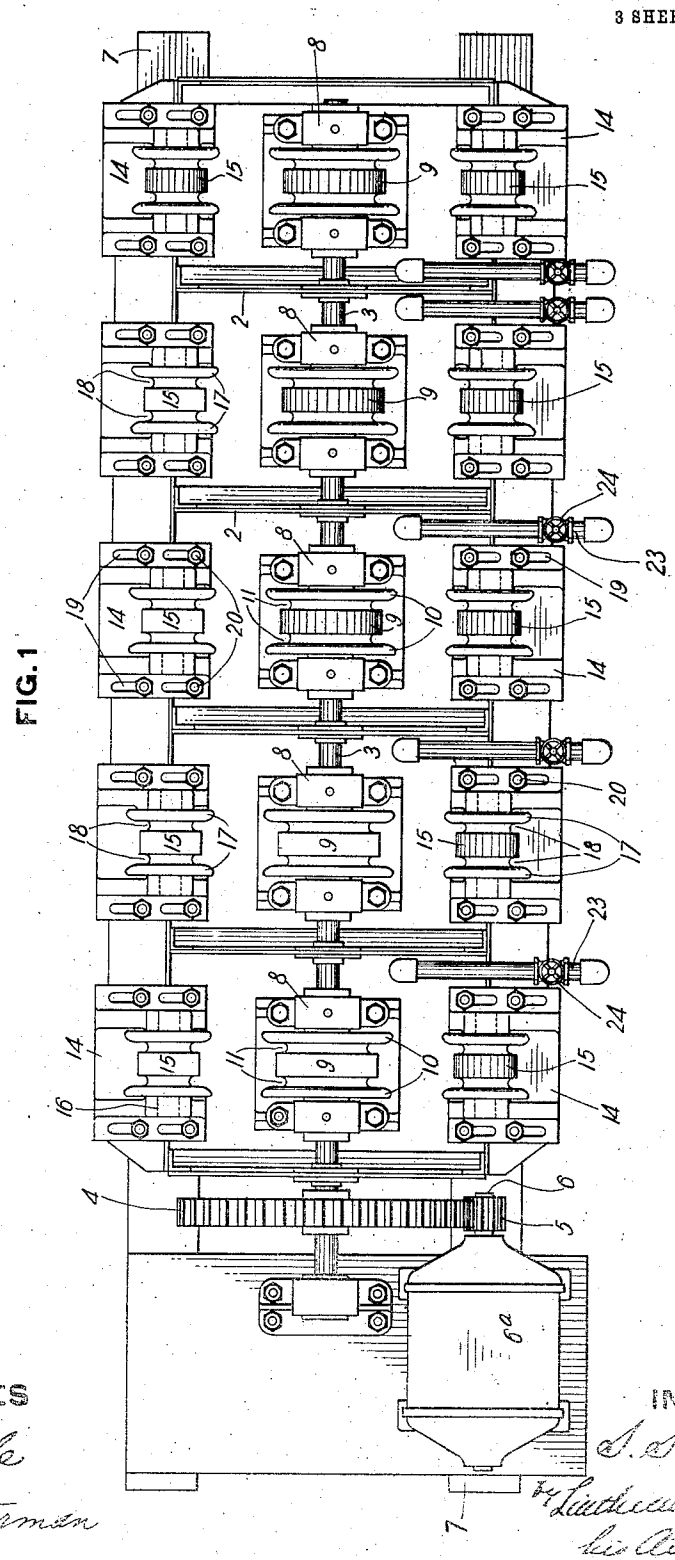


FIG. 1

WITNESSES

R. D. Little

Chas. Totterman

INVENTOR

S. S. Wales

by Lauterman Bell & Fuller

his Attorneys

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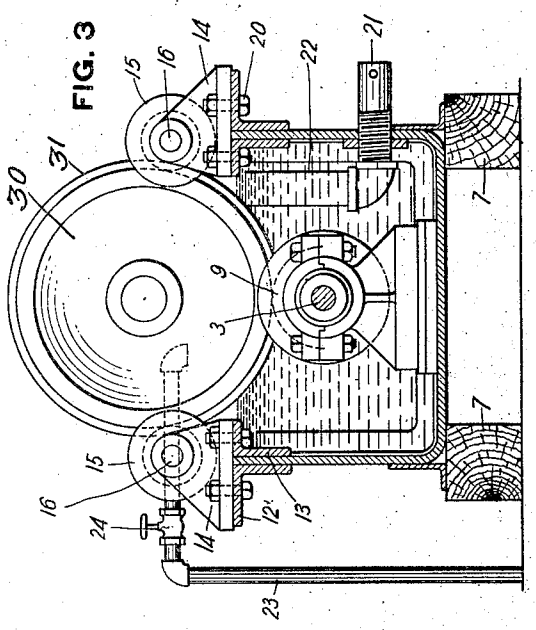
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3 SHEETS—SHEET 2.

FIG. 3



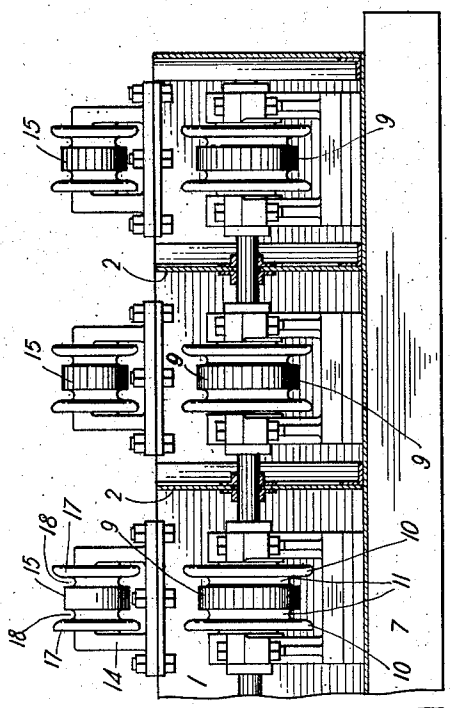
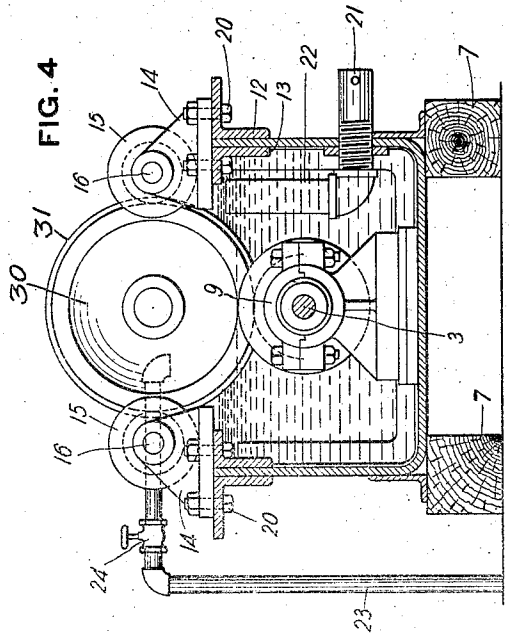


FIG. 4



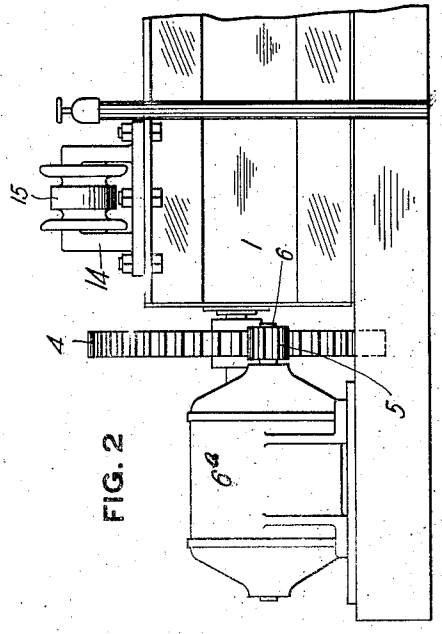


FIG. 2

WITNESSES

R. D. Little

Chas. Fosterman

INVENTOR

S. S. Wales

by Lucius Curtis Bell & Fuller

his Attorneys

S. S. WALES.

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3 SHEETS—SHEET 3.

FIG. 6

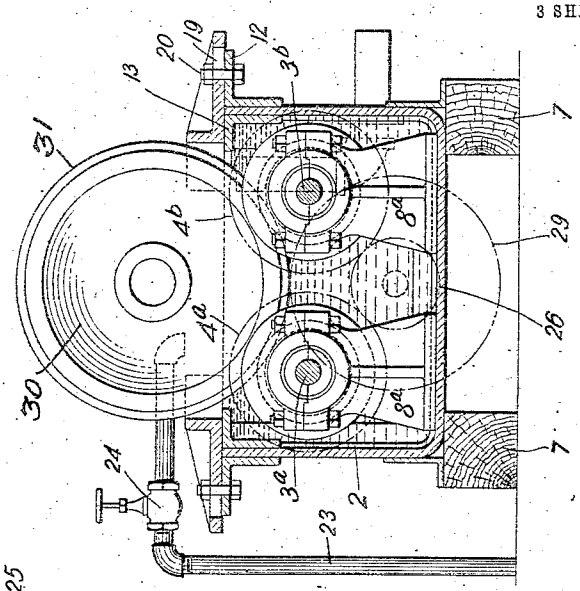
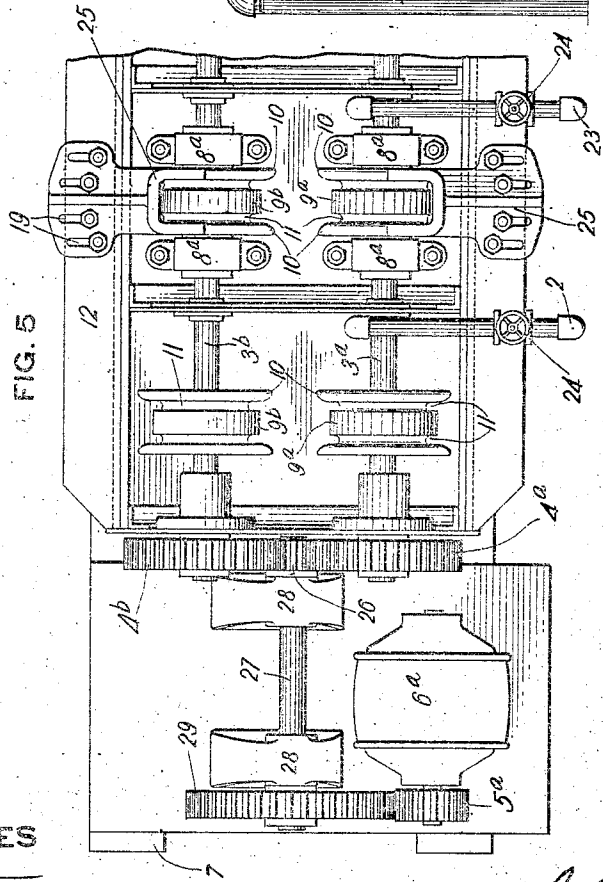


FIG. 5



WITNESSES

Chas. Foteman

R. D. Little

INVENTOR

S. S. Wales

by Lothrop, Beck & Fuller

his Attorneys

UNITED STATES PATENT OFFICE.

SAMUEL S. WALES, OF MUNHALL, PENNSYLVANIA.

APPARATUS FOR TREATING CAR-WHEELS AND SIMILAR CIRCULAR BODIES.

1,105,116. Specification of Letters Patent. Patented July 28, 1914.

Application filed May 9, 1913. Serial No. 766,540.

To all whom it may concern:

Be it known that I, SAMUEL S. WALES, of Munhall, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Apparatus for Treating Car-Wheels and Similar Circular Bodies, of which the following is a specification.

My invention relates to apparatus for treating heated car wheels and similar circular bodies and more especially relates to apparatus used in hardening and tempering the flange and tread forming the rim portions of forged steel car wheels for railway cars.

One object of my invention is to provide a wheel treating apparatus of improved construction having novel means whereby the peripheries of a plurality of car wheels or similar circular articles are simultaneously subjected to alternate contact with or exposure to a cooling fluid such as water or oil, and to the atmosphere.

Another object of the invention is to provide a wheel treating apparatus having improved means whereby successively different portions of the peripheries of such circular articles are subjected to the action of a cooling fluid alternately with exposure to the atmosphere for a sufficient interval of time to gradually cool and harden or temper the peripheral surfaces of such circular articles.

A further object of this invention is to provide an apparatus for treating car wheels having novel adjusting means whereby wheels or circular articles of various diameters may be treated without change in the construction of the apparatus.

Still further objects of my invention will appear hereinafter as the invention is more fully described and claimed.

Referring to the accompanying drawings forming part of this specification, Figure 1 is a plan showing a wheel treating apparatus constructed and arranged in accordance with my invention. Fig. 2 is a longitudinal side elevation of the same, partly in section. Fig. 3 is a sectional end elevation showing my improved apparatus with a car wheel as operatively mounted therein in treating the wheels. Fig. 4 is a transverse section, similar to Fig. 3, showing a car wheel of smaller size mounted therein and the manner in which the anti-friction guide rollers forming part of my improved apparatus are adjusted. Fig. 5 is a plan showing a modification in the apparatus in which two lengthwise parallel shafts are employed for the supporting rollers forming part of the apparatus. Fig. 6 is a transverse section of the modified apparatus shown in Fig. 5. Fig. 7 is a detail sectional side elevation showing the overflow pipe as arranged to vary the level of liquid within the vessel.

In the drawings, the numeral 1 designates a vessel or trough which is provided at intervals in its length with transversely extending partitions 2 so as to form a series of separated wheel receiving compartments. Extending lengthwise within the tank is a horizontal shaft 3, this shaft projecting through openings in the partitions 2 and through one end of the tank and having a spur gear 4 mounted thereon on the exterior of the tank which meshes with a spur pinion 5 on the armature shaft 6 of an electric driving motor 6^a which is preferably a variable speed motor. The tank 1 and motor 6^a are conveniently mounted upon lengthwise extending beams or timbers 7 which in turn are supported upon a floor or any suitably constructed foundation or base.

The shaft 3 within the tank 1 is rotatably mounted in a series of capped bearings 8, a pair of which is secured in each compartment of the tank to the bottom thereof and between the pairs of bearings 8 in each compartment of the tank is a roller 9 having flanges 10, this roller also having a plurality of spaced apart peripheral grooves 11 therein to receive the flanges 31 of the car wheels 30 being treated. The provision of two grooves, 11, 11 in each roller as shown enables the wheels being placed in the tank without reference to the way the flange 31 is facing.

The tank 1 is provided on its upper marginal edges with stiffening angles 12 and 13, these angles also serving to form a supporting base for the roller stands 14 in each of which an anti-friction guide roller 15 is rotatably mounted on a pin or axle 16. The guide rollers 15 also have flanges 17 and grooves 18 to receive the flanges of the car wheels 30 engaging with and supported by the rollers 9 when the wheels are being treated. The bases of the stands 14 are provided with slotted openings or holes 19 for the securing bolts 20 to permit of horizontal adjustment of the stands 14 and anti-

friction rollers 15 toward and away from the longitudinal center of the trough 2.

As will be seen by reference to Figs. 1 and 2, the axes of the frictional driving rollers 9 and the anti-friction guide rollers 15 are alined axially in parallel vertical planes so that the flanges 10 and 17 and grooves 11 and 18 on these rollers are opposite each other with the anti-friction rollers, in a horizontal plane, located above or higher than the driven rollers 9.

Each of the compartments formed by the partitions within the trough or vessel 1 is provided with an overflow outlet 21 which consists of a horizontal pipe screw threaded through a suitable opening in the side wall of the trough and a vertically extending pipe 22 which is swiveled to the inner end of the horizontal pipe and has an open upper end, in this way providing overflow outlets whereby the level of the water or other fluid is maintained within the trough or compartments, the level of the fluid being regulated by swinging the upper end of the vertical pipe 22 upwardly or downwardly to raise or lower the level of the fluid to the desired extent. In this way the depth to which wheels of varying diameters are submerged below the level of the fluid in the tank is regulated and controlled.

Each of the separate compartments in the tank or trough is provided with a water inlet 23 having a valve 24 thereon to supply the water, ordinarily used in treating the wheels, or other fluid cooling medium to each compartment of the vessel or trough. While the trough is shown with transverse partitions 3 dividing the trough lengthwise into a series of separate compartments, obviously these partitions 3 may be omitted or openings may be provided therethrough so as to form a single body of fluid cooling medium instead of a series of separate bodies, as shown.

Instead of employing a single wheel rotating roller 9 in each compartment of the tank mounted on a single shaft 3 to rotate therewith, as is shown in Figs. 1 to 4, two lengthwise parallel shafts 3^a and 3^b may be employed, as is illustrated in Figs. 5 and 6. In such construction the shafts 3^a and 3^b are mounted in bearings 8^a of a construction similar to that shown in the preceding figures, and the rollers 9^a and 9^b having flanges 10, 10 are positioned in pairs on the shafts 3^a, 3^b so as to have the rollers of each pair opposite each other in each of the separate compartments.

The ends of the shafts 3^a, 3^b projecting through the end of the vessel 1 are provided with spur gears 4^a, 4^b meshing with the pinion 26 on the countershaft 27 which is mounted in bearings 28, 28, and the opposite end of the shaft 27 is provided with a spur gear 29 meshing with and driven by the pinion 5^a on the armature shaft of the driving motor 6^a.

Instead of employing the flanged guiding rollers 15 on the top of the tank to maintain the wheels upright on the rollers 9, a guide block 25 may be substituted, the guide block being made adjustable toward and away from the transverse center of the tank in the same manner as the stands for the guide rollers.

In the operation of my improved apparatus, in treating wheels, the series of compartments within the tank 1 are filled with water, after the vertical pipe 22 in each compartment has been adjusted angularly to fill the tanks to the desired level with respect to the top of the tank. The motor 6^a is then started and the shaft 3 and rollers 9 secured therein are thereby caused to rotate. A variable speed motor is used preferably in order to regulate and control the speed at which the rollers 9 and the car wheels frictionally engaged thereby are rotated.

A car wheel 30 or other circular article to be treated after being heated to the desired temperature, is placed within the tank with its flange and tread portions resting upon the peripheral surface of one of the rollers 9 and with the flange and tread portions positioned between the outer flanges 17 on the anti-friction rollers 15 located on each side of the trough or vessel 1. The rollers 9 and 15 having double grooves 11, 11 and 18, 18 therein enable the wheels being put in with the flange toward either end of the tank or vessel. Before the car wheels are placed in position the guide rollers 15 will be adjusted toward or away from the longitudinal center of the tank to the necessary extent.

The wheel supported upon the rotating roller 9 is by frictional engagement therewith caused to rotate within the tank so as to bring successively different portions of the periphery or rim of the wheel below the surface of the fluid in the vessel and to then expose such portion to the action of the atmosphere, these operations being performed alternately for such time interval as is required or found necessary to cool and temper the wheel to the desired extent.

Each of the rollers 9 in the series of compartments of the tank 1 is employed to engage with and rotate a heated car wheel 30, as has been described, and after the apparatus has been started in operation the car wheels will be removed therefrom as quickly as the treatment thereof is completed, and each wheel, when removed, will be replaced with another heated wheel for tempering or hardening, so that the treating operations are carried out in a substantially continuous manner.

When appartus like that illustrated in

Figs. 5 and 6 is employed, the same operations are carried out as has been described. In this construction however, the wheels 30 being treated engage with and are supported within the tank or compartment of the tank by two positively driven rollers 9^a and 9^b, and for that reason the use of guide rollers or guiding blocks 25 on the upper marginal surfaces of the tank may be dispensed with, although such apparatus may be employed when desired, to assit in maintaining the car wheels in upright position.

The advantages of my invention will be apparent to those skilled in the art. The apparatus is simple and is easily kept in repair, and by the use of apparatus like that forming my invention, a large number of car wheels may be treated and the treating operations made substantially continuous. Modifications in the construction and arrangement of the parts may be made without departing from my invention as defined in the appended claims.

I claim:

1. Apparatus for treating heated car wheels and similar circular bodies comprising a vessel or tank containing a cooling medium, a rotary wheel support in said vessel, means for positively driving the rotary support, said support engaging the rim or wheels carried thereon to frictionally rotate the wheels and thereby bring successively different rim portions of the wheels below the level of the cooling medium, and a guide on the side of the vessel engaging with the rotating wheels.

2. Apparatus for treating heated car wheels and similar circular bodies comprising a vessel or tank containing a cooling medium, a rotary wheel support in said vessel, means for positively driving the rotary support, said wheel support engaging the rim of wheels carried thereon to frictionally rotate and thereby bring successively different rim portions of the wheel below the level of the cooling medium, an adjustable guide on the side of the vessel engaging the wheels in the vessel, and means for securing the guides in adjusted position on the vessel.

3. Apparatus for treating heated car wheels and similar circular bodies comprising a vessel or tank containing a cooling medium, a rotary wheel support in said vessel, wheel guiding members on opposite sides of the vessel, and means for positively driving the rotary support, said support frictionally engaging the periphery of wheels carried thereon to thereby rotate the wheels and bring successively different rim portions thereof below the level of the cooling medium.

4. Apparatus for treating heated car wheels and similar circular bodies comprising a vessel or tank containing a cooling medium, a rotary wheel support in said vessel, idler rollers forming guides on opposite sides of the tank, and means for driving the rotary support, said support frictionally engaging with the rim of wheels carried thereon to rotate and bring successively different rim portions thereof below the level of the cooling medium.

5. Apparatus for treating heated car wheels and similar circular bodies comprising a vessel or tank containing a cooling medium, a rotary wheel support in said vessel, idler rollers forming guides adjustably secured on opposite sides of the tank, means for securing the guide rollers in adjusted position, and means for driving the rotary support, said support frictionally engaging with the rim or wheels carried thereon to rotate and bring successively different rim portions thereof below the level of the cooling medium.

In testimony whereof I have hereunto set my hand.

SAMUEL S. WALES.

Witnesses:
R. D. LITTLE,
JAMES W. HAMILTON.