

(No Model.)

W. G. RICHARDS.
MANUFACTURE OF ANNEALED STEEL WHEELS.

No. 461,593.

Patented Oct. 20, 1891.

Fig. 1

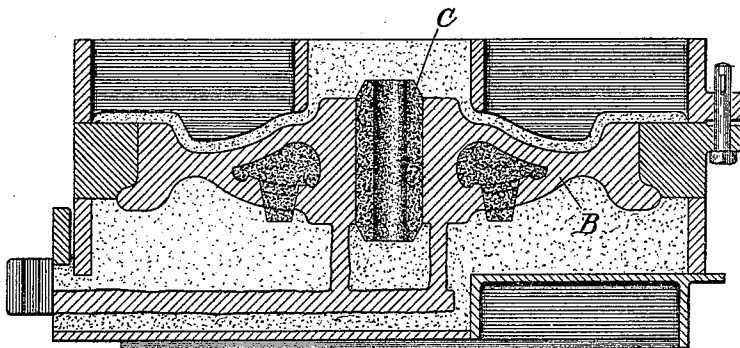
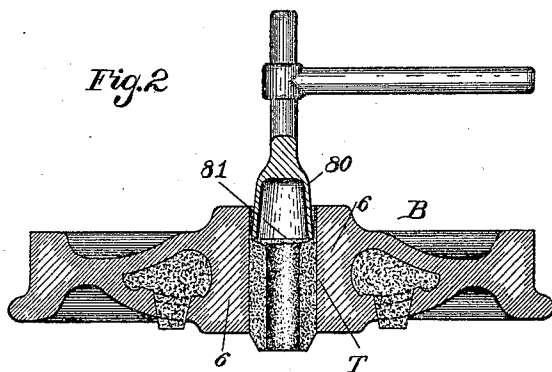


Fig. 2



Witnesses:

Henry L. Reckard.

H. Mallin.

Inventor:

William G. Richards,

By his Attorney,

J. W. Richards

UNITED STATES PATENT OFFICE.

WILLIAM G. RICHARDS, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE
AMERICAN STEEL WHEEL COMPANY OF NEW JERSEY.

MANUFACTURE OF ANNEALED STEEL WHEELS.

SPECIFICATION forming part of Letters Patent No. 461,593, dated October 20, 1891.

Application filed April 11, 1891. Serial No. 388,440. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM G. RICHARDS, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in the Manufacture of Annealed Steel Wheels, of which the following is a specification.

This invention relates to the manufacture by the method of casting of steel car-wheels having central openings, the object being to furnish a method of making an all-steel wheel having such an opening and annealed throughout.

In the drawings accompanying and forming a part of this specification, Figure 1 is a central vertical section of a car-wheel mold having therein a double-plate car-wheel, in the central opening of which there is a core. This view illustrates the first step of the process. Fig. 2 is a similar sectional view of the car-wheel after its removal from the mold, and illustrates the second step of the process.

Similar characters designate like parts in all the figures.

The mold shown in Fig. 1 is described and claimed in my application, Serial No. 358,657, filed July 14, 1890. Other forms of wheel-molds may, however, be employed for carrying into practice my present invention.

In the manufacture of all-steel car-wheels by the method of casting the process is first to cast the wheel and afterward anneal the same in suitable furnaces, the wheel being transferred while still red-hot from the mold to the annealing-pits. For making the central opening in the wheel the ordinary method is followed of inserting in the mold a core of suitable size and shape, around which the molten metal is poured; but, contrary to ordinary practice, the core for a steel wheel must be made of the most refractory materials, which become hardened and cannot be safely removed by the ordinary method from the hot casting. It is necessary, however, in order to obtain effective annealing of the central part of the wheel, to remove the core

before the wheel goes to the annealing-pits, while it is still highly heated and sensitive to heavy blows on the core, being a wheel-shaped shell of hot metal filled with fluid metal.

According to my present improvement the wheel B is cast around a suitable core C, as indicated in Fig. 1. This core may be solid or tubular, as shown, and should, of course, be made of materials suitable for withstanding the heat of the metal. When the casting has remained a short time in the mold, it is removed therefrom, the core being still in place. If the core be not a tubular one, the middle thereof should be removed by suitable instruments, this part of the core being usually loosely formed and readily driven out by ordinary means. Next the workman places the circular chisel 80 centrally on the core, and by a series of light blows thereon, its edge 81 nearly filling the bore of the wheel, drives down the chisel and cuts the core material from the surface of the wheel-bore, as illustrated in Fig. 2. This leaves but a slight covering of core material adhering to the inner surface of the wall, not sufficient to materially interfere with the proper annealing of the metal of the hub. The core, being operated upon by an instrument substantially as described, is removed or cut from the surface of the opening by the application of a force longitudinally thereof and simultaneously throughout the periphery of the opening, so that the thin solidified shell or tube T, Fig. 2, then constituting the wall of the central opening, is not broken or distorted, although the core be removed while the wheel is still fluid, as at 66, throughout the interior of the hub thereof. After the core is removed as described, the wheel is placed in the annealing-pits to be annealed and remain until sufficiently cooled for removal and use.

Having thus described my invention, I claim—

The improved method herein described of making annealed-center all-steel car-wheels, which consists in casting the wheel around a

core and allowing the casting to remain in the mold until solidified on the interior surface thereof, removing the wheel and core together from the mold, and cutting the core from the heated interior surface of the wheel
5 by force applied simultaneously throughout the periphery of the opening and longitudi-

nally thereof prior to the internal solidification of the casting.

WILLIAM G. RICHARDS.

Witnesses:

D. P. MIRREB,

W. E. MUMFORD.