A. L. BLACKMAN.

CAR-WHEEL.

No. 184,324. Patented Nov. 14, 1876.

FIG. 1.

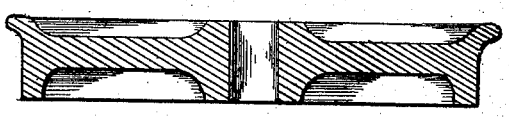
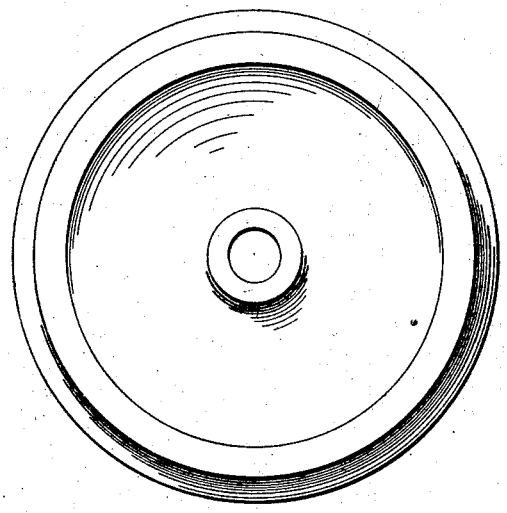


FIG. 2.



WITNESSES;
Walter G. Fowler
Reynolds & Lowry

INVENTOR;
Albert L. Blackman
by
D. G. Cassidy
his atty.

UNITED STATES PATENT OFFICE.

ALBERT L. BLACKMAN, OF NASHVILLE, TENNESSEE.

IMPROVEMENT IN CAR-WHEELS.

Specification forming part of Letters Patent No. **184,324**, dated November 14, 1876; application filed April 10, 1876.

To all whom it may concern:

Be it known that I, ALBERT L. BLACKMAN, of Nashville, in the county of Davidson, State of Tennessee, have invented certain new and useful Improvements in Manufacture of Wrought-Steel Railway-Car Wheels; and I do hereby declare that the following is a full, clear, and exact description thereof, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form part of this specification.

My invention is intended to furnish an improved article of manufacture in the matter of wrought or hammered steel railway-car wheels in one piece, all of which is more particularly pointed out hereafter.

Figure 1 is a section of the wheel. Fig. 2 is an elevation of the side of the wheel.

Take an ingot of steel, or cast a steel car-wheel of suitable form and size for the purpose, heat it to a proper heat, then put it into a die made in the face of an anvil prepared for the purpose, and with a counter-die in the face of a direct-action steam-hammer operating directly upon it, hammer the mass until the steel and wheel are changed from cast to a close-fibered finished wrought or hammered steel wheel for railway-cars.

The steel is taken in the molten state, cast into ingots or directly into car-wheels, allowing for scale, &c. When cast into an ingot the diameter should be less than the wheel desired, that the metal may be drawn out from the center to the periphery to create a uniform fiber, radiating from the center to the circumference in every direction. The mass is then heated to a proper heat, put into the die, and hammered into a perfect wheel, and until the nature of the metal is changed into hammered steel.

When the steel is cast into a wheel it is reheated, put into the lower die, and hammered until the nature of the metal has been changed from cast to hammered wrought-steel, and the wheel is a hammered-steel wheel.

Persons familiar with steel will appreciate the advantage of a steel wheel, after having been hammered firm and close, over a steel wheel not hammered.

The die used in manufacturing my wheel is made in two parts. One part is wrought into the face of the anvil, is intaglio, and designed to form one side of the wheel desired. The other part of the die is made in the face of a direct-action steam-hammer, is also intaglio, and designed to form the other side of the wheel.

When the two parts of the die are properly brought together they form a matrix the shape and finish of the wheel required.

A mandrel is inserted and held in the center of the upper die, that is, by the weight of the die and the power of the stroke, forced down and through the mass of metal, forming and finishing the axle-hole of the wheel. The wheel comes from these dies a perfect, completed, hammered-steel railway-car wheel.

I am aware that it has heretofore been attempted to manufacture steel railway-car wheels in one piece from a single ingot of steel, but none of these attempts have succeeded in changing the cast metal from "pinny" steel to hammered cast-steel—that is to say, none have succeeded in getting an equal distribution of the carbon throughout the entire wheel—an effect that can only be accomplished by directly hammering and exposing the parts.

I do not, therefore, broadly, claim a steel wheel, although my wheel is essentially different from any wheel heretofore made or attempted to be made, inasmuch as it is completed and finished entirely by hammering, the blows of the hammer acting directly upon the metal, whereby the character of the steel is changed from cast or simply malleable steel to the metal known as hammered steel, and the metal is more dense throughout with a hard close finish on the surface.

Having now so described my invention that those skilled in the art can manufacture and produce it, what I deem new, esteem as novel, and ask to protect by Letters Patent, is—

A hammered wrought-steel car-wheel complete in one piece, forged by hammering from one ingot of steel, or a cast-steel wheel, substantially as described, in the manner and for the purpose set forth.

In testimony that I claim the foregoing invention I have hereunto set my hand this 7th day of April, 1876.

ALBERT L. BLACKMAN.

Witnesses:

VERNON DORSEY,

THOMAS C. CONNOLLY.