

W. Wilmington,

Casting Car Wheels.

No. 106,243.

Patented Aug. 9, 1870.

Fig. 1

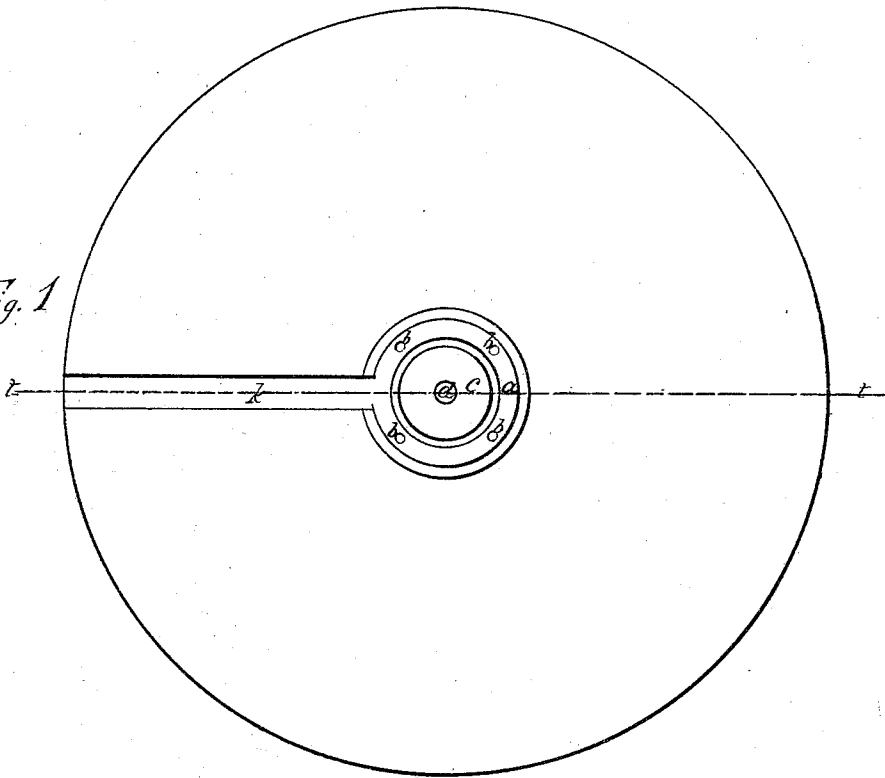


Fig. 2

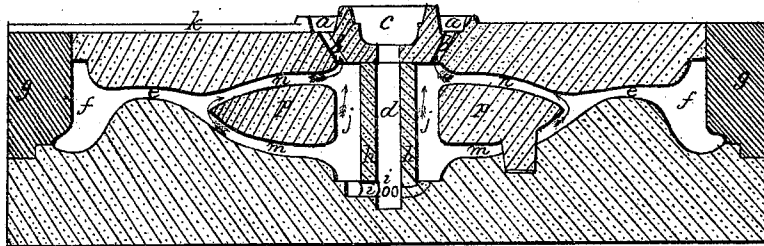
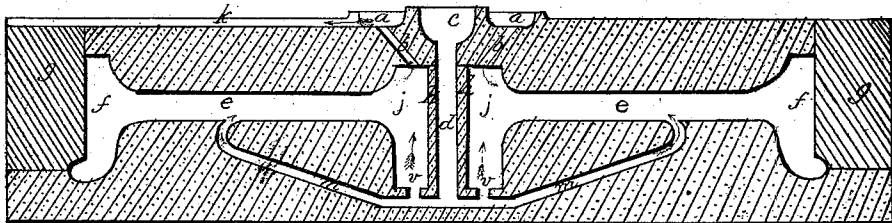


Fig. 3



Witnesses,

Henry C. Smith
W. Morris Smith

Inventor,

William Wilmington
By his Attorney *J. C. Robbins*

UNITED STATES PATENT OFFICE

WILLIAM WILMINGTON, OF TOLEDO, OHIO.

IMPROVEMENT IN CAST-IRON CAR-WHEELS.

Specification forming part of Letters Patent No. **106,243**, dated August 9, 1870.

To all whom it may concern:

Be it known that I, WILLIAM WILMINGTON, of Toledo, in the county of Lucas and State of Ohio, have invented a new and useful improvement in that description of cast-iron car-wheels whose rims are composed of chill-hardening iron, and whose hubs and plates are composed of a softer and stronger iron; and I do hereby declare that the following is a full and exact description of the method of producing my said improvement in car-wheels, reference being had to the accompanying drawing, which forms a portion of this specification—

Figure 1 being a top view of a mold in which one of my improved car-wheels is cast; Fig. 2, a section of said mold in the line *t t*, Fig. 1, the interior arrangement thereof being such as to cause two plates, *m n*, to radiate from the wheel-hub and unite in a single plate, *e*, which forms the connection between the said double plates and the rim *f* of the wheel; and Fig. 3 is a section of a mold for casting a different form of my said improved car-wheel—viz., a wheel which has but a single plate, *e*, uniting the hub with the rim of the same.

By the method of producing the aforementioned cast-iron car-wheels, as set forth in the patent issued to me on the 22d day of September, 1868, I have found that the desired result cannot be uniformly produced in consequence, as is supposed, of the disturbance within the mold caused by the pouring of the molten soft iron into the center of the mold at the same time that the molten chill-hardening iron is being poured into periphery of the same, the said disturbance preventing the speedy subsidence of said molten metal in the rim portion of the wheel, which is absolutely necessary to the production of a uniformly-perfect chill of the tread thereof; but subsequent experiments have enabled me to make such changes in car-wheel molds as have enabled me to produce, with absolute uniformity, precisely the desired result—viz., a car-wheel possessing a perfectly-chilled rim, composed of chill-hardening iron, united, while in a state of fusion, with the wheel-plate and hub thereof, composed of a softer and stronger iron. This I have accomplished by slightly elevating the central cup, *c*, which surmounts the tubular hub-core *h* of the mold, (through which all the molt-

en iron flows into the same,) and providing a sufficient number of eduction-outlets *b b*, leading from the hub portion *j* of the mold to an annular groove, *a*, which surrounds the central receiving-cup, *c*, and communicates with a discharging-channel, *k*, which leads to the periphery of a mold, as shown in Figs. 2 and 3 of the drawing.

With a mold thus prepared for casting a double-plate car-wheel the following is the process of casting the same: Contiguous furnaces, the one supplied with chill-hardening iron and the other with a softer and stronger iron, being in the proper condition for furnishing the desired quantity and quality of molten iron, the mold is first nearly or quite filled with the molten chill-hardening iron, and the moment after the flow of that metal into the mold ceases other hands commence to pour into the same the molten soft iron, which causes the commencement of and immediate outflow from the mold of a portion of the molten iron first poured into the same—viz., all of said iron save that which remains stationary and undisturbed in the single-plate portion *e*, Fig. 2, and the rim portion *f* of the wheel-mold—the said outflow being through the double-plate channels *m m* and *n n*, above and below the core *p*, and up through the hub-space *j j* to and through the eduction-passages *b b* to the annular channel *a*, and thence outward through the discharging-channel *k* to the vessels of the operatives prepared to receive and dispose of the same.

The casting of a single-plate wheel in the mold represented by Fig. 3 is upon precisely the same principle as that above described.

The mold is first nearly or quite filled with molten chill-hardening iron, and the moment after the flow of that description of iron into the mold ceases the flow of molten soft iron into the mold commences; and, by means of the radial passages *m m*, leading from the bottom of the tubular hub-core *h* to the outer portion of the single-plate space *e*, and the openings *v v* from the said passages *m m* into the hub-space *j*, the last pouring of molten iron into the mold will drive before it and discharge therefrom all the molten iron first poured into the same, save and except the portion thereof filling the outer portion of the plate-space *e*

and the rim-space *f* of the wheel-mold, the said outflow being in the direction of the arrows represented in Fig. 3.

Having thus fully described my improvement in cast-iron car-wheels, what I claim therein as my invention, and desire to secure by Letters Patent, is—

1. The method herein described of casting a car-wheel by the separate pourings of molten hard and soft iron into a mold that is provided with an induction-aperture for the reception of the molten metal and a series of eduction-apertures, through which a portion

of the molten metal first poured into the mold is discharged therefrom and replaced by the second pouring of metal into the same, all substantially as herein set forth.

2. Also, as a new manufacture, an improved car-wheel composed of two qualities of cast-iron, when molded and cast substantially in the manner herein set forth.

WM. WILMINGTON.

Witnesses:

Z. C. ROBBINS,
SYDNEY E. SMITH.