W. H. PAIGE.

CORES FOR CASTING CAR-WHEELS.

No. 186,949. Patented Feb. 6, 1877.

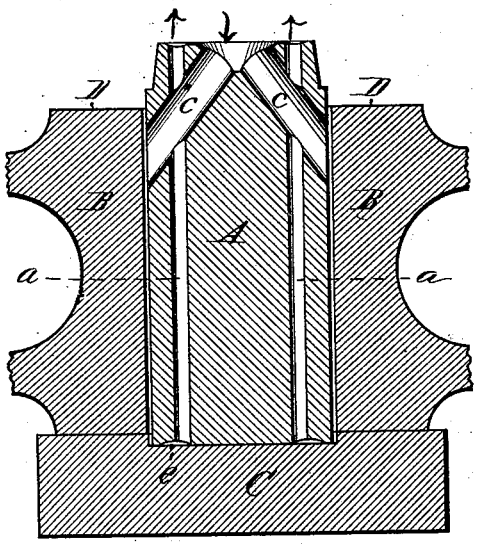

Fig. 1

Witnesses—
G. H. Blanden
D. E. Fisk

Inventor—
William H. Paige.

UNITED STATES PATENT OFFICE.

WILLIAM H. PAIGE, OF SPRINGFIELD, MASSACHUSETTS.

IMPROVEMENT IN CORES FOR CASTING CAR-WHEELS.

Specification forming part of Letters Patent No. **186,949**, dated February 6, 1877; application filed December 13, 1876.

To all whom it may concern:

Be it known that I, WILLIAM H. PAIGE, of Springfield, in the State of Massachusetts, have invented a new and useful Improvement in Cores for Casting Railway-Car Wheels; and that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, and to the letters of reference marked thereon.

My invention relates to a core for casting railway-car wheels, the object being to produce a car-wheel which shall have a uniform chill or hardened surface around the "tread," as well as to give a more uniform grain or character to the iron from the hub to the rim. To this end my invention consists of a central core provided with two inclined gates or holes, into which the molten iron is poured to form the wheel, and by means of which the molten iron is prevented from passing directly to the chill, and is caused to flow down upon the sand, and is thereby more uniformly cooled throughout the entire casting.

Figure 1 is a vertical central section through the core, showing a portion of the mold upon which the core rests, and also a portion of the hub of the wheel.

In the drawings, C represents a part of the lower portion of the mold, which may be slightly recessed at *e* to receive the core A, and upon which the latter rests, and the core A is cylindrical, and provided with the two holes or gates *c c*, extending from the central part of the upper end of the core downward in an oblique direction to the outside of the core; and the latter may be provided with any desired number of vent-holes, *a*, to conduct away the gases during the process of casting.

In all the processes of casting car-wheels now practiced with horizontal gates in a central tubular core, the weight of the metal, when poured into the core, forces the metal through said horizontal gates directly against the chill at the periphery during the whole process of casting, and the consequence is that the chill becomes unduly heated at the points opposite the horizontal gates by the constant flow of molten metal toward and against it, and as those parts of the wheel opposite the gates retain the heat the longest, the tread of the wheel opposite the gates is found to be insufficiently chilled, and wears away very fast and easily, while those parts of the tread at all other points are found to be too much chilled, as compared with those parts at the two points mentioned, owing to the less agitation of the molten metal, and thus being the more readily cooled.

The method of casting wheels by pouring the molten iron into the mold at D, forming the sprues on the outside of the hub B, is also objectionable, because that part of the hub is left rough and unsightly after the sprues are broken off; and in casting, just after the metal is poured, the iron in the sprues congeals too rapidly, as they are not surrounded or heated by the molten metal, and the iron in that part of the hub shrinks and becomes honey-combed during the cooling, so that the hub is not solid, or of the same grain or character as the other parts of the wheel.

By the use of my invention, however, the sprues are formed on the inside of the hub, and the hole left by the core is reamed out and made smooth to fit the axle.

In the use of the core A in casting wheels the molten metal is poured in at the upper end of the core, and, passing down the holes *c*, its flow is directly against the sand of the mold, and the metal then gradually and uniformly flows out in every direction against the chill, and the metal cools more uniformly, so that the result is a wheel of uniform grain or character throughout, and with the tread hardened or chilled of a uniform thickness all around; and these qualities give to the wheel a much greater degree of durability and less liability to fracture from a sudden jar or shock.

Having thus described my invention, what I claim as new is—

A central core, A, provided with holes or gates *c c*, extending from the upper end thereof downward in an oblique direction to its exterior, between the top and bottom of the mold-cavity, substantially as and for the purpose described.

WILLIAM H. PAIGE.

Witnesses:

T. A. CURTIS,

G. H. BLANDEN,

D. E. FISK.