W. WILMINGTON.

Car-Wheel Chill.

No. 169,325. Patented Oct. 26, 1875.

Fig. 1.

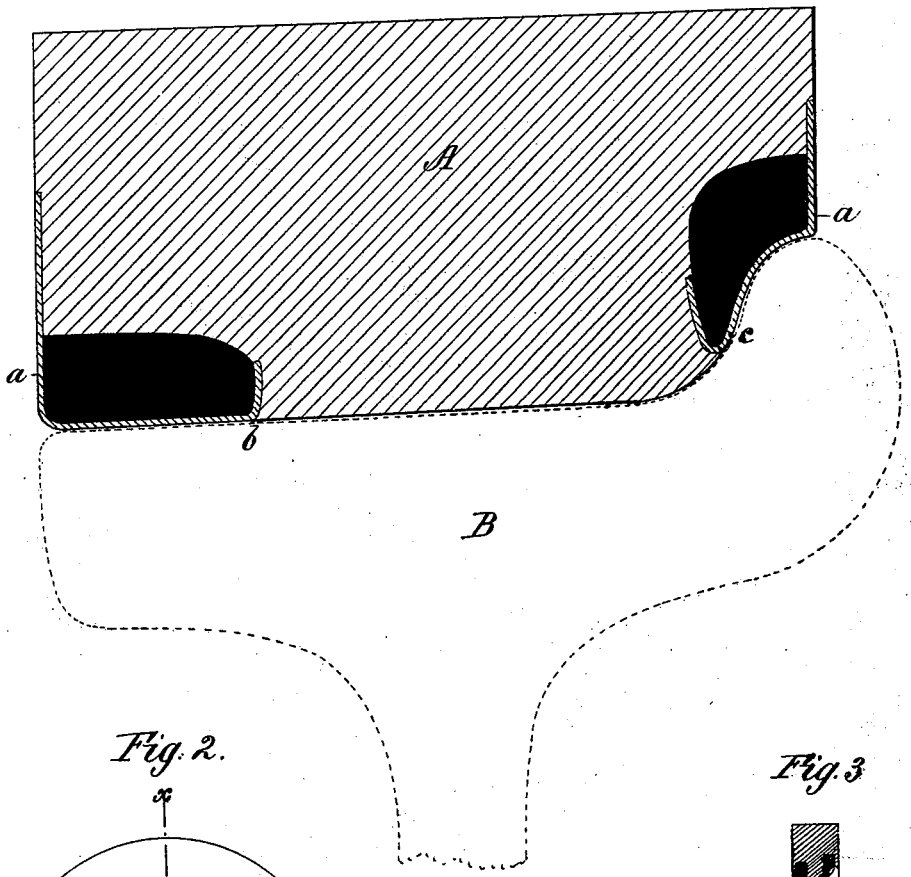

Fig. 2.

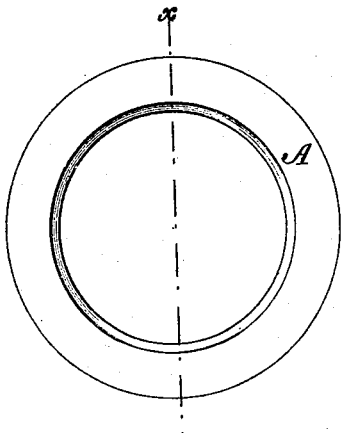

Fig. 3

WITNESSES:

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WILLIAM WILMINGTON, OF TOLEDO, OHIO.

IMPROVEMENT IN CAR-WHEEL CHILLS.

Specification forming part of Letters Patent No. **169,325**, dated October 26, 1875; application filed September 25, 1875.

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 Improved Car-Wheel Chill; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing forming a part of this specification, in which—

Figure 1 is a full-sized cross-section of the annular chill, showing the relative arrangement of the air-chambers to different parts of the car-wheel face; Fig. 2, a reduced plan of the chill; Fig. 3, a section of Fig. 2 through line *x x*.

This invention relates to certain improvements in chills for casting car-wheels; and it consists in constructing the metallic annular chill with annular air-chambers at the points of the interior surface of the chill, where the outer periphery of the flange of the wheel is formed, and also at the points where the outer horizontal surface of the tread is formed, by means of which the central portion of the tread, which receives the greatest wear, is allowed to harden; but the outer periphery of the flange, and the outer surface of the tread, are prevented from rapid cooling by the non-conducting air-chamber, and the metal at these points molded and preserved in its full strength and tenacity—a result to be greatly desired, in view of the fact that while the process of chilling hardens the iron, it greatly impairs its tenacity and strength.

In the drawing, A represents the annular metallic chill, which molds the outer periphery of the wheel.

Said chill, when made of a single solid piece of metal, is open to certain grave objections, which I have already endeavored to obviate by the use of a groove filled with non-conducting sand, for which invention protection has already been afforded me by Letters Patent No. 85,046; reissue 4,102.

Instead of using the groove with non-conducting sand to prevent the hardening of certain portions of the flange and tread, I now construct in the inner portion of the chill one or more air-chambers, with only such thickness of metal upon the face of the same as is sufficient to resist the momentum of the molten metal, so as to give the proper contour to the face of the wheel, for which purpose a piece of sheet metal, *a*, of about one-sixteenth of an inch in thickness will probably be sufficient.

I do not confine myself, however, to any particular construction of air-chamber or method of forming the same.

In locating said air-chambers, I arrange one to extend from an inch to an inch and a half from the edge of the outer surface of the tread, as seen at *b*, and the other I arrange so as to extend from the extreme outer periphery of the flange to the point *c*, being about half the distance from said extreme point of the flange to the level of the tread. The object of the latter arrangement is to allow the chill to exert its hardening effect upon the metal at the curved and lower portion of the flange, or the portion of the wheel between the top of the flange and the tread, which portion is at times subjected to wear.

In making use of the air-chambers in practice, it will be desirable to have holes or vents from the same for the escape of the heated air, which, upon expansion, would have a tendency to bulge out the thin metal constituting one side of the chamber, and spoil the face of the wheel. In the place of said holes, however, one side of the chamber may be left open, and provided with suitable braces or ties to hold the thin metal rigidly in its place.

B represents a portion of a car-wheel, showing the relation of the chill to the face of the same, and the relative positions of the air-chambers to the flange and inner edge of the tread.

By means of the air-chambers it will be seen that the same non-conducting effect of heat and preservation of the tenacity of the adjacent iron is obtained that is effected by the groove filled with sand, but in a better manner, for while the sand works well it is open to same objection on account of the increased labor in the preparation of the chill, which objection is entirely obviated by my present improvement.

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

A chill for casting car-wheels constructed with one or more air-chambers near its interior surface, as and for the purpose specified.

WM. WILMINGTON.

Witnesses:
SOLON C. KEMON,
CHAS. A. PETTIT.