J. N. BARR.
Chill for Car-Wheel.

No. 207,794. Patented Sept. 10, 1878.

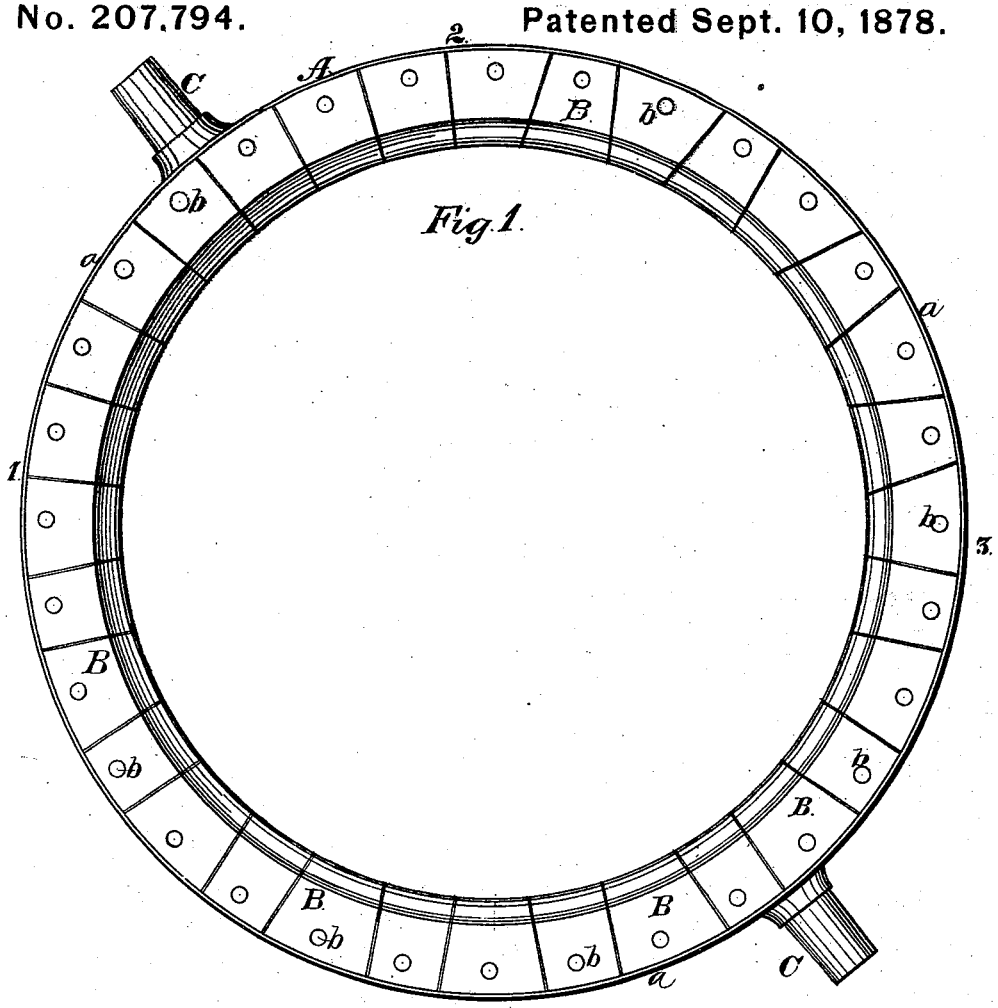

Fig. 1.

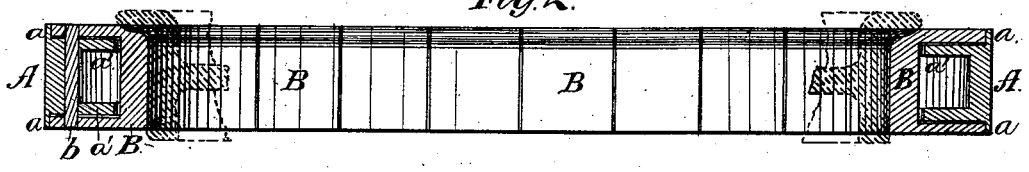

Fig. 2.

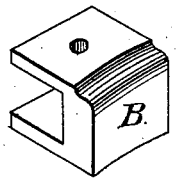

Fig. 3.

Attest:
P. B. Brock.
D. G. Stuart

Inventor:
Jacob N. Barr
per
A. McCallum
Attorney.

UNITED STATES PATENT OFFICE.

JACOB N. BARR, OF ALTOONA, PENNSYLVANIA.

IMPROVEMENT IN CHILLS FOR CAR-WHEELS.

Specification forming part of Letters Patent No. **207,794**, dated September 10, 1878; application filed May 1, 1878.

To all whom it may concern:

Be it known that I, JACOB N. BARR, of Altoona, in the county of Blair and State of Pennsylvania, have invented certain new and useful Improvements in Chills for Car-Wheels; and I do hereby declare that the following is a full, clear, and exact description of my invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention relates to chills to be used in casting car-wheels. Heretofore these chills have generally been made of a solid ring of metal, and in the process of casting the wheel the molten metal comes in contact with the inner face of the chill. The heat is thus transferred from the wheel to the chill, and causes the latter to expand. This expansion destroys the intimate contact between the tread of the wheel and the chill, and thus impairs the hardness of the tread of the wheel which the chilling process is intended to effect, and upon which the durability of the wheel depends. Again, the expansion of the chill may cause it to leave the tread of the wheel on one side, while on the opposite side the chill and tread remain in contact, thus causing the tread of the wheel to be hard on one side, while the opposite side remains comparatively soft, producing a wheel that will soon wear flat in service. Again, the chill, being exposed to great variations in temperature and consequent expansions and contractions, soon loses its cylindrical form, so that it must be replaced to avoid making wheels which are not cylindrical.

The object of my invention is to obviate these objections, to secure the greatest amount of hardness that can be obtained by the chilling process, to secure uniformity in the depth and hardness of the chilled iron around the tread of the wheel, and to secure chills which will retain their true cylindrical shape.

The invention consists in constructing the chill with an outer solid rim and an inner rim consisting of a series of blocks having spaces between them, the sides of which may be parallel or radial, as found most desirable or convenient. The blocks are bolted to the solid rim, with an intervening space of about one-sixty-fourth of an inch (more or less) between each block, so as to allow for their expansion in the direction of the circumference of the chill, while they are held in their proper radial position against the tread of the wheel being cast by means of the outside solid rim, which causes the radial expansion of the blocks to take place toward the center of the chill, thus producing a contraction in the face of the chill, which brings it into more intimate contact with the tread of the wheel, all as hereinafter more fully set forth.

In the accompanying drawings, Figure 1 is a plan view of my improved chill device. Fig. 2 is a vertical sectional view of the same; and Fig. 3 is a detached view of one of the blocks of which the inner face of the chill is composed, shown in perspective.

Referring to the parts by letters, A represents the solid exterior rim, made in the form shown in Fig. 2, with flanges *a* and radial flanges *a'*. B represents the blocks of which the inner face of the chill is formed. They are somewhat U-shaped in cross-section, and are made with parallel or radial sides, as found most desirable or convenient, or both forms may be used together. In the chill shown by Fig. 1 of the drawings the blocks are arranged in three different ways: Between 1 and 2 they are blocks with radial sides, arranged radially; between 2 and 3 the blocks are more of a wedge shape; and between 1 and 3 blocks with radial sides and blocks with parallel sides, arranged alternately, are shown—an arrangement which I prefer.

With a chill of this construction, it will be seen that the flanges of the rigid or solid rim A bear against the blocks B, causing the radial expansion to take place toward the center of the chill, thus keeping the chilling-surface in intimate contact with the tread of the wheel, while there is sufficient space between the blocks to allow free circumferential expansion.

It will be observed that a chill so constructed is hollow, thereby rendering it lighter and stronger than those heretofore in use. All danger of the chill cracking and breaking is

also obviated by the construction in this manner, and when necessary the blocks may be readily removed and others substituted therefor; and as the outer rim, on which the roundness of the chill depends, is not exposed to a high degree of heat, the chill will retain its cylindrical form, thus producing more perfect wheels and reducing the expense of renewing chills.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A contracting chill consisting of an outer retaining-ring and inner blocks B, separate therefrom, and having spaces between them to permit of lateral expansion, substantially as and for the purpose specified.

2. A chill constructed with an outer rim and inner radial blocks, said blocks being rigidly secured to the rim and having spaces between them, substantially as and for the purpose herein set forth.

3. The rim A, having flanges *a a'*, in combination with the U-shaped blocks B and bolts *b*, substantially as and for the purpose specified.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JACOB N. BARR.

Witnesses:
A. McCALLUM,
JNO. W. CLOUD.