(No Model.) 2 Sheets—Sheet 1.

F. E. CANDA.

CAR WHEEL CHILL.

No. 408,458. Patented Aug. 6, 1889.

Fig. 1.

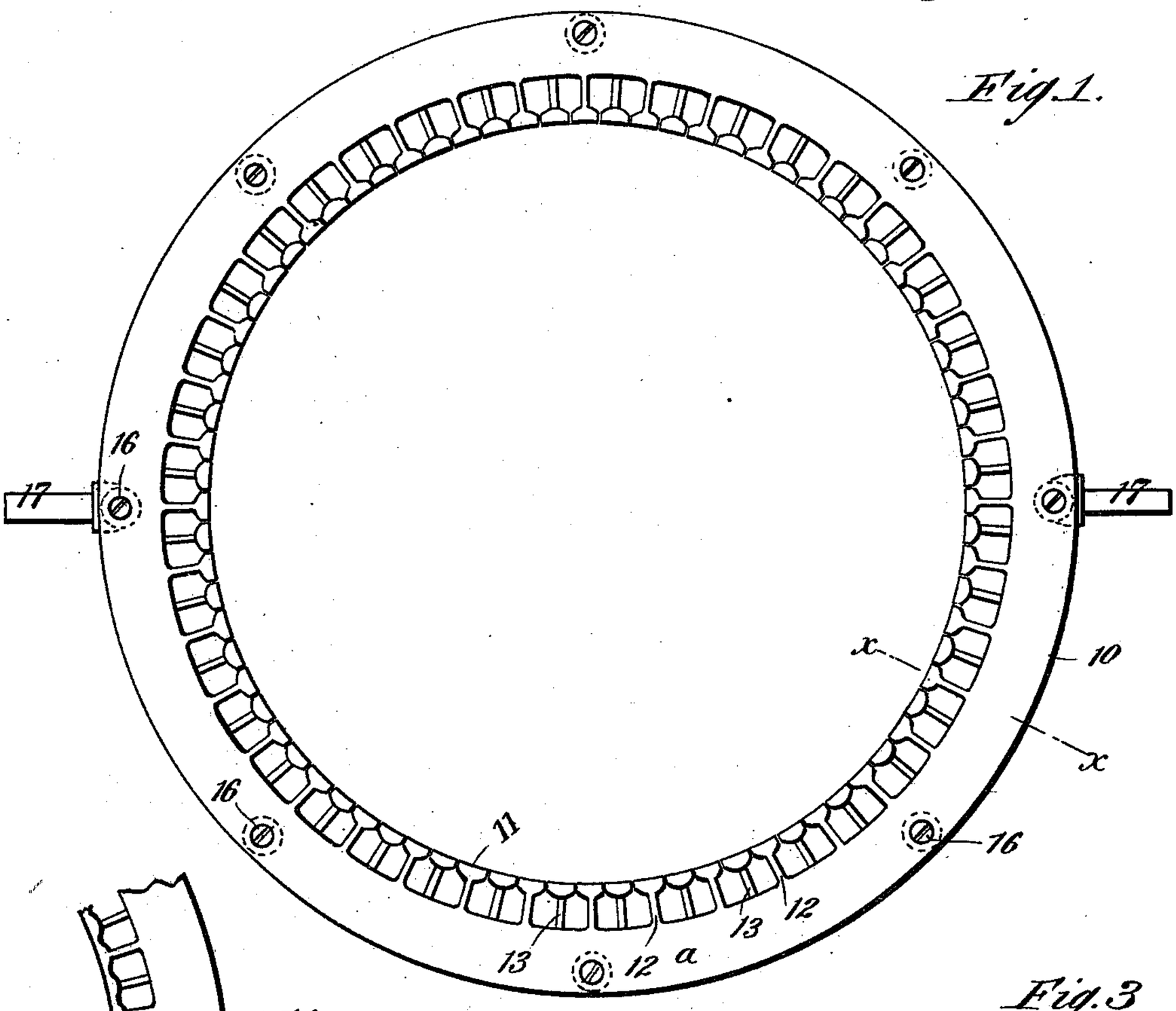


Fig. 2.

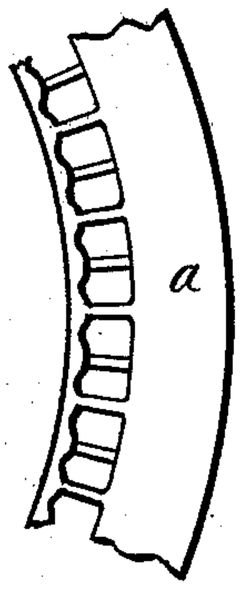


Fig. 3

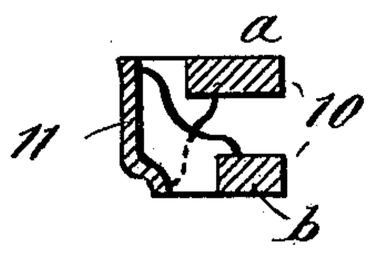
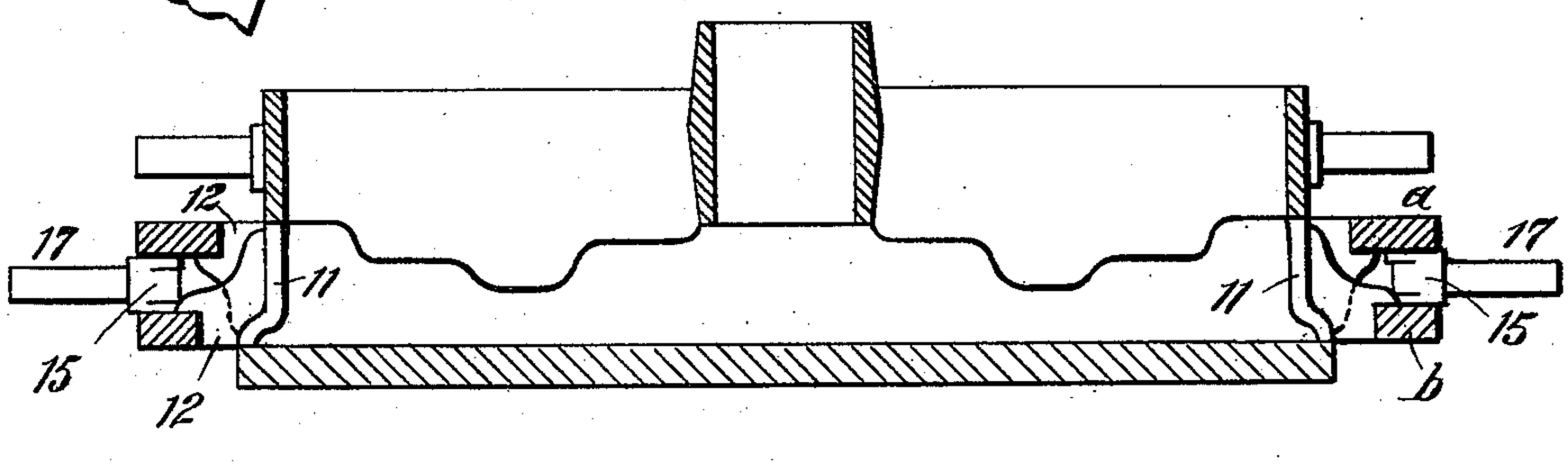


Fig. 4.



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(No Model.) 2 Sheets—Sheet 2.

F. E. CANDA.

CAR WHEEL CHILL.

No. 408,458. Patented Aug. 6, 1889.

Fig. 5.

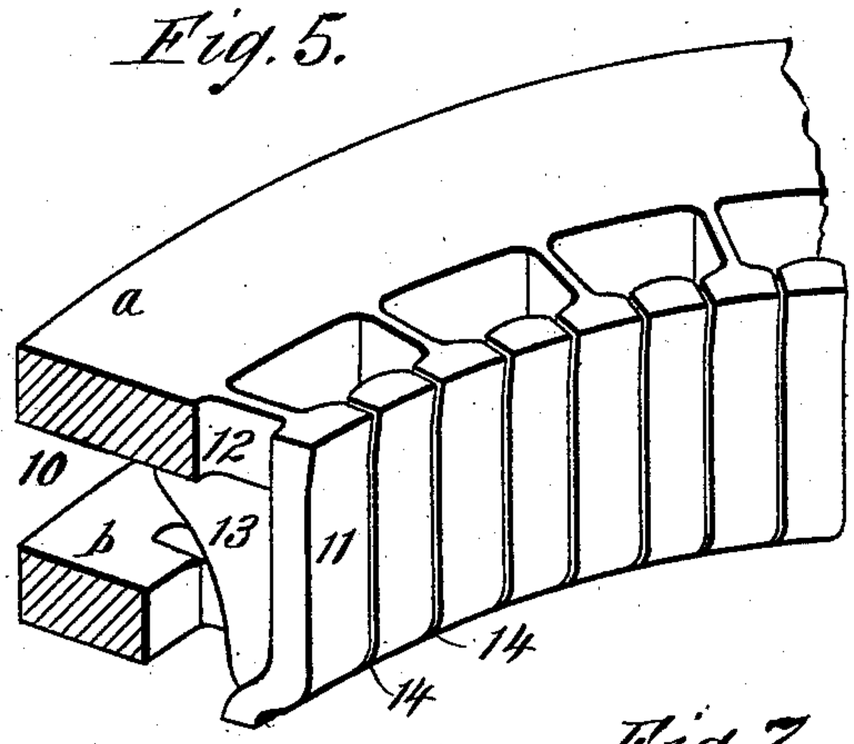


Fig. 6.

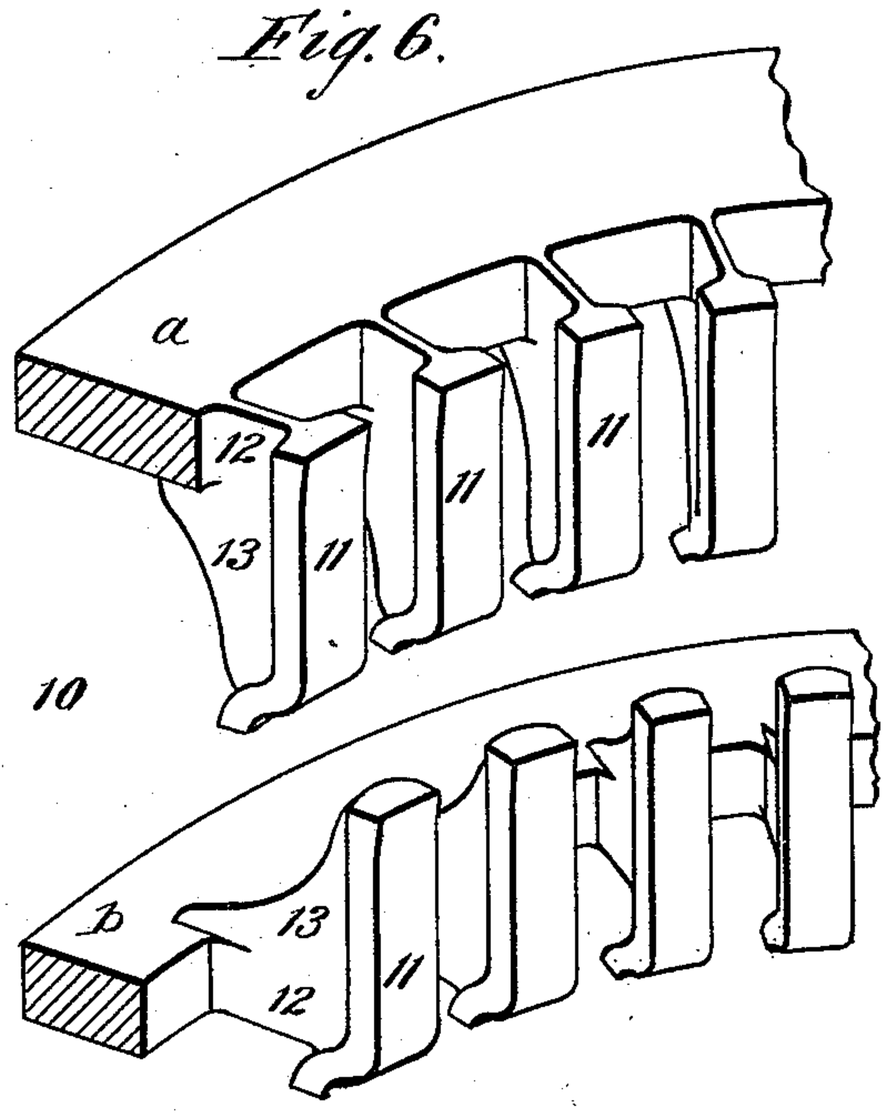


Fig. 7.

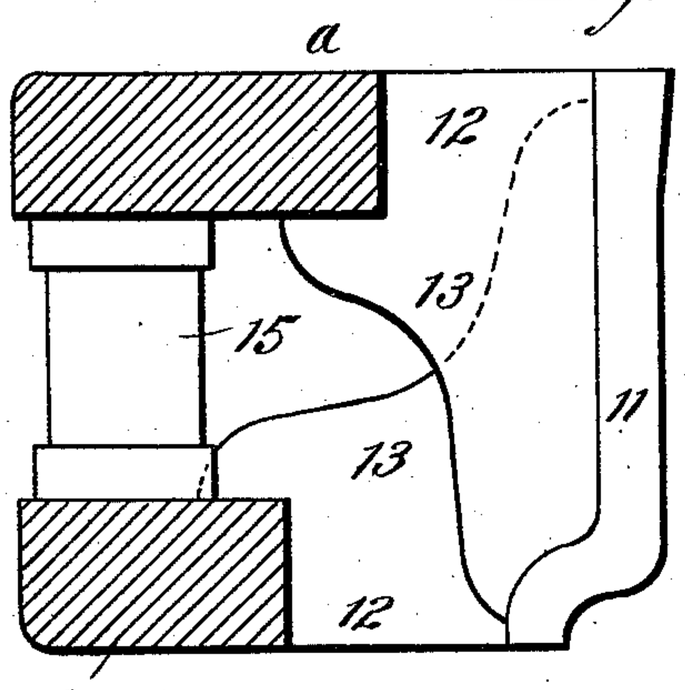


Fig. 8.

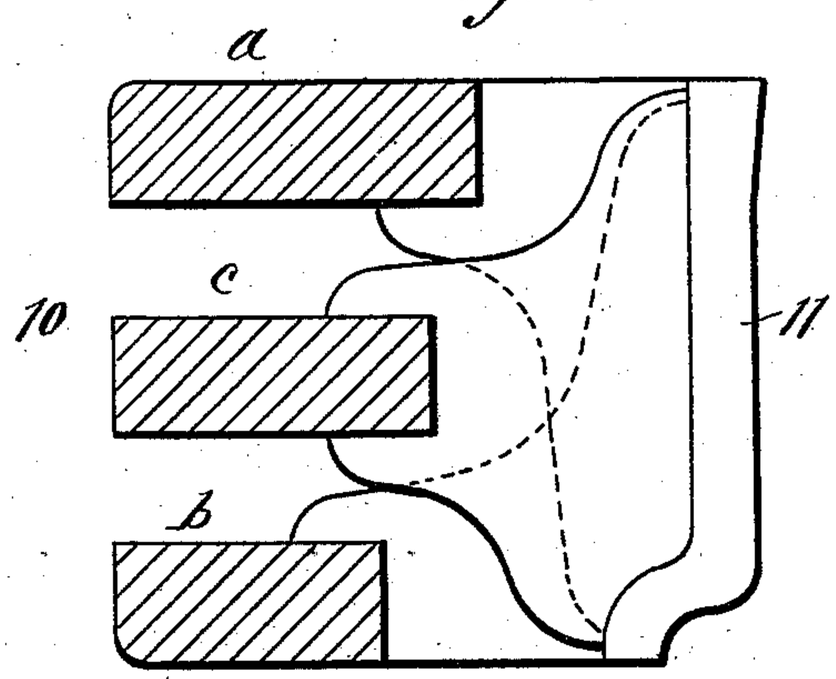
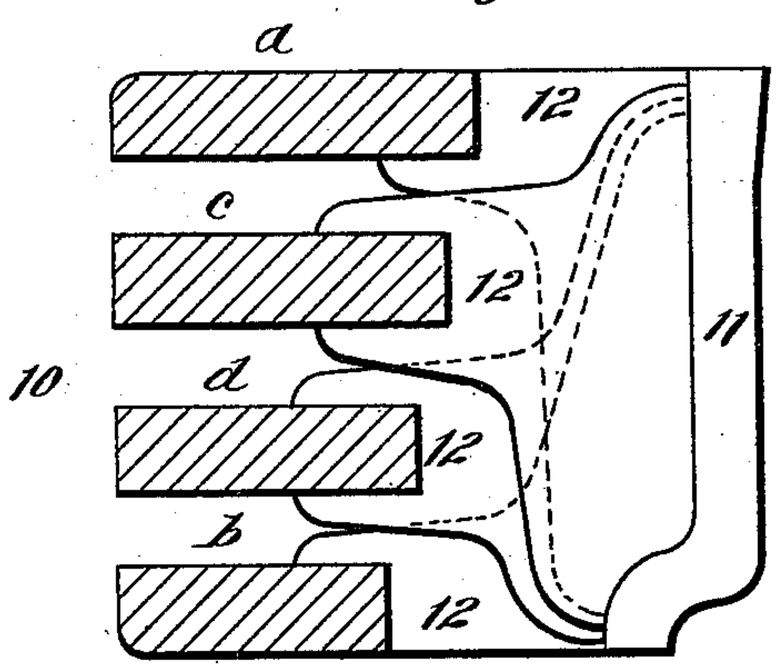


Fig. 9.



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UNITED STATES PATENT OFFICE.

FERDINAND E. CANDA, OF NEW YORK, N. Y.

CAR-WHEEL CHILL.

SPECIFICATION forming part of Letters Patent No. 408,458, dated August 6, 1889.

Application filed April 27, 1889. Serial No. 308,828. (No model.)

To all whom it may concern:

Be it known that I, FERDINAND E. CANDA, of the city, county, and State of New York, have invented a new and Improved Car-Wheel Chill, of which the following is a full, clear, and exact description.

This invention relates to car-wheel chills, the object of the invention being to provide a chill which shall be so constructed that the heat of the molten metal will cause an expansion of the chill such that the inner peripheral chilling-face will approach rather than recede from the axis of the chill, and which at the same time will provide adequate egress for the heat, steam, and gases generated by said molten metal.

Great difficulty has heretofore been experienced in casting car-wheels, owing to the fact that the chills have been so constructed that the heat of the molten iron would cause parts of the chilling-surface to draw away from the wheel tread and flange; or the chills have been so constructed that after a short use a permanent set has taken place in the chill, such set being almost invariably in opposition to the required cylindrical shape of the wheel-tread, and the chill after a short time is unfit for further use without serious prejudice to the wheels made from it. It is to obviate these objections and to secure a uniform and independent movement of the inner portion of the chill as the molten iron comes in contact with it, and thereby to secure a uniform depth of chill upon the tread of the wheel, as well as to avoid any possible warping of the chill proper, that I have designed the chill forming the subject-matter of this application, the chill consisting, essentially, of two or more outer rings and an inner ring made to conform to the tread of the wheel and subdivided into sections that are connected alternately to the outer rings by brackets or webs, one end only of each section being connected to its outer supporting-ring, the webs or brackets being formed to properly brace and hold the sections constituting the inner ring. In practice the two or more outer rings would be held apart and spaced by struts or separators that are bolted to place between the rings, and the chill would be made up of an inner compound ring wherein the ring members are divided by vertical or oblique lines of separation, and wherein the outer compound ring would be divided by horizontal lines of separation. The base-plate drag and cope employed in connection with the chill may be of any of the well-known forms.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of a chill constructed in accordance with the terms of my invention. Fig. 2 is a plan view of a portion of the chill, representing the same as it appears before the inner ring is divided. Fig. 3 is a cross-sectional view on line *x x* of Fig. 1. Fig. 4 is a cross-sectional view of the chill, representing the same as it appears when adjusted for use. Fig. 5 is a detail perspective view of a portion of the chill. Fig. 6 is a detail perspective view of a chill formed with two outer rings, the rings being represented as they appear when moved apart. Fig. 7 is a cross-sectional view of a portion of a chill formed with two rings. Fig. 8 is a cross-sectional view of a chill formed with three rings, and Fig. 9 is a cross-sectional view of a chill formed with four rings.

In the drawings, 10 represents the compound outer ring of the chill, which ring is made up of independent auxiliary rings *a b*, *a b c*, *a b c d*, or as many of these auxiliary independent rings may be employed as may be deemed desirable. To each of the auxiliary rings there are connected blocks 11, the combined inner faces of said blocks conforming to the required face of the car-wheel tread and flange, the blocks being connected to their supporting-rings by webs 12 and strengthening-brackets 13.

In the construction illustrated in the first seven figures of the drawings the blocks are alternately connected to the auxiliary rings *a b*. In the construction illustrated in Fig. 8 every third block or section 11 is connected to the ring *a*, the adjacent block upon the right to the ring *b*, and the block or section upon the left to the ring *c*, and so in Fig. 9 the blocks are connected to the rings *a*, *b*, *c*, and *d* in regular order.

In constructing the chill I prefer to cast it

in one piece, arranging the cores so that they come in proper places, and afterward to divide the sections or blocks forming the inner ring by means of a saw or any other known tool applicable for such work, the saw-kerfs 14 between the sections being about one thirty-second of an inch in width, more or less. Prior to the division just spoken of I place struts or separators 15 between the auxiliary rings constituting the compound outer ring 10, such struts being held to place by bolts 16, which pass through the auxiliary rings and through the struts or separators; or, if desired, the struts 15 could be cast with the chill and become an integral part thereof. Two of the struts or separators are provided with trunnions 17.

Such a chill as the one above described overcomes the difficulty presented in a chill formed with a solid outer ring, as the expansion of the webs or brackets by which the inner sections are supported will tend to decrease rather than increase the inner peripheral face of the chill, and as the outer ring is divided and exposed to the surrounding atmosphere it will not become unduly heated, as would be the case if it were formed from a solid mass of metal, adequate egress being provided for the heat, gases, and vapors generated in the process of casting the wheel within the chill.

Although I prefer to form the blocks so that they will be substantially parallel with the chill-axis, still I do not wish to confine myself to this specific construction, as under certain circumstances the blocks might be formed so that they would be at an angle to said chill-axis.

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

1. A chill consisting of two or more outer rings and an inner ring comprising segments, some of which segments are connected to one of the outer rings, and the others of which are connected to the remaining outer ring or rings, substantially as described.

2. A chill consisting of an outer ring made up of auxiliary rings arranged substantially at right angles to the chill-axis, and an inner ring made up of sections or blocks that are alternately connected to the outer rings, substantially as described.

3. In a car-wheel chill, the combination, with an outer compound ring 10, of blocks 11, constituting an inner ring, and webs that are integral with the blocks and with alternate members of the compound ring, substantially as described.

4. In a car-wheel chill, the combination, with an outer compound ring made up of auxiliary rings *a* and *b* and struts or separators 15, of an inner ring made up of blocks or sections 11, webs 12, and brackets 13, substantially as described.

FERDINAND E. CANDA.

Witnesses:
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EDGAR TATE.