(No Model.)

W. FAWCETT.

CHILL FOR CAR WHEELS.

No. 534,215. Patented Feb. 12, 1895.

Fig. 1.

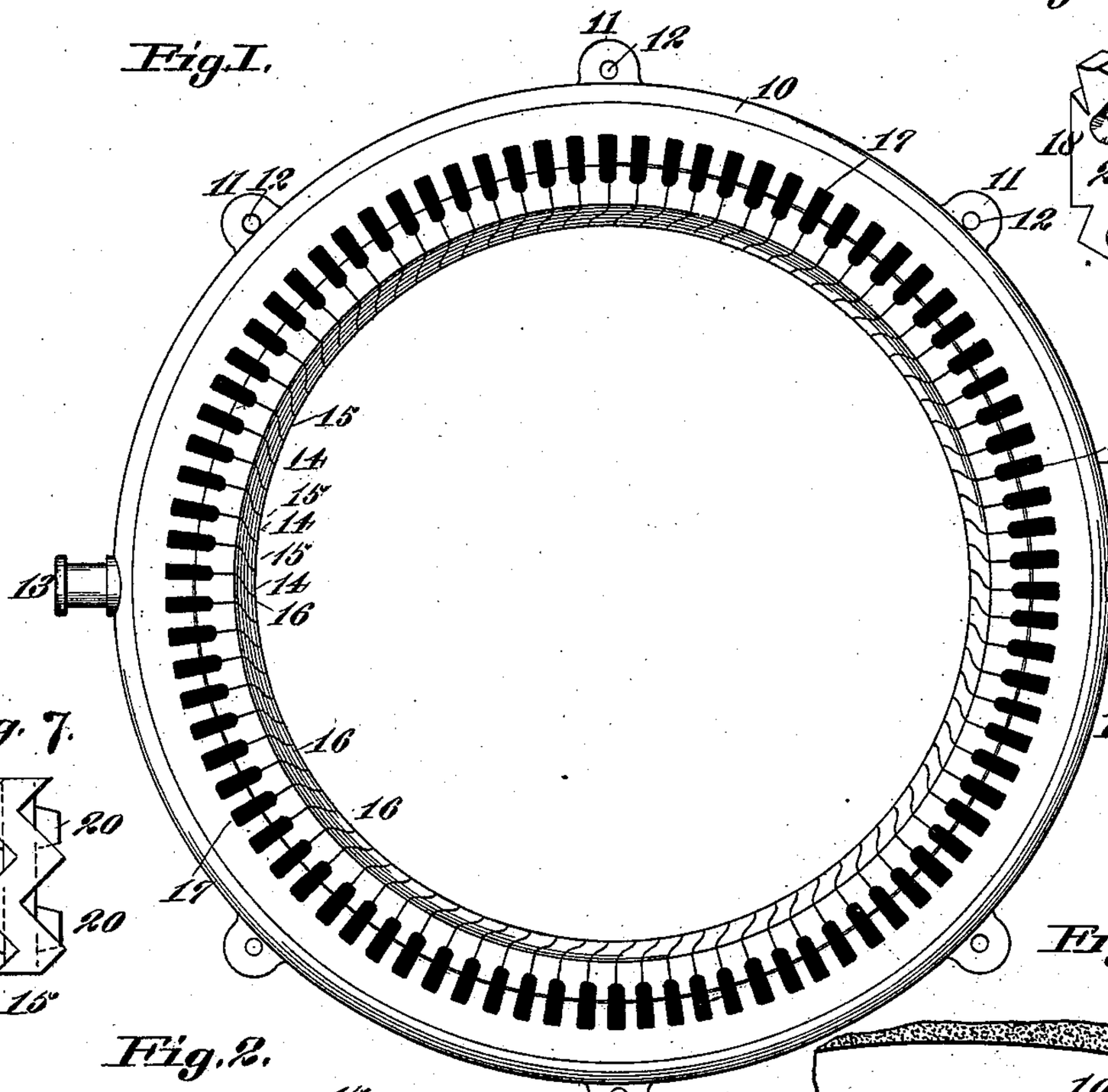


Fig. 9.

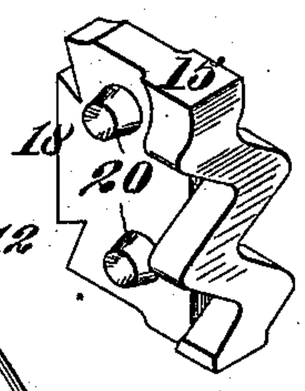


Fig. 7.

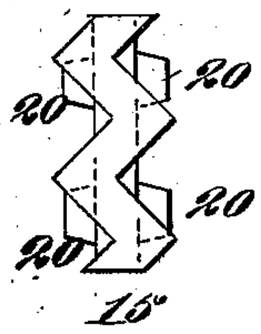


Fig. 8.

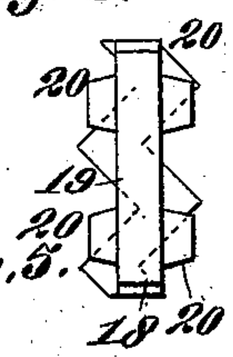
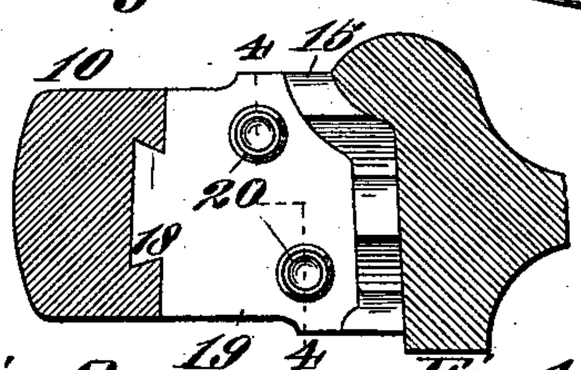


Fig. 2.



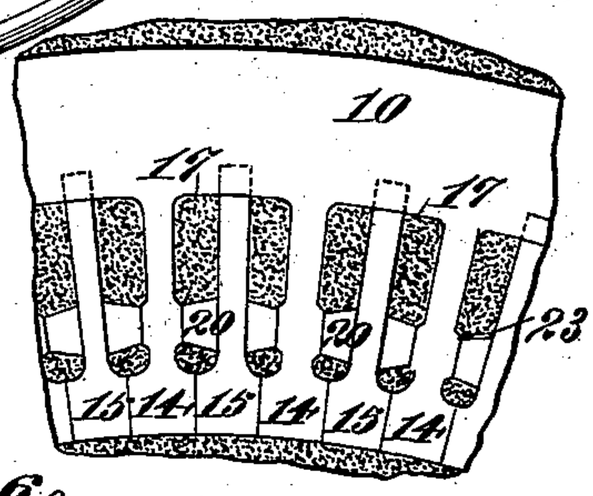


Fig. 3.

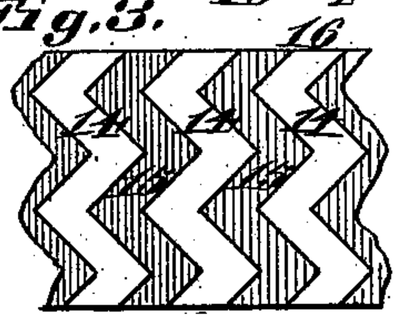


Fig. 4.

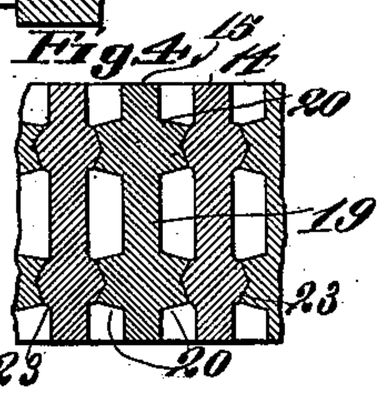
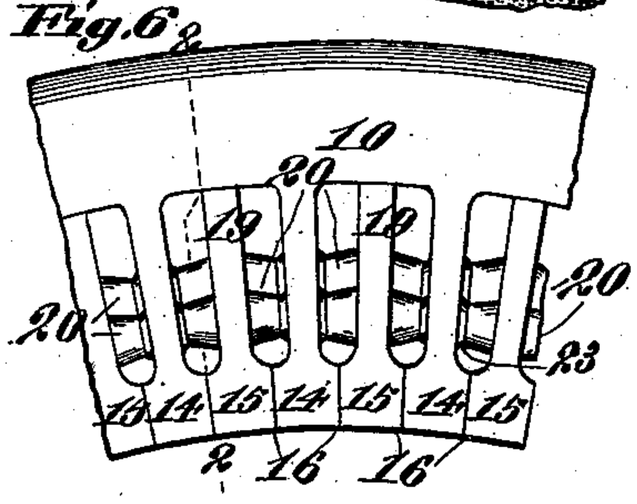


Fig. 6.



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Attorneys.

UNITED STATES PATENT OFFICE.

WILLIAM FAWCETT, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO JOHN H. BASS, OF FORT WAYNE, INDIANA.

CHILL FOR CAR-WHEELS.

SPECIFICATION forming part of Letters Patent No. 534,215, dated February 12, 1895.

Application filed May 29, 1893. Serial No. 475,838. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM FAWCETT, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Chills for Car-Wheels, of which the following is such a full, clear, and exact description as will enable any one skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to certain improvements in the construction of chills for cast-iron car wheels. The end sought to be attained in constructing chills for car wheels, is to provide a chill that will maintain an intimate contact with the periphery of the car wheel during the process of cooling, and thus facilitate the rapid abstraction of heat therefrom. Numerous expedients have been resorted to, and many difficulties have been met with in attempting to attain the desired end. Where a solid chill is employed, it has been found that the wheel contracts away from the chill, and hence an effectual chilling of the wheel has not been obtained. In this case the metal when poured into the mold surrounded by the chill, is at the point of highest expansion, while the chill itself, being cold, is at the point of lowest contraction. Therefore, as the car wheel cools it immediately begins to contract, while the chill itself, as it is heated by the metal therein, begins at once to expand, and hence the intimate contact between the wheel and the chill cannot be maintained. It has been attempted to overcome this difficulty by providing a chill having a solid outer portion, provided with separate projections extending toward the center. In this case a more intimate contact is maintained, as the projections, being supported only at their rear ends, when heated, expand or lengthen inwardly and to some extent follow the wheel as it contracts, thereby maintaining a more intimate contact than is possible where a solid chill is employed. In chills of this latter character, as now constructed, there are appreciable spaces between the projections in contact with the periphery of the wheel, the said spaces extending transversely across the inner face of the chill where it comes in contact with the tread and flange of the wheel. These spaces have been found to produce inequalities upon the tread of the wheel, the said inequalities consisting of alternate elevations and depressions, and when the wheel is used, it is found that such inequalities produce noise and jar.

The object of my invention is to remedy the several defects just enumerated, and to that end, I provide a chill which can be conveniently constructed at small cost, that will maintain an intimate contact with the periphery of the wheel during the process of cooling, and will, at the same time, produce no inequalities upon the periphery of the wheel of such a character as will cause noise or jar when the wheel is used upon a car or other conveyance.

Another object of my invention is to so construct the chill as to provide for a circulation of air therein, and permit an escape of gases from the molten metal, thereby greatly promoting the efficiency of the chill.

These several objects I accomplish by constructing a chill which has a solid exterior part, and an interior part formed of a series of separate inwardly-projecting plates. The said plates are preferably reduced in thickness toward the rear thereof, so as to provide air-spaces, and have their inner ends of such form as to make a proper mold for the tread and flange of a car wheel. The intervals between the several plates do not extend transversely across the inner face of the chill, but said intervals are given a zigzag or irregular direction as not to form obstructions upon the tread of the wheel that will produce noise or jar, and to firmly and better knit the parts together.

My invention will be best understood by reference to the accompanying drawings, in which—

Figure 1 represents a top view of my chill. Fig. 2 is a section of my chill taken on the line 2—2, Fig. 6, and showing the flange and tread of a car wheel in contact therewith. Fig. 3 is a view of a part of the inner face of my chill, showing the form of the inner end of the inwardly-extending plates. Fig. 4 is a section of a part of my chill taken on the line

4—4 Fig. 2. Fig. 5 is a top view of a part of my chill, the same being shown as it appears in the sand, the remainder being broken away. Fig. 6 is a top view of the same part shown in Fig. 5, the sand being removed. Fig. 7 is a view of the inner face of one of the separate plates employed in my chill. Fig. 8 is a view of one of the separate plates employed in my chill, looked at from the opposite end to that shown in Fig. 7. Fig. 9 is an isometric projection of one of the separate plates employed in my chill.

Referring to the drawings, in which the same marks of reference indicate the same parts throughout the several views: 10 is a solid exterior ring of iron, which forms the outer part of my chill. The exterior ring 10 is provided, on its lower side at proper intervals, with the feet 11, the said feet 11 having therethrough perforations 12. The object of the perforated feet 11 is to provide means for properly securing the chill to the flask. The exterior ring 10 is also provided with suitable projections 13, said projections being designed to facilitate the handling of the chill. Projecting inwardly from the outer ring 10 are the inwardly-extending plates 14 and 15. The plates numbered 14 are cast integral with the outer ring 10, while the plates numbered 15 are constructed separately from the outer ring 10, and are secured thereto by having the outer ring cast around them, as hereinafter explained. I preferably have the plates 14 which are made integral with the ring 10, alternate with the plates 15 made separate therefrom, but I do not wish to be understood as confining myself to this precise arrangement. The plates 14 and 15 are thickened toward their inner ends, and are separated one from another by a small space or interval, indicated in the drawings by 16. The inner ends of the plates are made of such form as to constitute a mold for the tread and the flange of the wheel. The rear portion of the plates 14 and 15 are reduced in thickness, so that there will be formed between them a series of openings 17 extending through the chill from the upper to the lower surfaces thereof.

The manner in which my chill is preferably made is as follows: A pattern of the form of the chill is properly molded in a two-part flask, after which the pattern is withdrawn from the mold and the separate plates 15 together with the cores forming the air spaces 17 are set in the mold at proper intervals, the mold then closed and iron poured in, which flows around the outer ends and between the plates 15 binding them all in a complete chill, and at the same time forming the inwardly-projecting plates 14.

The form of the separate plates 15 preferably employed by me, is as follows: The rear part thereof consists of a solid piece of iron of the requisite width, and having its sides lying in vertical planes. The portion just described is indicated in the drawings by the number 19. Upon each side of the portion 19 are placed the conical projections 20, there being two of such projections on each side of the rear portion 19. The ends of the projections 20 have therein depressions, the depressions being adapted to have metal flow therein, so as to secure the separate plates to the integral portion of the chill. The inner ends of the plates are somewhat thickened, and do not have their sides lying in vertical planes, but the sides of the inner ends present irregular surfaces or spaces formed of zig-zag lines extending in the irregular direction indicated in Fig. 3.

The form of the inwardly-projecting plates 14 which are cast integral with the outer ring 10, are identical with that of the separate plates 15, saving only that the plates 14 have not the conical projections 20, but are provided with a slightly thickened portion formed where the metal flows into the ends of the conical projections 20, thus serving to hold said plates 15 firmly in place.

When the separate iron plates 15 are properly set up in the sand as before described, the sides of the thickened inner ends of said plates 15 are coated with a fireproof coating, where the plates 15 come into contact therewith, leaving a perceptible space between them when the metal cools down, providing room for expansion and contraction of the chill. When the metal forming the outer ring 10, and the integral parts 14, is poured into the mold, it will flow into the space formerly occupied by the pattern, will surround the separate plates 15 as aforesaid, holding them securely in place by reason of the fact that the dove-tail projection 18 at the rear of the plate will be inclosed within the metal ring 10, and the metal will flow into the depressions in the ends of the lateral projections 20. The metal poured into the mold will be in intimate contact with the sides of the irregular inner ends of the separate plates 15, but as the sides of the inner ends of the plates 15 are covered with a fireproof coating, and as the metal forming the integral plates 14 will contract slightly in cooling, there will be an appreciable interval between the sides of the inwardly-projecting plates 14 which are integral with the exterior ring 10, and the separate plates 15 around which said ring is cast. To the rear of the inner ends of the inwardly-projecting plates are formed the spaces 17, which spaces will permit a circulation of air to keep the chill cool, and will also facilitate the escape of gases, which gases will pass through the intervals between the plates and outwardly through the spaces 17.

It will thus be seen that under my construction the plates which are in contact with the periphery of the wheel are supported at the rear end by the dove-tail projections, and also sidewise and vertically near their thickened inner ends by the projections 20 with conical depressions, and will therefore, when they be-

come heated, expand inwardly and maintain an intimate contact with the tread and flange of the wheel, thus operating to secure a thorough and efficient chill; while at the same time, the spaces between the several plates have such a direction that they will not produce ridges and depressions promoting jar and noise in the wheel, but, if they produce any inequalities on the surface of the wheel, such inequalities will have a diagonal direction, and thus there will be no appreciable noise or jar produced thereby, for the reason that the wheel in rolling on the rail, will not fall from the crest of a ridge to the depth of a depression, but such inequalities as are present in the wheels chilled with my device, will neutralize one another. So also the zig-zag arrangement locks the plates 14 and 15 together at their inner ends, thereby making a more rigid and better structure.

I do not claim broadly a chill as herein described, but

What I do claim as new, and desire to secure by Letters Patent of the United States, is—

1. A chill for car wheels, consisting of an inner portion formed of a series of plates separated from one another at their inner ends, and an outer portion surrounding said inner portion, the line of separation between the inner ends of the plates aforesaid extending across the inner face of the chill in a zig-zag direction, substantially as described.

2. A chill for car wheels, consisting of an inner portion formed of a series of plates separated from one another at their inner ends, and an outer portion surrounding said inner portion, the line of separation between the inner ends of the plates aforesaid extending across the inner face of the chill in a zigzag direction, the said chill being provided intermediate its outer and inner faces with apertures extending therethrough from its upper to its lower surface.

In testimony whereof I have hereunto set my hand and affixed my seal, this 27th day of May, 1893, in the presence of the two subscribing witnesses.

WILLIAM FAWCETT. [L. S.]

Witnesses:
WALTER D. COLES,
M. M. BROWN.