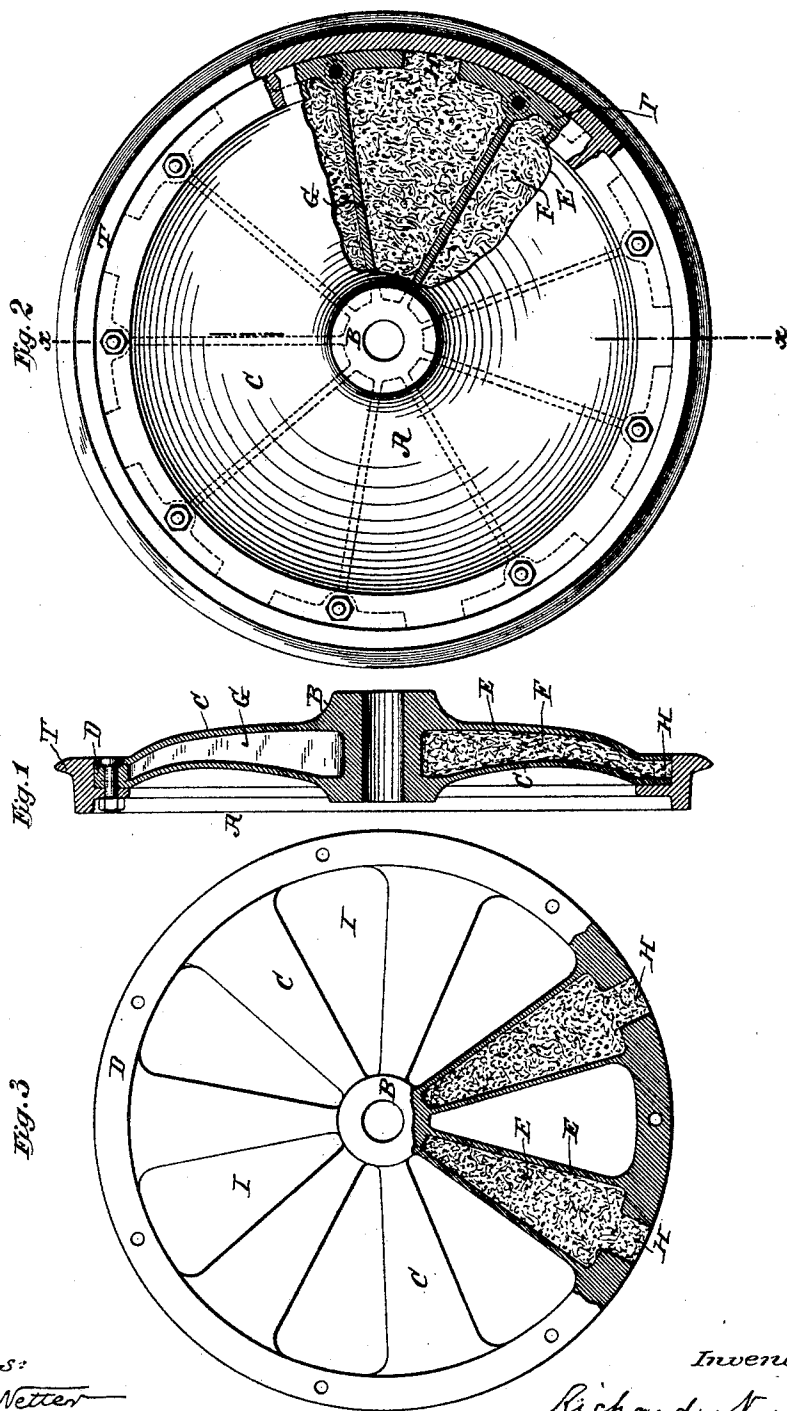


(No Model.)

R. N. ALLEN.
CAR WHEEL.

No. 435,672.

Patented Sept. 2, 1890.



Witnesses:
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UNITED STATES PATENT OFFICE.

RICHARD N. ALLEN, OF CLEVELAND, OHIO.

CAR-WHEEL.

SPECIFICATION forming part of Letters Patent No. 435,672, dated September 2, 1890.

Application filed May 14, 1890. Serial No. 351,760. (No model.)

To all whom it may concern:

Be it known that I, RICHARD N. ALLEN, of the city of Cleveland, in the county of Cuyahoga and State of Ohio, have invented new and useful Improvements in Car-Wheels, of which the following is a specification.

This invention relates to car-wheels more especially designed for street-railroads, where it is desirable to lessen as much as possible the noise resulting from the vibrations of the metal of the wheels as they run over the rails.

The invention consists, generally stated, in making the center or body portion of the wheel hollow or with recesses or chambers and filling such hollow spaces with flexible fibrous material—as paper-pulp, oakum, mineral wool, or other flexible fibrous material—by inserting the same through small apertures in the rim or felly of the center and tamping and consolidating them into such hollow spaces to fully fill the same, and then applying and securing a tire upon the rim to cover the apertures therein, substantially as hereinafter more fully described and claimed, whereby the noise and ring of the metal of the wheel will to a great degree be absorbed and prevented and the rim of the center, which is essential to the strength of the wheel and the support of the tire, will be largely preserved.

This invention is illustrated in the accompanying drawings, in which—

Figure 1 is a cross-section on the line xx of Fig. 2 of a wheel containing this invention. Fig. 2 is a view in elevation of the front face or side of the wheel, a part of the side wall being broken away to show the recesses, ribs, and packing, and Fig. 3 is a cross-section of a modified construction of car-wheel center.

In the drawings, A represents the body or central part of a car-wheel, which includes the hub B, the side walls C, and the rim D, the side walls being so disposed relatively to each other as to leave a hollow or empty space or spaces E between such walls, preferably extending from the hub to the rim, which space or spaces are filled with a packing of flexible fibrous material F to absorb and deaden the ring of the metal of which the wheel is made. The body or central part of the wheel is preferably formed by casting in

one piece, which can readily be done in a mold of the usual construction and by the use of a core or cores supported by rods inserted therein, which are connected with the core-prints extending through and beyond the rim of the mold and anchored outside of the mold, so as to hold the cores in position in the mold to permit the melted metal to flow around them and form a hollow body or center when the cores are broken up and removed from the casting.

For the purpose of giving additional strength to the wheel, I prefer to join the side walls of the body or center by cross-ribs G, which are readily formed in the casting by the use of a series of cores separated from each other in the mold at a distance equal to the thickness of the ribs, the cores being held in their proper position in the mold, as above described. This construction will form a series of radial chambers or recesses E between the side walls of the body and the ribs, and the series of apertures H, through the periphery of the rim, where the core-prints are located, which apertures form openings through the rim into the hollow portion of the wheel, through which openings the flexible fibrous packing material can be inserted to fill the hollow spaces.

Instead of forming the body or center of the wheel with continuous side walls, as shown in Fig. 2 of the drawings, the side walls may be interrupted by cross-ribs, leaving open spaces I through the body, thus forming a series of hollow spokes, uniting the hub and the rim, as shown in Fig. 3 of the drawings. This construction of the body can be easily cast in one piece by the use of cores held in position in the mold, as above described, which are broken up and expelled from the casting through apertures in the rim D. The hollow spokes or recesses E are filled with the flexible fibrous packing F by introducing it through the apertures left in the rim in the manner hereinafter described, after which the tire is applied and secured in place.

The wheel is provided with a tire T, which is united to the body by any suitable means, but it is preferably removably secured to the rim D by a series of bolts passing through an inwardly-projecting flange of the tire and through the rim of the wheel.

In case the body or center of the wheel is

cast in one piece with ribs G, forming radial chambers E, and apertures opening through the rim D, as shown in the drawings, and which I consider the preferable construction, 5 the fibrous material can be readily introduced through the apertures, and by use of properly-shaped tools be tamped into the recesses E to fill the same, thereby producing a car-wheel center or body which possesses the requisite 10 strength and lightness, and which has the vacant spaces between its side walls filled with a light fibrous non-sonorous packing in intimate contact with the walls of the wheel and adapted to absorb and lessen the vibration of the metal and greatly reduce the noise 15 and ring which would otherwise be produced. A desirable packing material for this purpose is cheaply produced from long-fibered paper pulp from which the water has been expressed and with which has been mixed a 20 small quantity of coal-tar sufficient to render the mass slightly adhesive to enable it more readily to pack closely and retain its packed position. Oakum such as is used for calking 25 purposes makes an excellent packing material for this purpose, and almost any fibrous material—preferably moistened with coal-tar or other heavy adhesive substance—will answer the purpose.

30 It will be apparent, since the apertures in the rim of the center are of very much less area, particularly in their length, than the chambers or recesses in the center into which they open that the fibrous packing material 35 used must be of a flexible and yielding nature, so that it can be inserted or stuffed through the apertures in small quantities, and then by the use of tools be properly disposed and consolidated by tamping to completely fill the hollow spaces. The materials 40 above named are especially adapted to be worked as described and to give the desired results.

I am aware that descriptions have been 45 given of car-wheels constructed by casting a center or body so as to form a series of radial recesses extending about half-way to the hub and opening out at the periphery or edge of the center. These peripheral openings are, 50 however, fully equal, both in their length and

breadth, to the length and breadth of the radial recesses. Blocks shaped to fit the recesses are driven through these openings to completely fill the spaces or recesses. By this construction the center of the wheel is 55 deprived of a metal rim or felly, which is desirable as a support to the tire and largely adds to the strength of the wheel. In my construction, on the contrary, the rim or felly, with the exception of the small apertures, is 60 retained with substantially all the advantages of an entire rim. It would be impracticable to preserve the rim of the center and at the same time fill the radial recesses with blocks or rigid pieces of wood, as described; 65 but by the use of the flexible fibrous packing, as described, this is easily accomplished. After the body or center of the wheel has been filled with a fibrous packing, as above described, the tire is placed upon the rim to 70 cover the openings through the same and is secured in position by any suitable means. By the use of this method car-wheels combining great strength with minimum weight are 75 cheaply made, and at the same time are rendered largely non-sonorous by filling the cavities of the bodies with a fibrous packing.

What is claimed as new is—

1. A noise-quieting car-wheel composed of a center or body formed in one piece provided 80 with a series of chambers having apertures through the rim of the center of less area than the chambers and filled with a flexible fibrous packing, and a tire secured to the rim and covering the apertures therein, substantially as and for the purpose set forth. 85

2. The herein-described method of making noise-quieting car-wheels, which consists in casting in one piece a center or body provided with a series of radial chambers having 90 apertures through the rim of the center of less area than the chambers, introducing a packing of flexible fibrous material through the apertures and consolidating the same by tamping to fill the chambers, and securing a tire to 95 the rim to cover the apertures therein.

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