

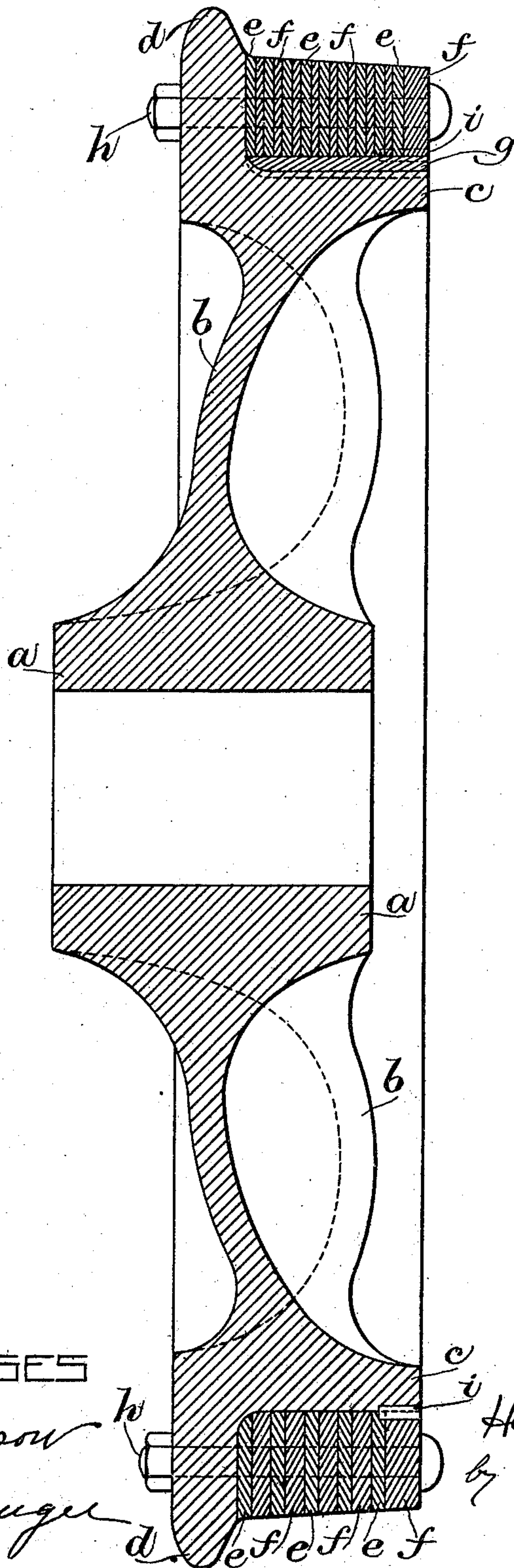
No. 686,173.

Patented Nov. 5, 1901.

H. O. WHITE.
CAR WHEEL.

(Application filed Sept. 7, 1901.)

(No Model.)



WITNESSES

G. E. Johnson

Chas. S. Leuger

INVENTOR

Henry O. White

by a. o. Orme
A75

UNITED STATES PATENT OFFICE.

HENRY O. WHITE, OF BOSTON, MASSACHUSETTS.

CAR-WHEEL.

SPECIFICATION forming part of Letters Patent No. 686,173, dated November 5, 1901.

Application filed September 7, 1901. Serial No. 74,618. (No model.)

To all whom it may concern:

Be it known that I, HENRY O. WHITE, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Car-Wheels, of which the following is a specification.

This invention in car-wheels relates to constructions in which the tread is made from metals having particular properties, the tread being formed in one or more sections, which are secured to the rim or flange without materially weakening the structure.

When cars having iron wheels run on trestles, particularly if the trestles are of iron, the noise is very disagreeable. This in addition to the jolting received by the car because of imperfect condition of the track has led to the substitution of composite wheels for wheels entirely of iron.

Car-wheels have long been built up of iron treads and hubs, with the webs made of a great variety of substances, of which the best is perhaps paper, and it has been found that such wheels diminish noise and jolting from roughness of the track, particularly within the car, besides being very much more durable than wheels wholly of iron or steel. Other car-wheels have been made with the intention of preventing jar and noise in addition to absorbing it when caused by applying to the frame of any ordinary type of wheel a tread composed wholly or in part of non-metals, as paper, fiber, vulcanite, &c. Such constructions are impracticable, as they are lacking in wearing qualities. They are injuriously affected by the changes of the weather, the strength is deficient, particularly to resist swaying at curves, the brake-shoes tear the face of the wheel, the switch-points of the track cause derailments, and if the line is run with electricity the insulating properties of the interpolated material diminish the already insufficient contact at the rail.

The noise conveyed from a structure such as used in modern cities for passenger traffic is a serious inconvenience to tenants along such lines; and the object of this invention is to lessen the sonorous vibrations caused by the rolling of the car-wheels on the car-track, and at the same time to improve the conductivity of the circuit carrying the electric current that supplies energy to propel the

cars. With this end in view and being familiar with the causes of failure as car-wheels have heretofore been made I have devised a car-wheel capable of accomplishing much that is desired without involving the defects indicated above; and my invention consists of a car-wheel having its tread made in rings or sections of iron or steel and copper or entirely of copper or other metal having the characteristics of copper to be pointed out. Copper is an excellent conductor of electricity, it is of imperfect elasticity, it is lacking in resiliency, it does not continue to vibrate or ring, it is tough, it possesses properties when running in contact with another metal allied to lubrication of value to diminish wear of brake-shoes on the wheels, and when hammered or rolled it hardens to a considerable degree without the crystallization and disintegration noticed in many metals. Hence it preserves its surface finish under wear and is not liable to fracture. This last property is of great value for the purposes of this invention, as the action of an ordinary track and a car-wheel in motion thereon is much like the effect of blows of a hammer if delivered to or by the wheel. This effect is so marked that iron or steel wheels crystallize and crumble under stresses far short of their assumed safe-working loads. It should be understood that the term "copper" as used in this specification means not only commercially-pure copper, but copper alloyed sufficiently to make good castings.

My invention may be applied to a car-wheel of any construction by cutting out the tread of solid iron of the wheel-rim and inserting rings or sections of steel or iron and copper, so that the face of the tread may present in addition to the iron also more or less copper, the rings or sections of the tread resting either directly on the iron of the rim or on a backing or cylinder of copper interposed between the rim and the said sections, the sections being secured to the wheel-frame by grooving, keys, or bolts, as may be best suited to any particular type of wheel.

As the removal of the iron from the tread greatly weakens the flange, so that it is in danger of breaking on curves in the ordinary constructions, I finish the outer surface of my rim to a slight taper, so that when the

copper or composite tread is mounted on the conical outer surface of the rim and bolted or otherwise connected to the flange the said tread reinforces the flange and prevents its collapse.

The drawing shows sections of a car-wheel involving my invention.

From the hub *a* the corrugated or wavy web *b* extends to support the rim *c* and flange *d*. On the rim and extending from the flange I arrange alternate rings or sections of copper *e* and iron or steel *f* until the tread so formed reaches across the rim, and sometimes between the said rim and alternate rings or sections I insert a backing shell or cylinder *g*, of copper. The rings or sections are held in place by one or more rows of bolts *h*, passing through the flange *d*, rotation of the rings or sections being prevented by keys *i*. The copper shell or cylinder *g* is forced onto the rim of the wheel, which may have previously had longitudinal grooves cut in its face at preferably different angles to the side of the rim, and the copper shell is penned into the grooves to prevent rotation, slipping off, and to back up the flange, and then the outer surface of the shell is turned to a taper fit to receive the sectional tread, that forms the support for connections between the shell or cylinder and the flange.

Having described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a car-wheel, the combination with a rim, of a tread comprising sections of copper and another metal, and means for holding the said sections in place on the rim, substantially as described.

2. In a car-wheel, a hub, web, rim and flange,

combined with a tread made in alternate rings of metal of the iron class and a metal having the characteristics of copper, substantially as described.

3. In a car-wheel, a frame, and a tread built up in part of steel sections, combined with other tread-sections of metal tending to diminish sonorous vibrations but of good electrical conductivity and means for securing the parts in position, substantially as described.

4. In a car-wheel, a tread, composed in part of metal tending to harden but not to disintegrate in use, substantially as described.

5. In a car-wheel, a grooved tread and rings in the grooves made of metal tending to prevent excessive wear of the brake-shoes, substantially as described.

6. In a car-wheel, a tread made of two dissimilar metals, one of which is a good conductor of electricity, an indifferent generator of sound and increasing in wear-resisting properties during its use on the rail, substantially as described.

7. In a car-wheel, a hub, web, rim and flange, combined with a tread having a facing of copper, substantially as described.

8. In a car-wheel, the combination with a hub, web, tapered rim and a projecting flange, of a tread tapered to fit and jam on the tapered rim and means for connecting the flange to the said tread, substantially as described.

In testimony whereof I have affixed my signature in presence of two witnesses.

HENRY O. WHITE.

Witnesses:

W. A. WHITE,
E. WHITE.

It is hereby certified that in Letters Patent No. 686,173, granted November 5, 1901, upon the application of Henry O. White, of Boston, Massachusetts, for an improvement in "Car-Wheels," errors appear in the printed specification requiring correction, as follows: Line 24, page 2, the word "penned" should read *pened*, and line 53, same page, the word "in" should read *with*; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 19th day of November, A. D., 1901.

[SEAL.]

F. L. CAMPBELL,
Assistant Secretary of the Interior.

Countersigned:

F. I. ALLEN,
Commissioner of Patents.