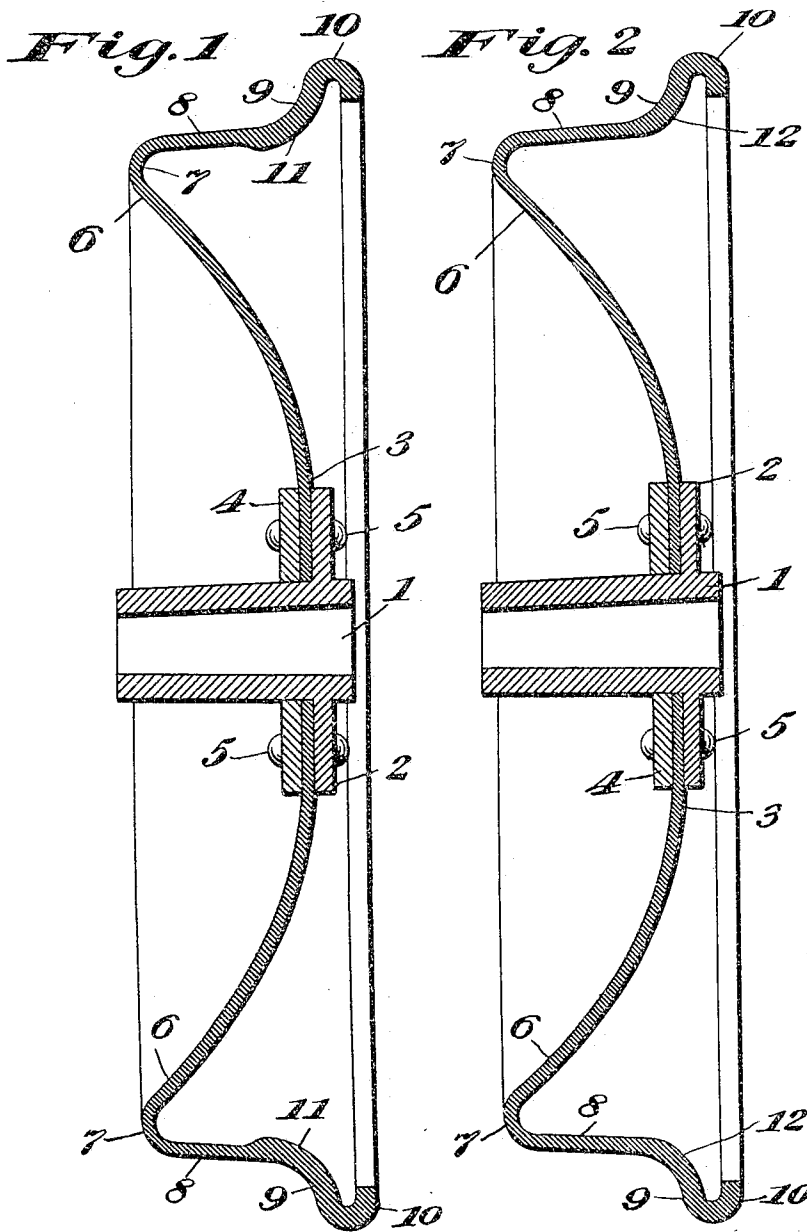


D. A. MOORE.  
WHEEL.

APPLICATION FILED JULY 18, 1904.



Witnesses  
C. S. Kump  
D. Moore.

Inventor

David A. Moore

By J. B. Saplinger  
Attorney.

# UNITED STATES PATENT OFFICE.

DAVID A. MOORE, OF HARVEY, ILLINOIS.

## WHEEL.

SPECIFICATION forming part of Letters Patent No. 793,311, dated June 27, 1905.

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*To all whom it may concern:*

Be it known that I, DAVID A. MOORE, a citizen of the United States, residing at Harvey, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Wheels, of which the following is a specification.

This invention relates to certain improvements in wheels, and more particularly in that class of wheels which are primarily designed for use on cars and the like and are produced from plate or sheet metal; and the object of the invention is to provide a wheel of this general character of a simple and inexpensive nature which shall present a maximum of strength and durability, while retaining the required degree of resilience, so as to be especially well adapted for resisting the wear to which such wheels are exposed, whereby the life of the wheel is considerably lengthened.

The invention consists in a wheel formed from plate or sheet metal of proper gage and quality having its tread portion or rim flanged along one side, so as to be adapted to run along the ball of a rail, the said flange having a thickness greater than that of the remaining portions of the wheel with which it is integrally formed, so that a sufficiency of metal is afforded at the flange for resisting wear without unnecessary increase of thickness in the remaining portions of the wheel. The invention also contemplates the extension of the thickened or reinforced portion from the wheel-flange along a sufficiently wide portion of the wheel-rim to provide the wheel with a thickened tread adapted to rest upon the rail and to permit the wheel to better resist wear and strains such as are exposed in a great degree upon the tread and flange.

The invention also contemplates certain other novel features of the construction of the improved wheel, whereby certain important advantages are attained and the device is made simpler, cheaper, and otherwise better adapted and more convenient for use, all as will be hereinafter fully set forth.

The novel features of the invention will be carefully defined in the claims.

In order that my improvements may be the better understood, I have illustrated in the accompanying drawings a car-wheel formed from plate or sheet metal according to my invention, in which—

Figure 1 is a sectional view taken diametrically through a wheel constructed from plate or sheet metal according to my invention; and Fig. 2 is a view similar to Fig. 1, but showing a modified construction of the improved wheel.

Referring first to Fig. 1, 1 indicates a hub, which may be formed from cast metal and is provided with a bore of sufficient diameter to receive the end of an axle and has produced integrally on one of its ends an annular projecting flange or collar 2, upon the inner face of which is held in any preferred way the central part 3 of the web portion of the wheel. The preferred way of securing the web 3 to the hub flange or collar 2 is that shown in the drawings and comprises an annular collar 4, fitted over the hub on the side of the web opposite the hub flange or collar 2 and pressed securely upon the adjacent surface of the web 3, the parts 2, 3, and 4 being held in relation by means of rivets 5, passed through them in a well-known way. This feature of the wheel, however, forms no part of my invention, and I do not wish to be understood as limiting myself to any particular hub construction or attachment in carrying out my invention. The outer portion 6 of the web 3, or that part of the web which extends toward the periphery of the wheel, is flared or dished, as clearly shown, so as to present a convexity upon the outer surface of the wheel, whereby said outer portion 6 of the wheel-web is carried over and is caused to extend in a plane adjacent to the end of hub 1 opposite to that end of the hub at which the web portion 3 is attached, and at said outer portion 6 the web is integrally connected, by means of a curved portion 7, with the rim 8 of the wheel, the width of said rim 8 depending, of course, on the size of the wheel and the use for which it is designed. The edge portion of the rim 8 which is opposite to the curved connection 7 with the wheel-web is connected, by means of an

integral outwardly-curved portion 9, with the flange 10, which projects in annular form around the periphery of the wheel-rim in a well-known way and is adapted for engagement with the track or rail to take the thrust and hold the wheel in place thereon.

In the use of the wheel the ball of the rail or track on which it runs will be engaged by the lateral surface of the flange 10 and by the curved portion 9, connecting said flange with the rim 8 of the wheel, together with a narrow portion of said rim 8, which is adjacent to the said curved portion 9, and it will be seen that practically all of the wear, together with a great proportion of the strains to which the wheel is exposed in practical use, will be exerted upon these portions of the wheel alone, and for overcoming such wear and strains I provide the wheel with an integral thickened part or reinforce 11, extending along the flange 10, curved portion 9, and that part of the rim 8 adjacent to said curved portion 9, and which, as above stated, bears in practice upon the ball of the rail.

Wheels of this general character are at present produced from plate or sheet metal by pressing and rolling and otherwise working the flat metal blanks into wheel form, and in carrying out my present invention I prefer to produce the improved wheel in a similar way, the thickening or reinforcing of the tread portion 11 of the wheel rim and flange being accomplished by upsetting the plate or sheet metal of which the wheel is formed in the process of rolling which constitutes the finishing operation in the manufacture of said wheels.

From the accompanying drawings it will be obvious that not only does the thickening or reinforcing of the tread portion 11 of the wheel rim and flange enable the wheel to withstand wear and strains at that point to an increased degree, whereby the life of the wheel is greatly increased and lengthened; but it will also be seen that since the web portion 3 of the wheel is connected with the hub substantially in line with the said tread portion 11 increased strength and stiffness are afforded, so that the wheel is adapted for service under heavier loads without in any way lessening or impairing the resilience of the metal of which it is formed.

In some cases it may be desirable to merely reinforce the flange of the wheel without carrying the thickened or upset portion of the metal into the wheel-rim, and this construction I have illustrated in Fig. 2, wherein 12 indicates the thickened or upset portion of the metal, which is only extended along the flange, so as to reinforce the same against side strains and wear, such as are imposed on the flange portion of the wheel perhaps to a greater extent than on any other part, especially in rounding curves in the tracks, when

the flange is pressed tightly upon the rail and is subjected to great friction and wear, owing to the lateral thrust and also to the slipping of certain portions of the flange over the rail-surface. By this construction the life of the wheel is also considerably lengthened without reinforcing or thickening any portion of the wheel excepting the flange thereof. It will also be obvious that the thickening of the wheel at the tread portion 11 for provision against wear at that point is accomplished without any increase whatever in the thickness of the metal of which the remaining rim and web portions of the wheel are formed, the thickness of said remaining rim and web portions of the wheel being only sufficient to provide the necessary strength and stiffness, since practically no wear is exerted on said parts.

The improved wheel constructed according to my invention is of an extremely simple construction and is especially well adapted for use, since its cost is not materially greater than that of other similar wheels, while its reinforced and thickened tread portion insures lengthened usefulness, and it will also be obvious from the above description that the improved wheel constructed according to my invention is capable of some modification without material departure from the principles and spirit of the invention, and for this reason I do not wish to be understood as limiting myself to the precise form and arrangement of the wheel as herein shown in carrying out my invention in practice.

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

1. A wheel formed from plate or sheet metal and comprising a web portion and a rim portion integrally connected with the web portion and having tread and flange portions each of which is of greater thickness than the body of said rim portion.

2. A wheel having a rim portion formed from sheet or plate metal having an integral flange produced along one of its sides and having at said flange an integral tread portion of greater thickness than the body of said rim portion.

3. A wheel formed from plate or sheet metal and comprising a web portion, a rim integrally connected with the web portion and a flange integrally produced at one side of the rim, said flange and the adjacent portion of the wheel-rim being of greater thickness than the body of the rim portion.

4. A wheel comprising a hub, a web portion formed from plate or sheet metal and having at its central part means of attachment to one end of the hub, the outer part of said web portion being flared toward the opposite end of the hub, a rim portion also formed from plate or sheet metal and inte-

grally connected with the outer part or the web  
portion at one side but at other points out of  
contact with said web portion and having at its  
opposite side a flange and adjacent to the flange,  
5 a tread portion of greater thickness than the  
body of the rim portion.

In testimony whereof I have hereunto signed

my name, in the presence of two subscribing  
witnesses, at Chicago, Illinois, this 6th day of  
July, 1904.

DAVID A. MOORE.

Witnesses:

J. D. CAPLINGER,

W. MOORE.