(No Model.)

N. SMITH.

WHEEL FOR RAILWAY CARS.

No. 464,527. Patented Dec. 8, 1891.

Fig. 3.

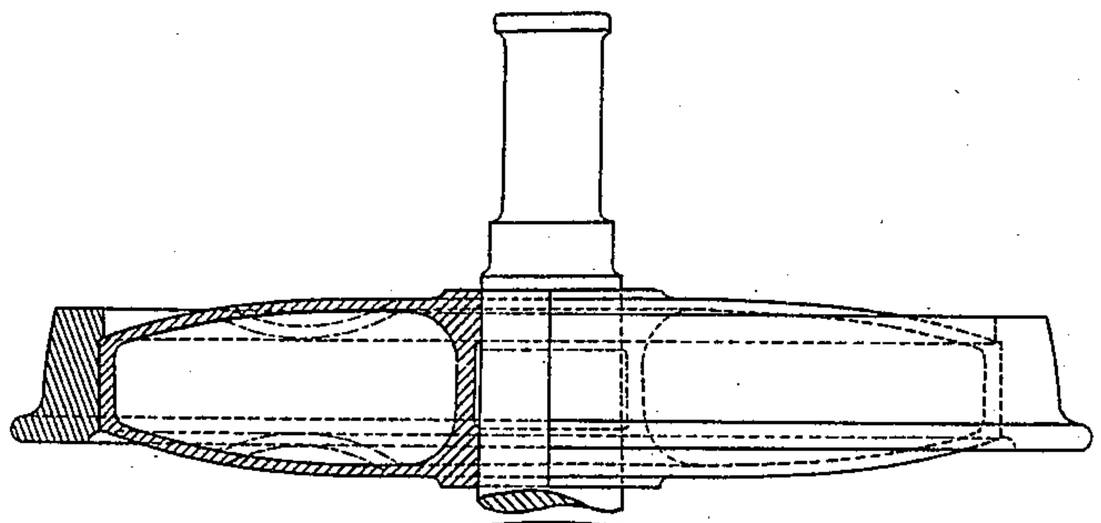


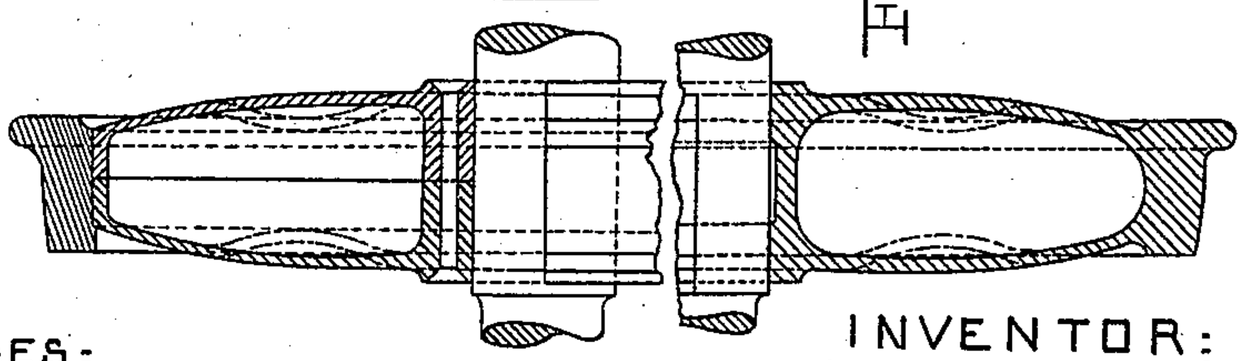
Fig. 4.

Fig. 1

Fig. 5.

Fig. 6.

Fig. 2.



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WHEEL FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 464,527, dated December 8, 1891.

Application filed August 28, 1890. Serial No. 363,300. (No model.)

To all whom it may concern:

Be it known that I, NICOLAUS SMITH, engineer, a subject of the King of Norway, residing in Gellivare, county of Norrbotten, in the Kingdom of Sweden, have invented an Improved Wheel for Railway-Cars; and I do hereby declare the nature of this invention and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement.

This invention relates to wheels for railway-cars, tramway-cars, and the like, and has for its object to provide a cheap, safe, and reliable flexible wheel, as hereinafter described.

In the accompanying drawings, Figure 1 is an edge view, partly in section, of a railway-carriage wheel constructed according to this invention. Fig. 2 is a transverse section illustrating a modification. Fig. 3 is an edge view, partly in section, of a modified construction of the wheel. Fig. 4 is an elevation the left-hand half of which is a face view of Fig. 1 and the right-hand half a face view of Fig. 3. Fig. 5 represents a section and elevation of a detail illustrating another modification. Fig. 6 is a similar view to Fig. 3, but illustrating a further modification.

The improved wheel is constructed of two cast-steel outwardly-convex plates A and B and a rim C. At points intermediate between their inner and outer peripheries the disks are provided with apertures C′, (see Fig. 1,) and at the center part around the wheel-axle the plates or disks have each a flange *a* and *b*, respectively, forming the hub of the wheel. These flanges are joined to each other when the two sides of the wheel are put together. The part *a* of the hub has an inwardly-turned flange and the other part *b* of the hub has an outwardly-turned flange. These flanges are cut away at two diametrically opposite parts, as indicated by the dotted lines on the left-hand half of Fig. 4, sufficiently to allow the corresponding remaining parts of flange *b* to enter the two parts of the flange *a*. This arrangement constitutes a kind of bayonet-slot, whereby two disks can be united by turning them in opposite directions. At the periphery of the wheel the two disks are, as shown in Figs. 1, 2, and 5, bent inward so as to form cylindrical surfaces, the edges of which may be rabbeted, as shown in Fig. 1, or otherwise suitably formed so that they can be fitted together. For example, they can be made with plain abutting faces, as shown in Fig. 2. When the disks are joined in this way, their cylindrical surfaces are flush with each other and thus form one continuous cylindrical surface well suited to receive the wheel-rim C. Into the cylindrical surface dovetailed plates *c*, which are narrowed in the middle, can be sunk, as illustrated in Fig. 5, the said plates serving to keep the peripheries of the two disks securely held together. It will be obvious that the said plates can be replaced by others of different shapes. They are preferably fastened by means of screws, as shown in the drawings. The wheel-rim is to be shrunk on the middle piece of the wheel and thereafter it may be further secured to the same by screws from the inside, which screws can be inserted through the above-named apertures C′ in the faces of the disks.

The above-described wheel can be modified, as hereinafter described and illustrated in Fig. 3 and in the right-hand side of Fig. 4, so as to render the same stronger, more reliable, elastic, and cheaper to manufacture. In this modification, instead of employing two separate disks, each formed with a portion of the hub, the said parts are cast together in one single piece with the apertures in the face of the disks increased, so that the remaining parts C^2 of the outwardly-convex disks, as shown on the right-hand side in Fig. 4, form kind of inverted spokes which are turned at right angles to the axle of the wheel. The wheel-rim being shrunk on the middle piece formed by said disks can then be still further fastened thereto by means of screws inserted from the outside of the wheel, or by means of electric welding. A flexible, light, and very durable wheel is thus produced; or, as shown in Fig. 6, the whole of the wheel—that is to say, the hub, the disks, and the rim—can be cast in one piece, thereby increasing the strength of the wheel, as well as its elasticity, and at the same time materially decreasing its weight, as, owing to the homogeneous nature of its construction, the rim can be cast much thinner. The

wheel-rim being shrunk on the disks, Fig. 3, the sides of the middle piece bulge out, whereby the middle piece always by its proper elasticity follows the alterations of the inner diameter of the wheel-rim and will be kept securely therein, notwithstanding changes of temperature. These parts can, moreover, as above described, be connected with each other by means of screws, screwed from the inner side of the wheel outward into the wheel-rim, or by electric welding at the circumference of the middle piece to the edges of the inner surface of the wheel-rim.

It is evident that for casting together the disks and the hub members, as shown in Fig. 3, and the disks with the wheel-rim, as shown in Fig. 6, common cast-iron cannot be employed; but for this purpose Siemens-Martin steel or equivalent material, or such steel alloys as give the steel a high degree of tenacity and elasticity, are required. The sides of the disks A and B, Fig. 1, when cast of the material in question, may be very thin, and, in consequence of the same being convex, thin, and of very elastic material, it has been possible to attain a favorable result.

I am cognizant of the fact that railway-car wheels have already been cast in one piece, including the wheel-rim, but those wheels were in nowise elastic, partly in consequence of the construction of the wheel, and secondly owing to the nature of material (cast-iron) used, which in no essential degree possessed elastic properties.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed, what I claim is—

1. In a railway-car wheel, the combination of two disks having hub-flanges turned toward each other, cut away, and adapted to interlock by the partial rotation of one disk relative to the other, and a surrounding rim, substantially as set forth.

2. In a railway-car wheel, the combination of two disks having outer peripheral flanges turned toward and flush with each other and correspondingly exteriorly and interiorly rabbetted, and a surrounding rim fitting said flush surfaces, substantially as set forth.

3. In a railway-car wheel, the combination of two disks having outer peripheral flanges turned toward each other and provided with dovetail recesses, double dovetail pieces fitting said recesses, and a surrounding rim, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

NICOLAUS SMITH.

Witnesses:
WM. KERR,
A. E. PAGE.