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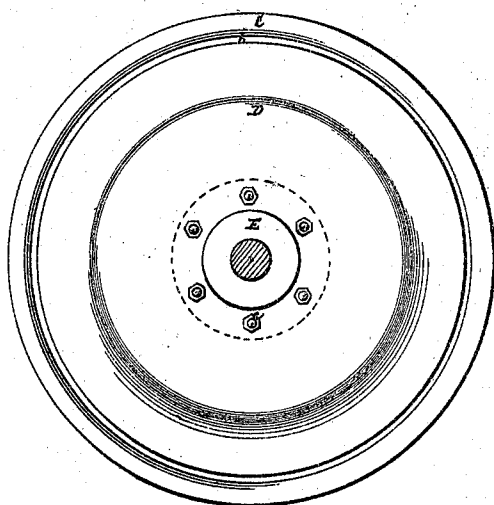
WILLIAM D. GRIMSHAW.

Improvement in Wheels and Pulleys.

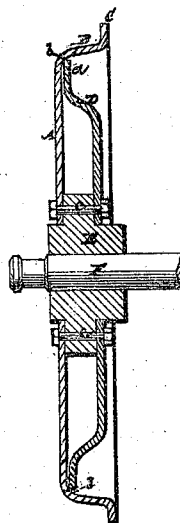
No. 122,456.

Patented Jan. 2, 1872.

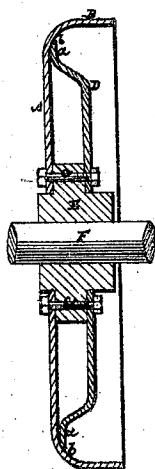
*Fig. 1*



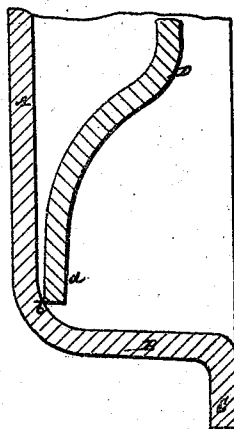
*Fig. 2*



*Fig. 3*



*Fig. 4*



*Witnesses.*  
*Geo. H. Hayes*  
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# UNITED STATES PATENT OFFICE.

WILLIAM DAKIN GRIMSHAW, OF ANSONIA, CONNECTICUT.

## IMPROVEMENT IN WHEELS AND PULLEYS.

Specification forming part of Letters Patent No. 122,456, dated January 2, 1872.

### *To all whom it may concern:*

Be it known that I, WILLIAM DAKIN GRIMSHAW, of the city of Ansonia, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Wheels and Pulleys, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing forming part of this specification, and in which—

Figure 1 represents an inner face view of a railroad car-wheel constructed in accordance with my improvement, and Fig. 2 a transverse section of the same as fitted to its axle. Fig. 3 shows a transverse section of a pulley (in part) similarly constructed. Fig. 4 is a sectional view, on a larger scale, of the outer portion of the wheel represented in Figs. 1 and 2.

Similar letters of reference indicate corresponding parts throughout the several figures of the drawing.

My invention consists in a novel construction of wheels and pulleys by forming them or their bodies and rims in two main parts out of elastic sheet-metal plates, struck up in suitable dies or otherwise made to form dish-shaped elastic disks, the one smaller than the other, and so that on arranging them with their hollow sides face to face, the smaller dish-shaped disk, which constitutes the one side of the wheel or pulley, is caused, by a flanged construction of it, to rest concentrically within and against the other or larger disk that is constructed to constitute both the opposite side or face of the wheel or pulley and tread or rim thereof; also, in case of a railroad-car or other like wheel, the flange thereof. And in this connection the invention further consists in such a construction of the dish-shaped disks as that the smaller disk is made self-centering within the larger one by causing its flange to rest upon a beveled or curved surface formed within the larger one. Wheels or pulleys constructed according to this invention may be made cheap and combine lightness with strength, and when made of steel possess a large and almost universal elasticity.

Referring in the first instance to Figs. 1, 2, and 4 of the accompanying drawing, A represents the one side or face, B the rim or tread, and C the flange of a railroad car-wheel, all formed in one piece out of a sheet or plate of

steel cut and pressed or struck up in a die to form a hollow or dish-shaped steel disk of the shape shown in the drawing, and which may be done by means of a machine or press constructed and operating substantially as described in Letters Patent of the United States issued to me December 1, 1868. D is a smaller hollow or dish-shaped steel disk, struck up or formed in a similar manner, and made with a flange, *a*, which, when said disk is fitted to its place within the larger disk, rests upon or against a beveled or curved surface, *b*, formed at the junction of the side A with the rim B of the larger disk. This bearing of the smaller disk (which constitutes the other side of the car-wheel) on the larger one serves to secure a concentric arrangement of the former disk within the latter. Between these dish-shaped elastic disks, at their center, may be arranged a cast-iron or other suitable hub, E, formed with shoulders for the disks to rest against and projecting at its reduced ends through the disks. The hub and elastic disks thus arranged may be secured together by bolts *e*, and the whole fitted to the axle F in any suitable manner. A railroad car-wheel, the body, tread, and flange of which are all made up of but two pieces of sheet-metal disks of dish-shaped form, arranged one within the other, as represented and described, combines not only lightness with strength and cheapness of construction, but secures an elasticity to it in various directions—as, for instance, in direction of the axis of the wheel, transversely thereto, and in a twisting direction crosswise of the axle. This universal elasticity relieves the axle of strain on the wheel passing over irregularities in the rail-surface, and more especially as occurring at the joints of the rail sections and secures an easy running action generally to the car. By the bearing of the flange *a* of the smaller disk on the bevel *b* formed in the larger one the smaller disk readily returns or adjusts itself to its concentric arrangement within the larger one on any displacement of it therefrom by the tipping or skewing of the axle. For carriage and other wheels in which no outer flange C is required the same is omitted in shaping or stamping the larger disk. Fig. 3 represents a sheet-metal pulley, constructed substantially as described, of two hollow or dish-shaped elas-

tic disks, which are arranged one within the other, and made the one to support the other, as hereinbefore specified with reference to the car-wheels shown in Figs. 1 and 2.

It is an essential feature in this invention, in order to secure an independent elasticity to the disks and a proper or full elasticity of the whole wheel or pulley, that the disks should not be bound or bolted together where the smaller disk at its outer circumference or flange is made to bear or rest upon the larger disk.

What is here claimed, and desired to be secured by Letters Patent, is—

1. A wheel or pulley, the sides or body and tread or rim of which are made in two pieces of reversely-arranged dish-shaped sheet-metal elastic disks, disposed the one to lie within the other, substantially as specified.

2. The hollow sheet-metal elastic disk D, formed with a flange, *a*, in combination with

the reversely-arranged larger elastic disk of similar character, but constructed to form both the one side of the body and rim or tread of the wheel or pulley, and formed with a beveling or curved seat, *b*, for the flange *a* of the smaller disk to bear against in the fit of the one disk within the other, essentially as specified.

3. A wheel or pulley composed of steel plate or other elastic sheet metal, the parts of which, though mutually sustaining, are bound together only at or near the hub or center, and allowed to preserve, independently of each other, their natural elasticity in other parts, substantially as herein described.

W. D. GRIMSHAW.

Witnesses:

FRED. HAYNES,  
HENRY PALMER.

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