

A. WHITNEY.

3 Sheets—Sheet 1.

Car Wheel.

No. 5,126.

Patented May 22, 1847.

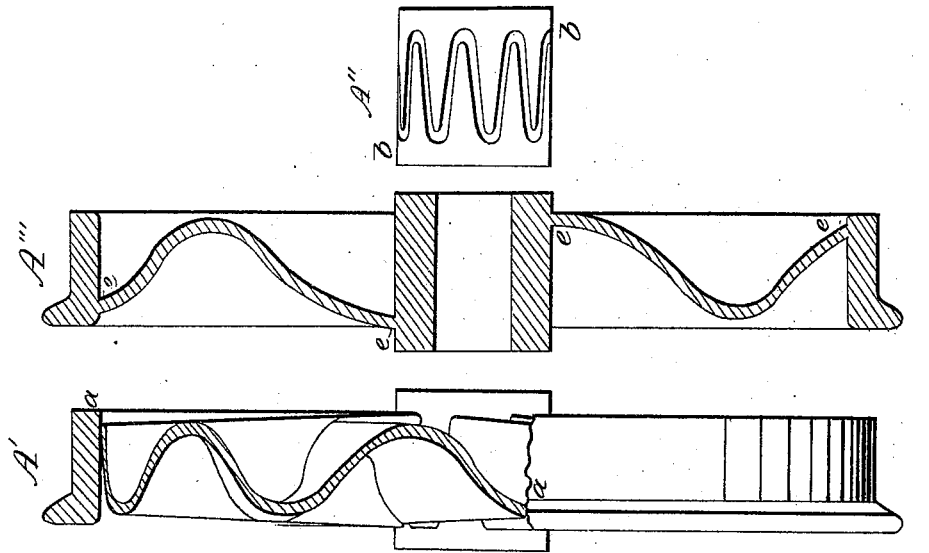
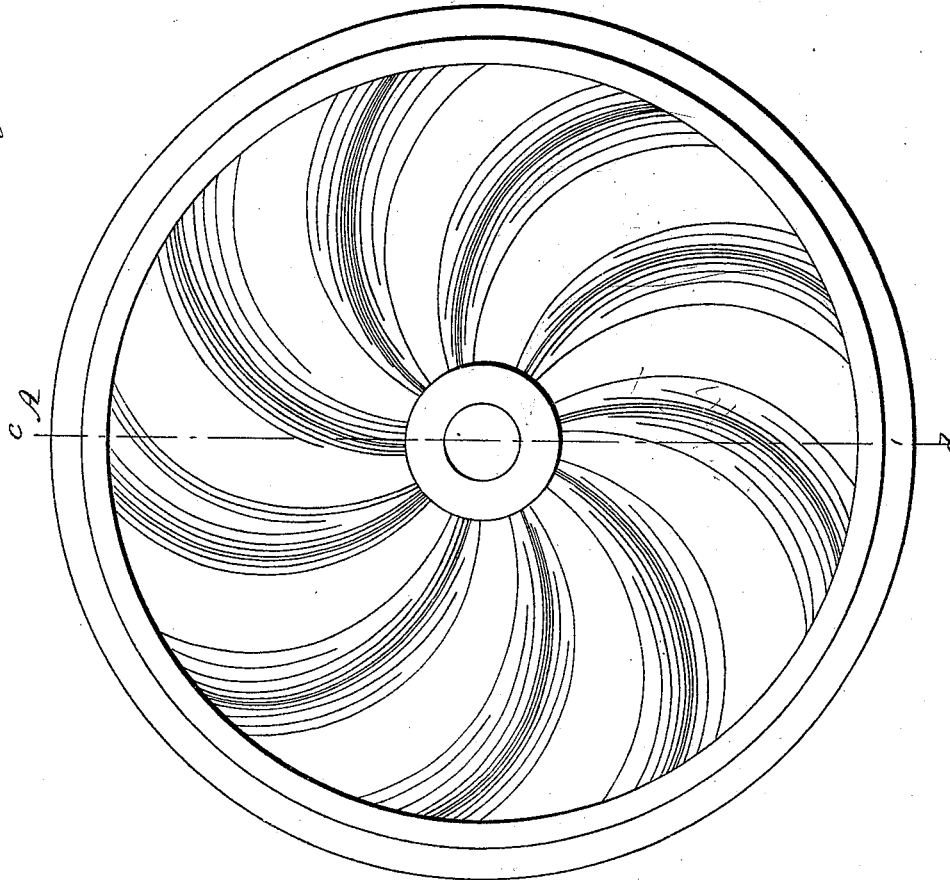


Fig. 1.



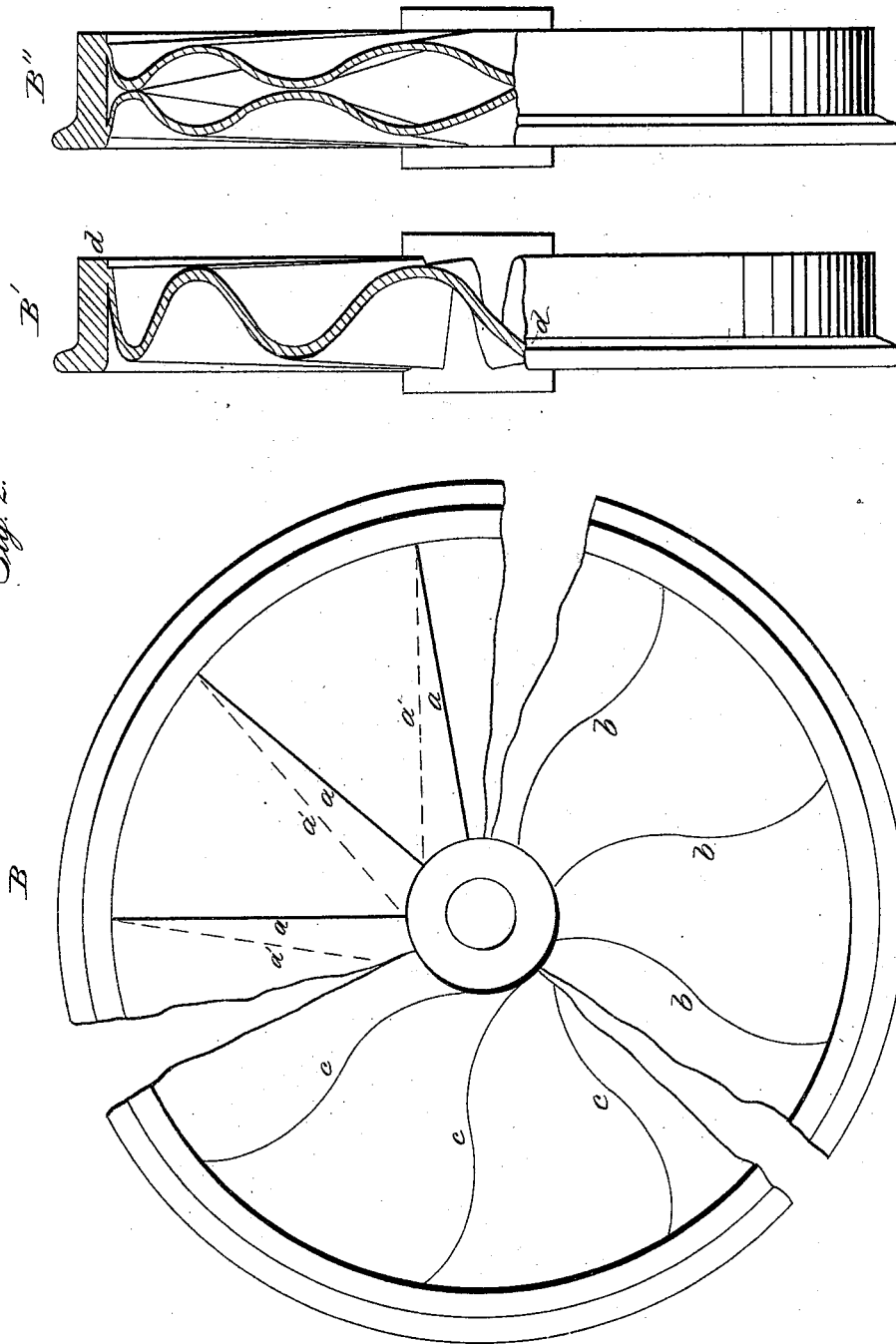
A. WHITNEY.
Car Wheel.

3 Sheets—Sheet 2.

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Fig. 2.



A. WHITNEY.
Car Wheel.

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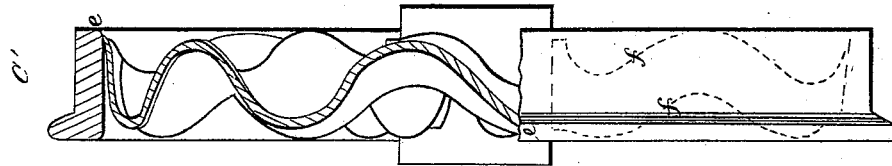
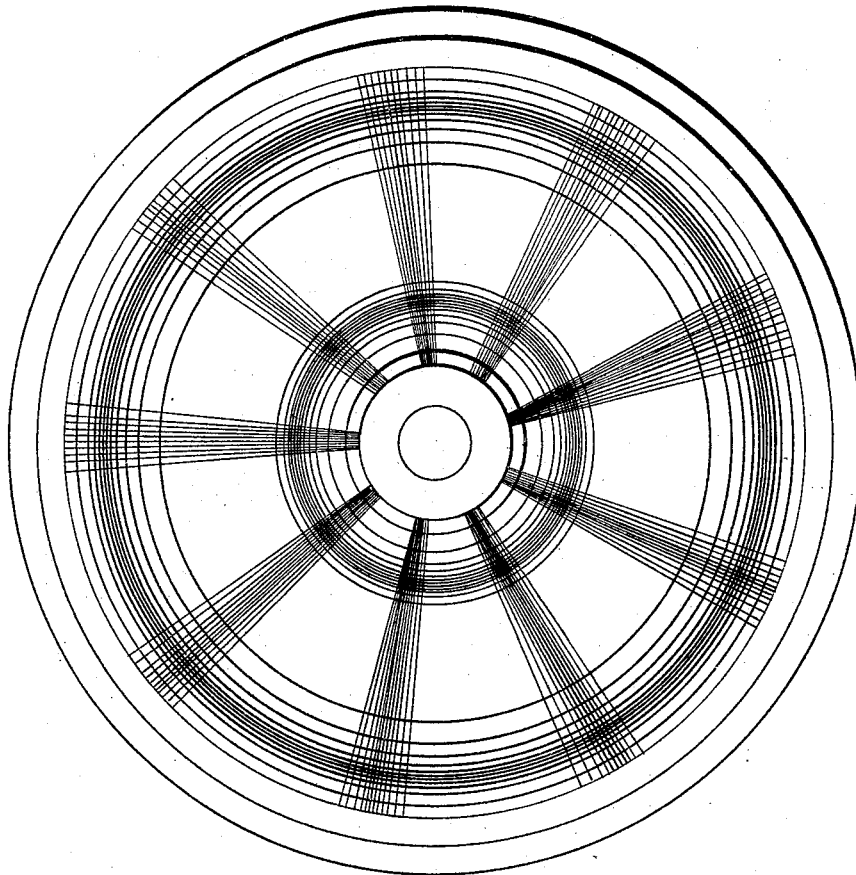


Fig. 3.

c



UNITED STATES PATENT OFFICE.

ASA WHITNEY, OF PHILADELPHIA, PENNSYLVANIA.

CAST-IRON CAR-WHEEL.

Specification of Letters Patent No. 5,126, dated May 22, 1847.

To all whom it may concern:

Be it known that I, ASA WHITNEY, of the city of Philadelphia, in the State of Pennsylvania, have made a new and useful Improvement in the Manner of Constructing the Wheels of Railroad Cars or Carriages; and I do hereby declare that the following is a full and exact description thereof.

10 The design of my improvement is to give a greater degree of elasticity than has heretofore been given to the wheels used on rail roads, and to provide more perfectly for their ready expansion and contraction
15 in virtue of such elasticity, and that whether said wheels are made entirely of cast iron, or of a combination of cast and wrought iron, or other metal, my improved wheels are of the kind in which the space between
20 the rim and the hub or nave, consists of a disk or disks, instead of the spokes that have been most generally employed. These disks I make corrugated in such manner as that a vertical section cutting them through their
25 centers, and also a like division of them into circles, at any point between their rims and naves, would present waved, curved, or sinuous lines, which may be either of continuous curves, or of straight lines and angles, said wheels being corrugated in one or
30 more of the forms shown in the annexed drawings, marked Figures 1, 2, and 3, or in any other form in which both the transverse and circular sections above named,
35 would produce such sinuous or waved lines. I am aware that car wheels have been made with disks that were concave convex, both double and single and that they have also been made with disks the transverse section
40 of which from the rim to the hub, would present a waved line, consisting of two or more curves; but neither of these forms fulfil the condition of allowing a free expansion and contraction in all directions,
45 resulting from the elasticity consequent on the manner of corrugating them.

In Figure 1, of the accompanying drawings A, is a side view of a wheel, having a disk with the corrugations curving spirally
50 from the hub to the rim, in the form of volutes; the shading serving to show the curve and form of the corrugations.

A', is an edge view of the wheel, with a part of the rim off to show the form of the

disk where it connects with the rim, by the 55 sinuous lines from *a*, to *a*, in perspective.

A'', is a top view of the hub, or nave, showing in perspective the form of the disk where it connects with the hub by the sinuous lines from *b*, to *b*; and similar sinuous 60 lines would also be produced by circular sections through the disk at any distance from the center of the wheel.

A''', is a transverse section of the wheel, on the line *c*, *d*, representing the form of the 65 disk between the hub and the rim, as from *e*, to *e*.

B, Fig. 2, represents, in a side view, three several forms of corrugating the disk. 1st, those shown by the straight dotted lines *a'*, *a'*, 70 *a'*, which are inclined from the radial lines *a*, *a*, *a*; and which lines may be inclined more or less from the lines *a*, that are perpendicular to the center; the inclined position of the lines *a'*, when the disks are corrugated 75 or formed into waves, in that direction, in the manner of the spiral volutes in Fig. 1, will cause them to present waved, or sinuous lines in the sections designated in describing that first form of wheel. The sec- 80 ond form in this figure, is that represented by the reversed curved lines *b*, *b*, *b*, the common chord of both curves being perpendicular to the center. A third form is shown on the reversed curved lines *c*, *c*, *c*, the common 85 chord of both curves, being more or less inclined from lines perpendicular to the center.

B', is an edge view of a wheel, of either of these kinds, with part of the rim off, to 90 show its form, where it connects with the rim, as by the lines *d*, to *d*, in perspective; the disks in the foregoing cases are represented as single.

B'', is an edge view, with part of the rim 95 off, showing a double disk, corrugated in any of the forms represented in A or B.

Fig. 3, represents a wheel with the corrugations of the disk radiating from the hub to the rim in straight lines perpendicular 100 to the center, and these corrugations crossed by others running around the center. In the side view C, the double set of corrugations is shown by the shading. C', is an edge view with part of the rim off, to show 105 the form of the disk, in perspective, where it connects with the rim, as by the sinuous lines *e*, to *e*. The dotted lines *f*, *f*, show the

form of the corrugations around the center, which may also be combined with either of the forms of disk shown by Figs. 1 and 2. This form of disk may also be made double as well as those shown by Figs. 1 and 2.

Disks of either of these forms of corrugations may be made of cast or of wrought iron, and attached to, wrought or cast hubs and rims, as may be desired. When the wheel is made wholly of cast iron, the hub, disk, and rim, may be all cast together at the same heat; or the disk may be cast separately and when thus cast placed in the mold and the rim and hub subsequently cast on the disk; or the disk and rim, or the disk and hub may be cast together at one heat, and those parts laid in the mold, and the remaining part, hub or rim, cast on to them at a subsequent heat. When the wheels are made in parts, the connection between the hub, rim and disk may be made in any of the known ways employed in constructing railroad wheels.

The advantages expected to result from the use of wheels having their disks corrugated in the manner herein set forth are as follows. First. To provide for the inequality of shrinkage due to the successive order of time in which the several parts of the cast iron chilled wheel cool, I make the disk corrugated, and connect it with the rim and hub, in such manner (depending on the form of corrugation) as to allow of its expansion and contraction, both in diameter and circumference simultaneously, during the process of casting and cooling; and in this way compensate for the contest that would exist between the exterior and interior parts of the wheel if made of such form as to be nonelastic or unyielding. Second. Cast iron chilled wheels when made in the form and manner described above, will not require their hubs to be cast in sections; and consequently the expense will be saved of subse-

quently filling the spaces between such sections with some suitable metal and of putting wrought iron bands on the hubs as has been necessary for all the spoke wheels and most of the disk wheels as heretofore used. Those disk wheels which have not been cast with their hubs in sections, have been necessarily made much heavier than would have been requisite but for the want of elasticity in the disk while being cast and cooling; and none of them have as yet proved as durable as the spoke wheel. Third. By these corrugated forms of disk the rim or tread of the wheel is better supported than by any form of disks, or spokes heretofore used; and wheels made of any suitable materials, with disks corrugated in one or more of the forms above described, or in any other involving the same principle, and connected with the rim and hub in the best manner for the form of corrugation employed will be much more strong and durable than those made of the same weight of material in any other form heretofore employed.

I do not claim that the invention above described is an improvement in the form or construction of any other part of railroad wheels than that contained between the hub and rim; nor do I claim to be the inventor of any new and improved mode of fastening or attaching the hub and rim to the disk. But

What I do claim as my invention, and desire to secure by Letters Patent is—

The corrugating of the disks of railroad wheels in such manner as that they are rendered elastic and flexible, and are susceptible of expansion and contraction by the yielding of the corrugated parts both in diameter and circumference simultaneously.

A. WHITNEY.

Witnesses:

GEO. WHITNEY,
THOS. P. JONES.