B. SEVERSON.

Car Wheel.

No. 7,658. Patented Sept. 17, 1850.

Fig. 1.

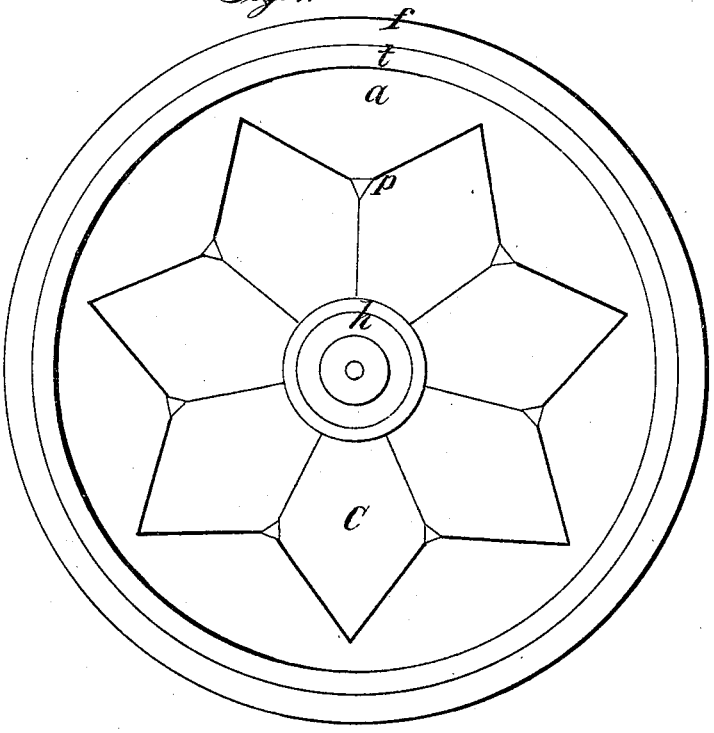
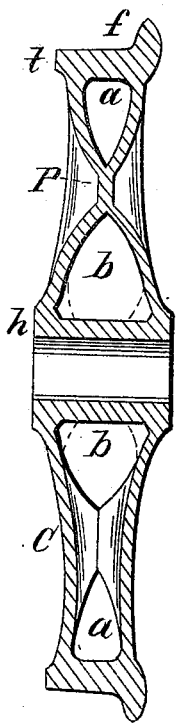


Fig. 2.



UNITED STATES PATENT OFFICE.

BENJ. SEVERSON, OF SCHENECTADY, NEW YORK.

CAST-IRON RAILROAD CAR-WHEELS.

Specification of Letters Patent No. 7,658, dated September 17, 1850.

To all whom it may concern:

Be it known that I, BENJAMIN SEVERSON, of Schenectady, in the county of Schenectady and State of New York, have invented a new and Improved Form of Cast-Iron Car-Wheel; and I do hereby declare that the following is a full and exact description.

The nature of my invention consists in having the sides of the hollow part of the wheel symmetrical in form and amount of metal, having an equal amount of surface internally and externally, thus insuring an equal amount of contraction in cooling, having the sides united in one thickness of plates at points nearly equidistant from hub and tread, and the parts adjacent to these plates united to them in the form of pointed arches, the parts between these plates raised so as to give the wheel sufficient lateral strength, and these raised parts will take nearly the form of hollow arms, having their radial sides curved inward or toward each other, and not have any portion of them bulged or curved outward, thus having all parts well bound together giving the whole a great amount of lateral strength to resist wrenching, and yet all parts of the metal nearly in the direction of the stress or forces acting upon them.

It is well known, that nothwithstanding the many different forms adopted to provide for the peculiar effect of chilling and contraction in cooling of car wheels, all seem to be more or less imperfect, or objectionable. Plate wheels seem not to be sufficiently bound together. And being in some parts bulged or curved outward, they are liable to an injurious degree of vibration. This bulged form, seems to be highly objectionable when toyed by the laws that govern forces. Pressure, a jar, or concussion, will cause these bulged plates to separate and break, split the tread, and perhaps shiver the entire wheel. Some parts of the pipe wheels seem to be liable to the same objection, bulged.

Another objection, common to the plate and pipe wheels now in use, is, that the metal is no symmetrically disposed nor as nearly in the direction of the stress or forces acting upon the different parts as it might be. If the above objections are well founded, then there seems to be a decided improvement in the plan now presented. In this it would seem to require nearly a crushing force to break it. Although the three sides formed about these spherical triangular plates are slightly curved outward, or would cut a line drawn straight from the point of contact with the plates and tread or hub still the curve would not cut a straight line drawn from said points of contact of hub and tread. And as these curved sides form a spherical triangular concavity about the sides of all these plates, they will mutually support each other. And this result is further secured by the superior or greater amount of projection outward of the hub and tread and the raised parts or hollow arms (if arms they may be termed) being curved inward or toward each other.

To enable other skilled in the art to make and use my invention I will proceed to describe its construction and principle.

Figure 1, is a view of the outside of the wheel. Fig. 2, is a vertical section taken through the center of Fig. 1,—all drawn 2 inches to the foot.

Similar letters refer to corresponding parts.

a, *a*, is the hollow part next the tread.

b, *b*, is the hollow part about the hub. C, hollow part connecting coves *a*, and *b*.

f, is the flange.

t, is the tread. *p*, plates of which there should be an uneven number, say 5, 7, or 9, so that they may not be opposite each other, or in a straight line with the center of the wheel. This is thought to be a good provision to favor the contraction in cooling of the entire wheel. *h*, solid part of hub, which may have slight openings between the hollow part *b*, and the eye for the axle, if desired for venting the core or otherwise, though I prefer to have the hub solid as represented. The section represented in Fig. 2 is taken vertically through Fig. 1, dividing the plate at *p*, and the hollow part or arm at C, through the center. At C, in Fig. 2 is seen the interior of the hollow part, of which there are seven in Fig. 1, and all alike. At *p*, is seen, in Fig. 2, the exterior of the same part, and the manner of joining in the form of pointed arches to the single plates that bind the sides of the wheel together. The section taken transversely at, *a*, should have as little width as is consistent with the safety of the flange, the outer edge of the tread and a sufficient amount of curvature in the sides between

the tread and hub, the object of which is to bring the joining of the sides to tread near together to avoid the necessity of using too great a thickness of metal in the tread, or else back the tread with brackets to give it sufficient strength. Brackets, arms or corrugations passing transverse or obliquely across the back of tread are objectionable, as the unequal thickness of the metal at different points in the tread where these are united to it, cause the chill to have an unequal effect on the tread and consequently will not wear even.

The pointed arches formed around the triangular plates may be more or less depressed or raised as may be required or they may be of a parabolic form, though I prefer the form and proportions represented and described.

I do not claim as my invention the solid hub, nor having a portion of the wheel hollow. Neither do I claim anything like the concentric plates or bands as used between concentric hollow rings, hubs, or fellies. And I do not claim having invented the principle of making the number of points of union about a center in casting, uneven.

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

A castiron wheel in one piece, having the rim connected to the hub by two plates, joined together at intervals, at points as small as may be and nearly equidistant from the rim and hub—said plates being of such form, that each section by the plane of the axes, passing through the points of union, shall present two pointed arches, uniting at the apex, the one springing from the ends of the solid hub, and the other from the edges of the rim, and a similar section between the points of union, shall bestow flat curved lines bending toward each other and joining the ends of the solid hub with the edges of the rim; and a circular section passing through the points of union of the two plates, shall produce a double series of flat arches, united to each other at their ends. The wheels being constructed substantially in the manner and for the objects herein set forth.

BENJAMIN SEVERSON.

Witnesses:
WM. P. ELLIOT,
A. E. H. JOHNSON.