

(No Model.)

G. VOLK.  
METAL WHEEL.

No. 418,253.

Patented Dec. 31, 1889.

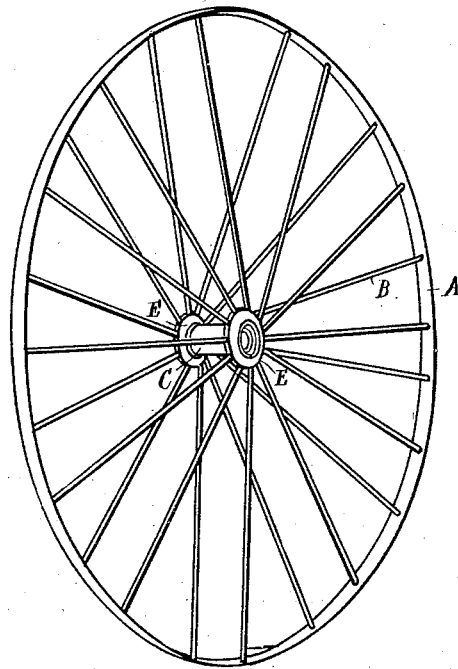


Fig. 1

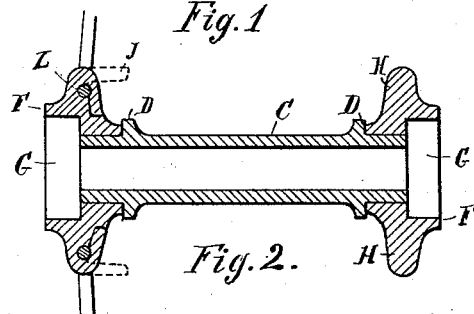


Fig. 2.

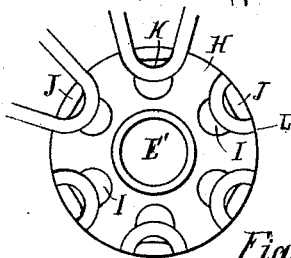


Fig. 3.

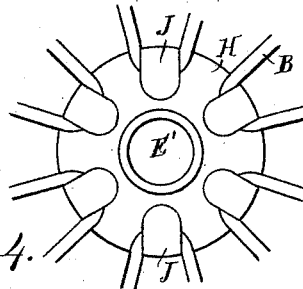


Fig. 4.

Witnesses.  
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# UNITED STATES PATENT OFFICE

GEORGE VOLK, OF TOLEDO, OHIO.

## METAL WHEEL.

SPECIFICATION forming part of Letters Patent No. 418,253, dated December 31, 1889.

Application filed May 6, 1889. Serial No. 309,746. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE VOLK, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Metal Wheels; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

My invention relates to metal wheels of the character used for children's carriages, bicycles, velocipedes, &c., and has for its object to construct a wheel in which the hub-sections are formed of a single piece of metal that shall be easy to cast of malleable iron, or that can be readily drop-forged out of steel, if desired, and that when in engagement with the spokes shall present a smooth finish.

The invention consists in the parts and combination of parts hereinafter described, and pointed out in the claims.

Heretofore, in the branch of the art to which my invention belongs, the hub has been formed of several parts, requiring a nicety of finish to adjust the same that renders the wheel expensive, with great liability of the same getting out of repair. In other constructions the wheel has been formed with a single section upon each end of the spindle; but in these constructions the method of forming the same has been found to be exceedingly expensive, and in some forms of hubs of this character the appearance of the hub has condemned the same for purposes where ornamentation is essential.

It is my object to construct a wheel that shall be neat in appearance, cheap to manufacture, and strong, and in which the spokes shall be confined within the hub-sections by overlapping lugs of a peculiar construction, that shall fold into depressions in the hub-section in a manner to form a smooth side to the same.

In the drawings, Figure 1 is a side elevation of a complete wheel. Fig. 2 is a longitudinal vertical section through the hub. Fig. 3 is a plan view of one of the hub-sections prior to fastening the spokes therein. Fig. 4

is a like view with the spokes secured in position.

A designates the rim of the wheel; B, the spokes, which are of the kind known in the art as "return-spokes"—i. e., two spokes are formed of a single piece of wire by bending the wire centrally thereof and securing the bend in the hub-section and the free ends in the rim by riveting the same.

C represents a thimble formed with shoulders D, against which hub-sections E abut. Each section E is formed with a central perforation E', through which the end of the thimble C passes, and upon the outer side of the section is formed a hub-band F, integral therewith, the band F being formed by reason of an annular chamber G, formed in the outer side of the section. The inner face of each section is formed with radial surfaces H, extending from the perforation E' to the periphery, and between each surface H are depressions I, extending from near the center toward the periphery.

J designates studs formed integral with the section and projecting at right angles to the periphery. Each stud is preferably of semicircular form in cross-section, and of a length that when bent at right angles the end portion will lie within depressions I and the outer surface of the stud present the same contour as the radial surfaces, whereby the hub presents a smooth and even appearance.

K designates a semicircular portion of the stud formed of a larger radius than the upper portion, and L designates a semicircular depression surrounding the enlarged portion of the stud, this recess being of a size to allow the bend of the spoke to seat therein and project from the periphery of the section centrally of the width thereof.

By the construction described, it will be seen that the hub-sections can be readily cast, there being no lateral projections to prevent withdrawal of the pattern from the mold, thereby reducing the expense of manufacture to a minimum.

In assembling the parts to form a wheel the sections are placed upon the thimble C, the spokes are placed with the return-bend within the semicircular depressions L and against the semicircular enlargements K of the studs. The studs are then closed over

the bends of the spokes and the ends forced into the depressions I, thereby forming a smooth and even surface to the inner face of the section. The spokes are held firmly against the enlarged portion of the stud and within the semicircular groove, thereby forming a strong and durable wheel when the spokes are secured to the rim.

What I claim is—

1. In a wheel, hub-sections formed each of a single piece, with a sand-band upon the outer face and projecting lugs upon the inner face at right angles thereto, with depressions coincident with the lugs adapted to receive the same when bent at right angles upon spokes placed over the lugs, whereby said lugs lie flush with the inner face of the section, as and for the purpose set forth.

2. In a wheel, a thimble, a hub-section upon each end thereof, each section being formed with projecting lugs at right angles to the inner face of the section and semicircular recesses at the base of the lugs, recesses extending axially to the semicircular recesses, adapted to receive the ends of the lugs when bent to embrace the bend of spokes, as and for the purpose set forth.

In testimony that I claim the foregoing as my own I hereby affix my signature in presence of two witnesses.

GEORGE VOLK.

Witnesses:

WILLIAM WEBSTER,  
DAVID E. WATSON.