(No Model.)

W. P. & J. W. BETTENDORF.

METALLIC WHEEL.

No. 458,410. Patented Aug. 25, 1891.

Fig. 1.

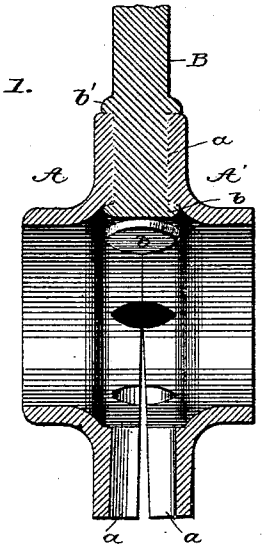


Fig. 2.

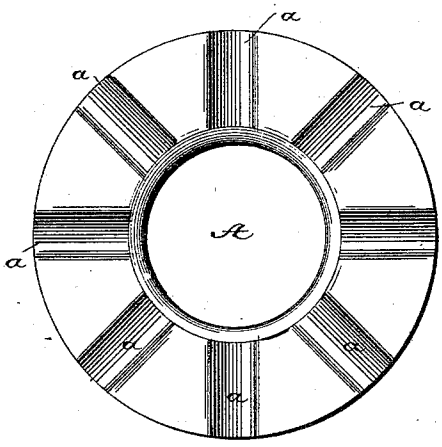


Fig. 3.

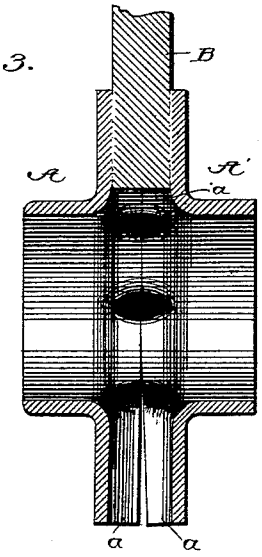


Fig. 4.

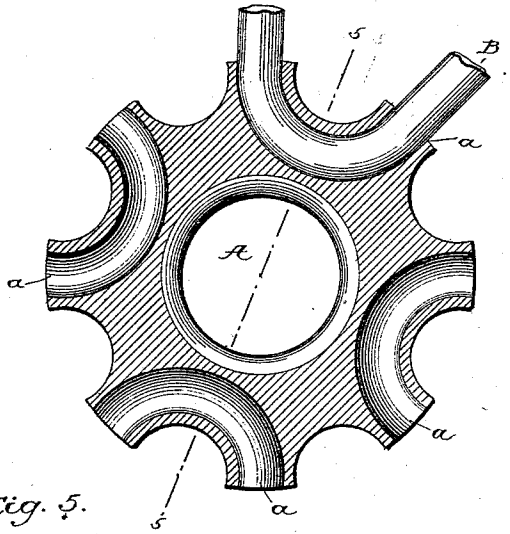
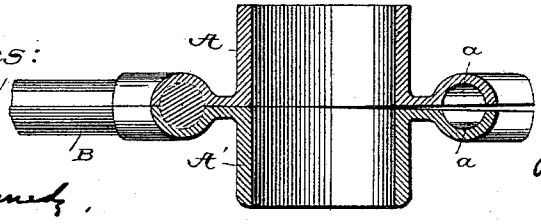


Fig. 5.

on line 5-5.



Witnesses:

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N. R. Kennedy.

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By Phil. T. Dodge Atty

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM P. BETTENDORF AND JOSEPH W. BETTENDORF, OF DAVENPORT, IOWA.

METALLIC WHEEL.

SPECIFICATION forming part of Letters Patent No. 458,410, dated August 25, 1891.

Application filed May 10, 1890. Serial No. 351,309. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM P. BETTENDORF and JOSEPH W. BETTENDORF, of Davenport, in the county of Scott and State of Iowa, have invented certain Improvements in Metallic Wheels and the Method of Making Same, of which the following is a specification.

Our invention relates to an improved metal wheel.

Our wheel consists of metal spokes, the inner ends of which are seated between and welded to two metal plates, the two annular grooved plates thus applied and united to the spokes and to each other constituting in effect a hub integral with the spokes.

Our method of manufacture consists in introducing the ends of the metal spokes, one or more at a time, between the metallic plates and welding the parts thus assembled together. The form of the spokes and tenons may be modified at will in order to adapt the wheels for different uses or to suit the fancy of the maker, and the means employed for heating and welding the parts may be of any suitable character. We prefer under ordinary circumstances to press the hub-plates into shape by suitable dies from sheet metal with indentations in their proximate faces to receive the spokes. We also prefer to use solid metal spokes with shoulders or enlargements to engage the hub-plates and aid in holding the spokes against end motion.

In the accompanying drawings, Figure 1 is a central cross-section through the center of a wheel constructed on our plan, the spoke being shown in position on one side. Fig. 2 is an inside face view of one of the hub-plates. Fig. 3 is a central cross-section through the center of a wheel of slightly-different form. Fig. 4 is an inside face view of a hub-plate in still another form, adapted to receive the spokes formed in pairs, one of said double spokes being shown in position thereon. Fig. 5 is a cross-section on the line 5 5 of Fig. 4.

Referring to Figs. 1 and 2, A A′ represent annular metal plates constructed in duplicate. These plates are usually formed each from a single piece of sheet metal pressed by any appropriate dies. The outer edges of the plates, which are turned outward to face each other, are provided with complementary radial depressions *a*, to receive the inner ends of the spokes, so that when the spoke is introduced and the plates closed together it will be closely encircled by them. Each plate is also formed with an annular flange turned outward on one side around the central opening, so that when the two plates are united their flanges, extending in opposite directions, will, as shown in Figs. 1 and 3, give the requisite length to the hub to receive the axle or axle-box.

B represents a solid metal spoke having its inner end adapted to fit between the two plates into the depressions therein. The spoke is provided at the inner end with a head or enlargement *b*, and also provided at a distance therefrom with a second annular shoulder or enlargement *b′*. The spoke passes between the two plates from the outer edge to the central opening, and the plates are welded firmly to the spokes, and, preferably and usually, welded to each other also. The two plates constitute jointly a hub. The head *b* and shoulder *b′* bear, respectively, against the inner and outer sides of the hub, and thus assist in holding the spoke against end motion. The head and shoulders may be omitted, if desired, or, if present, they may be welded to the hub-plates or not, as preferred.

In Fig. 3 we have represented a wheel of essentially the same construction as that above described, the principal difference being that the spokes are in this case without the heads or shoulders.

In Figs. 4 and 5 we have illustrated a wheel in which the spokes are formed in pairs by bending a single rod into V form, the angular portion being attached to the hub, while the two ends extending radially form two distinct spokes, as in other wheels already known in the art. The hub-plates are in this instance formed with complementary depressions or cavities adapted to receive and inclose the angular portion of the spoke. The two plates and the spoke are welded firmly together.

In constructing our wheel it is our usual practice to introduce the spoke between the two plates, as represented in Fig. 5, to heat

the various parts while they are thus assembled, and to subject them while heated to pressure or blows sufficient to effect the welding action. The heating may be effected either by a suitable flame or furnace or by electric-welding presses, such as are now known in the art, adapted to pass an electric current through the several parts for heating purposes and at the same time to apply pressure.

It is to be observed that our hub consists of but two parts or members—the annular plates—and that the spoke-receiving sockets are produced by grooves formed in the opposing faces of these plates, so that when the plates are brought together the portions which enter between the spokes are integral with or constituent parts of the plates. In this regard our wheel is clearly distinguishable from those in which the hub is built up from two flat plates between which the spokes are seated, and a series of sector-shaped filling-blocks introduced between the plates and spokes.

Having thus described our invention, what we claim is—

1. In a metal wheel, the combination, with intermediate spokes, of two annular plates provided with spoke-receiving grooves in their proximate faces and with annular flanges around the central opening to give the requisite length to the hub, said parts welded together, as described and shown.

2. A wheel-hub consisting of two annular plates having complementary grooves stamped in their inner faces and welded together face to face.

In testimony whereof I hereunto set my hand, this 5th day of May, 1890, in the presence of two attesting witnesses.

WILLIAM P. BETTENDORF.

Witnesses:
PHILIP T. DODGE,
W. R. KENNEDY.

In testimony whereof I hereunto set my hand, this 7th day of May, 1890, in the presence of two attesting witnesses.

JOSEPH W. BETTENDORF.

Witnesses:
S. S. STACKHOUSE, Jr.,
AUG. A. BALLUFF.