No. 683,832. Patented Oct. 1, 1901.

D. BAKER.

METHOD OF MAKING METAL WHEELS.

(Application filed June 21, 1900. Renewed May 11, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

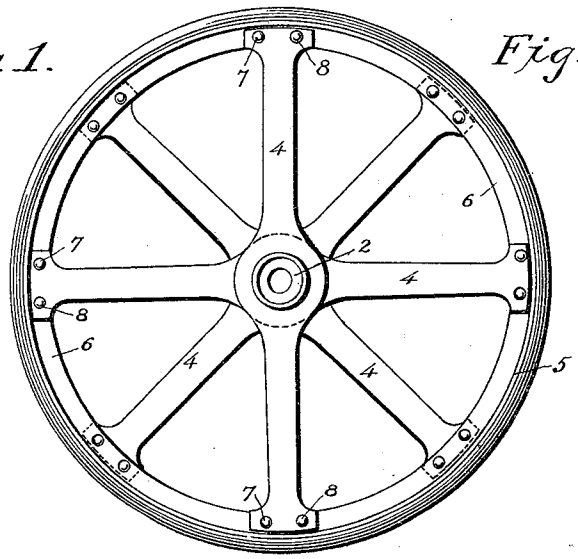

Fig. 2.

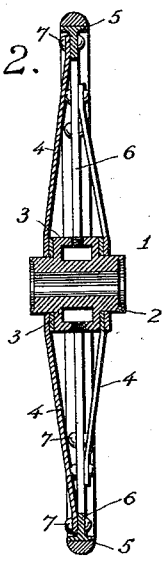

Fig. 3.

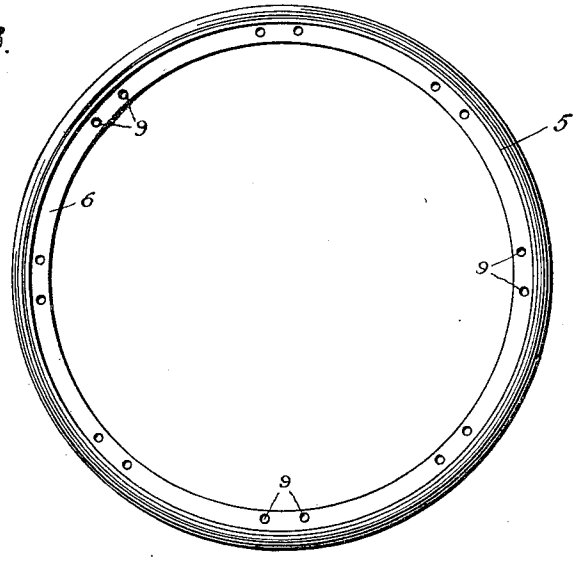

Fig. 4.

Fig. 5.

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Fig. 6.

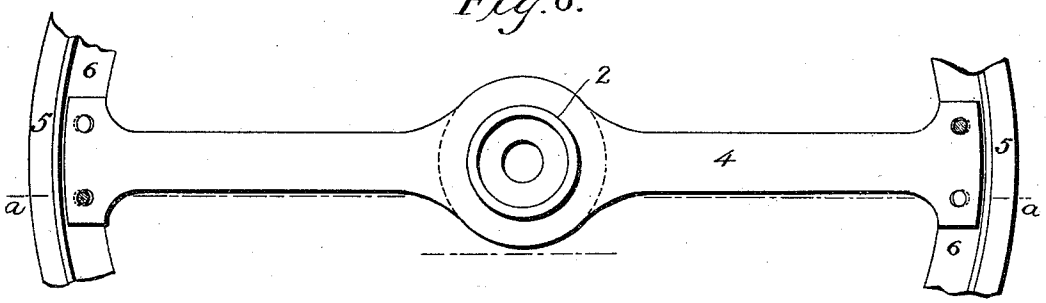


Fig. 7.

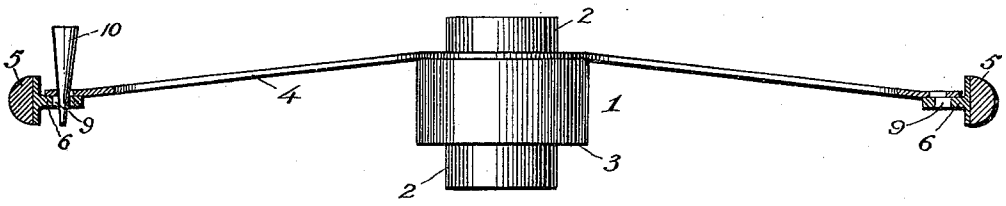


Fig. 8.

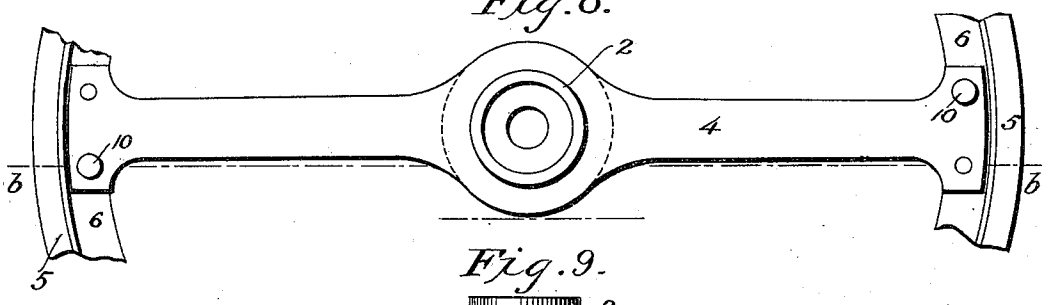
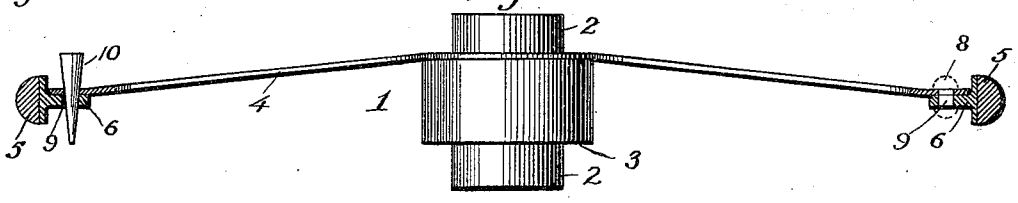


Fig. 9.



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UNITED STATES PATENT OFFICE.

DAVID BAKER, OF CHICAGO, ILLINOIS.

METHOD OF MAKING METAL WHEELS.

SPECIFICATION forming part of Letters Patent No. 683,832, dated October 1, 1901.

Application filed June 21, 1900. Renewed May 11, 1901. Serial No. 59,830. (No model.)

To all whom it may concern:

Be it known that I, DAVID BAKER, of Chicago, county of Cook, and State of Illinois, have invented a new and useful Improvement in Methods of Making Metal Wheels, of which the following is a specification.

This invention relates to the manufacture of metal wheels; and it consists in an improved method of making wheels, as will be fully described hereinafter.

In the accompanying drawings, Figure 1 is a side elevation of my improved wheel. Fig. 2 is a central transverse sectional elevation of same. Fig. 3 is an elevation of the rim of the wheel. Fig. 4 is an elevation of one of the spokes. Fig. 5 is an edge view of the same. Fig. 6 is a plan view showing one of the spokes in position on the hub and rim preparatory to being placed under tension and fastened in place. Fig. 7 is a longitudinal sectional elevation of same on the line *a a* of Fig. 6. Fig. 8 is a plan view showing the spoke under tension ready to be riveted. Fig. 9 is a longitudinal sectional elevation through the same on the line *b b* of Fig. 8, showing one of the rivets in dotted lines.

Referring to the drawings, as shown in Figs. 1 and 2, my improved wheel comprises a hub 1, formed with reduced ends 2 and shoulders 3, a series of superposed continuous spokes 4, formed midway between their ends with openings surrounding the reduced ends of the hub, and a rim 5, provided with a web 6, to which the ends of the spokes are firmly attached, each by two rivets 7 and 8.

As shown in Figs. 4 and 5, the spokes consist of a sheet-metal strip enlarged at its center to form a surface adapted to bear against the shoulders on the hub and widened at its ends where it is riveted to the web of the rim, the spoke between its ends being bent permanently outward previous to its being placed under tension and fastened in position. The wheel in the present instance comprises four continuous spokes of the construction described, two of which are situated on each side of the hub at right angles to each other, those of one side alternating in position with the opposite spokes. The inner spokes of each side bear directly against the shoulders on the hub, while the other spokes bear on the inner ones, as clearly shown in Fig. 2. The spokes are placed under tension in the operation of attaching their outer ends to the rim, so that a wheel is produced in which the spokes encircle an integral hub and are secured firmly at their ends to the rim under tension.

In carrying my improved method into practice to produce a wheel of the form described I form the web 6 at intervals with pairs of holes 9, a distance apart corresponding to the distance between the holes in the ends of the spokes which receive the rivets 7 and 8, and I pass the first spoke over the reduced end of the hub and place the latter in position within the rim, so that the ends of the spoke will rest on the web. The length of the bent spoke is such that when in this position the holes will be slightly out of register, those in the spokes being slightly inward of those in the web, as shown in Figs. 6 and 7, the difference in position representing the degree of elongation the spoke will be subjected to to produce the requisite tension when secured. Tapered plugs 10, greater in diameter at their larger ends than the holes, are now passed through the diagonally opposite holes in the spoke and web and driven firmly home to the position represented in Figs. 8 and 9, which action will elongate the spoke, thereby placing it under tension and causing the holes in the spoke and web to truly register. Rivets are now passed through the holes in the spoke and rim opposite those occupied by the plugs and are properly headed to form a firm connection, after which the plugs are withdrawn and other rivets substituted for them. The spoke on the opposite side of the wheel is next by a similar operation secured in place at right angles, after which the other two spokes are secured in like manner, thus completing the wheel, with all the spokes firmly riveted in place and under tension.

The feature of giving the spokes a permanent bend previous to their attachment to the rim is of advantage in wheels of this character in that a much smaller degree of tension is necessary to give the wheel the requisite degree of resistance against bending and tor-

sional strain than if the spokes were straight throughout. In this latter case a greater elongation would be required to produce the same degree of resistance against bending strains.

It will be noted that the hub of my improved wheel is integral and free from relatively movable parts, the tension not being due to a relative movement of the hub, but being given the spoke previous to its attachment to the rim. This produces a wheel simple in construction and of few parts and one well adapted to successfully stand the severe usages to which they are in certain situations subjected.

Having thus described my invention, what I claim is—

1. In the method of making wheels, subjecting the spokes at opposite ends to a stretching action lengthwise thereof, and securing both ends of the spokes to the rim while in this condition.

2. In the method of making wheels, providing spokes bent permanently between their ends beyond a straight line passing longitudinally therethrough, subjecting the bent spokes to a longitudinal stretching action tending to straighten them, and finally securing the spokes to the rim while subjected to strain.

3. In the method of making wheels, subjecting the spokes at diagonally opposite ends to a stretching action and securing spokes at their adjacent diagonally opposite ends to the rim.

4. In the method of making wheels, subjecting the spokes at diagonally opposite ends to a stretching action, securing the spokes to the rim, relieving the spokes of the strain first applied, and finally securing the spokes to the rim at the points thus relieved of strain.

5. The method of making metal wheels which consists in providing a rim, hub and spokes, passing the spokes over the end of the hub, subjecting the spokes to a longitudinal straining action tending to elongate them, and finally securing the spokes to the rim in this condition.

In testimony whereof I hereunto set my hand, this 11th day of June, 1900, in the presence of two attesting witnesses.

DAVID BAKER.

Witnesses:
W. J. MELONI,
HOLLIS A. FOX.