(No Model.)

C. O. WILDER.

ART OF MAKING METALLIC WHEELS.

No. 286,754. Patented Oct. 16, 1883.

Fig. 1.

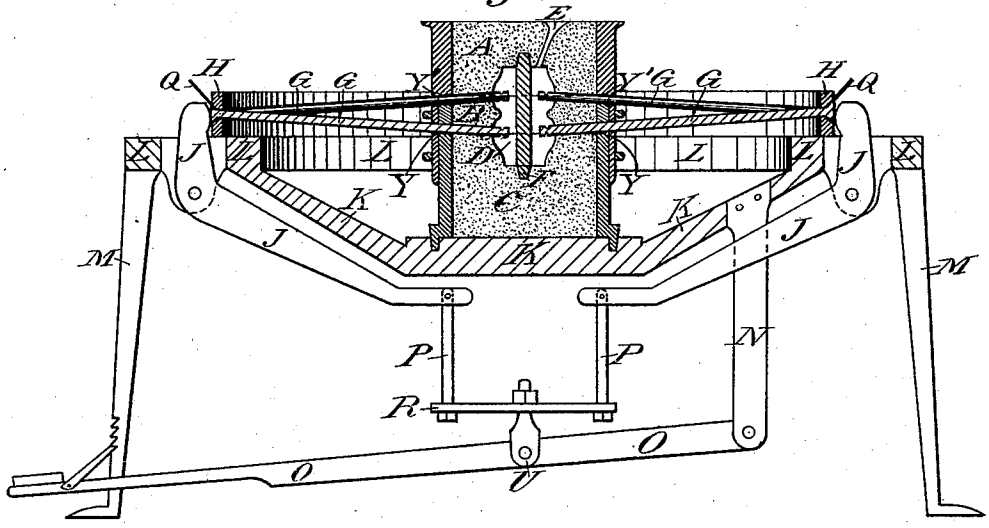


Fig. 2.

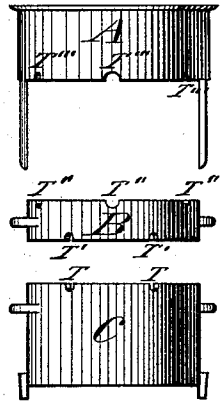


Fig. 3.

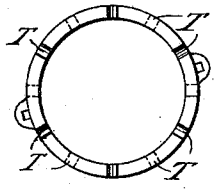
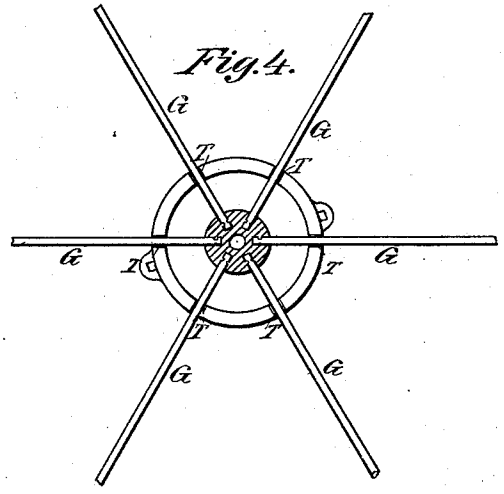


Fig. 5.



Fig. 4.



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UNITED STATES PATENT OFFICE.

CHARLES O. WILDER, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE NORTH-WESTERN STEELE WHEEL COMPANY, OF SAME PLACE.

ART OF MAKING METALLIC WHEELS.

SPECIFICATION forming part of Letters Patent No. 286,754, dated October 16, 1883.

Application filed August 11, 1883. (No model.)

To all whom it may concern:

Be it known that I, CHARLES O. WILDER, of the city of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in the Manufacture of Staggered-Spoked Metallic Wheels, of which the following is the specification, reference being had to the accompanying drawings, in which similar letters of reference indicate like parts in all the figures.

My invention relates to that class of metallic wheels which are formed by casting the hub onto the inner ends of the spokes, which have previously been placed in the rim in the herein-after-described manner, and has for its object the utilizing of the shrinkage of the hub in cooling for the purpose of tightening the spokes, and I accomplish this in the following manner.

Referring to the drawings, Figure 1 represents a section of a machine which I employ in the manufacture of wheels by my improved method. Fig. 2 represents an elevation of the flask used for casting the hub, showing the cope A, cheek B, and drag C. Fig. 3 shows a plan view of the drag C. Fig. 4 represents a plan view of the drag C and a section of the hub, with the spokes G G G, &c., in position. Fig. 5 is a section of the hub *x*, a spoke, G, and a segment of the rim H, showing the relative positions of the rim H and the head *z* of the spoke G before casting.

In making metallic wheels by my improved method I use the machine shown in Fig. 1 as a matter of convenience only, and do not regard it as essential to the successful practice of my invention. The said machine consists of an annular plate, L, having inserted through it at regular intervals, equal in number to the spokes of the wheel to be formed, the crank-levers J, each of which is attached to and operated by the foot-lever O in the manner shown in the figure.

K is a circular plate hung below the open central part of the annular plate L, and supports the flask A B C, in which is molded in the usual manner the hub D of the wheel. The flask is insured a proper position on the plate K by means of the lugs on the bottom of the drag, which engage in corresponding holes in the plate K, as shown in the drawings. I first place in position the drag C of the flask. This drag is provided, as shown in Fig. 2, with the semicircular notches T T, &c., on its upper edge, equal in number to half the number of spokes in the wheel. I then place, in the position shown in Fig. 1, the rim H H of the wheel, which I form of a single piece of metal, with spoke-holes, corresponding in number with the spokes, drilled through and countersunk on the outside, as shown in Fig. 5. The rim H is placed in such a position on the plate L that the holes therein will be a little to one side of the corresponding lever, J, the purpose of which will be seen presently. I next insert through each alternate hole in the rim, and can do so by reason of its being to one side of the levers J, the spokes G G, &c., each of which is provided on its outer end with the rivet-head *z*. The inner ends I lay in the semicircular openings T in the drag. I next place on the drag C the cheek B, having in its under edge the semicircular openings T′ T′, &c., to correspond with those of the drag C, and having on its upper edge, at equal intervals between the openings T′ T′, the openings T″ T″ T″. The cheek B being in position, I insert the remainder of the spokes, and place in position the core F and the cope A. The construction of the flask and the molding of the hub are of the usual method.

The leading feature of my invention is here seen. When I pass the spokes G G, &c., through the rim H into the mold of the hub, I leave between the head *z* of the spoke and the bottom of the countersink in the rim a small space, the object of which is to allow for the drawing inward of the spokes, due to the shrinkage of the hub, which always takes place when cooling. This space should be one-half the shrinkage of the hub, and in wheels of the ordinary size for use on cultivators should be about one sixty-fourth of an inch. I maintain this space during the casting of the hub by inserting therein a small piece of tin or other metal, as shown in Fig. 5 at Q. I now pour the hub, and when the metal has become set I withdraw the pieces of metal Q, and the

shrinkage of the metal due to cooling draws the heads *z* of the spokes G firmly down into the countersinks in the rim, making the wheel extremely firm. By this means I make a strong and durable wheel, simple in construction, and free from any necessity of tightening the spokes by bolts or otherwise.

I do not confine myself to the particular method above described of maintaining the space between the countersink and the head of the spoke during the process of pouring the hub; but, if I desire, I may insert a small ring of soft metal, to be squeezed out by the draw due to the shrinkage; or I may dispense entirely with any such mechanical means and simply lay the spokes in the proper position.

In manufacturing wheels by my improved method I usually prepare a large number of the wheels, rims, and molds before commencing to cast.

I do not claim the machine herein shown, the same having been described in my application for Letters Patent No. 102,967, filed August 6, 1883.

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

That improvement in the art of manufacturing metallic wheels which consists in placing headed spokes through the rim, with their heads outside of and apart from the rim, and then casting the hub upon the spokes, whereby in the cooling of the hub the shrinkage is utilized to draw tight the spokes, substantially as shown, and for the purposes described.

CHARLES O. WILDER.

Witnesses:
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