

JAMES O'CONNOR.

Improvement in Carriage Wheels.

No. 125,840.

Patented April 16, 1872.

Fig. 1.

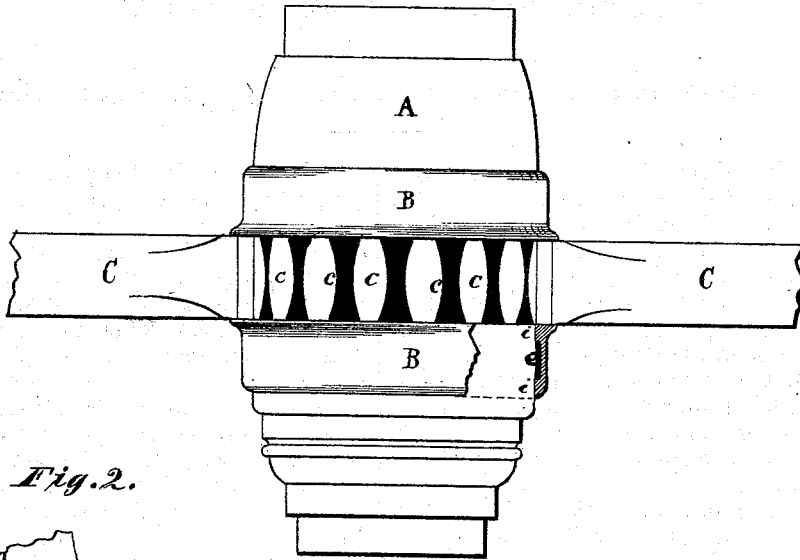


Fig. 2.

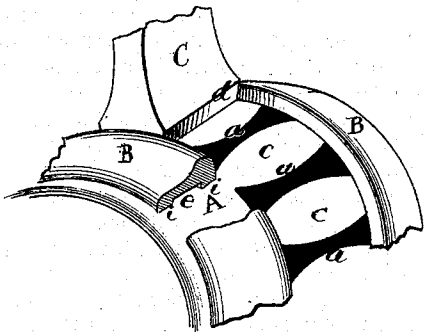


Fig. 3.

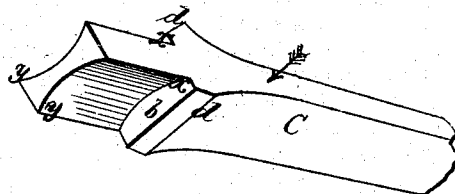
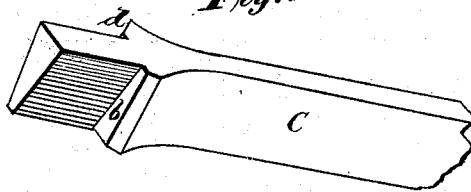


Fig. 4.



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UNITED STATES PATENT OFFICE.

JAMES O'CONNOR, OF JACKSON, MISSOURI, ASSIGNOR OF ONE-HALF HIS
RIGHT TO LOWNDES H. DAVIS.

IMPROVEMENT IN CARRIAGE-WHEELS.

Specification forming part of Letters Patent No. 125,840, dated April 16, 1872.

Specification describing certain Improvements in Carriage-Wheels, invented by JAMES O'CONNOR, of Jackson, in the county of Cape Girardeau and State of Missouri.

My improvements relate, first, to the mortising of the hub and the fitting of the spokes; and, secondly, to the construction and application of the metallic strengthening-bands.

The spokes of a wheel are frequently subjected to considerable lateral strain; and, as heretofore formed and fitted, they often work loose under such strain, and this may result in serious accident.

The first object of my invention is to obviate this objection; and to effect this end I make the mortises in the hub of dovetail form, and shape the tenons of the spokes accordingly, whereby loosening of the spokes by lateral strain is prevented. The second part of my invention consists in forming the hub-bands with a groove in the inner face and in pressing the bands on the hub when the metal has been expanded by heat, so that, as the iron shrinks, in cooling, the metal at each side of the groove will be embedded in the wood, producing a raised rib on the hub, fitting the groove in the band, which receives the said rib. The bands are thus very securely fixed, and will remain so under all ordinary circumstances.

In the drawing, Figure 1 is a top view of a hub made and fitted according to my invention, some of the spokes being removed and a portion of one of the bands broken away to show the construction. Fig. 2 is a perspective view of the same. Figs. 3 and 4 are perspective views of spokes formed with dovetailed tenons.

Referring to the drawing, in which similar letters of reference indicate like parts in the several figures, A represents a wooden hub made of any suitable form or style. B B are the metallic strengthening-bands, and C C the spokes. The mortises *a* in the hub are made in single or double dovetail form, but the latter only is shown, and will be described. The end walls of the mortises are made as usual, but the sides incline or curve inward from the ends toward the center, forming the double dovetail, as shown. The form of the tenons of the spokes corresponds exactly to that of the

mortises, but the tenons are made slightly larger than the mortises, as usual, so as to fit tightly therein. The shoulders *b b* rest on the divisions *c* between the mortises *a*; and the edges *d* may be beveled, so that the spokes may fit closely together and support each other, and entirely cover the divisions *c*. The edges of the spokes are rounded, as usual, to present a neat and finished appearance.

In Fig. 4 is shown a spoke made with a tenon in the form of a single dovetail. Of course, when this form is used the mortises in the hub will be of corresponding shape.

With the common form of mortises and tenons the whole lateral strain is exerted on the end walls of the mortises, and therefore should the tenon shrink but slightly it could be very easily worked loose; but by my improvement the pressure is equally distributed, and the sides of the mortise are made to resist a great part of the lateral strain. It will be noticed that the sides of the mortise present the form of arches, and hence are in the best shape to insure strength and withstand strain. When the strain on the spoke is in the direction of the arrow in Fig. 3, the pressure at *x x* will be counteracted by pressure in the opposite direction at *y y*; and so the spoke will remain immovable.

The bands B are formed with a groove or channel, *e*, in the inner face. The bands are applied either before or after the insertion of the spokes—generally before—and are pressed onto the hub while hot, so that, as it shrinks in cooling, the surfaces *i i* will sink into the wood, leaving a rib projecting into the groove of the band, which holds the band firmly in place.

It is evident that my improved hub can be as easily and economically manufactured as those now in use; and practical tests have demonstrated its great advantage in point of strength to resist lateral strains.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The hub-mortises and spoke-tenons made in dovetail form, substantially as herein shown and described, for the purpose specified.
2. The annular bands B, grooved substantially as described and pressed, while hot, on

the wooden hub, so that, without preparatory grooving of the hub, the shrinking of the metal in cooling causes the surfaces *i i* to embed themselves in the wood, producing a ridge on the hub fitting the groove of the band, substantially as herein described.

To the above specification of my invention

I have signed my name this 29th day of February, 1872.

JAMES O'CONNOR.

Witnesses:

N. C. HARRISON,
L. H. DAVIS.