POTTS & OGDEN.

Wagon-Wheel Spoke.

No. 102,861. Patented May 10, 1870.

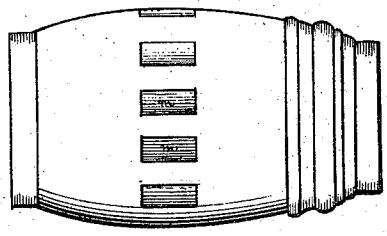

Fig. 3.

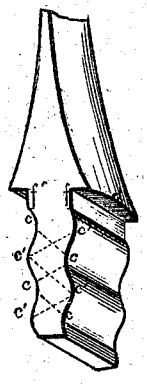

Fig. 2.

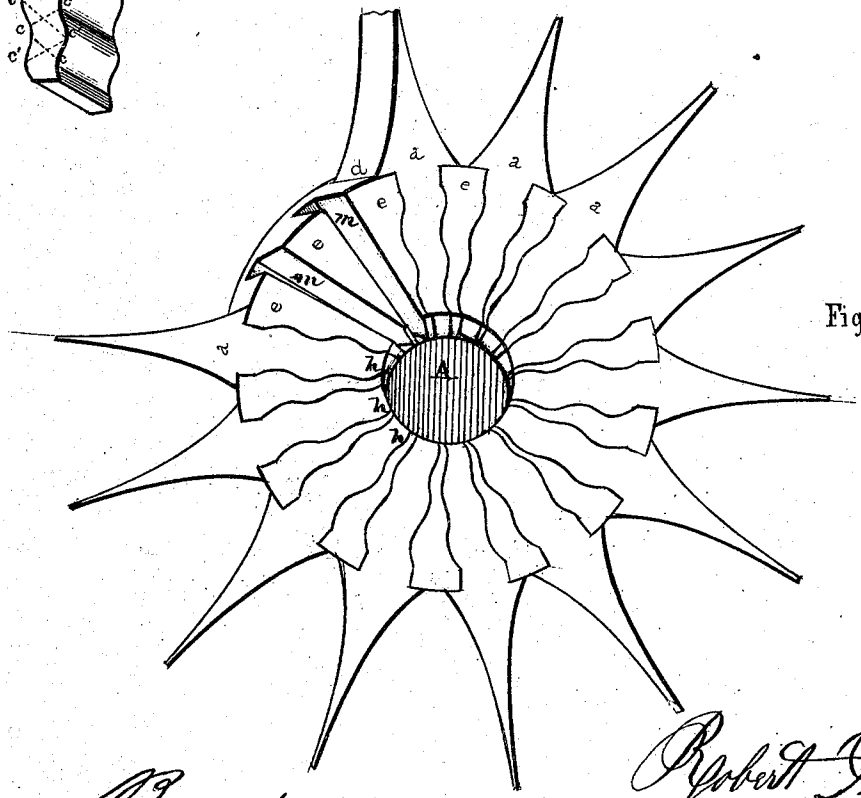

Fig. 1.

Witnesses.

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ROBERT POTTS AND NATHANIEL OGDEN, OF CHATHAM, NEW YORK.

*Letters Patent No.* 102,861, *dated May* 10, 1870.

## IMPROVEMENT IN SPOKES FOR WAGON-WHEELS.

The Schedule referred to in these Letters Patent and making part of the same

We, ROBERT POTTS and NATHANIEL OGDEN, of Chatham Village, in the town of Chatham, county of Columbia and State of New York, have invented certain Improvements in the Construction of Spokes for Wagon, Carriage, Cart, and other Wheels, of which the following is a specification.

### *Nature and Object of the Invention.*

Our invention relates principally to the form of the tenon of the spoke, that is, making it alternately concavo-convex or serpentine, so that the hold or bearings of the two sides of the tenon shall be diagonally rather than transversely opposite to each other; the object being to facilitate the driving of the spoke, to reduce the tendency to split the hub, to lock them all together at the center or axle-hole, to enable the wood of the hub, in drying, to shrink close up to all parts of the tenon, and subsequently, in the use of the wheel, to lessen the danger or liability of the hub splitting out around and adjoining the spokes.

### *Description of the Accompanying Drawing.*

Figure 1 is a transverse section of a hub with our spokes inserted in all but two of the mortises.

Figure 2 is a perspective view of the tenon as we construct it.

Figure 3 is an external view of the entire hub before the spokes are inserted.

### *General Description.*

This tenon, (see fig. 2,) is so constructed as to have in its length, two concavities and two convexities on each of its sides, which extend entirely across the tenon, the last or bottom ones terminating so as to give the end a somewhat hooked form, as shown in figs. 1 and 2.

A tenon of this kind strains the hub far less in driving it, and tends less to split out the parts adjoining it in case any force or strain is applied, tending to withdraw the spoke, and, when driven, (the hub being steamed as usual,) the wood of the hub surrounding the tenon, shrinks more closely to all its inequalities than to any other of the most approved forms now in use.

We are aware that Letters Patent have been granted to David B. Goewey, No. 63,628, for mortising hubs of wagon-wheels and the tenons of spokes to fit in the wheels, April 9, 1867. In this hub he inserts what he calls the corrugated or dovetailed spoke.

The elevations and depressions on the two sides of the tenon of this spoke, which constitute the corrugations, are a succession of inclined planes transversely opposite to each other, or a series of wedges, and it terminates as a truncated wedge. These all uniting at the center or axle-hole of the hub as a combination of wedges, possess no advantage over the ordinary square tenon.

Another serious objection to this tenon is, that at the periphery of the hub, where is the greatest strain and, therefore, the greatest need of strength, is its weakest point, being cut down next to the shoulder on the two opposite sides, so as to form the first pair of braces diametrically opposite to each other.

In ours, next to the shoulder *d*, and for about one-sixth the length, the tenon is straight, (*f f*, fig. 2,) the whole strength of the wood preserved, and so it is the whole length, except the trifling taper necessary to allow them all to lock together around the axle-hole A.

Our tenon is serpentine, the elevations *c' c' c' c'* and depressions *c c c c*, fig. 2, occurring in alternation or diagonally opposite to each other. The strain is, by this mode of constructing the tenon, distributed more evenly through the hub than by any other in use.

The hooked ends *h h h*, &c., of our tenons lock into or behind the curves of the adjoining ones, so that they are all bound together at the center, and could not be easily withdrawn if all the hub between the spokes *e e e*, &c., above the first curve on the tenons should be removed.

The mortises *m m*, &c., in the hub, fig. 3, are cut in the usual manner, and hub steamed, as usual, before the spokes *a a a*, &c., are driven.

In our form there is no danger of any part of the mortise in the hub being left unoccupied by the tenon, but in the corrugated tenon, the shoulders or enlargements being directly opposite to each other, spaces are often left under or adjoining these shoulders, which the wood of the hub, in drying, will not shrink to fill, thus leaving the spokes liable to loosen after a little use.

We claim as our invention—

The spokes *a*, provided with shoulders *d d*, straight portions *f f*, serpentine portions *c c'*, and hooks *h*, said spokes being connected to the hub by passing through into the orifice thereof, and hooked over each other, substantially as set forth.

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Witnesses:

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