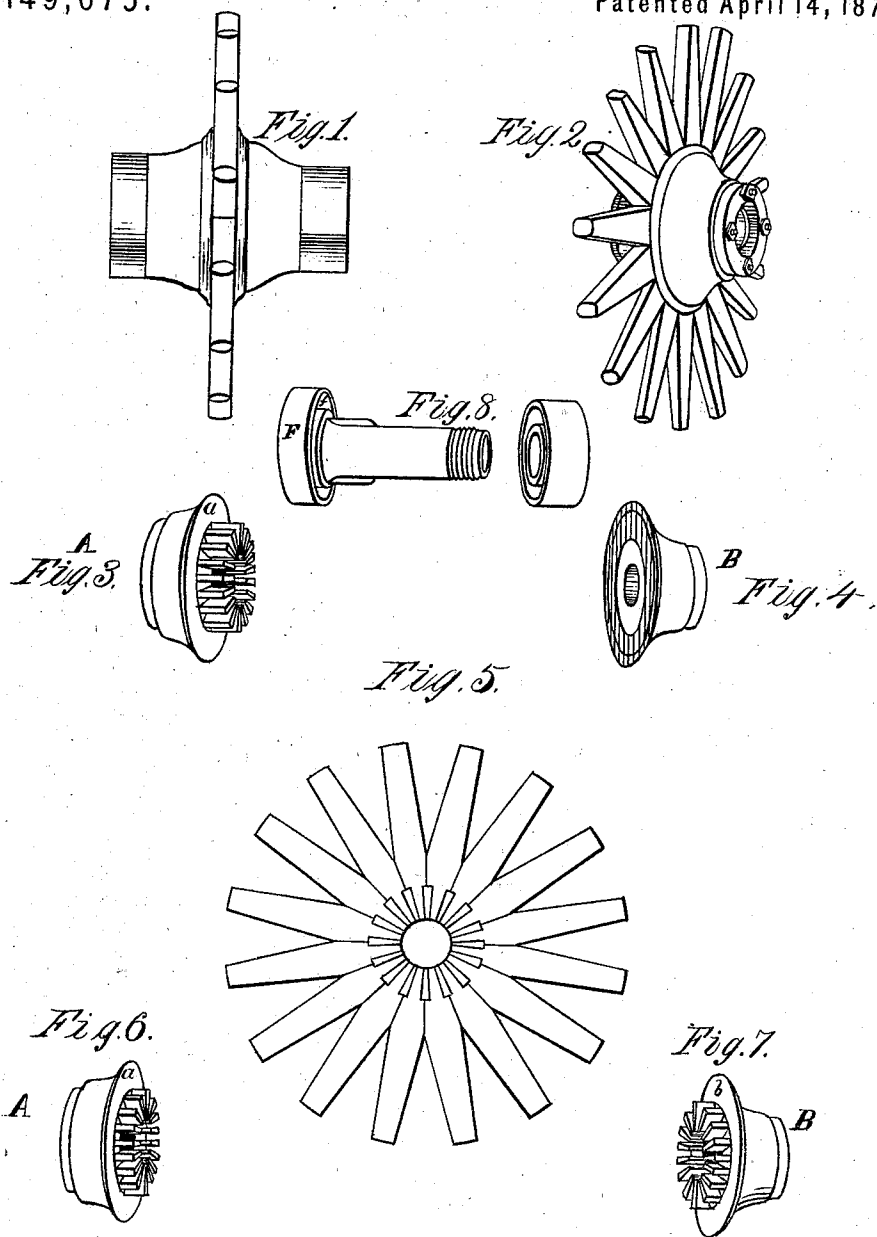


E. OTIS.
Hubs.

No. 149,675.

Patented April 14, 1874.



WITNESSES

Roger M. Sherman
William F. Roper

INVENTOR

Edmond Otis

UNITED STATES PATENT OFFICE.

EDMOND OTIS, OF NEW HAVEN, CONNECTICUT, ASSIGNOR OF ONE-HALF HIS
RIGHT TO GEORGE P. OTIS AND CHARLES H. OTIS, OF SAME PLACE.

IMPROVEMENT IN HUBS.

Specification forming part of Letters Patent No. **149,675**, dated April 14, 1874; application filed
December 4, 1873.

To all whom it may concern:

Be it known that I, EDMOND OTIS, of the city and county of New Haven and State of Connecticut, have invented an Improvement in Carriage-Wheels; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon, making a part of this specification.

Figure 1 is a front view of the wheel, or so much thereof as is requisite to show the appearance of the parts embodying my invention when put together and finished. Fig. 2 is a view of the wheel held together by four bolts, without the box and nut on its end. Fig. 3 shows the inner-section of the wood hub, with the sockets in which the tenons of the spokes are held and the metal rings or flanges projecting beyond the sockets. Fig. 4 shows the outer section of the wood hub with its metal flange *b*. Fig. 5 is a view of the spokes with their tenons in the sockets made for their reception, forming a solid belt of wood outside of the sockets, against which belt the metal flanges are screwed. Figs. 6 and 7 show the two sections of the wood hub with sockets on each section of one-half the depth of the sockets, shown in Fig. 3, and the metal flanges on each section. Fig. 8 is a view of the box, made with a flange, *F*, on its inner end, of the size of the inner end of the hub, and of a nut or cap, which is of the size of the outer end of the hub. By this construction of the box all the parts about the hub are firmly screwed together.

The flange on the inner end of the box may have a recess, *f*, and supply the place of a band on the inner end of the hub. The same is true of the nut or cap on the outer end of the box.

A carriage-wheel with wood hub and metal flanges, riveted together, and embracing a solid belt of wood, made of the spokes, possesses great advantages, so far as strength and durability are concerned, and great disadvantages, so far as expense and difficulty of repairing are concerned. The object of my

invention is to secure the advantages of a wheel of such construction, and remedy the disadvantages.

To this end I make the wood hub in two sections, *A* and *B*, as shown in Figs. 3 and 4, and in 6 and 7. The two ends of these sections, which come together, are turned down, so as to leave a shoulder, against which the metal flanges *a* and *b* come. In Fig. 3, the part of the inner section *A* thus turned smaller, in addition to the thickness of the metal flange, equals in length the width of the tenons of the spokes, into which parts the sockets for the reception of the spokes are cut, equidistant apart, as shown in the figure. The part of the outer section *B* thus turned smaller corresponds in size with the corresponding part in the inner section *A*, and in length to the thickness of the metal flange *b*. The flanges *a* and *b* are circular and flat, with the holes through them of such size that they will go over the sockets, and against the shoulders prepared for them.

The wood hub in two sections may be made without sockets, and the spokes may have very short tenons inserted in metal sockets, forming a part of the box, so that the metal flanges only embrace the faces of the spokes.

It is obvious that a wheel of this construction, with the flanges screwed against the spokes, is much more easily repaired—a new spoke put in, for example—than when the flanges are riveted together by rivets passing through the spokes. It is also obvious that, as the metal flanges are not connected together, and are only pressed upon by wood, the hub in this wheel has the properties of a wood hub equal in diameter to the diameter of the flanges; and that the rigidity of wheels with flanges connected together is overcome, while their strength remains.

I claim as my invention—

1. A carriage-wheel constructed with a wood hub, in two sections, *A* and *B*, spokes forming a continuous belt of wood immediately above the sockets, metal flanges fitted onto the central ends of the wood sections *A* and *B*, axle-box *C*, having flange *F* on its inner end

and nut D on its outer end, all combined substantially as and for the purpose shown and described.

2. The metal flanges fitted onto the central ends of the wood sections A and B, the axle-box C, with flange F on its inner end and nut D on its outer end, all combined substantially as shown and described.

3. The metal flanges, fitted onto the central

ends of the wood sections A and B and secured by four or more bolts, all combined substantially as and for the purpose shown and described.

EDMOND OTIS.

Witnesses:

GEORGE P. OTIS,
GEORGE TERRY.