J. A. SMITH.

Wheel for Vehicles.

No. 160,240. Patented Feb. 23, 1875.

Fig. 4.

Fig. 3.

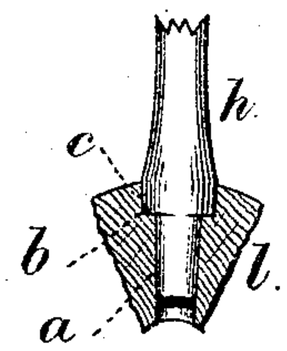


Fig. 2.

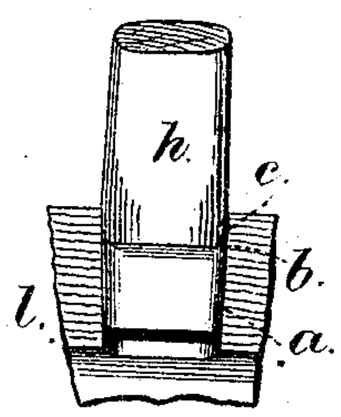
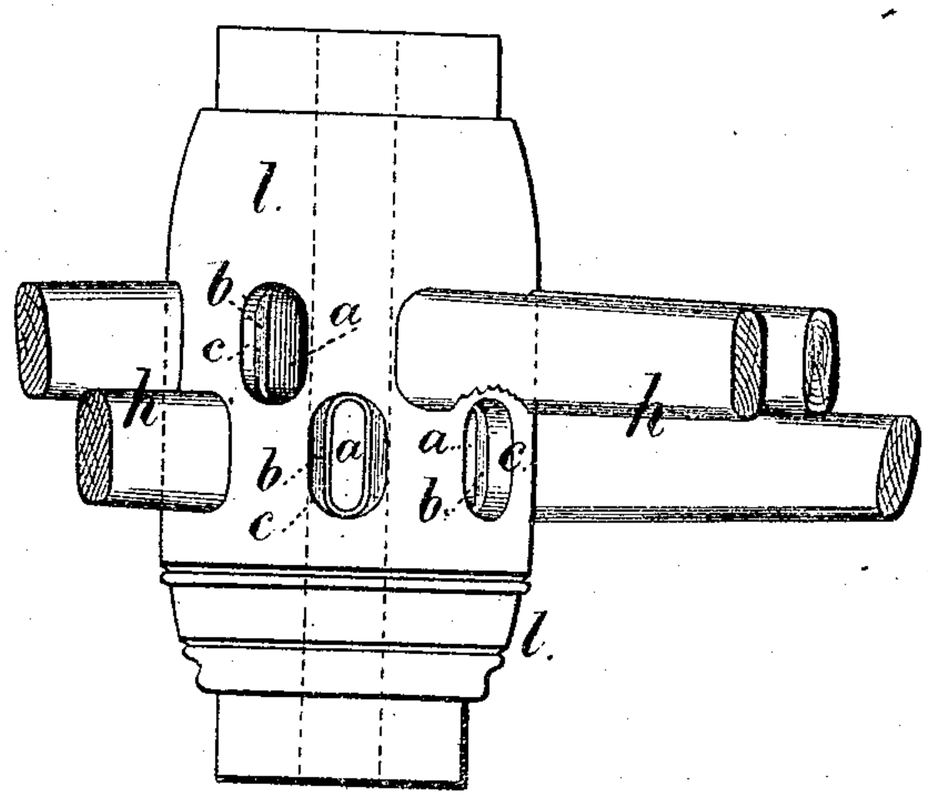


Fig. 1.



Witnesses,

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UNITED STATES PATENT OFFICE.

JAMES A. SMITH, OF NEW YORK, N. Y.

IMPROVEMENT IN WHEELS FOR VEHICLES.

Specification forming part of Letters Patent No. **160,240**, dated February 23, 1875; application filed December 1, 1874.

To all whom it may concern:

Be it known that I, JAMES A. SMITH, of the city and State of New York, have invented an Improvement in Hubs for Wheels, of which the following is a specification:

Hubs have been made with two-part square or oblong mortises, the outer part of each mortise being larger than the inner portion, leaving an offset or shoulder for the end of the spoke to rest against. In this case the projecting tenon passes into the smaller portion of the mortise, and the end of the spoke itself enters the larger portion of the mortise, and in some cases the spoke has had square shoulders upon three sides, and the mortise has been made to correspond. Mortises of this character are difficult to make, and the angles of the spoke and tenon are liable to chip and break, and are difficult to form with precision. In some instances the end of the spoke has been made with a round tenon, and the spoke itself has been clamped between metal rings or flanges.

My invention relates to a hub in which the mortise and its shoulders are oblong and rounded at the ends and the hole tapering, combined with the spoke and tenon that are made with rounded edges fitting the shouldered mortise, so that the spoke can be driven into the mortise and firmly held therein, without the risk of splitting the hub or being injured in so doing, and the tenon binds firmly into the mortise.

In the drawing, Figure 1 is a plan of the hub with some of the spokes in place. Fig. 2 is a section, longitudinally, of the hub with the spoke in elevation. Fig. 3 is a similar view, transversely, of the hub, and Fig. 4 is an elevation of the tool that is adapted to use in forming such mortise.

Each mortise in the hub is made with rounded ends by the action of the tool shown in Fig. 4, the hub being moved endwise while the tool is in operation, so as elongate the mortise to the proper extent. The smaller portion of the mortise, at *a*, is tapering and smallest at the inner end. The shoulder *b* is between the smaller part *a* and larger part *c* of the mortise. The shoulder is preferably widest at the sides of the mortise, as represented. This is effected by raising the tool *l'* so that the offsets 4 will revolve about the surface, and finishing out the smaller portion of the mortise to the same length as the larger portion. The spoke *h* is made with the rounded end to fit the larger portion of the mortise tightly, and the tenon is of a size to fit the larger end of the inner mortise *a*, so as to be compressed in driving the same, but the hub *l* will not be liable to split because the wood near the surface is not subjected to any severe strain.

The hub *l*, by my construction, is not as much weakened as heretofore, neither is it liable to split, and the spoke is stronger and more easily made than those with square ends and tenons.

I claim as my invention—

The hub containing mortises, each of which is oblong and round-ended, and has a shoulder formed thereon, in combination with the spokes having tenons that are shouldered and made rounding to fit into said mortises, with the end of the spoke oblong in cross-section, to rest against the shoulder, as set forth.

Signed by me this 27th day of November, 1874.

JAMES A. SMITH.

Witnesses:

GEO. T. PINCKNEY,

CHAS. H. SMITH.