

F. H. HOLMAN, A. STAGE & D. S. HOLMAN.

Wheels for Vehicles.

No. 134,282.

Patented Dec. 24, 1872.

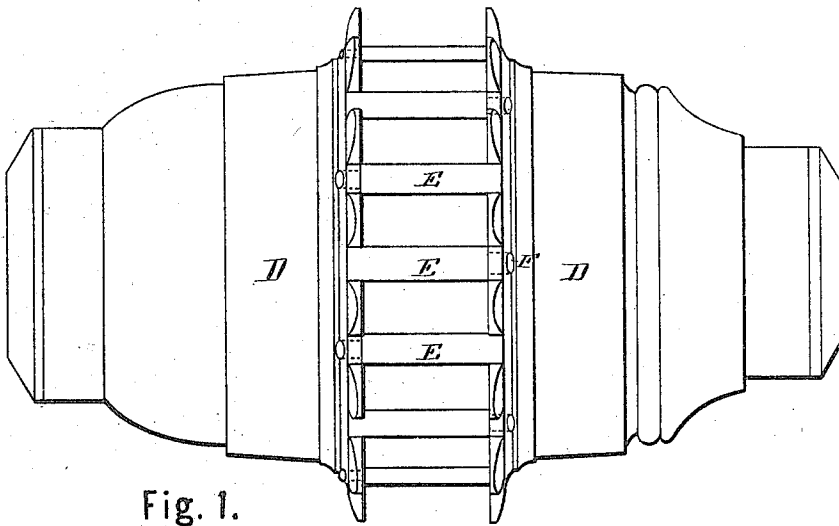


Fig. 1.

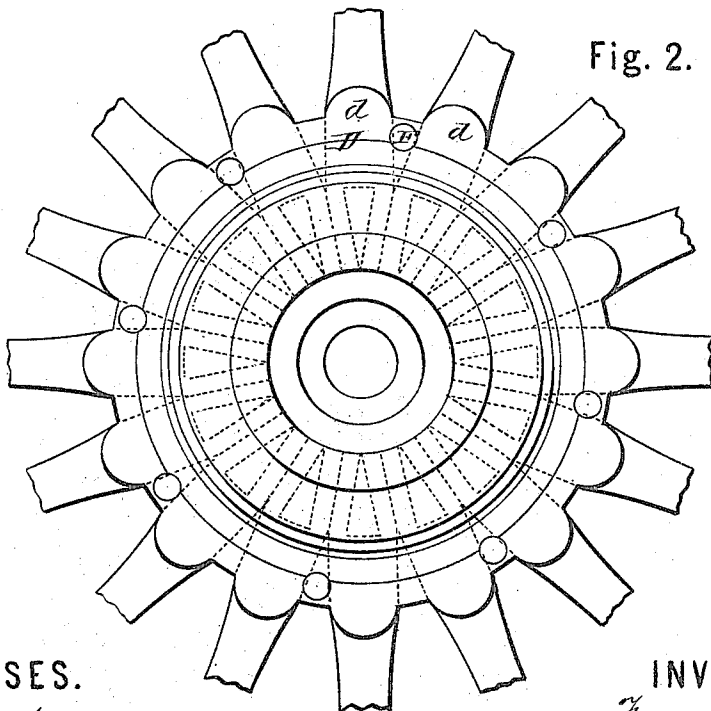


Fig. 2.

WITNESSES.

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George E. Upham.

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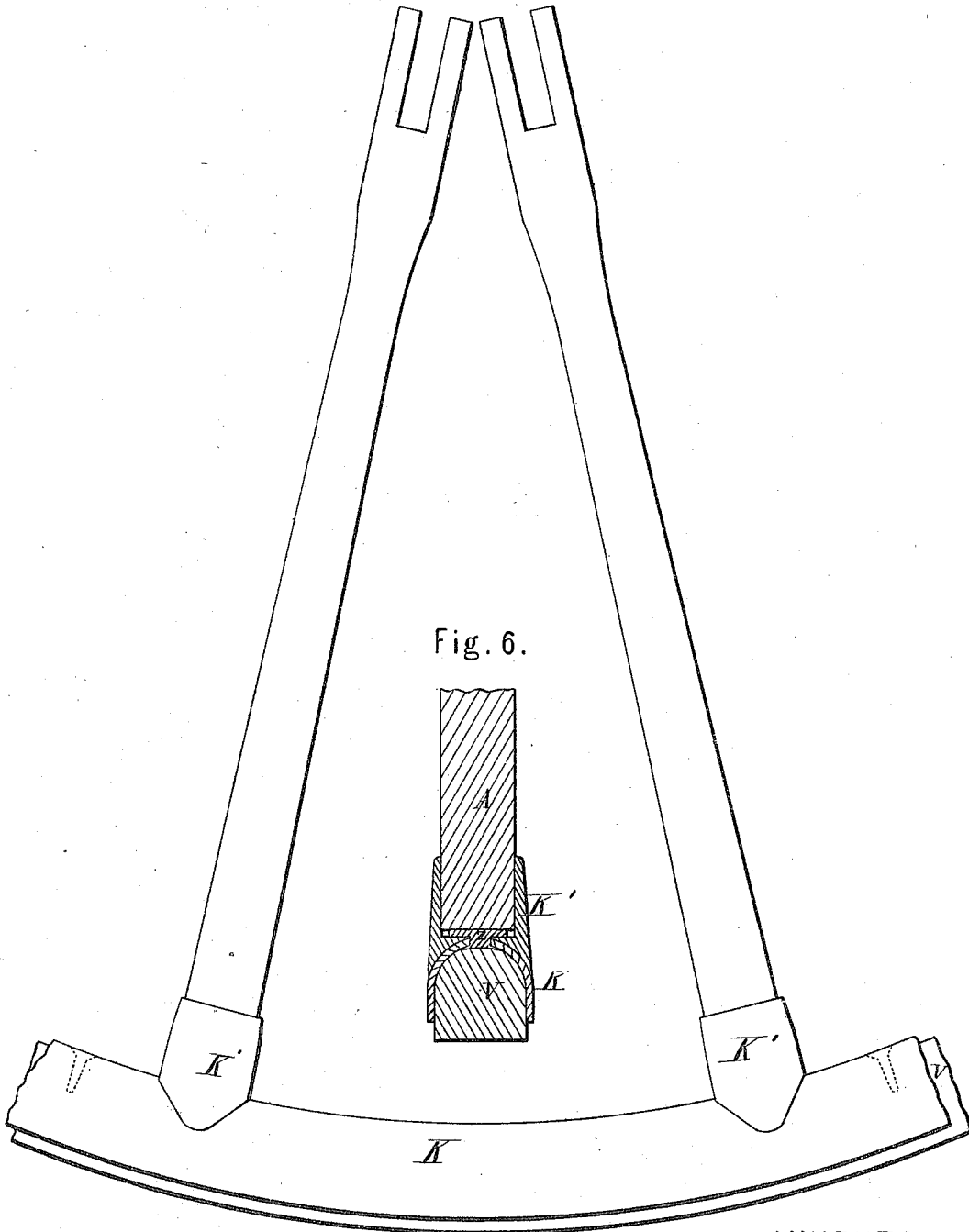


Fig. 6.

Fig. 5.

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UNITED STATES PATENT OFFICE.

FRANCIS H. HOLMAN, ALBERT STAGE, AND DAVID S. HOLMAN, OF CONNEAUTVILLE, PENNSYLVANIA.

IMPROVEMENT IN WHEELS FOR VEHICLES.

Specification forming part of Letters Patent No. 134,282, dated December 24, 1872.

To all whom it may concern:

Be it known that we, FRANCIS H. HOLMAN, ALBERT STAGE, and DAVID S. HOLMAN, of Conneautville, in the county of Crawford and State of Pennsylvania, have invented a new and valuable Improvement in Carriage-Wheels; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of an outside view of our hub. Fig. 2 is a face view of one section of the same. Fig. 3 is a longitudinal section of the same. Fig. 4 is a transverse section of the same. Fig. 5 is a view of our spoke and felly. Fig. 6 is a sectional view of the same.

This invention has relation to carriage-wheels; and it consists in the construction and novel arrangement of the mortised hub and forked inner ends of the spokes; of the hub-bands having alternating wedge-shaped connections between the spokes; of the sand-caps and boxing; and of the concavo-convex felly-sheath or protector, all hereinafter more fully described.

Referring to the accompanying drawings, A designates the spokes, having their inner ends cut with parallel rectangular sides, and forked or cleft, the forked space being also made with parallel sides. The outer ends of the spokes are rounded, but not tenoned usually. B represents the hub, made of wood, and so mortised for the reception of the spokes as to leave between every two mortises a V-shaped wall, *b'*. The spokes are driven into the hub in such a manner that each spoke shall include within its cleft a V-shaped wall, *b'*. The spokes, before being applied to the hub, are steamed, and their forked ends dipped in glue. They are then driven into the hub side by side, and the prongs or cleft ends *v* so compressed as to conform exactly to the shape of the V-shaped walls *b'*. By this arrangement the spokes are rendered very firm, and, in fact, nearly, if not quite, as solid as the hub itself. This arrangement is less expensive than the ordinary method, where mortised hubs are used. According to our method, the mortises

are all parallel sided, and therefore may be produced by the most common means. D D represent the hub-bands, constructed with the lugs *d* corresponding in position with the spokes, against the sides or faces of which they rest when the bands are in position, and thus brace and strengthen the spokes. From the inner surface of each band studs E project, and pass between every other pair of spokes, the studs from one band alternating with those from the other. These studs are V-shaped, and exactly fill the spaces between the spokes. Each stud has on its end a projection, F, which passes through a corresponding hole in the opposite band, and is clinched or headed down the outside. In this way screws and rivets are dispensed with in connecting the bands together. G designates the hub-box, to a threaded shoulder, *g*, on the forward end of which is secured a hollow conical cap, H, which fits the conical or bell-shaped mouth of the hub, and has a flange, *h*, which covers the end of the hub. This cap serves as a means of holding the box in place, with the assistance of the nut which is put on the latter, outside of the collar *g*, upon the threaded portion shown, and also serves to prevent grease from penetrating the hub. This cap, together with the back cap I, serves as a sand-guard to prevent the hub-box from being filled with dirt. The cap I has a shoulder, *i*, against which the flange *h'* on the inner end of the hub-box rests. From said shoulder to the inner end of the cap the internal surface of the cap fits close to the external surface of the box, as shown. K designates a concave metallic band, having sockets K' to receive the ends of the spokes. This rim is drawn onto the ends of the spokes with a truss-band, making any amount of dish required in the wheel. The ends of said band are secured together by rivets, placing it beyond the power of unskillful tire-setters to destroy the shape of the wheel. The wood or rubber pith or felly V is drawn on outside the band in the same manner, and fits down into the concavity of the band closely and tightly, and is properly secured to the band. The ferules or sockets K' are secured to the band by means of rivets *z*, and receive the ends of the spokes without the latter being tenoned. The felly-sheath K is not usually made sufficiently

wide to meet the tire, a small strip of the outer part of the felly being visible next the tire. By this arrangement all the advantages of the elastic nature of the felly proper are secured.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The spokes A having cleft spoke ends, in combination with the wedge-shaped partitions *b'* of the mortised hub B, substantially as specified.

2. The hub-bands D cast with the alternating wedge-shaped studs E fitting the tapering recesses between the spokes A, substantially as specified.

3. The corresponding hub-bands D, having alternately arranged around their inner walls the perforations, and the partition-studs cast with rivet-projections F to fit said perforations, substantially as specified.

4. The combination, with the hub B having

tapering end openings, of the box G having flange *i'*, and threaded collar *g*, the tapering rear cap I having shoulder *i*, and the tapering screw-cap H flanged at *h*, substantially as specified.

5. The combination, with a continuous concave felly-sheath, K, of the felly fitting said sheath continuously, the spokes and the spoke-sockets K' riveted to said sheath and dividing the same from the spoke ends, substantially as specified.

In testimony that we claim the above we have hereunto subscribed our names in the presence of two witnesses.

FRANCIS H. HOLMAN.
ALBERT STAGE.
DAVID S. HOLMAN.

Witnesses:

D. M. WILLIAMS,
W. H. H. BROWN.