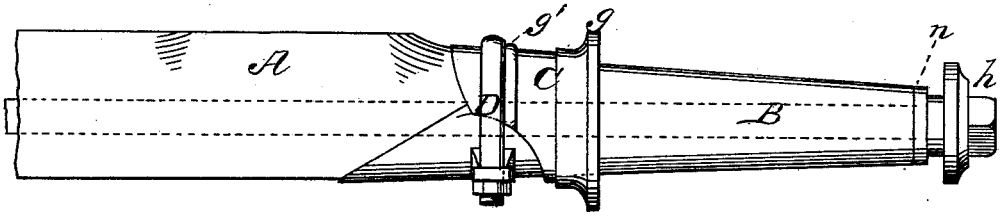
N. L. HOLMES.

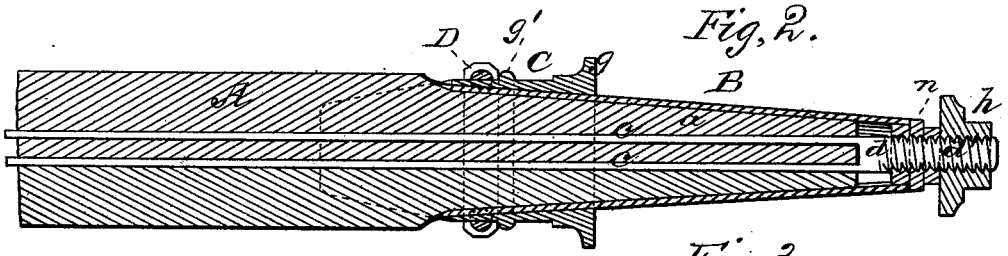
Vehicle Axle and Skein.

No. 214,137. Patented April 8, 1879.

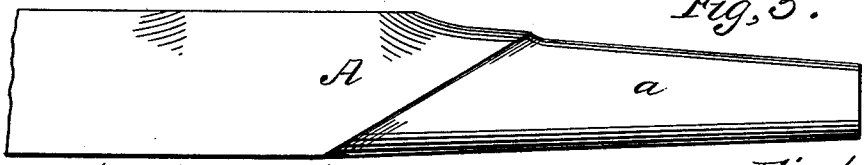
Fig, 1.



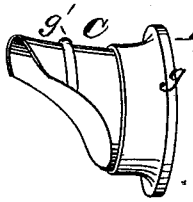

Fig, 2.




Fig, 3.



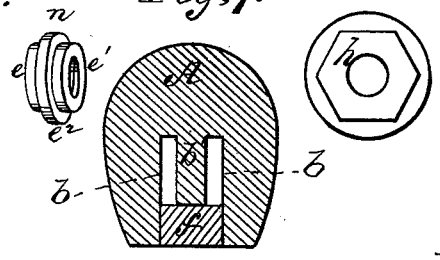

Fig, 5.




Fig, 4.

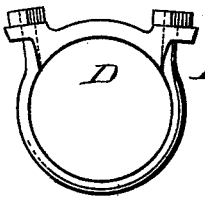
Fig, 6.

Fig, 7.




Fig, 8.

Fig, 9.




Fig, 10.


WITNESSES

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# UNITED STATES PATENT OFFICE.

NATHAN L. HOLMES, OF RACINE, WISCONSIN.

## IMPROVEMENT IN VEHICLE-AXLES AND SKEINS.

Specification forming part of Letters Patent No. **214,137**, dated April 8, 1879; application filed January 27, 1879.

*To all whom it may concern:*

Be it known that I, NATHAN L. HOLMES, of Racine, in the county of Racine and State of Wisconsin, have invented a new and valuable Improvement in Axles and Skeins; and I 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 drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

This invention has relation to improvements in axle-skeins; and the nature of the invention consists in certain novel combinations of parts, as will be hereinafter more fully set forth.

Figure 1 is a side view of my invention; Fig. 2, a longitudinal section thereof. Fig. 3 is a view of the axle-arm; and Figs. 4, 5, 6, 7, 8, 9, and 10 are details.

In the annexed drawings, the letter A designates one end of a wooden axle, having the usual arm *a*, not differing in form from that generally used. In the under side of this axle are formed two parallel grooves, *b*, separated from each other by a rib, *b'*, in which are seated two strong steel or iron bars, *c*. These grooves extend from end to end of the tree, and the bars *c* are also continuous. Their ends are welded together, as shown at *d*, and provided with a screw-threaded tang, *d'*, the object of which will hereinafter appear. B indicates a steel thimble, fitting snugly on the arm *a*, and completely enveloping the same. These are held in place by means of a nut, *n*, that is provided with an inside and outside rabbet, *e e*$^1$, separated by a flange, *e*$^2$. These nuts *n*, when forcibly applied, bear with their flanges *e*$^2$ against the outer end of the thimble-skeins and hold them in place upon the arms *a*, the inside rabbets, *e*$^1$, being received in the open outer ends of the said thimbles, as shown in Fig. 2. The bars *c* are inclosed within the axle by means of a wooden strip, *f*, let into the axle, as shown in Fig. 7, and glued or cemented in place. The rib *b'* is sufficiently wide to allow through-bolts to be passed through the axle without interfering with the bars *c*. C designates the sleeve of the skein, that is passed over the thimble or skein, and is provided with a flange, *g*, projecting outward, that forms a strong and substantial shoulder, serving the purpose of the collar at the inner end of the hub. This sleeve C tapers from the said shoulder inward and upward, and is provided with a raised rib, *g'*, its lower portion being cut away, as shown, the object being to allow the said sleeve to bear at its upper part on the wooden axle, the thimble-skein being cut away for this purpose. A clip, D, is then applied, and draws the upper part of the sleeve C into forcible contact with the axle. This clip is prevented from slipping toward the collar-flange *g* by means of the rib *g'*.

The sleeve being tightly clamped in place not only adds to the strength of the axle, but also prevents water from getting in between the axle and thimble, and prevents the former from decaying and the latter from becoming loose thereon.

This thimble is made of sheet-steel, cut into form, and bent around a former. Its edges are then brought together at the upside and welded together.

The wheel is passed upon the arm of the axle, and confined thereto by means of a nut, *h*, of the usual form, applied on the end of the tang *d'* outside of the nut *n* aforesaid.

The bars *c*, by extending through the tree, as shown, not only add to its strength, but when the end nuts *n* are applied hold the thimbles upon the arms.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with an axle, A, having arms *a*, and parallel grooves *b* cut into its under side, and extending from end to end thereof, of the metallic bars *c*, seated in said grooves, confined therein, and united and screw-threaded at their ends, and the nuts *n*, provided with a collar-flange, *e*$^1$, and screwed upon the ends of said bars, substantially as specified.

2. The combination, with an axle-arm, *a*, and the thimble B passed thereon, and cut away at its inner end from above downward to expose the axle, of a detachable sleeve, C,

cut away from below upward to expose the thimble, and provided with a shoulder-flange, *g*, and rib *g'*, and a clip, D, bearing above upon the axle and below upon the sleeve, and clamping the sleeve to the axle and the axle to the thimble, substantially as specified.

3. The rods *c*, connected and screw-threaded at their ends, and adapted to be let into an axle-tree, substantially as set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

NATHAN L. HOLMES.

Witnesses:
J. B. WINSLOW,
D. G. JANES.