F. R. WILLSON, Jr., & W W. WILLSON.
Vehicle Axle-Skein.

No. 208,131. Patented Sept. 17, 1878.

Fig. 1.

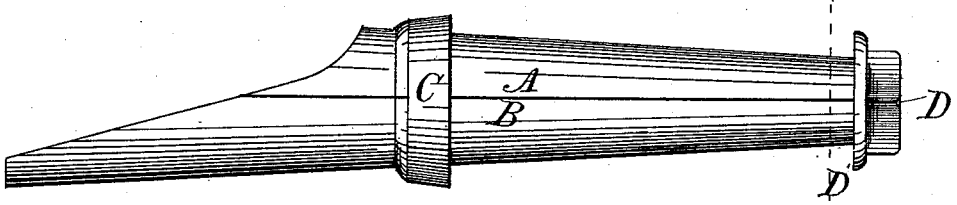



Fig. 2.

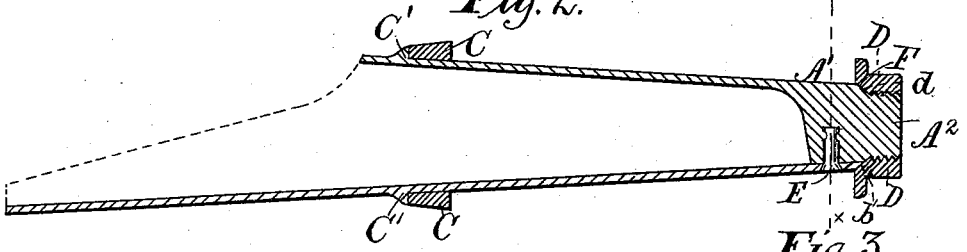



Fig. 3.

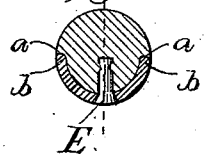



Fig. 4.

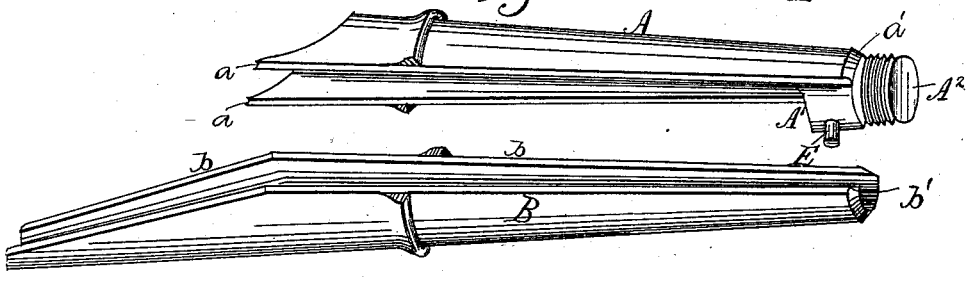



Fig. 5

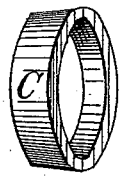
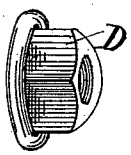



Fig. 6.

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# UNITED STATES PATENT OFFICE.

FREEMAN R. WILLSON, JR., AND WILLIAM W. WILLSON, OF COLUMBUS, OHIO.

## IMPROVEMENT IN VEHICLE-AXLE SKEINS.

Specification forming part of Letters Patent No. **208,131**, dated September 17, 1878; application filed July 15, 1878.

*To all whom it may concern:*

Be it known that we, FREEMAN R. WILLSON, Jr., and WILLIAM W. WILLSON, of the city of Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Wagon-Axle Skeins; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to wagon-axle skeins.

One of the chief objects of our invention is to provide a skein having all the wearing qualities of a solid cast-steel skein at about one-half the cost of its manufacture and with much less trouble in casting. This we accomplish by making the lower part of the skein, which chiefly sustains the friction and wear, of cast-steel, and making the upper part, which is subjected to very little wear, of cast-iron. The two sections are constructed to interlock, and are provided with fastening and clamping devices, as hereinafter described. The construction of the interlocking, fastening, and clamping devices forms several other features of our invention, which need not be individually pointed out here, as they will be fully set forth below and pointed out in the claims.

In the accompanying drawings, Figure 1 represents a side view of our improved wagon-axle skein. Fig. 2 represents a longitudinal vertical section through the same. Fig. 3 represents a vertical cross-section of the skein through the line *x x* of Figs. 1 and 2. Fig. 4 represents the two sections of the skein detached. Figs. 5 and 6 represent detail views of the collar and nut, respectively.

In said drawings, A and B designate the two longitudinal sections of our improved skein, the upper skein, A, being of cast-iron, and the lower skein, B, being of cast-steel. The advantages of this construction are numerous. In the first place, as the weight of the wagon rests upon the axle, the lower part of the skein will be forced thereby powerfully into contact with the axle-box, and subjected to the grinding action due to the rotation of the wheel during such close contact, while the upper part of the skein will be comparatively free from wear. It is evident, therefore, that a skein having its lower part composed of hard costly metal, like cast-steel, and its upper part composed of less durable and expensive metal will unite the merits of a skein made wholly of the harder material to those (approximately) of a skein made wholly of a cheaper material. The sectional construction also lessens the cost and trouble of manufacture, since it does away with the need of a core in casting.

It is of prime importance to have our sections hold so tightly together as to constitute in effect one piece after fastening. To insure this we make the corresponding edges of the sections interlock when set together by means of a double longitudinal tongue-and-groove connection—that is, each edge of section B is provided with a longitudinal ridge or rib, *b*, and the opposite edge of section A is provided with a groove, *a*, adapted to receive the same. They effectually prevent any sidewise movement of either section. The tongue and groove also prevent the oil from running in on the wooden journal, saturating it and making it brittle.

The outer end of upper section, A, is thickened to form a block, $A^1$, which closes the end of the skein, and is provided with a cylindrical screw-threaded extension, $A^2$, to receive nut D. On said block $A^1$, behind said extension $A^2$, is a beveled shoulder, *a'*, adapted to engage with a similar bevel, *d*, on the inner face of said nut. A similar bevel, *b'*, is formed on the thin outer end of lower section, B, which is extended far enough to be in contact with and under the beveled portion of said nut when the latter is turned home. Said nut serves the double function of acting as a stop for the axle-box and of clamping sections A and B together. The beveled faces *a' b' d* have the effect of causing said sections to bind the more tightly together the farther said nut is screwed inward.

E designates a rivet or stud of malleable iron, which is cast in a recess of section A, and extends downward therefrom, as shown in Fig. 4. When the sections are in position said stud passes through a small aperture in section B, and is headed on the outside of the

same, so as to rivet the two sections together. A still further fastening is provided in collar C, which is shrunk upon the skein and driven tightly against flange C′ on the outside thereof, binding the sections firmly together. Said collar also subserves the ordinary purpose of an inner stop for the axle-box. The skein is attached to the wooden journal within by means of rivets or other fastenings passing through openings in section B.

Various modifications can be made in the several parts of the skein above described without departing from the spirit or scope of our invention.

Having thus fully described the said invention, what we claim as new, and desire to protect by Letters Patent, is—

1. An axle-skein consisting of an upper section of cast-iron and a lower section of cast-steel clamped firmly together, substantially as described.

2. The combination of lower section, B, and upper section, A, with collar C and nut D, which serve both as stops for the axle-box and as clamping devices to hold said sections together.

3. The combination of upper section, A, having screw-threaded extension $A^2$ and shoulder $a'$, with lower section, B, having bevel $b'$ and nut D, having bevel $d$, substantially as and for the purpose set forth.

4. The combination of upper cast-iron section, A, and lower perforated cast-steel section, B, with malleable stud E, cast into said section A, and adapted to pass through the hole in section B, for the purpose of riveting said sections together.

5. The combination of upper section, A, and lower section, B, having a tongue-and-groove connection along the corresponding edges, with clamping devices, substantially as set forth.

In testimony that we claim the foregoing as our own we affix our signatures in presence of two witnesses.

FREEMAN R. WILLSON, JR.
WILLIAM W. WILLSON.

Witnesses:
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