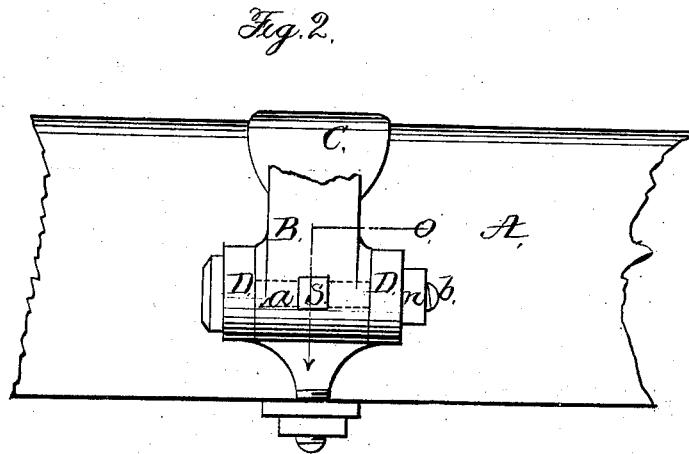
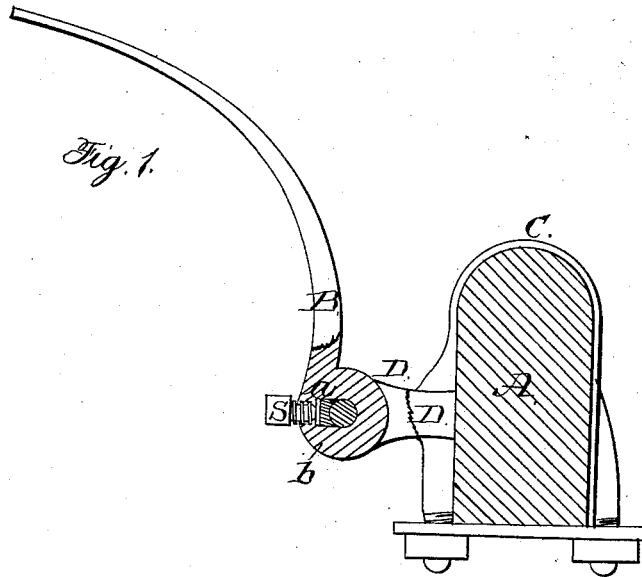


R. B. WILLIS.

Thill-Coupling.

No. 45,888.

Patented Jan. 10, 1865.



WITNESSES:

Wm H. Rogers
Wm H. Loughborough

INVENTOR:

R. B. Willis

UNITED STATES PATENT OFFICE.

B. R. WILLIS, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN THILL ATTACHMENTS.

Specification forming part of Letters Patent No. 45,888, dated January 10, 1865.

To all whom it may concern:

Be it known that I, R. B. WILLIS, of Rochester, in the county of Monroe and State of New York, have invented a new and useful Improvement in Shackle-Joints for Attaching Thills and Poles to Buggies and other Vehicles; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is an end view of a section of the axle-tree, and showing the clip C and thill-iron B in side elevation, one of the jaws D and one-half of the head of the thill-iron being broken away in the direction of the red line *o* in Fig. 2, so as to show the set-screw *s* and the adjustable friction plate or key *a*. Fig. 2 is a front view of the same, with the shank of the thill-iron broken away, and in which the friction-plate *a* is indicated by the dotted lines.

Similar letters of reference indicate corresponding parts in both figures.

This invention relates to that class of shackle-joints or thill-irons sometimes called "anti-rattlers;" and it consists in providing a set-screw and an adjustable friction plate or key intervening between it and the axial bolt of the thill-iron, whereby all looseness occasioned by the wearing of the parts may be entirely compensated for, and at the same time a perfect security afforded against the loss of the axial bolt, even if the nut should become detached, which is very liable to occur.

To enable others to work my invention, I will describe its construction and operation.

A in the drawings represents the axle-tree; B, the iron to which the thill is bolted; C, the ordinary clip, and D the jaws of the clip to which the thill-iron is hinged by the bolt *b*. The clip C and jaws D may be made together in the usual way. The bolt *b* is also made as commonly practiced, having a square shank next the head to fit the square opening made in the jaw next to it. The hole through the head of the thill-iron B to receive the bolt *b* is recessed from end to end on one side to make room for the adjustable friction plate or key *a*, as seen in Fig. 1. The set-screw *s* is

tapped through the head of the thill-iron so as to strike the center of the plate *a* longitudinally, it being nearly or quite as long as the distance between the jaws D. There may be two set-screws, if desired.

The compensating plate or key *a* may be placed in front, as shown, or on the back side, or at any intermediate point above or below, and in either case the same effect would be produced as regard tightening; but I prefer to place it as shown in the drawings for convenience and durability. If the plate is placed on the back side, where all the friction of the draft centers, it would receive all the wear, and when worn out might be substituted by a new one, and thus entirely relieve the head of the thill-iron from wear.

It will be seen that when the plate *a* is properly adjusted by the set-screw *s* the friction between it and the bolt *b* prevents the possibility of the latter working out, although the nut *n* might work entirely off.

Instead of the key or plate *a* there may be a tubular plate used, partially surrounding the bolt *b*, and the hole through the head of the thill-iron drilled large enough to receive them both, and the point of the set-screw *s*, pressing against the center of the curved plate, would tend to close the two edges together upon the bolts by forcing the whole against the opposite side of the hole in the iron B, and thereby effect a similar result to that produced by the construction and arrangement shown in the drawings.

There may be a "jam-nut" used on the set-screw *s* if necessary, in order to secure its proper adjustment while the vehicle is in use, though this will scarcely be necessary if the screw is properly fitted in the head of iron B.

The parts may be made of malleable or wrought iron.

What I claim as my invention is—

The set-screw *s*, in combination with the adjustable friction plate or key *a*, or its equivalent, substantially in the manner shown, and for the purpose set forth.

R. B. WILLIS.

Witnesses:

W. H. ROGERS,
WM. S. LOUGHBOROUGH.