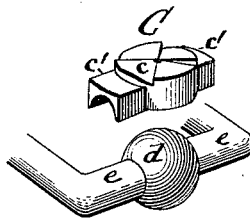
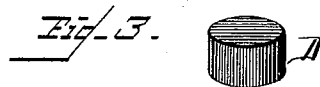
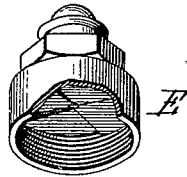
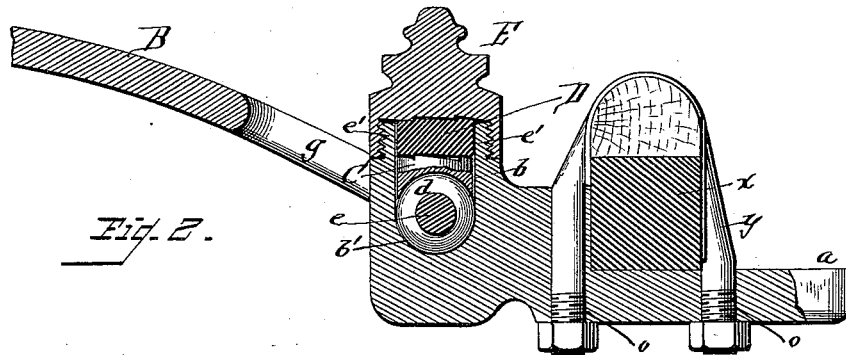
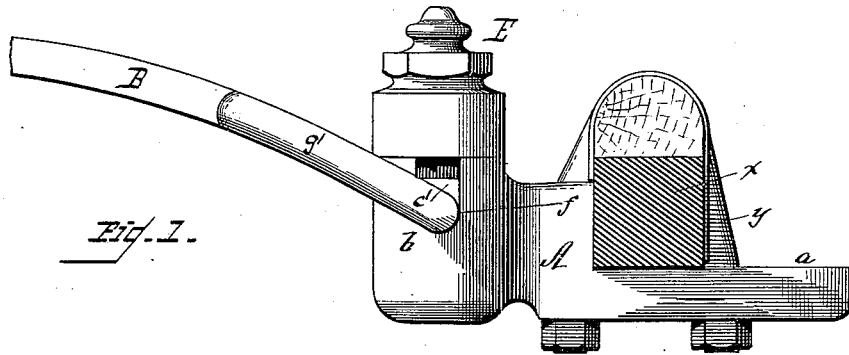


(No Model.)

Z. B. CUSTER.
THILL COUPLING.

No. 419,421.

Patented Jan. 14, 1890.



Witnesses
W. H. H. H. H.
H. Bowles

Inventor
Zora B. Custer.
By *his* Attorneys
Gilson & Benjamin.

UNITED STATES PATENT OFFICE.

ZORA B. CUSTER, OF DANSVILLE, NEW YORK.

THILL-COUPLING.

SPECIFICATION forming part of Letters Patent No. 419,421, dated January 14, 1890.

Application filed November 19, 1888. Serial No. 291,298. (No model.)

To all whom it may concern:

Be it known that I, ZORA B. CUSTER, a citizen of the United States, residing at Dansville, in the county of Livingston and State of New York, have invented certain new and useful Improvements in Thill-Couplings; and I do declare the following to be a full, clear, and exact description of the invention, such as 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 the letters of reference marked thereon, which form a part of this specification.

My invention relates to thill-couplers for vehicles, and has for its chief objects to secure a cheap, durable, and perfect anti-rattling coupler. For the means by which I secure these objects reference should be had to the following specific description and to the accompanying drawings, in which—

Figure 1 is a side view of my improved coupler attached to an axle, shown in section. Fig. 2 is a vertical sectional view, and Fig. 3 shows in detail several parts of my device.

In the drawings, A represents the body of the coupling, consisting of the shaft-arm *a*, box *b*, and threaded neck *e'*. Within the box *b* and upon its cup-shaped bottom *b'* rests the ball *d*, having extending horizontally therefrom the trunnions *e*, which rest in the sockets *f* in either side of the box *b*. The ball *d* and the trunnions *e* are integral parts of the shaft-iron B, and are connected therewith by the arms *g g'*. Fitting over the ball *d* and the trunnions *e* is a metal cap C, consisting of a round central piece *c*, the under side of which is cup-shaped, as shown in Fig. 2, and having lateral arms *c' c'*, which are curved on the under side to fit over the trunnions *e*. The top or upper side of the central portion *c* of the metal cap is made with spiro-radial serrations or notched, so that when the washer D, of rubber or other yielding substance, is pressed upon it the teeth or notches formed by the serrations will sink into or become embedded in the washer, and thus prevent the latter from turning. Over the washer and surmounting the box *b* is the screw cap or hood E, the sides of which are threaded to screw onto the neck *e* of the box *b*. The roof

of the hood E is made with spiro-radial serrations, as shown in Fig. 3, to correspond with the serrations in the cap C. When the hood E is screwed down upon the washer D, the soft or yielding character of the latter permits the ridges formed by the serrations in the roof of the hood to enter the washer, and thus form a lock-joint, which prevents the turning of the hood, and by pressing on the cap C allows of no rattling in the socket or box *b*. When the ball becomes worn by friction, a turn or half-turn upon the screw cap or hood E will make the parts fit snugly.

In addition to these advantages in adjustment the use of the serrated cap and hood with a washer of elastic material avoids the necessity for check or lock nuts commonly employed in similar devices.

Economy in construction, as well as simplicity in the number of parts used, is obtained in my improved coupler.

The yoke *y*, passing through holes *o o* and over the axle *x*, is no part of my invention.

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

1. In a thill-coupler, the combination, with an elastic washer therein, of a hood provided with spiro-radial serrations in its roof adapted to engage or bear upon said elastic washer and be locked in any position to which it may be turned thereon, as and for the purpose described.

2. In a thill-coupler, the combination, with a round elastic washer, of one or more hollowed and grooved metal caps having thereon spiro-radial serrations adapted to engage with an elastic washer when pressed thereon, for the purposes set forth.

3. In a thill-coupler, the combination of the body A, having cup-shaped socket *b'*, shaft-iron B, having ball *d* and trunnions *e*, metal hood E, and cap C, both provided with spiro-radial serrations, and the cap adapted to fit over the ball *d* and trunnions *e*, substantially as and for the purposes described.

In testimony whereof I affix my signature in presence of two witnesses.

ZORA B. CUSTER.

Witnesses:

F. BOWLES,
N. BARTLETT.