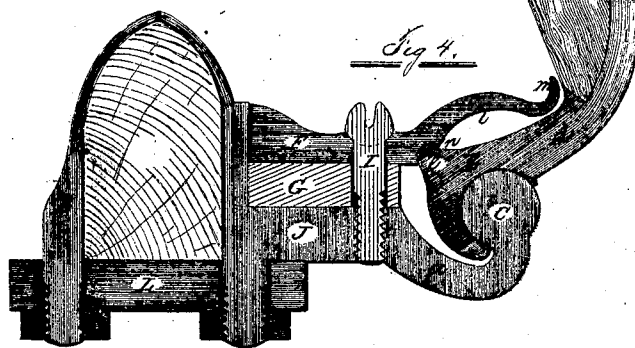
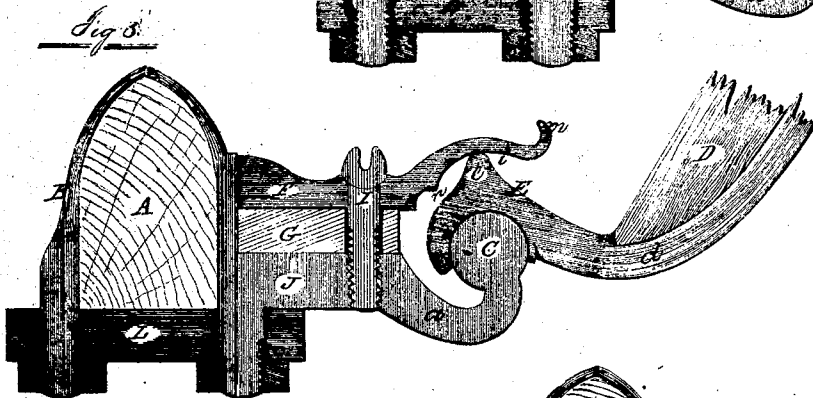
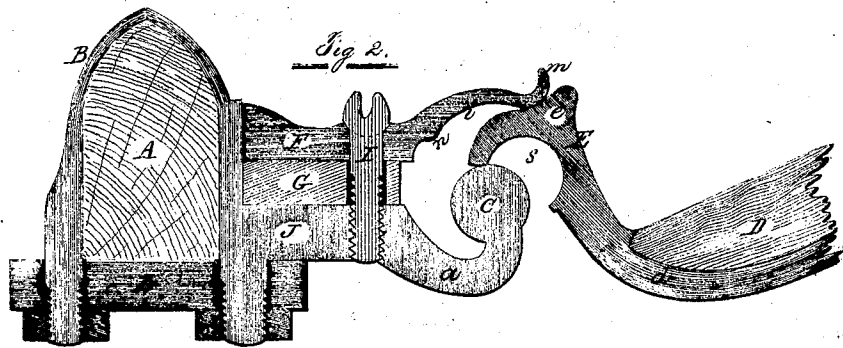
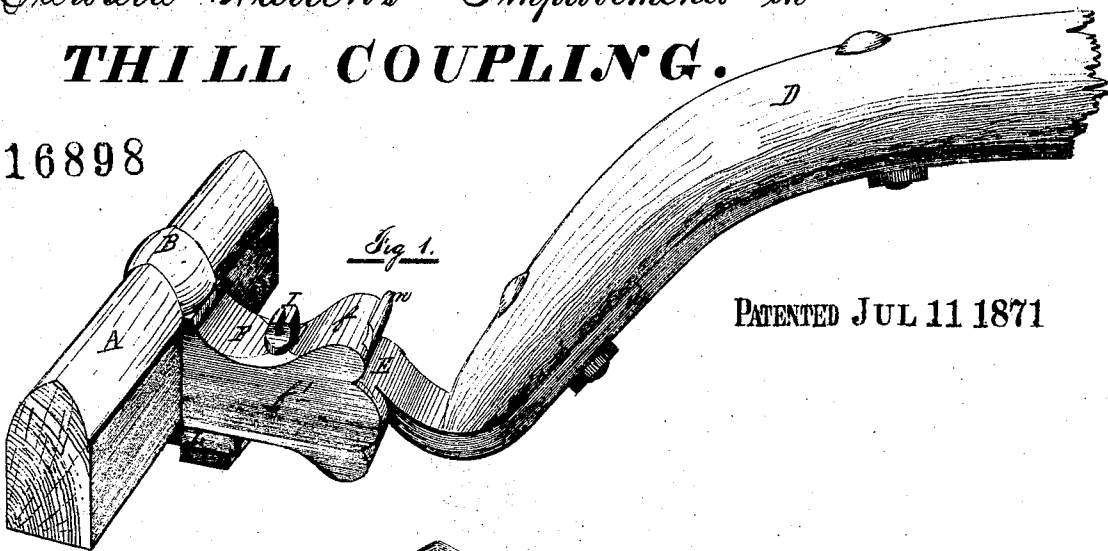


Edward Warren's Improvements in THILL COUPLING.

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PATENTED JUL 11 1871



Inventor.

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by his Attorney in fact
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Witnesses.

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UNITED STATES PATENT OFFICE.

EDWARD WARREN, OF CERESCO, ASSIGNOR TO HIMSELF, ISAAC S. PETERS, SILAS PETERS, AND WILLIAM B. PETERS, OF MARSHALL, MICHIGAN.

IMPROVEMENT IN THILL-COUPPLINGS.

Specification forming part of Letters Patent No. 116,898, dated July 11, 1871.

To all whom it may concern:

Be it known that I, EDWARD WARREN, of Ceresco, in the county of Calhoun and State of Michigan, have invented certain Improvements in Thill-Couplings, of which the following is a specification:

My invention relates to the arrangement of a joint-head formed on a curved extension of the clip, with a joint-socket or bearing formed in a cam-head of the thill-iron, in combination with a spring-actuated flanged rocking-cap, with which the thill-head cam engages for the double purpose of keeping the working parts of the joint in snug contact and locking the thills in temporary elevation out of the way, the additional objects of my invention being to provide a safe and silent joint that may be coupled and uncoupled with great ease and celerity and exclude dust and water. My invention also relates to the employment of a T-headed bolt in said coupling, which bolt can be turned before the thills are coupled, but not afterward, in order to guarantee perfect security.

Figure 1 is a perspective view of the coupling with broken sections of axle and thill. Fig. 2 is a vertical central section, showing position of thill-head to couple the end of thills or pole to rest on floor or ground. Fig. 3 is a similar section, showing position of thill-head when coupled. Fig. 4 is a similar section, showing the position of the thill-head when the thills are elevated and locked to be out of the way.

B is the clip. A is the axle, and *a* is a curved extension of the clip terminating in a joint-head, C, substantially as shown. *d* is the thill-iron bolted to the thill D in the usual way, and furnished with a head, E, consisting of a semicircular socket or bearing, *s*, to work on the clip-joint head C, the upper part of the shell having a cam-shaped projection, as at *e*. F is the cap, consisting of a curved top plate, *f*, having side flanges *f'* of sufficient depth to cover and exclude dust from the joint. G is a block, of rubber or other suitable elastic material, interposed between the plane surfaces of the clip extension and cap, and arranged relatively with the tap-bolt I, which connects the cap with the clip, as shown. The interior curve of the cap at *i* is a circle-arc concentric with the joint-head C, and the elastic block G should be of such thickness that, when the cap is properly screwed down against it, the

curved surface at *i* forms a somewhat yielding bearing for the vibratory action of the thill-iron cam *e*, so as to act against said cam with sufficient pressure to keep the convex and concave surfaces of the joint in close contact to prevent vertical displacement, secure uniform wear, and noiseless action. *n* indicates a rounded cross-ridge formed in the cap, so that the cam *e* of the thill-head may be readily sprung past in either direction by hand, but offering ample resistance (when the cam is sprung in behind by the raising the thills or pole high up out of the way) to prevent their falling back, and the thills may thus be held safely in elevation without other prop or support. *m* is a curved tip on the end of the cap, which is very useful to hang the thill-sockets over just before coupling, but is not indispensable. A bolt having an ordinary head may also be used for the cap; but for the most absolute security I employ a T-head, rounded to match a concave cross-seat in the cap. When the thills are uncoupled the forward end of the cap may be pressed down and this bolt turned into or from its seat, but not when the thills are coupled and the cam *e* presses against the cap. For a cheap construction an open concave bearing might be swaged out in the thill-head in place of a socket, for the side flanges of the cap will effectually secure against lateral displacement; and it will be readily seen, also, that in place of an independent extension, J, forged on the clip, as shown, the joint-head C may be formed on an elongation of the cross-bar L, and thereby save some expense in construction.

In coupling, the thill-head sockets are first hooked over the tips *m* of the caps, if so provided, and the free ends of the thills or the end of the pole lowered to rest on the ground. The operator then unhooks each thill-head, and introducing it, as shown in Fig. 2, by a slight push, causes the cap to rock on the bolt against the elastic block G, and effects the articulation of the joint. The coupling, however, is not complete until the thills are next lifted and the cams *e* sprung under the caps, as shown in Fig. 3, which indicates the position when at or about the draft line, leaving ample space for vibratory play occasioned by inequalities of the road. The uncoupling is, of course, effected by reverse motions.

When the team is unhitched in the stable or

elsewhere, the thills or pole may be lifted up until the cams *e* are sprung and vibrated past the ridge *n*, as shown in Fig. 4, where they will be held in elevation out of the way; and it is always best to back the team to place before lowering the thills or pole, and thus avoid the accidents which so often occur in hitching by first getting the team to place and then raising the pole from the floor, or in causing a horse to sprawl over and among lowered thills in getting him to place.

My improved clip-coupling need not necessarily be expensive in construction, for the flanged cap may be safely made of malleable cast-iron, and, perhaps, some other parts; and, in addition to advantages of safe and silent working, articulation of joint, exclusion of dust and mud therefrom, and compensation for wear, it possesses the special advantages of automatically locking the thills or pole, so as to be snugly out of the way, at any desired angle of elevation to suit the height of the stable, and also a peculiar ease and facility in coupling and uncoupling. This last feature combines with it an element of safety, for it will readily be seen, by reference to Fig. 2, that the coupling would be self-detachable if by

any unfortunate accident the thills or pole should become disconnected from the harness and fall while in motion on the road, leaving the vehicle and occupants intact and the frightened team at liberty, if uncontrollable, to run away with the thills or pole.

I claim as my invention—

1. The combination, with each other and with the carriage-clip B, of the joint-head C, thill-iron head E, cap F, and elastic block G, arranged, connected, and operated substantially as and for the purposes set forth.

2. In suitably-arranged carriage-thill couplings, a ridge, *n*, groove, or other equivalent device, behind or into which the thill-heads may be sprung to automatically lock the thills or pole at a suitable angle of elevation to be out of the way when not in use and unlock the same when needed, substantially as described.

3. The T-headed bolt I, in combination with a concave seat in the cap F, substantially as and for the purpose specified.

EDWARD WARREN.

Witnesses:

I. S. PETERS,

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