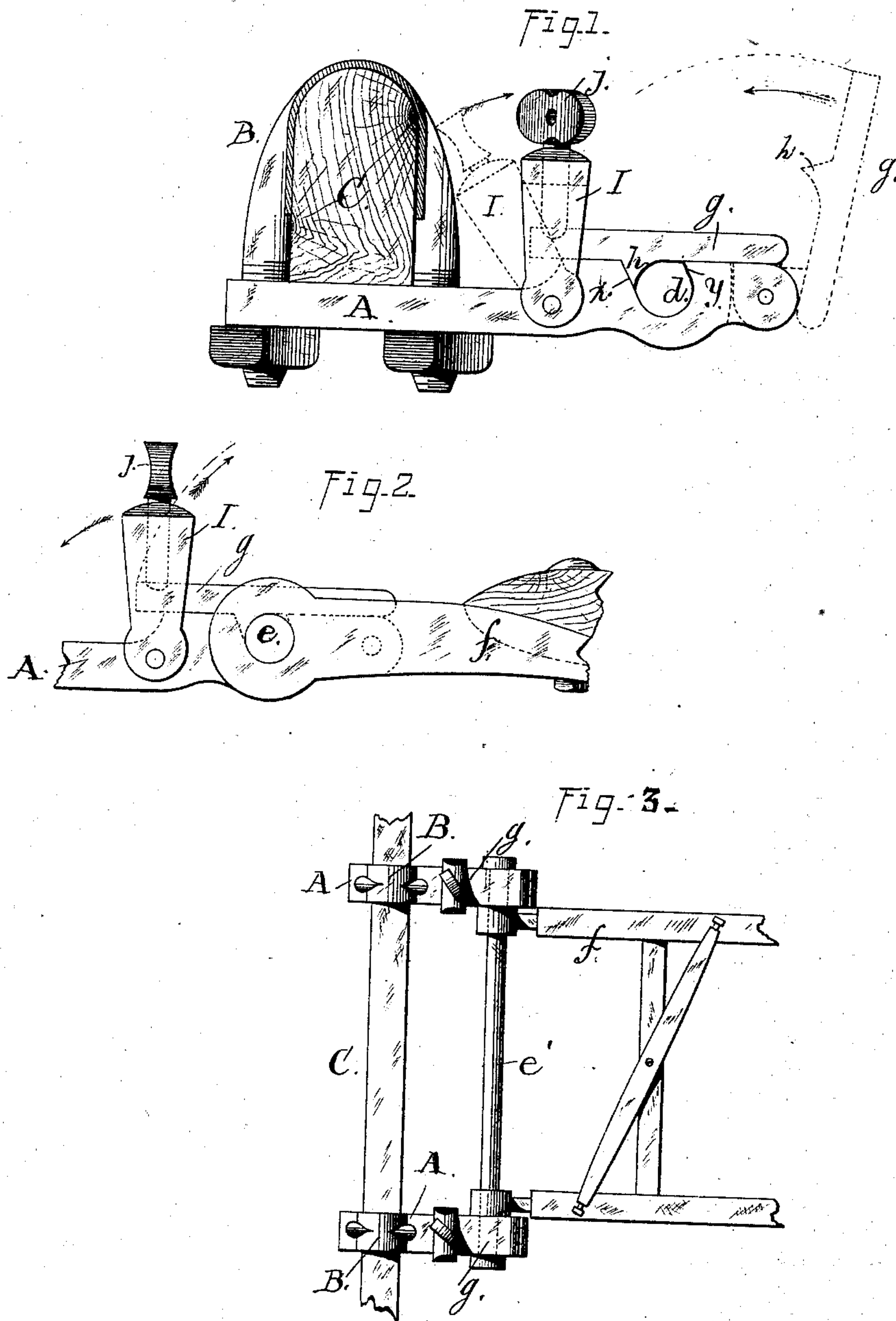


A. HARD.  
Thill-Coupling.

No. 216,270.

Patented June 10, 1879.



WITNESSES

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INVENTOR

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# UNITED STATES PATENT OFFICE.

ABNER HARD, OF AURORA, ILLINOIS.

## IMPROVEMENT IN THILL-COUPPLINGS.

Specification forming part of Letters Patent No. **216,270**, dated June 10, 1879; application filed May 22, 1878.

*To all whom it may concern:*

Be it known that I, ABNER HARD, of Aurora, in the county of Kane and State of Illinois, have invented certain new and useful Improvements in Thill and Tongue Couplings; and I do hereby declare that the following is a full, clear, and exact description of the invention, 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.

My invention has for its object a novel construction of thill and tongue couplings, whereby their strength and durability are increased, the strain on the weaker parts lessened, the liability of becoming unlocked or disconnected obviated, and the employment of springs in the fastening devices avoided, while at the same time the thill may, when desired, be readily connected with or disengaged from the vehicle without the need of raising it upward toward a vertical position, and which in low barns or carriage-houses cannot ordinarily be done without running the vehicle out of doors for the purpose.

To insure these and other advantageous results, I construct my coupler so that all the pull or strain comes directly and only upon strong pieces of metal and in the direction of their length, the bolt or bolts of the thills or tongue lodging in deep sockets or journal-bearings in such pieces to permit such pull, these pieces passing under the axle and being severally secured to both ends of the clips, and I also make these sockets with their walls inclining upward and backward, so as to afford an inclined pocket for the lodgment of the bolt, this inclination tending to prevent the pull or strain from lifting the bolt upward or out of this pocket or socket, or forcibly pressing against the cap.

In the drawings, Figure 1 is a side elevation of a coupler embodying my invention; Fig. 2, a side elevation with the thill attached to the coupling, and Fig. 3 a plan showing thills or shafts having a long instead of two short bolts as applied to my improved couplings.

The same letters of reference indicate like parts in all the figures, in which—

A is a strong bar of metal, constituting the body of my improved coupler, and which is provided with two bolt-holes through which to pass the two ends of any ordinary clip, B, adapted for spanning an axle, C. This manner of securing the coupler to the clip and axle gives the very maximum of strength and of power to resist strain, because the whole strength of the axle and of both the ends of the clip are availed of as well as the full strength of the bar A itself under a pull in the direction of its length, and it is easily applied without any need of heating or welding of the clip or of the coupling, as is often done, in order to unite them together, and it is impossible to pull them apart.

That portion of the coupling in which the thill-bolt *e* is to lodge I make of sufficient thickness to allow a deep cavity for the thill-bolt, and at the same time to retain enough thickness of metal for all purposes of resistance and strain to which the coupling may be subjected.

This hole or cavity *d*, to receive the bolt of the thill or tongue, I make with a downward forward incline, *x y*, and of such depth that when the bolt *e* of the thill *f* (or the bolt of a tongue) is lodged therein, the axis of the bolt shall not only be much below the top line of the bar, but the pull or strain of the thill or tongue shall be against the part *y*, which inclines backward up and over the front side of the bolt; or, preferably, the whole body of the bolt shall lie a little below such top line, as shown, so that if there were no cap *g* or other covering over this hole the pull of the bolt must be entirely upon the bar A and not upon any auxiliary part.

The cap *g* is a simple flat piece of metal, hinged, as shown, at the forward end of the bar A, and none of the pull of thills can come upon it in any manner, nor upon its axial pin. Its function is merely to cover the thill-bolt, and to lock it to place against accidental dislodgment. It may be entirely straight on its under face; but it is preferable that it conform somewhat by means of a lip, *h*, toward its rear end to the cylindrical form of the thill-bolt, as also to the rear inclination, *x*, of the inclined faces of the socket or cavity *d*, so that by means of the incline *y* and the lip *h* the bolt



has almost a continuous circular or tubular bearing, and which is of course the best condition for its most efficient action, and especially when the bolt is bound with leather or rubber.

As a means for locking this hinged cap *g*, I use a swing-yoke, *I*, pivoted to the bar *A*, and provided with a set-screw, *j*, by means of which the cap may be firmly held to place, the screw may be conical-pointed, and its point lodge in a conical cavity made in the end of the cap to receive it, thus preventing accidental disconnection of the yoke from its cap.

My locking device is absolutely positive in its hold and action, and I dispense entirely with the use of any springs for fastening, and consequently avoid all risk of derangement incident to the loss of resilience in or breakage or displacement of a spring.

Instead of two short bolts, *e*, one on each shaft, a long bolt, *e'*, may be used, extending from one shaft to the other, as shown in Fig. 3, such long bolt lodging, in the same manner as heretofore described, in holes or cavities *d* in the respective couplings.

Rubber tubing or pieces of rubber or other packing may of course be placed around or by the side of the thill-bolts to prevent rattling.

It will now be seen that there is no weak part in the whole device; that the strength is not dependent, as in other known constructions, upon a mere pin or screw, nor upon any mere welded part, nor upon the strength of that part only of the clip which is in front of the axle, nor even on the whole clip alone; nor is the pull or strain divided between the bar and

its cap, as is too often done in other constructions, for by my construction the cap is so made and applied in connection with the form of the cavity *d* that it shall not share or receive any of the strain under any conditions, the line of draft being always so low down and so restrained by the incline *y* as entirely to relieve the cap and screw of all strain; nor is there any risk or liability of the cap getting loose by the derangement of any spring, or of its being wrenched off or out of shape, while the simplicity, strength, and cheapness of my invention, and the positive character and action of all its parts, are quite evident, as also its safety when in use, by reason of the impossibility of the thill or tongue getting accidentally detached from the coupling.

I am aware that hinged cap-pieces have been employed with thill-couplings, and locked to place by a spring lock and hook; and I am also aware that vertical cavities for the bearings of thill or tongue bolts have been used in thill-couplings. These, therefore, I do not claim; but

I claim—

The thill-coupling described, consisting of the bar *A*, adapted to extend under the axle and to be connected to both ends of the clip, and having the deep backward-inclined cavity *d*, adapted to receive the whole circumference of the thill-bolt, and provided with the hinged cap *g* and adjusting and fastening swing-yoke *I*, all substantially as shown and described.

ABNER HARD.

Witnesses:

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