No. 838,767. PATENTED DEC. 18, 1906.

C. C. BRADLEY.

THILL COUPLING.

APPLICATION FILED JUNE 25, 1906.

Fig. 1.

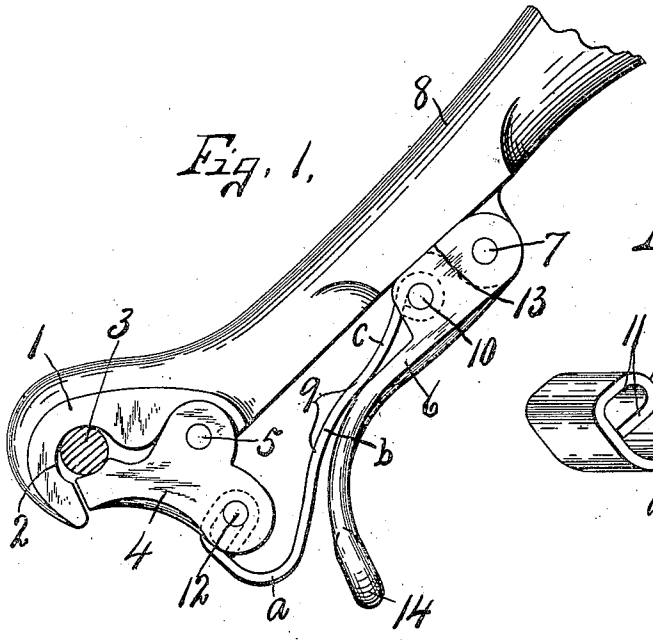


Fig. 3.

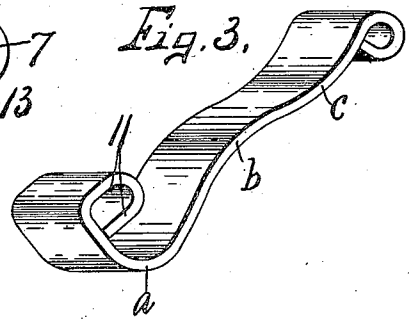
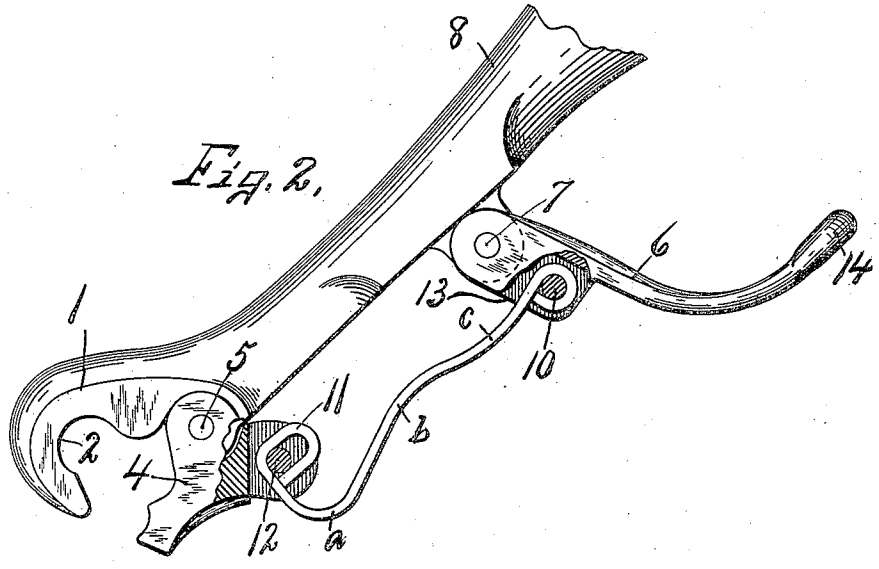


Fig. 2.



WITNESSES

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THILL-COUPLING.

No. 838,767. Specification of Letters Patent. Patented Dec. 18, 1906.

Application filed June 25, 1906. Serial No. 323,315.

To all whom it may concern:

Be it known that I, CHRISTOPHER C. BRADLEY, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Thill-Couplings, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to certain improvements in thill-couplings involving the use of a fixed jaw, a movable jaw pivoted to and entering the open side of the fixed jaw, a lever pivoted to the fixed jaw, and a spring-link of special construction connecting the lever to the movable jaw, whereby the latter is spring-pressed and held against the coupling-pin by the action of the lever.

Aside from the spring-link connection between the lever and movable jaw my present invention is very similar to that shown in the patent to Worrest, No. 662,050, November 20, 1900, in which a bow-spring link is used. This bow-spring is made in the form of an arc of a circle, and although it is not my intention to depreciate the value of the bow-spring as employed in this particular thill-coupling attention is called to the fact that bow-springs in general when attached at the ends and subjected to frequent compression the greatest tension is usually localized at the center of the spring and after a short period of use becomes crystallized and disintegrated at this point. This is particularly true when springs of this character are used as a means for holding the movable jaw against the coupling-pin, because there is a continued vibration or action against the spring tending to open the jaws, due to the horse motion and also to the jar of the vehicle in passing over rough pavements.

The object of my invention is to construct a spring-link on the line of a compound curve—that is, one having reverse bends or curves—whereby the tension or strain is distributed throughout a greater portion of the length of the spring instead of localizing such tension or strain at one particular point and at the same time to make portions of the spring to conform to the general outline of certain portions of the lever, so that when the joints are closed the lever may lie flatwise against the spring, thereby occupying a minimum space without cutting away any portion of the lever.

Another object is to connect the spring-link to the jaw with a loss motion, whereby the tension on the spring is entirely relieved when the lever is thrown back to open the jaw.

Other objects and uses will be brought out in the following description.

In the drawings, Figure 1 is a side elevation of a thill-coupling embodying my invention, parts being shown in their closed position. Fig. 2 is a similar side elevation, partly in section, showing the parts in their closed position. Fig. 3 is a perspective view of the detached spring-link.

This particular thill-coupling comprises a fixed jaw 1, having an open-sided bearing 2 for receiving a coupling-pin 3, a movable jaw 4, which is hinged at 5 to the fixed jaw at the front of the open-sided bearing 2, the lever 6, which is hinged at 7 to the under side of the extension 8 of the fixed jaw 1, and a spring-link 9, having one end pivoted at 10 to the lever 6 and its other end provided with a closed loop 11, which receives a pin 12 on the movable jaw 4. This jaw 4 constitutes a lever of the first kind fulcrumed at 5 and having one end movable into and out of the open side of the fixed jaw 1 to engage and release the coupling-pin 3.

The lever 6 is fulcrumed at one end at 7 some distance in front of the pivot 5 of the jaw 4 and has an elongated substantially flat bearing-face 13, forming an abutment at the rear of the fulcrum 7, adapted to engage the under face of the extension 8 to limit the rearward and upward springing movement of said lever. The opposite end of this lever 6 is curved rearwardly and downwardly and is formed with an elongated ring 14 for the reception of the tie-strap.

The pivot 10 is located intermediate the ends of the lever 6 and is movable with said lever to opposite sides of a direct line drawn between the pivot 12 of the jaw 4 and fulcrum 7 of the lever 6, so that when the lever is closed, as shown in Fig. 1, to tension the spring 9 and close the jaw 4 the pin 10, to which the front end of the link 9 is attached, is within or above the direct line drawn between the pivots 7 and 12, thereby yieldingly locking the lever 6 and jaw 4 in their closed positions.

The link 9 preferably consists of a flat bar, of comparatively thin spring metal, having its intermediate portion between its ends bent in the form of a compound curve having a plurality of bow portions *a*, *b*, and *c*, whereby the strain under tension of the spring is dis-

tributed practically throughout the entire length of the link. This manner of constructing the spring-link produces greater resiliency from end to end without liability of localizing the strain at any one point, thereby increasing the life and working efficiency of the spring. The bow portion *a* nearest the jaw 4 is of somewhat sharper curvature than the other bows *b* and *c*, thereby establishing greater resiliency at its connection with the movable jaw, so that as the tension on the bow portion *a* increases during the closing of the jaw the strain is distributed to the bow portion *b* and *c* instead of throwing all of the tension upon the bow portion *a*.

The closed loop 11, which receives the pivotal pin 12, is elongated lengthwise of the spring, the front end of the loop engaging the pin to close the jaw, and when the lever is thrown forward, so that the pin 10 passes beyond or beneath the opposite side of a direct line drawn through the pivots 7 and 12, the link is drawn forwardly, and its own spring tension tends to force the lever forward until its tension is spent, thereby releasing the jaw, allowing it to open by its own gravity aided by the weight of the lever, the rear end of the loop 11 engaging the pin to positively draw the jaw downward and forwardly and at the same time allowing a limited movement of the jaw independently of the link and lever by permitting the pivot 12 to slide lengthwise in the slot in the loop 11, so that when the jaw and lever are swung to their open positions the spring tension is entirely relaxed. The portion *b* of the spring-link 9 is bent inwardly toward the extension 8 of the fixed jaw 1 to conform to the bend of the free end of the lever 6, so that the lever may lie flatwise along and in proximity to the inwardly-bent portion *b* when the parts are in their closed position.

What I claim is—

1. In a thill-coupling, a fixed jaw and a movable jaw pivoted to the fixed jaw, a lever and a spring having one end attached to the lever and its other end attached to the movable jaw and its intermediate portion bent in the form of compound curves to increase its resiliency and distribute the strain of its tension throughout its entire length.

2. In a thill-coupling, a fixed jaw and a movable jaw pivoted thereto, a lever pivoted to the fixed jaw and a flat spring having one end pivoted to the lever and its other end connected with a loss motion to the movable jaw, the intermediate portion of said spring being curved in opposite directions to distribute the strain of its tension throughout its length.

3. In a thill-coupling, a fixed jaw and a movable jaw pivoted thereto, a lever pivoted to the fixed jaw, a flat spring-link having its end pivotally attached respectively to the lever and movable jaw and its intermediate portion bent in opposite directions, the bend nearest the movable jaw being of sharper curvature than the other bends to afford greater resiliency to the portion of the spring nearest the jaw, the remaining bends serving to relieve the tension on the bend nearest the movable jaw when the latter jaw is closed.

In witness whereof I have hereunto set my hand this 22d day of June, 1906.

CHRISTOPHER C. BRADLEY.

Witnesses:

H. E. CHASE,

MILDRED M. NOTT.