

M. W. St. JOHN.
Thill-Couplings.

No. 152,880.

Patented July 7, 1874.

Fig: 1.

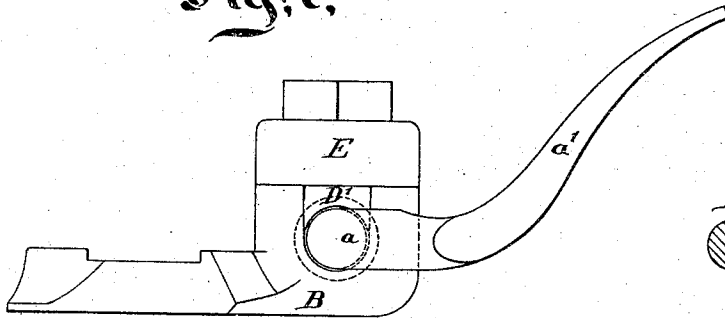


Fig: 3.

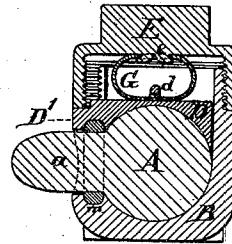


Fig: 2.

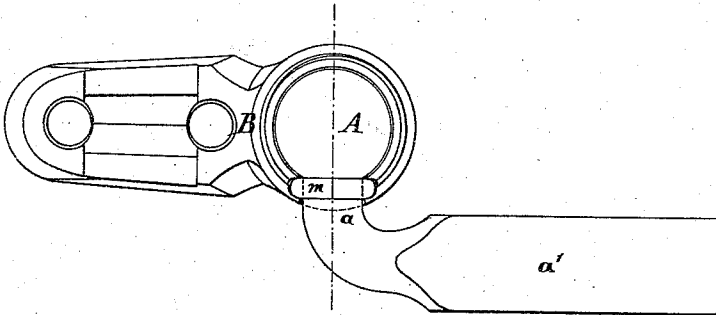


Fig: 4.

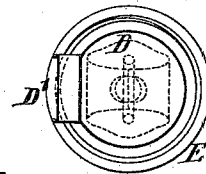
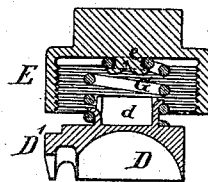


Fig: 5.



Witnesses:

Inventor;

Amos H. Brown.

W. C. Day

M. W. St. John
by his attorney *J. D. Nelson,*
New York City.

UNITED STATES PATENT OFFICE.

MILTON W. ST. JOHN, OF LEONARDSVILLE, NEW YORK.

IMPROVEMENT IN THILL-COUPPLINGS.

Specification forming part of Letters Patent No. **152,880**, dated July 7, 1874; application filed May 28, 1874.

To all whom it may concern:

Be it known that I, MILTON W. ST. JOHN, of Leonardsville, Madison county, New York, have invented certain Improvements Relating to Thill-Couplings, of which the following is a specification:

In the use of the thill-coupling described in my patent dated August 23, 1873, and in the earlier form described in my patent of June 30, 1868, a difficulty is experienced in consequence of the liability of the parts to become separated and lost when the coupling is opened for any purpose. My present invention overcomes the difficulty by causing the spring to confine the cap and the follower or concave piece together. I have also extended the concave piece out over the neck of the ball, so as to be flush with the exterior of the socket-piece, and have thus obtained room in which I produce an annular recess for the reception of a ring of rubber or other suitable packing, which forms a tight joint around the neck.

The following is a description of what I consider the best means of carrying out the invention.

The accompanying drawings form a part of this specification.

Figure 1 is a side elevation of the thill-coupling complete. One part is adapted to be secured to the axle (not represented) by ordinary clips, and another to be welded to the irons of the thills or poles. Fig. 2 is a plan view of the same, with the cap (and also the spring and follower) removed. Fig. 3 is a vertical section through the entire device. Fig. 4 represents the upper parts, seen from below. In this figure only the follower or upper concave piece and the cap above it are shown in strong lines. The spring is shown in dotted lines. Fig. 5 represents a modification. It is a vertical section through the cap, spring, and follower, detached. This figure represents the spring as a helical, usually denominated a spiral, spring.

Similar letters of reference indicate corresponding parts in all the figures.

A is the ball; *a*, the neck thereof, extending out in a direction lateral to the motion of the carriage; and *a'*, an extension thereof, bent forward for attachment to the thills. B is the socket-piece, which is formed with a

deep cavity adapted to receive and smoothly seat the ball A therein, and with an opening down the side to allow the neck *a* to be inserted and sunk to its proper place. D is the follower or concave piece, adapted to match within the socket B and to fit smoothly on the upper surface of the ball A. Above the neck *a* the follower D is extended out, as indicated by D'. It is finished flush with the exterior surface of B. A sufficient thickness of metal is left in the socket-piece and in the follower to allow a groove to be milled out or otherwise formed to receive a packing, *m*. This packing may be made of elastic material—as rubber, or its compounds—in the form of a continuous ring, and expanded by stretching so as to be snapped on over the ball A, or I can use a ring of leather or other suitable material with ends abutting or scarfed so as to lap and form a practically continuous ring. E is the cap or top piece, formed with a square top of a little less size than the main body, and with a female screw-thread adapted to match to a corresponding thread on the socket-piece B. The cap E may be screwed tightly down upon the body or socket-piece B. A shoulder is formed on the upper side of the extension D', to allow the lower edge of the cap to match down thereon. G is a spring, which, when the coupling is in use, abuts against the cap E and presses down on the follower D with a yielding force. This spring expands to compensate for the gradual wear of the parts in use, and yields to allow for any accidental irregularities in the perfection of the parts when the ball is partially revolved. The upper surface of the follower D is formed with a fastening, *d*, adapted to engage and lock loosely with the lower part of the spring G. The cap E is formed with a fastening, *e*, adapted to engage with the upper part of the spring. It is important that one or both of these fastenings shall allow the parts to revolve. In Figs. 3 and 4 the spring is of sheet metal, preferably steel or hard brass. It is bent around in the form of a flattened ring, and preferably so fitted that its ends will lap or extend a little past each other. The wide part has a round hole which fits over a smaller round projection, *e*, which extends down from the cap E. After these parts are

applied together the projection *e* is split and spread so as to lock the spring, but allow it to turn loosely on the neck above. The lower side of the spring is an open side, where the ends abut together or preferably lap a little. They engage under a staple-shaped fastening, *d*, on the upper surface of the follower. In Fig. 5 the spiral spring employed calls for a corresponding modification in the fastenings. The lower end of the spring is secured by portions partially cut and turned out from the extension *d* on the top of the follower. The extension *D'* of the follower affords room for the packing-groove, and gives a finished appearance to the exterior. The packing allows the partial revolution of the neck, and also the slight irregular lateral motions due to the springing of the shafts, while it maintains the joint dust-proof and aids to retain any lubricant. The spring maintains a tension on the follower under all conditions when in use, and holds itself permanently connected to the cap and follower when removed for cleaning or repairs. The swiveling attachment of the

spring to the cap allows for the revolutions of the latter in screwing on or taking off.

I claim as my improvements in thill-couplings—

1. The follower *D D'*, having the extension *D'* filling the entire notch over the neck *a*, in combination with such neck, and with the ball *A*, cap *E*, and spring *G*, as specified.

2. The packing *m* around the neck *a*, in combination with the ball *A*, socket *B*, and the follower *D*, having an extension, *D'*, adapted to form a dust-proof joint, as specified.

3. In combination with the ball *A a a'*, socket *B*, follower *D*, and cap *E*, the elastic piece *G*, fastened to the cap and follower, as and for the purpose set forth.

In testimony whereof I have hereunto set my hand this 25th day of May, 1874, in the presence of two subscribing witnesses.

MILTON W. ST. JOHN.

Witnesses:

J. P. ALLIS,

N. L. BURTON.