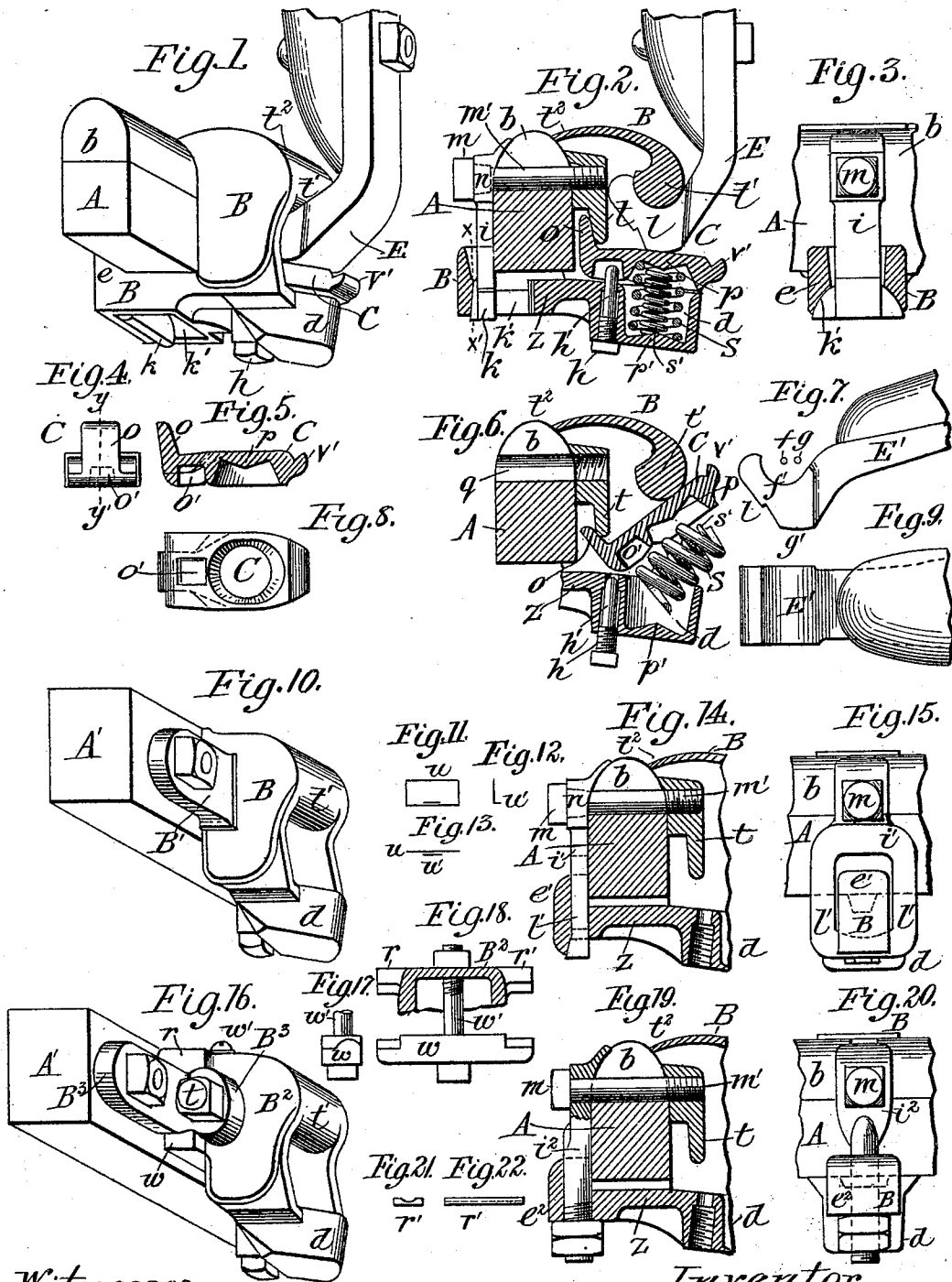


(No Model.)

H. A. LUTTGENS.
THILL COUPLING.

No. 582,360.

Patented May 11, 1897.



Witnesses:

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THILL-COUPLING.

SPECIFICATION forming part of Letters Patent No. 582,360, dated May 11, 1897.

Application filed February 29, 1896. Serial No. 581,396. (No model.)

To all whom it may concern:

Be it known that I, HENRY A. LUTTGENS, of the city of Paterson, county of Passaic, and State of New Jersey, have made certain Improvements in Thill-Couplings for Vehicles; and I do hereby declare that the following is a correct description and specification of the same, reference being had to the accompanying drawings, in which like letters represent the same parts in all the figures.

My invention is an improvement upon a thill-coupling for which Letters Patent of the United States of America were granted to me April 13, 1875, No. 161,973; June 27, 1882, No. 260,107, and April 14, 1885, No. 315,642.

The improvements consist—

First. In the mode of securing the coupling-box to the axle of a vehicle. As shown in the former patents, the box is provided with an extension underneath the axle, which is gibbed to the rear of the axle in every case where the coupling is secured to the axle, but it is now provided with other means than a clip-bolt to secure it to the axle. The extension in the rear of the coupling-box is provided with a cavity suited to receive and hold a vertical bar in contact with the rear of the axle, which bar is perforated near its top, so that a bolt can be inserted at right angles with the bar and directly above the axle proper through a hole provided in the wooden bed-piece. The bolt enters the part of the box in front of the axle, which is fitted to receive the end of the bolt.

Second. In casting in one with the box that part which in the other patents forms the front end of the clip-bolt. This latter part so made is extended to cover the box, and it engages with the thill-iron when this is in its proper position for use.

Third. In the former patents it was necessary to detach the coupling-box from the axle for the purpose of removing and inserting the springs and spring-cap, but by a change in this part the spring-cap and springs can be removed and replaced, while the coupling-box remains secured to the axle. Also the box is provided with a removable stop, which holds the spring-cap and springs so as to avoid rattling when the shafts are detached and the pole is used instead, as is the case on platform

spring-wagons, where the pole is usually placed into a separate pocket provided for its use.

Screws are used for various purposes in thill-couplings. They are used in the patents hereinafter referred to as follows: First, in the patent for a thill-coupling, dated July 11, 1871, to Edward Warren, No. 116,898, a T-headed bolt is claimed in combination with a cushion-plate which compresses a rubber block held in its proper position by the adjustment of the T-headed bolt. Second, in the patent for a thill-coupling, dated April 7, 1885, to C. C. Wright, No. 315,415, a screw is claimed in connection with other parts. It is used as a set-screw for the purpose of support and adjustment as to height of a box containing a rubber cushion which supports the thill-iron.

In my improved method of holding a spring-cap the screw-bolt is not used for the purpose of support or adjustment of the spring-cap. The spring-cap is provided with a proper recess and presses against the side of a projecting stop formed at the end of a screw-bolt, which prevents the further movement of the spring-cap when the latter comes in contact with the stop. The bolt itself is screwed firmly to its position, is therefore safe from dust and moisture, and is used to hold or to displace the projecting stop, so that the spring-cap can be removed at the front of the coupling.

Modifications of shape and in the mode of securing the vertical bar at its connection with the coupling are shown, and instead of being provided with a head to enter a pocket it may be changed at its bottom end into a loop and the pocket at the rear of the coupling into a solid projection which engages with the bar so changed.

Another modification may be made by changing the lower end of the vertical bar into a bolt passing through a hole made in a solid projection. In that case the bar is secured with double nuts at the bottom. Also modifications as regards the fastening of the coupling-box, when applied to the running-gear of a platform spring-wagon, are as follows: Omitting the rear bottom extension of the coupling, it may be provided with the bar

which forms part of the ordinary coupling for this style of wagons; or, if the latter is fitted with a pair of jaws forming part of the iron fittings, and is therefore not detachable, the coupling is to be inserted and bolted to these jaws. Liners are shown adapted to their position and to be used when needed.

In the accompanying drawings, Figure 1 is a perspective view of the thill-coupling, and Fig. 2 is a section upon a vertical plane through the center of the coupling. Fig. 3 is a rear elevation of the coupling with section at line $x x'$, shown in Fig. 2. Fig. 6 is a section like Fig. 2, with part of the coupling-box removed and other parts omitted to show the spring-cap and springs in the act of being inserted or taken out. Figs. 4, 5, and 8 are an end view, a section at line $y y'$, shown in Fig. 4, and a bottom view of the spring-cap. Figs. 7 and 9 are side and top views of a thill-iron for shafts suitable for platform spring-wagons. Figs. 14, 15, 19, and 20 are sections through the center of the coupling, with part removed, and rear elevations showing changes in the coupling-box adapted to modifications of the vertical bar in the rear of the coupling. Figs. 10 and 16 represent perspective views of couplings to be used in connection with platform spring-wagons. In Fig. 10 it is made to bolt to the front bar, which is part of the running-gear of many of these wagons. In Fig. 16 it is fitted to enter the jaws provided to receive common thill-irons. Figs. 17 and 18 represent, partly in section, details of Fig. 16. Figs. 11, 12, and 13 represent an elevation and side and top views of a liner which can be used to make a fit of the coupling-box in the rear of the axle. Figs. 21 and 22 represent end and side views of another liner which can be used with the bolt which unites the vertical bar with the coupling-box.

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

The principal features of this coupling are the same as described in the Patents Nos. 161,973 and 315,642.

A represents a portion of a carriage-axle.

E is the thill-iron of a carriage-shaft; B, the coupling-box, which is united from side to side by part t , the hook-bearing t' , a web t^2 , which closes the top of the box B, and the bottom part z , which unites the sides at the bottom.

The rear of the coupling-box is closed at e and fitted securely to the rear of the axle A. It is further provided at this end with a hole made to receive the bottom end of the vertical bar i , which is rounded at k , as shown, and presses against a corresponding surface k' . The vertical bar i is provided with a taper-hole near its top to admit bolt m , which is made a corresponding taper near its head at n , and the bolt m' , passing through hole q , screws into the part t of coupling-box B, and the hole in the coupling-box is slightly countersunk. Likewise the bolt m at its end is

made a little tapering to facilitate its entrance into the coupling and to make it bear firmly upon the top of axle A when the bolt has been screwed into its place.

A portion of part t of coupling-box B forms a downward flange and leaves an opening in the rear between this flange and the axle for the insertion of spring-cap C by means of its vertical part o .

The spring-cap C is provided with a cavity, the top of which forms a downward-projecting cusp p , which is above and opposite a similar projection p' , formed in the bottom of the spring-pocket d , provided in the coupling-box B for the reception of springs S and s' .

A screw-bolt h , which enters the bottom of the coupling-box B, projects by means of the removable stop h' into a cavity o' in the spring-cap C.

The spring-cap C is provided with a projection v' and the thill-iron E placed so as to be supported by its shoulder l resting upon v' before the thill-iron enters the coupling.

When the vehicle is in use, the screw-bolt h is in the position as shown in Fig. 2, so that when the thill-iron E is removed and the springs S and s' are at liberty to extend to near their full length they are somewhat checked by the end face of cavity o' coming in contact with the projecting stop h' . Only when it is desired to remove and change the springs S and s' then the screw-bolt h is so far unscrewed as not to project into cavity o' or above the inner face of coupling-box B, as shown in Fig. 6. Then first the spring-cap C and also the springs S and s' can be inserted and removed at will.

The thill-iron shown by Figs. 7 and 9 has the center of its rounded surface f' in a different position from center g , which is the center for the arc of the lower surface g' .

Figs. 10, 16, 17, and 18 represent modifications of Figs. 1 to 3 to adapt the coupling to different styles of vehicles, with such changes as are necessary for that purpose. The changes are: casting in one with coupling-box B the bar B' ; also, by omitting the rear extension or bottom part z of the box B. When bolted to bar A' , it takes the place of the ordinary coupling. This mode of fastening is shown by Fig. 10.

When, as shown in Fig. 16, the ordinary coupling-jaws are retained, then the coupling-box B^2 is made to enter the jaws B^3 . In that case bolt t^3 , which was used to connect with the ordinary shaft-irons, is used to secure the coupling-box B^2 . In connection with this last device a rearward-projecting flange at the top of the coupling-box B^2 is provided with ears $r r$, and a corresponding washer w is placed underneath the jaws B^3 of the ordinary coupling. These are united by a bolt w' , passing through washer w and the top of coupling-box B^2 , whereby the box B^2 is prevented from turning within the jaws B^3 of coupling-box.

Figs. 14, 15, 19, and 20 represent modifica-

tions of the shape of the lower end of vertical bar *i*.

In Figs. 2 and 3 a solid bar *i*, provided with a suitable head *K* to hold it in position, enters the coupling through a hole provided for it. In Figs. 14 and 15 this is changed by making the projection *e* in a solid part *e'* and by providing the lower end of the vertical bar *i'* with a loop *l'*, which surrounds and rests against the lower projection *e'* of coupling-box B.

In Figs. 19 and 20 the vertical bar *i*² is formed into a bolt at its bottom. It enters the coupling-box B through a hole in the otherwise solid projection *e*² in the rear of the coupling-box B, and the vertical bar *i*² is secured in this case by double nuts at the bottom, as shown.

The operation of placing the case-hardened thill-iron into the coupling does not differ from the mode as explained in Patent No. 315,642. On entering the thill-iron E it will first rest by means of the offset *l* of the thill-iron E upon the pointed projection *v'* of the spring-cap C by raising the shafts or pole and bringing them close to the dashboard. The thills are entered one after another into the coupling-boxes B by pressing down upon the shafts or pole, so as to compress the springs S and *s'*, and by using one hand to push the thill-iron E into the coupling-box B. Likewise in removing the thill-iron E the springs should be compressed and the thill-iron detached from the coupling B by pressing against the rear of the thill-iron.

Instead of making use of a hinged clip-iron to secure the coupling-box B to the axle, as in former patents, this is now changed to the combination of the vertical bar *i*, united by means of bolt *m* to the coupling-box B, so that the coupling-box B can be made in one casting, preferably of cast-steel, with its inside parts in their proper finished position. Also in the Patent No. 315,642 and those preceding it it is necessary for the purpose of removing or replacing the springs or spring-

cap, or both, to disconnect the coupling-box B from the axle A, but by the construction and method more particularly shown in Fig. 6 the springs S and *s'* and spring-cap C can be taken out and replaced as follows: The spring-cap C is entered into coupling-box B, and its vertical part *o* is entered into the cavity provided for it by part *t* and axle A. It is then placed in the position shown in Fig. 6. The springs S and *s'* may now be placed in their proper position in the coupling. After the spring-cap C and the springs S and *s'* have been so placed, and with sufficient pressure upon spring-cap C to bring cavity *o'* of spring-cap C above screw-bolt *h*, the latter is then screwed up and the stop *h'* enters cavity *o'*, so that the spring-cap C, and thereby the springs S and *s'*, cannot be removed until the stop *h'* is first put back into the position as shown in Fig. 6.

The coupling-box B made as herein described can be fitted to bar A', as shown in Figs. 10 and 16, by providing the bar B' cast in one with the coupling-box B', or it may be inserted, as described, into an ordinary coupling-box B² by means of provisions made as shown in Figs. 16, 17, and 18.

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

1. In thill-couplings a vertical bar *i* in combination with bolt *m* and coupling-box B.
2. In thill-couplings having provision for one or more springs to support the weight of shafts or pole, a removable stop in combination with spring-cap C.
3. In thill-couplings a spring-cap C in combination with the hook-bearing *t'*, bottom part *z* and stop *h'*, arranged with a view to remove and replace spring-cap C and springs S and *s'* while the thill-coupling is attached to the vehicle.

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