

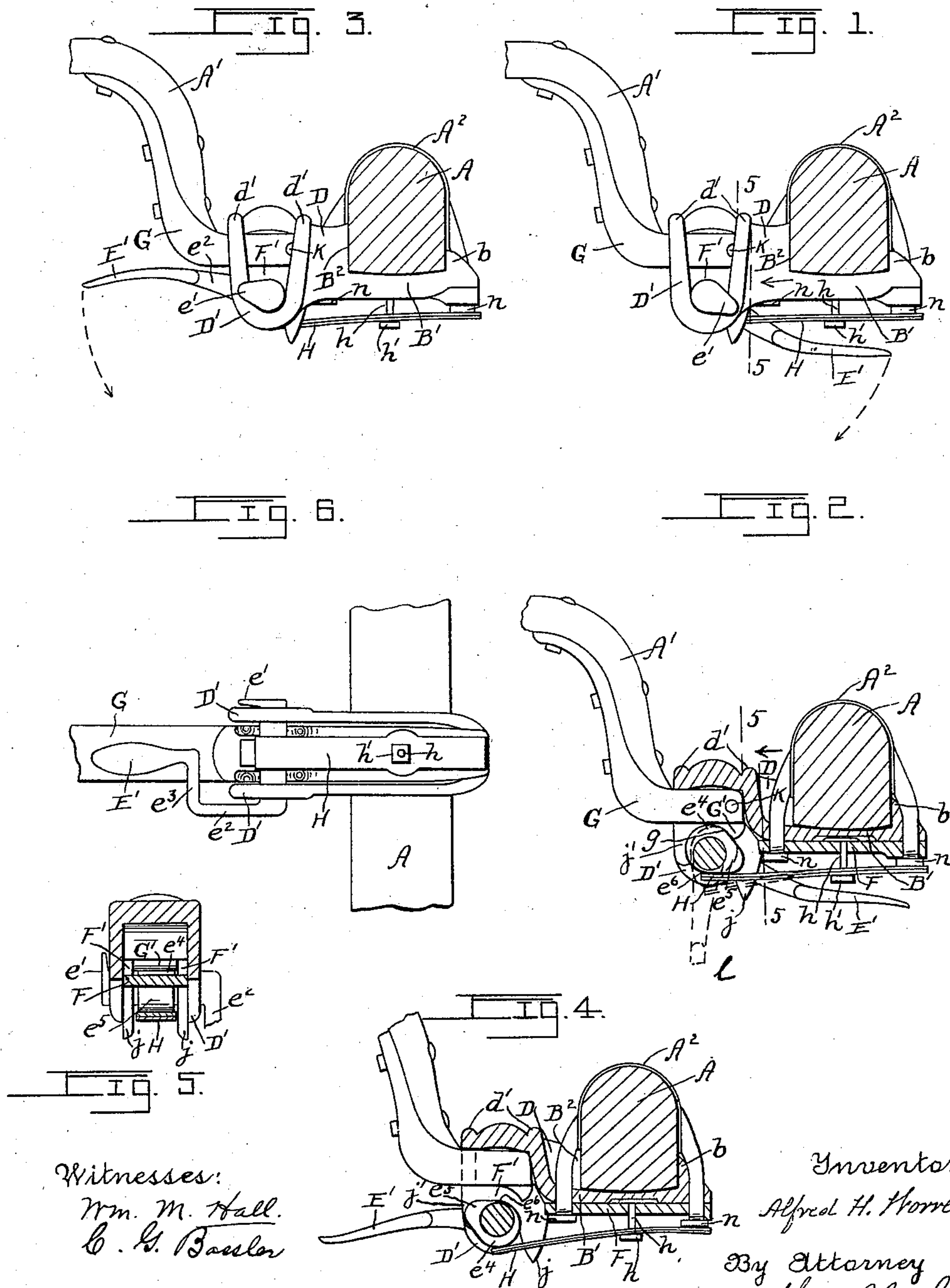
(No Model.)

2 Sheets—Sheet 1.

A. H. WORREST.
THILL COUPLING.

No. 589,063.

Patented Aug. 31, 1897.



Witnesses:

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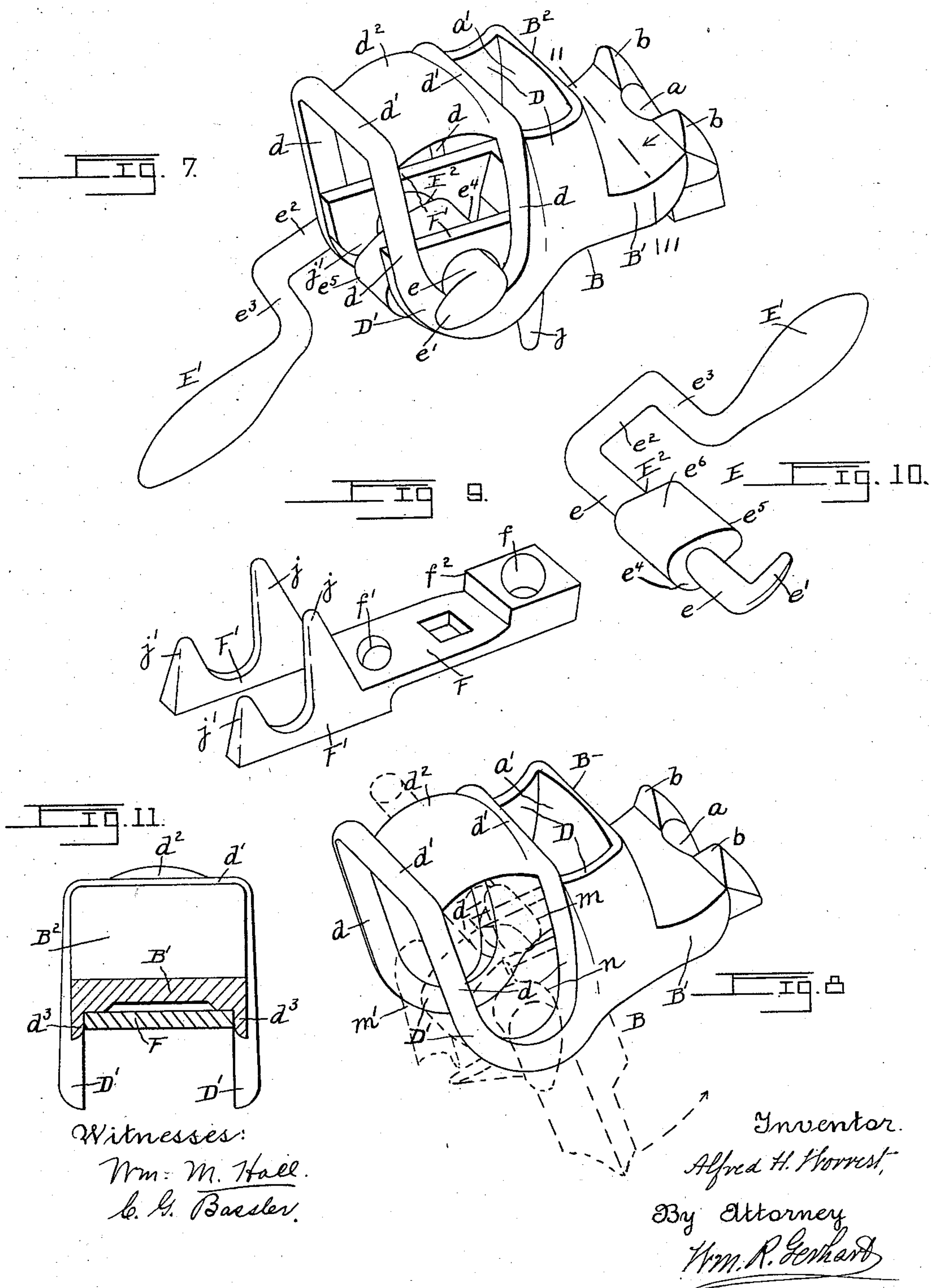
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2 Sheets—Sheet 2.

No. 589,063.

Patented Aug. 31, 1897.



UNITED STATES PATENT OFFICE.

ALFRED H. WORREST, OF LANCASTER, PENNSYLVANIA.

THILL-COUPLING.

SPECIFICATION forming part of Letters Patent No. 589,063, dated August 31, 1897.

Application filed July 28, 1896. Serial No. 600,796. (No model.)

To all whom it may concern:

Be it known that I, ALFRED H. WORREST, a citizen of the United States, residing at Lancaster, in the county of Lancaster, State of Pennsylvania, have invented certain Improvements in Thill-Couplings, of which the following is a specification.

This invention relates to improvements in that class of couplings connecting the thills or tongues of vehicles with the axle; and the objects of the improvements are, first, to provide a coupling by which thills or tongues can be detachably connected with the axle without the use of screws or bolts; second, to construct the coupling so that thills or a tongue can be connected with or detached from the axle more easily and expeditiously than can be done with the ordinary bolt-coupling, and, third, to produce a thill-coupling cheap and simple in construction and in which each member or part is detachably connected with the other members or parts.

The invention consists in the construction and combination of the various parts, as hereinafter fully described, and then pointed out in the claims.

In the accompanying drawings, forming a part of this specification, Figure 1 is a side view of a coupling embodying my invention; the thill being secured in the coupling; Fig. 2, a similar view showing the coupling in section; Fig. 3, a side view, the thill being engaged with the coupling, but not locked therein; and Fig. 4, a similar view showing the coupling in section. Fig. 5 is a vertical section on broken line 5 5 of Figs. 1 and 2; and Fig. 6, a bottom plan view, the parts being in the position occupied thereby in Figs. 3 and 4. Fig. 7 is a perspective view of the coupling detached from the connected parts; and Figs. 8, 9, and 10, similar separate views, respectively, of the coupling-frame, of the keeper-plate, shown inverted, and of the cam-lever. Fig. 11 is a vertical section on broken line 11 11 of Fig. 7.

Similar letters indicate like parts throughout the several views.

Referring to the details of the drawings, A indicates the axle, A' the thill, and A² a clip of ordinary construction surrounding the axle.

B is the coupling-frame, comprising a clip-

bar B' and a thill-iron socket. The clip-bar B' takes under the axle, as is usual, and has shoulders *b* on the back end which bear against the rear face of the axle, being located on opposite sides of the opening *a* in the clip-bar through which the rear arm of the axle-clip A² passes.

On the front of the clip-bar is a higher shoulder B² of the width of said bar and bearing against the front of the axle. This shoulder also serves as the back plate of the socket of the thill-iron, to be described, and on the vertical edges of said back plate are forwardly-projecting cheeks D, through an opening *a'* between which passes the front arm of the clip.

On the front edges of cheeks D are formed forwardly-extending U-shaped bearings D', the loops whereof depend somewhat below the clip-plate, and the upper ends of the opposite arms *d* of bearings D' are connected by cross-bars *d'*, themselves connected by a horizontal plate or web *d*².

In the loops of bearings D' are supported the journals *e* of cam-lever E, and on the outer end of one of these journals is a hook *e'*, that laps the outer face of the bearings, and on the outer end of the other journal is an arm *e*² at right angles therewith and lapping the outer face of the other bearing. The swinging end *e*³ of arm *e*² is turned inward at right angles therewith and extends beneath the coupling parallel with the axis of rotation of journals *e*, the extremity of end *e*³ having thereon and at right angles thereto a drooping handle E', wherewith the cam-lever is operated. The cam E² is supported by and between journals *e*, the swell *e*⁴ of the cam being uppermost and locking the thill-iron in the socket, as will be explained. When handle E' is extended rearwardly, as shown in Figs. 1 and 2, said swell, terminating in a tongue *e*⁵, extends toward the handle, for a purpose to be explained.

Above journals *e* and between the same and the thill-iron is located what I term, for the purposes of this specification, the "keeper-plate." The body F of this plate extends beneath the clip-plate in a channel formed by lips *d*³ on the bottom edges of the clip-plate, as seen in Fig. 11, and is provided with two openings *f* and *f'*, that register with the open-

ings in the coupling-frame, through which pass the arms of the clip, and around the rear opening f of the keeper-plate and on the underside thereof is formed a boss f^2 . The arms of the clip pass through openings f and f' , and the nuts n , securing the clip-plate and the keeper-plate on the clip-arms, bear against said keeper-plate.

On the ends of the front edge of body F are forwardly-projecting arms F' , that pass over and rest on the journals e between cam E^2 and the U-shaped bearings D' , said arms being raised somewhat above body F .

Each journal e is embraced by jaws j, j' on the bottom of the arm passing over the same, and the under sides of said arms are rounded out between jaws j, j' to properly embrace the journals. The keeper-plate thus serves to hold the journals e down in their bearing, even when the socket is not engaged by the thill-iron.

G indicates the thill-iron, secured to the thill in the ordinary manner and being of the usual shape, but having on the bottom of the inner end a shoulder G' , the front face g whereof is so curved as to be adapted to engagement by cam E^2 , whereby said thill-iron is rigidly locked in the socket, as fully illustrated in Fig. 2.

In the bottom of the keeper-plate and about midway between the clip-arms is secured what I call a "tension-bolt" h , the lower end of which is threaded, and on this bolt, secured by a nut h' , is a flat spring H , composed of two leaves. The inner end of the spring rests on the end of the rear arm of the clip or on the nut securing the same, while the outer end of said spring extends forward between jaws j and beneath the cam, against which it bears. Jaws j are made longer than jaws j' , that they may embrace spring H and prevent lateral displacement thereof.

The thill-iron is of such thickness that it fits snugly between cross-bars d' and the tops of arms F' of the keeper-plate, the shoulder G' being narrower than the thill-iron, so as to fit between said arms F' , and the flat side e^6 of the cam opposite the swell e^4 is reduced that it may fall below the level of the upper edges of arms F when the handle E' is thrown forward, as seen in Fig. 4.

When the parts are in their normal positions, the swell e^4 of the cam engages the curved front face g of shoulder G' , the tongue e^5 of said cam extends back beneath shoulder G' , the handle E' of the cam-lever also extends backward beneath the coupling, and the front end of spring H bears against the flat side e^6 of the cam, so as to take up the wear of the cam and the adjacent parts and prevent the disengagement of the cam from shoulder G' . To disconnect the thill from the coupling, the handle E' is drawn downward and forward until it extends beneath the thill in an approximately horizontal position. By this movement of said handle tongue e^5 depresses spring H and is turned

forward in the direction of the handle, leaving the flat side of the cam uppermost, so as to afford a free channel for the passage of shoulder G' in withdrawing the thill-iron from the socket. In recoupling, the thill-iron is again inserted and the handle E' is turned downward and backward.

For safety, to prevent accidental disengagement of the cam from the shoulder G' , the cam is so constructed that it is not entirely disengaged from said shoulder until the handle E' has almost reached the horizontal forward position. To disengage the cam entirely from said shoulder, the handle must make fully one-half the turn from the vertical position, as shown by broken lines l , Fig. 2, to the front horizontal position as in Fig. 4, so that should spring H break or weaken and the handle drop the thill-iron would still be locked in the socket. The only strain upon the spring is the pressure of handle E' , and this is greatly reduced or taken up entirely by the friction between the cam and shoulder G' . The tension of the spring is regulated by the nut on tension-bolt h .

The thill-iron is provided with a bolt-hole K , so that it can be engaged with an ordinary coupling.

The coupling-frame, the cam-lever, and the keeper-plate are assembled by first inserting the cam through the upper portion of the U-shaped openings, with handle E' extending upward, then turning said handle forward, as shown, respectively, by broken lines m and m' of Fig. 8, and then lowering the journals into their bearings. After this the arms F are inserted vertically behind the cam-journals and the jaws j, j' engaged therewith, as shown by broken lines m^2 of Fig. 8, when the body of the plate is revolved upward about said journals and into its place between lips d^3 . The coupling-frame and keeper-plate are then secured on the arms of the clip.

The application of the principles in my invention are entirely new. I do not, therefore, confine myself to the details of the construction herein shown and described, as it is obvious that many alterations may be made therein without departing from the principle and scope of my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a thill-coupling, of a coupling-frame, bearings in the sides of said frame, a cam-lever journaled in said bearings, a thill-iron having a shoulder thereon and adapted to engage said frame, a cam on said lever and constructed to engage the shoulder on the thill-iron, a tongue on the cam, and a spring adapted to engage the tongue on the cam, for the purpose specified.

2. The combination, in a thill-coupling, of a coupling-frame having U-shaped bearings thereon, a cam-lever journaled in said bearings, a keeper-plate having arms resting on

the journals of the cam-lever, jaws on said arms and embracing the journals of the cam-lever, a cam located between the arms of the keeper-plate, and a thill-iron having a shoulder thereon constructed to be engaged by the cam, for the purpose specified.

3. The combination, in a thill-coupling, of a coupling-frame having U-shaped bearings thereon, a cam-lever journaled in said bearings, a keeper-plate having arms resting on the journals of the cam-lever, jaws on said arms and embracing the journals of the cam-lever, a cam located between the arms of the keeper-plate, a tongue on the cam, a thill-iron having a shoulder thereon constructed to be engaged by the cam, and a spring bearing against the tongue on the cam, for the purpose specified.

4. The combination, in a thill-coupling, of a coupling-frame having U-shaped bearings thereon, a cam-lever journaled in said bearings, a keeper-plate having arms resting on the journals of the cam-lever, jaws on said arms and embracing said journals, one pair of said jaws depending below the keeper-plate, a cam located between the arms of the keeper-plate, a tongue on the cam, a spring on the bottom of the keeper-plate and located between said depending jaws, said spring bearing against the tongue on the cam, and a thill-iron having a shoulder thereon constructed to be engaged by the cam, for the purpose specified.

5. The combination, in a thill-coupling, of a coupling-frame provided with U-shaped bearings, a clip-plate on the frame, having shoulders embracing the axle, a cam-lever journaled in said bearings, a keeper-plate in a channel in the bottom of the clip-plate, the

arms on the clip passing through the clip-plate and the keeper-plate, arms on the keeper-plate and resting on the journals of the cam-lever, jaws on said arms and embracing said journals, one pair of said jaws depending below the keeper-plate, a spring secured to the bottom of the keeper-plate by a tension-bolt and located between said depending jaws, said spring bearing against the tongue on the cam, and a thill-iron having a shoulder thereon constructed to be engaged by the cam, for the purpose specified.

6. The combination, in a thill-coupling, of a coupling-frame provided with U-shaped bearings, a clip-plate on the frame, having shoulders embracing the axle, a cam-lever journaled in said bearings, a keeper-plate in a channel in the bottom of the clip-plate, the arms on the clip passing through the clip-plate and the keeper-plate, arms on the keeper-plate and resting on the journals of the cam-lever, jaws on said arms and embracing said journals, one pair of said jaws depending below the keeper-plate, a spring secured to the bottom of the keeper-plate by a tension-bolt and located between said depending jaws, said spring bearing against the tongue on the cam, a thill-iron adapted to rest on the arms of the keeper-plate, a shoulder on said thill-iron and depending between said jaws, the cam being adapted to engage said shoulder, and a handle on the cam-lever, adapted to extend beneath the coupling, all substantially as and for the purpose specified.

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