This invention relates to draft mechanisms for use on railway vehicles, such as cars or motive power units, for cushioning shocks in buff and draft applied to the vehicle coupler. More particularly, the invention is concerned with a novel coupler and draft gear combination which permits the coupler to swing a limited distance in a horizontal plane to facilitate the coupling together of cars, the couplers of which are somewhat out of horizontal alignment.

Though the new coupler and draft gear combination may be employed in friction gears it will be illustrated and described as including a vertical yoke positioned between the spaced longitudinal sills of the vehicle and cushioning means interposed between the yoke and the sills. The yoke is provided with a pair of horizontally spaced integral wings, extending forwardly and receiving between them the shank of a coupler connected to the wings by a horizontally disposed key extending through aligned slots in the wings and shank. The forward face of the front bar of the yoke between the spaced wings is provided with a recess, in which are mounted resilient means, such as a pad of rubber, which acts on the rear end of the coupler shank. The aligned slots in the yoke wings and coupler shank are sufficiently longer than the key is wide so that the coupler may be swung in a horizontal plane, relative to the yoke, against the resilient means until the coupler engages one of the wings of the yoke. The yoke is substantially narrower throughout its length than the space between the sills, so that the yoke may be swung a limited distance relative to the sills against the force exerted upon it by the cushioning means. The total angle, through which the coupler may thus be swung relative to the railway vehicle in either horizontal direction, is, therefore, equal to the horizontal swing of the coupler with respect to the yoke plus the swing of the yoke with respect to the sills of the vehicle.

For a better understanding of the invention, reference may be made to the accompanying drawings in which:

Fig. 1 is a horizontal sectional view through a coupler and draft gear combination, according to the invention on line 1-1 of Fig. 2, and

Fig. 2 is a vertical sectional view on the line 2-2 of Fig. 1.

In the drawings, the coupler and draft gear combination is illustrated as installed on a railway vehicle which is provided with spaced longitudinal sills 10, on the inner faces of which are mounted front and rear abutment means, which may be pairs of front stops 11 and rear stops 12. The tops of the sills are connected by a plate 13 and, at their lower ends, the sills are provided with outwardly extending flanges 14 connected by a carry iron 15. Wear plates 16 are supported between the sills on the carry iron 15 and similar wear plates 17 are attached to plate 13, which connects the tops of the sills.

A vertical yoke 18 is supported between the sills on wear plates 16 and it comprises a front bar 19 and a rear bar 20 connected by upper and lower bars 21 and 22. Horizontally spaced side wings 23 integral with the front bar extend forwardly from it and vertically spaced wings 24 project forwardly from the front bar of the yoke between wings 23.

A front cushioning unit 25 lies within the yoke and is supported on the lower bar 22 of the yoke. This unit is made up of alternate rubber springs 26 and flat divider plates 27, each rubber spring consisting of a metal sheet to the opposite faces of which are secured concentric rubber rings 28. The rubber springs and divider plates are usually rectangular in form. The front cushioning unit bears at its rear end against the front face of the rear bar 20 of the yoke and at its forward end, against a follower block 29 which extends through the yoke, rests upon lower bar 22 of the yoke, and has forwardly extending portions 30 and 31 which engage front stops 11.

A rear cushioning unit 32 made up of alternate rubber springs and divider plates is mounted outside the yoke and rests upon wear plates 16. The rear cushioning unit bears at its forward end against the rear face of the rear bar 20 of the yoke and at its rear end against a follower block 33, the rear face of which engages rear stops 12. The rear cushioning unit, as shown, contains a larger number of rubber springs and divider plates than the front unit, so that the gear has greater capacity in buff than in draft.

The shank 34 of a coupler 35 extends into the pocket defined by the wings 23 and 24 of the yoke and the shank is connected to the yoke by a key 36 which passes through a slot 37 in the shank.
and aligns slots 28 and 29 in the side wings 27 of the yoke. A recess 40 is formed in the front face of front bar 19 of the yoke between the wings and contains resilient means for acting on the rear end of the coupler shank and tending to force it outwards, so that the rear end of the slot in the shank engages key 36 and forces the key against the front ends of the slots in the wings. Various forms of resilient means may be used and that shown is a rubber ring 41, which is somewhat thicker than the recess is deep and is held in place by a stud 18a on the yoke. A follower 42 is interposed between the front face of the cushion and the rear end of the coupler shank and is held in place by opposed transverse flanges 24a extending inward from the top and bottom wings 24.

The slots in the coupler shank and in the side wings of the yoke are substantially longer than the key is wide, and, when the coupler is acted upon by a force in draft the force is transmitted through the shank and key to the wings 23 of the yoke and the yoke is then moved forward against the resistance of the front cushioning unit 25. In the buffer force is transmitted from the coupler shank to the yoke through follower 42 and the pad 41, and the yoke moves back against the resistance of the rear cushioning unit 22. Under compression, pad 41 will be deformed and flow into the space between the front face of the front bar 19 of the yoke and the follower 42.

The coupler is supported forwardly of its connection to the yoke by a striking casting 44 which prevents the coupler from moving downwardly in a vertical plane but the coupler may, be swung in a horizontal plane. When the coupler is swung in the direction indicated by the arrow in Fig. 1, the rear corner 45 of its shank will push backwardly upon plate 42 and compress pad 41. The rear end 48 of slot 37 in the shank will then move back away from the key, and the coupler will be permitted to swing until it engages a side wing 23 of the yoke. The rear bar 20 of the yoke, which is the widest part of the yoke, is substantially narrower than the distance between the opposed faces of the sills. Therefore, the yoke too may be swung a small distance in a horizontal plane against the resistance of cushioning units 25 and 32.

The provision of a resilient seat for the rear end of the coupler shank and the loose key connection between the shank of the coupler and the wings of the yoke permit the coupler to be swung in a horizontal plane, and the resilient member acting on the flat rear end of the shank tends to maintain the coupler in central position. The coupler may be swung until its shank engages a wing of the yoke and, since the yoke is narrower than the space between the sills, the coupler and the yoke may be swung further until the wing of the yoke engages the inner face of the adjacent sill. The total angle of swing of the coupler is sufficient to make possible engagement of a pair of couplers, which are substantially out of alignment.

We claim:
1. In a railway vehicle having spaced longitudinal sills provided with spaced front and rear abutments on their opposed faces and elongated slots between the ends of the sills and the front abutments, a coupler and draft gear combination, which comprises a yoke positioned between the sills, cushioning means interposed between the yoke and respective pairs of abutments, the yoke having a front bar containing a recess in its forward face and a pair of side wings projecting forwardly from the front bar, a coupler having a shank extending between the wings, the shank and wings having slots aligned with the sill slots, a key extending through all the slots, a resilient element seated in the recess and projecting therefrom, a follower bearing upon the resilient element and engaging the rear end of the shank, the resilient element and the follower urging the shank forward to cause the rear end of the shank slot to hold the key against the forward ends of the wing slots, and upward and downward flanges on the yoke for holding the follower in place.
2. In a railway vehicle having spaced longitudinal sills provided with spaced front and rear abutments on their opposed faces and elongated slots between the ends of the sills and the front abutments, a coupler and draft gear combination, which comprises a yoke positioned between the sills, cushioning means interposed between the yoke and respective pairs of abutments, the yoke having a front bar containing a recess in its front face and a pair of side wings projecting forwardly from the front bar, a coupler having a shank extending between the wings, the shank and wings having slots aligned with the sill slots, a key extending through all the slots, a resilient element seated in the recess and projecting therefrom, a follower bearing upon the resilient element and engaging the rear end of the shank, the resilient element and the follower urging the shank forward to cause the rear end of the shank slot to hold the key against the forward ends of the wing slots, and upward and downward flanges on the yoke for holding the follower in place.
3. In a railway vehicle having spaced longitudinal sills provided with spaced front and rear abutments on their opposed faces and elongated slots between the ends of the sills and the front abutments, a coupler and draft gear combination, which comprises a yoke positioned between the sills, cushioning means interposed between the yoke and respective pairs of abutments, the yoke having a front bar containing a recess in its forward face and a pair of side wings projecting forwardly from the front bar, a coupler having a shank extending between the wings, the shank and wings having slots aligned with the sill slots, a key extending through all the slots, a resilient element seated in the recess and projecting therefrom, a follower bearing upon the resilient element and engaging the rear end of the shank, the resilient element and the follower urging the shank forward to cause the rear end of the shank slot to hold the key against the forward ends of the wing slots, and upward and downward flanges on the yoke for holding the follower in place.
4. A railway vehicle having spaced longitudinal sills provided with spaced front and rear abutments on their opposed faces and elongated slots between the ends of the sills and the front abutments, a coupler and draft gear combination, which comprises a yoke positioned between the sills, cushioning means interposed between the yoke and respective pairs of abutments, the yoke having a front bar containing a recess in its front face and a pair of side wings projecting forwardly from the front bar, a coupler having a shank extending between the wings, the shank and wings having slots aligned with the sill slots, a key extending through all the slots, a resilient element seated in the recess and projecting therefrom, a follower bearing upon the resilient element and engaging the rear end of the shank, the resilient element and the follower urging the shank forward to cause the rear end of the shank slot to hold the key against the forward ends of the wing slots, and upward and downward flanges on the yoke for holding the follower in place.
5. A railway vehicle having spaced longitudinal sills provided with spaced front and rear abutments on their opposed faces and elongated slots between the ends of the sills and the front abutments, a coupler and draft gear combination, which comprises a yoke positioned between the sills, cushioning means interposed between the yoke and respective pairs of abutments, the yoke having a front bar containing a recess in its front face and a pair of side wings projecting forwardly from the front bar, a coupler having a shank extending between the wings, the shank and wings having slots aligned with the sill slots, a key extending through all the slots, a resilient element seated in the recess and projecting therefrom, a follower bearing upon the resilient element and engaging the rear end of the shank, the resilient element and the follower urging the shank forward to cause the rear end of the shank slot to hold the key against the forward ends of the wing slots, and upward and downward flanges on the yoke for holding the follower in place.
6. A railway vehicle having spaced longitudinal sills provided with spaced front and rear abutments on their opposed faces and elongated slots between the ends of the sills and the front abutments, a coupler and draft gear combination, which comprises a yoke positioned between the sills, cushioning means interposed between the yoke and respective pairs of abutments, the yoke having a front bar containing a recess in its front face and a pair of side wings projecting forwardly from the front bar, a coupler having a shank extending between the wings, the shank and wings having slots aligned with the sill slots, a key extending through all the slots, a resilient element seated in the recess and projecting therefrom, a follower bearing upon the resilient element and engaging the rear end of the shank, the resilient element and the follower urging the shank forward to cause the rear end of the shank slot to hold the key against the forward ends of the wing slots, and upward and downward flanges on the yoke for holding the follower in place.
7. A railway vehicle having spaced longitudinal sills provided with spaced front and rear abutments on their opposed faces and elongated slots between the ends of the sills and the front abutments, a coupler and draft gear combination, which comprises a yoke positioned between the sills, cushioning means interposed between the yoke and respective pairs of abutments, the yoke having a front bar containing a recess in its front face and a pair of side wings projecting forwardly from the front bar, a coupler having a shank extending between the wings, the shank and wings having slots aligned with the sill slots, a key extending through all the slots, a resilient element seated in the recess and projecting therefrom, a follower bearing upon the resilient element and engaging the rear end of the shank, the resilient element and the follower urging the shank forward to cause the rear end of the shank slot to hold the key against the forward ends of the wing slots, and upward and downward flanges on the yoke for holding the follower in place.
by the element and follower until the coupler shank engages one of the wings, and the yoke being substantially narrower throughout its length than the space between the sills whereby the yoke may be swung horizontally against the resilient force exerted upon it by the cushioning means until it engages a sill and means on the inner faces of one pair of wings for holding the follower in position.

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