

Jan. 5, 1965

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3,164,266

CAR COUPLER

Filed March 19, 1962

2 Sheets-Sheet 1

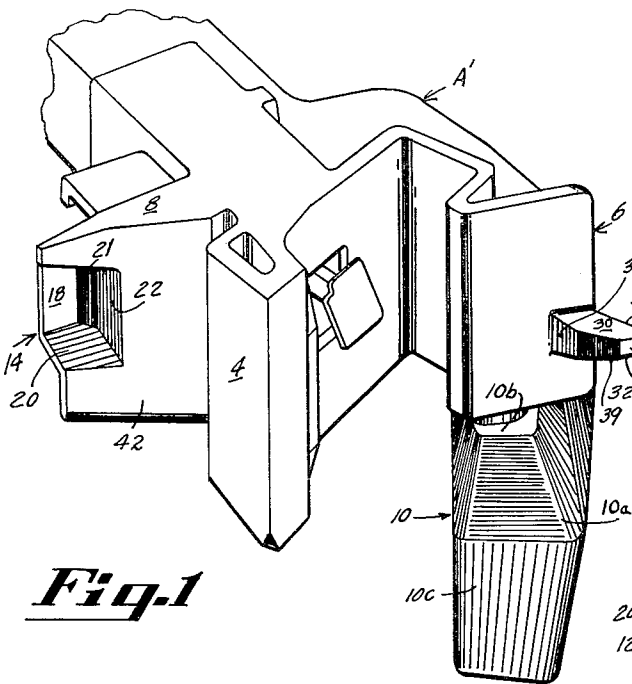


Fig. 1

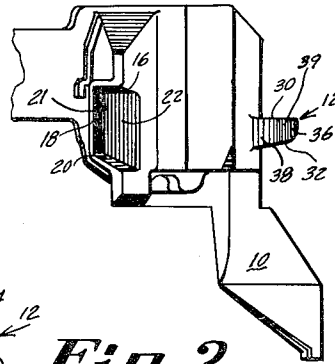


Fig. 2

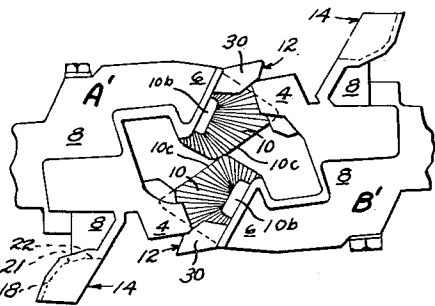


Fig. 3

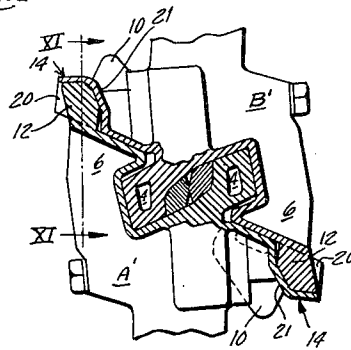


Fig. 4

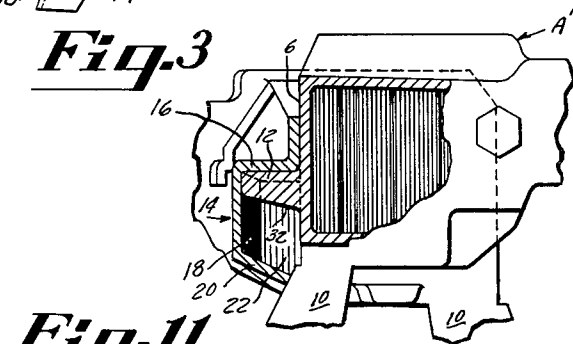


Fig. 11

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2 Sheets-Sheet 2

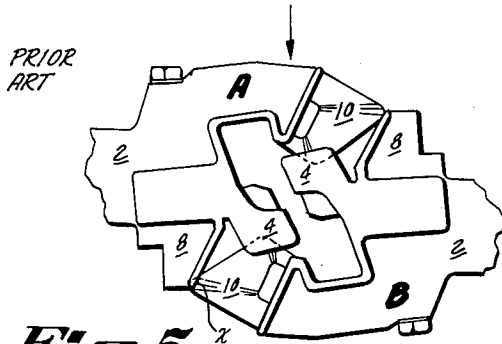


Fig. 5

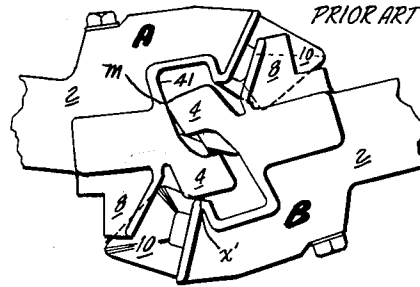


Fig. 7

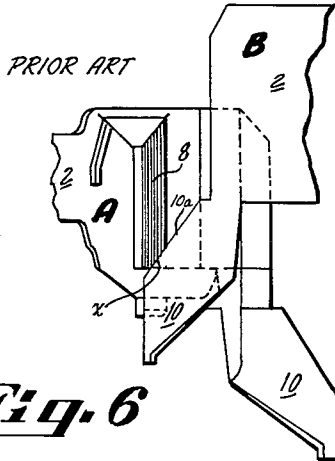


Fig. 6

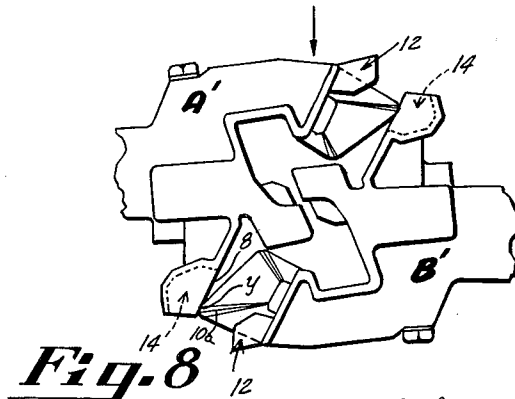


Fig. 8

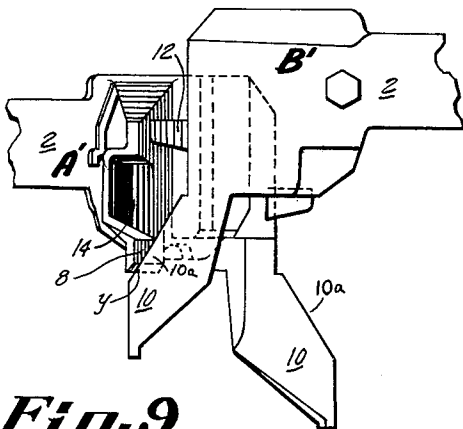


Fig. 9

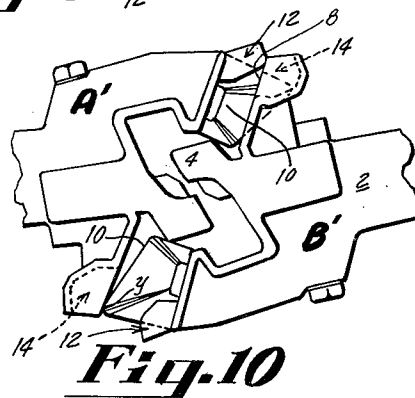


Fig. 10

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CAR COUPLER

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7 Claims. (Cl. 213-100)

This invention relates to automatic railway car couplers of the rigid-jaw type and more particularly to an improved anti-jackknifing and interlocking means therefor.

With many areas of the world converting to the use of automatic railway car couplers there has been a corresponding interest in rigid-jaw couplers that offer the same advantages as do the standard knuckle type couplers used in the United States. The interest that has been shown has centered around interlocking couplers that rely for alignment and vertical interlock on an aligning horn mounted on the underside of the coupler head. However, the use of such an aligning horn presents a problem in that horizontal jackknifing of the couplers may occur during coupling operations. When two couplers equipped with aligning horns come together during coupling operations with one coupler initially displaced vertically relative to the other coupler, the couplers will frequently jackknife horizontally to preclude coupling of the two couplers. To overcome this deficiency in the operation of some rigid-jaw couplers, the herein disclosed pocket and projection means is provided.

It is therefore the primary object of this invention to provide a rigid-jaw coupler having an aligning horn with means to preclude horizontal jackknifing of two couplers during coupling operations.

It is a specific object of this invention to provide on a rigid-jaw coupler having an aligning horn, projecting means and pocket means adapted for complementary engagement with an opposing similar coupler to perform an anti-jackknifing function for said coupler.

Another specific object of the invention is to provide on a rigid-jaw coupler having an aligning horn, a forwardly projecting lug on the pulling jaw side of the coupler and a pocket on the buffing jaw side of the coupler which provide an anti-jackknifing function for said coupler when it is being coupled with an opposing similar coupler.

These and other objects will be more apparent from the following description and claims in which:

FIG. 1 is a perspective view of a coupler embodying the invention;

FIG. 2 is a side view of a coupler shown in FIG. 1;

FIG. 3 is a plan view of couplers similar to the one shown in FIGS. 1 and 2 in a position of lateral misalignment.

FIG. 4 is a plan view partly in a horizontal section of two intercoupled couplers embodying the invention;

FIG. 5 is a plan view of two prior art couplers in contact prior to coupling;

FIG. 6 is a fragmentary side view of the two couplers shown in FIG. 5;

FIG. 7 is a plan view of the two couplers of FIG. 5 jackknifed horizontally to a position from which coupling is impossible;

FIG. 8 is a plan view of two couplers embodying the invention making initial contact under buff;

FIG. 9 is a fragmentary side view of the two couplers shown in FIG. 8;

FIG. 10 is a plan view of two couplers embodying the invention showing the maximum horizontally angled position of the couplers which can occur during coupling operations;

FIG. 11 is a fragmentary vertical section of the pocket portion of a coupler embodying the invention when in

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coupled relationship with a similar coupler that is vertically displaced relative thereto.

Referring to FIGS. 1-4, there is shown the head of a rigid-jaw coupler A' having a buffing jaw 4 and a pulling jaw 6. Disposed laterally and rearwardly of the buffing jaw 4 is an aligning wing 8. Mounted on the underside of the coupler A' is an aligning horn 10 having a vertical face 10c which faces in an oblique forward direction toward the center line of the coupler.

Extending forwardly from pulling jaw 6 and forming an integral part thereof, is forwardly projecting lug 12 which is disposed adjacent the outer edge of the jaw. On the opposite side of the coupler in the wing 8 there is provided a pocket portion 14. The lug 12 is of such a size and shape that it is readily received in pocket 14 of an opposing similar coupler. As shown in the various figures of the drawing, the lug 12 projects laterally outwardly with respect to the outermost lateral extremity, e.g., the jaw edge 6a, of the associated pulling jaw 6.

The pocket 14 is defined by a top wall 16, rear wall 18, bottom wall 20, an inwardly canted side wall 21, and an inner side wall 22. The pocket, as shown, does not have an outer side wall in the preferred embodiment, but nothing herein should be construed as limiting the pocket to the particular configuration illustrated. The bottom wall 20 is sloped forwardly and downwardly relative to substantially vertical back wall 18. The slope to the wall 20 is necessary to permit the lug 12 of an opposing coupler to slide upwardly into the pocket during coupling operations. The top wall 16 is sloped upwardly and outwardly to perform a similar function and to assist in gathering. The aligning function of the lug 12 and pocket 14 supplements the aligning function of the aligning horn 10. Once in coupled relationship, the lug and the pocket also function as an interlock to maintain the two couplers in coupled relationship. The effectiveness of the interlock is determined by the amount of slack between the lug 12 and pocket 14 which can be altered to suit particular operating conditions.

Referring to FIG. 1, the lug 12 is characterized by a top surface 30, bottom surface 32, an outer side surface 34, a front facing abutment face 36, an inwardly facing vertical surface 38 and an outwardly directed surface 39 continuing from surface 38. The surface 39 is angled transversely inwardly and rearwardly relative to the center line of the coupler to join with the forward end of the surface 38 and thus provide an increased gathering range during coupling operations.

With a rigid-jaw coupler having an aligning horn 10 the primary benefit derived from the lug 12 and pocket 14 is the anti-jackknifing function which they provide.

Referring to FIGS. 5, 6, and 7 there are shown two typical prior art couplers that are in vertically displaced relationship. "A" designates the lower of the two couplers while "B" designates the upper coupler. When two couplers so displaced are forced together as in buff, a frequent occurrence is that a sloping aligning surface 10a of horn 10 of the upper coupler which extends downwardly and forwardly with respect to the pulling jaw 6 engages the lower edge 40 of the wing 8 of the lower coupler as at "x." Under these conditions there is a tendency for the two couplers to pivot around the point of contact "x" between the two couplers until the couplers jackknife laterally in the direction of the arrow to the position shown in FIG. 7. When in this position the couplers cannot be moved to a coupled position unless they are first separated and repositioned.

The prior art couplers A and B do not move out of the position illustrated by FIGS. 6 and 7 because the forward edge of the buffing jaw 4 of the coupler B presses in substantially line contact against the transverse vertical

surface of coupler A along a vertical line indicated by "m," and a buffing jaw 4 of the coupler A presses against an intumed wedge portion of the pulling jaw 6 in substantially line contact along a vertical line indicated by "x'." Simultaneously, the wing 8 engages the sloping horn surface 10a of the coupler B. As a result, the frictional forces developed between the couplers along lines m and x' are sufficient to overcome any camming action along the surface 10a tending to lift coupler A relative to coupler B into vertical alignment.

In preventing the condition just described from developing, the lug 12 is provided on the front face of the pulling jaw 6 essentially for the purpose of engaging a front face 42 of the wing 8 as shown in FIG. 9. The lug 12 thus functions essentially as a spacing means for maintaining the wing of one coupler and the pulling jaw of the other coupler apart on one side of the center lines of the couplers, while the two couplers pivot with respect to a point along the horn surface 10a at the other side of the center lines. As the lug 12 must be stored during coupled condition of the couplers, the pocket 4 is provided with the further refinement that the pocket is tapered rearwardly and the lug is tapered forwardly with respect to vertical and horizontal planes so that the pocket of one coupler may cooperate with the lug of an opposing coupler to promote final aligning and, ultimately, interlocking of the couplers.

FIG. 3 illustrates another coupling condition under which the lugs 30 of two opposing couplers A' and B' prevent non-coupling of the couplers. As a practical matter, couplers cannot be installed, or at least used for any length of time, with absolute lack of slack in the connection thereof with the draft rigging of respective vehicles. The usual condition is that the couplers are able to twist at least slightly and concentrically about their longitudinal axes. Engagement of the horns of two opposed couplers, as shown in FIG. 3, subjects both couplers to twisting forces which may displace the buffing jaw 4 of each coupler outwardly of the extreme lateral corner of the pulling jaw 6 of the opposed couplers. These jaws are disposed at a considerable difference in elevation in respect to the horns 10. They are twisted counterclockwise to a measurable extent. When this happens in the use of prior art couplers, such as illustrated in FIGS. 5, 6, and 7, jamming of opposed couplers in a non-coupling condition may occur along the forward edges of opposed jaws.

The presence of the lugs 30 permits the couplers to twist to a minor degree out of good coupling attitude and be correctly gathered in a positive coupling path as illustrated by FIG. 3.

The herein disclosed invention overcomes this tendency of the couplers to jackknife outwardly by providing projection and pocket means thereon as will hereinafter be explained.

Referring to FIGS. 8 and 9 there are shown two rigid-jaw couplers embodying the invention making an initial contact under buff. It should be noted that the only point of contact of the vertically displaced couplers is between the aligning horn 10 of couplers B', and the underside of wing 8 of coupler A' as at "y." As in the prior art couplers shown in FIGS. 5, 6, and 7, there is a tendency to pivot around this point of contact "y" and to jackknife laterally in the direction of the arrow. However, before the couplers can jackknife, the forwardly projecting lug 12 on coupler A' engages the wing 8 of coupler B' as shown in FIG. 10. Once the lug 12 of coupler A' engages the wing 8 of coupler B', no jackknifing of the couplers will occur and the couplers will move to coupled position in their normal manner. Thus, the couplers are effectively precluded from moving to the relative positions shown in FIG. 7. It should be noted in FIG. 7 that the buffing jaw 4 of coupler B is unable to move into the throat of coupler A because of the

abutting engagement of the buffing jaw 4 of coupler A with the pulling jaw of coupler B at x'.

In addition to performing an anti-jackknifing function, lug 12 and pocket 14 supplement the normal aligning function of the horn 10. During the initial stages of contact, the aligning horn 10 guides the two opposing couplers into their correct position for coupling. After the couplers are substantially aligned, but not coupled, the lug 12 by seeking to seat itself in the pocket 14 guides the couplers during the final stages of coupling. Thus, during the latter stages of coupling, the lug and the pocket augment the normal aligning action of the coupler.

Another feature of the lug 12 and pocket 14 is that when the couplers are in coupled relationship the couplers are interlocked against relative vertical displacement with the lower edge or extremity of the wing 6 of one or both couplers resting on a shoulder surface 10b of the horn 10 of the opposing coupler. The interlock that is achieved can most clearly be seen in FIGS. 4 and 11. Should one of the couplers shown in FIGS. 4 and 11 be pulled out of its pocket in its associated rail vehicle, the lug and pocket engaging the complementally shaped lug and the pocket of the opposing coupler preclude relative vertical displacement of the couplers. Thus, in addition to performing an anti-jackknifing and an aligning function for the coupler, the lug 12 and pocket 14 provide an interlock feature that can by itself interlock two couplers embodying the invention disclosed herein, or supplement existing interlocking structure.

What has been disclosed herein is an improved type of rigid-jaw coupler that provides for a three-fold function of anti-jackknifing, interlocking, and aligning of couplers during coupling operations.

The terms and expressions which have been employed are used as terms of description and not of limitation and there is no intention of excluding such equivalents of the invention described, nor of the portions thereof, as fall within the purview of the claims.

What is claimed is:

1. A car coupler of the rigid-jaw type comprising:
 - a head having a pulling jaw member and a buffing jaw transversely disposed on opposite sides of the longitudinal center line of the coupler, said jaw and jaw member being interengageable with the jaw member and the jaw of an opposed similar coupler;
 - an aligning wing member extending laterally outwardly from the head at the rear of the buffing jaw;
 - a gathering-and-aligning horn mounted under the pulling jaw member and having frontwardly thereof an aligning surface sloping forwardly and downwardly; said wing member having a lower extremity adapted to slide upwardly and rearwardly on a similar aligning surface of an opposed coupler to effect vertical alignment of the couplers as the coupling thereof progresses; and
 - on one side of said center line, projecting spacing means engageable between the jaw member and the aligning wing member of opposed similar couplers, and, at the other side of said center line, disposing said lower extremity of the wing member of the lower coupler in engaged slidable relation with said horn aligning surface of the higher coupler, under a condition of vertical misalignment of the couplers.
2. The car coupler of claim 1, wherein:
 - said spacing means projects from the pulling jaw member.
3. The car coupler of claim 1, wherein:
 - said spacing means projects from the pulling jaw member; and
 - said wing member has a pocket for receiving the spacing means of an opposing similar coupler in coupled relation with said coupler.
4. The car coupler of claim 3 wherein:
 - said spacing means tapers forwardly and the pocket tapers rearwardly with respect to vertical and hori-

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zontal planes to augment the gathering and interlocking characteristics of similar couplers during the coupling operation.

5. The car coupler of claim 1, wherein:

said spacing means comprises a lug having a forward-
facing vertical gathering surface inclined rearwardly
and inwardly toward said center line of a length and
disposition adapting it to be engaged by the buffing
jaw of an opposed coupler at a position wherein the
vertical face of the horns of opposed couplers engage;
and
a pocket on said wing for receiving the lug of an op-
posed similar coupler coupled with said coupler.

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6. The car coupler of claim 5 wherein:

said lug has a vertical abutment face forming a corner
with said gathering surface and extends laterally out-
wardly from said corner.

7. The car coupler of claim 5 wherein:

said lug projects laterally outwardly beyond the lateral-
ly outer front edge of the pulling jaw member.

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