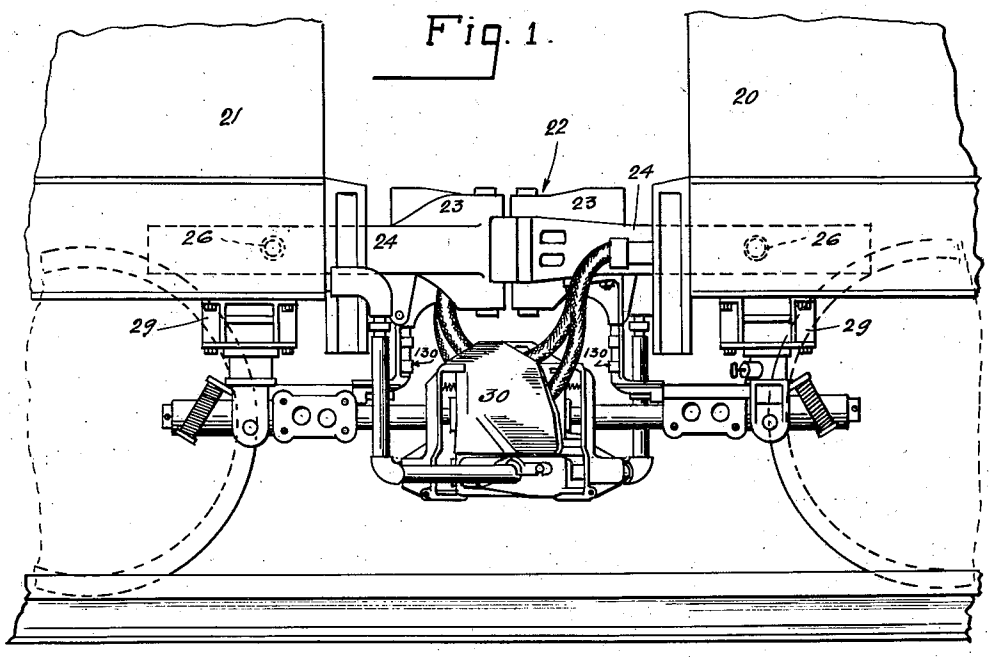
Sept. 14, 1937. C. B. HERD 2,092,915

DRAW BAR GUIDE FOR AUTOMATIC TRAIN PIPE CONNECTERS

Original Filed March 25, 1935 4 Sheets-Sheet 1

Fig. 1.



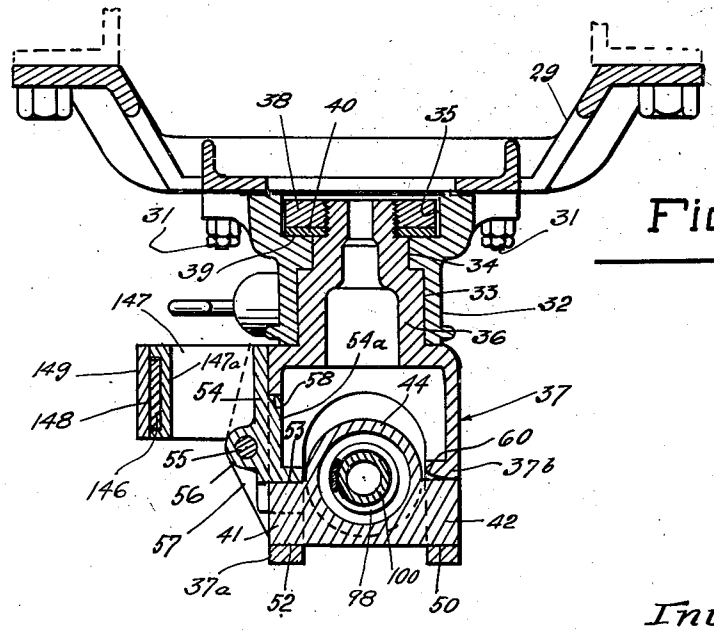


Fig. 6.

Inventor.
Clifton B. Herd.

Attorney.

Sept. 14, 1937. C. B. HERD 2,092,915

DRAW BAR GUIDE FOR AUTOMATIC TRAIN PIPE CONNECTERS

Original Filed March 25, 1935 4 Sheets-Sheet 2

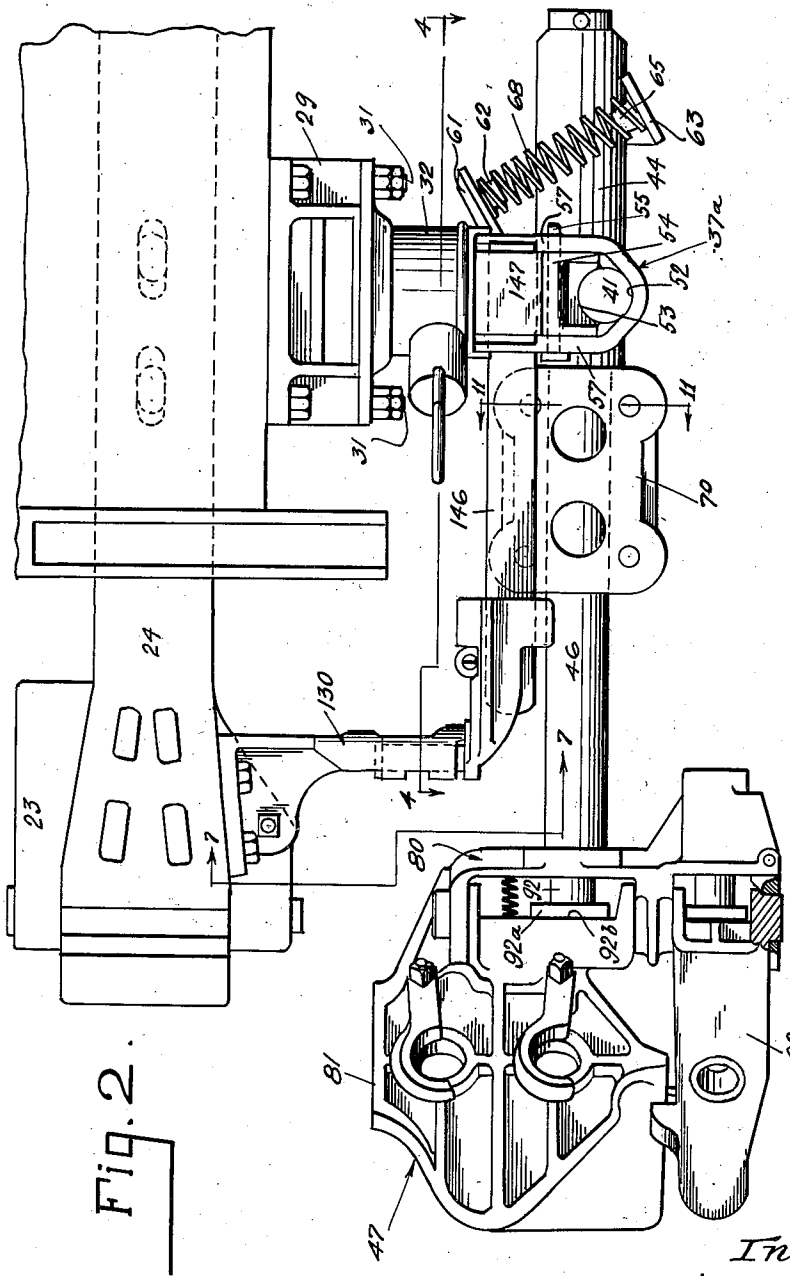


Fig. 2.

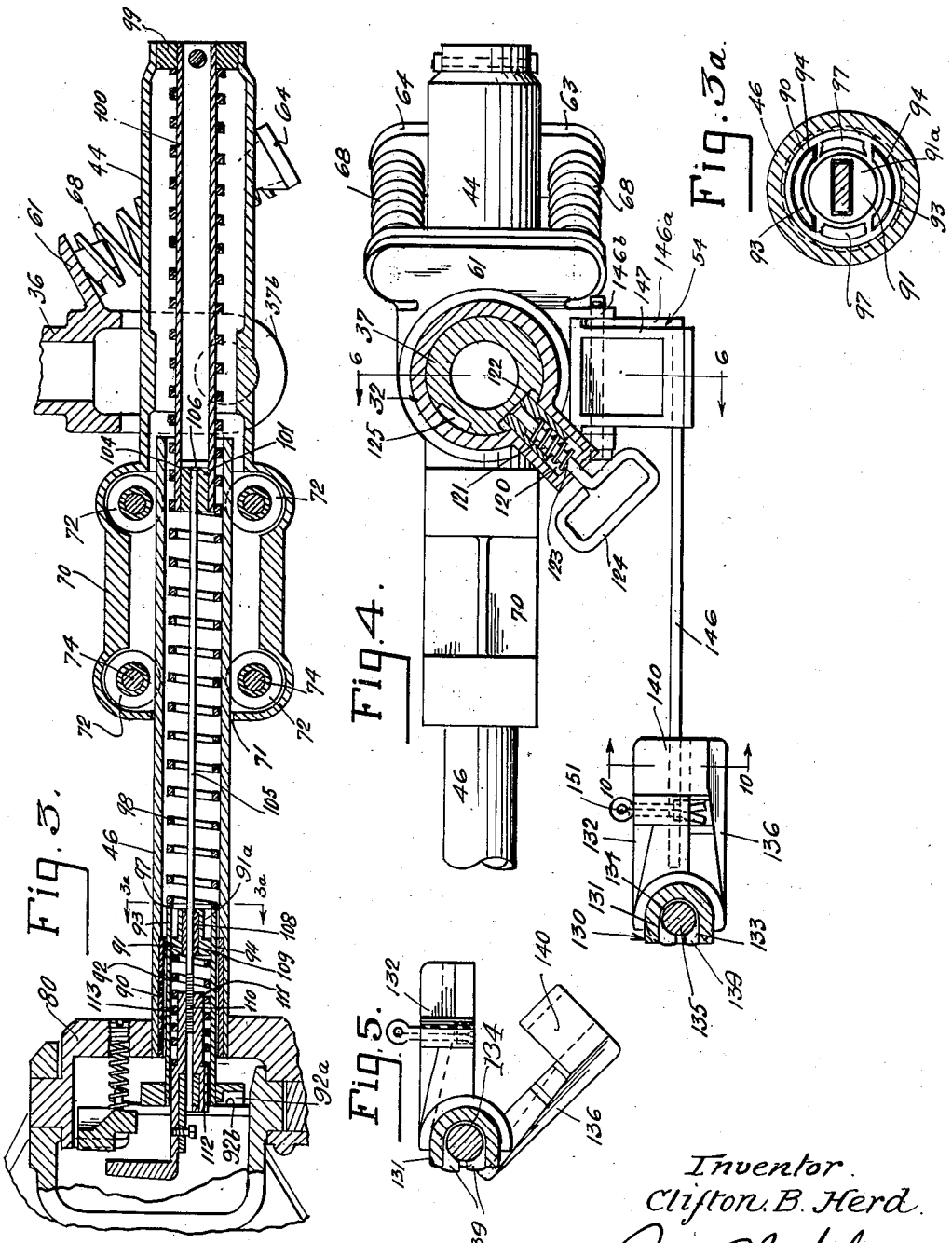
Inventor.
Clifton B. Herd.

Attorney.

Sept. 14, 1937. C. B. HERD 2,092,915

DRAW BAR GUIDE FOR AUTOMATIC TRAIN PIPE CONNECTERS

Original Filed March 25, 1935 4 Sheets-Sheet 3



Inventor.
Clifton B. Herd.

Attorney.

Sept. 14, 1937. C. B. HERD 2,092,915

DRAW BAR GUIDE FOR AUTOMATIC TRAIN PIPE CONNECTERS

Original Filed March 25, 1935 4 Sheets-Sheet 4

Fig. 7.

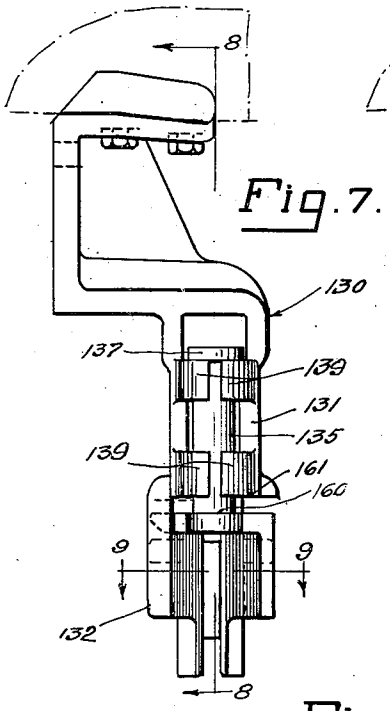


Fig. 8.

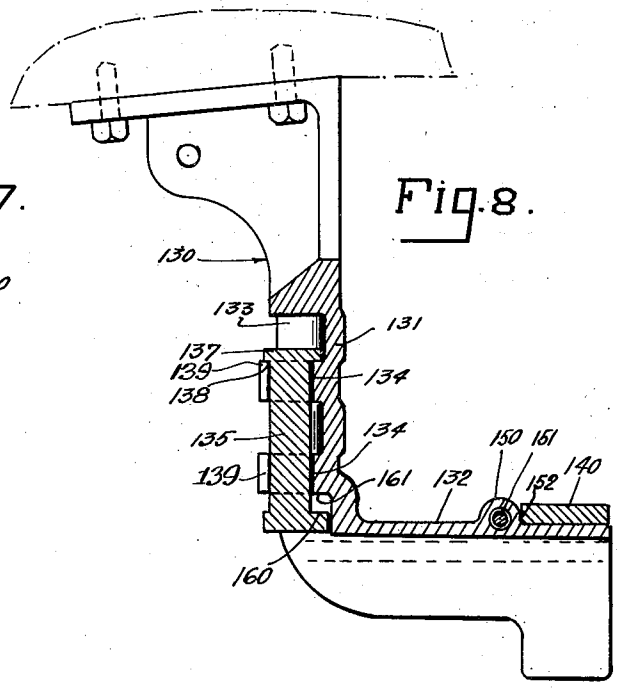


Fig. 10.

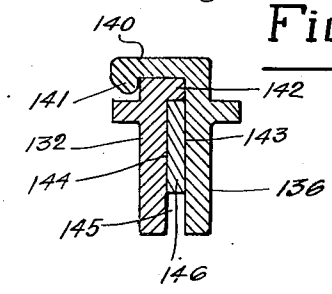


Fig. 9.

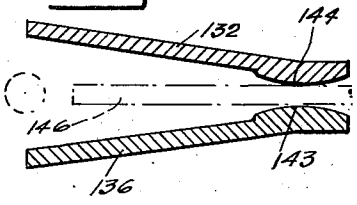
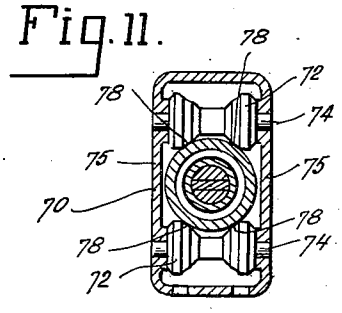


Fig. 11.



Inventor
Clifton B. Herd.

Attorney.

Patented Sept. 14, 1937

2,092,915

UNITED STATES PATENT OFFICE

2,092,915

DRAW BAR GUIDE FOR AUTOMATIC TRAIN PIPE CONNECTERS

Clifton B. Herd, Los Angeles, Calif., assignor to Johnson Connector Company, Ltd., Los Angeles, Calif., a corporation of California

Application March 25, 1935, Serial No. 12,842
Renewed February 11, 1937

13 Claims. (Cl. 213—76)

This invention relates generally to automatic train pipe connecters, and deals particularly with improvements in a train pipe connecter of the type which is suspended from the car but is horizontally guided by the draw bar arm above. Such a draw bar guided pipe connecter was first described and claimed in Patent No. 1,990,651 issued to Albert S. Johnson.

It may be stated that a primary object of the present invention is to provide improvements in means for releasing a draw bar suspended guide arm from its operative engagement with the connecter arm, whereby the connecter arm may easily and quickly be swung to one side independently of the draw bar.

Further objects of the invention have to do with improved construction and arrangement of parts in the draw bar guide device and related connecter arm mounting parts.

The invention itself, as well as additional objects not specifically stated, will best be understood without the necessity for further preliminary discussion by referring at once to the following detailed description of a present preferred embodiment thereof, reference for this purpose being had to the accompanying drawings, in which:

Fig. 1 is a side elevation of the meeting ends of a pair of coupled cars equipped with the devices of the present invention;

Fig. 2 is a side elevation of a connecter in accordance with the present invention;

Fig. 3 is a vertical longitudinal section of the connecter arm;

Fig. 3*a* is a detail section on line **3***a*—**3***a* of Fig. 3;

Fig. 4 is a section taken on broken line **4**—**4** of Fig. 2;

Fig. 5 is a view showing a portion of the device illustrated in Fig. 4, but with the gate moved to another position;

Fig. 6 is a vertical transverse section taken on line **6**—**6** of Fig. 4;

Fig. 7 is a view taken as indicated by the arrows **7**—**7** in Fig. 2;

Fig. 8 is a sectional view taken as indicated by line **8**—**8** of Fig. 7;

Fig. 9 is a horizontal detail section taken as indicated by line **9**—**9** of Fig. 7;

Fig. 10 is a detail section taken as indicated by line **10**—**10** of Fig. 4; and

Fig. 11 is a section taken as indicated by line **11**—**11** of Fig. 2.

In Fig. 1 of the drawings, numerals **20** and **21** designate a pair of cars coupled by a usual draft coupling **22**, the interlocking heads **23** of which are mounted on draw-bars **24**. The draw-bar coupler heads, as usual, have considerable gathering range enabling them to couple from positions of relative lateral, vertical and rotative displacement. The draw-bars may be mounted to swing horizontally in any usual manner, either pivoting on vertical axes, or floating laterally on suitable guides (Fig. 2). In the case of passenger equipment, centering springs are used on the draw-bars, as indicated at **26** in Fig. 1.

Rigidly affixed to the understructure of the car body is a suspension bracket **29** for the train pipe connecter, which is generally designated at **30**. To the underside of bracket **29** is secured by screws **31** a hanger **32** that provides a vertical pivot bearing for the connecter arm mounting. This bearing has a bore **33** extending upwardly from its lower end, a bore **34** extending upwardly from the upper end of bore **33**, and a larger counterbore **35** extending downwardly from its upper end to meet bore **34**, all as clearly shown in Fig. 6. Mounted for rotation in bores **33** and **34** is the stem **36** of a yoke member **37**. The upper end of said stem **36** has screwthreaded thereon a bearing ring **38**, which overhangs the shoulder **39** between bores **34** and **35** and bears down on a washer **40** resting on said shoulder to support the yoke and parts mounted thereon.

The yoke is thus mounted in bearing hanger **32** for pivotal movement about a vertical axis. Mounted for pivotal movement in the lower portions of yoke arms **37***a* and **37***b* are horizontal pivot studs or trunnions **41** and **42**, respectively, which are formed integrally with and extend oppositely from a tubular cradle member **44** straddled by the yoke. This cradle **44** supports a longitudinally extending connecter arm tube or cylinder **46**, the outer end of which carries the pipe connecter head structure **47**.

Cradle trunnion **42** is mounted for pivotal movement in a bore **50** provided in a lower portion of yoke arm **37***b* (Fig. 6). Cradle trunnion **41**, on the other hand, is supported on its lower half by a half-round bearing surface **52** formed in the lower portion of yoke arm **37***a*, while the upper half of said trunnion has bearing against a half-round bearing surface **53** formed on a mounting casting **54** which is mounted against the side of yoke arm **37***a*. Said casting **54** is secured in position by means of a removable pin **55** which is passed through a lug **56** formed on member **54** and through flanges **57** formed integrally with yoke arm **37***a* (see Figs. 2 and 6).

Crade **44** and the connecter arm carried there-

by thus are mounted for pivotal movement about the horizontal axis of cradle pivot trunnions 41 and 42, while the cradle and connecter arm may be swung horizontally by rotation of yoke 37 on its vertical axis.

It will be evident from an inspection of the drawings that the described mounting for the cradle trunnions in the yoke arms enables the device to be most easily assembled. An opening 58 in yoke arm 37a permits the cradle to be lifted in from the bottom (prior to mounting of casting 54), with pivot trunnion 41 at first on top, to a position somewhat above its final level, and then to be so manipulated that trunnion 42 enters bore 50 while trunnion 41 backs down and comes to rest on bearing surface 52. Casting 54 is then pinned in place, its inner portion 54a being received within arm opening 58, and its lower portion forms the upper half of the bearing for trunnion 41, as previously described. To enable trunnion 42 easily to enter bore 50 during the assembly, said bore may be relieved somewhat at the top, as indicated at 60 (Fig. 6).

For the purpose of supporting the connecter arm in a horizontal position, the pivot yoke member is provided with a rearwardly extending and upwardly inclined bracket 61 providing spring seats 62, and cradle sleeve 44 is provided with oppositely extending bracket arms 63 and 64 which carry spring seats 65 opposite seats 62. Mounted on these seats are compression springs 68, which are adjusted to support the connecter arm yieldingly in a position of horizontal extension.

The forward end of cradle member 44 is formed with an enlarged box 70 (Figs. 2, 3 and 11). This box opens into the tubular portion of the cradle, as shown, and has at its forward end an opening 71 which freely passes the connecter arm tube 46. Connecter arm tube 46 is embraced and supported within this box by a forward and a rearward pair of upper and lower rollers 72, which are rotatably mounted on shafts 74 rigidly mounted in the side walls 75 of the box. The rollers, which constitute the sole mounting for the arm tube within the supporting cradle, are provided with arm-tube engaging surfaces 78 curved to the radius of the arm tube, and are preferably formed of some suitable anti-friction composition. This anti-friction provision reduces to a minimum wear on arm tube 46, which in service has more or less continuous telescopic movement in and out of cradle 44. Reference is here made to a copending application of Albert S. Johnson, entitled Anti-friction mounting for automatic train pipe connecter arm, Ser. No. 12,843, filed March 25, 1935, in which this connecter arm mounting is claimed.

The forward end of arm tube 46 carries a knuckle mounting 80 which supports the previously mentioned connecter head structure 47. The connecter head may be of various well known types, that here shown is the same as is completely described, and in certain aspects claimed, in my copending application entitled Automatic train pipe connecter, filed April 1, 1935, Ser. No. 14,108, and comprises separate air pipe and steam pipe heads 81 and 82, respectively, pivotally mounted on knuckle 80. It will be unnecessary for the purpose of the present disclosure herein to describe in detail the particular characteristics of these preferred connecter heads.

The forward end of arm tube 46 has rigidly mounted therein a bushing 90, the rearward end of which carries an abutment member 91. A tube 92 slides within bushing 90, and this tube 92 has rearward projections 93 which extend rearwardly through arcuate slots 94 in abutment 91. The forward end of tube 92 has a buffer head 92a which bears against a rearwardly facing surface 92b on the connecter head. Bearing against the rearward ends of tube projections 93 is a washer 97, against which comes one end of a compression spring 98, the other end of which spring bears against abutment 99 fastened within the rear end of cradle 44. Washer 97 is annularly spaced from the reduced rearward extension 91a of abutment 91 (Figs. 3 and 3a). It will be understood that spring 98 acts through tube 92 and the connecter head engaged thereby to extend connecter arm tube 46 (on which the connecter head is rigidly mounted) from cradle 44. Such extensive telescopic movement of the arm from the cradle is opposed and limited as now to be described. The abutment 99 in the rear end of cradle 44 carries a tube 100 that projects forwardly through spring 98, the forward end of this tube having welded therein an abutment 101. This abutment 101 is cut through with a rectangular guide slot 104 for a flat tension rod 105. The rear end of tension rod 105 has an enlarged head 106 adapted to engage abutment 101. The forward end of rod 105 passes through a guide slot 108 formed in an anti-friction insert 109 mounted in abutment 91. The forward end of flat rod 105 is reduced in width and its edges are screwthreaded, as indicated at 110, and screwthreaded thereon is a tubular forwardly projecting member 111. This tubular member projects forwardly and has operative relation with certain parts of the connecter head, not necessary here to illustrate and describe. Member 111 has a rearwardly facing shoulder 112 affording a seat for one end of a compression spring 113, the other end of which bears against the forward side of abutment 91.

The position of Figs. 2 and 3 is the normal uncoupled position of the connecter arm. It will be apparent that spring 98 is acting against washer 97 to extend tube 92 and the connecter head and its arm tube 46 from cradle 44, and that such extension is resisted by tension rod 105 and spring 113 to which said rod is connected through member 111. It will thus be evident that spring 98 tends to extend the connecter arm from the cradle, while spring 113 and tension rod 105 act in opposition, tending to contract the connecter arm; as a result the connecter arm takes a normal uncoupled position with springs 98 and 113 balanced against one another, as illustrated in Fig. 3.

Fig. 2 shows that in uncoupled position the connecter head extends outwardly somewhat beyond the end of the draw bar coupler head. As a pair of cars equipped with the present invention are moved together, the interengagement of the opposed pipe connecter heads causes the arm tubes 46 to recede within cradles 44 against the force of springs 98 until the draft couplers are engaged. When the cars are coupled the connecter arms thus ride in a somewhat retracted position, compression springs 98 being at such times under some compression. To uncouple the cars, the draft coupler heads are released and the cars moved apart. During such uncoupling the connecter arm tubes may be caused to be extended somewhat until the pipe connecter heads are disengaged from each other. After such disengagement, springs 98 and 113 act to return the arm

to the normal uncoupled position of Figs. 2 and 3.

It will be noted that the vertical pivot mounting of arm carrying yoke 37 in hanger 32 permits the connecter arm to be swung from side to side in a horizontal direction. Such swinging action is necessary as the coupled cars pass over curved tracks, and, in coupling, a preliminary horizontal swing of the connecter arms is also necessary in many instances to place them in sufficiently good alinement that the opposed connecter heads will properly interengage and connect when the cars are moved together. This may be particularly necessary when the cars to be coupled are on a track of considerable curvature. The connecter heads themselves will be understood to be provided with some gathering range but in some instances the normal gathering range is not sufficient to take care of the misalinement of the heads, and such preliminary throwing over of the arms into better alinement becomes desirable.

Means are provided for limiting such horizontal swing of the connecter arm to the maximum angle that may become necessary for the most extreme case of curved tracks expected to be encountered. As shown in Fig. 4, the side wall of the pivot bearing member 32 is formed with a box having a bore 120 within which works a locking plunger 121. This locking plunger is adapted to be received within a notch 122 cut in the stem of pivot yoke member 37. Notch 122 is of sufficient arcuate length to permit the pivot yoke stem to rotate through the angle necessary for a proper swing of the connecter arm, which may be for instance about ten degrees. Back of plunger 121 is a spring 123 which constantly urges the plunger into locking engagement with the pivot stem, and connected to the plunger and extending out through the side wall of bearing member 32 is a handle member 124, by means of which the plunger may be retracted to permit the connecter arm to be swung beyond the limits permitted by notch 122. For instance, when it is desired to carry the connecter in an inoperative position, handle 124 is pulled and the connecter arm rotated to a position which conveniently may be substantially at 72° to that shown, another notch 125 being provided in the pivot stem to permit the arm to be locked in that position.

Means are provided for guiding the connecter arms to swing horizontally on their vertical pivot mountings to follow horizontal swinging of the draw bars 24, the purpose of this provision being to assure that if the draw bars are in such relative horizontal positions as to be capable of coupling when the cars are moved together, then the pipe connecter arms, which are horizontally positioned by the draw bars, will also be placed in such relative positions that the pipe connection will positively be made.

As previously mentioned, such a draw bar guiding arrangement was first disclosed and claimed in Patent No. 1,990,651 issued to Albert S. Johnson, the present invention dealing with improvements in such a draw bar guide device.

The present illustrative embodiment of my improved draw bar guide for the pipe connecter arm is embodied as follows: Secured to the underside of draw bar 24, at a point thereon that swings horizontally to an extent sufficient for the purpose, is a depending guide arm 130, which in the present drops somewhat to one side of the connecter arm (see Fig. 4). This arm has a vertically extending portion 131 which is U-shaped in cross section, and below said portion 131 the arm has a rearwardly extending portion 132. As may be observed from Fig. 4, the opening 133 of the U-shaped portion of the guide arm faces toward the forward end of the connecter arm. Rotatably received within bearing surfaces 134 formed within this U-shaped opening 133 is the vertical pivot mounting pin 135 of a gate member 136, which is adapted to extend alongside guide arm extension 132. Pin 135 has on its upper end an enlarged head 137, which seats downwardly against a shoulder 138 at the upper end of bearing 134 (Fig. 8) and so supports the pin and gate. When the device is assembled, pin 135 is first placed in the position described, and lugs 139 (which before assembly extend straight forwardly, in an open position) are then hammered in to the position shown to confine the pin against removal. The pin remains free to rotate within bearing surfaces 134 after lugs 139 are so bent.

Gate 136 has at its swinging end a projection 140 having a depending latch lug 141 adapted to engage over the flanged upper edge of guide arm extension 132 (Fig. 10). Arm flange 142 engages the adjacent surface 143 of gate 136, and said surface 143 together with guide arm surface 144 define a slot or way 145 which receives the forward end of a forwardly extending flat spring guide-member 146, the rear end of which is connected, through casting 54 and yoke 37, with the connecter arm. Surfaces 143 and 144 which engage the flat sides of member 146 are preferably convex, as indicated in Fig. 9, so that member 146 will be engaged at only one point along its length by guide member 132 and gate 136, and is not subject to becoming bound against free longitudinal movement therebetween. As will be observed from Fig. 9, the side walls of both member 132 and gate 136 diverge rearwardly from arm engaging surfaces 143 and 144, thus providing space for limited lateral action of the forward end of spring member 146.

Spring member 146 is rigidly mounted at its rear end on a box-like supporting bracket 147 which is a part of the previously described mounting casting 54 mounted on yoke arm 37*a*. As here shown, member 146 is received within a slot 148 formed between the outer wall 147*a* of bracket 147 and a keeper plate 149 which is welded to wall 147*a*. The rearward extremity of member 146 is bent inwardly, as at 146*a* (Fig. 4), and engages between the side of box 147 and a bracket or extension 146*b* on yoke arm 37*a*. In assembling the device, member 146 is first inserted in slot 148 of box 147, and its inner end 146*a* takes its position inside of 146*b* as casting member 54 is mounted on the yoke arm. Thus member 146 is rigidly mounted on the arm carrying yoke, and is connected through the yoke with the connecter arm in such manner that member 146 and the connecter arm move together in horizontal swinging action.

Guide arm extension 132 is formed on its upper edge with a perforated lug 150 which receives a cotter pin 151, the split end of which overlies and engages the top edge of gate 136 when said gate is in the closed position illustrated in Figs. 4, 7, 8, 9 and 10 of the drawings, thereby holding the gate down with latch 141 engaged back of arm portion 132 so that the gate cannot be swung open.

At certain times it is necessary to swing the connecter arm to one side independently of the draw bar, as to a position which in the present

device is conveniently at about 72° to its normal operative position; this becomes necessary, for instance, in the event a car provided with the present train pipe equipment should be coupled to a car not so equipped, or in any emergency. In any such event it is of course necessary to disengage guide member 146 which swings horizontally with the connecter arm, from the draw bar suspended guide arm and gate. This is accomplished by pushing back locking pin 151 sufficiently far to clear the gate (see Fig. 5), next lifting gate 136 and its mounting pin 135 sufficiently that gate latch 141 clears the upper edge of guide arm extension 132, and then swinging the gate to one side, as in Fig. 5. As indicated in Figs. 4 and 5, the pin receiving perforation 150*a* in lug 150 is enlarged at one end to enable the split end of the cotter pin to be received therein when the pin is pushed back to gate-release position. The pin must be compressed somewhat as it is driven to this position, but because of this enlargement of the perforation, may be easily pushed back by striking it with any convenient tool. The described elevation of gate 136 necessary for lug 141 to clear the top of 132 is provided for in the manner indicated in Figs. 7 and 8, the gate having at the lower end of mounting pin 135 an upwardly facing shoulder 160, which when the gate is in closed position (Figs. 7 to 10) is somewhat below an opposed downwardly facing shoulder 161 provided at the lower end of the lower pin-receiving bearing 134. Upward movement of the gate is limited by engagement of shoulder 160 with shoulder 161, but the gate may be lifted sufficiently within that limit that its latch lug 141 will clear the upper edge of arm extension 132. The gate being thus lifted and swung to one side (Fig. 6), the connecter arm and guide member 146 interconnected therewith are released from the draw bar, and by then pulling handle 124 to free the pivot yoke for rotation the connecter arm and guide member 146 mounted thereon may be swung to the inoperative 72° position mentioned, in which locking plunger 121 enters pivot yoke stem notch 125 to lock the device rigid against further movement, until such time as the device is again swung into operating position.

It will be understood that horizontal swinging of the draw bar acts through the draw bar guide arm and spring arm 146 engaged thereby, to rotate the arm supporting pivot yoke and thereby cause the connecter arm to follow horizontal swinging of the guide arm and draw bar. This swing, however, is limited in extent to about five degrees on either side of center by the stop plunger 121 and a notch 122 in the yoke bearing member; and when the draw bar swings to one side to an angle greater than that allowed the connecter arm, the overmovement of the draw bar is taken up by flexure of spring arm 146. The draw bar guide device as thus described places the pipe connecter arms in such relative positions whenever a coupling is to be made that the pipe connection is always accomplished if conditions are sufficiently favorable that the draft coupling can be made, the gathering range of the pipe connecter head being sufficient to assure connection within the full range of misalinement of the draw bar head from which the draw bars will gather and couple. In other words, if in any situation of either straight or curved tracks, the draw bars are so positioned relatively to one another before the cars are moved together that the draft coupling will be made when the cars are moved together, then the draw bar guide devices will place the pipe connecter arms and heads likewise in such relative positions that the pipe connection will positively be made.

It will be understood the drawings and description are to be taken as illustrative of and not restrictive on the broader claims appended hereto, for various changes in design, structure and arrangement may be made without departing from the spirit and scope of said claims.

I claim:

1. In a draw bar guide for a train pipe connecter arm which is mounted on a car for horizontal swinging movement, such car having a draw bar mounted thereon for horizontal swinging movement, the combination of a forwardly extending arm connected at one end with the pipe connecter arm and extending forwardly from such connection, a depending guide arm on the draw bar, said guide arm having at its lower end a guide portion adapted to be horizontally engaged by one side of said forwardly extending arm, and a gate pivotally mounted on said guide arm and movable to and from a position of engagement with the other side of said forwardly extending arm, said gate when swung away from such position of arm engagement clearing said forwardly extending arm and permitting it to be swung aside independently of the draw bar, and releasable means for holding the gate in its position of arm engagement.

2. In a draw bar guide for a train pipe connecter arm which is mounted on a car for horizontal swinging movement, such car having a draw bar mounted thereon for horizontal swinging movement, the combination of a forwardly extending arm connected at one end with the pipe connecter arm and extending forwardly from such connection, a depending guide arm on the draw bar, said guide arm having at its lower end a guide portion adapted to be horizontally engaged by one side of said forwardly extending arm, and a gate pivotally mounted on a vertical axis on said guide arm and movable to and from a position of engagement with the other side of said forwardly extending arm, said gate when swung away from such position of arm engagement clearing said forwardly extending arm and permitting it to be swung aside independently of the draw bar, and releasable means for holding the gate in its position of arm engagement.

3. In a draw bar guide for a train pipe connecter arm which is mounted on a car for horizontal swinging movement, such car having a draw bar mounted thereon for horizontal swinging movement, the combination of a forwardly extending arm connected at one end with the pipe connecter arm and extending forwardly from such connection, a depending guide arm on the draw bar, said guide arm having at its lower end a guide portion adapted to be horizontally engaged by one side of said forwardly extending arm, and a gate having a vertical mounting pin pivotally mounted on said depending guide arm and adapted to be swung to and from a position of engagement with the other side of said forwardly extending arm, said gate when swung away from such position of arm engagement clearing said forwardly extending arm and permitting it to be swung aside independently of the draw bar, and releasable means for holding the gate in its position of arm engagement.

4. In a draw bar guide for a train pipe connecter arm which is mounted on a car for hori-

zontal swinging movement, such car having a draw bar mounted thereon for horizontal swinging movement, the combination of a forwardly extending arm connected at one end with the pipe connecter arm and extending forwardly from such connection, a depending guide arm on the draw bar, said guide arm having as its lower end a rearwardly turned guide portion adapted to be horizontally engaged by one side of said forwardly extending arm, and a gate member having a vertical pivot mounting on the depending guide arm and movable to and from a position of engagement with the other side of said forwardly extending arm, said gate when swung away from such position of arm engagement clearing said forwardly extending arm and permitting it to be swung aside independently of the draw bar, and releasable means for holding the gate in its position of arm engagement.

5. In a draw bar guide for a train pipe connecter arm which is mounted on a car for horizontal swinging movement, such car having a draw bar mounted thereon for horizontal swinging movement, the combination of a forwardly extending arm connected at one end with the pipe connecter arm and extending forwardly from such connection, a depending guide arm on the draw bar, said guide arm having at its lower end a rearwardly turned guide portion adapted to be horizontally engaged by one side of said forwardly extending arm, and a gate member having a pivot pin part mounted for pivotal movement on the depending guide arm and having a horizontally swinging part movable to and from a position of engagement with the other side of said forwardly extending arm, said gate when swung away from such position of arm engagement clearing said forwardly extending arm and permitting it to be swung aside independently of the draw bar, and releasable means for holding the gate in its position of arm engagement.

6. In a draw bar guide for a train pipe connecter arm which is mounted on a car for horizontal swinging movement, such car having a draw bar mounted thereon for horizontal swinging movement, the combination of a forwardly extending arm connected at one end with the pipe connecter arm and extending forwardly from such connection, a depending guide arm on the draw bar, said guide arm having at its lower end a rearwardly turned guide portion adapted to be horizontally engaged by one side of said forwardly extending arm, and a gate member having a vertical pivot pin part, a vertical bearing for said pivot pin part on the depending guide arm, a shoulder on the gate member adapted to bear downwardly on the guide arm for vertical support of the gate member, the gate member having at the lower end of the pin part a horizontally swinging gate part which is movable to and from a position of engagement with the other side of said forwardly extending arm, said gate when swung away from such position of arm engagement clearing said forwardly extending arm and permitting it to be swung aside independently of the draw bar, and releasable means for holding the gate in its position of arm engagement.

7. In a draw bar guide for a train pipe connecter arm which is mounted on a car for horizontal swinging movement, such car having a draw bar mounted thereon for horizontal movement, the combination of a forwardly extending arm connected one end with the pipe connecter arm and extending forwardly from such connection, a depending guide arm on the draw bar, said guide arm having at its lower end a rearwardly turned guide portion adapted to be horizontally engaged by one side of said forwardly extending arm, and a gate member having a vertical pivot pin part, a vertical bearing for said pivot pin part on the depending guide arm, a shoulder on the gate member adapted to bear downwardly on the guide arm for vertical support of the gate member, the gate member having at the lower end of the pin part a horizontally swinging gate part which is movable to and from a position of engagement with the other side of said forwardly extending arm, said gate when swung away from such position of arm engagement clearing said forwardly extending arm and permitting it to be swung aside independently of the draw bar, a projection on said gate adapted to overlie the rearwardly turned portion of the guide arm when the gate is in its position of engagement with the forwardly extending arm, and a depending latch lug on said projection adapted to engage back of said rearwardly turned guide arm portion to prevent the gate from swinging open when in its normal closed position with its downwardly bearing shoulder resting on the guide arm, the gate being limitedly movable vertically from such position to allow said latch lug to clear the upper side of the rearwardly turned guide arm portion when the gate is to be opened.

8. In a draw bar guide for a train pipe connecter arm which is mounted on a car for horizontal swinging movement, such car having a draw bar mounted thereon for horizontal movement, the combination of a forwardly extending arm connected at one end with the pipe connecter arm and extending forwardly from such connection, a depending guide arm on the draw bar, said guide arm having at its lower end a rearwardly turned guide portion adapted to be horizontally engaged by one side of said forwardly extending arm, and a gate member having a vertical pivot pin part, a vertical bearing for said pivot pin part on the depending guide arm, a shoulder on the gate member adapted to bear downwardly on the guide arm for vertical support of the gate member, the gate member having at the lower end of the pin part a horizontally swinging gate part which is movable to and from a position of engagement with the other side of said forwardly extending arm, said gate when swung away from such position of arm engagement clearing said forwardly extending arm and permitting it to be swung aside independently of the draw bar, a projection on said gate adapted to overlie the rearwardly turned portion of the guide arm when the gate is in its position of engagement with the forwardly extending arm, and a depending latch lug on said projection adapted to engage back of said rearwardly turned guide arm portion to prevent the gate from swinging open when in its normal closed position with its downwardly bearing shoulder resting on the guide arm, the gate mounting pin being limitedly movable axially from such position to allow said latch lug to clear the upper side of the rearwardly turned guide arm portion when the gate is to be opened.

9. In a draw bar guide for a train pipe connecter arm which is mounted on a car for horizontal swinging movement, such car having a draw bar mounted thereon for horizontal swinging movement, the combination of a forwardly extending arm connected at one end with the pipe connecter arm and extending forwardly from such connection, a depending guide arm

on the draw bar, said guide arm having at its lower end a rearward extension adapted to be horizontally engaged by one side of said forwardly extending arm, a gate member comprising a vertical pivot pin and a gate portion extending horizontally from the lower end of the pin, said guide arm having a vertical bearing for said gate pin, a shoulder on said pin adapted to bear downwardly on a seating surface on the guide arm, and a pin being movable vertically in the bearing from a position in engagement with said seating surface, said gate portion adapted to be swung to position to engage the other side of said forwardly extending arm, and a latch projection on said gate adapted to engage over and back of said guide arm extension when said gate pin shoulder is in engagement with its seating surface on the guide arm.

10. In a draw bar guide for a train pipe connecter arm which is mounted on a car for horizontal swinging movement, such car having a draw bar mounted thereon for horizontal swinging movement, the combination of a forwardly extending arm connected at one end with the pipe connecter arm and extending forwardly from such connection, a depending guide arm on the draw bar, said guide arm having at its lower end a rearward extension adapted to be horizontally engaged by one side of said forwardly extending arm, a gate member comprising a vertical pivot pin and a gate portion extending horizontally from the lower end of the pin, said depending guide arm having a portion U-shaped in cross section and having within its U-shaped opening vertical bearing surfaces for said gate pin, a shoulder on said pin adapted to bear downwardly on a seating surface on the guide arm, and said gate portion being adapted to be swung to position to engage the other side of said forwardly extending arm, and releasable means for holding the gate in its position of arm engagement.

11. In a draw bar guide for a train pipe connecter arm which is mounted on a car for horizontal swinging movement, such car having a draw bar mounted thereon for horizontal swinging movement, the combination of a forwardly extending arm connected at one end with the pipe connecter arm and extending forwardly from such connection, a depending guide arm on the draw bar, said guide arm having at its lower end a rearward extension adapted to be horizontally engaged by one side of said forwardly extending arm, a gate member comprising a vertical pivot pin and a gate portion extending horizontally from the lower end of the pin, said depending arm having a portion U-shaped in cross section, with the opening of the U facing forwardly, vertical bearing surfaces within said U-shaped opening for said gate mounting pin, a shoulder on said pin adapted to bear downwardly on a seating surface on the guide arm, the pin being movable vertically in the bearing surfaces from a position in engagement with said seating surface, and said gate portion being adapted to be swung to position to engage the other side of said forwardly extending arm, a latch projection on said gate adapted to engage over and back of said guide arm extension when said gate pin is in engagement with its seating surface on the guide arm, and a shoulder on the guide arm extension between the gate pin and the latch projection and engaged by the edge of the latch projection when the gate is in closed position.

12. In a pipe connecter for a car having a horizontally movable draw bar, the combination of a supporting member adapted to be mounted on a car for rotation about a vertical axis, said supporting member embodying a pair of depending yoke arms, a connecter arm tube having a pair of oppositely extending horizontal trunnions, a full bearing surface for one of said trunnions in one of the yoke arms, a bearing surface for the lower portion of the other trunnions in the other of said yoke arms, a member detachably mounted on the last mentioned yoke arm providing bearing for the upper portion of the last mentioned trunnions, and a forwardly extending arm mounted on said detachable member and having horizontal guiding connection with the draw bar of the car.

13. In a train pipe connecter, the combination of a supporting member adapted to be mounted on a car for rotation about a vertical axis, said supporting member embodying a pair of depending yoke arms, a connecter arm tube having a pair of oppositely extending horizontal trunnions, a full bearing surface for one of said trunnions in one of the yoke arms, a bearing surface for the lower portion of the other trunnion in the other of said yoke arms, and a member detachably mounted on the last mentioned yoke arm providing bearing for the upper portion of the last mentioned trunnion.

CLIFTON B. HERD.