

May 9, 1933.

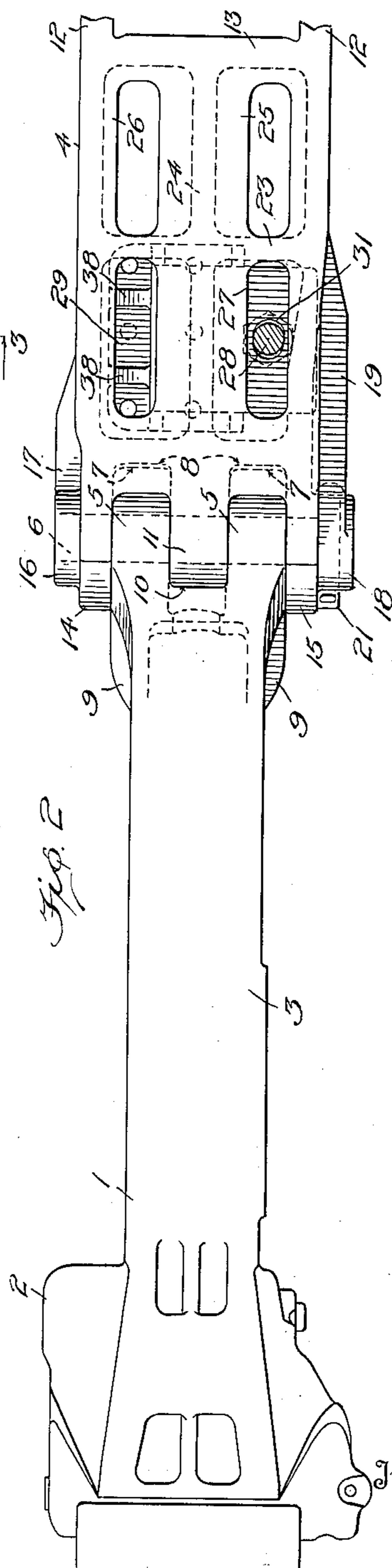
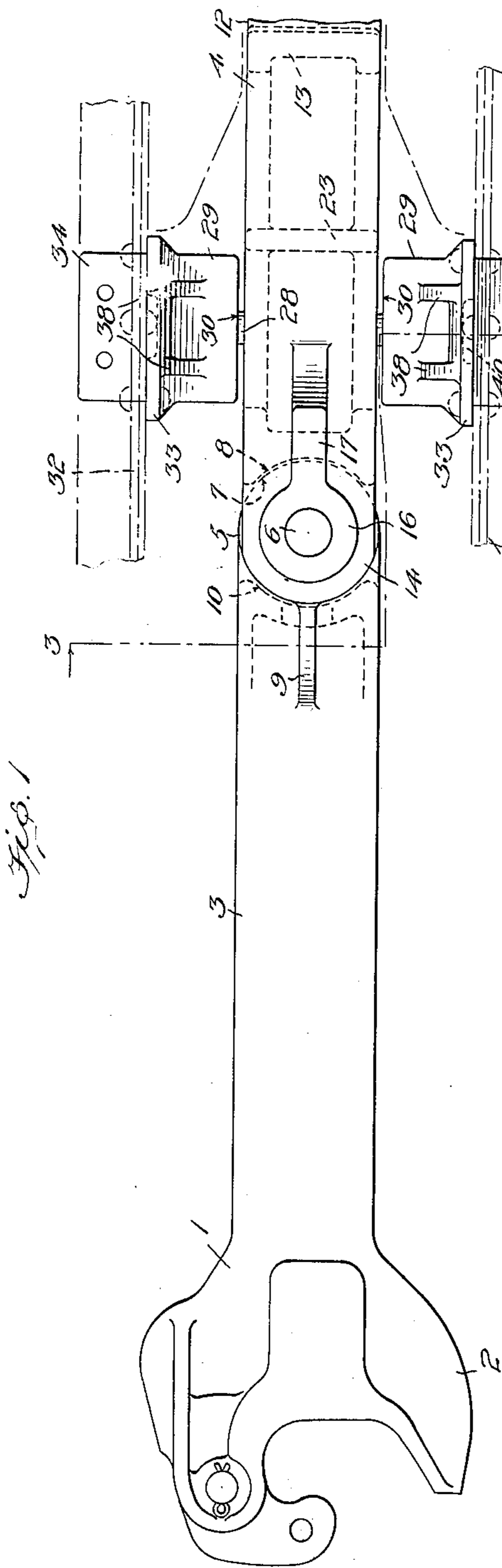
W. J. REGAN

1,908,541

DRAFT APPLIANCE FOR RAILWAY CARS

Filed Oct. 22, 1928

2 Sheets-Sheet 1



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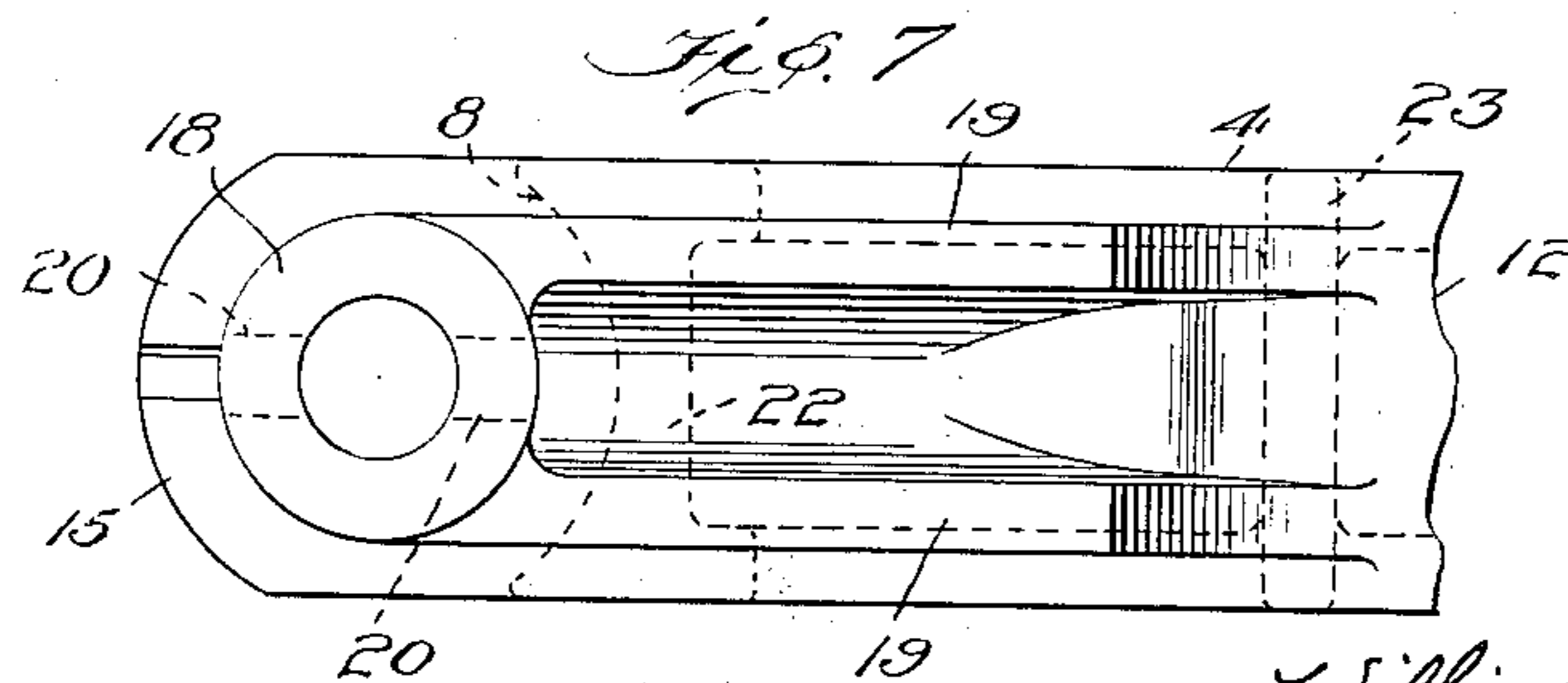
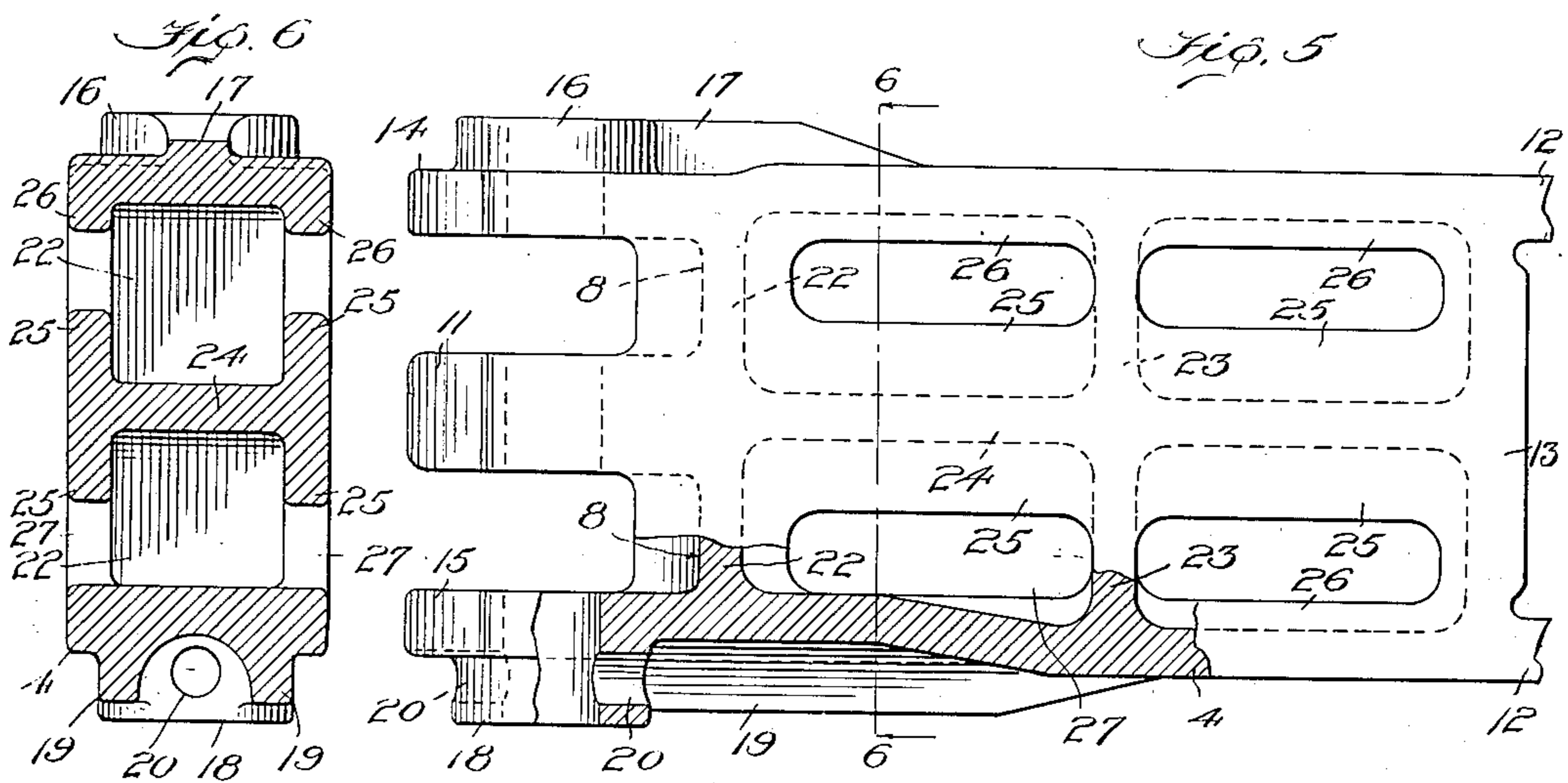
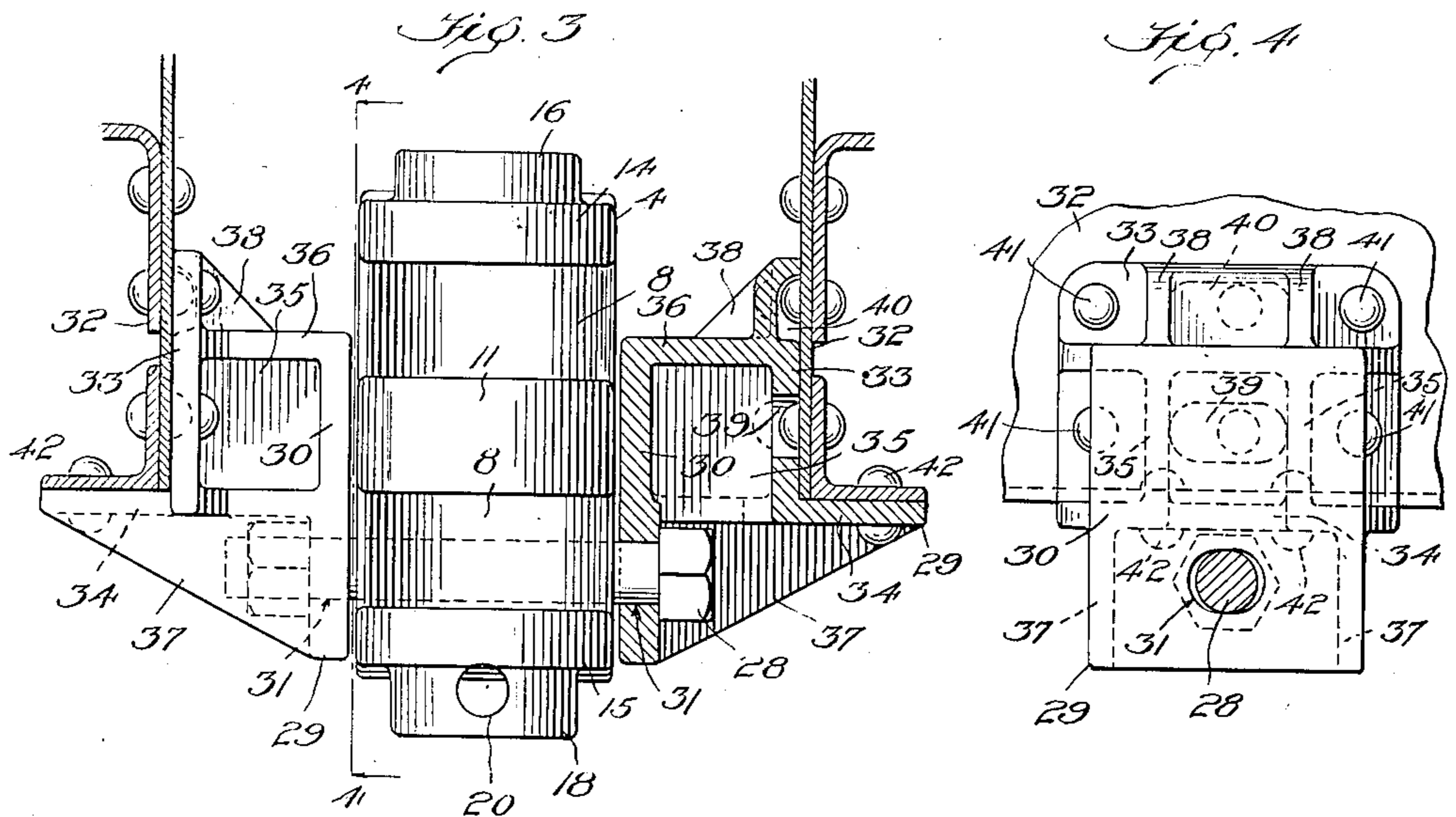
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DRAFT APPLIANCE FOR RAILWAY CARS

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2 Sheets-Sheet 2



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# UNITED STATES PATENT OFFICE

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## DRAFT APPLIANCE FOR RAILWAY CARS

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My invention relates to draft appliances for railway cars and particularly to a construction in which the car coupler is pivotally connected to the draft yoke so as to be capable of swinging laterally as the car passes around a curve.

A primary object of the invention is to provide a construction capable of application to existing cars with a minimum amount of alterations to their construction wherein the coupler which is pivotally connected to the draft yoke may be formed with a head and stem which are rigidly united, the parts being so related as to permit the head to be made sufficiently large to receive the standard knuckle, locking block and other fittings of the well-known D-type coupler without substantially diminishing the amount of lateral swinging movement of the pulling face of the coupler.

The principal feature of the invention, generally stated, resides in pivotally attaching a coupler having a rigidly united head and stem to the forward end of a longitudinally movable draft yoke whose draft receiving space is located sufficiently far to the rear of the pivot point of the coupler to enable the forward end of the yoke to cooperate in draft and buffing with adjacent chafing members which are carried by the car sills and which serve as means for maintaining the front end of the yoke and the rear end of the coupler in the center of the space between the sills under all working conditions.

Another feature of the invention consists in forming the yoke to receive means for preventing spreading of the draft sills at a point adjacent the pivotal connection of the coupler to the yoke.

Other features of the invention pertaining to advantageous details of construction and special relations of parts will hereinafter appear and be pointed out in the claims.

In the drawings illustrating a preferred form of the invention, Figure 1 is a plan view of a draft appliance embodying the invention, a portion of the draft yoke being broken away and portions of the draft sills

of the car being shown in dot and dash lines.

Figure 2 is a side elevational view of the construction shown in Figure 1.

Figure 3 is a sectional view on the line 3—3, Figure 1, the coupler being omitted.

Figure 4 is a sectional view on the line 4—4, Figure 3.

Figure 5 is a detail view, partly in side elevation and partly in vertical central section, of the forward end of the draft yoke.

Figure 6 is a sectional view on the line 6—6, Figure 5.

Figure 7 is a detail inverted plan view of the forward end of the draft yoke.

In the drawings, 1 indicates a car coupler having a head 2 and a shank 3 which are cast integral. The coupler head is preferably suitable for receiving the knuckle, locking block and other fittings of the standard D coupler and the shank 3 is made of ample depth and width to insure great strength. To provide for pivot attachment to the draft yoke 4 the rear end of the coupler shank is bifurcated so as to form upper and lower pivot lugs 5 for receiving a tail pin 6 by which the pivotal attachment of the coupler to the draft yoke is effected. The rear ends of the pivot lugs 5 are circularly curved, as at 7, for buffing cooperation with the correspondingly curved forward faces 8 of the yoke; and the said lugs 5, which project above and below the top and bottom walls of the intermediate portion of the coupler shank are preferably braced and reinforced by longitudinally extending ribs 9. Between the pivot lugs 5 the coupler shank is preferably provided toward its rear end with a rearwardly facing curved surface 10 for cooperating with the correspondingly curved forward face of the intermediate pivot lug 11 of the yoke.

The draft yoke 4 is preferably an integral casting and is provided with the usual arms 12 which are connected at their rear ends so as to form a space for enclosing the cushioning elements. These yoke arms are rigidly connected at their forward ends by a vertically extending wall or tie 13 whose rear face is adapted to engage the forward follower of the draft gear. At its forward end the draft

yoke is fashioned with vertically spaced perforated pivot lugs for receiving the tail pin 6, the upper lug 14 of the yoke being preferably substantially in longitudinal alignment with the upper yoke arm 12 and the lower pivot lug 15 being similarly related to the lower yoke arm. The pivot lug 14 may be advantageously reinforced by an upwardly extending boss 16 which is braced by a rearwardly extending rib 17. The lower pivot lug of the yoke is also preferably fashioned with a reinforcing boss 18 and is braced by rearwardly extending spaced ribs 19. The bosses 16 and 18 not only strengthen their respective pivot lugs but also provide increased bearing area for the tail pin 6. As the tail pin which is employed is preferably of the downwardly removable headless type the boss 18 on the underside of the draft yoke is preferably formed with longitudinally aligned openings 20 for receiving a headed pin 21 (see Fig. 2) which passes through and thereby supports the tail pin 6. The reinforcing ribs 19 being spaced laterally of the yoke permit the headed supporting pin 21 to be easily inserted or removed.

Connecting the rear ends of the pivot lugs 11, 14 and 15 of the yoke is a solid wall of metal 22 whose forward surfaces between the lugs are circularly curved to form seats or bearings 8 which cooperate in buffing with the correspondingly curved pivot lugs 5 of the coupler. The forward portion of the draft yoke, which extends from the follower engaging wall 13 adjacent the draft gear space to the tail pin 6 connecting the draft yoke to the rear end of the coupler shank 3, is considerably longer than is the usual practice. To enable it to withstand the strains to which it is subjected under heavy draft or buffing when the car coupler is at an angle, it is preferably provided between the rear tie wall 13 and the forward wall 22 with an intermediate vertically extending wall 23 rigidly uniting the upper and lower extensions of the yoke arms 12; and it is also preferred to strengthen this portion of the yoke by a longitudinally extending horizontal web 24 which is integrally united to each of the spaced vertically extending tie walls 13, 22 and 23 respectively, the said web being in longitudinal alignment with the intermediate pivot lug 11 of the draft yoke. Between the rear tie wall 13 and the forward tie wall 22 the horizontal web 24 is reinforced by oppositely disposed vertically extending marginal flanges 25 which form side walls of the yoke and give to its central forward portion an I-beam form. The portions of the yoke arms in advance of the draft gear space are also preferably provided with vertically extending marginal flanges 26 forming portions of the side walls of the yoke. The side walls as

thus constituted have transversely aligned openings which respectively communicate with the interior of the forward portion of the yoke in the space bounded by the yoke arms, the intermediate horizontal web and the vertical walls. These openings, all of which are preferably elongated longitudinally of the yoke provide for coring and the lower forward one 27 receives a cross-tie in the form of a bolt 28 which serves as means for preventing spreading of the draft sills. The slot 27 of the yoke is preferably long enough to give some added clearance for the cross-tie bolt beyond the full travel of the yoke in draft and buffing, thus insuring that the bolt shall not be subject to shear.

Rigidly mounted upon the draft sills, as by being riveted thereto, are chafing members or blocks 29 whose inner ends stand closely adjacent to the sides of the draft yoke, the tail pin 6 being in advance and the intermediate vertical tie wall 23 being somewhat to the rear of the chafing members when the parts are in normal position. As the inner faces of the chafing blocks 29 preferably extend longitudinally of the yoke for a distance greater than the full travel of which the draft gear is capable, the forward cross-tie wall 22 of the yoke is interposed between the chafing blocks 29 in buffing, while the intermediate cross-tie wall 23 moves into position between said blocks when the coupler is subject to pulling. The yoke is thus well adapted to withstand the great strains imparted to it under heavy draft and buffing when the coupler is in a laterally displaced position as the lateral forces applied to the yoke are resisted by solid metal.

The chafing blocks 29 are preferably integral castings, each being formed with an inner vertical wall 30 adapted to cooperate with the draft yoke 4 so as to cause its forward end and the rear end of the coupler to travel longitudinally in the center of the space between the draft sills during draft and buffing without regard to the angular position the coupler may occupy. The inner walls 30 of the chafing blocks extend vertically upward above the central portion of the draft yoke so as to resist twisting of the latter and each is provided toward its lower end with an opening 31 to receive the cross-tie bolt 28, the openings being preferably slightly elongated longitudinally of the mechanism so as to relieve the bolt of any substantial strain which might be communicated thereto as the result of weaving of the draft sills, and the said openings being below the draft sills so as to permit easy application and removal of the bolt. The outer side of each of the chafing blocks is preferably fashioned with a vertical wall 33 or base-plate which engages the inner face of the adjacent draft sill and is also pref-

erably formed with an outwardly extending flange 34 for projecting under the lower flange with which draft sills are usually provided. The upper portions of the inner walls 30 may advantageously be braced by spaced vertical walls 35 which integrally unite them to the top walls 36 and the base-plates 33 of the respective chafing blocks. The lower portions of the inner walls 30 are laterally braced by horizontally spaced flanges 37 which extend upwardly to the outwardly projecting horizontal flanges 34 and are positioned so as not to interfere with the application of the cross-tie bolt 28. To increase the stability of the chafing blocks 29 the top wall 36 of each is preferably reinforced by tapering vertical ribs or flanges 38 which are integrally united to the neighboring upper part of the base-plate 33. To provide space for the accommodating draft sill rivets the base-plates 33 of the chafing blocks are formed with elongated openings 39 and are hollowed out toward their upper ends, as indicated at 40. The base plates 33 are secured to their respectively adjacent draft sills by rivets 41 and the outwardly extending flanges 34 of the chafing blocks are secured to the sills by rivets 42.

30 I claim:

1. A railway draft appliance comprising a car coupler having a head and shank, an integral draft yoke mounted between the draft sills of the car and longitudinally movable with respect thereto in draft and buffing, the rear end of said coupler shank being pivotally connected to the forward end of said yoke, means for causing the forward end of the yoke and the rear end of said shank to reciprocate centrally of the space between the draft sills when the coupler is subjected to draft or buffing in any position said coupler may assume, and a cross-tie extending through said yoke and connecting said draft sills adjacent the point of pivotal connection of said coupler and yoke.

2. A railway draft appliance comprising a car coupler having a head and shank, an integral draft yoke mounted between the draft sills of the car and longitudinally movable with respect thereto in draft and buffing, the rear end of said coupler shank being pivotally connected to the forward end of said yoke, chafing members rigidly connected to the respective draft sills adjacent the forward end of said yoke and adapted to cooperate with said yoke to cause the forward end of the latter and the rear end of said shank to reciprocate centrally of the space between the draft sills when the coupler is subjected to draft or buffing in any position said coupler may assume, and a cross-tie extending through said yoke adjacent the point of pivotal connection of the latter to said coupler and connecting said

chafing members to prevent spreading of said sills.

3. A railway draft appliance comprising a car coupler having a head and shank, an integral draft yoke mounted between the sills of the car and longitudinally movable with respect thereto in draft and buffing, the rear end of said coupler shank being pivotally connected to the forward end of said yoke and the latter being provided with a transverse wall adapted to engage the forward follower of a cushioning unit, chafing blocks rigidly secured to the respective draft sills and cooperating with the forward end of the yoke to cause the latter and the rear end of said shank to reciprocate centrally of the space between the draft sills when the coupler is subjected to draft or buffing while at an angle to its normal central position, and a transversely extending bolt rigidly connecting said chafing blocks to prevent spreading of said sills, said bolt extending through said yoke in advance of said transverse wall.

4. A railway draft appliance comprising a car coupler having a rigidly connected head and shank, a draft yoke mounted between the draft sills of the car and longitudinally movable with respect thereto in draft and buffing, the rear end of the coupler shank and the forward end of the yoke being pivotally connected, chafing blocks rigidly connected to the respective draft sills and extending downwardly beyond the latter and adapted to cooperate with the forward end of said yoke to cause said forward end and the rear end of said shank to reciprocate centrally of the space between the draft sills when the coupler is subjected to draft or buffing while in an angularly displaced position, and a removable cross-tie extending through said yoke and connecting said chafing blocks below the draft sills.

5. A railway draft appliance comprising a car coupler having a head and shank, a draft yoke mounted between the draft sills of the car and longitudinally movable with respect thereto in draft and buffing, the rear end of said shank and the forward end of said yoke being pivotally connected, chafing blocks rigidly mounted upon the respective draft sills and having downwardly projecting portions engaging said yoke below said sills, said projecting portions being provided with openings for receiving a cross-tie member and being respectively reinforced on opposite sides of said openings with spaced outwardly extending flanges, and a cross-tie member extending through said openings and rigidly connecting said chafing blocks.

6. A railway draft appliance comprising a car coupler having a rigidly connected head and shank, a draft yoke mounted be-

tween the draft sills of the car and longitudinally movable with respect thereto in draft and buffing, said yoke being provided to the rear of said coupler shank with a  
 5 vertically extending tie wall having a rear face adapted to engage the forward follower of a cushioning unit, the rear end of said shank being pivotally connected to the forward end of said yoke, and chafing blocks  
 10 rigidly mounted upon the respective draft sills and adapted to cooperate with said yoke to cause the forward end of the latter and the rear end of said shank to reciprocate centrally of the space between the draft  
 15 sills when the coupler is subjected to draft or buffing while in an angularly displaced position, said chafing blocks being spaced forwardly from said tie wall when the yoke is in normal position, and each of said  
 20 chafing blocks being formed with a base-plate for engaging the inner face of the neighboring draft sill, said base-plate being recessed to receive a rivet head of said sill.

7. A railway draft appliance comprising  
 25 a car coupler having a head and shank, a draft yoke mounted between the draft sills of the car and longitudinally movable with respect thereto in draft and buffing, the forward end of said yoke and the rear end of  
 30 said shank being pivotally connected, chafing blocks rigidly mounted upon the respective draft sills for cooperating with said yoke to cause the forward end of the latter and the rear end of said shank to reciprocate  
 35 centrally of the space between the draft sills when the coupler is subjected to draft or buffing while in an angularly displaced position, each of said chafing blocks being formed with a downwardly extending portion  
 40 engaging said yoke below the draft sills and each of said blocks having a base-plate for engaging the draft sills, and said base-plate and downwardly projecting portion of each chafing block being integrally united  
 45 by webs spaced longitudinally of the yoke, and means extending between said webs and through the yoke for connecting said chafing blocks.

8. A railway draft appliance comprising  
 50 a car coupler having a head and shank, a draft yoke mounted between the draft sills of the car and longitudinally movable with respect thereto in draft and buffing, the rear end of said shank and the forward end of  
 55 the yoke being pivotally connected, and chafing blocks rigidly mounted upon the respective draft sills for cooperating with the forward end of the yoke to cause the latter and the rear end of said shank to  
 60 reciprocate centrally of the space between the draft sills when the coupler is subjected to draft or buffing while in an angularly displaced position, said yoke being provided with spaced arms for receiving a cushion-  
 65 ing unit between them and being provided

with a plurality of longitudinally spaced vertical tie walls, one of which is adapted to engage the forward follower of a draft gear cushioning unit and one of which forms a bearing for the rear end of said shank  
 70 and one of which is disposed intermediate of said follower engaging tie wall and said shank engaging tie wall, said yoke being open transversely between said intermediate  
 75 and follower engaging walls, said intermediate tie wall and the tie wall forming a bearing for said shank being adapted to be interposed between said chafing blocks upon longitudinal movement of said yoke,  
 80 and said chafing blocks being spaced forwardly from said follower engaging tie wall when the yoke is in normal position.

9. A railway draft appliance comprising a car coupler having a rigidly connected  
 85 head and shank, a draft yoke longitudinally movable with respect thereto in draft and buffing, the rear end of said shank being pivotally connected to the forward end of said yoke, chafing blocks rigidly mounted upon the respective draft sills for cooperating  
 90 with the yoke to cause its forward end and the rear end of said shank to reciprocate centrally of the space between the draft sills when the coupler is subjected to draft or  
 95 buffing while in an angularly displaced position, said yoke being formed as an integral casting provided at its forward end with a plurality of longitudinally spaced vertical tie walls, one of which is intermediate of  
 100 others, and formed with a longitudinally extending horizontal web connecting said tie walls and in spaced relation to the top and bottom walls of said yoke, said yoke being provided at its forward end with an opening  
 105 adapted to receive a cross-tie for connecting said chafing blocks, and a cross-tie extending through said opening of the yoke and connecting said chafing blocks.

10. A railway draft appliance comprising  
 110 a car coupler having a rigidly connected head and shank, a draft yoke mounted between the draft sills of the car and longitudinally movable with respect thereto in draft and buffing, and formed with a draft  
 115 gear receiving opening which is closed at the forward end, the rear end of said coupler shank being pivotally connected to the forward end of said yoke, and means spaced forwardly of said draft gear receiving opening  
 120 and rigidly secured to the respective draft sills for cooperating with the forward end of the yoke to cause the latter and the rear end of said shank to reciprocate centrally of the space between the draft sills  
 125 when the coupler is subjected to draft or buffing while in an angularly displaced position, the forward portion of said yoke in advance of the draft gear receiving space thereof being provided with top, bottom and  
 130 side walls and having a plurality of trans-

versely extending vertical tie walls which are spaced longitudinally of the yoke and one of which is intermediate of others and having a horizontal web integrally connecting said vertical tie walls and connecting said side walls intermediate of the top and bottom walls of the yoke.

11. A railway draft appliance comprising a car coupler having a rigidly connected head and shank, an integral draft yoke mounted between the draft sills of the car and longitudinally movable with respect thereto in draft and buffing, the rear end of said coupler shank being pivotally connected to the forward end of said yoke, means rigidly mounted on the respective draft sills for cooperating with said yoke to cause the forward end of the latter and the rear end of said shank to reciprocate centrally of the space between the draft sills when the coupler is subjected to draft or buffing in any position said coupler may assume, said yoke being provided with a transverse wall adapted to engage the forward follower of a cushioning unit, and means extending through said yoke in advance of said wall and connecting said first-named means for preventing spreading of said draft sills.

12. A railway draft appliance comprising a car coupler having a rigidly connected head and shank, an integral draft yoke mounted between the draft sills of the car and longitudinally movable with respect thereto in draft and buffing, the rear end of said coupler shank being pivotally connected to the forward end of said yoke, chafing members rigidly connected to the respective draft sills adjacent the forward end of said yoke and adapted to cooperate with said yoke rearwardly of its point of pivotal connection to the car coupler to cause the forward end of the yoke and the rear end of said shank to reciprocate centrally of the space between the draft sills when the coupler is subjected to draft or buffing while displaced laterally from its normal central position, said yoke being provided with a transversely extending wall adapted to engage the forward follower of a cushioning unit, and means extending transversely through said yoke in advance of said wall and connecting said chafing members for preventing spreading of said draft sills.

In testimony whereof I affix my signature  
WILLIAM J. REGAN.