

June 5, 1934.

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1,961,354

PIVOTAL YOKE AND COUPLER CONNECTION

Filed Dec. 19, 1930

2 Sheets-Sheet 1

Fig. 1

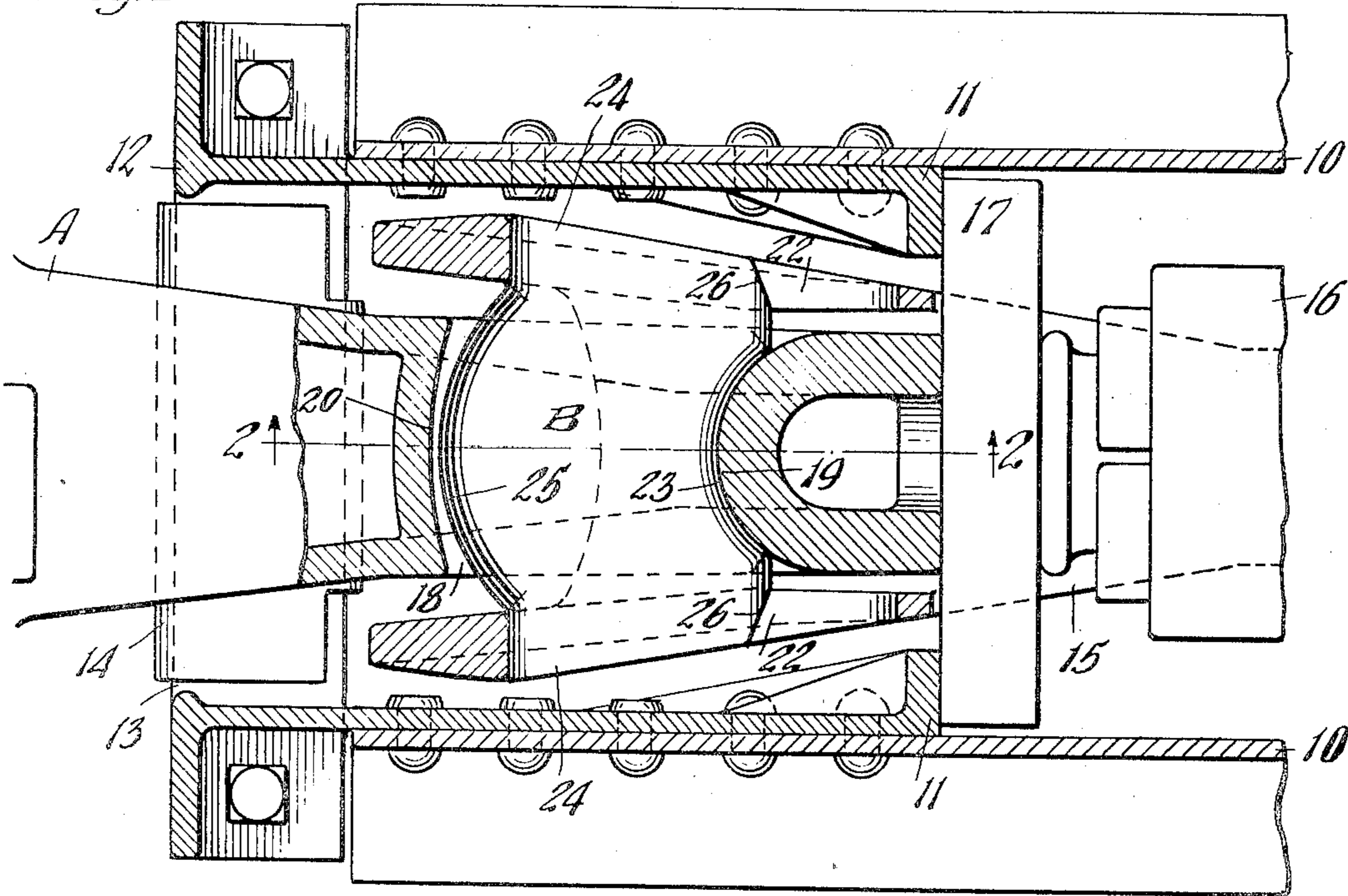
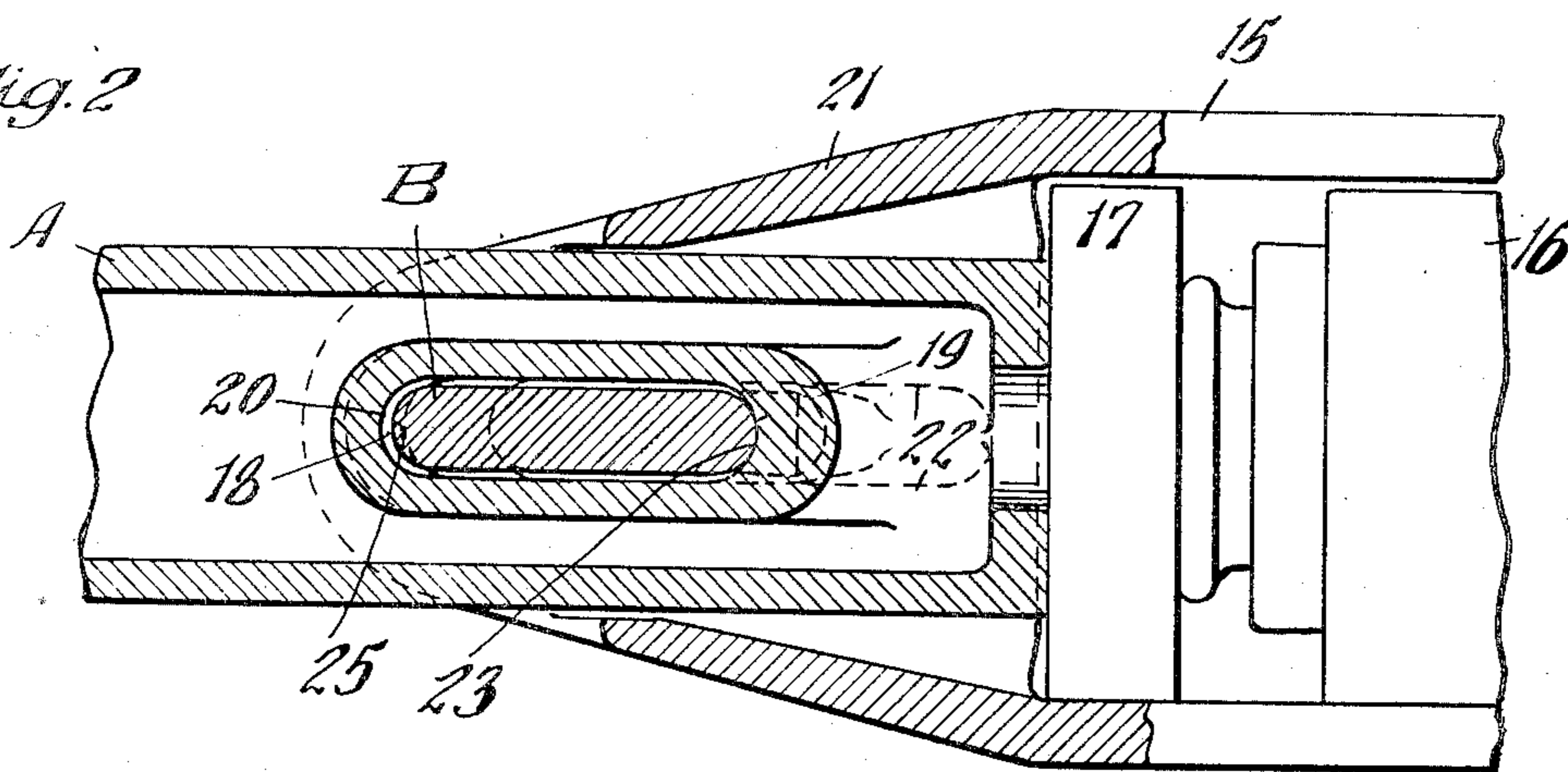


Fig. 2



Witness
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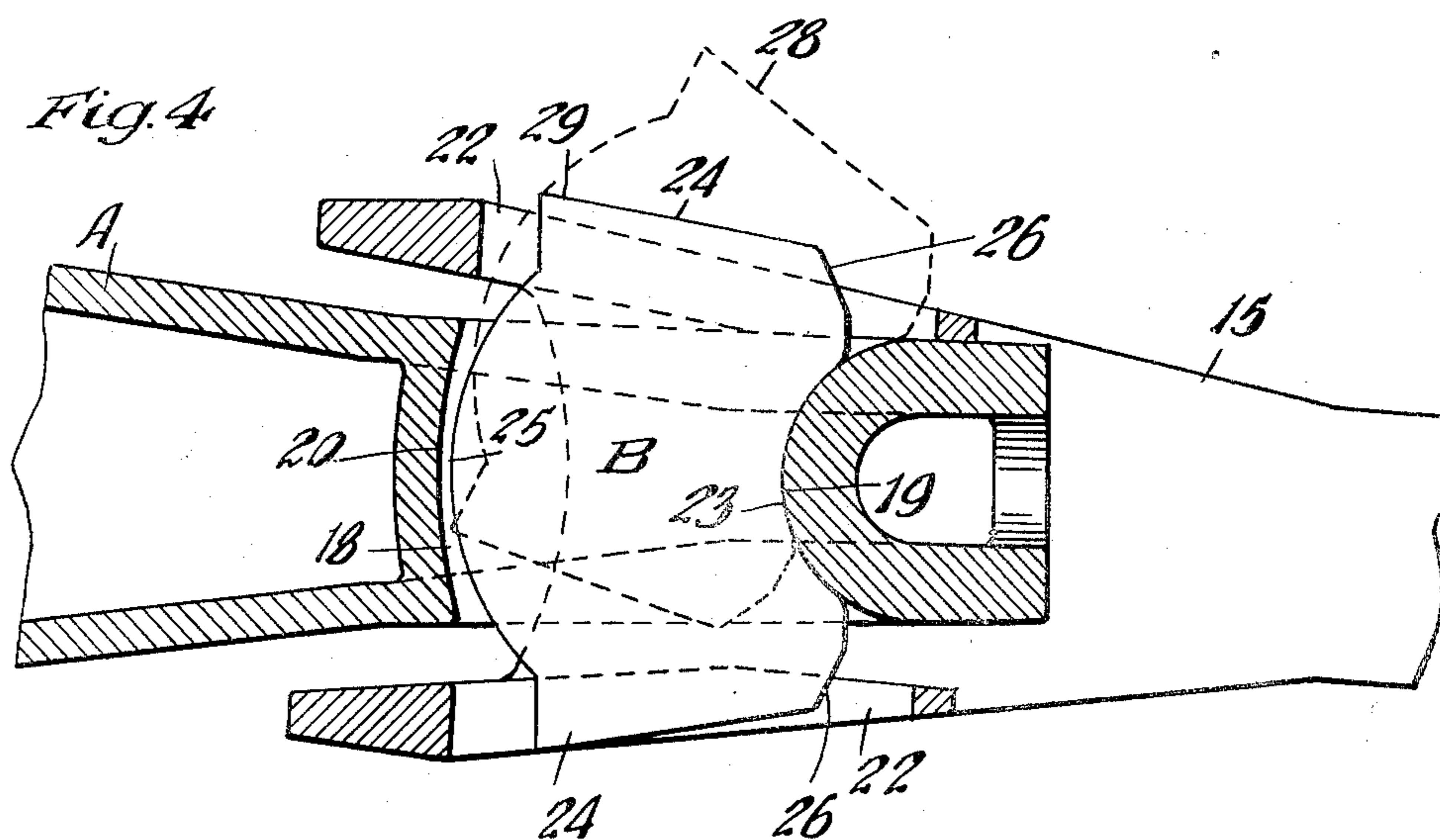
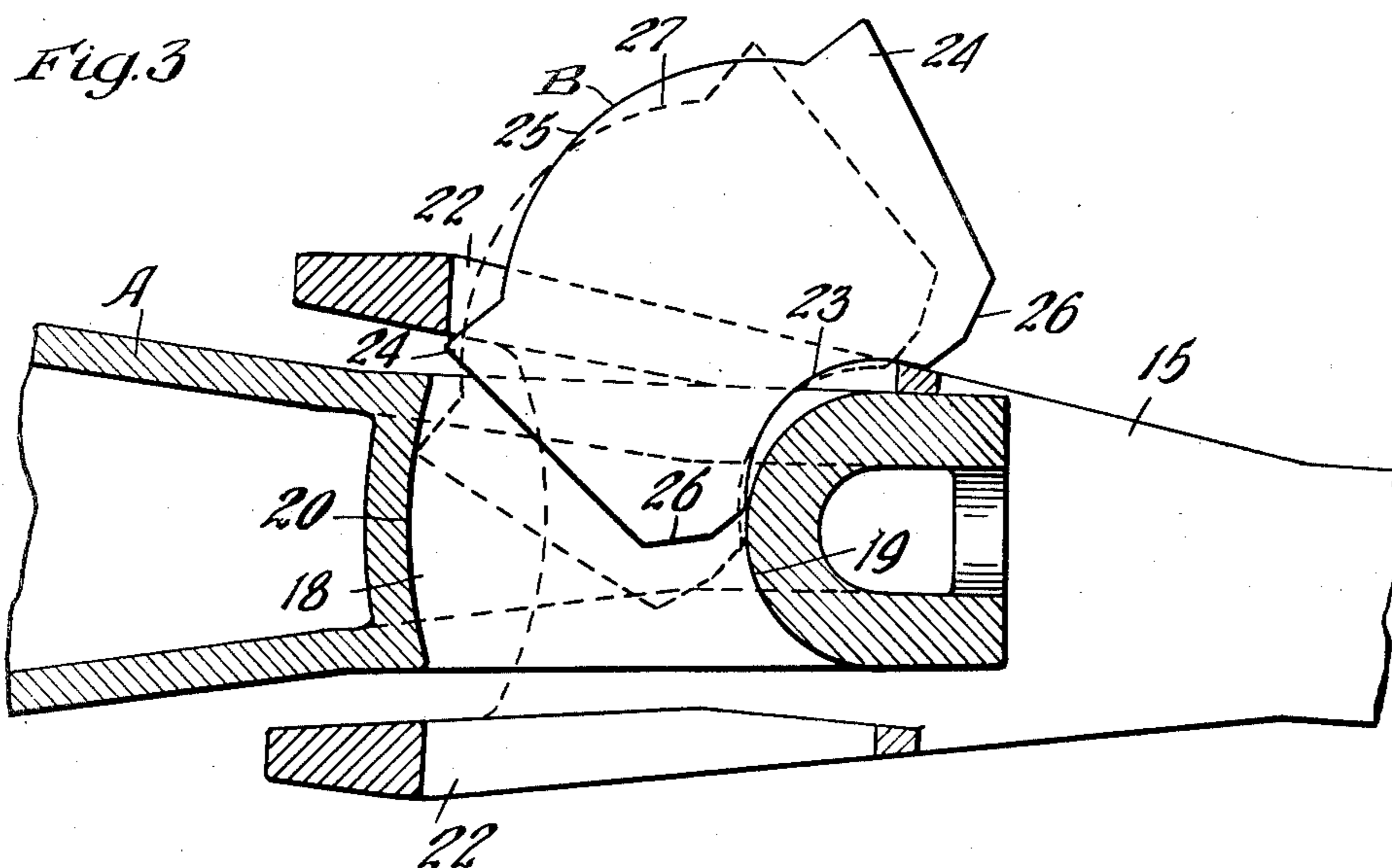
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Witness

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UNITED STATES PATENT OFFICE

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PIVOTAL YOKE AND COUPLER CONNECTION

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6 Claims. (Cl. 213—71)

This invention relates to improvements in pivotal yoke and coupler connections.

One object of the invention is to provide a pivotal coupler and yoke connection especially adapted for railway draft riggings, including a coupler key extending transversely through the slots of the yoke and having swiveled connection with the coupler shank to provide for lateral swinging movement of the coupler with respect to the yoke, wherein the key is held against lateral disengagement by the swiveled connecting means when the parts of the draft rigging are assembled in operative relation in service.

A more specific object of the invention is to provide a mechanism of the character indicated in the preceding paragraph wherein the swiveled connection between the key and the coupler shank is provided by curved cooperating engaging surface portions on the key and coupler shank respectively, which permits assembling of the key with the coupler shank and yoke by lateral insertion and rocking movement of the key through the slots of the yoke and coupler shank but prevents accidental disengagement of the key in service after being completely assembled with the other parts.

Other objects of the invention will more clearly appear from the description and claims hereinafter following.

In the drawings, forming a part of this specification, Figure 1 is a horizontal, longitudinal, sectional view of a portion of the underframe structure of a railway car, at one end of the same. Figure 2 is a vertical, sectional view, corresponding substantially to the line 2—2 of Figure 1, the sills and cooperating parts of the underframe structure of the car being omitted. And Figures 3 and 4 are horizontal, sectional views through the swiveled connection of the coupler shank and yoke, illustrating the manner of applying the key member thereto.

In said drawings, 10—10 indicate the channel shaped center or draft sills of a railway car under frame and 11—11 the front stop lugs, which are secured to the inner sides thereof. In the present disclosure the sills and stop lugs are not shown as provided with the usual coupler key guide slots, but it will be understood that either solid sill and lug members or those provided with the usual slots may be employed. The striking casting of the railway draft rigging is indicated by 12 and has the usual detachable carry iron 13 secured to the bottom thereof, a wear plate 14 being supported on the carry iron and cooperating with the coupler shank in the usual manner.

The yoke of the draft rigging is indicated by 15 and is of the well known vertical type having a hooded front end portion. A shock absorbing mechanism 16, the front end of which only is shown, and a front main follower 17 are disposed within the yoke and cooperate with the stop lugs 11—11 in the ordinary manner.

In carrying out my invention, I provide broadly a coupler A and a coupler key B, wherein the coupler key extends through aligned slots in the usual yoke member 15 and the shank of the coupler, the key and yoke having cooperating swiveling means thereon formed rigid with said members respectively.

The coupler A has the shank portion thereof provided with a transverse coupler key receiving slot 18 having a convex rear end wall 19 and a concave front end wall 20. As shown, the curvature of the rear wall 19 is of lesser radius than the curvature of the front wall 20. The shank of the coupler A has flat bearing engagement with the front follower 17, as clearly shown in Figures 1 and 2.

The yoke member 15, the hooded portion of which is indicated by 21, has the side walls thereof provided with coupler key receiving slots 22—22, which are in transverse alinement with the key receiving slot 18 of the coupler shank.

The coupler key B, which connects the coupler to the yoke, is of special design so as to have swiveling engagement with the coupler shank. As shown, the key B has a concave seat 23 in the rear edge thereof which mates with the convex projecting surface 19 of the rear wall of the slot of the coupler shank. As will be clear, the key is thus mounted for rocking movement on said rear wall. The key has lateral extensions 24—24, which are of the shape illustrated in Figures 1, 3 and 4 and extend into the slots 22—22 of the hood of the yoke. The forward edge of the key projects beyond the sections 24—24 thereof and presents a convex edge 25 which protrudes into the concavity formed by the front end wall 20 of the slot of the coupler shank. As shown in Figure 1, relatively slight clearance is provided between the convex edge section 25 of the key and the wall 20. The curvature of the edge 25 is of greater radius than the curvature of the face of the concave seat 23. The lateral projections 24—24 of the key preferably are cut away on their outer corners at the rear edge of the key, as indicated at 26—26. As will be evident, when the key is in the fully assembled position shown in Figure 1, the same will be maintained seated on the convex bearing surface

19 of the rear wall of the key slot of the coupler shank, due to the projecting curved front edge of the key extending into the concavity of the front wall of the slot with only slight clearance therebetween. Withdrawal of the key in a transverse direction with respect to the coupler shank is thus prevented and accidental disengagement of the key from the coupler shank and yoke is completely eliminated. It is further pointed out that when the parts are in assembled relation as shown in Figure 1, even if the key should become slightly displaced, disengagement of the same will be prevented by the solid walls presented by the draft lugs and webs of the center sills.

In assembling the parts of my improved device, the coupler A and the yoke 15 are placed substantially in the full line position shown in Figure 3. The key B is then inserted through the slot 22 of one of the side walls of the hood of the yoke, into the slot of the coupler shank, as shown in full lines in Figure 3. Next the key is displaced to the dotted line position shown in said figure, which is indicated by 27, wherein the rear edge portion of the lateral projection 24 of the key at that side of the yoke clears the rear end wall of the slot 22. In the position 27, the key has bearing engagement with the convex surface 19 of the yoke slot and is moved along this surface to the position indicated by 28 and shown in dotted lines in Figure 4. As will be evident, the curved rear edge 23 of the key is thus seated fully on the convex surface 19. The key is then rocked to the full line position shown in Figure 4 and indicated by 29. After the key has been thus fully assembled with the coupler shank and yoke, the key together with the coupler shank is pulled forwardly with respect to the yoke and displaced to the position shown in Figure 1. The parts thus assembled, with the shock absorbing mechanism and front follower placed within the yoke is installed between the draft sills, the assembled parts being lifted upwardly between the sills. As will be obvious during such assembling operation, the carry iron is removed, the same being secured in position to properly support the coupler shank after the mechanism has been properly positioned between the draft sills. The operation of detaching the key from the coupler shank and yoke is substantially the reverse of the assembling operation hereinbefore described.

As will be clear in the operation of my improved construction, a pulling or draft action of the coupler A will pull the key forwardly, carrying the yoke 15 therewith and compressing the shock absorbing mechanism against the front follower 17, which is held stationary by the stop lugs 11. During such draft action, the coupler is free to swivel on the key B by means of the cooperating engaging convex and concave bearing surfaces of the coupler shank and key, thus allowing the necessary lateral swinging movement of the coupler shank in service. During a buffing action, the coupler will force the follower 17 rearwardly, thereby compressing the shock absorbing mechanism. During this time the coupler key B will travel rearwardly in the slots of the slots of the yoke member. Due to the fact that the curved front edge of the key projects into the concavity of the front wall of the key slot of the coupler shank, there is no danger of the key being displaced laterally and disengaged from the coupler shank or yoke, it being necessary that the key be swung on the convex wall

19 at the rear end of the slot of the coupler shank in order to disengage the same. In case the key should become slightly angularly displaced during a buffing action, engagement of the side projections 24—24 of the key with the front end walls of the slots of the yoke, during a draft action, will restore the key to the position shown in Figure 1.

I have herein shown and described what I now consider the preferred manner of carrying out my invention, but the same is merely illustrative and I contemplate all changes and modifications that come within the scope of the claims appended hereto.

I claim:

1. In a railway draft rigging, the combination with a coupler having the shank thereof provided with a transverse key-receiving slot having front and rear transverse walls, the central portion of said slot being narrowed between said front and rear walls by an inwardly projecting key-receiving slots transversely aligned with the slot of the coupler shank; and an elongated coupler key extending through the slots of the coupler shank and yoke, said key having a seat in one edge within which the projecting portion of said transverse wall of the coupler shank slot is engaged, said key also having a projection normally engageable with the other transverse wall of the coupler shank slot to limit displacement of the key lengthwise of the coupler shank to prevent disengagement of said projecting portion and the seat in a direction transverse of the coupler shank, said seat of the key being of such a depth and the key being of such an overall length that when the key is rocked to a predetermined angular position with respect to the longitudinal axis of the coupler shank the key will clear the projecting portion and the walls of the coupler shank slot so as to permit withdrawal of the key from the coupler shank.

2. In a railway draft rigging, the combination with a coupler having the shank thereof provided with a transverse slot adapted to accommodate a coupler key, said slot having transverse front and rear walls, one of said walls having a protruding rounded portion; of a yoke having key slots aligned with said coupler shank slot; and a coupler key within the slot of the coupler shank, said key having a rounded bearing seat within which said rounded wall of the slot has swiveled bearing engagement, said key also having at the side opposite to said seat a rounded projection engageable with the corresponding transverse wall of the key slot of the coupler shank to maintain said rounded wall engaged within said seat when the key is in normal transverse position to prevent withdrawal of the key transversely of the coupler shank, the seat and rounded projection of said key being so proportioned and the key being of such an overall length that when the key is swung on said rounded wall of the slot of the coupler shank to a predetermined angular position with respect to the longitudinal axis of said shank the seat will be disengaged from the bearing projection and the end of the key which is located within the slot of the coupler shank will clear the front and rear walls of said slot to permit withdrawal of the key from the coupler shank.

3. In a railway draft rigging, the combination with a coupler having the shank thereof provided with a transverse key-receiving slot, the slot having a transversely curved rear end wall provid-

ing a projecting rounded bearing portion, said slot also having a transverse front wall curved in a similar direction to the rear wall; of a yoke member having key slots aligned with the slot of the coupler shank; and a coupler key extending through the slots of the coupler shank and yoke, said key having a transversely curved central portion, thereby providing a curved seat at the rear side and a rounded front edge, said curved seat fitting said rounded bearing portion and said curved front edge engaging said curved front wall to permit swiveling movement of the coupler with respect to the yoke, said curved central portion of the key being of such a width lengthwise of the coupler shank as to limit movement of the key in a direction lengthwise of the coupler shank to an extent to prevent disengagement of the key from the slot of the coupler shank in a direction transverse of said shank and yoke, said key being of such an overall length that it will clear the front and rear walls of the slot when said key is brought to a predetermined angular position with respect to the length of the coupler shank, said key being swingable on said rounded bearing projection of the rear wall of the key slot of the coupler shank to said predetermined angular position with respect to the longitudinal axis of said shank to free said key from said bearing projection and said walls of the slot of the shank to permit withdrawal of the key.

4. In a railway draft rigging, the combination with a coupler having the shank thereof provided with a transverse key-receiving slot, said slot having a curved rear wall presenting an inwardly projecting, round bearing portion, said key slot having the front wall thereof curved in a similar direction; of a yoke member having key slots aligned with said slot of the coupler shank; and a coupler key extending through the slots of the coupler shank and yoke, said key having a recess in the rear face providing a curved bearing seat fitting said curved rear wall of the coupler shank slot to provide for swiveling movement of the coupler with respect to the yoke, said key having a forwardly projecting, curved front edge portion extending into the curved

front wall of the slot of the coupler shank and preventing lateral withdrawal of the key when the key is in normal position, the entire front edge portion of said key being so shaped as to clear the front wall of said coupler shank slot when the key is swung angularly on said rounded bearing projection of the rear wall of the slot, thereby permitting withdrawal of the key from the slot. 80

5. In a railway draft rigging, the combination with a coupler having a transverse key-receiving slot in the shank thereof, said slot having front and rear end walls curved in the same direction; of a yoke having key slots aligned with the slot of the coupler shank; and a key having a transversely curved central portion loosely fitting the slot of the coupler shank and having side portions engaging in the slots of the yoke, the key being of a width at its curved section to permit withdrawal of the key only when the key is swung in an arcuate path. 85 90 95

6. In a railway draft rigging, the combination with a coupler having a transverse key-receiving slot in the shank thereof, said slot having concentrically curved front and rear walls; of a yoke having key slots aligned with said slot of the coupler shank; and a key extending through the slot of the coupler shank, said key having the opposite end portions thereof engaged within the slots of the yoke, the section of said key between said end portions having the front and rear edges curved in similar directions, the curved rear edge being concentric with the curved rear wall of the key slot of the yoke and bearing on said curved wall, said curved front edge of the key being of lesser radius than the curved front wall of the key slot of the yoke and said key being of such a width at said section as to preclude withdrawal of the key from the slot of the coupler shank when the key is in normal transverse position, and said opposite ends of the key being proportioned so as to clear the front wall of the coupler key slot when the key is rotated on the rear wall of said slot, thereby permitting complete withdrawal of the key from the coupler shank. 100 105 110 115 120

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