To all whom it may concern:

Be it known that I, Enoch George, Jr., a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Coupling-Centering Mechanism; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a coupler centering device for yieldingly maintaining a laterally swinging car coupler in normal position in the longitudinal axis of the car. As will hereinafter appear, certain structural features of the invention enable it to be also advantageously employed for effecting a lateral shifting of the train pipes of a railway car so as to prevent them from being injured by the lateral swinging movements of the coupler.

The primary object of the invention is to produce a coupler centering device consisting of a few compactly arranged and simple parts which cooperate to effect the efficient centering of a car coupler mounted upon a railway car with capability of swinging laterally.

A principal feature of the invention involves the employment of a carry iron having a transversely extending recess within which a plurality of tandem arranged springs and corresponding pairs of followers are disposed, and in combining therewith a coupler saddle which is sidely mounted upon the carry iron and has a portion extending into the said recess, one of the followers of each pair being normally in engagement with and being adapted to be actuated by the portion of the saddle which extends into the recess of the carry-iron and one of the followers of each pair having a lost motion connection with the said saddle.

Another feature of the invention consists in so constructing the mechanism that the tandem arranged and operating springs may serve not only to centralize the coupler, but also to shift the train pipes of the car laterally as the car coupler swings from side to side.

In the drawings illustrating the preferred embodiments of the invention, the scope whereof is pointed out in the claims:

Figure 1 is a front elevation of a coupler centering device embodying the invention, the laterally swinging car coupler associated therewith being shown in section.

Figure 2 is a view, partly in plan and partly in horizontal section, of the mechanism shown in Fig. 1, parts of the car coupler being broken away.

Figure 3 is a sectional view on the line 3—3, Fig. 1.

Figure 4 is a sectional view on the line 4—4, Fig. 2.

Figure 5 is a detail plan view of the coupler saddle.

Figure 6 is a detail front elevation of the coupler saddle.

Figure 7 is a detail side elevation of the coupler saddle.

Figure 8 is a view partly in end elevation and partly in section of a coupler centering device embodying the invention, the laterally swinging coupler associated therewith being shown in section.

Figure 9 is a section on the line 9—9, Fig. 8.

Figure 10 is a section on the line 10—10, Fig. 9.

Figures 11, 12 and 13 are, respectively, a detail plan view, a detail front elevation and a detail side elevation of the form of coupler saddle employed in the modified construction shown in Figs. 8, 9 and 10.

Figure 14 is a detail plan view of one of the follower devices embodied in the modified form of my invention.

Figure 15 is a detail elevation of another follower device embodied in the modified form of construction.

In the drawings, 1 indicates the stem of a laterally swinging car coupler which may be pivotally connected to the draft rigging (not shown) of a railway car by being provided with a suitable aperture 2 for the reception of the usual tail pin.
Rigidly mounted upon the railway car in any convenient manner as, for example, by being secured to the center sills or draft sills of the car, is a carry iron 3 which is preferably formed as an integral casting having an upwardly opening transversely extending recess 4 therein. At its center the carry iron is provided with shoulders or abutments 5 which project into the recess 4 to form stops for cooperating with the respectively adjacent followers 6 within the recess.

Located within the recess of the carry iron and normally bearing against stops or abutments 7 at the outer ends thereof are followers 8, the said followers 6 and 8 being arranged in pairs and each pair of followers being adapted to compress an interposed one of the tandem arranged springs 9 which are disposed within the recess of the carry iron on opposite sides of the coupler and preferably in axial alignment with each other.

Each of the outer followers 8 is provided with an extension 10 which may be conveniently formed as a hollow cylinder perforated at its inner end for the passage of the stem portion of a bolt 11. These bolts, whose heads are capable of moving back and forth within the extensions 10 of the followers 8, afford means for effecting a lost motion connection between the followers 8 and the coupler saddle 12 which is so mounted upon the carry iron as to be moved transversely of the car when the coupler is displaced laterally.

The coupler saddle 12 movably supported on the carry iron is provided with a downwardly projecting portion 13 which extends into the recess 4 between the inner followers 6. This projection 13 is, as shown, preferably hollow and its end walls 14 which normally engage the followers 6 are preferably provided with downwardly opening slots 15 to permit the passage of the body portions of the respective bolts 11. These bolts, which are slidable with respect to the followers 6 through which they pass, are operatively connected at their inner ends to the coupler saddle 12 by means of nuts 16 normally bearing against the respective inner faces of the end walls of the projection 13 of the saddle.

To cause it to slide transversely on the carry iron when the coupler 1 is displaced laterally in either direction from its normal position, the coupler saddle 12 is preferably fashioned with a pair of spaced upwardly extending arms or lugs 17 between which the shank of the coupler passes and which are adapted to be engaged by the latter. As shown, these arms 17 may be beveled or made of convex form upon their inner sides so as to allow the coupler 1 to angly with respect to the saddle as said coupler performs its laterally swinging movements. This prevents any substantial binding of the coupler saddle upon the carry iron 3 during the transverse movements of the saddle. The coupler engaging arms 17 may be integrally united to the plate-like portion 18 of the saddle which rests upon the carry iron and engages the under surface of the shank of the coupler 1.

A mechanism constructed in accordance with my invention not only efficiently centers the car coupler but affords sufficient spring capacity to provide for the return to normal position of the train pipes with which the railway car is equipped after they have been shifted laterally to avoid interference with the car coupler during the swinging movements of the latter. To this end the coupler saddle 12 is preferably provided with train pipe carriers or clamping means 19 and 20, respectively, which may be connected to the coupler saddle by means of suitable brackets 21 and 22 integrally united to the respective coupler engaging arms or lugs 17 of the coupler saddle.

The pipe carrier or clamping device 19 embraces the steam pipe 23 while the clamping device 20 embraces the air pipe 24 and the signal pipe 25. These train pipes while free at their outer ends are secured to the framing of the car rearwardly of the coupler in a well-known manner. In assembling the construction shown in Figs. 1 to 7, inclusive, the springs 9, their followers 6 and 8, and the bolts 11 are properly associated with each other and the nuts 16 are then applied to the bolts. These parts are then placed in position in the recess 4 of the carry iron and the coupler saddle is finally put in place, the slotted end walls 14 of its downwardly projecting portion 13 being forced between the followers 6 and the adjacent nuts 16. The train pipes may then be assembled within the clamps 19 and 20 carried by the coupler saddle 12.

When the coupler 1 is displaced laterally in either direction from its normal position the coupler saddle 12 and the train pipe clamps connected thereto are shifted transversely of the car. Such a movement of the coupler saddle causes the simultaneous compression of the springs 9 in the following manner: The transverse movement of the saddle effected by the displacement of the coupler from normal position causes the downwardly projecting portion 13 of said saddle to unseat one or the other of the followers 6, depending upon the direction of movement of the coupler, from its abutments or stops 5 upon the carry iron, thereby forcing said follower toward its companion follower 8, which latter remains seated upon the adjacent abutment 7 of the carry iron. The spring 9 which is between these two
followers is thus compressed. During this movement of the said follower the other follower 6 remains seated upon its stop shoulders 5, but the follower 8 which is associated with the last named follower 6 is caused to move with the coupler saddle through the instrumentality of the connecting bolt 11, thus being caused to approach its companion follower 6 and thereby causing the interposed spring 9 to be compressed. Upon expansion of the springs 9 the coupler saddle, car coupler and train pipes will be restored to normal or central position.

The principal differences between the construction heretofore described and that illustrated in Figs. 8 to 15, inclusive, reside in the form of the coupler saddle 26 and in the character of followers which are employed. The coupler 1, the coupler engaging arms 17 of the coupler saddle, the brackets 21 and 22 and the train pipe carriers or clamping devices 19 and 20 may be of the same forms as those shown in the principal figures of the drawings and accordingly corresponding reference numerals have been applied thereto. With the exception that the carry iron 27 is unprovided with the inwardly projecting stops 5, it also is similar to the carry iron 3 and is designed to be mounted upon the car in the same manner.

The tandem arranged and operating springs 28 which are disposed within the transversely extending recess 29 of the carry iron 27 are adapted to be simultaneously compressed by means of corresponding pairs of followers 30, 31 and 32, 33, respectively, when the coupler moves in either direction from its normal position. The followers 30 and 32 normally bear respectively against stops or abutments 7 with which the carry iron 27 is provided adjacent its outer ends.

The follower 30 is provided with an extension 34 having at its inner end a pair of spaced arms 35 which lie upon opposite sides of the adjacent spring 28 and between which the follower 31 is adapted to reciprocate. At its outer end each of the arms 35 terminates in a lug or shoulder 36, the said lugs being normally engaged by corresponding downwardly projecting flanges 37 with which the coupler saddle 26 is provided. The arms 35 connected to the follower 30 are adapted to slide back and forth between the flanges 37 of the coupler saddle, thus forming a lost motion connection between said saddle and the follower 30.

The follower 31, which cooperates with the follower 30 in the compression of the interposed spring 28, is rigidly united to the follower 32 preferably through the instrumentality of a pair of bars 38 which may integrally unite them. The bars 38 extend toward the coupler saddle 26 and each of them may be provided with a slot 39 which extends from the follower 31 toward the follower 32. These slots are adapted to receive a downwardly extending projection or lug 40 formed upon the coupler saddle and slidable back and forth in said slots. The follower 32 is by this means connected to the coupler saddle 26 by a lost motion connection.

The follower 33 which cooperates with the follower 32 in effecting a compression of the interposed spring 28 is preferably formed as a rectangular plate interposed between the downwardly extending lug 40 of the coupler saddle and the adjacent spring 28 and is slidable with respect to the follower 32 between the arms or bars 38 connected to and extending inwardly from the latter.

In assembling the modified form of my invention the springs 28 and the follower devices 30, 31, 32 and 33 are brought into assembled relation and inserted within the recess 29 of the carry iron, after which the coupler saddle 26 is put in place.

When the coupler is displaced laterally from its normal position the coupler saddle 26 and associated train pipe clamping devices 19 and 20 are correspondingly displaced and the springs 28 are simultaneously compressed. If the lateral displacement of the coupler is in one direction the downwardly projecting lugs 37 of the coupler saddle press against the lugs 36 and cause the follower 33 to move toward the follower 32, thus compressing the interposed spring, and at the same time moving the follower 30 toward the follower 31. As the follower 31 is prevented from retracting because it is rigidly connected through the arms or bars 38 with the follower 32 which is seated upon the neighboring abutment 7, the spring interposed between the moving follower 30 and the stationary follower 31 is compressed. If the displacement of the coupler 1 is in the opposite direction from normal position the lug 40 upon the coupler saddle forces the follower 31 toward the follower 30, thus compressing the interposed spring 28. As the follower 31 is rigidly connected to the follower 32 through the bars or extensions 38 the last named follower is caused to approach the follower 33, the latter being prevented from retracting by engaging the inner ends of the arms 35 of the extension of the follower 30. The spring 28 which is interposed between the followers 32 and 33 is therefore compressed. Upon the expansion of the springs the coupler and train pipes will be restored to normal position.

I claim:
1. In mechanism of the character indicated, the combination with a laterally swinging car coupler, of a carry-iron adapted to be mounted upon a railway car and
having a transversely extending recess, a coupler saddle slidably mounted on said carry-iron and adapted to be moved transversely of the car by said coupler and having a portion extending into said recess, a plurality of tandem arranged springs within said recess, a plurality of followers arranged in pairs and extending into said recess and slidable with respect to said carry-iron, each pair of said followers being adapted to compress an interposed one of said springs, one of the followers of each pair being normally in engagement with and adapted to be actuated by the said portion of the coupler saddle extending into said recess, and the other follower of each pair having a projection extending toward said coupler saddle, and bolts slidably connecting the respective projections of the said followers to the portion of the saddle which extends into said recess of the carry-iron.

2. In mechanism of the character indicated, the combination with a laterally swinging car coupler, of means for yieldingly resisting lateral displacement thereof in either direction from normal position and for shifting the train pipes of the car upon which said coupler is mounted, said means involving a device engaged by said coupler and adapted to move laterally therewith, means for connecting said device to the train pipes of the car, and a plurality of tandem arranged springs which are simultaneously energized by a lateral displacement of said device in either direction from normal position.

3. In mechanism of the character indicated, the combination with a laterally swinging car coupler, of a carry-iron, and means for yieldingly resisting lateral displacement of said coupler in either direction from normal position and for shifting laterally the train pipes of the car upon which said coupler is mounted, said means involving a coupler saddle slidably mounted on said carry-iron and adapted to be shifted transversely of the car by said coupler, a plurality of tandem arranged springs mounted on said carry-iron and adapted to be simultaneously compressed by a lateral movement of said saddle in either direction from normal position.

4. In mechanism of the character indicated, the combination with a laterally swinging car coupler, of train pipe shifting means actuated by said coupler, said means involving a device movable laterally by said coupler and adapted to engage and effect a lateral shifting of the train pipe, and a plurality of tandem arranged springs disposed on opposite sides of said coupler and adapted to be simultaneously energized upon a lateral movement of said coupler in either direction from normal position.

5. In mechanism of the character indicated, the combination with a laterally swinging car coupler, of a carry-iron, and means for yieldingly resisting lateral displacement of said coupler in either direction from normal position and for shifting laterally the train pipe of the car upon which said coupler is mounted, said means involving a coupler saddle slidably mounted on said carry-iron and adapted to be shifted transversely of the car by said coupler, a plurality of tandem arranged springs mounted on said carry-iron and adapted to be simultaneously compressed by a lateral movement of said saddle in either direction from normal position, and train pipe clamping means disposed on opposite sides of said coupler above said springs and connected to said saddle.

In testimony whereof I affix my signature.

ENOCH GEORGE, Jr.