Jan. 4, 1938. R. W. FAULHABER 2,104,511

SADDLE FOR CYCLES

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FIG. 1.

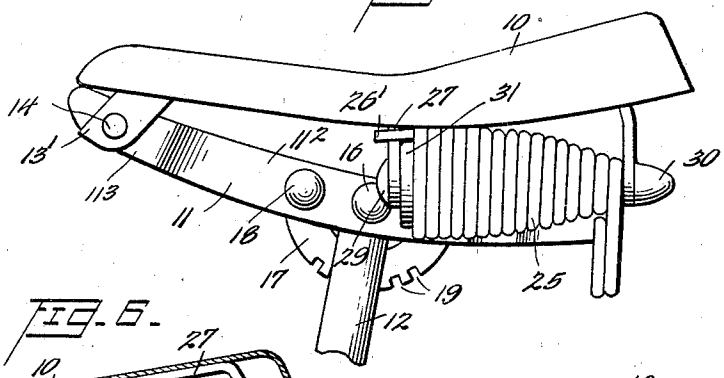


FIG. 6.

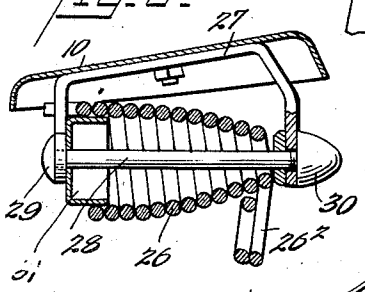
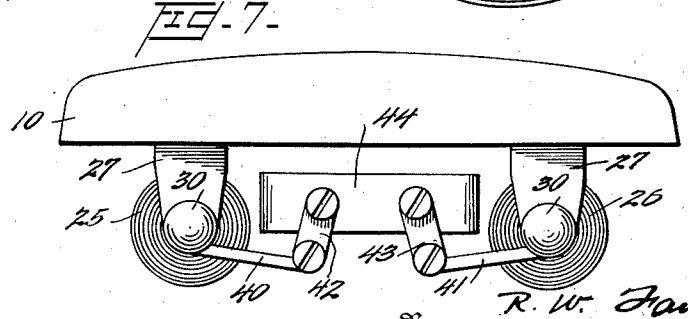


FIG. 2.

FIG. 7.



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FIG. 3.

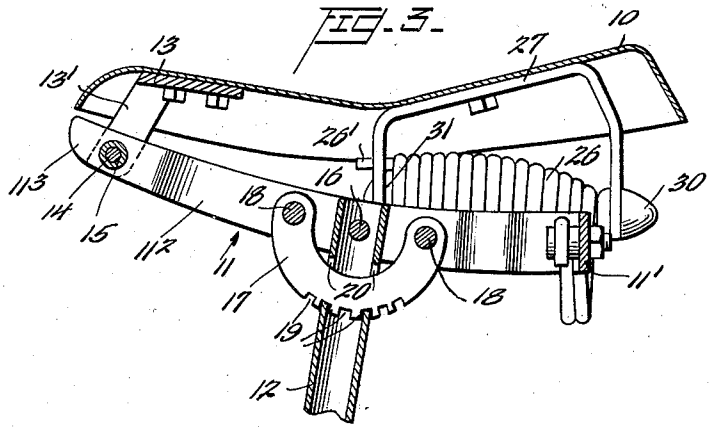


FIG. 4.

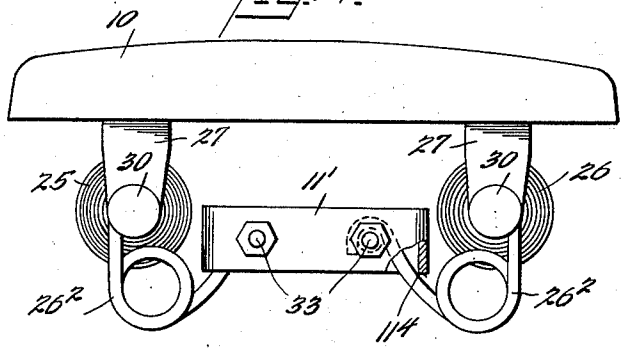
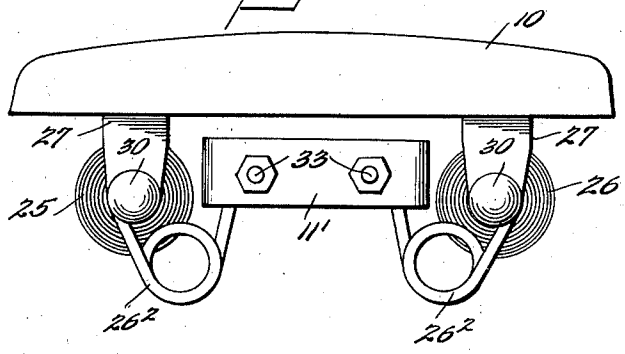


FIG. 5.



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UNITED STATES PATENT OFFICE

2,104,511

SADDLE FOR CYCLES

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Application March 23, 1936, Serial No. 70,478

11 Claims. (Cl. 155—5.22)

This invention relates to saddles for cycles of various kinds, such as motorcycles, bicycles and the like.

Many types of such saddles have been heretofore designed, suggested, and used, each such saddle comprising essentially a base or seating member and a cushioning means, the cushioning means being attachable to the cycle and in turn resiliently supporting the base or seating member, it being the function of the cushioning means to dampen or minimize the road shocks to which the cycle is subjected when in use and thereby increase the comfort of the user. For the most part the cushioning devices employed in connection with the saddles heretofore made use of, however, have been of the compression type, generally comprising coiled springs arranged normally to the seating member and projecting downwardly therefrom for considerable distances.

The present invention contemplates the use, in combination with a seating member of any desired type, of a novel and improved cushioning means of simple, compact, inexpensive but strong and durable type. The customary compression springs are preferably dispensed with entirely and the cushioning effect desired realized by the use of compact torsion springs which snugly fit beneath the seating member or body of the saddle, where they are largely protected thereby against injury due to falling of the cycle or other causes. The cushioning effect realized by the use of the improved cushioning means may be regulated as desired by employing torsion springs of different capacities and in fact all of the advantages of prior cushioning mechanisms of all types are realized, as well as certain additional advantages, flowing from the use of the torsion springs, as will be hereinafter more definitely pointed out.

Another feature of the invention is the attachment bracket, that is, the bracket employed in conjunction with the seating member and the cushioning means and by which the saddle may be mounted upon the cycle with which it is to be used. This attachment bracket is permanently connected to the cushioning means and adapted to be assembled therewith at the original point of manufacture and sold and shipped as an integral part of the saddle, thus making it possible for the cycle manufacturer to assemble the saddle with the cycle with a maximum of convenience. Heretofore it has been generally the practice for cycle manufacturers to separately obtain the saddles and attachment brackets and to assemble these elements with the cycle separately instead of simultaneously. The attachment bracket is, while permanently attached to the cushioning means, adjustable relatively thereto and the details of construction of the attachment bracket and the portions of the cushioning means to which it is immediately connected comprise important features of the invention.

In adapting the invention to various types of saddle constructions the design and arrangement of the springs and the associated elements may be considerably varied, as will be apparent to one skilled in the art, and it will be realized that the form of the invention hereinafter described in detail, and illustrated in the accompanying drawings, is set forth by way of example only.

In the drawings:

Figure 1 is a side elevation of a saddle and the attached saddle post;

Figure 2 is a bottom plan view of the same;

Figure 3 is a vertical longitudinal section through the saddle;

Figures 4 and 5 are rear elevations of the saddle showing the operative parts in different relative positions;

Figure 6 is a section on line 6—6 of Figure 2; and

Figure 7 is a rear elevation of a slightly modified type of saddle construction.

The seating member of the saddle is indicated at 10 and this member may have any one of a number of forms or may be fabricated in different ways from different materials. The member 10 illustrated in the drawings is a one-piece sheet metal member, fabricated by a pressing or stamping operation and there may be mounted on this member a sponge rubber facing or cushioning member, and a cover of leather, fabric or the like (not illustrated).

The reach member 11 has its forward end pivotally connected to the seating member 10 and its rear end, or free end, connected to the seating member by means of springs designed and intended to resiliently support the weight of a rider and to absorb road shocks. A saddle post is indicated at 12 this saddle post forming a portion of the saddle assembly and by means of which the saddle may be readily applied to a cycle, which cycle is provided with a socket to receive the cylindrical post 12.

The exact construction of the reach member may be varied widely but that which is illustrated in the drawings is well suited for use in combination with the cushioning springs which I preferably employ. It is fabricated of a continuous length of sheet metal, bent into the form shown, its mid-portion 11' being shaped into the form

of a relatively large loop and the leg portions 11^2 being disposed in closely spaced parallel planes, the extreme ends 11^3 of the leg portions being more closely spaced than the portions 11^2. Portions 11^3 of the reach member are provided with aligned apertures and extending through these apertures, and also through aligned apertures in the downwardly projecting flanges 12 of a bracket member 13 secured to the forward end of the seating member 10, is a bolt 14 which serves as a pivot member about which the seating and reach members may relatively rock. A spacing sleeve 15 intermediate the forward ends of portions 11^3 of the reach member maintains these portions in spaced relationship. The post 12 has its upper end intermediate the parallel legs 11^2 of the reach member and is pivotally connected thereto by means of the removable pivot bolt 16, which extends through aligned apertures, in reach member portions 11^2 and through aligned apertures formed in the upper end of the post, which post is in the form of a tube. A notched segment is indicated at 17 the ends of this segment being rigidly secured in position by means of bolts 18 the curved outer edge of the segment being centered about the axis of bolt 16 and its outer margin having formed therein a series of notches 19. As shown in Figure 3, segment 17 extends through aligned apertures 20 formed in the tubular post 12 and the lower margins of these apertures lie, respectively, in two of the notches 19 previously referred to. Hence the post is locked by the segment in a position of definite angularity with respect to the reach member 11. To adjust this angular relationship the user may either remove bolts 16 or one or other of the bolts 18 so that the post of the segment may be relatively moved and the post disengaged from the segment at least so far as to permit the post to be swung about the axis of bolt 16. When the desired angular relationship between post and reach member has again been secured, the locking engagement of post and segment is again effected and the bolt which has been removed for the purpose of effecting this adjustment is again replaced, thus locking the parts in the position in which adjustment has been effected.

The spring or cushioning means interposed between the free end of the reach member and that portion of the seating member which lies above the same comprises two torsion springs of the helical type indicated at 25 and 26, respectively, these springs being distinct from so-called volute or spiral springs and identical in form and construction except in that one of them may be designated a right-hand spring and the other a left-hand spring. The axes of the springs are preferably parallel or substantially parallel to each other and are also disposed generally parallel to the axis of the reach member. They are connected to the reach member through the instrumentality of brackets, one of which is shown in detail in Figure 6, being indicated at 27. The bracket is generally U-shaped in form, having a mid-portion secured by means of a bolt or suitable rivets to the seating member, and parallel downwardly extending ends. Through aligned apertures formed in these bracket ends extends an elongated bolt 28 having a rounded head 29 at one end and a conical nut 30 at the other. Mounted upon the bolt is a spring supporting thimble 31 the outer diameter of which is approximately the same as the inner diameter of one end of the spring 26, thimble 31 forming a supporting and centering member for this end of the spring. The terminal end of the spring is indicated at 26' and is shown to project generally parallel to the axis of the spring and to lie closely adjacent the lateral edge surface of the forward downwardly depending leg of the bracket member 27 so as to be held against rotation about the axis of bolt 28 by the bracket when torsion forces are applied to the spring.

The diameter of the coiled torsion spring decreases rearwardly of the seating member so that the spring is generally conical with its smaller end toward the rear. Its smaller end is connected to the free end of the reach member by the extension arm 26^2, this arm being integral with the body of the spring and extending downwardly to a point below the reach member and thence inwardly and upwardly so that the looped terminus or end thereof extends into the end portion 11' of the reach member from below, the arm terminating in a looped portion which extends over and around the grooved pin 33 extending inwardly from the reach member. Intermediate the main coiled body of the spring and its looped end the arm 26^2 is also coiled, as shown, there being one, two or three convolutions formed in the spring member at this point, as may be desired. It will be understood that, as has been before pointed out, the spring 25 is formed in the same manner, is supported in the same manner, and is connected to the reach member, as is the spring 26 although it will be of the opposite "hand" and that the saddle and its cushioning means is in reality symmetrically formed about its central longitudinal axis.

The operation of the spring mechanism just described may be more readily understood from a comparison of Figures 4 and 5. In Figure 4 the parts occupy the positions which they assume when there is no weight superposed upon the seating member, and in Figure 5 the parts are shown in the positions in which they occupy when the seating member is loaded. In this last mentioned position the seating member is closer to the free end of the reach member than in the first mentioned position and the main body 26 of the spring as well as the extension arm 26^2 has been considerably distorted. Thus it is clear that in the downward movement of the seating member the looped portions of the spring arms are moved downwardly and inwardly and these loops will also be slightly contracted. The amount of deflection of the spring arms and the amount of distortion of the main portions of the spring will depend upon the weight superposed upon the seating member and the springs will in every instance be designed to successfully carry the expected weight without permitting undue downward movement of the seating member with respect to the reach member. As soon as the superposed weight is removed from the seating member the springs will cause the seating member to be elevated to the position in which it is shown in Figure 4, this upward movement of the seating member, however, being limited by the coaction of the spring arms and the looped portion 11' of the reach member. Thus, in this upward movement, the upper surface of that portion of the spring extension arm which lies closest to the lower inner corner 11^4 of the reach member will come in contact with this corner of the reach member, as shown in Figure 4, which corner will act as a stop, limiting the further upward movement of the seating member. It will be understood, of course, that contact will be

made between the two spring extension arms and the reach member simultaneously when the upward limit of movement has been reached and that, as a matter of fact, the springs act simultaneously and occupy corresponding positions for all relative positions of the seating member and reach member.

In Figure 7 of the drawings a slightly modified form of the invention is disclosed. In this form the extension arms **40** and **41** of the coiled torsion springs are connected by means of pivoted links **42** and **43** to the rear cross member **44** of the reach member. As the seating member moves relatively to the reach member the links **42** and **43** will swing about their upper pivotal axes. The form of the invention shown in the first six figures of the drawings, however, makes it unnecessary to use such swinging links, is simpler, and is therefore preferred.

Obviously the torsion springs may be arranged somewhat differently from the springs shown in the drawings and may be connected both to the seating member and to the reach member by connecting means different in minor details of construction from those illustrated. Likewise additional torsion springs may be employed, or one only made use of without sacrificing the desirable compactness of construction which it has been one of the objects of the invention to achieve. By the use of the invention, not only is compactness obtained but a spring suspension or cushioning support for saddles is realized which is of great ruggedness, thoroughly efficient in operation, and inexpensive to construct.

Having thus described the invention what is claimed as new and desired to be secured by Letters Patent is:

1. A saddle for cycles comprising a seating member and a reach member disposed in substantial parallelism, one end of the reach member being pivotally attached to the seating member, a torsion spring forming a helix, means carried by one of said members and supporting said spring at the ends of the helix with the axis thereof in fixed relation to said member and extending longitudinally of said saddle, one end of said spring being fixed against rotation with relation to said axis and means connecting the other end of said spring to the other member.

2. A saddle for cycles comprising a seating member and a reach member disposed in substantial parallelism, one end of the reach member being pivotally attached to the seating member, a torsion spring forming a helix, brackets fixed to one of said members and supporting said spring at the ends of said helix for distortion about an axis fixed with respect to said member, and disposed parallel with the longitudinal axis of said saddle, one end of said spring being fixed with relation to the axis, and an operative connection between the other end of said spring and the other member.

3. A saddle for cycles comprising seating and reach members, one end of the reach member being pivotally connected to the seating member and the other end being looped in a plane generally parallel to the seating member, a helical torsion spring on each side of the reach member, and each disposed with its axis parallel with that of the longitudinal axis of said reach member, means mounting said springs on the seating member for bodily movement therewith, and each of said springs having one end fixed with relation to said mounting means and a radially extending end portion projecting toward the free end of the reach member and attached thereto.

4. A saddle for cycles comprising seating and reach members, one end of the reach member being pivotally connected to the seating member and the other end being looped in a plane generally parallel to the seating member, a helical torsion spring on each side of the reach member, said springs having their ends supported upon the seating member by brackets and being disposed in substantial parallelism, each spring having a portion operatively connected to the looped end of the reach member.

5. A saddle for cycles comprising seating and reach members, one end of the reach member being pivotally connected to the seating member and the other end being looped in a plane generally parallel to the seating member, a helical torsion spring on each side of the reach member, said springs having their ends supported, respectively, upon the seating member by brackets and being disposed in substantial parallelism, and each spring also having an arm extending into the looped end of the reach member and pivotally attached thereto within the looped portion thereof.

6. The combination set forth in claim 5 in which the spring arms pass upwardly and inwardly into the looped portion of the reach member, whereby movement of the seating member away from the reach member is limited by contact of such arms intermediate their ends and the loop of the reach member.

7. A saddle for cycles comprising seating and reach members disposed in substantial parallelism, one end of the reach member being pivotally attached to the seating member, a torsion spring forming a helix, brackets fixed to one of said members for supporting said spring at the ends of said helix for distortion about an axis fixed with respect to said member, one end of said spring being fixed with relation to said axis, an arm extending from said spring and pivotally connected with said reach member for resiliently resisting movement substantially about the axis of said spring, upon relative movement of said seat and reach members, portions of said arm and of said reach member adapted to abut to limit the extent of movement of said members in directions away from each other.

8. In a saddle construction, in combination with a seating member and a reach member having one end pivotally connected to the seating member and its other end free for movement toward or away from said member, a torsion spring carried by said seating member located laterally of the reach member and having an arm pivotally connected to said reach member for resiliently connecting said members, said arm extending under the free end of said reach member, portions of said reach member and of said arm adapted to normally abut to limit the movement of said members away from each other.

9. A saddle for cycles comprising seating and reach members disposed in substantial parallelism, one end of the reach member being pivotally attached to the seating member, a torsion spring mounted upon one of said members for bodily movement with said member relative to the other of said members, an arm extending from said spring and pivotally connected with a portion of said other member, whereby relative movement of said seat and reach members is resiliently resisted, portions of said arm and of said other member adapted to abut to limit the

extent of movement of said members in directions away from each other.

10. In a saddle construction, in combination, a seating member, a reach member having one end pivotally connected to the seating member and its other end free for movement toward or away from said member, the free end of the reach member being formed as a loop disposed in a plane generally parallel to the plane of the seating member, a torsion spring in the form of a helix on each side of the reach member, means mounting said springs upon the seating member at each end of said helix, each spring also having an arm extending beneath portions of the loop in said reach member and pivotally attached to said reach member, said spring being tensioned to normally pull the reach member downwardly until said loop portion abuts said arms, whereby the movement of said members away from each other is limited.

11. A saddle for cycles comprising a seating member and a reach member disposed in substantial parallelism, one end of the reach member being pivotally attached to the seating member, a pair of torsion springs disposed one upon either side of the longitudinal axis of the saddle and each forming a helix, means supporting said springs at the ends of the helices with the axes thereof in fixed relationship to one of said members and extending longitudinally of said member, means retaining one end of each of said springs in fixed relationship to the axis thereof, and means connecting the other ends of said springs to the other of said members.

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