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E. G. CARLSON

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ADJUSTABLE BRACELET STRUCTURE

Filed March 4, 1932

Fig. 1.

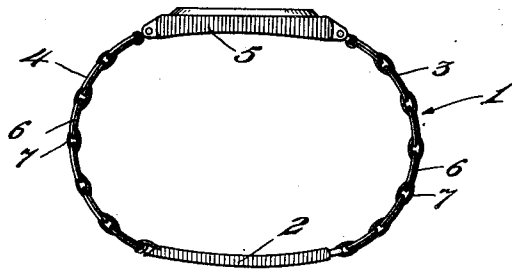


Fig. 2.

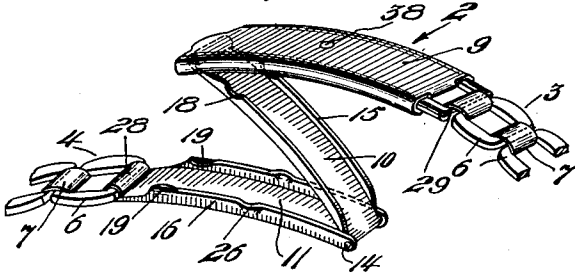


Fig. 3.

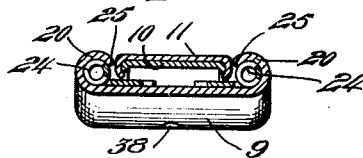


Fig. 4.



Fig. 5.

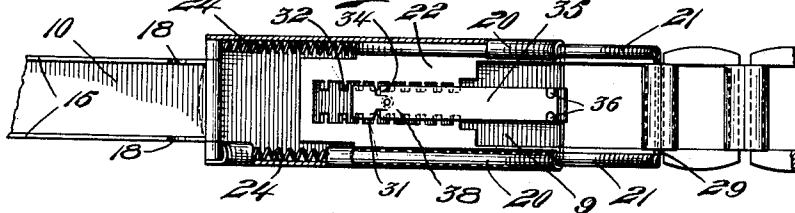


Fig. 6.

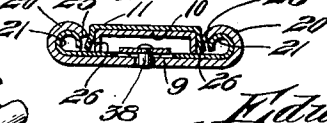
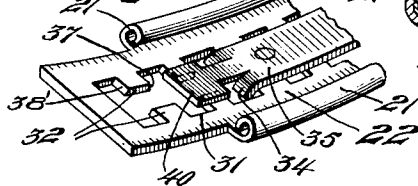


Fig. 7.



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ADJUSTABLE BRACELET STRUCTURE

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This invention relates to an improved adjustable bracelet structure of a type adapted for use in connection with wrist watches wherein there is employed a take-up means consisting generally of metal plates pivotally connected together and adapted to be folded into interfitting relation with each other, and which is provided with an adjustable extension means to permit variations in the length of the bracelet.

One object of the invention is the provision of an improved bracelet structure wherein an extension member is carried by the take-up means and adapted to be moved into various positions of extensibility and temporarily secured in each of said positions.

Another object of the invention is the provision of a take-up means provided with an extension member capable of being adjustably moved from its retracted position by automatically operated means and by degrees in such a manner that substantially the exact degree of extension desired may be secured readily and without extensive manipulation of the parts.

A further object of the invention is the provision of a take-up means of the character described provided with an extension member and having regulating means therefor which are adapted to regulate the movement of the extension member into its extended position.

A further object of the invention is the provision of a spring propelled bracelet extension member and constantly effective means for regulating the degree of extension of the extension member in such a manner as to permit a graduated step-by-step movement of the member into its extended position.

A further object of the invention is the provision of an improved extension device of this character comprising a supporting member and an extension member adapted to be housed within the supporting member or moved into extended position relative thereto, together with rack and pawl means carried by said supporting member and extension member respectively and capable of cooperative engagement to regulate automatically the degree of movement of said extension

member from its retracted position within the supporting member.

A further object of the invention is the provision of an improved form of take-up means comprising plates pivotally connected together for movement into extended position or into folded relation with each other and having an extension member carried by one of said plates together with means for locking said extension member in a plurality of adjusted positions in such a manner that the extension member is maintained in its previously adjusted positions when the plates are moved into extended position relative to each other.

Another object of the invention is the provision of cooperating pawl and ratchet means of this character wherein the pawl is resiliently actuated to render the same constantly effective for regulating the position of the extension member through engagement with a rack carried thereby.

Other objects and advantages of the invention relate to various improved details of construction and novel arrangements of the parts as will be more fully set forth in the detailed description to follow.

Referring to the drawing:—

Fig. 1 is a side elevational view of the improved bracelet structure, arranged in the form of a bracelet, and showing the opposite ends of flexible sections attached to a take-up means and watch respectively,

Fig. 2 is a perspective view of the take-up means showing the parts in partially open position, and illustrating the manner of attaching flexible bracelet sections to the opposite ends thereof,

Fig. 3 is an enlarged transverse sectional view taken through the take-up means and illustrating the arrangement of the foldable plates when in their folded positions,

Fig. 4 is a longitudinal sectional view taken through a portion of the take-up means and one of the flexible bracelet sections to show more clearly the detail structure of the extension member and its supporting plate,

Fig. 5 is a plan view of the extension member and its supporting plate, certain of the parts being broken away to illustrate more

clearly details of the structure and the relation of the rack and pawl members to each other,

Fig. 6 is an enlarged transverse sectional view through the take-up means, with the plates in folded position, showing the means for detachably securing the end plates together as well as the actuating means for regulating the movement of the extension member relative to its supporting plate, and,

Fig. 7 is an enlarged perspective view of the rack and pawl mechanism showing the arrangement of the parts to effect a step-by-step regulation of the movement of the extension member.

In that form of the invention illustrated herewith 1 designates generally the bracelet structure which as shown comprises a take-up means 2 and flexible bracelet sections 3 and 4 which connect opposite ends of the take-up means 2 with a watch 5. The flexible bracelet sections 3 and 4 are each made up of a plurality of rectangular links 6, which are joined to each other by bands 7 joining the adjacent side portions of the links 6.

The take-up means 2 comprises a plurality of hingedly connected plate members 9, 10 and 11, said plate members having their adjacent ends pivotally connected together in any suitable manner as by pivot pins 12 and 14 so as to be capable of movement into an extended position relative to each other, as indicated in Fig. 4 or to be folded and held into interfitting relation as indicated in Fig. 3. The pivotally connected plates 10 and 11 are provided with upstanding lateral flanges 15 and 16 respectively, so positioned as to fit within each other and both extend towards the back portion of the plate 9 when the parts are in folded position as shown in Fig. 3 of the drawing. The flanges 15 are provided with oppositely positioned recesses 18, while the flanges 16 have inturned portions 19 oppositely positioned relative to each other and so arranged as to be located adjacent to and to snap into the recesses 18 when the parts are in their folded positions in order to releasably secure the plates 10 and 11 against separation.

The plate 9 has its lateral edge portion partially rolled over as indicated at 20 to provide oppositely positioned housings for the enlarged or rolled lateral edges 21 of an extension member 22 which is slidably supported by the plate 9 with its rolled lateral edges 21 fitting within the housings 20 in such a manner as to slide freely therein. Coiled compression springs 24 are also located within the housings 20 adjacent to that end of the plate 9 which carries the pivot pin 12, and these compression springs 24 engage the ends of the lateral edges 21 of the extension member to constantly urge the extension member outwardly from the plate 9 or into extended position relative thereto.

The edges of the rolled portions 20 of the plate 9 terminate as indicated at 25 so that they are engaged by outturned lugs 26 carried by the flanges 16 of the plate 11 when the parts are in folded position to releasably secure the several plates against accidental separation, thus retaining the parts of the take-up means in folded position, as shown in Fig. 6 of the drawing.

The flexible bracelet section 4 has one of its end links 6 secured to the free end of the plate 11 in any suitable manner, as by bending over the end portion of the plate 11 as indicated at 28, and the flexible section 3 has its end link 6 secured to the transverse end portion 29 of the extension member 22 as by means of a sleeve link 7, similar to those employed in connecting adjacent links together.

The extension member 22 is provided with a rack portion 31 connecting portions of the rolled over or enlarged side edges 21 thereof and shaped to fit against and slidably engage the back of the plate 9 between the rolled over housings 20. The rack 31 has a portion thereof cutaway in such a manner as to form oppositely positioned inwardly projecting teeth 32 which are adapted to be engaged by the downturned ends 34 of a spring plate or pawl 35 carried by the plate 9 and secured thereto in any suitable manner as by bent over clamping lugs 36. The spring plate 35 is provided with an actuating lug 38 which projects through an opening formed in the back of the plate 9 to permit disengagement of the ends 34 of the spring plate from the teeth 32 carried by the extension member so that the extension member may be moved into extended position by the action of the compression springs 24. The spring plate 35 is provided with an end extension 40 projecting beyond the teeth engaging ends 34, and of sufficient width to overlie and contact with the upper surface of the teeth 32 when the ends 34 of the pawl 35 are in engagement with the sides of the teeth 32. The provision of the end extension 40 serves to limit the degree of engagement of the pawl with the ratchet teeth and prevents the ends 34 of the pawl from being forced beneath the teeth 32 through any severe strain to which the bracelet may be subjected.

The inwardly extending teeth 32 are each formed with one face 37 located at substantially right angles to the plane of the rack and adapted to be engaged by the ends 34 of the pawl 35 for locking the extension member against movement outwardly of the plate 9, while the opposite face of each tooth 32 is inclined as at 38' to permit the ends 34 of the pawl 35 to slide thereover in pressing the extension member into its retracted position within the supporting plate 9.

In using the improved bracelet structure, the extension member 22 may be adjusted

roughly relative to its supporting plate 9 before applying the structure to the arm, and then after the bracelet is in position upon the arm with the plates 9, 10 and 11 folded together, the final adjustment may be made as follows.

If the bracelet fits the arm too loosely, pressure may be exerted upon the end 29 of the extension member to force it further within its supporting plate 9, and the inclined surfaces of the pawl end 34 will slide freely over the inclined faces 38' of the teeth 32, to permit the desired retraction of the extension plate 22 within its supporting plate 9.

In the event that the bracelet fits too closely about the arm when the parts of the take-up means are moved to their folded positions, or if it is found desirable at any time to lengthen the bracelets, the user need only press slightly upon that portion of the lug 38 which projects slightly through the back of the plate 9 to force the ends 34 of the pawl 35 out of engagement with the teeth 32 of the rack 31 and the coiled springs 24 will move the extension member automatically outwardly of the plate 9 and into a more extended position relative thereto. If the pressure upon the lug 38 is temporary the pawl 35 will slide over only one or two of the teeth 32 and thus effect a slight increase in length of the bracelet which may be repeated if desired to effect a step-by-step extension of the bracelet structure. By means of the spring pressed pawl 35 and its lug 38 the pawl may be actuated manually to move the pawl out of engagement with the teeth temporarily in such a manner as to permit a gradual extension of the bracelet structure until the desired length has been obtained. In each case the resilient character of the pawl 35 forces the downturned ends 34 into engagement with oppositely positioned teeth 32 of the rack as soon as pressure upon the lug 38 is released.

The lug 38 and the resilient pawl 35 serve therefore in connection with the teeth 32 carried by the extension member as a means for regulating the movement of the extension member while the same is subjected to the influence of the coiled spring 24, whereby movement of the extension member may be controlled as desired through movement of the manually operated lug 38. That is, momentary movement of the lug 38 serves to release the pawl 35 from the teeth 32 with which it may be engaged, the pawl tending to return immediately upon its release for engagement with other teeth 32. This may be repeated to obtain a more or less gradual or step by step movement of the extension member outwardly of its supporting plate in such a manner as to lengthen the bracelet. The pawl 35 also cooperates with the teeth 32 when pressure upon the lug 38 is released

to form a stop mechanism for limiting the outward movement of the extension member relative to its supporting plate under the pressure exerted by the coiled springs 24.

It will be seen also, that the present construction provides an adjustable extension means which is confined to a single take-up plate, and that the parts of the take-up means will be maintained in their original positions without change even after the removal of the bracelet structure and its replacement on the arm. This is accomplished by supporting both the rack 31 and the pawl 35 upon the plate 9 which supports the extension member 22 in such a manner that the movement of the take-up plates into their extended positions does not effect any movement of the pawl and rack relative to each other. The present structure also permits adjustment of the extension member in either direction, both while the plates 9, 10 and 11 are in folded position and when they are in extended position, and holds the extension member in the desired adjusted position relative to the plate 9 at all times even when the parts of the take-up means are in their extended positions.

It will be seen also that by means of the outturned lugs 26 carried by the flanges 16 of the plate 11 engaging over the edges 25 of the rolled portions 20 of the plate 9, the several plates are secured against separation and are so held that the two plates 10 and 11 are located within the overall thickness of the plate 9 whereby a relatively compact take-up member is provided which presents a smooth and even surface on both sides, and has no portions liable to irritate the arm or catch upon the fabric of the sleeve. The provision of the flanges 15 and 16 carried by the plates 10 and 11, and so positioned as to extend towards the back portion of the plate 9 when the parts are in their folded positions, serves to provide sufficient space between the plate 9 and the plate 11 for such movement of the pawl 35 as may be necessary to disengage the downturned ends 34 from the teeth 32 of the rack upon pressure being exerted upon the lug 38 in order to make the desired adjustment of the extension member.

What I claim is:—

1. In a bracelet structure, a take-up means comprising plates pivotally connected to each other and provided with interfitting portions, an extension member slidably supported by one of said plates, yieldable means engaging said extension member for moving it into extended position relative to said plate, and means for regulating the movement of said extension member relative to said plate.

2. In a bracelet structure, a take-up means comprising plates pivotally connected together for movement into extended position or into folded relation with each other, an

extension member slidably supported by one of said plates, spring means acting upon said extension member to move it into its extended position relative to said plate, and manually actuated means for controlling the movement of said extension member in one direction relative to said plate.

3. In a device of the character described, a take-up means comprising plates pivotally connected together for movement into extended position or into folded relation with each other, an extension member slidably supported by one of said plates, spring means acting upon said extension member to move it into its extended position relative to said plate, and stop means carried by said plate and extension member for controlling the movement of said extension member as actuated by said spring means.

4. In a device of the character described, a take-up means comprising plates pivotally connected together for movement into extended position or into folded relation with each other, an extension member slidably supported by one of said plates, spring means acting upon said extension member to move it into its extended position relative to said plate, and spring pressed stop mechanism for controlling the movement of said extension member in one direction relative to said plate.

5. In a device of the character described, a take-up means comprising plates pivotally connected together for movement into extended position or into folded relation with each other, an extension member slidably supported by one of said plates, spring means acting upon said extension member to move it into its extended position relative to said plate, and a ratchet member and resilient pawl carried by said extension member and plate respectively for controlling the movement of said extension member relative to said plate.

6. In a device of the character described, a take-up means comprising plates pivotally connected together for movement into extended position or into folded relation with each other, an extension member slidably supported by one of said plates, spring means acting upon said extension member to move it into its extended position relative to said plate, and an adjustable release mechanism for regulating the movement of said extension member relative to said plate.

7. In a device of the character described, a take-up means comprising plates pivotally connected together for movement into extended position or into folded relation with each other, an extension member slidably supported by one of said plates, spring means acting upon said extension member to move it into its extended position relative to said plate, and a resilient release mechanism for regu-

lating the extent of movement of said extension member relative to said plate.

8. In a bracelet structure, a take-up means made up of separate plates connected for movement into either folded or extended position relative to each other, an extension member slidably supported by one of said plates, means for moving said extension member into extended position relative to said plate, and means for controlling the extent of movement of said extension member.

9. In a bracelet structure, a take-up means made up of pivotally connected plates adapted to be folded together, a movable spring-pressed extension member carried by one of said plates, and adjustable means for controlling the movement of said extension member under the influence of said spring in one direction.

10. In a bracelet structure, a take-up means made up of hingedly connected plates adapted to be folded together, a movable spring-pressed extension member carried by one of said plates, and a manually operable release mechanism for regulating the movement of said extension member relative to its supporting plate.

11. In a bracelet structure, a take-up means made up of a series of pivotally connected plates adapted to be folded together, a movable spring-pressed extension member carried by one of the end plates of said series, and a spring controlled release mechanism for regulating the movement of said extension member relative to its supporting plate.

12. A take-up means made up of hingedly connected plates adapted to be folded together, a movable extension member supported by one of said plates, resilient means engaging said extension member to move it relative to said plate, and a manually actuated stop mechanism for regulating the movement of said extension member relative to said take-up means.

13. A take-up means of the character described comprising plates hingedly connected together and adapted to be folded into interfitting relation with each other, an extension member slidably supported by one of said plates, spring means normally urging said extension member into extended position relative to said plate, and means for regulating the movement of said extension member relative to said plate.

14. A take-up means comprising a plurality of plates pivotally connected together for movement into extended position or into folded relation with each other, a spring pressed extension member slidably supported by one of said plates, and adjustable means for effecting longitudinal adjustment of said extension member relative to its supporting plate when the plates are arranged in folded position.

15. A take-up means comprising a plural-

ity of plates pivotally connected together for movement into extended position or into folded relation with each other, a spring pressed extension member slidably supported by one of said plates, means for retaining said extension member in fixed position relative to its supporting plate when the several plates are in either extended position or in folded relation to each other, and means for releasing said retaining means when the plates are in either extended position or in folded relation to each other.

16. A take-up means comprising pivotally connected plates adapted to be arranged in extended position or folded into interfitting relation with each other, one of the end plates being provided with lateral guide edges, a spring pressed extension member provided with spaced portions slidably mounted in said guide edges, and adjustable means for retaining said extension member in any one of a plurality of adjusted positions relative to said end plate when the plates are in extended position or in interfitting relation with each other.

17. A take-up means comprising a plurality of pivotally connected plates adapted to be arranged in extended position or to be folded into interfitting relation with each other, one of the end plates being provided with lateral guide edges, an extension member provided with spaced arms slidably mounted in said guide edges, and separate resilient members carried by said end plate and normally engaging said extension member to urge the same into extended position relative to said end plate.

18. A take-up means comprising a plurality of pivotally connected plates adapted to be arranged in extended position or to be folded into interfitting relation with each other, one of said end plates being provided with lateral guide edges, an extension member having spaced arms slidably mounted in said guide edges, resilient means carried by said end plate and normally urging said extension member into extended position relative to said plate, stop means carried by said extension member, and a resiliently acting pawl cooperating with said stop means for regulating the movement of said extension member relative to said plate.

19. In a take-up means comprising a plurality of pivotally mounted plates adapted to be arranged in extended position or in interfitting relation with each other, one of said plates being provided with lateral guide edges, a spring pressed extension member provided with spaced lateral portions slidably mounted in said guide edges, and pawl and ratchet means carried by said extension member and plate respectively and effective in either the extended position or interfitting relation of said plates for holding said

extension member in adjusted position relative to its supporting plate.

20. A take-up means for bracelets comprising a plurality of plates pivotally connected together for movement into extended position or folded relation with each other, an extension member slidably supported by one of said plates, cooperating means carried by said extension member and plate respectively for regulating the movement of said extension member relative to said plate comprising a pawl and ratchet teeth, and means carried by said pawl and engaging the ratchet for limiting the degree of engagement of said pawl with the ratchet teeth.

In testimony whereof I have affixed my signature.

EDWIN G. CARLSON.