Dec. 30, 1941. K. C. AUGENSTEIN 2,267,968

LINK BRACELET

Filed Oct. 3, 1941

Fig. 1

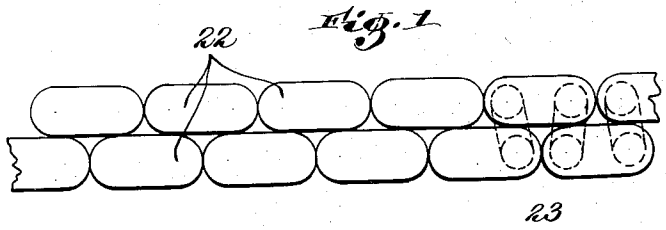


Fig. 2

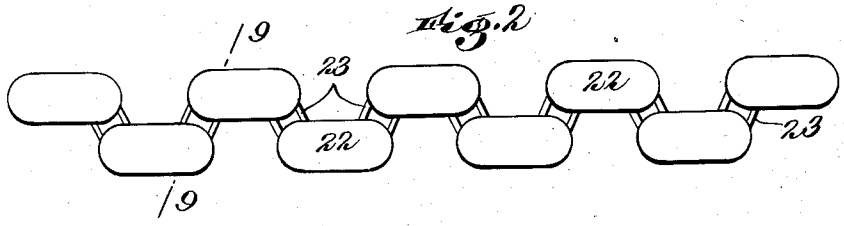


Fig. 3

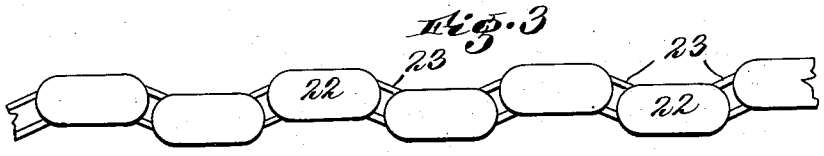


Fig. 4

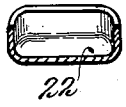


Fig. 5

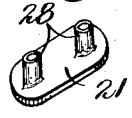


Fig. 6



Fig. 7

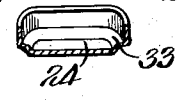


Fig. 8

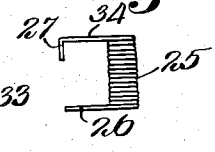


Fig. 9

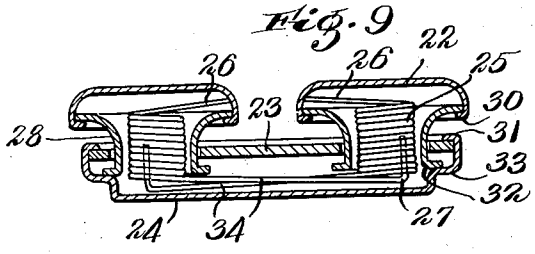


Fig. 10

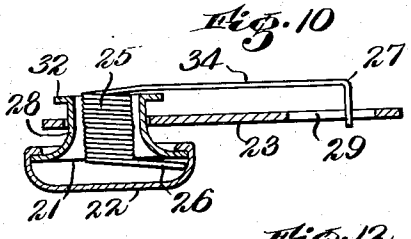


Fig. 11

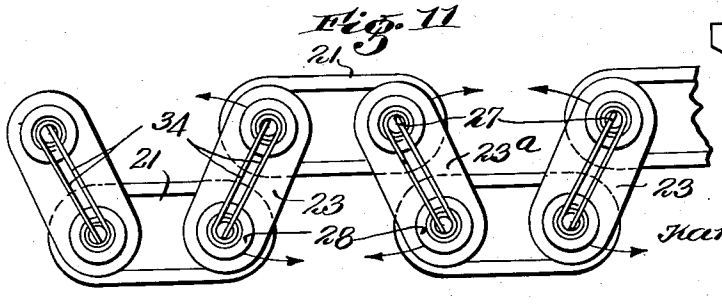
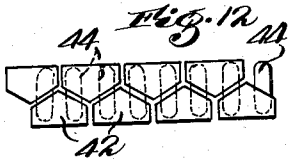


Fig. 12



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2,267,968

LINK BRACELET

Karl C. Augenstein, Cranston, R. I., assignor to Edwin F. M. Speidel, Cranston, R. I.

Application October 3, 1941, Serial No. 413,477

5 Claims. (Cl. 59—79)

This invention relates to extensible linkages of the self-retracting type, and pertains more particularly to bracelet linkages of the character described in my copending application, Serial No. 386,864, filed April 4, 1941, which are particularly suitable for use as wrist watch bracelets.

The principal purpose of the invention is to provide an extensible linkage comprising top and bottom links so interconnected and spring-tensioned that the top links of the retracted bracelet are disposed in two juxtaposed rows extending parallel to the axis of the closed linkage, with the top links of one row offset or staggered with respect to the top links of the other row. This arrangement not only affords a bracelet of unique and attractive appearance, but ensures that the bottom links are covered and substantially concealed by the close-fitting, retracted top links, and permits the bracelet to be expanded approximately one hundred per cent in length by extending the linkage so that the top links travel in a path parallel to the axis of the straightened linkage and form a single row of longitudinally spaced top links and intervening bottom links.

In my said copending application, I have disclosed a bracelet linkage comprising a series of top and bottom links pivotally interconnected at their ends and equipped with coil springs located in tubular pivots of the top links and having end portions extending longitudinally of the intermediate or bottom links, the coils and spring ends being so arranged that the top links of the retracted bracelet extend angularly with respect to the axis of the linkage with their sides in juxtaposition and their ends projecting along the sides of the bracelet.

In that arrangement, protuberant stop members are formed on the sides of the bottom links to maintain the links of the retracted bracelet in proper relative position, and both top and bottom links move in an angular direction when the linkage is extended; whereas, in the improved bracelet herein described, the top and bottom links may be of the same size and shape and no special stop members are needed, for the retractive effect of the springs is limited by the mutual abutment of the opposed ends of the top links in the respective rows above mentioned. It will become evident, however, that the top links of a linkage or bracelet constructed in accordance with the present invention may assume a variety of shapes differing in contour from the bottom links, for the arrangement hereinafter described permits the utilization of many unique and pleasing designs which could not feasibly be employed in a linkage constructed in accordance with my previous application.

Recommended embodiments of the present invention are shown in the accompanying drawing, in which:

Fig. 1 is a plan view of the improved linkage showing the top links in retracted position;

Figs. 2 and 3 are similar views showing the linkage partially extended and fully extended, respectively;

Fig. 4 is a sectional perspective of one of the top link covers or shells;

Fig. 5 is a perspective view of one of the top links formed with a tubular pivot at each end;

Fig. 6 is a perspective view of one of the bottom links showing the end openings which receive complemental pivots;

Fig. 7 is a view similar to Fig. 4 showing the cover or shell for a bottom link;

Fig. 8 is an enlarged view of one of the retracting springs;

Fig. 9 is an enlarged section taken on line 9—9 of Fig. 2;

Fig. 10 is a similar view showing a top link in inverted position and assembled with a bottom link and one spring;

Fig. 11 is an enlarged, fragmentary bottom view of the partially retracted linkage with the shells of the bottom links removed; and

Fig. 12 is a fragmentary top view of a retracted linkage equipped with a modified form of top link.

In the form chosen for the purpose of illustration in Figs. 1 to 11, the bracelet linkage comprises a series of top links **21** each provided with a cover or shell **22**; a series of bottom links **23**, each also provided with a shell **24**; and a plurality of coiled springs **25**, each having end portions **26** and **27**, respectively, which are so disposed with respect to the link members as to cause the links to retract in the manner heretofore indicated and hereafter more fully explained.

Each top link **21** preferably consists of a flat plate formed with upstanding tubular members **28** which constitute pivots on which the bottom links are arranged to swing and which receive the coiled springs **25**; and each bottom link **23** preferably consists of a flat plate formed with end openings **29** which receive the tubular pivots **28** at the end of adjacent top links as best shown in Figs. 9 and 11. The shells **22** and **24** are cup-shaped and are applied to the respective links by crimping over their margins as indicated at **30** and **31** respectively (Fig. 9). The ends of the

pivots 28 may also be peened over, as shown at 32 to serve as seats for interior shoulders 33 of the bottom shells 24 and to prevent displacement of the bottom links from the pivots.

In assembling the parts, the shells 22 are applied to the top links 21; the perforated bottom links 23 are applied over the pivots 28 of adjacent top links and the tops of the tubular pivots are rolled over; one of the coiled springs 25 is inserted in each pivot so that its short end 26 engages the shell 22 of the top link (Fig. 10); the hooked end 27 of the spring is then preferably inserted in the coil of the spring located in the pivot at the opposite end of the bottom plate 23 so that the relative long arms 34 of the complemental springs of each set or pair extend toward each other over the intervening bottom link with which each set is associated (Fig. 11); and the bottom shells 24 are then applied to the links 23 and secured in place to enclose the pivot ends and springs and hold the hooked ends 27 in operative position.

The spring coils are suitably tensioned to provide the desired retractive effect, and the engagement of the hooked tips 27 in the coils of the opposite springs of each complemental pair holds the end portions of the springs together, prevents relative displacement thereof and maintains the tension desired. It will be evident that other suitable means preferably independent of the bottom links 23 may be provided for holding the upper ends of the respective spring coils 25 of each pair in mutual engagement or against relative displacement; and that, in some cases, the coils of each pair may be formed from a single length of wire with an integral connecting arm taking the place of the parallel arms 34.

It will also be observed that a complemental pair of springs is associated with the pivots of each bottom link, although the spring ends do not directly engage the link 23 which constitutes a free swinging spacing connector; and that the paired springs associated with adjacent bottom links are arranged to react in opposite directions with respect to each other. For example, as shown by the direction arrows in Fig. 11, the springs associated with the bottom links 23 are coiled to cause that link to swing in a counterclockwise direction; whereas, the springs associated with the adjacent and intervening link 23a are so coiled that that link tends to swing in a clockwise direction.

Because of this novel relationship, the top links 21 which are exclusively reacted upon by the retracting springs, are caused to move in a direction parallel to the longitudinal axis of the linkage during extension or retraction, and are formed in two juxtaposed rows with the top links of one row offset or staggered with respect to the links of the other row and with the links of each row in end to end engagement, when the linkage is retracted as shown in Fig. 1. The bottom links swing angularly as above described, and are disposed crosswise of the linkage, covered and concealed by the top links, when the the links are closed together by automatic action of the retracting springs. When fully extended, the links form a single and substantially straight row, as indicated in Fig. 3.

Although all the links shown in Figs. 1 to 11 are of substantially the same size and contour and present straight, parallel sides and curved ends, it will be understood that other shapes may be employed, especially for the top links of a wrist or watch bracelet which lend style and visual attractiveness to the article when in use or on display. For example, in the optional form illustrated in Fig. 12, the covers 42 of the top links are polygonal in contour and have pointed, angular edges on one side, the angular sides of adjacent links pointing in opposite directions, so that these sides are nested together when the linkage is retracted to form the top links in two parallel rows as above explained. In such optional form, the shells 44 of the bottom links may be shaped as in Fig. 7 or may have a different contour, as desired.

It will also be understood that the exposed surface of the top links may be decorated or ornamented to suit individual fancy, and that the design or structural details of the bracelet linkage herein described may be varied to suit particular requirements or conditions without departing from the essence of this invention as defined in the following claims. Suitable connectors may, of course, be applied to the ends of the linkage for attaching said ends together or to the bails of a wrist watch, as disclosed in my aforesaid copending application.

It will be observed that I have herein employed the terms "top link" and "bottom link" to designate the link members 21 and 23 whether or not covered by the shells 22 and 24 respectively, according to the preferred arrangement of the links at the top or bottom of the linkage or bracelet; and it will be understood that these terms are intended to be interpreted as designating either the internal link members themselves or the covered links as a whole, as the context requires or admits, and that a reversal of the upper and lower links would be considered as the full equivalent of the combination defined in the following claims.

I claim:

1. An extensible self-retracting linkage, comprising a series of top and bottom links, means pivotally interconnecting the adjacent ends of the respective links so that the top links of the retracted linkage are disposed in two juxtaposed rows parallel to the axis thereof with the top links of one row offset with respect to the top links of the other row, and spring means associated with the pivotal connections and arranged to hold the retracted links in said relation while permitting the links to be extended into substantial alignment.

2. An extensible self-retracting linkage, comprising a series of top and bottom links, means pivotally interconnecting the adjacent ends of the respective links so that the top links of the retracted linkage are disposed in two juxtaposed rows parallel to the axis thereof with the top links of one row offset with respect to the top links of the other row, and spring means associated with the pivotal connections and arranged to hold the retracted links in said relation while permitting the links to be extended into substantial alignment, said spring means comprising a complemental pair of springs associated with the pivots of each bottom link, the respective springs of each such pair having end portions extending toward each other and engaging the opposite pivot, and the paired springs associated with adjacent bottom links reacting in opposite directions upon the top links connected thereby, whereby one bottom link tends to swing in a clockwise direction and the next adjacent bottom links tend to swing in a counterclockwise direction, while the top links travel in a path substantially parallel to the axis of the linkage during retraction or extension thereof.

3. An extensible self-retracting linkage, com-

prising a series of top and bottom links, each top link having tubular pivots at its ends and each bottom link having openings at its ends receiving said pivots, and spring means housed in said tubular pivots and reacting on adjacent top links to move alternate top links in paths substantially parallel to the axis of the linkage, so that the top links of the retracted linkage are disposed in two juxtaposed rows with the top links of one row offset with respect to the top links of the other row and with the links of each row in end to end engagement, the bottom links constituting angularly swinging connectors and said bottom links being disposed crosswise of the retracted linkage.

4. An extensible self-retracting linkage, comprising a series of top and bottom links, each top link having an integral upstanding pivot at its respective ends and each bottom link having openings at its ends respectively receiving the pivots of adjacent top links, spring coils associated with said pivots, one end of each coil engaging the top link carrying the pivot with which it is associated and the opposite end of the coil extending over the intervening bottom link so that the coils are arranged in complemental pairs, a pair being associated with the pivots of each bottom link and said opposite coil ends of each pair extending toward each other, and means independent of the bottom link for holding said ends against relative displacement whereby the springs react upon the top links and tend to retract the linkage, the pair of springs associated with the pivots of one bottom link being coiled to react in a direction opposite to those associated with the pivots of the next adjacent bottom links.

5. An extensible self-retracting linkage, comprising a series of top and bottom links, each top link having tubular pivots at its ends and each bottom link having openings at its ends receiving the pivots of adjacent top links, spring coils located in said pivots, one end of each coil engaging the top link carrying the pivot in which the coil is located and the opposite end of each coil extending over the intervening bottom link so that the spring coils are arranged in complemental pairs, a pair being associated with the pivots of each bottom link and the latter coil ends of each pair extending toward each other, and means for holding said ends together whereby the springs react upon the top links and tend to retract the linkage, the pair of springs associated with the pivots of one bottom link being coiled to react in a direction opposite to those of the next adjacent bottom links, so that alternate bottom links tend to swing in opposite directions relative to each other when the top links are actuated by the springs, thereby moving alternate top links in paths substantially parallel to the longitudinal axis of the linkage and causing the top links of the retracted linkage to form in two parallel juxtaposed rows with the top links of one row offset with respect to the top links of the other row and with the links in each row in end to end engagement.

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