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C. H. KESTENMAN

2,143,702

TERMINAL CLASP OR CONNECTOR

Filed Dec. 15, 1937

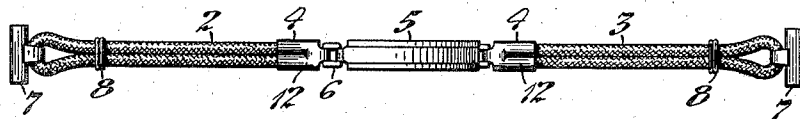


Fig. 1.

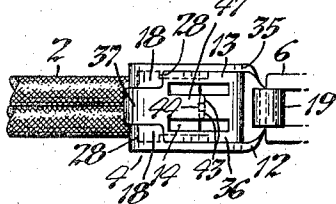


Fig. 2.

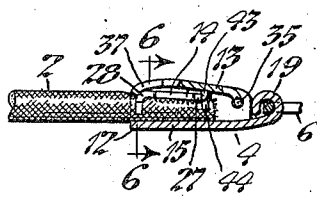


Fig. 3.

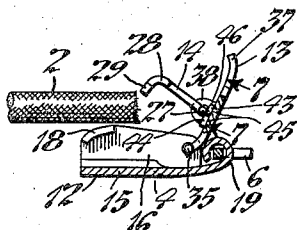


Fig. 4.

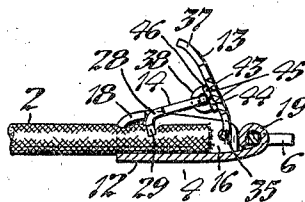


Fig. 5.

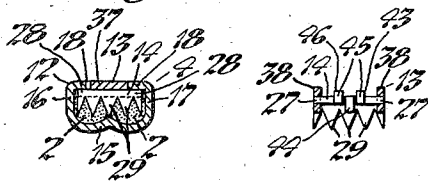


Fig. 6.

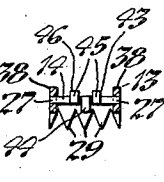


Fig. 7.

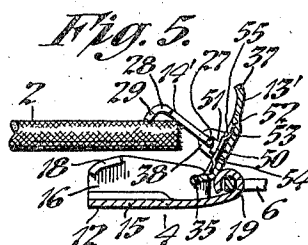


Fig. 11.

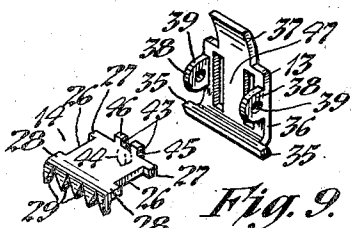


Fig. 10.

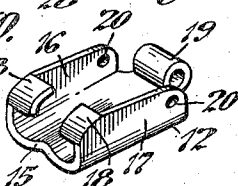


Fig. 8.

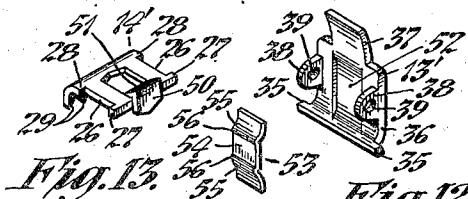


Fig. 13.

Fig. 14.

Fig. 12.

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UNITED STATES PATENT OFFICE

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TERMINAL CLASP OR CONNECTER

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Application December 15, 1937, Serial No. 179,917

8 Claims. (Cl. 24—265)

The present invention relates to improvements in end clasps or fastening devices for attaching the ends of cords, straps, bands, bracelets and the like.

5 In clasps of this type as heretofore used the end of a cord, strap, band, bracelet or the like is placed in a body-member and gripped thereto by a gripper element. In such prior devices the gripper element has to be manually pressed into gripping engagement with the end to be held and thereafter manually guided under a holding abutment on the body-member. Due to the relatively small size of the parts it is inconvenient and, in fact, quite difficult to accomplish these functions manually.

10 One of the objects of the present invention is to provide a device of the type indicated wherein the gripper is automatically moved into gripping engagement with the part to be gripped and thereafter guided under the abutments on the body-member.

Another object of the invention is to provide means for yieldingly holding the gripper in predetermined angular relationship with respect to an operating lever while the latter is being rocked to closed position on the body-member and for thereafter yieldingly holding the operating lever in closed position.

25 Another object of the invention is to provide a device of the type indicated having cooperating spring- and detent-means adapted to yieldingly hold the gripper in either one or the other of two angularly-related positions with respect to the operating lever.

30 Still another object of the invention is to provide a device of the type indicated which is of simple and compact construction and one which facilitates the operation of gripping the end of the object to be held.

40 Further objects of the improvement are set forth in the following specification which describes two forms of construction of the device, by way of example, as illustrated by the accompanying drawing. In the drawing:

45 Fig. 1 is a top plan view of a cord-type bracelet showing the present invention embodied in a pair of clasps attached to the ends of the cords and joined by an expansible buckle;

Fig. 2 is an enlarged bottom plan view of one of the end clasps shown in Fig. 1 illustrating the slotted construction of the operating lever to provide a resilient portion or spring-bridge;

50 Fig. 3 is a longitudinal sectional view of the improved clasp showing it in gripping connection with the end of a bracelet cord;

Fig. 4 is a view similar to Fig. 3 showing the operating lever rocked to open position with respect to the body-member and the gripper yieldingly held in definite angular relationship with respect to the operating lever;

5 Fig. 5 is a view similar to Fig. 3 showing the operating lever rocked toward the body-member and the gripper pressed into gripping engagement with the end of the bracelet cord;

10 Fig. 6 is a transverse sectional view on line 6—6 of Fig. 3 showing the teeth on the gripper engaging the end of the bracelet cord;

Fig. 7 is a transverse sectional view on line 7—7 of Fig. 4 showing the oppositely-extending lugs at the end of the gripper constituting detent-means which cooperate with the resilient portion of the operating lever;

Fig. 8 is a detailed perspective view of the body-member or housing;

20 Fig. 9 is a detailed perspective view of the operating lever;

Fig. 10 is a detailed perspective view of the gripper;

Fig. 11 is a longitudinal sectional view similar to Fig. 3 showing a modified form of the cooperating detent- and resilient-means for yieldingly holding the gripper in one or the other of two angularly-related positions with respect to the operating lever;

30 Fig. 12 is a detailed perspective view of the operating lever illustrated in Fig. 11;

Fig. 13 is a detailed perspective view of the gripper illustrated in Fig. 11; and

Fig. 14 is a detailed perspective view of the spring which cooperates with the detent-means in the modified form of the invention illustrated in Fig. 11.

Fig. 1 of the drawing illustrates a cord bracelet of usual construction comprising a pair of looped cords 2 and 3 having their ends gripped in fasteners or end clasps 4 forming the subject-matter of the present invention. One of the clasps 4 is directly connected to one end of an expansible buckle 5 of usual construction, while the other clasp 4 is connected to the opposite end of the buckle by means of a link 6. At the outer looped ends of the cords 2 and 3 are end members or connectors 7 adapted to be attached to the bails of a wrist-match or to similar parts of other articles of jewelry or the like, not herein shown. Metal loops 8, of usual construction, are also provided for encircling the looped cords 2 and 3 to hold them together in parallel relationship.

As most clearly shown in Fig. 4 of the draw- 55

ing each clasp 4 comprises a box-like body-member 12, an operating lever 13 and a gripper 14. As shown in detail in Fig. 8, the body-member or housing 12 has a top wall 15 of a contour corresponding to the contour of the end of the bracelet and side walls 16 and 17; it being understood that Figs. 2 to 8 illustrate the clasp in inverted position or bottom side up. Abutments 18 are provided at one end of the body-member, being herein illustrated as inwardly-directed lugs or flanges made integrally with the side walls 16 and 17 and generally curved or inclined toward the top wall 15. At the opposite end of the body-member 12 from the abutments 18 the top wall 15 is extended beyond the ends of the side walls 16 and 17 and curled around to form a loop 19 for connection with the buckle 5 or other element of the bracelet. Although the side walls 16 and 17 may take other forms they are herein illustrated as inclined upwardly toward the open end of the body-member 12, and adjacent the loop 19 they are provided with bearing apertures 20.

The gripper element 14, shown in detail in Fig. 10, is adapted for longitudinal sliding movement in the body-member 12 to enter its free end into engagement with the inner faces of the abutments or inwardly-directed flanges 18. The gripper element 14 is preferably in the form of a flat plate having its sides recessed or slotted at 26 to form laterally-extending pintles 27 at its rearward end and laterally-extending shoulders 28 at its forward end. At its forward end the gripper element 14 is provided with angularly-related teeth 29 for piercing engagement with the end of the cord 2 or 3, or other type of bracelet band to grip it against the top wall 15 of the body-member 12. Preferably, the shoulders 28 merge into the toothed portion of the gripper 14 with a rounded contour to adapt the shoulders to more readily engage the inside faces of the abutments 18.

The gripper element 14 is adapted to be moved longitudinally of the body-member 12 by rocking the operating lever 13, shown in detail in Fig. 9, to closed position on the body-member 12. The operating lever 13 is of stepped configuration having a rearward section 36 of a width to adapt it to fit closely between the side walls 16 and 17 of the body-member 12 to close the open under side thereof and a forwardly projecting tongue 37 of a width to adapt it to fit between the inner edges of the abutments or flanges 18 and provide a finger-piece for operating the lever. Pintles 35 provided at the rearward end of the operating lever 13 are adapted to project laterally into the bearing apertures 20 in the side walls 16 and 17 of the body-member 12 whereby to hingedly mount the lever to rock thereon. Adjacent the pintles 35 the lever 13 is curved to aline its sides with the edges of the side walls 16 and 17 and the forwardly-projecting tongue 37 is generally curved to correspond to the contour of the walls at the forward end of the body-member. Ears 38 bent at right-angles to the main portion 36 of the lever 13 have bearing apertures 39 for receiving the pintles 27 of the gripper element 14 to mount the latter for pivotal movement thereon. Thus, the operating lever 13 is adapted to be rocked to the open position illustrated in Fig. 5 to withdraw the gripper element 14 from engagement with the abutments or flanges 18 on the body-member 12, and to be rocked in the opposite direction to overlies the gripper element 14 when the latter is engaged with the bracelet end as illustrated in Fig. 3; the

recesses or slots 26 in the sides of the gripper element providing a clearance for the ears 38.

In accordance with the present invention, co-operating spring- and detent-means are provided on the operating lever 13 and gripper element 14 to yieldingly hold the latter in one or the other of two angularly-related positions with respect to the lever. In the preferred form of the invention illustrated in Figs. 1 to 10, the detent-means comprises lugs 43 and 44 at the rearward edge of the gripper 14 which are bent in opposite directions to project at right-angles to the main plane of the element on opposite sides thereof. The rearward sides of the lugs 43 and 44 provide flat faces 45 while the outer ends of the lugs 43 provide similar faces 46 extending at right-angles to the faces 45, see Figs. 7 and 10.

The spring-means on the operating lever 13 is formed by slitting the intermediate portion 36 of the lever longitudinally at spaced points to form a relatively narrow central portion or bridge 47 therebetween, see Fig. 2, which is adapted to yield slightly due to the inherent resiliency of the material. The relative position of the pintles 27 on the gripper element 14 and the bearing apertures 39 on the ears 38 of the lever 13 is such that the rearward faces 45 of the detent-means will bear against the resilient portion 47 of the operating lever when the parts are in assembled relationship. Thus, the gripper element 14 is normally held in the position illustrated in Fig. 4 so that it projects outwardly at approximately right-angles to the operating lever. The resilient portion 47 of the lever 13, however, is adapted to yield when the shoulders 28 at the forward end of the gripper element 14 are engaged in under the abutments 18 on the sides of the body-member 12 whereby to permit the gripper to pivot on the lever. The gripper 14 is caused to pivot on the lever 13 due to the resistance it encounters as it bites into the cord end. During this pivotal movement of the gripper 14 on the lever 13 the lugs 43 slide on the spring-portion 47 to engage their end faces 46 with the flat forward face thereof. The spring-portion 47 bearing against the faces 46 then acts to yieldingly hold the operating lever in the closed position on the body-member 12.

To attach the ends of the cord 2 or 3 to the end clasp 4, the latter is placed in inverted position and the operating lever 13 rocked on its pintles 35 to the position shown in Fig. 4. The forward toothed end of the gripper 14 will thus be positioned rearwardly of and upwardly from the inwardly-directed flanges or abutments 18 on the body-member 12. The ends of the bracelet cord 2 or 3 are then laid within the body-member 12 between its side walls 16 and 17. When the ends of the cord are properly positioned in the body-member 12 the operating lever 13 is rocked from the position shown in Fig. 4 to that shown in Fig. 5, and due to the engagement of the detent-lugs 43 and 44 with the resilient portion 47 of the lever 13 the forward toothed end of the gripper 14 is automatically moved into engagement with the ends of the cord and into position to slide its shoulders 28 under the abutments or flanges 18 on the body-member 12. As pressure on the operating lever 13 is continued the teeth 29 on the gripper will bite into the end of the cord. Then, as the shoulders 28 on the gripper 14 slide under the abutments 18 on the body-member 12 the resilient portion 47 of the lever 13 yields to permit the gripper to pivot on the lever. During the movement of the detent-lugs 43 on

the resilient portion 47 of the lever 13 the gripper 14 moves forwardly due to the eccentric relationship of the pivots 27 and 35 and the shoulders 28 engage under the abutments 18 on the body-member 12 and slide forwardly thereunder. The forward rounded portions of the shoulders 28 cam in under the abutments 18 and due to the inclination of the abutments the gripper is further cammed toward the top wall 15 of the body-member 12 as it moves forwardly thereof to increase the gripping or binding engagement of the end of the cord between the teeth 29 and top wall. During the latter part of the forward sliding movement of the gripper 14 the resilient portion 47 of the lever 13 bears against the faces 46 of the lugs 43 to yieldingly urge the operating lever to the closed position illustrated in Figs. 2 and 3 and to thereafter yieldingly hold it closed. The operating lever 13, when in the position illustrated in Figs. 2 and 3, entirely closes the open side of the housing 12, the intermediate portion 36 closely fitting between the side walls 16 and 17 and the rearward edges of the abutments 18, and the tongue or finger-piece 37 closely fitting between the inner edges of the abutments.

When it becomes necessary to replace the cords, or to open the clasp 4 for any other purpose, the operating lever 13 is lifted from its closed position illustrated in Fig. 3 to its open position illustrated in Fig. 4. Such movement of the operating lever 13 is opposed by the engagement of the resilient portion 47 on the operating lever with the faces 46 of the detent-lugs 43. As the operating lever 13 is rocked to the open position illustrated in Fig. 5 the gripper 14 will pivot on the lever to cause the faces 45 of the lugs 43 to be brought into engagement with the resilient portion 47 and the gripper will thereafter be moved upwardly with the operating lever in the relationship illustrated in Fig. 4 to maintain the gripper properly positioned to function again in the manner as hereinbefore explained.

In Figs. 11 to 14 of the drawing a modified form of cooperating spring- and detent-means is illustrated. In this form of construction of the invention the central plate portion of the gripper 14' is slitted to provide a tab which is folded rearwardly and then at an abrupt angle to form angular detent-faces 50 and 51. The operating lever 13' is similar to that illustrated in Figs. 1 to 10 except that instead of being slitted it is punched or drawn to form a recess 52 for receiving a leaf-spring 53. The spring 53 is preferably formed with a central flat portion 54 of a length substantially equal to the length of the detent-face 50 on the gripper 14' and arcuate terminal portions 55 at the opposite ends of the flat portion with ribs 56 formed therebetween. The spring 53 is adapted to fit closely within the confines of the recess 52 with its ends bearing against the bottom of the recess to hold its flat portion 54 spaced therefrom. With the gripper 14' pivotally mounted on the operating lever 13' the flat portion 54 of the spring 53 yieldingly bears against one or the other of the angularly-related faces 50 and 51 of the detent-means on the gripper.

This modified form of end clasp operates in substantially the same way as explained with respect to the form illustrated in Figs. 1 to 10. With the gripper 14' pivotally mounted on the lever 13' its detent-face 50 engages the flat portion 54 of the spring 53 to yieldingly hold the gripper in predetermined angular relationship with respect to the lever 13'. As the lever 13' is

rocked on its pintles 35 to closed position the forward end of the gripper 14' moves forwardly and downwardly into gripping engagement with the end of the cord 2 or 3 and thereafter engages its shoulders 28 under the abutments or flanges 18. Continued rocking movement of the operating lever 13' causes the gripper 14' to pivot on the lever, the spring 53 yielding to permit relative movement of the parts. After the operating lever 13' has been rocked to its closed position the spring 53 engages the detent-face 51 on the gripper 14' to thereafter hold the operating lever closed.

It will be observed from the foregoing that the present invention provides a novel form of clasp or fastener for holding the ends of a cord, strap, band or bracelet, and one which is simple of construction and adapted to facilitate the operation of gripping the end of the cord. It will further be observed that the invention provides a cooperating spring- and detent-means on the operating lever and gripper for yieldingly holding the gripper in one or the other of two angularly-related positions with respect to the lever to automatically engage the gripper with the bracelet end and guide the gripper under the holding abutments, while thereafter acting to yieldingly hold the operating lever in closed position.

While I have herein shown and described two preferred embodiments of the invention, it is to be understood that various other modifications may be made in the structure and arrangement of the parts of the device without departing from the spirit or scope of the invention. Therefore, without limiting myself in this respect, I claim:

1. A fastener for holding the end of a bracelet cord or strap comprising a body-member provided with an abutment, an operating lever rockably mounted on said body-member, a gripper pivotally connected to said operating lever and having a jaw for clamping the cord in the body-member, and means for yieldingly holding the gripper in predetermined angular relationship with respect to the operating lever to cause the gripper to engage under the abutment when the operating lever is rocked toward the body-member to engage the jaw with the cord.

2. A fastener for holding the end of a bracelet cord or strap comprising a body-member provided with an abutment, an operating lever pivotally mounted on said body-member, a gripper pivotally connected to said operating lever and having a jaw for clamping the cord against the body-member, and resilient means acting between the operating lever and gripper to hold the gripper in predetermined relationship with respect to the lever whereby to cause said gripper to slide under the abutment on the body-member when the operating lever is rocked toward the latter to engage the jaw with the cord.

3. A fastener for holding the end of a bracelet cord or strap comprising a body-member provided with an abutment, an operating lever pivotally mounted on said body-member, a gripper pivotally connected to said operating lever and having a jaw for clamping the cord, and cooperating spring- and detent-means on the gripper and operating lever for yieldingly holding the gripper either in angular relation to the operating lever or in substantially parallel relation thereto, said gripper being so constructed and arranged as to cause the jaw to slide under the abutment on the body-member when the operating lever is rocked toward the latter and to cooperate with the body-member to grip the cord thereagainst.

4. A fastener for holding the end of a bracelet cord or strap comprising a body-member provided with an abutment, an operating lever pivotally mounted on said body-member, a gripper pivotally connected to said operating lever and having a jaw for clamping the cord in the body-member, and resilient means on the operating lever cooperating with the gripper to yieldingly hold the latter in one or the other of two positions in relation to the operating lever whereby to guide the gripper under the abutment and thereby engage the jaw with the cord when the lever is rocked toward the body-member and to thereafter maintain the operating lever in substantially parallel relationship with respect to the gripper.

5. A fastener for holding the end of a bracelet cord or strap comprising a body-member provided with an abutment, an operating lever pivotally mounted on said body-member, a gripper pivotally connected to said operating member and having detent-means adjacent its pivot and a jaw at its end for clamping the cord in the body-member, and resilient means on the operating lever cooperating with the detent-means on the gripper to yieldingly hold the latter in one or the other of two positions in relation to the operating lever, the gripper in one of its positions being adapted to slide under the abutment to engage the jaw with the cord when the operating lever is rocked toward the body-member and in its other position to hold the gripper and operating lever in overlying relationship.

6. A fastener for holding the end of a bracelet cord or strap comprising a body-member having a top wall and side walls with abutments extending inwardly from said side walls, said lever being movable on its pivot from an open position to a closed position on the open side of the body-member, a gripper pivotally connected to said operating lever and having a jaw for clamping the cord in the body-member, and cooperating spring- and detent-means on the operating lever

and gripper for yieldingly holding the latter in predetermined angular relationship with respect to the operating lever to cause the gripper to slide under the abutments on the body-member to engage its jaw with the cord when the lever is rocked on its pivot from an open to a closed position, said spring- and detent-means thereafter acting to yieldingly hold the operating lever in closed position on the body-member.

7. A fastener for holding the end of a bracelet cord or strap comprising a body-member provided with an abutment adjacent one end, an operating lever pivotally mounted on said body-member adjacent its end opposite from said abutment, said lever having spaced longitudinally-extending slits forming a resilient portion therebetween, and a gripper pivotally connected to said operating lever and having a gripping jaw at its free end and angular lugs adjacent its pivoted end engaging the resilient portion of the operating lever, said resilient portion and lugs cooperating to guide the gripping jaw beneath the abutments on the body-member when the operating lever is rocked toward the body-member and thereafter cooperating to hold the operating lever in closed position with respect to the body-member.

8. A fastener for holding the end of a bracelet cord or strap comprising a body-member provided with an abutment, an operating lever pivotally mounted on said body-member and having a recessed portion intermediate its ends, a gripper pivotally connected to said operating lever and having detent-means adjacent its pivot, and a leaf-spring in the recess of the operating lever adapted to bear against the detent-means on the gripper to yieldingly hold the latter in predetermined angular relationship with respect to the operating lever to cause it to pass beneath the abutment when the operating lever is rocked on its pivot toward the body-member.

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