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END CLASP FOR BRACELETS OR THE LIKE

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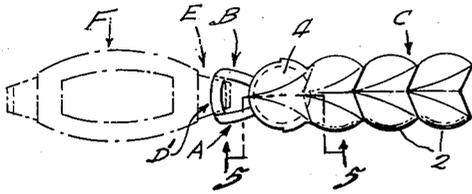


Fig. 1

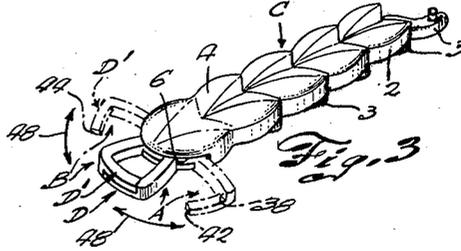


Fig. 3

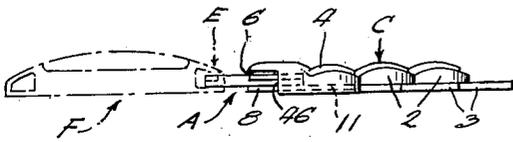


Fig. 2

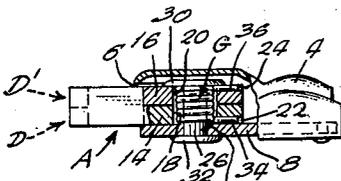


Fig. 5

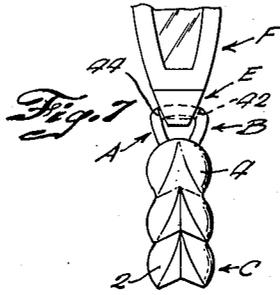


Fig. 7

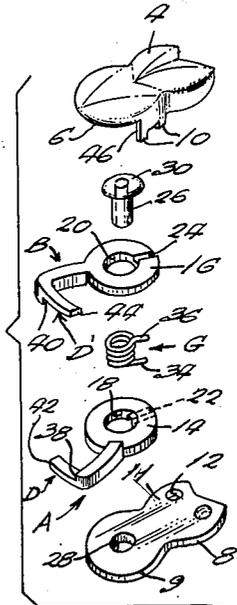


Fig. 4

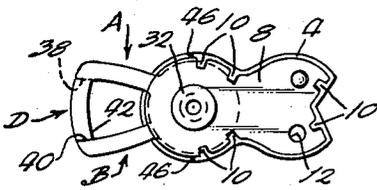


Fig. 6

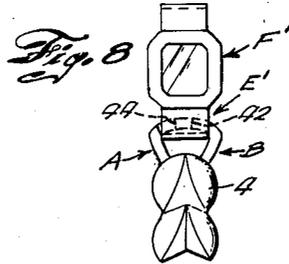


Fig. 8

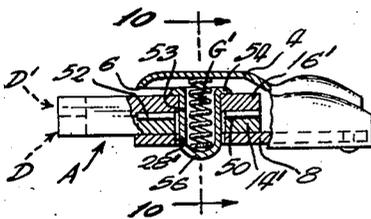


Fig. 9

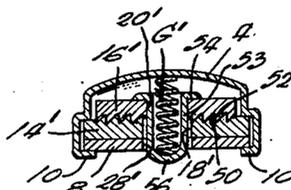


Fig. 10

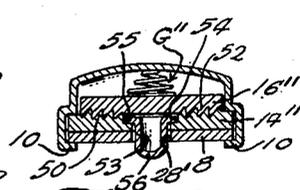


Fig. 12

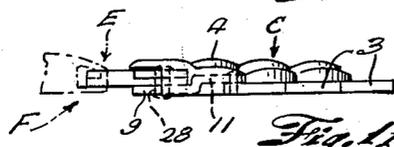


Fig. 11

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# UNITED STATES PATENT OFFICE

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## END CLASP FOR BRACELETS OR THE LIKE

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8 Claims. (Cl. 24-235)

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The present invention relates to an end clasp particularly adapted for use on bracelets the ends of which are to be attached to a watch or the like.

The problem of providing an adequate securing device by means of which wrist watch bracelets may be secured to watches has long vexed the industry. This has particularly been true in the case of ladies' watches the cases of which are relatively small and consequently are not provided with a conventional removable pin passable through a link in the bracelet, but are instead provided with lugs or the like which the bracelet is adapted to grasp. In most instances the fastening means employed at the end of the bracelets have been semi-permanent in nature and have required the use of special tools and considerable manipulative skill. Since watches and bracelets are often sold separately but used together, the problem of securing the bracelet to the watch is an ever-present one. In view of the above described difficulty in manipulation of the normal type of bracelet and clasp, the task of securing the bracelet to the watch has devolved upon the jeweler, who sells either the watch or the bracelet, since normally only the jeweler has the necessary tools and skills. When individuals have attempted to manipulate the prior art end clasps on their own, the result is usually failure of the end clasp, separation of the bracelet from the watch at an unforeseen moment and consequent damage to, and often loss of, the watch and bracelet.

Even when the securing operation is performed by the jeweler, considerable time and care must be lavished upon that operation, thus adding to the overhead of the jeweler and detracting from the availability of his employees for other purposes such as sales, watch repairing and the like which are more financially productive.

Moreover, the watch generally being the longer-lived member of the watch-bracelet combination, it often happens that an individual wishes to replace the bracelet attached to a watch or to change that bracelet in conformity with the ensemble of clothing and jewelry which the individual may be wearing at a given time. This is particularly true in the case of women, and it is particularly with respect to women's watches that the fastening of the bracelet to the watch has given the most trouble. It is obviously not feasible for a user to return a watch and bracelet to a jeweler each time she wishes the bracelet to be changed, and no matter how friendly or obliging the jeweler, repeated requests for changes and refastenings are bound to become irksome.

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No matter how carefully the replacement job may be done with bracelet end clasps of the prior art, the semi-permanent nature of the fastening action of those clasps and their relative fragility necessitated by their small size mitigate against their use for frequent fastenings and unfastenings. In most instances some thin metal portion must be bent or deformed each time the bracelet is secured to or detached from the watch and after a few such operations the clasp will break.

Moreover, the fastening portions of the end clasps of the prior art have been more or less rigidly attached to the bracelets so that the bracelet ends are to be more or less rigidly secured to the watch. This is a disadvantage particularly where wrist watches are concerned, since the normal use of the owner's arm and the constant flexing of her wrist will be resisted by the rigidity of the fastening members, and that resistance will not only place undue strain upon the fastening members but will also cause discomfort to the wearer.

A further difficulty involved with bracelet end clasps of the prior art has resided in the fact that, because of the construction of the end clasp, it has been difficult to integrate them into the ornamental motif of the bracelet. Hence, the bracelet does not, from an appearance point of view, blend smoothly into the watch but is instead separated from the watch by fastening members which, although they may in and of themselves be decorated, are normally of a different appearance from the bracelet itself.

By means of the present invention, an end clasp is produced which may readily be secured to or detached from a watch or other ornamental article without the use of special tools or equipment by an unskilled person and which may be attached or detached a substantially indefinite number of times and on a moment's notice without deterioration or mechanical failure. The clasp is positive in operation and is adaptable for use with watches of various sizes without modification. The fastening members of the clasp are articulately secured to the bracelet so that they may be moved relatively thereto even after they have been secured to the watch. In this way, the watch is attached to the bracelet with considerable freedom of movement so as to afford maximum comfort to the wearer and minimum strain on the clasp when the bracelet-watch combination is subjected to normal wear.

In its preferred form, the fastening members are enclosed within an open-ended housing, which housing may have exactly the same ornamentation as the remainder of the bracelet, so

that the appearance of the bracelet when it is attached to the watch is uniform.

This is accomplished by pivotally securing a pair of arms on the bracelet end, these arms being provided with fingers projecting toward one another and the arms being movable toward one another so that the fingers can grasp or release the lug of the watch. A spring is employed active on the arms to retain them in a watch grasping position toward one another. Two embodiments are here disclosed, in one of which the spring constantly urges the arms toward one another, the arms being manually movable away from one another to release the watch when desired, and in the other the arms are provided with cooperating ratcheted surfaces which permit the arms to be moved toward one another into a grasping position but prevent them from being moved away from one another to release the watch, a spring being active upon the arms to urge the ratcheted surfaces into engagement and a manually operable member being provided to render the spring inoperative so that the arms can be moved apart when desired to release the watch.

To the accomplishment of the foregoing advantages and to the achievement of such other advantages as may hereinafter appear, the present invention relates to an end clasp for a bracelet or the like as defined in the appended claims and as described in this specification, taken together with the accompanying drawings, in which:

Fig. 1 is a top view showing the end clasp and a portion of a bracelet, the clasp grasping a watch lug;

Fig. 2 is a side view of Fig. 1;

Fig. 3 is a perspective view of the bracelet and end clasp of Fig. 1 showing the arms in closed and open position;

Fig. 4 is an exploded view of the various elements of one embodiment of the clasp;

Fig. 5 is a side cross-sectional view taken along the line 5-5 of Fig. 1;

Fig. 6 is a bottom view thereof;

Figs. 7 and 8 illustrate the adaptability of the clasp for use with watches having lugs of different sizes;

Fig. 9 is a view similar to Fig. 5 but showing another embodiment of the clasp;

Fig. 10 is an end cross-sectional view taken along the line 10-10 of Fig. 9;

Fig. 11 is a side elevational view similar to Fig. 2 but of an alternative embodiment; and

Fig. 12 is a view similar to Fig. 10 but showing a different embodiment.

It will be understood that although the present invention is specifically illustrated in the form of a bracelet end clasp which engages with a watch lug, the invention is susceptible of other uses and is not to be limited to use either with the particular bracelet here disclosed, with bracelets in general, or to secure watches alone.

Broadly considered, the bracelet comprises a pair of arms A and B pivotally mounted on the end of a bracelet body generally designated C, extending out therefrom, and having fingers D, D' projecting toward one another and spaced from the end of the bracelet body C so as to grasp the lug E of a watch F therebetween, a spring G being active on the arms A and B so as to retain them in a position toward one another, in which position the fingers D and D' engage and grasp the watch lug E.

By way of illustration the bracelet body C is here disclosed as composed of a plurality of inter-nesting links 2 having a suitably ornamented up-

per surface, which links are interconnected together as a conventional expansible bracelet by the bottom links 3. Each end of the bracelet (only one end is here shown, the other end being identical thereto) is provided with a shell-like housing 4 the upper surface of which is ornamented to simulate the appearance of the links 2. Note that as here disclosed the shell 4 is approximately twice as long as each of the individual links 2 and is so stamped or otherwise formed as to simulate the appearance of two individual links, thus carrying out the appearance of the bracelet right up to the end thereof.

The end of the housing is open as indicated at 6 and it is through that open end that the arms A and B extend. A base plate 8 is secured within the housing 4, the housing preferably being provided with lips 10 bendable under the base plate 8 to retain the same in position. The base plate 8 is appropriately secured to the bracelet body C, the present embodiment disclosing that plate having an aperture 12 to which an end of the conventional expansible linkage is to be secured. When thus secured to the bracelet body C, the clasp housing 4 and base plate 8 form, in effect, a part of the bracelet proper, since they constitute an elongation thereof which overlies the body of the user in the same manner as the bracelet body C. The arm A is secured to and is preferably formed integrally with a hub 14 and the arm B is secured to and preferably formed integrally with a hub 16, said hubs having central apertures 18 and 20 respectively, the lower surface of the hub 14 being provided with groove 22 and the upper surface of the hub 16 being provided with groove 24. These two hubs are placed one above the other between the base plate 8 and the housing 4 and are pivotally secured to the base plate 8 by means of a stud 26 which passes through the apertures 18 and 20 in the hubs 14 and 16 and through an aperture 28 in the base plate 8, the top of the stud 26 being headed as at 30 so as to prevent its passing completely through the hubs and the bottom of the stud 26 being spun over as at 32 so as to secure the parts in assembled relationship. The aperture 28 in the base plate 8 is of a sufficient size so that the stud 26 can pass therethrough relatively snugly. The apertures 18 and 20 in the hubs 14 and 16 are sufficiently large so that the spring G can be positioned around the stud 26 and inside the interior surfaces of the apertures 18 and 20, the projecting ends 34 and 36 of the spring G being received within the slots 22 and 24 in the hubs 14 and 16. The spring G is so tensioned that, in the embodiment now under discussion, the hubs 14 and 16 will constantly tend to be rotated in such a direction that the arms A and B will move toward one another.

Each of the fingers D and D' are preferably adapted to overlap one another when the arms A and B are moved toward one another, and to that end the fingers D and D' may be of reduced thickness when compared with the arms A and B to which they are attached and with respect to which they are preferably integrally formed. More specifically, the finger D may have a thickness approximately one-half the thickness of the arm A so that a shoulder 38 is defined on the upper portion of the arm A, and the finger D' may be one-half the thickness of the arm B so that a shoulder 40 is formed on the lower portion of the arm B. In an alternative construction, the fingers D and D' may be of the same thickness as the arms A and B but may be suit-

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ably vertically offset therefrom. Hence, whenever the arms A and B are permitted to move together, as they are urged by the spring G, that motion will be limited by engagement of the end 42 of the finger D with the shoulder 40 on the arm B and by simultaneous engagement of the end 44 of the finger D' with the shoulder 38 on the arm A. When in that fully closed position, it will be apparent that the arms A and B may pivot together with respect to the base plate 8 and housing 4 until the arm A or B, depending upon the direction of pivotal motion, comes into contact with one vertical edge 46 or the other defining the sides of the open end 6 of the housing 4.

When it is desired to secure the bracelet to a watch, the arms A and B, as they extend out from the housing 4, are grasped and separated from the solid line position illustrated in Fig. 3 to the phantom position there illustrated, each of the arms A and B moving along the arcuate path designated by the arrows 48 until the fingers D and D' no longer overlap but instead define an open space between themselves. It will be noted that the arms A and B have only a limited degree of possible divergence, the vertical edges 46 defining the sides of the open end 6 of the housing 4 serving as positive stops. Consequently, the arms A and B cannot be spread apart so far as to damage the spring G.

With the arms A and B in their thus diverged position, the clasp is positioned adjacent to the watch lug E so that said lug enters between the spread fingers D and D'. The arms A and B are then released and the spring G will cause those arms to move toward one another, the fingers D and D' entering into the lug E, overlapping one another, and thus positively and firmly securing the bracelet body C to the watch F.

It should be noted particularly that it is not necessary, in order to secure positive and adequate fastening action, that the arms A and B move all the way to their fully converged position as illustrated in the solid lines in Fig. 3. Hence, the clasp is self-adaptable to watch lugs of different sizes. In Fig. 7 a lug E is illustrated which is extremely narrow, so narrow that the arms A and B are permitted to move to their fully converged position in which the ends 42 and 44 of the fingers D and D' engage the shoulders 40 and 38 respectively on the arms B and A. In Fig. 8 a watch F' is illustrated having a lug E' considerably wider than the lug E illustrated in Fig. 7. When the end clasp of the present invention is employed with such a lug as E', the arms A and B are prevented from moving to their fully converged position by reason of their engagement with the sides of the lug E', but nevertheless the fingers D and D', by reason of the action of the spring G, pass within the lug E' and are retained in their converged position, grasping the lug E'.

It should also be noted that, once the clasp of the present invention has been secured to a watch lug E, the arms A and B are nevertheless simultaneously pivotable to a limited degree, without separation, with respect to the base plate 8 and the housing 4 so that slight misalignment between the bracelet C and the watch F while on the wrist of the wearer will be accommodated by the freedom of motion between the arms A and B on the one hand and the base plate 8 and the housing 4 on the other hand. Hence, normal use imposes no strain on the clasp, lateral motion of the watch F with respect to the

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bracelet C does not tend to spread the arms A and B but instead merely moves the arms A and B together, and, since said pivotal motion is unopposed, no resistance or discomfort is felt by the wearer. The securing action is positive and relative motion of the watch and bracelet does not tend in any way to cause detachment of the bracelet from the watch.

In order that the top of the end portion of the shell-like housing 4 may be on the same level as the remainder thereof, thus enhancing the uniformity of appearance of the bracelet, the modification illustrated in Fig. 11 may be employed, which modification is applicable for use with either of the embodiments previously discussed but which is illustrated in Fig. 11 as applied to the embodiment of Figs. 1 through 8. The base plate 8' has its outward end 9 in which the aperture 28 is to be found stepped below the portion 11 of the base plate 8 to which the expansible linkage is secured. It is upon the portion 9 that the hubs 14 and 16 are supported. This stepped construction lowers the hubs 14 and 16 with respect to the remainder of the structure so that the top of the housing 4 which encloses the hubs 14 and 16 may be on the same level as the top of the rest of the bracelet. This construction does not provide interference with the wrist of the wearer since the downwardly stepped portion 9 of the base plate 8, although it extends below the lower surface of the top links 2 of the bracelet, does not extend below the bottom links 3 thereof.

Figs. 9 and 10 disclose an alternative embodiment in which the hubs 14' and 16' are provided with cooperating opposed ratcheted faces 50 and 52 so oriented that, when these surfaces 50 and 52 are engaged, the hubs 14' and 16' can be rotated relative to one another in such a direction that the arms A and B converge toward their grasping position but cannot be rotated in the opposite direction. In this embodiment, the base plate 8 is provided with an aperture 28' of approximately the same size as the aperture 18' in the hub 14'. A cup-shaped manually operable member 53 has a flange 54 which rests upon the upper surface of the upper hub 16' and has a closed hollow body which extends freely through the apertures 18' and 28' and which is received with a frictional fit in the aperture 20' in the upper hub 16'. This body projects downwardly beyond the base plate 8, terminating in the exposed tip 56. A spring G' is active between the surface of housing 4 and the inner surface of the manually operable member 53 so as to urge that member downwardly, its flange 54 engaging the upper surface of the hub 16' and its body being frictionally engaged in the aperture 20', thereby forcing the hub 16' downwardly so that its ratcheted surface 52 engages with the ratcheted surface 50 on the lower hub 14'. With the hubs thus engaged, and because of the orientation of the ratcheted surfaces 50 and 52, manual manipulation of the arms A and B toward one another will be permitted, the inclined portions of the ratcheted surfaces 50 and 52 sliding over one another and the upper hub 16' rising slightly and compressing the spring G' as each ratchet tooth is passed. If, however, it be attempted to separate the arms A and B, the spring G' will ensure engagement between the ratcheted surfaces 50 and 52 and hence such diverging motion of the arms A and B will be prevented. Consequently, although the clasp may readily be secured to a watch lug E, it cannot readily be detached therefrom.

When detachment is desired, the exposed tip 56 of the manually operable member 53 is positioned upwardly compressing the spring G' and lifting the hub 16' through the frictional interconnection between the member 53 and the aperture 20' in the hub 16'. When this is done, the ratcheted surfaces 50 and 52 are no longer in engagement and consequently the arms A and B may be spread.

The embodiment disclosed in Fig. 12 operates similarly to that disclosed in Figs. 9 and 10 except that the upper hub 16'' is not apertured and the lower hub 14'' is provided at its upper edge with a countersunk portion 55 into which the flange 54 of the manually operable member 53 is receivable. The spring G'' is active between the undersurface of the housing 4 and the flat upper surface of the upper hub 16'', and is preferably of tapered form so as to ensure proper seating. In this embodiment, upward pressure on the projecting tip 56 of the manually operable member 53 will cause the flanges 54 thereof to abut against the underside of the upper hub 16'' and positively move it upwardly against the action of the spring G'' until the ratcheted surfaces 50 and 52 are moved out of engagement so as to permit spreading of the arms A and B.

The functioning and operation of the end clasps of the present invention will in the main be fully apparent from the above description. The presence of the spring G ensures positive securing action at all times. The fact that the arms A and B are simultaneously freely pivotable with respect to the remainder of the bracelet to which they are attached makes for increased comfort, reduces the strain to which the clasp may be subject, and ensures that lateral dislocations will not tend to cause the clasp to open and become disengaged from the watch. It is clear that the clasp is readily engageable with and disengageable from a watch without the employment of any special tools or equipment and that said engagement and disengagement may be accomplished almost instantaneously. Since the engagement and disengagement is accomplished without the necessity of bending any structural parts, such engagement and disengagement may be repeated time and time again without deterioration of the clasp. Since the arms A and B are enclosed within a shell-like housing 4, that housing may have any type of ornamentation applied thereto without in any way affecting the functioning and operation of the clasp and hence it is possible to provide a bracelet and clasp which have substantially the same appearance as the remainder of the bracelet. The clasp is self-adaptable to varying sizes of watch lugs and hence a single type of clasp may be employed on a bracelet by means of which that bracelet can be attached to widely varying styles of watches. This not only simplifies the manufacturer's problem but also materially assists the retailer, who heretofore has had to carry a large inventory of various sizes of end clasps, each of which had to be separately secured to a bracelet depending upon the type of watch with which that bracelet was to be used.

It will be apparent that many modifications may be made in the end clasps here disclosed, all within the spirit of the invention as defined in the following claims.

I claim:

1. An end clasp for use with a watch bracelet and capable of attaching said bracelet to apertured watch lugs of different widths comprising a housing having an opening with a restricted

width at the end of said housing remote from said bracelet body, a pair of arms coaxially mounted in said housing for pivotal movement about a common axis and extending out through the opening in said housing substantially longitudinally with respect to said bracelet body and having inner surfaces for grasping the sides of a watch lug, said arms being movable toward or away from one another to varying degrees so as to grasp or release watch lugs of different widths, and fingers on said arms projecting toward one another in a transverse direction, said fingers being adapted to move into the aperture of a watch lug to a greater or lesser degree as said arms are moved toward and away from one another, and a spring active on said arms independently of said housing to urge them toward one another into a grasping position, said arms in grasping position being closer together than the sides of the opening in said housing and thus being freely simultaneously pivotable in the same direction on said housing to the degree permitted by the width of the opening in said housing, the divergence of said arms when moved away from one another against the action of said spring being limited by engagement between said arms and the sides of the opening in said housing.

2. The combination of claim 1 in which the fingers on said arms project toward one another so as to be substantially colinear with one another as said arms move from their grasping position, the inner surfaces of said fingers making an abrupt angle with the inner surfaces of their respective arms and said fingers having a radius of curvature not substantially less than the distance from said fingers to the pivot point of said arms.

3. An end clasp for use with a watch bracelet and capable of attaching said bracelet to apertured watch lugs of different widths comprising a housing having an opening with a restricted width at the end of said housing remote from said bracelet body, a base plate within said housing, a stud on said base plate, a pair of hubs coaxially rotatably mounted on said stud, an arm on each hub extending out through the opening in said housing substantially longitudinally with respect to said bracelet body and having an inner surface for grasping the sides of a watch lug, said arms being movable toward or away from one another to varying degrees so as to grasp or release watch lugs of different widths, and fingers on said arms projecting toward one another in a transverse direction, said fingers being adapted to move into the aperture of a watch lug to a greater or lesser degree as said arms are moved toward and away from one another, and a spring active on said arms independently of said base plate and housing to urge them toward one another into a grasping position, said arms in grasping position being closer together than the sides of the opening in said housing and thus being freely simultaneously pivotable in the same direction on said base plate to the degree permitted by the width of the opening in said housing, the divergence of said arms when moved away from one another against the action of said spring being limited by engagement between said arms and the sides of the opening in said housing.

4. The combination of claim 3 in which the fingers on said arms project toward one another so as to be substantially colinear with one another as said arms move from their grasping position, the inner surfaces of said fingers making an abrupt angle with the inner surfaces of their

respective arms and said fingers having a radius of curvature not substantially less than the distance from said fingers to the pivot point of said arms.

5. An end clasp for use with a watch bracelet and capable of attaching said bracelet to apertured watch lugs of different widths comprising a housing having an opening with a restricted width at the end of said housing remote from said bracelet body, a pair of hubs coaxially rotatably mounted in said housing and extending up to but not beyond said opening, thereby being completely contained within said housing, an arm on each hub extending out through the opening in said housing substantially longitudinally with respect to said bracelet body and having an inner surface for grasping the sides of a watch lug, said arms being movable toward or away from one another to varying degrees so as to grasp or release watch lugs of different widths, and fingers on said arm projecting toward one another in a transverse direction, said fingers being adapted to move into the aperture of a watch lug to a greater or lesser degree as said arms are moved toward and away from one another, and a spring active on said arms to urge them toward one another into a grasping position, the divergence of said arms when moved away from one another against the action of said spring being limited by engagement between said arms and the sides of the opening in said housing, said fingers projecting toward one another so as to be substantially colinear with one another as said arms move from their grasping position, the inner surfaces of said fingers making an abrupt angle with the inner surfaces of their respective arms and said fingers having a radius of curvature not substantially less than the distance from said fingers to the pivot point of said arms.

6. The end clasp of claim 5, in which the inner surfaces of said arms define unobstructed substantially straight lines extending substantially longitudinally from said housing, and in which the inner surfaces of said fingers are substantially perpendicular thereto and define smooth, continuous lines.

7. The end clasp of claim 6, in which said fingers overlap one another over substantially their entire length when said arms are positioned toward one another, the tips of said fingers then

engaging the opposite arms so as to limit the spring-urged movement of said arms toward one another.

8. The end clasp of claim 5, in which said fingers overlap one another over substantially their entire length when said arms are positioned toward one another, the tips of said fingers then engaging the opposite arms so as to limit the spring-urged movement of said arms toward one another.

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