Dec. 23, 1924. 1,520,186

C. H. KESTENMAN

EXPANSIBLE METAL BAND

Filed March 20, 1924

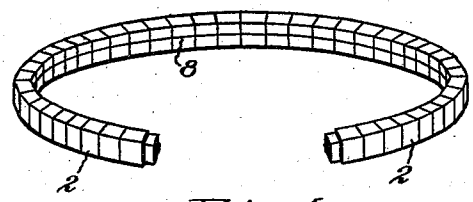

Fig. 1.

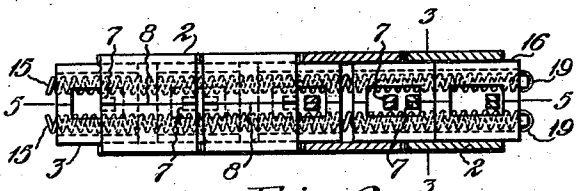

Fig. 2.

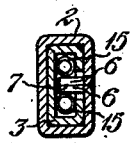

Fig. 3.

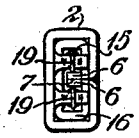

Fig. 4.

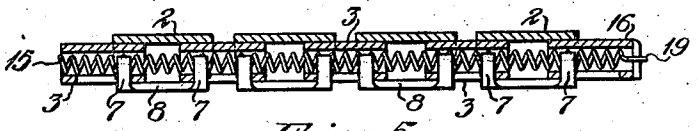

Fig. 5.

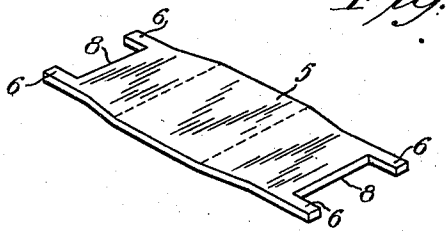

Fig. 6.

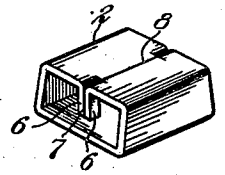

Fig. 7.

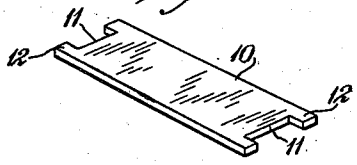

Fig. 8.

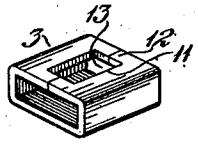

Fig. 9.

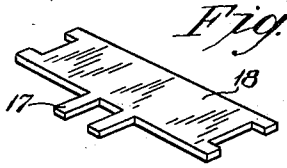

Fig. 10.

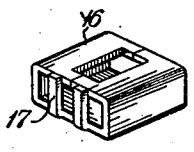

Fig. 11.

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Attorneys

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UNITED STATES PATENT OFFICE.

CHARLES H. KESTENMAN, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO KESTENMAN BROTHERS MFG. CO., OF PROVIDENCE, RHODE ISLAND, A PARTNERSHIP CONSISTING OF ABRAHAM KESTENMAN AND CHARLES H. KESTENMAN.

EXPANSIBLE METAL BAND.

Application filed March 20, 1924. Serial No. 700,509.

To all whom it may concern:

Be it known that I, CHARLES H. KESTENMAN, a citizen of the United States, residing at Providence, in the county of Providence, State of Rhode Island, have invented certain new and useful Improvements in Expansible Metal Bands, of which the following is a specification.

This invention relates to improvements in expansible metal straps, bands or linkages for use in the manufacture of bracelets, chains, belts, garters and other jewelry or articles of a like nature.

A principal object of the invention is to provide an improved article of manufacture of the type specified having closely associated articulated links or chain-elements which are adapted to flex, one in relation to the other, and also to move longitudinally relatively to each other to provide for expansion in the length of the bracelet, chain, belt or other article in which it is incorporated.

One object of the present improvement is to provide an expansible strap, band or chain in which the elements are more neatly and closely joined or connected and which may be flexed and expanded without dislocation of its parts and without disclosing unsightly joints or seams.

Another object of the improvement is to provide a device of the type specified in which the parts are connected by resilient means that stretch or expand throughout the full length of the article so as to secure a greater degree of resiliency and expansion.

Another object of the improvement is to provide a device of the type specified in which are incorporated one or more expansion elements extending continuously throughout the full length of the article as differentiated from expansible bracelet structures having relatively short individual compression springs in the several links.

Another object of the improvement is to provide a device of the type specified in which the resilient elements or springs are stretched instead of being compressed, whereby to provide for greater expansion without deterioration or weakening of the springs after long periods of use.

Another object of the improvement is to provide a device of the type specified which may be manufactured from sheet-metal parts struck up in dies and assembled with a minimum of hand operations.

Another object of the improvement is to provide a device of the type specified of stronger construction and less liable to be broken or damaged in use.

Further objects of the improvement are set forth in the following specification which describes a preferred embodiment of the invention as illustrated in the accompanying drawings. In the drawings:

Fig. 1 is a perspective view of the improved metal strap, band or chain showing it contracted to normal length but flexed in substantially circular form;

Fig. 2 is an enlarged bottom plan view of several of the links of the strap, band or chain, two of the outer links being shown in section in a medial plane extending laterally therethrough;

Fig. 3 is a cross-sectional view of one of the outer links of the device taken on the line 3—3 of Fig. 2 and showing the inner slidable link telescoped within the outer link;

Fig. 4 is an end view of the end links of the device showing the means for fastening the resilient expansion element thereto;

Fig. 5 is a longitudinal sectional view of several of the links of the strap, band or chain taken in a vertical plane on the line 5—5 of Fig. 2 and showing the links in expanded relation;

Fig. 6 is a perspective view of the sheet-metal blank from which the outer enclosing link or main element of the strap, band or chain is constructed;

Fig. 7 is a perspective view of the completed outer link or element;

Fig. 8 is a perspective view of the blank from which the inner link is constructed;

Fig. 9 is a perspective view of the completed inner link;

Fig. 10 is a perspective view of the blank from which the inner terminal link of the strap, band or chain is constructed; and

Fig. 11 is a perspective view of the completed inner terminal link.

My improved strap, band or chain comprises, essentially, a series of main elements or outer link-members 2 of box-like form, within which are enclosed similar box-like connecting-links 3 arranged to slide with respect to the main links and limited in

their sliding movement to prevent the main elements of the chain from being pulled apart or dislocated. Passing through the several links of the strap, band or chain, and preferably enclosed within the inner links 3 thereof is one or more resilient connecting-means such as a helical spring of relatively fine tempered wire. In most instances I prefer to employ two of these springs, but in some cases I may use elastic bands or cords in place of the springs.

Referring now to Fig. 7 of the drawings, the main or outer link-member 2 comprises a hollow or tubular box of folded sheet-metal having open ends. The outer links 2 are struck up from blanks 5 stamped from sheet-metal in the shape indicated in Fig. 6. The central or body portion of the blank 5 is of rectangular shape and from this central portion the sides of the blank are tapered inwardly to a slight degree and extended at the end in two opposite, narrow strips or legs 6. To form the finished box-link 2 the blank 5 is folded across its width at points indicated by the dash lines in Fig. 6, so that the two sides of the box will stand upright therefrom with their lateral edges slightly tapered as shown in Fig. 7. The central portion of the blank 5 forms the top of the box and its bottom comprises the ends of the strip which are folded inwardly to meet at the center of the link. In folding the ends of the strip inwardly the opposite legs 6 are bent downwardly, as illustrated in Fig. 7, with their faces abutting to provide upright abutments or prongs 7, see Fig. 5, when the box is reversed in position. The outer edges 8 of the strip or blank 5 extending between the legs 6 abut along the bottom of the box as shown in Fig. 7 to form a smooth seam on the under side of the link.

The inner telescoping links or connecting-elements 3 of the strap, band or chain are also of hollow box-like form with open ends as illustrated in Fig. 9. The sheet-metal blanks 10 for the inner links 3 are of the form shown in Fig. 8, consisting in a rectangular strip having its ends recessed or cut away at 11 to form opposite projecting tabs or fingers 12. The blank 10 is folded in tubular form to provide the hollow box shown in Fig. 9, the tabs 12 meeting on the under side thereof with their edges abutting to form a smooth seam. The cut out portions 11 at the ends of the blank 10 provide a rectangular slot or opening 13 in the under side of the box or link-member 3, adapted to receive the lugs or abutments 7, see Fig. 7, which project from the bottom of the main links 2; it being understood that Figs. 7 and 9 show the link-members 2 and 3 reversed in position or bottom side up.

As before stated the inner link-members 3 telescope within the ends of the outer members 2 as illustrated in Figs. 2, 3 and 5, and the relative sliding action of the two sets of links to expand the chain or band is limited by the engagement of the prongs 7 on the main links 2 with the ends of the slots or openings 13 in the bottom of the inner links 3. The band or chain is normally held contracted with its main links in close relation, that is with their ends abutting as shown in Fig. 2, by means of one or more resilient elements such as elastic cords or wire springs which extend continuously through all of the links in the series. As illustrated in Figs. 2 and 5, I may employ two opposite parallel helical springs 15 constructed of relatively fine tempered wire. The springs 15 pass through the tubular inner links 3 and are maintained in spaced apart relation by the abutments or prongs 7 on the outer links 2 which project upwardly into the center of the inner links as shown in Figs. 2, 3 and 5.

Any suitable means may be provided for attaching the ends of the resilient elements or springs 15 to the end links of the chain or band. As a convenient and simple arrangement for this purpose the two opposite inner end members or links 16 may be provided with fingers or bars 17 extending across their open ends. Fig. 11 shows an end link 16 as so constructed, the blank from which it is formed being illustrated in Fig. 10. It will be observed from Fig. 10 that the blank 18 for the end link 16 is provided with integral projections or bars 17 which, after the blank has been formed up into the hollow box as shown in Fig. 11, are bent upwardly to extend across its open end, it being understood that the ends of the springs 15 are provided with loops or rings 19 adapted to be hooked around the fingers 17 as shown most clearly in Figs. 2 and 4.

It is further to be understood that the several links of the chain or band are assembled in telescopic relation before the outer or main links 2 are completely formed. That is to say, the expansible elements or springs 15 are threaded through the inner links 3 and the outer links 2 are then applied in place to enclose the inner links by bending them around the latter with the prongs 7 inserted up through the slots or openings 13 in the bottom of the inner links. The inner links may be completely formed in suitable dies and the outer links partly formed by bending up their sides, after which they are placed in position enclosing the inner links and the forming process completed in suitable tools or dies which bend over the bottom portions of the outer links and force their fingers 6 into place to provide the prongs 7 reaching up through the slots or openings 13 on the under side of the inner links 3.

The springs 15 or other resilient expansible elements for the chain or band are made of such length as to adapt them to contract to draw the parts together with the outer enclosing links 3 maintained in juxtaposition with their ends abutting as illustrated in Fig. 1. The end links 16 of the chain, which serve as the anchoring means for the springs or other resilient connecting-elements, will be drawn into close or abutting relation with their next adjoining inner links, as illustrated in Fig. 2, but a slight portion of each of the end links 16 will project beyond the end of the terminal outer links 2 as shown in Fig. 1. These inner end links 16 may be employed for mounting a clasp, catch, swivel or other suitable device for use in clasping the ends of the chain together or for joining the strap, band or bracelet to a watch or ornament. If desired, the two ends of the strap, band or chain may be permanently joined together by a suitable box-link of the same form as the other outer links 2, whereby a continuous band is provided for use as an expansible bracelet, arm-garter or for any other purpose. With such a construction the last outer enclosing link may be applied to place after the ends of the elastic bands or springs 15 are fastened together to hold the article contracted.

It has been explained that the lateral edges of the end portions of the blank 5 from which the main link 2 is constructed are tapered so that the edges of the sides of the link are inclined toward the bottom, see Fig. 7. This provides that when the links are assembled in the strap, band or chain the latter may be flexed to bend it into substantially circular form with the links still fitting closely together without open seams between their ends. In other words, the sides of the link are shaped more or less like the segments of a circle to provide for bending or curving the band or chain as a whole.

It will be seen that my improved structure provides an article of the type specified of extremely neat and finished appearance with the parts held in cooperative relation by expansible connecting-means which are entirely enclosed and concealed from view. Furthermore, the link-elements are so formed and constructed as to eliminate unsightly seams or openings at the joints between their ends and the several articulated links are held together in such way that they cannot be dislocated or pulled apart. A feature of the improvement which is of utmost importance is the provision for extending the resilient expansion-means continuously throughout the whole length of the strap or chain as distinguished from the usual construction of like articles, such as bracelets, wherein each section or link of the device encloses its own spring. Furthermore, in previous constructions where bracelets or like articles have been made with individual springs enclosed within the several links these springs must be compressed to expand the bracelet and thus are subjected to abnormal strain so that they soon lose their resiliency and cease to be efficient for the purpose designed. In the present construction the resilient elements or springs are stretched or expanded throughout the whole length of the chain or band so that the expansion is distributed over a greater extent and thus no undue strain is put upon any part of the expansion-means. Furthermore, it is a well known fact that a long spring may be stretched or expanded and allowed to return to its normal length without weakening or destroying its resiliency to any appreciable extent, whereas the repeated compression of a relatively short spring will ultimately destroy its resiliency and render it dead or inexpansive from loss of temper.

It is further to be observed that my improved construction provides an article of the type specified which may be manufactured very economically from sheet metal parts formed up in dies and assembled in cooperative relation by automatic machinery with a minimum of hand labor. The improvement also provides an article of much more finished and ornamental appearance, with the links of the device susceptible of surface embellishment by engraving, piercing, or embossing as usually practiced in the jewelry art. In fact, the improved construction lends itself to many and varied uses as applied to articles of jewelry and orament and as adapted for other purposes as indicated.

It will thus be observed that my invention provides a particularly simple and neat form of construction for embodiment in an article of manufacture for use in jewelry manufacture and kindred arts. The strap, band or chain may be manufactured in different lengths to adapt it to be marketed as an article of manufacture for use in producing jewelry such as bracelets, arm-bands and necklaces, or for kindred novelties such as garters, belts or the like. It is to be understood that the device as herein shown and described is not limited to any particular use but may be adapted for other purposes than those specified and, further, the form and arrangement of the parts of the device may be varied without departing from the spirit or scope of the invention.

I claim:

1. In a device of the type specified, the combination of a series of outer box-like link-members having prongs projecting inwardly from their sides, a series of inner box-like link-members enclosed within the outer members in telescopic relation therewith and provided with slots in their sides through which the prongs on the outer members pro-

ject, and resilient means connecting said members to adapt the device to expand and contract with a telescopic action.

2. In a device of the type specified, the combination of a series of outer box-like link-members having prongs projecting inwardly at their ends, a series of inner box-like link-members enclosed within the outer members, said inner members having openings in their sides through which the prongs on the outer members project, and resilient expansion means extending through the inner members throughout the whole series and anchored to the terminal links to provide for expansion and contraction of the device as a whole.

3. In an article of the type specified, the combination of a series of outer, hollow box-like link-members, a series of inner box-like link-members arranged in telescopic relation with the outer members, the inner terminal members of the series having end bars, and a pair of springs strung through all of the members of the series and secured to the end bars of the end members.

4. In an article of the type specified, the combination of a series of outer hollow box-like link-members, a series of inner box-like link-members arranged in telescopic relation with the outer members and formed with openings in their sides, prongs at the ends of the outer members projecting through the openings in the inner members and arranged in the medial plane of the members, and helical springs extending through the inner members with the prongs maintaining them in spaced apart relation and with their ends attached to the terminal links of the series to provide for expansion and contraction of the article throughout its length.

In testimony whereof I hereunto affix my signature.

CHARLES H. KESTENMAN.