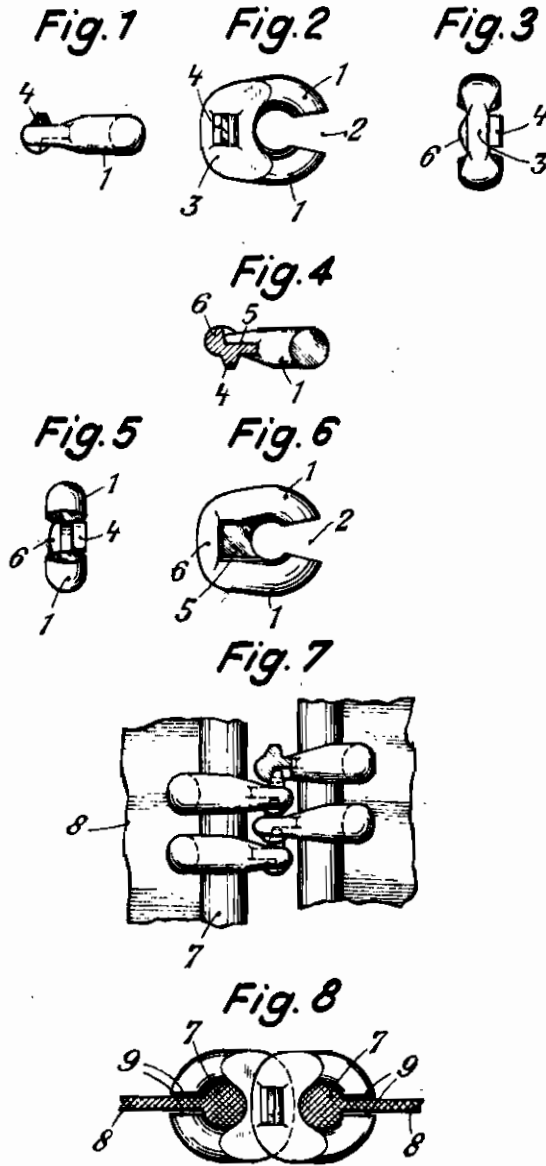


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SLIDING CLASP FASTENERS
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ALIEN PROPERTY CUSTODIAN

SLIDING CLASP FASTENERS

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The known sliding clasp fasteners with fastener elements obtained by stamping possess, amongst others, the inconvenience that, owing to their sharp edges the material on which they are mounted is easily damaged and injuries are caused to the wearers. These known sliding clasp fasteners further look as if they were not finished, because the rough stamping- or cutting faces of the fastener elements are on the outer side. This circumstance also prevents to make such fastener elements from material multicolored on the outer side, such as eloxated, enameled or varnished material as the cutting faces would be without covering.

With regard to these inconveniences of the sliding clasp fasteners composed of stamped fastener elements, it has already been proposed to make the fastener elements from wire. Sliding clasp fasteners made of interengaging wire spirals are not sufficiently yieldable and adaptable. These spirals further do not stand sharp bending, as herefrom results either a breaking or at least distorting of the spiral so that the whole sliding clasp fastener would be useless. The other proposition, according to which fastener elements consisting of wire loops or of bent wire sections with stamped closing means are provided, could not find favor with the public for the reason that the individual elements, notwithstanding very complicated auxiliary means which have been proposed, had not the solid seat on the carrying bands necessary for secure and perfect working of the sliding clasp fastener, but became loose under stresses, turned and were mutually displaced, so that the sliding clasp fastener became useless.

The invention has for its object to obviate the inconveniences of the fastener elements consisting of bent wire sections, in that first of all the conditions relating to fixed seat and mutual engagement of the elements are made more favorable and also the individual stability of the elements is increased. The fixed seat has been improved according to the invention in that the points at which the elements engage the one into the other are placed close to the edge bead and the arms of each fastener element and the bend of the same tightly embrace the edge bead of the carrying band over its whole circumference in clamping the same from all sides, so that the end faces of the two wire arms bear on the carrying band. By approaching the edge bead to the bend piece of the individual fastener element and owing to the tight gripping of the bead from all sides, a secure seat of the fastening element

is ensured and cannot be loosened even when the sliding clasp fastener is submitted to strong bending stresses.

The increase of the individual stability of the fastener element is attained according to the invention in that the bend connecting the two arms of the wire section is at the stamping of the fastening element flattened about the nose of the fastener element in order to obtain a high resistance moment, and strengthened on the opposite side by the formation of an indentation with closing lip.

In order to not impair the flexibility of the fastener chain by the stamped connecting piece, this piece is preferably of ball-shape or rounded on all sides. The fastening means proper in the connecting piece are preferably formed by stamping parallel to the axis of the element, so that the points at which the fastener elements engage the one in the other are situated close to the edge bead, the occurring bending stresses of the fastener elements being thereby reduced to a minimum. In order to make the element proper as resistant as possible against the stresses, the stamping of the fastener elements is preferably utilized to enlarge the connecting piece to above the diameter of the wire arms to thus increase its resistance moment.

A sliding clasp fastener composed of such fastener elements according to the invention is absolutely satisfactory as regards economical production, wearing properties and reliable working. The economy of its production is chiefly due to the fact that only little material is necessary for the fastener elements which can be made without waste. The fastener elements are further of simple shape, so that not only the fastening stamping can be made without difficulty, but the fastener elements can be fixed easily and securely on the carrying band. When employing material treated on the surface the same advantages exist undiminished. Thereby that the end faces of the two wire arms bear on the carrying band or that the wire sections are closed ring-like, it is possible to produce a sliding clasp fastener of perfect appearance and made of colored material treated on the surface, in that the cutting faces of the wire sections which are not provided with the covering are hidden. When shaping the fastener elements according to the invention the surface quality of the material, notwithstanding the stamping proceeding, is uniformly maintained at all points.

As the fastener elements have no longer any sharp edges or burs, as are unavoidable in

stamped elements, but are absolutely smooth on the outer side, damages of the clothes and injuries at the handling of the sliding clasp fastener are excluded. Furthermore, the sliding clasp fastener according to the invention is very flexible and yielding, so that it possesses in every respect the most favorable wearing properties.

The reliable operation of the fastener in any size of the fastener elements is guaranteed by the kind of shaping of the fastener elements and first of all thereby, that the fastener elements are absolutely securely fixed on the carrying band and cannot be brought out of position by bending or sharp bending of the fastener.

The arms of the wire sections rounded up to the carrying band are also excellently suited for a wide, flexible sliding clasp guiding, in spite of broad bearing.

An embodiment of the invention is illustrated by way of example in the accompanying drawing, in which

Fig. 1 shows in side elevation a fastener element according to the invention,

Fig. 2 is a top plan view and

Fig. 3 an end view seen from the front,

Fig. 4 is a longitudinal section through the fastener element turned by 180° relative to Fig. 1,

Fig. 5 is a rear end view, and

Fig. 6 a view from below,

Fig. 7 shows in side elevation, and

Fig. 8 in top plan view a sliding clasp fastener with fastener elements according to the invention.

The fastener element, shown in Fig. 1 to 6 as to be shifted over the edge beads of the carrying bands, consists of a bent wire section, the arms 1 of which are bent together up to a slit 2 the width of which depends on the thickness of the edge bead. The connecting piece 3 of the arms 1 form the carrier for the fastening means of the fastener elements, that is for the projection 4 and the cavity 5, situated on the other side, and having a lip 6, the projection, cavity and lip being produced by vertical stamping from the material of the wire section which is of uniform thickness over its whole length. In this instance the fastener stamping, as can be best seen from Figs. 1 and 4, is carried out so that, the wire cross section being flattened at the same time, the greatest possible accumulation of material exists on the outer edge of the element in the range of the connecting piece 3, in order that

a high resistance moment of the element is obtained.

Figs. 7 and 8 show how the fastener elements are fixed on the edge beads of the carrying bands and engage the one in the other. The edge beads 7 of the carrying bands 8 are ring-like enclosed on their whole circumference by the elements pressed together, in such a manner that the end faces 9 of the bent wire sections are close to the carrying band 8 or directly bear on this carrying band. The edge beads 7 are approximately centrally arranged in the fastener elements, in that the fastening means are placed as closely as possible to the edge bead. By this measure the forces occurring at the points of engagement of the fastener elements are of less effect for the fixation of the elements on the bead.

The fastening can take place in a zigzag line, as shown in Fig. 7, by corresponding arrangement of the fastener elements, that is by corresponding stamping of the projection 4 and of the cavity 5, or it may extend in a straight line.

The sliding clasp fastener according to the invention is distinguished especially by a secure seat of the fastener elements, which seat is absolutely maintained even at strong stresses by the fact that the fastener elements tightly enclose the edge beads on all sides by the wire sections. The sliding clasp fastener according to the invention presents the advantage, that it can be produced also from any material the surface of which has been treated, especially from eloxated, enameled and colored material, without diminishing the quality of the surface, in that the cutting faces of the wire section forming the individual elements face the carrying band. First of all the sliding clasp fastener can be composed of fastener elements of any size and of any thickness, in opposition to the sliding clasp fasteners composed of stamped fastener elements, without influencing the usefulness.

The fastener element and the fastening means are evidently not limited to the forms of construction illustrated in the drawing, but may be of any desired shape. For instance, the fastener elements may be oval or angular. Also as regards the manner of production of the wire sections one may proceed as desired. For instance, it is well possible and advisable under certain circumstances, to produce the fastener elements by die-casting.

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