

PATENT SPECIFICATION

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DRAWINGS ATTACHED

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(54) IMPROVEMENTS RELATING TO FASTENING DEVICES

(71) We, THOMAS WALKER LIMITED, a British Company, of 39 St. Paul's Square, Birmingham B3 1QY, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to a two-part releasable fastening device of a kind which comprises two inter-engageable separate component parts and which is suitable for use with garments or other articles of wearing apparel to connect together, for example, respective free end portions of strap or band portions thereof.

An object of the invention is to provide a simple fastening device of improved construction.

More particularly, the invention provides a fastening device of the kind referred to, wherein the two separate component parts are adapted to be coupled by slotting together to produce an interlocking fastening engagement, each said component part comprising a sheet metal plate member having a substantially planar body portion, slot means for securing to said body portion a respective free end portion of the strap or band portions to be connected, a coupling portion adjacent said body portion, a cranked portion providing a shallow step integrally interconnecting said body portion and coupling portion and extending in a direction transversely across the plate member, an open coupling slot extending transversely inwards from an edge of said plate member opposite and adjacent to said cranked portion as far as a median longitudinal axis of said plate member, said coupling portion of each component part including a transversely extending tongue which bounds one side of said coupling slot, said coupling portion of each component part further comprising a latching tab formed

by a rearwardly directed projection at the free extremity of said transversely extending tongue, said tab being adapted to latchably engage a recessed edge portion of the plate member of the other component part when said two component parts are fully coupled together to establish an additional interlocking engagement wherein said coupling portion of each component part is substantially planar and lies in a plane offset from the general plane of said body portion and further has embossed strengthening rib means extending into said tongue in the direction of the length of said tongue.

Preferably said body portion of each plate member has first and second edge portions bounding the second side of the coupling slot adjacent inner and outer ends respectively of said slot, said first edge portion being parallel to the tongue and to the longitudinal axis of said coupling slot and said second edge portion being at an oblique angle to the tongue and to said axis of said coupling slot thereby to provide a tapering entrance to said coupling slot and provide a guide surface to facilitate coupling engagement of the two component parts.

Also, the plate member of each component part advantageously has a shallow curvilinear or angular form in longitudinal cross-section whereby said two component parts when coupled together follow a shallow substantially arcuate contour so as to conform to curvature of the body of a wearer of an article of wearing apparel upon which the fastening device is used.

For attaching to a strap or band of a garment, the slot means may comprise an aperture or closed slot in the body portion through which a portion of the strap or band can be threaded and looped back on itself in order to be secured by stitching in a conventional manner, said aperture or closed slot being preferably produced as hereinafter described in relation to a particu-

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lar preferred embodiment.

By way of example, the invention will now be more particularly described by reference to the accompanying drawing which illustrates a fastening device, composed of two identical component parts, having a structure in accordance with one preferred form of the invention.

In said drawings,

10 Figure 1 shows a front view of one of the said component parts;

Figure 2 is a rear view of said component part;

15 Figure 3 is an end elevation of the outer or leading end;

Figure 4 is an end elevation of the opposite inner or trailing end;

Figure 5 is a top plan view;

20 Figure 6 is a section on line VI-VI of Figure 2;

Figure 7 is a front view showing the two parts of the fastening device connected together as when in use; and

25 Figure 8 is a longitudinal section on line VIII-VIII of Figure 7, with the two parts shown additionally as being attached to strap or band portions of an article of wearing apparel.

Referring to the drawing, each component 30 part of the device consists of a sheet-metal plate member 10 of approximately rectangular form which includes a generally planar rectangular body portion 11 with bevelled corners and, offset from the general plane of this body portion, and adjacent, generally 35 planar, coupling portion 12.

As indicated, the coupling portion 12 is integrally connected to the body portion 11 by a cranked portion 14 providing a 40 shallow step extending in a direction transversely across the plate member 10, and opposite and adjacent to said cranked portion 14 is an open coupling slot 15 which extends transversely inwards from the upper 45 edge of the plate member 10, in the position shown in Figure 1, as far as the median longitudinal axis x-x of the plate member 10. The closed inner end of the slot 15 is radiused as shown. The cranked portion 14 and the 50 slot 15 are both offset towards one end of the plate member 10 so that the coupling portion 12 provides a transversely-extending tongue 13 which is narrow in relation to the width of the body portion 11.

55 As shown in the drawing, the free end of the tongue 13, which represents a free edge of the coupling portion 12 lying adjacent the open end of the coupling slot 15, has a rounded or radiused contour and is bent rearwardly through substantially 90° to provide a latching projection or tab 16 adapted to hook or latch over an inset edge portion 21 of the body portion of the other component 60 part when said two identical component parts are fully coupled together as hereinafter de-

scribed. As is also shown, the coupling portion 12 of each part is provided with an embossed strengthening rib 22 which extends into the tongue 13, and the inset edge portion 21 defines a slightly rounded shoulder at one end in the edge profile of the body portion.

It will also be seen that one side of the slot 15 is defined by first and second edge portions of the body portion 11 adjacent 75 inner and outer ends respectively of said slot, said first edge portion being parallel to the tongue 13 and to the longitudinal axis of this coupling slot and said second edge portion being at an oblique angle thereby to 80 provide a tapering entrance to said slot.

For securing or anchoring the plate member 10 to a respective free end portion of a pair of strap or band portions to be connected, the body portion 11 is formed with 85 a substantially rectangular closed slot or aperture 17 through which a part of the respective garment strap or band portion 30 (see Figure 8) can be passed and looped back on itself for securing, such as by stitching, in 90 a conventional manner. The slot or aperture 17 is conveniently formed by stamping or chopping out to sever along three sides a portion of the sheet-metal blank from which the component is formed so as to produce a 95 broad tongue, indicated at 18, which is folded over against the front face of the body portion 11 so as to provide a smooth rounded surface 19 along the edge of the slot against which the material of the strap 100 or band portion 30 bears during use, thereby reducing risk of fraying or similar damage to the material.

In use, the two identical parts of the fastening device, anchored to their respective 105 parts 30, 30, of the material which are to be connected, are coupled together to produce an interlocking fastening engagement by bringing their coupling slots 15 opposite to one another and the parts are then moved together and meshed so that the slot 15 of each 110 embraces or accommodates the cranked portion 14 of the other part. The parts are thereby interlocked together, as illustrated in Figures 7 and 8, with their body portions 115 10 lying in alignment in substantially the same plane due to the stepped or cranked formation of portions 14 so that a desirable shallow substantially flush fitting is provided. The security of the coupling is considerably 120 improved by the provision of the latching projections or tabs 16, and also, it will normally be enhanced during use by tension in the connected parts 30, 30, of the material. But, when required, the fastening is readily 125 released merely by displacing the parts slightly angularly and then laterally so as to move them out of mesh.

Although the plate members 10, 10, of the two component parts are generally of planar 130

form, it will be noted that each has, in longitudinal section, a shallow curvilinear or angular form. As a result, when coupled together these two parts follow a shallow substantially arcuate contour as clearly indicated in Figure 8, thereby to conform more closely to curvature of the body of a wearer of an article of wearing apparel upon which the fastening device is used.

Engagement of the two component parts is facilitated by the tapering entrance to the slots 15 which provide guide surfaces to facilitate slotting together, and also the rounded or radiused contours of the latching projections or tabs 16 and of the shoulder at the end of each inset edge portion 21 assist in guiding the parts into their proper relative positions to establish full interlocking engagement. The radiused contour of the closed inner end of each slot 15 further promotes proper relative positioning of the parts to establish the most effective locking interengagement when the fastening device is in use, and is superior in this respect to an equivalent square-cut inner end contour to said slot.

Although the particular structure of fastener hereinabove specifically described represents an especially satisfactory preferred embodiment of the invention, it will of course be understood that numerous modifications and alterations in the precise structural form can be made, if desired, within the scope of the invention as defined in the appended Claims.

WHAT WE CLAIM IS:—

1. A fastening device of the kind referred to, wherein the two separate component parts are adapted to be coupled by slotting together to produce an interlocking fastening engagement, each said component part comprising a sheet metal plate member having a substantially planar body portion, slot means for securing to said body portion a respective free end portion of the strap or band portions to be connected, a coupling portion adjacent said body portion, a cranked portion providing a shallow step integrally interconnecting said body portion and coupling portion and extending in a direction transversely across the plate member, an open coupling slot extending transversely inwards from an edge of said plate member opposite and adjacent to said cranked portion as far as a median longitudinal axis of said plate member, said coupling portion of each component part including a transversely extending tongue which bounds one side of said coupling slot, said coupling portion of each component part further comprising a latching tab formed by a rearwardly directed projection at the free extremity of said transversely extending tongue, said tab being adapted to latchably

engage a recessed edge portion of the plate member of the other component part when said two component parts are fully coupled together to establish an additional interlocking engagement wherein said coupling portion of each component part is substantially planar and lies in a plane offset from the general plane of said body portion and further has embossed strengthening rib means extending into said tongue in the direction of the length of said tongue.

2. A fastening device as claimed in Claim 1 wherein said body portion of each plate member has first and second edge portions bounding the second side of the coupling slot adjacent inner and outer ends respectively of said slot, said first edge portion being parallel to the tongue and to the longitudinal axis of said coupling slot and said second edge portion being at an oblique angle to the tongue and to said axis of said coupling slot thereby to provide a tapering entrance to said coupling slot and provide a guide surface to facilitate coupling engagement of the two component parts.

3. A fastening device as claimed in any of the preceding Claims, wherein the plate member of each said component part has a shallow curvilinear or angular form in longitudinal cross-section whereby said two component parts when coupled together follow a shallow substantially arcuate contour so as to conform to curvature of the body of a wearer of an article of wearing apparel upon which the fastening device is used.

4. A fastening device as claimed in any of the preceding Claims, wherein the slot means of each plate member comprises an aperture or closed slot in the body portion through which the respective free end portion of the pair of strap or band portions to be connected can be threaded and looped back on itself for securing or anchoring to the respective said component part, said aperture or closed slot being produced by partially severing a portion of a sheet metal blank from which the plate member of the component part is formed so as to produce a broad tongue which is folded over against the face of the body portion adjacent said aperture or closed slot whereby to provide a smooth rounded surface along an edge of the latter against which edge the material of said strap or band portion bears during use.

5. A fastening device as claimed in any of the preceding Claims wherein the latching tab has a rounded or radiused contour which assists in guiding the two component parts into their proper relative positions to establish full interlocking engagement.

6. A fastening device as claimed in any of the preceding Claims wherein the closed inner end of each coupling slot has a radiused contour which facilitates proper rela-

form, it will be noted that each has, in longitudinal section, a shallow curvilinear or angular form. As a result, when coupled together these two parts follow a shallow substantially arcuate contour as clearly indicated in Figure 8, thereby to conform more closely to curvature of the body of a wearer of an article of wearing apparel upon which the fastening device is used.

- 10 Engagement of the two component parts is facilitated by the tapering entrance to the slots 15 which provide guide surfaces to facilitate slotting together, and also the rounded or radiused contours of the latching projections or tabs 16 and of the shoulder at the end of each inset edge portion 21 assist in guiding the parts into their proper relative positions to establish full interlocking engagement. The radiused contour of the closed inner end of each slot 15 further promotes proper relative positioning of the parts to establish the most effective locking interengagement when the fastening device is in use, and is superior in this respect to an equivalent square-cut inner end contour to said slot.

Although the particular structure of fastener hereinabove specifically described represents an especially satisfactory preferred embodiment of the invention, it will of course be understood that numerous modifications and alterations in the precise structural form can be made, if desired, within the scope of the invention as defined in the appended Claims.

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1. A fastening device of the kind referred to, wherein the two separate component parts are adapted to be coupled by slotting together to produce an interlocking fastening engagement, each said component part comprising a sheet metal plate member having a substantially planar body portion, slot means for securing to said body portion a respective free end portion of the strap or band portions to be connected, a coupling portion adjacent said body portion, a cranked portion providing a shallow step integrally interconnecting said body portion and coupling portion and extending in a direction transversely across the plate member, an open coupling slot extending transversely inwards from an edge of said plate member opposite and adjacent to said cranked portion as far as a median longitudinal axis of said plate member, said coupling portion of each component part including a transversely extending tongue which bounds one side of said coupling slot, said coupling portion of each component part further comprising a latching tab formed by a rearwardly directed projection at the free extremity of said transversely extending tongue, said tab being adapted to latchably

engage a recessed edge portion of the plate member of the other component part when said two component parts are fully coupled together to establish an additional interlocking engagement wherein said coupling portion of each component part is substantially planar and lies in a plane offset from the general plane of said body portion and further has embossed strengthening rib means extending into said tongue in the direction of the length of said tongue.

2. A fastening device as claimed in Claim 1 wherein said body portion of each plate member has first and second edge portions bounding the second side of the coupling slot adjacent inner and outer ends respectively of said slot, said first edge portion being parallel to the tongue and to the longitudinal axis of said coupling slot and said second edge portion being at an oblique angle to the tongue and to said axis of said coupling slot thereby to provide a tapering entrance to said coupling slot and provide a guide surface to facilitate coupling engagement of the two component parts.

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5. A fastening device as claimed in any of the preceding Claims wherein the latching tab has a rounded or radiussed contour which assists in guiding the two component parts into their proper relative positions to establish full interlocking engagement.

6. A fastening device as claimed in any of the preceding Claims wherein the closed inner end of each coupling slot has a radiussed contour which facilitates proper rela-



tive positioning of the two component parts to establish the most effective interlocking engagement when the fastening device is in use.

- 5 7. A fastening device substantially as herein described and as illustrated in the accompanying drawings.

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