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PATENT SPECIFICATION

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DRAWINGS ATTACHED



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(54) BACKING MEMBER FOR GARMENT FASTENING DEVICES

(71) We, THOMAS WALKER LIMITED, a British Company, of 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:—

This invention relates to garment fastening devices of the kind comprising a pronged fastener component having integral attachment prongs which are passed through a portion of the garment fabric material and clenched upon a backing member to clamp the latter to the back of said portion of material thereby firmly to secure and anchor said fastener component in place.

The above-described form of attachment is commonly utilised for sheet metal hook and eye fastener components of hook-and-eye fastening devices employed in the clothing trade, and backing members are commonly used which are in the form of a sheet-metal back-plate provided with prong-receiving apertures through which the attachment prongs are passed before being clenched over against a face of the back-plate. Usually, however, although the back-plate may be recessed so that the attachment prongs are shielded or lie flush within the contour of the back-plate after clenching, the clenched prongs remain exposed to view, and the back-plate needs to be covered and concealed by another layer or layers of fabric material in order for such attachment means to be commercially acceptable. In some cases, the make-up of a garment is such that the need to cover and conceal backing members of prong-attached

fastener components presents no disadvantage, but in other cases it is most desirable or necessary to secure prong-attached fastener components by means of backing members applied to an exterior or exposed surface of a portion of the garment without additional covering.

To meet the latter requirement, hollow box-like forms and simulated button or cap forms of backing members have been proposed, but these have generally been rather bulky and not as completely satisfactory as may be desired.

An object of the present invention is accordingly to provide a backing member of a garment fastening device of the kind referred to having an improved structure which can enable said backing member to be produced in a form eminently suitable for exposed use, without additional covering, on exterior surface portions of garments and which may also present other advantages.

According to the invention, a backing member for a pronged fastener component of a garment fastening device of the kind referred to comprises a sheet-metal plate body portion having opposite first and second faces and having, indented in said body portion, a recessed formation or configuration which provides said first face with an embossed or protuberant profile and which provides, re-entrant with respect to said second face of the body portion, a recess or recesses, said backing member further including, in folded-over relationship with said body portion, an integral tongue portion which confronts said second face of the body portion in substantially abutting engagement and which overlies said recess or recesses, and defines, in co-

operation with said recess or recesses, a pocket or spaced-apart pockets of channel form disposed within a localised area spaced inwards from the peripheral edges of said body portion and adapted to accommodate, longitudinally therein, the bent-over portions of the prongs of the pronged fastener component after clenching so that said bent-over portions are enclosed and confined laterally, openings being provided in said tongue portion for entry into said pocket or pockets of said prongs, said recess or recesses presenting adjacent said openings, curved or inclined guide surfaces adapted to engage and deflect the fastener component prongs when the latter are driven through said openings into said pocket or pockets during the operation of attaching the fastener component by means of a clenching press thereby automatically to clench said prongs and cause the bent-over portions to lie substantially flat, within said pocket or pockets, against said tongue portion so as to clamp the backing member to the garment fabric material.

Preferably, the recessed formation or configuration extends over an area which constitutes a minor proportion, that is, less than 50%, of the total area of the body portion and is produced by localised indentations forming a plurality of said recesses which, in co-operation with the tongue portion, define discrete spaced-apart said pockets which are each adapted to accommodate and closely confine one attachment prong.

Also, the openings for entry of the attachment prongs are preferably provided by apertures substantially elliptical in shape in the folded-over tongue portion which covers the recessed area, and the tongue portion itself comprises two separate tongue elements.

By way of example, one preferred form of backing member, designed for use with a pronged staple or eye member of a garment hook-and-eye fastening device and constructed in accordance with the invention, is illustrated in the accompanying drawing wherein:

Figure 1 is a front elevation;

Figure 2 is a rear elevation;

Figure 3 is an end view;

Figure 4 is a side elevation;

Figure 5 is a fragmentary view showing a portion of the sheet-metal blank from which the backing member is produced;

Figure 6 is a perspective view of the prolonged staple or eye member; and

Figure 7 is a longitudinal section which illustrates the manner in which the backing member co-operates with the prongs of the staple or eye member during the operation of attaching the latter to a portion of garment fabric material.

Referring to the drawing, the backing member shown therein, denoted generally by the reference numeral 10, comprises an elongate substantially rectangular sheet-metal body

portion 11 having opposite front and rear faces 12 and 13 respectively, and an integral tongue portion, comprising two separate tongue elements 15, 15, disposed in foldedover relationship with said body portion 11, confronts and lies substantially in contact or abutting engagement with the rear face 13.

The tongue elements 15, 15, are each integrally connected to the body portion 11 by an abrupt U-bend 16 formed by a narrowed waist portion *w* of a sheet-metal strip *b* which constitutes the blank from which the backing member 10 is produced, said waist portion *w* being defined by and extending between substantially V-shaped notches 18, 18, in opposite marginal side edges as shown in Figure 5. This feature reduces the tendency of the sheet-metal to buckle or crumple during folding and formation of each U-bend 16.

As shown, the body portion 11, which is slightly curved in transverse section to give greater rigidity, is provided with a pair of spaced-apart localised indented recesses 19, 19, which are re-entrant with respect to the rear face 13 and which give an embossed or tubulant profile to the opposite front face 12. These recesses 19, 19, are each of shallow, elongate form tapering in width and having a depth which, although it increases towards one end, conforms substantially to the thickness of the sheet metal (see Figure 7).

As will be clear from the drawing, the indented recessed formation or configuration provided by the recesses 19, 19, extends over an area which constitutes a minor proportion of the total area of the body portion 11, and each recess 19 also tapers in width to conform to a tapering profile of the attachment prongs of the pronged component.

The tongue elements 15, 15, which extend longitudinally towards one another from opposite ends of said body portion 11, lie over and partially cover the indented recesses 19, 19, to define pockets of elongate channel form, apertures 20, 20, being formed in said tongue elements to define openings for entry, into said pockets, of the attachment prongs of the eye member fastener component as hereinafter described.

The apertures 20, 20, have a substantially elliptical profile and they are in alignment or register with adjacent curved or inclined surfaces 22 within said recesses.

Figure 6 shows a typical pronged staple or eye member 24, with which the backing member 10 is intended to be used. As shown, it has a pair of spaced-apart attachment prongs 25, 25, connected by a bridge or bar portion 26, and is formed from sheet-metal of thickness similar to that of the backing member.

In use, in attaching the staple or eye member 24 to a portion of garment fabric material 28 as indicated in Figure 7, the backing member 10 is supported in a suitable recessed lower die 30 of a clenching press over which is then

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placed the garment fabric material. Meanwhile, the staple or eye member 24 is mounted in a conventional upper die or workholder tool 31 of the clenching press which tool has a pivoted foot portion 32 adapted to fit closely under the bar or bridge portion 26 between the prongs 25, 25. The clenching press is then operated to bring said lower and upper dies together and the prongs 25, 25, are forcibly driven through the material, through the apertures 20, 20, and are caused to engage said curved or inclined surfaces 22, 22, so that they are thereby automatically bent over and clenched to lie in close confinement within the respective pockets formed by the partially covered recesses 19, 19, and lie in engagement with the tongue elements 15, 15. Thereby the backing member 10 is firmly clamped to the fabric material 28. During this operation, the tongue elements 15, 15, are prevented from lifting by the foot portion 32 of the workholder tool 31 holding the staple member 24 as indicated in Figure 7.

The substantially elliptical form of the apertures 20, 20, assists in locating precisely the exact position of entry of the prongs 25, 25, into the recesses 19, 19, and due to the size and shape of the pockets formed by said recesses relative to the prongs, said prongs are constrained to lie substantially flat, after clenching, as shown also in Figure 7, thereby providing a more efficient clamping than is frequently obtained with conventional plain apertured back-plate kinds of backing members since, with the latter, the prongs of the pronged fastener component often tend to retain a distorted curvature which reduces the area in contact with the backing member. Also, with the present backing member 10, apart from the fact that the prongs are completely concealed from view and are fully shielded in respect of possible damaging contact with the garment material after clenching, there is no possibility of them lifting and loosening the security of the attachment of the fastener component during use.

The backing member 10 as above-described can be readily manufactured from a one-piece sheet-metal strip blank, and as a result of the localised embossed formation of the indented recesses 19, 19, and of the reduction to a minimum of the volume of hollow spaces enclosed within the structure, it is extremely strong and resistant to crushing or other distortion if, for example, it is subjected to the action of a garment press.

Also, it will be appreciated that it is neat and compact in appearance, and since it completely conceals the clenched prongs, it is eminently suitable and acceptable for use in exposed position on garments without additional covering.

If desired, however, numerous modifications may be made, within the scope of the inven-

tion as defined in the appended Claims, in precise structural details hereinabove described. For example, in alternative embodiments, the tongue elements 15, 15, constituting the tongue portion could be replaced by a single tongue, extending from one end or side of the body portion, having a plurality of apertures which register respectively with the prong-receiving recesses, or the two separate recesses 19, 19, could be merged into one another to provide a single recess of greater size sufficient to accommodate both prongs. Also, it will be appreciated that the backing member can readily be designed for use with pronged fastener components other than a staple or eye member, such as for example a hook member of a garment hook-and-eye fastening device having a plurality of attachment prongs appropriately orientated.

WHAT WE CLAIM IS:—

1. A backing member for a pronged fastener component of a garment fastening device of the kind referred to, said backing member comprising a sheet-metal plate body portion having opposite first and second faces and having, indented in said body portion, a recessed formation or configuration which provides said first face with an embossed or protuberant profile and which provides, re-entrant with respect to said second face of the body portion, a recess or recesses, said backing member further including, in folded-over relationship with said body portion, an integral tongue portion which confronts said second face of the body portion in substantially abutting engagement and which overlies said recess or recesses and defines in co-operation with said recess or recesses, a pocket or spaced-apart pockets of channel form disposed within a localised area spaced inwards from the peripheral edges of said body portion and adapted to accommodate, longitudinally therein, the bent-over portions of the prongs of the pronged fastener component after clenching so that said bent-over portions are enclosed and confined laterally, openings being provided in said tongue portion for entry into said pocket or pockets of said prongs, said recess or recesses presenting, adjacent said openings, curved or inclined guide surfaces adapted to engage and deflect the fastener component prongs when the latter are driven through said openings into said pocket or pockets during the operation of attaching the fastener component by means of a clenching press thereby automatically to clench said prongs and cause the bent-over portions to lie substantially flat, within said pocket or pockets, against said tongue portion so as to clamp the backing member to the garment fabric material.

2. A backing member according to Claim 1, wherein the recessed formation or configuration consists of localised indentations forming



placed the garment fabric material. Meanwhile, the staple or eye member 24 is mounted in a conventional upper die or workholder tool 31 of the clenching press which tool has a pivoted foot portion 32 adapted to fit closely under the bar or bridge portion 26 between the prongs 25, 25. The clenching press is then operated to bring said lower and upper dies together and the prongs 25, 25 are forcibly driven through the material, through the apertures 20, 20, and are caused to engage said curved or inclined surfaces 22, 22, so that they are thereby automatically bent over and clenched to lie in close confinement within the respective pockets formed by the partially covered recesses 19, 19, and lie in engagement with the tongue elements 15, 15. Thereby the backing member 10 is firmly clamped to the fabric material 28. During this operation, the tongue elements 15, 15, are prevented from lifting by the foot portion 32 of the workholder tool 31 holding the staple member 24 as indicated in Figure 7.

The substantially elliptical form of the apertures 20, 20, assists in locating precisely the exact position of entry of the prongs 25, 25, into the recesses 19, 19, and due to the size and shape of the pockets formed by said recesses relative to the prongs, said prongs are constrained to lie substantially flat, after clenching, as shown also in Figure 7, thereby providing a more efficient clamping than is frequently obtained with conventional plain apertured back-plate kinds of backing members since, with the latter, the prongs of the pronged fastener component often tend to retain a distorted curvature which reduces the area in contact with the backing member. Also, with the present backing member 10, apart from the fact that the prongs are completely concealed from view and are fully shielded in respect of possible damaging contact with the garment material after clenching, there is no possibility of them lifting and loosening the security of the attachment of the fastener component during use.

The backing member 10 as above-described can be readily manufactured from a one-piece sheet-metal strip blank, and as a result of the localised embossed formation of the indented recesses 19, 19, and of the reduction to a minimum of the volume of hollow spaces enclosed within the structure, it is extremely strong and resistant to crushing or other distortion if, for example, it is subjected to the action of a garment press.

Also, it will be appreciated that it is neat and compact in appearance, and since it completely conceals the clenched prongs, it is eminently suitable and acceptable for use in exposed position on garments without additional covering.

If desired, however, numerous modifications may be made, within the scope of the inven-

tion as defined in the appended Claims, in precise structural details hereinabove described. For example, in alternative embodiments, the tongue elements 15, 15, constituting the tongue portion could be replaced by a single tongue, extending from one end or side of the body portion, having a plurality of apertures which register respectively with the prong-receiving recesses, or the two separate recesses 19, 19, could be merged into one another to provide a single recess of greater size sufficient to accommodate both prongs. Also, it will be appreciated that the backing member can readily be designed for use with pronged fastener components other than a staple or eye member, such as for example a hook member of a garment hook-and-eye fastening device having a plurality of attachment prongs appropriately orientated.

WHAT WE CLAIM IS:—

1. A backing member for a pronged fastener component of a garment fastening device of the kind referred to, said backing member comprising a sheet-metal plate body portion having opposite first and second faces and having, indented in said body portion, a recessed formation or configuration which provides said first face with an embossed or protuberant profile and which provides, reentrant with respect to said second face of the body portion, a recess or recesses, said backing member further including, in folded-over relationship with said body portion, an integral tongue portion which confronts said second face of the body portion in substantially abutting engagement and which overlies said recess or recesses and defines in co-operation with said recess or recesses, a pocket or spaced-apart pockets of channel form disposed within a localised area spaced inwards from the peripheral edges of said body portion and adapted to accommodate, longitudinally therein, the bent-over portions of the prongs of the pronged fastener component after clenching so that said bent-over portions are enclosed and confined laterally, openings being provided in said tongue portion for entry into said pocket or pockets of said prongs, said recess or recesses presenting, adjacent said openings, curved or inclined guide surfaces adapted to engage and deflect the fastener component prongs when the latter are driven through said openings into said pocket or pockets during the operation of attaching the fastener component by means of a clenching press thereby automatically to clench said prongs and cause the bent-over portions to lie substantially flat, within said pocket or pockets, against said tongue portion so as to clamp the backing member to the garment fabric material.

2. A backing member according to Claim 1, wherein the recessed formation or configuration consists of localised indentations forming



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5 a plurality of said recesses which, in co-
operation with said tongue portion, define dis-
crete spaced-apart said pockets which are each
adapted to accommodate and closely confine
a single said attachment prong of the pronged
fastener.

10 3. A backing member according to Claim 2,
wherein the recesses taper in width so as to
conform to a tapering profile of the attach-
ment prongs of the pronged component.

15 4. A backing member according to any of
the preceding claims, wherein the recessed
formation of configuration extends over an
area which constitutes a minor proportion of
the total area of the body portion.

20 5. A backing member according to any of
the preceding Claims, wherein the depth of
the recess or recesses conforms substantially
to the thickness of the sheet metal.

25 6. A backing member according to any of
the preceding Claims, wherein the openings
for entry of the attachment prongs are pro-
vided by apertures having a substantially
elliptical profile.

30 7. A backing member according to any of
the preceding Claims, wherein the tongue por-
tion comprises two separate tongue elements.

35 8. A backing member according to Claim 7,
wherein the tongue elements are each in-
tegrally connected to the body portion by an
abrupt U-bend formed by a narrowed waist
portion defined by and extending between
substantially V-shaped notches in opposite
marginal side edges.

40 9. A backing member according to Claim
7 or 8 which is designed for use with a said
pronged fastener component having two
spaced-apart attachment prongs only, the body
portion of said backing member being of
elongate substantially rectangular form with
said two tongue elements extending longitu-

dinally towards one another from opposite
ends of said body portion.

45 10. A backing member according to Claim
9, wherein the said two tongue elements par-
tially cover separate said recesses which are
also of elongate form and which extend sub-
stantially in alignment longitudinally along the
body portion.

50 11. A backing member according to Claim
9 or 10, wherein the body portion has, in
transverse cross-section, a shallow curvature
convex in relation to said first face of said
body portion.

55 12. A backing member for a pronged
fastener component of a garment fastening
device of the kind referred to, said backing
member having a structure substantially as
shown in the accompanying drawing and as
herein described with reference to said draw-
ing.

60 13. A pronged fastener component of a
garment fastening device of the kind referred
to, in combination with a backing member
according to any of the preceding Claims.

65 14. A pronged eye member of a garment
hook-and-eye fastening device of the kind
referred to, in combination with a backing
member according to any of Claims 1 to
12.

70 15. A garment fastening device of the kind
referred to, having a pronged fastener com-
ponent secured and anchored to a portion of
garment fabric material by means of a backing
member as claimed in any of Claims 1 to 12.

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