

TAMPER-RESISTANT PLASTIC FASTENERS

The present invention relates generally to plastic fasteners of the type having an elongated filament and a cross-bar attached to at least one end of the elongated filament. Plastic fasteners of this construction have various forms and can be used for various purposes but they are particularly used for attaching tags to pieces of fabric. The invention is particularly concerned with providing plastic fasteners of this type which, once attached to a piece of fabric, are difficult to remove therefrom intact.

Plastic fasteners of the type used to attach tags to pieces of fabric, such as articles of clothing, product labels, and the like, are well known in the art and widely used in the retail industry. Typically, such fasteners comprise an elongated plastic member having a first end shaped to define a cross-bar (also commonly referred to as a "T-bar"), a second end shaped to define a paddle, and a thin filament portion interconnecting the cross-bar and the paddle. The cross-bar is adapted to be inserted first through a tag and then into a desired piece of fabric; the paddle is appropriately sized and shaped to keep the tag from being pulled off the filament portion. Typically, such fasteners are mass-produced by a moulding process in either one of two different forms known as fastener stock. One type of fastener stock, which is shown in U.S. Pat. No. 3,103,666, comprises a plurality of fasteners joined together at their respective cross-bars by an orthogonally disposed runner bar. The other type of fastener stock, which is shown in U.S. Pat. No. 4,955,475, comprises a plurality of fasteners arranged in an end-to-end alignment, the heads and opposite ends of successive fasteners being joined together by severable connectors so as to form a

continuously connected fastener stock.

Typically, the cross-bar portion of a single fastener is separated from a quantity of fastener stock and then inserted through a tag and into a piece of fabric with a hand-held apparatus commonly referred to as a tagging gun. (Connections, if any, between the paddles of a pair of adjacent fasteners are severed by pulling the tagging gun away from the piece of fabric after the cross-bar of one of the fasteners has been inserted thereinto.) Examples of tagging guns are illustrated in U.S. Pat. Nos. 5,024,365, 4,121,487, and 4,456,161.

While plastic fasteners of the type described above function well in their intended purpose, it is nonetheless known that certain unscrupulous consumers have, on occasion, engaged in "ticket-switching" wherein the tag from a low-priced item is switched with the tag from a high-priced item. As can readily be appreciated, "ticket-switching" requires that either the fastener holding the low-priced tag or the fastener holding the high-priced tag be removed intact from its respective item so that it can later be manually re-attached to the high-priced item with the low-priced tag. Typically, such removal of the plastic fastener is accomplished first by positioning the cross-bar so that it is parallel to the filament (i.e., by pulling on the cross-bar to create some slack in the filament and then bending the end of filament adjacent to the cross-bar so that the cross-bar is aligned with the remainder of the filament) and then by pushing the cross-bar and the filament back through the same opening in the piece of fabric through which they were originally inserted.

According to one aspect of the present invention, a plastic fastener comprises an elongated unitary plastic member having a filament and a cross-bar attached to one

end of the filament, the cross-bar being insertable through a sheet of material, and the filament having an enlarged portion sized and shaped to limit the extent of insertion of the filament into a sheet of material, the enlarged portion being spaced from the cross-bar a distance of less than or equal to one half the length of the cross-bar.

According to a second aspect of the invention, a plastic fastener for use in attaching a tag to a piece of fabric comprises an elongated unitary plastic member having a first end, a second end, and a filament interconnecting said first end and said second end, said first end being shaped to define a cross-bar insertable through a tag and into a piece of fabric, said second end being shaped so as to prevent removal of a tag thereacross, said filament having an enlarged portion sized and shaped to limit the extent of insertion of said filament into a piece of fabric, said enlarged portion being spaced from said cross-bar a distance of less than or equal to one half the length of the cross-bar.

According to a third aspect of the invention, a plastic fastener for use in attaching a tag to a piece of fabric comprises an elongated unitary plastic member having a first end, a second end, and a filament interconnecting said first end and said second end, said first end being shaped to define a cross-bar insertable through a tag and into a piece of fabric, said second end being shaped to define a paddle sized and shaped to prevent removal of a tag from said second end, said filament having an enlarged portion sized and shaped to limit the extent of insertion of said filament into a piece of fabric, said enlarged portion being spaced from said cross-bar a distance of less than or equal to one half the length of the cross-bar.

It is an object of the present invention to provide a plastic fastener of the type described above which is more difficult to remove intact from a piece of fabric to which it is attached than are existing plastic fasteners and it will be appreciated that the invention achieves this object by the provision of the enlarged portion spaced from the cross-bar by such a distance that when the cross-bar is inserted into a sheet of material it cannot easily be aligned with the filament in such a way as to permit the cross-bar and the filament to be removed from the sheet of material.

It will be realised that plastic fasteners embodying the invention can be mass-produced according to conventional techniques to form fastener stock of either the continuously connected variety or the runner bar variety and which preferably can be dispensed using conventional tagging guns.

In a preferred embodiment of the invention, the enlarged portion of the filament is disc-shaped, and the second end of the elongated unitary plastic member is paddle-shaped. Additionally, the cross-bar, the disc-shaped enlarged portion of the filament, and the paddle-shaped second end of the plastic member all preferably face in the same direction.

The invention may be carried into practice in various ways but one plastic fastener constructed in accordance with the present invention will now be described by way of example and a prior art plastic fastener will also be described for comparison. The descriptions will be made with reference to the accompanying drawings, in which:

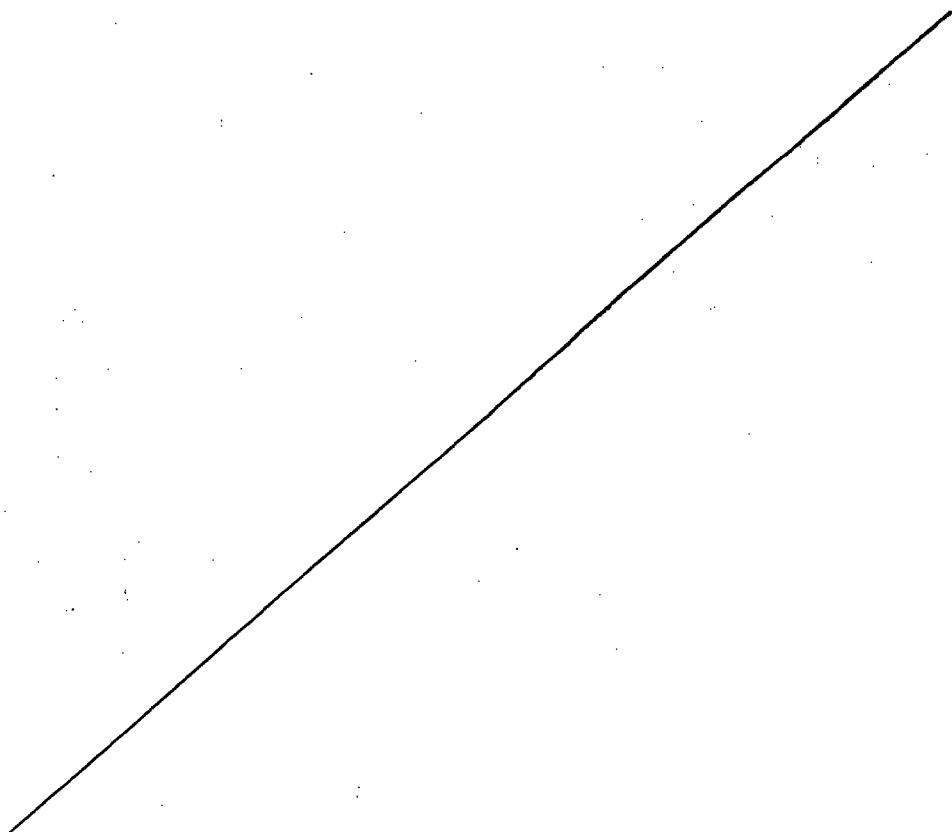
Fig. 1 is a front view of the prior art plastic fastener for use in attaching a tag to a piece of fabric;

Fig. 2 is a front view of the plastic fastener

constructed according to the present invention for use in attaching a tag to a piece of fabric;

Fig. 3 is a right end view of the plastic fastener shown in Fig. 2; and

5 Fig. 4 is a section view illustrating how the enlarged portion of the filament of the plastic fastener of Fig. 2 makes it significantly more difficult for someone to align the cross-bar with the filament in such a way as to permit the cross-bar and the filament to be
10 pushed back through the same opening in the piece of fabric through which they were originally inserted.



Referring now to Fig. 1, there is shown a prior art plastic fastener 11 which is of the type used to attach a tag to a piece of fabric. Fastener 11 is an elongated unitary plastic member having a first end which is shaped to define a cross-bar 13, a second end which is shaped to define a paddle 15, and a filament 17 which interconnects cross-bar 13 and paddle 15. Cross-bar 13 is appropriately sized and shaped to be inserted through a tag and into a piece of fabric, preferably through the hollow slotted needle of a tagging gun. Paddle 15 is appropriately sized and shaped to prevent a tag positioned on filament 17 from being removed thereover. As can readily be appreciated, fastener 11 may be moulded as part of a quantity of either continuously connected fastener stock or fastener stock of the type having an orthogonally disposed runner bar.

Referring now to Figs. 2 and 3, there is shown a plastic fastener 31 constructed according to the present invention for use in attaching a tag to a piece of fabric. The plastic fastener 31 is very similar in construction and composition to plastic fastener 11, and comprises an elongated unitary plastic member having a first end which is shaped to define a cross-bar 33, a second end which is shaped to define a paddle 35, and a filament 37 which interconnects cross-bar 33 and paddle 35. Plastic fastener 31, however, differs from plastic fastener 11 in that filament 37 includes an enlarged portion 39. In the embodiment shown, enlarged portion 39 is disc-shaped (as opposed to being spherical) and faces in the same direction as cross-bar 33 and paddle 35 so that several fasteners 31 can be joined together in a runner bar-type fastener stock manner, but it will readily be understood that enlarged portion 39 may take any shape(s) or form(s) consistent with the purpose

hereinafter described.

Referring now to Fig. 4, the manner in which enlarged portion 39 serves to prevent fastener 31 from being removed intact from a piece of fabric F is shown. For illustrative purposes, fastener 31 is shown holding a tag T.

As can be seen, because of the size, shape, and placement of enlarged portion 39, a sufficient amount of slack in filament 37 cannot be drawn through fabric F so as to permit cross-bar 33 to be aligned with filament 37. Consequently, intact removal of fastener 31 from fabric F is effectively prevented.

As can readily be appreciated, best results will typically be obtained when the distance between enlarged portion 39 and cross-bar 33 is slightly less than one-half the length of cross-bar 33. However, some variation from these values may occur due to the thickness of the fabric and/or the resiliency of cross-bar 33 and filament 39; therefore, in certain instances, the distance between enlarged portion 39 and cross-bar 33 may be equal to one-half the length of cross-bar 33.

Although the invention has been described with respect to plastic fasteners of the type for use in attaching tags to pieces of fabric, it should be understood that the principles of the invention may be applied generally to any plastic fastener of the type having an elongated filament and a cross-bar attached to at least one end of the elongated filament. Such plastic fasteners may include the well-known and commonly-used loop-type fasteners, which are fired twice from a tagging gun and are used to loosely pair items together, to hang soft goods or to secure products to packaging.



Claims:

1. A plastic fastener comprising an elongated unitary plastic member having a filament and a cross-bar attached to one end of the filament, the cross-bar being insertable through a sheet of material, and the filament having an enlarged portion sized and shaped to limit the extent of insertion of the filament into a sheet of material, the enlarged portion being spaced from the cross-bar a distance of less than or equal to one half the length of the cross-bar.
2. A fastener as claimed in claim 1 in which the other end of the filament is shaped so as to prevent removal of a tag across the said other end.
3. A plastic fastener for use in attaching a tag to a piece of fabric comprising an elongated unitary plastic member having a first end, a second end, and a filament interconnecting said first end and said second end, said first end being shaped to define a cross-bar insertable through a tag and into a piece of fabric, said second end being shaped so as to prevent removal of a tag thereacross, said filament having an enlarged portion sized and shaped to limit the extent of insertion of said filament into a piece of fabric, said enlarged portion being spaced from said cross-bar a distance of less than or equal to one half the length of the cross-bar.
4. A plastic fastener as claimed in claim 1 or claim 2 or claim 3 in which the second end is shaped to define a paddle.



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5. A plastic fastener as claimed in any of the preceding claims in which the enlarged portion is disc-shaped.

- 5 6. A plastic fastener for use in attaching a tag to a piece of fabric, said plastic fastener comprising an elongated unitary plastic member having a first end, a second end, and a filament interconnecting said first end and said second end, said first end being shaped to
- 10 define a cross-bar insertable through a tag and into a piece of fabric, said second end being shaped to define a paddle sized and shaped to prevent removal of a tag from said second end, said filament having an enlarged
- 15 portion sized and shaped to limit the extent of insertion of said filament into a piece of fabric, said enlarged portion being spaced from said cross-bar a distance of less than or equal to one half the length of the cross-bar.
- 20 7. A plastic fastener substantially as described herein with reference to Figures 2 to 4 of the accompanying drawings.