Dec. 30, 1958 G. WALDES 2,866,246

SEPARABLE FASTENERS

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FIG. 1

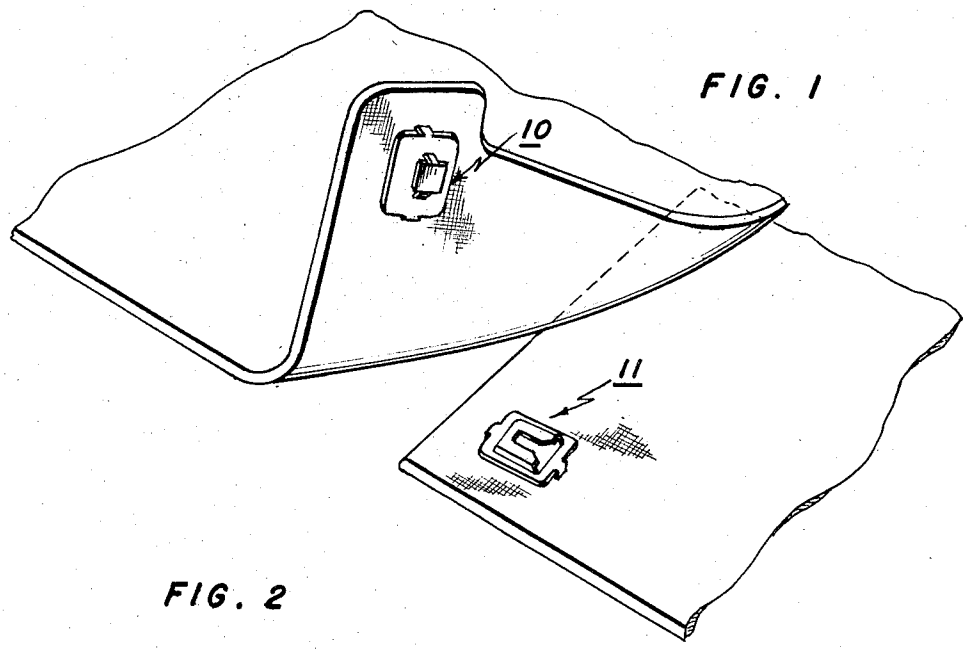


FIG. 2

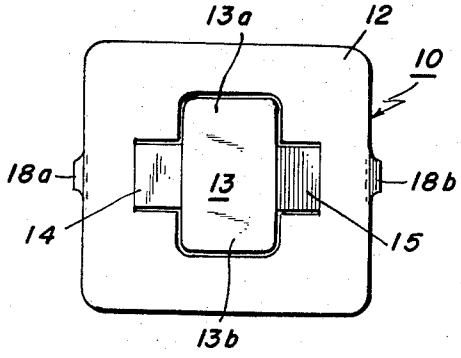
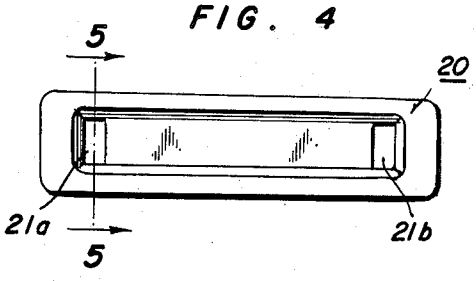


FIG. 4



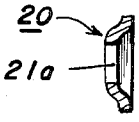
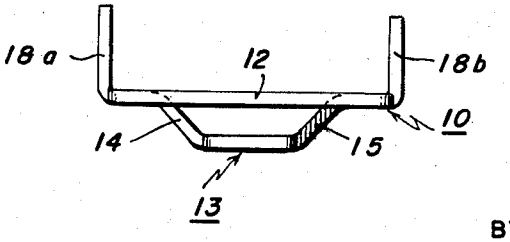


FIG. 5

FIG. 3



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FIG. 6

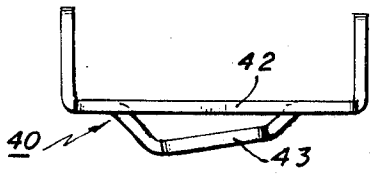


FIG. 7

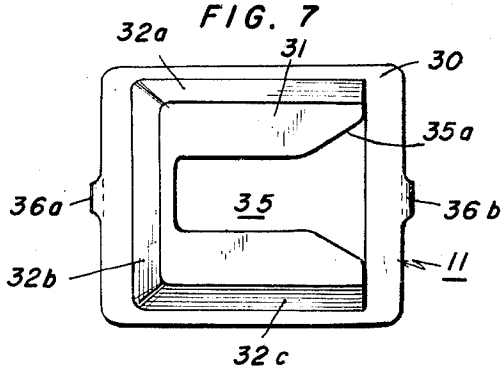


FIG. 8

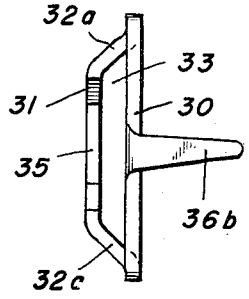


FIG. 9

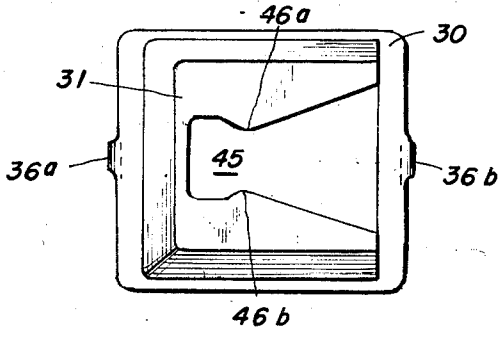


FIG. 11

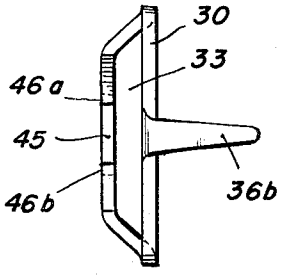
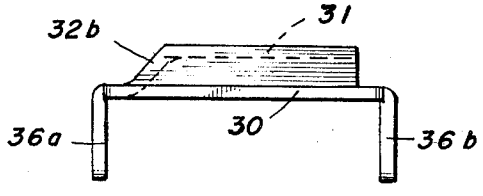


FIG. 10



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FIG. 12

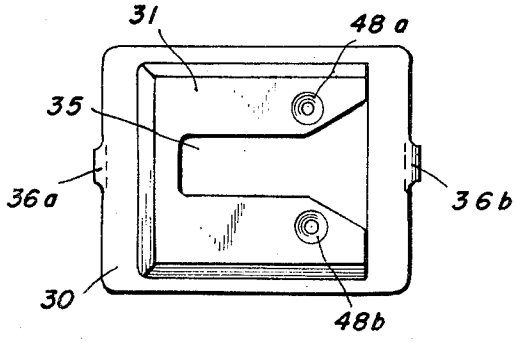


FIG. 14

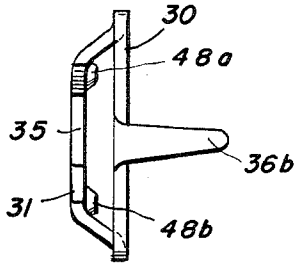


FIG. 13

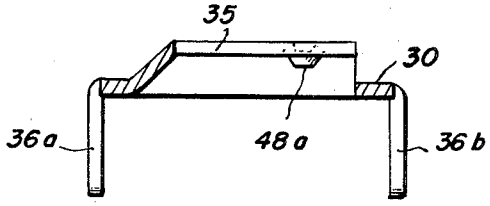
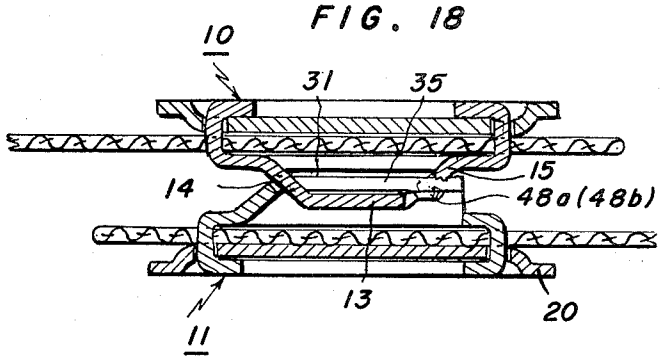


FIG. 18



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FIG. 15

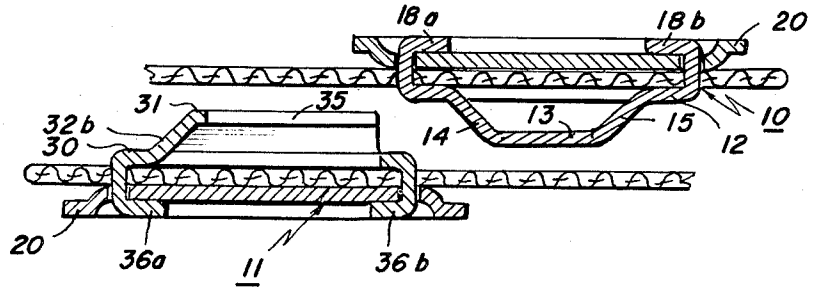


FIG. 16

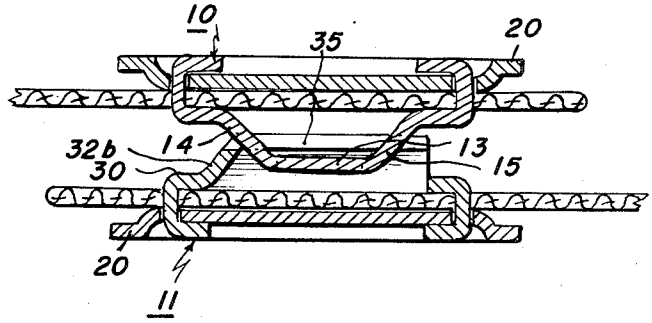
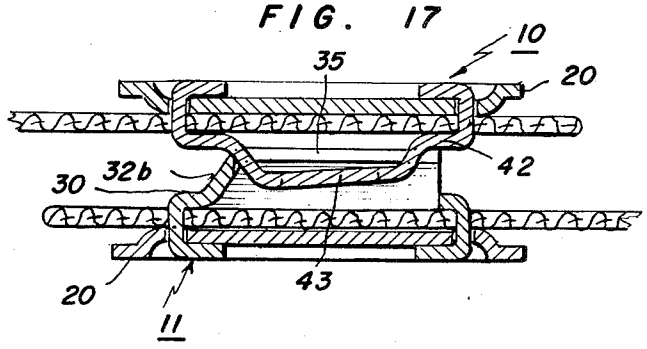


FIG. 17



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United States Patent Office

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SEPARABLE FASTENERS

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Application June 12, 1957, Serial No. 665,203

8 Claims. (Cl. 24—226)

This invention relates to improvements in separable fasteners, and more particularly to a modified hook-and-eye type separable fastener designed and especially adapted for use as a closure for the waistband opening of garments such as trousers, skirts and the like, but it will be understood that the fastener of the invention is not limited to this particular application.

The conventional hook-and-eye fastener applied as the closure for the opening of a garment which is dry-cleaned and/or laundered is open to the objection that the hook component of the fastener is likely to be flattened or otherwise deformed in the ironing process, sometimes to the extent of making it difficult if not wholly impossible to engage the hook and eye components of the fastener. A main object of the present invention, therefore, is the provision of a separable hook-and-eye type garment fastener which avoids the aforesaid disadvantage of the prior hook-and-eye fastener, and which, in addition, is easy to open and close and is moreover secure against accidental opening.

More particularly, an object of the invention is the provision of a modified hook-and-eye type garment fastener featured by both the hook and eye components of the fastener being fashioned from sheet metal and by the working parts of both said hook and eye components being simply struck out from initially plane sheet metal body parts.

A further object of the invention is the provision of a highly effective hook member for a modified hook-and-eye closure fastener, whose design and construction are such as enables it to be simply manufactured from a substantially rectangular plate-form body member of sheet metal, and whose working or hook element, rather than conforming to conventional hook construction, instead consists of a rectangular sheet metal head part struck from and disposed in a plane substantially parallel to that of said body member and being connected thereto at its opposite, i. e. front and rear, edges by two narrow-width webs which are oppositely inclined from the plane of said body so that they merge into the plane of the head part, said webs thereby strongly and firmly supporting the head part against giving way or flattening against forces applied normal thereto in the garment ironing process.

Another object of the invention is the provision of an effective eye member for a modified hook-and-eye type closure fastener, which may be simply fashioned from an initially plate-form rectangular body of sheet metal, and which is characterized by a rectangular frame or body portion and an elevated portion pressed therefrom and connected thereto along three sides and being provided with a slot having width substantially equal to the width of the aforesaid webs which connect the head part of the modified hook member to the body member thereof, the fourth side bounding said elevated portion being left open so as to provide for passage of said head part of the hook member into the three-sided shallow enclosure formed by said elevated portion.

Yet another object of the invention is the provision of

a modified hook-and-eye type closure fastener for garment openings characterized by sheet metal construction throughout, wherein the working part of the hook member of the fastener comprises a substantially rectangular planar part which is struck from the initially rectangular body part of said member and is connected to said body part by oppositely inclined, narrow-width webs or bridges, and wherein the eye member comprises a frame-like body part of generally rectangular shape and a pressed-out generally rectangular portion, which together define a shallow enclosure open at one side and provided with a slot extending inwardly from said open side for accommodating the webs of said hook member as the head part thereof moves into said enclosure, and wherein at least one of said fastener members is provided with means protecting the fastener against accidental opening following closing thereof by simple engagement of the hook with the eye member.

The above and other objects and advantages of the invention will appear from the following detailed description thereof, in which reference is had to the accompanying drawings illustrative of a preferred and various modified forms which the hook and eye members according to the invention may take, in which—

Fig. 1 is a perspective view of a separable hook-and-eye type fastener according to the invention shown to be applied to overlapping portions of a garment defining an opening therein;

Figs. 2 and 3 are plan and top-edge views, respectively, of the hook member of a modified hook-and-eye fastener according to the invention prior to its being secured to the garment;

Fig. 4 is a plan view, and Fig. 5 is a section on line 5—5 thereof illustrating one simple form of attaching strap for securing each of the hook and eye members to the garment;

Fig. 6 is a front edge view of a variant form of hook member;

Figs. 7 and 8 are plan and front-edge views, respectively, of one form of eye or keeper member of the herein proposed fastener;

Figs. 9, 10 and 11 are plan, bottom-edge and front-edge views, respectively, of a modified form of eye or keeper member of the invention;

Figs. 12, 13 and 14 are generally similar views illustrating a modified form of eye or keeper member;

Figs. 15 and 16, respectively, are sections taken through the preferred hook and eye members of the invention just prior to and following their engagement one to the other;

Fig. 17 is a section similar to Fig. 16 but taken through an engaged or closed fastener employing the variant hook member as shown in Fig. 6; and

Fig. 18 is a similar section through an engaged fastener which employs the embodiment of eye or keeper shown in Figs. 12–14.

Referring to the drawings, Fig. 1 shows in perspective the general relation of the separable fastener members **10** and **11** according to the present invention applied, for example, as the closure of a waistband opening of a pair of trousers or other garment having a waistband opening, of which the fastener member designated **10**, hereinafter referred to as the hook member, is affixed to the under face of the upper (outer) fly or edge of the garment opening and the fastener member **11**, hereinafter called the eye or keeper member, is affixed to the upper (outer) face of the under (lower) edge of said opening. According to the invention, both the aforesaid hook and eye members are of sheet metal construction throughout, the hook member comprising a generally rectangular, planar body part **12** and a smaller working part or head **13**, also planar and generally rectangular,

which is struck out from and is disposed more or less parallel to said body part **12**, being connected thereto along its opposite sides by relatively narrow webs **14, 15** which are also struck out from the body part and are oppositely inclined to one another according to the difference in elevation of said body part **12** and head part **13**. It will be seen from Fig. 2 that said webs connect to the head part **13** intermediate its upper and lower end portions **13***a*, **13***b* and accordingly said portions serve as what may be termed sheet-form tongues or bills which extend in both upward and downward direction from the connected middle portion of said head part. It will be manifest that because of the inclination and integral nature of the webs **14, 15** the head part **13** as a whole and the tongues **13***a*, **13***b* thereof are strongly supported and hence said tongues in particular are able to resist ironing pressure without being bent from or deformed out of their initial spacing and relation with respect to the flat body part **12** of the hook member.

Illustratively, said body part **12** of the hook member is provided along its two opposite side edges with pointed attaching prongs **18***a*, **18***b* which are adapted to pierce the material of the garment and thereupon to be bent over into clinching engagement therewith. Preferably, rather than being clinched directly to the garment material, the prongs **18***a*, **18***b* are, for security of attachment, clinched to a metal attaching strap **20** (Figs. 4 and 5) which is shown to be formed with an elongate prong-receiving channel, to which the prongs have access through prong openings **21***a*, **21***b* provided at the ends of the channel. The manner in which the attaching strap **20** serves to secure the clinched or bent-over ends of the prongs **18***a*, **18***b* is shown in Fig. 15 and succeeding figures.

A preferred form of the fastener eye member **11** is illustrated in Figs. 7 and 8 wherein reference numeral **30** designates a flat frame-like body part, and reference numeral **31** an elevated plate-like portion integrally connected therewith along three of its sides, i. e. top, bottom and forward sides by inclined connecting walls **32***a*, **32***b*, **32***c*. The fourth or rearward side is left open so as to provide an opening **33** (Fig. 8) to the shallow enclosure provided by said elevated portion **31** and the inclined side or connecting walls **32***a*, **32***b*, **32***c*. Since said shallow enclosure is designed to receive the head **13** of the hook member, both said enclosure and the opening to same are appropriately dimensioned so as to receive said head **13** with suitable clearance making for easy engagement of the parts. To accommodate for the webs **14, 15** of the hook member during closing of the fastener, i. e. in passing the head part **13** of the hook member through the opening **33** to a position in which it underlies the elevated central portion **31** of the eye member (see Fig. 16. for example), said elevated central portion **31** is provided with a slot **35** which extends relatively horizontally from the opening **33** in the direction of the blind end of the aforesaid shallow enclosure as defined by the closed side wall **32***b*. Preferably, the width of the slot **35** at its closed end is slightly greater than the width of the web **14** or **15** which is first to enter said slot, which may be taken as the leftward web **14** (Fig. 2). The other or entrance end of said slot **35** is preferably shaped as a wide mouth **35***a* defined by converging slot edges which serve initially to guide the web **14** into the slot **35**.

Preferably, a fastener eye member as described is provided with attaching prongs **36***a*, **36***b* (corresponding to the aforesaid prongs **18***a*, **18***b* of the hook member **10**) which are adapted to pierce the material of the garment and thereupon to be clinched to a metallic attaching strap corresponding in all essential respects to the aforesaid attaching strap **20** described in connection with Fig. 4.

Referring to Figs. 15 and 16, a fastener consisting of the hook-and-eye parts **10** and **11** as aforesaid is adapted to be closed by the simple operation of moving the hook member **10** over and past the eye member **11** to a position in which the head part **13** of the hook **10** is horizontally alinged with the opening **33** of the eye member, as is generally illustrated in Fig. 15, and thereupon drawing said hook-and-eye parts relatively together, as effects entry of the head part **13** of the hook member into the enclosure of the eye member as defined by the elevated central portion **31** and the side walls **32***a*, **32***b*, **32***c* thereof. It will of course be understood that during such movement of head part **13** into the eye enclosure, the webs **14, 15** which space the head part **13** from the body part **12** of the hook member are accommodated in the slot **35** of the eye member. Upon final closing of the fastener, it will be seen that the oppositely extending upper and lower tongues or bill portions **13***a*, **13***b* of the hook part are securely held against movement in three directions within the corresponding portions of the eye enclosure within which they fit. However, the fastener may be readily opened by the simple operation of imparting relative separating movement to said fastener parts, as results in the head part **13** of the hook member retracting through the opening **33** of the eye member.

The invention also provides various means for resisting ready separation of the hook member from the eye member as aforesaid, to the end that accidental or unintentional separation of said fastener members is positively precluded. Referring to Fig. 6, illustrating one such means incorporated into the hook member of the fastener, it will be seen that the head part **43** of a modified hook member **40**, rather than being parallel to the body part **42** thereof, is instead inclined to said body part by an angle such that, whereas its front side edge is spaced from its body part **42** a distance in excess of the thickness of the elevated central portion **31** of the eye member, the other or rear side edge of said head part **43** is spaced from the body part **42** a distance which is slightly less than the thickness of said elevated portion **31**. Accordingly, when a fastener employing the modified hook part **40** according to Fig. 6 is closed as in Fig. 17, the rear side edge of the head part **43** tends to bind against the under surface of the elevated portion **31** of the eye member, thereby frictionally resisting separation or opening of the fastener parts.

Referring to Figs. 9, 10 and 11, illustrating yet another means for retarding free opening of the fastener which in this instance is incorporated into the eye member **11**, it will be seen that the slot **45** in the elevated portion **31** of the eye member, rather than being formed with straight side edges and thereby uniform width throughout the greater part of its length, as is the corresponding slot **35** as shown in Fig. 7, is narrowed at points **46***a*, **46***b* intermediate its open and blind ends, such narrowing resulting in the effective width of the slot being made slightly less than the width of at least the first-to-enter web **14** of the hook member **10**. Accordingly, when the fastener is fully closed, the narrowed points **46***a*, **46***b* in the slot edges exercise a holding effect on said web **14** which prevents same from being freely retracted from the slot, with the desirable result that the fastener is normally maintained closed and it is not readily opened.

Yet another form of means for preventing accidental or unintentional separation of the fastener parts is shown in Figs. 12–14, illustrating an eye member corresponding generally to the eye member illustrated in Fig. 7, with the difference that the elevated central portion **31** thereof is provided adjacent the opening **33** to the aforesaid eye enclosure with a pair of dimples **48***a*, **48***b* whose under surfaces or points extend into and thereby lessen the depth of the eye enclosure adjacent the open side **33** thereof. By design, the dimples are sunk into said elevated portion **31** to an extent that the depth of the enclosure is slightly less than the thickness of the head part **13** of the hook member **10**. Thus, referring to Fig. 18, upon closing of the fastener by movement of the head part **13** of the hook member into the eye enclosure, the under points of the dimples **48***a*, **48***b* extend relatively

in back of the first-to-leave side edge of said head part 13 and thereby act as stops which retard free separating movement of said head part from the eye enclosure.

Without further analysis it will be appreciated that a modified hook-and-eye type separable fastener according to the invention ably overcomes the objection to the conventional hook-and-eye fastener applied as the closure for garments which are subjected to ironing, by providing not only a head part whose construction is such as renders it able in large measure to withstand substantial ironing pressures, but also one that is effectively supported and buttressed from opposite sides by inclined webs which connect the head to the flat body part of the fastener hook member. In addition, a fastener of the invention is at least as easy to close as is the conventional hook-and-eye fasteners and it may also be provided with simple but effective means as described for protecting the fastener against accidental or unintentional opening.

As many changes could be made in carrying out the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. A modified hook-and-eye type closure fastener comprising sheet metal hook and eye members, the hook member comprising a plane body part and a smaller plane head part struck out from and being disposed out of the plane of said body part and being connected thereto along a pair of its opposite edges by relatively narrow webs which slope in opposite directions from said opposite edges of said head part to said body part, the unconnected opposite edge portions of said head part providing oppositely projecting sheet-form tongues, the eye member comprising a frame-like body part and an elevated central portion pressed out from and integrally connected to said frame part along three of its sides, the elevated portion forming a shallow enclosure having dimensions substantially similar to those of the head part of the hook member and being open along its fourth side thereby to permit bodily movement of said head part into said enclosure, said elevated portion of the eye member having a slot therein which extends forwardly from said open side and has width substantially equal to the width of the aforesaid webs for accommodating said webs during movement of said head into the eye enclosure, the construction and arrangement being such that, upon said head part moving into the eye enclosure, the upper and lower tongue portions thereof hookably engage with the elevated portion of the eye member.

2. A modified hook-and-eye type closure fastener as set forth in claim 1, wherein one of said hook-and-eye members is provided with means for resisting free separation of said fastener members after they have been engaged to close the fastener.

3. A modified hook-and-eye type closure fastener as set forth in claim 1, wherein one of said hook-and-eye members is provided with means for obstructing closing of the fastener member and which thereupon becomes effective to resist opening of said members.

4. A modified hook-and-eye type closure fastener as set forth in claim 1, wherein the head part of the hook member is inclined to the body part of said member in direction and extent such that its edge portion last to enter the slot of the eye member is spaced from the body part of said hook member a distance less than the thickness of the elevated portion of the eye member.

5. A modified hook-and-eye type closure fastener as set forth in claim 1, wherein the slot in the elevated portion of the eye member is narrowed intermediate its ends to a width which is slightly less than the width of at least the first web to enter the slot in closing of the fastener.

6. A modified hook-and-eye type closure fastener as set forth in claim 1, wherein the elevated central portion of the eye member is provided with dimples extending into the eye enclosure and which are located adjacent the opening to said enclosure, the under surfaces of said dimples narrowing the depth of said enclosure to the side of the head part of the hook member which is disposed adjacent said opening.

7. In a modified hook-and-eye type closure fastener, a hook member made from sheet metal comprising a plane body and a smaller head part struck out from and being disposed out of the plane of said body part and being connected thereto intermediate its top and bottom ends by relatively narrow webs which slope from the opposite side edges of said head part to said body part, the upper and lower end portions of said head part providing oppositely projecting sheet-form tongues with function as hook bills.

8. A hook member for a modified hook-and-eye type closure fastener as set forth in claim 7, wherein said head part is disposed parallel to said body part.

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