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PATENT SPECIFICATION

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(54) CLOSURE CLASPS FOR OUTER GARMENTS, HANDBAGS
 AND OTHER ARTICLES HAVING PARTS TO BE FASTENED
 TOGETHER AND OPENED AWAY FROM ONE ANOTHER
 SELECTIVELY

(71) I, GERALD GLIEMANN, a German Citizen, of Mainzer Landstrasse 114a, 6000 Frankfurt, Germany, do hereby declare the invention, for which I pray that a patent may be granted to me and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to closure clasps for outer garments, handbags and other articles having parts to be fastened together and opened away from one another selectively, with a base plate on which are formed two bearing seats closely adjacent one another and aligned with one another, an L-shaped closure clip provided with two pivot pins and a projection at the free end of its shorter limb and a plate spring on the base plate and butting under compression against the projection.

These proposed closure clasps are used for releasably interconnecting two parts of a garment, for example a fur coat, or as closures for handbags, the closure clasp being secured to one of the two parts to be interconnected and the other part being provided with an eyelet or an opening. To connect the two parts with one another, first of all the longer limb of the L-shaped closure clasp is pushed through the eyelet or the opening and then swung against the base plate in its closure position in which it is retained by the leaf spring.

In the hitherto-proposed closure clasps, the leaf spring lies in a recess provided therefor in the base plate and is secured at its end remote from the projection at a point on the base plate. In one proposed construction, the securing is effected by means of a tubular or solid rivet, and in another proposed construction by means of a riveted pin which projects against the free end of the longer limb of the closure clip and forms together with the latter the operative part of the closure length. The

last-described construction is to be found mainly in closure clasps used for interconnecting two relatively thick parts such as the cleared edges of a fur coat.

Such closure clasps have the disadvantage that they are prodigal in component parts. For example, the last-described construction consists of the base plate, the closure clip, the plate spring, the riveted pin and generally a supporting disc or washer between the rivet head and the plate spring, thus in all five component parts.

The material costs of such a closure are accordingly high. To be added to this is the fact that the assembling of the individual parts is troublesome and time-consuming and can be automated partly only with considerable financial expenditure. Moreover, these closure clasps are relatively heavy, which becomes noticeable especially when several closure clasps are used in one garment.

An object of the present invention is to obviate or mitigate these difficulties and disadvantages, and to provide a closure clasp which has as few component parts as possible, can be fully assembled easily and quickly and in any circumstances on an automatic machine and has little weight.

According to the present invention there is provided a closure clasp for outer garments, handbags, and other articles having parts to be fastened together and opened away from one another selectively, comprising a base plate of resilient material at which are formed two axially-aligned and open bearing seats disposed in close but mutually-spaced relationship and which includes a leaf spring formed by two spaced slits which extend transversely to the axis of the bearing seats, a closure clip which has two pivot pins swivellably mounting same in the bearing seats and a projection against which the leaf spring rests when initially stressed or tensioned.

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By virtue of the present invention, it is possible to reduce drastically the number of component parts necessary; instead of the five component parts hitherto, only two are now present, both parts, namely the plate-spring and base plate unit and the closure clip, being capable of production at any time in a single working operation. The assembling of the two component parts can be carried out, as has been shown, with suitable dimensioning of the parts without difficulty on a simply constructed automatic assembly machine. Moreover, the presence of only two component parts calls for an essentially simple storage which has a favourable effect on the costs of production.

With regard to the mechanical loading capacity of the closure clasp it has been shown to be practical to use spring steel for the base plate. The production of the base plate with the plate spring formed integrally therewith may be effected in this case by punching out from a spring steel strip. If, however, there are no particular requirements as to the mechanical loading capacity of the closure clasp, it is recommended that the base plate and plate spring unit be produced from a tough elastic thermoplastic synthetic resin. Such a closure clasp has the advantage over the spring-steel closure clasp that it has little weight and is particularly cheap.

The plate spring is most practically formed by two slits extending at some spacing from one another and transversely to the longitudinal axis of the bearing seats. When the base plate is of spring steel, the slits are punched together with the base plate out of the spring steel strip, or, when the base plate is of thermoplastic synthetic resin, the slits are formed during the injection or press moulding process. The slits extend parallel to one another in the most practical arrangement, this being especially the case when there should be a marked stopping action in both end positions of the closure clip as is especially desired in closure clasps for handbags. If, on the other hand, a less marked stopping action of the closure clip in both of its end positions is necessary, as is mainly the case with closure clasps for garments, it is to be recommended to decrease the spacing between the slits in the direction towards the free end of the leaf spring, i.e. to have the slits extend at an acute angle to one another. Of course the stopping action of the closure clip may be achieved also with parallel slits by changing the spacing between the slits, but there is the danger that, when the distance between the slits is small, there may be a breakage or a plastic deformation at the transition between the plate spring and the base plate if the closure clip is depressed too far to the rear. The

stopping action may even be changed by a definite angular value independently of the relative locations of the slits by bending the plate spring downwardly especially where it merges with the base plate, but this is more difficult to manage for technical reasons in manufacture. It has furthermore been shown to be practical to have the slits open into bores at their ends remote from the free end of the plate spring. In this way, especially when the plate spring is overstressed, a possible rupture at the transition between the leaf spring and the base plate is eliminated.

A particularly easy and quick assembly of the closure clip on the base plate can be achieved by providing two open bearing seats. With bearing seats of this kind it may happen, especially when the closure clasp is incorrectly manipulated, that the closure clip jumps out of the bearing seats when it is in the folded-back condition. In order to prevent this, the most practical thing to do is to provide the free end of the plate spring with a bend. In a preferred construction, the bearing seats each consist of a semi-cylindrical seat opening towards the base plate with its median axis approximately in the plane of the base plate, and the plate spring terminates at its free end in a bend of S-shape in cross-section the first bend of which is directed towards the plane of the opening of the semi-cylindrical seat and the second and opposite bend of which is approximately below the median axis of the semi-cylindrical seat. Such a construction has the advantage that the assembly of the closure clip to the base plate can be carried out in a particularly simple and automated manner by inserting the closure clip with its shorter limb mounting the pivot pins parallel to the base plate surface between the end of the plate spring and the outer surfaces of the bearing seats.

As already mentioned, in hitherto proposed closure clasps for accurate interconnection of two relatively thick parts, a stud is arranged on the base plate in the plane of swinging of the closure clip, and this stud together with the closure clip forms the operative part of the closure length. In a closure clasp according to the invention, if the base plate is of synthetic resin, this stud can be moulded directly on the base plate. Instead of such a stud moulded on the base plate, the end of the longer limb of the closure clip may be provided with a stud projecting against the base plate. This is accompanied by the advantage that no additional component part is necessary and consequently also there is no additional working operation involving costs. As, however, the interconnection of the two parts to be connected by the closure clasp is made somewhat more difficult by a stud

arranged on the closure clip, such a construction will be used only when the moulding of the stud on the base plate is not possible as, for example, is the case when the base plate is of spring steel.

Finally it has been shown to be advantageous if the plate spring is thinner than the base plate and the plate spring and base plate surfaces facing the closure clip are in the same plane. In this way the result can be achieved, that the plate spring resting under compression against the projection of the closure clip does not project from the surface of the base plate remote from the closure clip in any position of the closure clip, which, especially when securing the closure clasp to a relatively tough elastic part, such as a wall of a handbag, does not lead to interference with the stopping action.

Embodiments of the present invention will now be described, by way of example, with reference to the accompanying drawings which are partly diagrammatic and in which:—

Fig. 1 is a plan view of a closure clasp;

Fig. 2 is a side elevation of the closure clasp of Fig. 1;

Fig. 3 is a plan view of a modified closure clasp with the closure clip removed; and

Fig. 4 is a section through the closure clasp of Fig. 3 along the line IV—IV.

As can be seen from Figs. 1 and 2, the closure clasp consists of a base plate 1 with several mounting holes 2 and a substantially L-shaped closure clip 3. Two open bearing seats 4 are made on the base plate 1 by bending over the ends of the latter, the bearing seats 4 being spaced from one another with their openings in alignment. Pivot pins 6 at the free end of the shorter limb 5 of the closure clip 3 are engaged one in each of the two seats 4. Moreover, a projection 7 is formed on the free end of the shorter limb 5, and a leaf spring 8 rests under compression against said projection 7.

The base plate 1 consists of a thermoplastic synthetic resin as does the leaf spring 8 which with the base plate 1 is combined in a one-piece unit. The leaf spring 8 is formed by two slits 9 and 10 which extend transverse to the longitudinal axis 11 of the open bearing seats 4 and the inter-spacing of which decreases in the direction towards the free leaf spring end 8a. Beneath the free end of the longer limb 12 of the closure clip there is a stud 13 which is unitary with the base plate 1 or is riveted to the base plate. The limb 12 may have a recess in which the stud engages.

Figs. 3 and 4 show a closure clasp the base plate 1 of which and the closure clip (not shown) of which can be assembled particularly easily and straightforwardly. On

the base plate 1, which has several mounting holes 2, there are formed two bearing seats 4 spaced apart near one another and aligned with one another. The bearing seats 4 consist of semi-cylindrical seats 4a opening against the base plate with their median axis 11 substantially in the plane of the base plate. The leaf spring 8, which is unitary with the base plate 1 with both being of spring steel, is separated from the base plate 1 by two parallel slits 9 and 10. At their ends remote from the free leaf spring end 8a, the slits 9 and 10 open into bores 14. The leaf spring end 8a has an S-shaped form in cross-section. The first bend 15 of the leaf spring end 8a, namely that adjacent the base plate, is directed towards the plane of the openings of the semi-cylindrical seats 4a, while the second bend in the opposite direction is located approximately below the median axis of the semi-cylindrical seats 4a. As is apparent particularly from Fig. 4, the mounting of the closure clip is effected in a simple manner by pushing same with its shorter limb 5 provided with the pivot pins 6 in the direction of the arrow A between the leaf spring end 8a and the outer surfaces 17 of the bearing seats until the pivot pins snap into the bearing seats.

WHAT I CLAIM IS:—

1. A closure clasp for outer garments, handbags, and other articles having parts to be fastened together and opened away from one another selectively, comprising a base plate of resilient material at which are formed two axially-aligned and open bearing seats disposed in close but mutually-spaced relationship and which includes a leaf spring formed by two spaced slits which extend transversely to the axis of the bearing seats, a closure clip which has two pivot pins swivellably mounting same in the bearing seats and a projection against which the leaf springs rests when initially stressed or tensioned.

2. A closure clasp according to Claim 1, in which each bearing seat comprises a semi-cylindrical seat opening on to the base plate with its median axis lying substantially in the plane of the base plate.

3. A closure clip according to Claim 1 or 2, in which the free end of the leaf spring is bent.

4. A closure clasp according to Claims 2 and 3, in which the free end of the leaf spring is bent to S-shape in cross-section with its first bend directed towards the plane of the openings of the semi-cylindrical seats and its second and opposite bend lying approximately below the median axis of the semi-cylindrical bearing seats.

5. A closure clasp according to any preceding claim, in which the base plate is of spring steel.



arranged on the closure clip, such a construction will be used only when the moulding of the stud on the base plate is not possible as, for example, is the case when the base plate is of spring steel.

Finally it has been shown to be advantageous if the plate spring is thinner than the base plate and the plate spring and base plate surfaces facing the closure clip are in the same plane. In this way the result can be achieved, that the plate spring resting under compression against the projection of the closure clip does not project from the surface of the base plate remote from the closure clip in any position of the closure clip, which, especially when securing the closure clasp to a relatively tough elastic part, such as a wall of a handbag, does not lead to interference with the stopping action.

Embodiments of the present invention will now be described, by way of example, with reference to the accompanying drawings which are partly diagrammatic and in which:—

Fig. 1 is a plan view of a closure clasp; Fig. 2 is a side elevation of the closure clasp of Fig. 1;

Fig. 3 is a plan view of a modified closure clasp with the closure clip removed; and Fig. 4 is a section through the closure clasp of Fig. 3 along the line IV—IV.

As can be seen from Figs. 1 and 2, the closure clasp consists of a base plate 1 with several mounting holes 2 and a substantially L-shaped closure clip 3. Two open bearing seats 4 are made on the base plate 1 by bending over the ends of the latter, the bearing seats 4 being spaced from one another with their openings in alignment. Pivot pins 6 at the free end of the shorter limb 5 of the closure clip 3 are engaged one in each of the two seats 4. Moreover, a projection 7 is formed on the free end of the shorter limb 5, and a leaf spring 8 rests under compression against said projection 7.

The base plate 1 consists of a thermoplastic synthetic resin as does the leaf spring 8 which with the base plate 1 is combined in a one-piece unit. The leaf spring 8 is formed by two slits 9 and 10 which extend transverse to the longitudinal axis 11 of the open bearing seats 4 and the inter-spacing of which decreases in the direction towards the free leaf spring end 8a. Beneath the free end of the longer limb 12 of the closure clip there is a stud 13 which is unitary with the base plate 1 or is riveted to the base plate. The limb 12 may have a recess in which the stud engages.

Figs. 3 and 4 show a closure clasp the base plate 1 of which and the closure clip (not shown) of which can be assembled particularly easily and straightforwardly. On

the base plate 1, which has several mounting holes 2, there are formed two bearing seats 4 spaced apart near one another and aligned with one another. The bearing seats 4 consist of semi-cylindrical seats 4a opening against the base plate with their median axis 11 substantially in the plane of the base plate. The leaf spring 8, which is unitary with the base plate 1 with both being of spring steel, is separated from the base plate 1 by two parallel slits 9 and 10. At their ends remote from the free leaf spring end 8a, the slits 9 and 10 open into bores 14. The leaf spring end 8a has an S-shaped form in cross-section. The first bend 15 of the leaf spring end 8a, namely that adjacent the base plate, is directed towards the plane of the openings of the semi-cylindrical seats 4a, while the second bend in the opposite direction is located approximately below the median axis of the semi-cylindrical seats 4a. As is apparent particularly from Fig. 4, the mounting of the closure clip is effected in a simple manner by pushing same with its shorter limb 5 provided with the pivot pins 6 in the direction of the arrow A between the leaf spring end 8a and the outer surfaces 17 of the bearing seats until the pivot pins snap into the bearing seats.

WHAT I CLAIM IS:—

1. A closure clasp for outer garments, handbags, and other articles having parts to be fastened together and opened away from one another selectively, comprising a base plate of resilient material at which are formed two axially-aligned and open bearing seats disposed in close but mutually-spaced relationship and which includes a leaf spring formed by two spaced slits which extend transversely to the axis of the bearing seats, a closure clip which has two pivot pins swivellably mounting same in the bearing seats and a projection against which the leaf springs rests when initially stressed or tensioned.

2. A closure clasp according to Claim 1, in which each bearing seat comprises a semi-cylindrical seat opening on to the base plate with its median axis lying substantially in the plane of the base plate.

3. A closure clip according to Claim 1 or 2, in which the free end of the leaf spring is bent.

4. A closure clasp according to Claims 2 and 3, in which the free end of the leaf spring is bent to S-shape in cross-section with its first bend directed towards the plane of the openings of the semi-cylindrical seats and its second and opposite bend lying approximately below the median axis of the semi-cylindrical bearing seats.

5. A closure clasp according to any preceding claim, in which the base plate is of spring steel.



6. A closure clasp according to any one of Claims 1 to 4, in which the base plate is of tough elastic thermoplastic synthetic resin.
7. A closure clasp according to any one of
- 5 Claims 1 to 6, in which the inter-spacing between the leaf-spring forming slits in the base plate, decreases in the direction towards the free end of the leaf spring.
8. A closure clasp according to any one of
- 10 Claims 1 to 7, in which the leaf-spring-forming slits in the base plate open into bores at their ends remote from the free end of the leaf spring.
9. A closure clasp according to any one of
- 15 Claims 1 to 8, with a stud arranged on the base plate in the plane of movement of the closure clip.
10. A closure clasp according to Claim 9, in which the stud is riveted to the base plate.
- 20 11. A closure clasp according to Claim 9 or 10, in which the closure clip is provided with a recess in which the stud engages.
12. A closure clasp according to any one of Claims 1 to 8, in which the free end of the
- 25 closure clip is provided with a stud projecting against the base plate.
13. A closure clasp according to any preceding claim, in which the leaf spring is thinner than the base plate and facing the closure clip lie in one plane.
- 30 14. A closure clasp for outer garments, handbags and other articles having parts to be fastened together and opened away from one another selectively, substantially as hereinbefore described with reference to
- 35 Figs. 3 and 4 of the accompanying drawings.
15. A closure clasp for outer garments, handbags and other articles having parts to be fastened together and opened away from one another selectively, substantially as
- 40 hereinbefore described with reference to Figs. 3 and 4 of the accompanying drawings.

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