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CONTINUOUS LINEAR CLOSING DEVICES

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FIG. 1

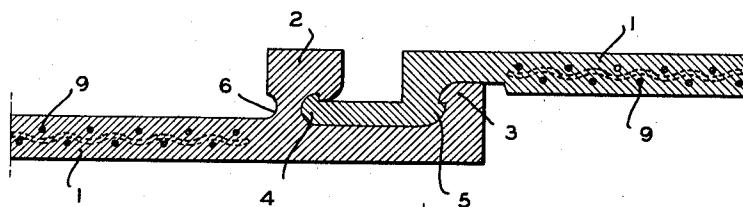


FIG. 2

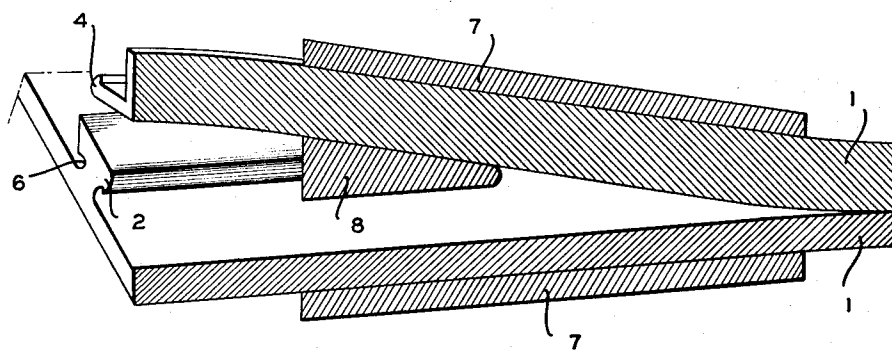
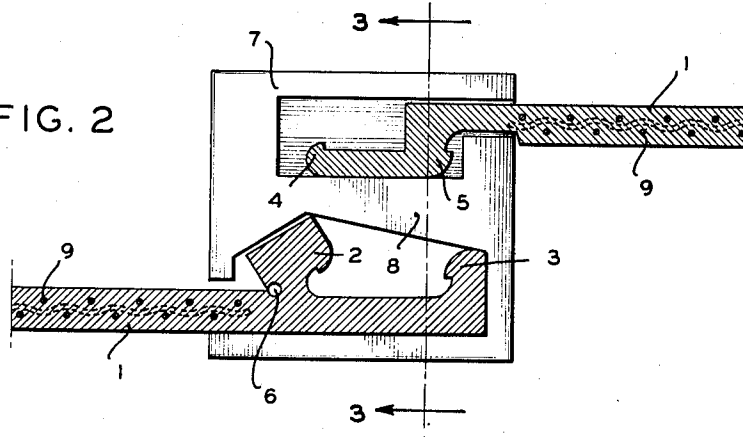


FIG. 3

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CONTINUOUS LINEAR CLOSING DEVICES

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3 Claims. (Cl. 24-201)

The present invention refers to certain improvements in continuous linear closing devices, particularly of the kind consisting of plastic material and provided with the necessary means for bringing about mutual interlocking of adjacent parts which in this manner are definitely fastened.

Many devices of the kind specified are already known to provide a close and safe fastening, being employed, or at least being provided, for the purpose of advantageously replacing the so-called "zip" fasteners. In this, however, the "zippers" have been unsuccessful due to lack of precision and tightness in the manufacture of the devices, or due to deficient arrangement of the component parts.

In fact, it will be recognized that the parts and arrangement thereof so far proposed as entirely novel, comprising longitudinal ribbon-like strips integrally provided with anchor or similar locking and engaging means, have not yet given proof of being entirely safe or, what is the same, their complete and secure closure is not always subject to the user's will. It happens thus that the parts arranged for proper locking come apart quite easily, particularly in view of the flexibility of strip-like members, which therefore become readily displaced, individually or together. The consequence of this is that the device opens, with resultant effects on the article of clothing or other object to which the fastener is applied.

The device according to the present invention, on the contrary, is provided with substantially improved means greatly superior to all such arrangements known or used to date. These improvements, object of the present invention, consist in providing the strips of plastic or similar material constituting the support at each side of the fastener, with a pair of locking members arranged, on the one side, at the edge of the supporting strip and, on the other side, in a region close to said edge and parallel thereto, representing an intermediate longitudinal band of a substantially flexible nature and which, in combination with the respective pairs of confronting members and a further member specially formed for greater relative flexibility, enables a tight closure to be obtained, only to be loosened at the user's option. Said locking or anchoring effect is obtained automatically or by means of a runner specially furnished for connecting or disconnecting the locking members. This runner is not essentially necessary for the operation of the present closing device.

The invention likewise envisages other accessory objects, as will be made clear in the course of the present description.

In order that the present invention may be more readily understood and put into practice, a preferred embodiment thereof has been illustrated in attached drawings, in which:

Figure 1 is a diagrammatic and cross-sectional view of a pair of strips arranged as locking supports, showing the manner in which one is adapted to the other.

Figure 2 is a likewise sectional view of the device

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adapted to a complementary runner member, if the use of such is preferred, illustrating the manner in which one of the locking members is offset to connect with its counterpart.

5 Finally:

Figure 3 illustrates a lengthwise part section of the locking device provided with a runner member, following line A—B of Figure 2.

Like numerals represent like or similar parts throughout the several figures of the drawings.

With reference to the embodiment illustrated in the drawings, the zipper object of the present invention comprises supporting bands or strips 1 arranged for mutual overlapping along their edges and the portions adjacent thereto, in order to fulfill their essential purpose. Each of said bands or strips at its corresponding edges is shaped with a pair of locking members 2, 3, 4 and 5, respectively arranged in pairs and substantially facing one another so as to leave between each pair of members a strip defining a flexing zone for secure locking of the said members once same have been connected, thus providing a well-defined stabilizing area in the position occupied by the locked members.

As can be seen in the Fig. 1, hook-like locking member 3 has a vertical portion extending upwardly from strip 1, and an integral horizontal end portion facing locking member 2. Locking member 2 has a vertical portion extending upwardly from strip 1, an integral horizontal portion extending in the direction of locking member 3, said horizontal portion terminating in an integral vertical end portion downwardly directed and facing strip 1. It is thus seen that hook-like locking members generally face each other, although their ends define planes approximately 90° with respect to each other.

This arrangement can be clearly seen in Figures 1 and 2, particularly in Figure 1, illustrating the manner in which the locking members are arranged. Members 2 and 3 represent the receiving parts of one of the strips (1) complemented by equivalent counterparts of the opposing strip. In order to bring about locking action, member 2 must be offset, which offsetting is made possible by the provision of a flexing part obtained by reducing the thickness of the strip in that area, said reduced portion forming a channel 6, as shown in Figure 1.

In case it should be preferred to use an additional member for bringing about locking action, a runner 7 can be provided, having an interposing member 8 which is run between the two parts 1 of the zipper, particularly between the adjacent edges of locking members 2—3, on the one hand, and 4—5 on the other. This runner 7, in the hollow corresponding to member 2, is provided with a chamfered part, in such a manner that during displacement it produces a slight offsetting of the locking member, as seen in Figure 2. This offsetting is clearly favoured by the thinner section 6, the entire arrangement permitting free disposal of the strip edge of member 4—5 and nearby area, between the two complementary members 2—3. Once the runner has passed, the interlocking position of the members is ensured inasmuch as members 3 and 5 constitute the locking parts and members 2 and 4 the holding or retaining parts thereof, thus completing the closure.

It should be clearly pointed out that the members or means furnished to provide flexibility to the whole, can be summarized as represented by slit 6 which, in turn, is substantially formed by a particularly reduced section arranged to form a substantially resilient hinge. This feature has a double purpose: that of permitting separation of member 2 in order to insert the counterpart of the opposite strip, and of preventing unlocking of members 3 and 6 when subject to tension or traction in lengthwise direction to the planes of sections 1. Under these

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circumstances the set of members 2 and 4 cannot come apart inasmuch as the thin section 6 accompanies same in their response to tractive effort or, more specifically, member 2 follows any deviation by member 4.

The supporting strips or means 1, for better arrangement of the closing members, are furthermore provided with an intermediate material 9, such as cloth or similar, contributing remarkably to the efficiency of the whole assembly. This cloth or other appropriate similar material is incorporated in the strip thermally or through some other process enabling both materials to be joined integrally.

The invention in the manner described and illustrated may be clearly understood and further explanations will not be required by those versed in the matter.

Inasmuch as sundry changes as to construction and detail may evidently be introduced without thereby departing from the real nature of this invention, it is to be understood that the description and drawings are in no way limitative or restrictive, the scope of the invention being clearly defined in the following claims.

What we claim is:

1. In a continuous fastener combination comprising a pair of supporting strips provided with cooperating hook-shaped sections longitudinally disposed for mutual engagement and separation, the improvement wherein one of said supporting strips has laterally spaced longitudinally extending hook-like locking members, said hook-like locking members generally facing each other, the inner surfaces of said hook-like locking members terminating in planar surfaces approximately 90° with respect to each other, said inner surfaces defining the hook-like shape of said hook-like locking members, the hook-like locking member remote from the end of said strip having a portion of increased flexibility disposed in the region of said hook-like member where said hook-like member joins said strip, the other of said strips having an edge portion complementary to the space defined by said hook-like locking members one of said planar surfaces being generally perpendicular to the plane of its supporting strip, and the other of said planar surfaces being generally parallel to the plane of the same supporting strip.

2. In a continuous fastener combination comprising a

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pair of supporting strips provided with cooperating hook shaped sections longitudinally disposed for mutual engagement and separation, the improvement wherein one of said supporting strips has laterally spaced longitudinally extending hook-like locking members, the hook-like locking member nearest the edge of said strip having a vertical portion extending upwardly from said strip and an integral horizontal end portion extending toward the other hook-like locking member on said strip, said end portion having a horizontal planar surface facing said strip, said other hook-like locking member having a first vertical portion extending upwardly from said strip, an integral horizontal portion extending in the direction of the first hook-like locking member and terminating in an integral vertical end portion downwardly directed toward said supporting strip, said end portion having a vertical planar surface facing said first vertical portion, said second hook-like locking member having a portion of increased flexibility disposed in the region where the upwardly extending vertical portion joins said strip, the other of said strips having an edge portion complementary to the space defined by said hook-like locking members.

3. A continuous fastener combination as recited in claim 2 in which said portion of increased flexibility is constituted by forming the portion of said vertical member of increased flexibility thinner than the remainder of said hook-like locking member.

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