Dec. 15, 1931. D. F. DALTON 1,836,958

FASTENING DEVICE

Filed July 2, 1924

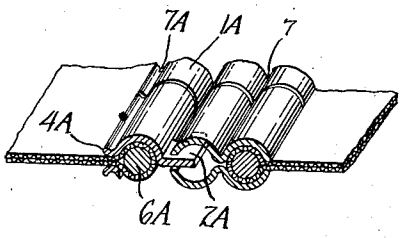


Fig. 5.

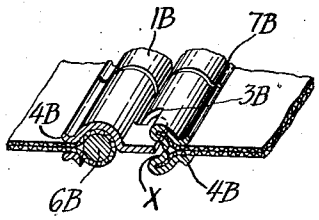


Fig. 6.

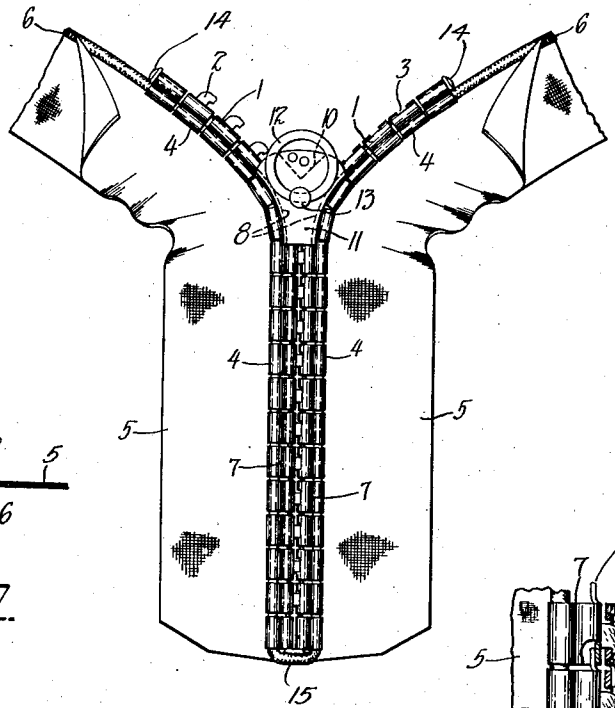


Fig. 1.

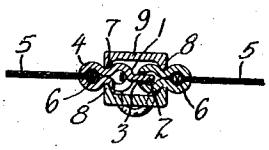


Fig. 2.

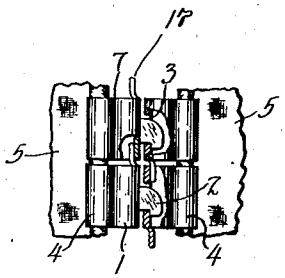


Fig. 3.

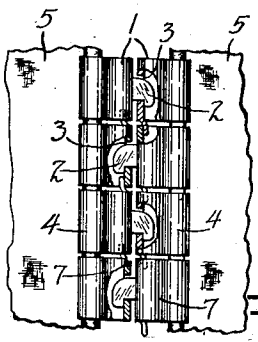


Fig. 4.

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Patented Dec. 15, 1931 1,836,958

UNITED STATES PATENT OFFICE

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FASTENING DEVICE

Application filed July 2, 1924. Serial No. 723,629.

This invention relates to fastening devices, more particularly a multiple fastener engageable or disengageable by operation of a slider. It aims to provide a new and improved type of multiple fastener for plackets or openings, one that is reliable in service, simple and rapidly operable, and comparatively easy to manufacture at a low cost of sheet metal.

With the illustrated embodiment in mind, and without any intention to limit more than is required by the scope of the prior art, the invention briefly stated consists in a series of inter-engageable elements provided with hooks and eyes which are adapted to be connected together or disconnected by operation of a slider tracking the elements or members which are secured within the respective margins of the placket or opening.

Embodiments of the invention are illustrated in the drawings, in which

Figure 1 is a plan view of a pair of stringers partly secured together with one form of elements of the present invention; and partly separated, a closing slider being also shown.

Figure 2 is a section through the narrow end of a closing slider in working relation with a pair of fastening elements;

Figure 3 is an enlarged plan view partly in section of the same fastener;

Figure 4 is a plan view of a slightly modified arrangement of the same elements;

Figure 5 is a perspective partly in section of a three-barrel type of fastener;

Figure 6 is a perspective partly in section of a two-barrel type of fastener.

The invention may be embodied in metal or various other materials. The fastening elements or interengageable members may be variously arranged to meet requirements.

In the drawings, Figures 1–3, is shown a form of invention in which each inter-engageable member has a cylindrical barrel portion 1 carrying a hook 2 or provided with an eye 3 and a second substantially cylindrical barrel 4 integral therewith for gripping a stringer 5 preferably but not necessarily consisting of fabric cut on the square or bias folded around a cord, wire, or other form of "piping" 6 to afford a good clamp or anchorage. The inter-engageable members may be and preferably are made of sheet metal folded and crimped as clearly shown in cross section in Figure 2. Preferably they are attached to the stringers opposite each other with the hooks 2 all on one side of the placket and the eyes 3 on the other side thereof. Variantly, as shown in Figure 4, the hooks and eyes may be arranged in alternation on both sides of the placket or opening in the shoe, garment, tent, box, or other article to which the invention may be applied.

In Figure 5 the inter-engageable members are much the same excepting that half of the members have their stringer-gripping portions 4A abbreviated, the piping 6A being housed in the element carrying portion 1A from which the hooks 2A are struck up.

In Figure 6 the inter-engageable members are likewise substantially the same as above described in detail excepting that all of the members have their stringer-gripping portions 4B abbreviated (to present less width of metal to view). In the hook carrying portions 1B of this form of multiple fastener the piping 6B is housed as in Figure 5, and in the barrel portions in which the eyes 3B are provided the plies of the stringer are caught and clinched by the metal turned and folded back as indicated at X from the body of the barrel to form the eye.

All forms of the inter-engageable members, however, comprise element-carrying-portions 1—1A—1B and stringer-gripping portions 4—4A—4B, the latter being minimized in width in all or half of the members if it is desired to decrease the width of metal visible. External grooves 7—7A—7B are provided on opposite sides of the members, the grooves being defined by outer and inner walls substantially coextensive with the length of each member, said grooves flanking the element carrying portions 1—1A—1B for the reception of curved flanges 8 in opposed pairs projecting inwardly from plates 9 pinned to a spacing block 10 and together therewith constituting a slider 11. The slider 11 successively engages or disengages the hooks 2 and eyes 3 in a manner obvious from the drawings. A ring 12 fixed as shown to

a post 13 (or loose on a bail as shown in the prior art) may be provided for pulling the slider lengthwise the row of interengageable members. Headed pins 14 and a U-shaped staple 15 are preferably secured at the upper and lower ends of the row of fasteners to limit movement of the slider. Projections 17 may be provided if desired at one end of the cylindrical barrel portions 1 of the inter-engageable members as shown in Figure 3 of the drawings of a length adapted to maintain the series of elements in alignment and more or less coplanar with the flexible stringers 5, each projection fitting loosely into the bore of the adjacent barrel portion so as not to permit movement of the members in arcuate or curved paths in passing through the operating slider.

It is to be noticed that the interengageable members are arranged directly opposite one another, that the elements are grooved externally so as to insure reliable operation of the slider whose flanges track the substantially continuous metallic guideway thereby provided, that the elements are constructed out of sheet metal in one piece, that the complete fastener is practically proof against disarrangement or jamming in service, that the assemblage presents a symmetrical and attractive appearance, and that the hooks are struck from the body of the elements and lie in the plane of the fastener-elements in a manner utilizing the strength of the metal to the best advantage. The hooks 2 are flat and parallel with the stringers 5. The shank portions of the hooks 2 are of a width substantially equal to the length of the eyes 3 which they approximately fill at least in the direction of extent of the inter-engaged members. It will be noticed that the curved hook is wider at its junction with the body member 1 than at its beak. The shank portions of the hooks 2 are designed in service to hold the members against lengthwise shift or displacement relative to one another and consequently to prevent the hooks from becoming disengaged. The hooks 2 may be engaged with or disengaged from the eyes 3 by the slider 11 when moved in the intersecting arcuate paths determined by the slider but cannot be disengaged by direct lateral pull upon the opposite stringers or otherwise than by operation of the slider. The hooks 2 are integral with the body of the members 1, having been struck therefrom and folded through an angle of more than 90°, the line of fold or juncture between the hooks and the body extending in the direction of the length of the members 1. The hooks 2 are thus ruggedly constructed in one piece with the body of the members 1 in a simple manner in a form insuring maintenance of engagement with the co-operating eyed-member in service.

Having thus described my invention, what I claim and desire to protect by Letters Patent is:

1. A fastener comprising a pair of flexible stringers, a series of inter-engageable members on each of said stringers, in combination with, a slider for interengaging or disengaging said members, said inter-engageable members on opposite sides being provided externally with longitudinal grooves defined by outer and inner walls substantially coextensive with the length of each member, and said slider having inturned flanges tracking the grooves.

2. A fastener comprising a pair of flexible stringers, a series of inter-engageable members on each of said stringers, in combination with, a slider for interengaging or disengaging said members, the inter-engageable members on opposite sides being provided externally with longitudinal grooves defined by outer and inner walls substantially coextensive with the length of each member, and those of one series being disposed directly opposite the co-operating members of the other series, and said slider having inturned flanges tracking the grooves.

3. A fastener comprising a pair of flexible stringers, a series of inter-engageable members on each of said stringers, in combination with, a slider for inter-engaging or disengaging said members, said inter-engageable members being clamped to the stringers, and means independent of the stringers for maintaining the inter-engageable members sufficiently aligned to insure their engagement or disengagement when the slider is operated, said last named means comprising projections on said inter-engageable members extending lengthwise from the end of each and adapted to be slidably received by the adjacent inter-engageable member.

4. A fastener comprising a pair of flexible stringers, a slider with inturned curved flanges, in combination with, a series of inter-engageable members each consisting of a piece of sheet metal folded and bent to form a stringer gripping portion and to form an inter-locking-element-carrying portion, said portions being divided by a groove extending the length thereof and in which the flanges of the slider are adapted to engage, some of said inter-engageable members having hooks struck therefrom, the remainder of said inter-engageable members having eyes provided therein to receive the hooks.

5. A fastener comprising a pair of flexible stringers, a slider with inturned curved flanges, in combination with, a series of inter-engageable members each consisting of a piece of sheet metal folded and bent to form a split substantially cylindrical stringer gripping portion and to form an inter-locking-element-carrying portion, said portions being divided by a groove extending the length thereof in which the flanges of the

slider are adapted to engage, some of said inter-engageable members having hooks struck therefrom, the remainder of said inter-engageable members having eyes provided therein, and projections on one end of said inter-engageable members adapted to be loosely received within the adjacent end of the nearest engageable member.

6. A fastener comprising a pair of flexible stringers, a slider with inturned curved flanges, in combination with, a series of inter-engageable members each consisting of a piece of sheet metal folded and bent to form a stringer gripping portion and to form an interlocking-element-carrying portion, said portions being divided by a groove extending the length thereof and in which the flanges of the slider are adapted to engage, some of said inter-engageable members having hooks, the remainder of said inter-engageable members having eyes provided therein to receive the hooks.

7. A fastener comprising a pair of flexible stringers, a series of members provided with hooks flat in a plane normally parallel to the stringers, each of the hook members being independently mounted on the stringers, a second series of members provided with eyes for receiving the hooks, each of the eye members being independently mounted upon the stringers, in combination with a slider for engaging and disengaging said members, said hooks being substantially wider at the junction with the members than at their free extremities.

8. A fastener comprising a pair of flexible stringers, a series of members provided with hooks flat in a plane normally parallel to the stringers, each of said hook members being independently mounted upon the stringers, and a second series of members provided with eyes for receiving the hooks, each of said eye members being independently mounted upon the stringers, said flat hooks having shank portions approximately filling the eyes in the direction of the length of the fastener when the members are inter-engaged, in combination with a slider for engaging and disengaging said members.

9. In a multiple-fastening device, a member provided with an eye, and a complementary member provided with a hook struck from the body thereof and folded at one side of the hook more than 90° into a plane substantially parallel with the plane of the body of the member, said hook projecting clear of the member so as to be engageable in the eye provided in the other member.

10. In a multiple fastening device, a member provided with an eye, and a complementary member provided with a hook bent up from the body thereof and folded at one side of the body through an angle of at least 90° into a plane substantially parallel with the plane of the body of the member, said hook projecting clear of the member so as to be engageable in the eye provided in the other member.

11. A separable fastener comprising a pair of flexible stringers, locking members, each having an eye and jaws clamped on the longitudinal edge of one stringer, locking members, each having jaws clamped to the longitudinal edge of the other stringer and each having a hook shorter than the body of the member and flat in a plane normally parallel to the stringer, and a slider for engaging and disengaging said members.

12. A separable fastener comprising a pair of flexible stringers, locking members each having jaws clamped to the longitudinal edge of one stringer and each having a hook shorter than the body of the member and flat in a plane normally parallel to the stringer, locking members each having jaws clamped to the longitudinal edge of the other stringer and each having portions projecting from the stringer edge to engage and hold the flat hooks on the first stringer, and a slider for engaging and disengaging said members.

13. A separable fastener comprising a pair of flexible stringers, locking members each having jaws clamped to the longitudinal edge of one stringer and each having a hook projecting laterally from the body of the member so as to lie flat in a plane parallel to the stringer, locking members each having jaws clamped to the longitudinal edge of the other stringer and each having a portion with a recess formed therein closed on at least three sides, said recess receiving said flat hook when the locking members are engaged.

14. A separable fastener comprising a pair of flexible stringers, locking members secured along the edges of said stringers, the locking members on one stringer each having an eye and attaching portions engaging the stringers, and the locking members on the other stringer each having a flat hook disposed normally in a plane parallel to the stringer and engaging portions for attachment to the stringer, said hooks engaging in said eyes when the fastener is closed, and a slider for engaging and disengaging said members.

Signed at Waterbury, in the county of New Haven, and State of Connecticut, this 27th day of June, 1924.

DANIEL F. DALTON.