W. E. RICE.

HOOK AND EYE.

APPLICATION FILED JULY 24, 1914.

1,144,786. Patented June 29, 1915.

Fig. 1.

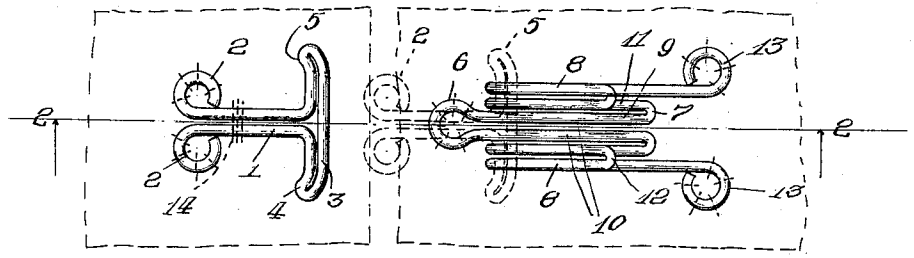


Fig. 2.

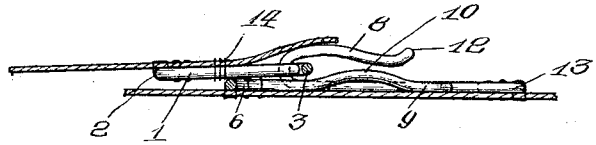


Fig. 3.

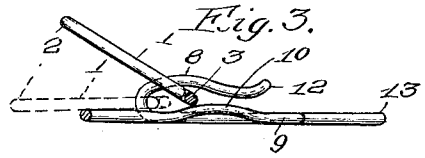
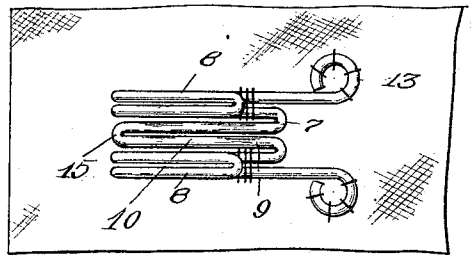


Fig. 4.



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HOOK AND EYE.

1,144,786. Specification of Letters Patent. Patented June 29, 1915.

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To all whom it may concern:

Be it known that I, WILLIAM E. RICE, citizen of the United States, residing at La Fayette, in the county of Tippecanoe and State of Indiana, have invented certain new and useful Improvements in Hooks and Eyes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to garment fasteners of the so-called hook and eye type, one of its prime objects being to provide a pair of coöperating fastener members which may easily be snapped into engagement with each other but which will not become accidentally disconnected by a relative movement of the portions of the garment to which said members are secured.

Another object is to provide a hook member having the customary loop ends whereby the same is secured to the garment and also having an auxiliary loop disposed near the hook formation or even extending beyond the latter, which auxiliary loop may also be secured to the material of the garment, thereby continuously maintaining the hook member in its normal position with respect to the garment.

Still another object is to provide a main member having a pair of substantially parallel hooks engaging a cross-bar upon the coöperating member, and to provide means upon said coöperating member for preventing the parallel hook portions from being spread apart by an unusual strain upon the interlocked fastener members, which strain might otherwise detach said members from each other.

Further objects will be apparent from the following specification and from the accompanying drawings, in which—

Figure 1 is a plan view of a fragment of a garment equipped with the fasteners of my invention. Fig. 2 is a vertical section through the right-hand portion of Fig. 1 along the line 2—2. Fig. 3 is a view similar to Fig. 2 showing the disposition of the fastener members when the strain on the garment is relaxed. Fig. 4 is a plan view of an alternative type of the hook member of my fastener.

In accomplishing my invention, I invert the usual arrangement of a hook and eye in which the eye of one member is slipped over a single hook upon the other member, by providing a hook member equipped with a pair of symmetrical hooks disposed parallel to each other and laterally spaced from each other, and by providing a substantially T-shaped companion member in which the cross-bar of the T member simultaneously engages both of the said hooks. The T member of my fastener consists preferably of a pair of parallel shanks 1 disposed close to one another and equippd at their free ends with eyes 2 adapted to be sewed to a portion of the garment, the other end of said shanks being joined by a transverse loop 3 which forms the head or transverse portion of the T formation. The opposite ends of the said cross-bar 3 are preferably equipped with bends 4 affording shoulders 5 adapted respectively to engage the lateral edges of the hook member of my fastener so as to prevent a spreading of the parallel hooks 8 of the hook member. The hook member is also preferably made of a continuous piece of resilient wire bent at its center to form a loop 6 directed forwardly toward the eyes 2 of the companion member, the said loop 6 being connected by return bends 7 with the inner ends of the two hook formations 8, which latter are disposed parallel to each other as shown in Figs. 1 and 3. The shanks 9 connecting the loop 6 with the return bends 7 are preferably bent upward or in a direction transverse to the plane of the garment carrying the said fastener, thereby providing a hump 10 having its uppermost portion considerably above the upper edge of the shorter shanks 11 of the hooks 8. By extending the loop or forward end of the innermost shanks 9 somewhat forward of the bends of the hooks 8, I provide a sufficient length in the said hump formation so as to afford a resiliency enabling the tip of the hump to be flexed downwardly by the pressure exerted when forcibly slipping the cross-bar 3 of the companion member of the fastener into or out of its normal position. That is to say, when the companion member is moved from its normal position of Fig. 2 toward the free tips 12 of the hooks proper, the cross-bar of the companion member will wedge the humps 10 and the hooks 8 apart, raising the

one and lowering the other, thereby permitting the said shank of the companion member to be slipped out of its normal position when moved with sufficient force. However, a similar movement when not forcibly exerted will merely cause the shank 3 simultaneously to engage portions of the hump and hook elements extending in different planes, so that these elements will coöperate to stop the companion member and prevent an accidental disengaging thereof.

To secure the main member of my fastener to a garment, I equip the free ends thereof with eyes 13 which are sewed to the garment after the usual manner, the loop 6 also being preferably sewed to the garment so as to maintain the hook member continuously pressed against the garment, thereby preventing it from being flexed away from the garment about the eyes 13 as a fulcrum, as so often happens with the hooks now on the market.

It will be evident from the drawings that by thus providing an auxiliary fastening disposed near or beyond the bends of the hooks proper, I avoid the shifting of the position of the hook with respect to the garment (which is so common in fasteners heretofore in use), thereby readily enabling the fastener to be manipulated with one hand. Likewise, such a tilting of a companion member may be prevented by sewing the shanks 1 to the garment as shown in dotted lines at 14. By equipping my hook member with a pair of companion hooks I am also able to afford a much stronger fastening when using wire of a given size for the construction of the fastener than is possible with single hook constructions. At the same time, the return bends 4 of the companion member will interlock with the outer edges of the respective hook formations, so as to avoid a relative spreading of the latter, which spreading has been one of the stumbling blocks in previous attempts to construct a fastener comprising a T-shaped member in combination with a main member having a pair of relatively spaced hooked formations. However, I do not wish to be limited to the use of these return bends upon the cross-bar of the companion member, nor to other details of the construction herein disclosed, as the same might be modified in many ways without departing from the spirit of my invention. For example, instead of carrying the inner or humped shanks 9 beyond the bends of the hooks 8 and joining them by a widened loop 6, the said shanks might be joined by a relatively compressed loop 15 extending only to the bends of the hook 8 as shown in Fig. 3, which loop might still be sewed to the garment to maintain the hook member securely in its normal position. In either case, the return bends 7 permit the guard portions 9 to flex about these bends 7 as a fulcrum, thereby increasing the resiliency obtainable in the guard formation and avoiding an unbending or "setting" of the said guard formation after a repeated flexing thereof, even when the hook member is made of wire of comparatively low resiliency.

While the height of the hump 10 may be varied considerably, it will be evident that every increase in its height will decrease the resiliency afforded by the hook member and will increase the amount of power required for unfastening the coupled members. However, I have found in practice that when the strain on the adjacent garment portions is relaxed, the eye member invariably is tilted out of its normal plane with respect to the hook member, as shown in Fig. 3. Consequently, even a spacing between the top of the hump and the bottom of the hooks sufficient to let one strand of the loop slip through freely will not suffice to permit the two strands of the cross-bar of the eye to slip out. Consequently, by making this spacing almost equal to the thickness of the wire, I can permit the fastener members to be separated without the use of any appreciable force by simply tilting the eye into the position shown in dotted lines in Fig. 3 and then sliding it with respect to the hook member.

I claim as my invention:

1. In a garment fastener, a hook member made of a single piece of wire and comprising a pair of terminal eyes, a pair of parallel hooks presenting tips directed rearwardly toward the said eyes, each of said hooks composed of two parallel strands, said eyes formed respectively upon the outer strands of said hooks; and a resilient, forwardly directed tongue connecting the inner strands of said hooks and disposed between said hooks, said tongue being upwardly curved intermediate of its ends.

2. In a garment fastener, a hook member made of a single piece of wire and comprising a pair of terminal eyes, a pair of parallel hooks presenting tips directed rearwardly toward the said eyes, each of said hooks composed of two parallel strands, said eyes formed respectively upon the outer strands of said hooks; and a resilient, forwardly directed tongue connecting the inner strands of said hooks and disposed between said hooks, said tongue provided at its forward end with a loop adapted to be secured to the material upon which said hook member is mounted.

3. In a garment fastener, a hook member formed of a single strand of wire terminating in attaching eyes and comprising a pair of spaced hooks presenting tips directed rearwardly toward said eyes, each of said hooks formed of two substantially parallel portions, the outer thereof con-

nected respectively to said eyes, the inner thereof extending toward the said eyes, and a forwardly directed resilient loop connected by return bends respectively to the said inner portions of the spaced hooks and presenting an upwardly directed hump intermediate of the ends of said loop.

In testimony whereof I have signed my name in presence of two subscribing witnesses.

WILLIAM E. RICE.

Witnesses:
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