No. 785,413. PATENTED MAR. 21, 1905.

H. H. EATON.

HOOK AND EYE.

APPLICATION FILED SEPT. 12, 1900. RENEWED AUG. 25, 1904.

FIG. 1.

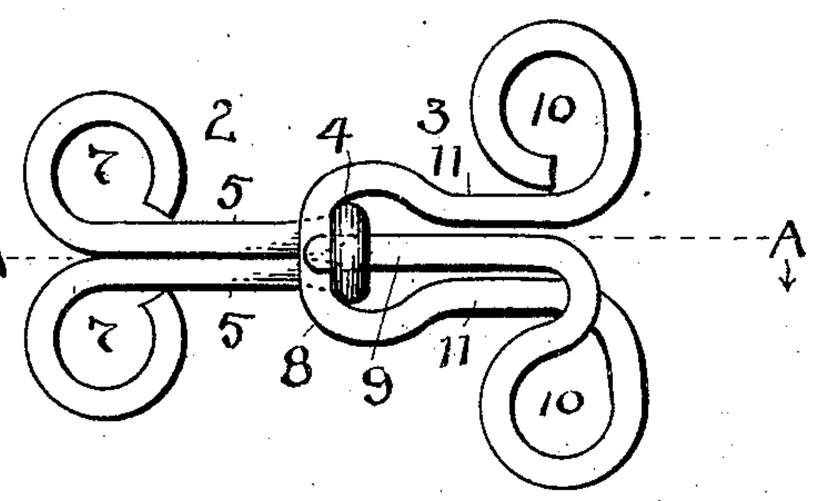
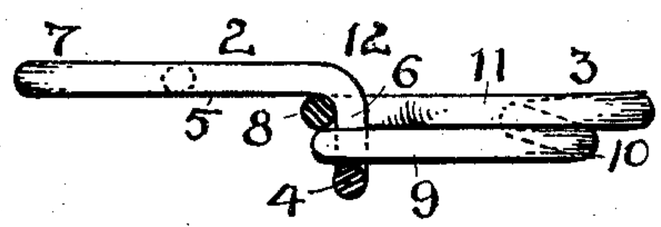


FIG. 2.



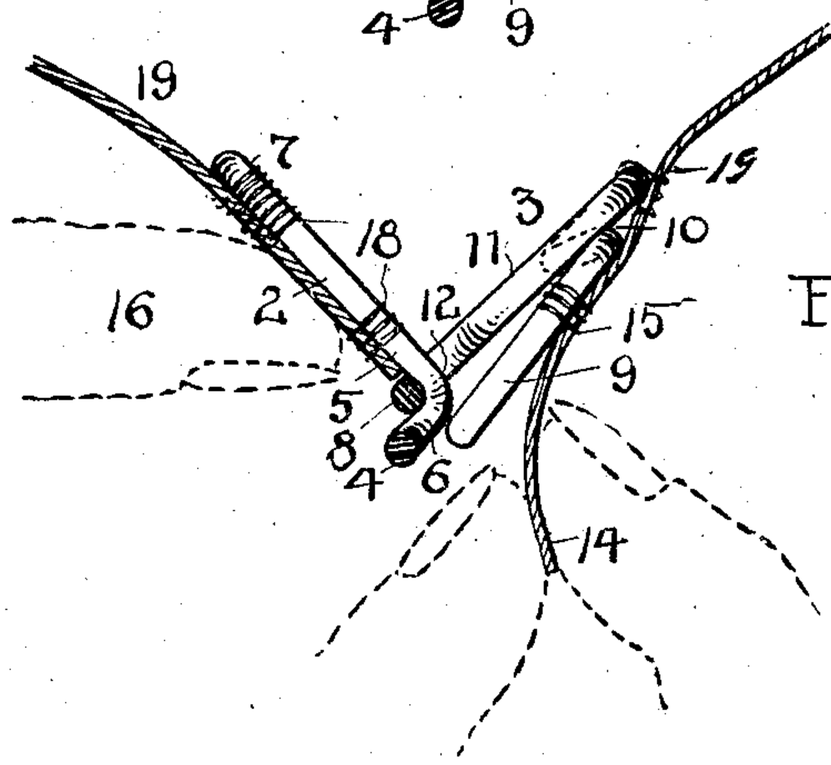
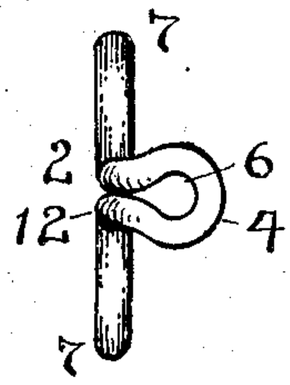


FIG. 3.

FIG. 4.



ATTEST

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No. 785,413. Patented March 21, 1905.

UNITED STATES PATENT OFFICE.

HARRISON H. EATON, OF CLEVELAND, OHIO.

HOOK AND EYE.

SPECIFICATION forming part of Letters Patent No. 785,413, dated March 21, 1905.

Application filed September 12, 1900. Renewed August 25, 1904. Serial No. 222,110.

To all whom it may concern:

Be it known that I, HARRISON H. EATON, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Hooks and Eyes; and I do declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to an improvement in hooks and eyes.

The object of my invention is to reorganize and improve the construction of hooks and eyes to obtain convenient engagement and disengagement and secure holding of the members during engagement. In hooks and eyes as heretofore constructed it has usually been necessary to pull the members by each other a considerable distance beyond the position which they occupy when they are in their normal engaged position in order to engage and disengage them. This requires a strain to be exerted upon the garment or other thing to be united by the hooks and eyes much in excess of that which they are required to stand in normal use and renders their engagement and disengagement difficult when used upon tight garments. It is also to be observed that in all hooks and eyes of the prior art of which I am aware not open to the objection above pointed out they were insecurely locked or held in their engaged position, so that they afforded at best an unreliable means of securing together the things to which they were attached.

More specifically stated, the object of my invention is to produce hooks and eyes that can be engaged and disengaged with little, if any, additional strain on the parts to be united, and which at the same time will operate securely to hold the parts together without liability of disengagement under increasing and decreasing strains incident to use.

To the above ends the present invention consists in the hooks and eyes hereinafter described, and particularly defined in the claims.

In the accompanying drawings, illustrating the preferred embodiment of my invention, Figure 1 is a plan of my hook and eye in engaged position. Fig. 2 is a longitudinal medial section taken on the line A A, Fig. 1. Fig. 3 is a longitudinally medial section showing the members attached to the parts they are designed to unite and in substantially what will be hereinafter termed the "disengaging" position of the members, and Fig. 4 is an end elevation of the hook member.

Referring to the accompanying drawings, the hook member (indicated in a general way by the reference character 2) is adapted to engage the eye member (indicated in a general way by the reference character 3) and to be held thereby securely in its engaged position irrespective of increasing or diminishing strain or accidental turning or other movements of the members relatively to each other during use.

The hook member 2 is provided with a hook 4, projected substantially at right angles from the forward end of shank portions 5 and penetrated by a tongue-receiving hole 6. The usual loops 7 are projected in opposite directions from the rear ends of the shank portions 5. It will be noted as one of the essential features of my invention that the hook 4 lies entirely in a plane substantially at right angles to the shank portions 5, there being no portion of the hook which extends rearwardly, which latter construction peremptorily requires the members to be moved toward each other a substantial distance in order to disengage them. This is an important feature of my invention, and its coöperative relation to other features thereof will be hereinafter fully described.

The eye member 3 is provided with an eye 8 and a tongue 9, which is projected forward upon the longitudinal medial line of the eye or loop 8, having its end at and normally resting upon the forward end of the eye. The tongue is elastically supported with relation to the eye so that it may move toward and from the plane of the eye conveniently by continuing one of the ends of the loops 10, which are projected laterally from the opposite sides of the shank portions 11 in substantially the plane of the eye 8. It is essential to my invention not only that the tongue 9 should not extend beyond the forward end of

the eye 8, but that it should extend forward far enough so that it may engage the end of the eye 8 and be prevented thereby from accidentally being bent or sprung so that it may swing through the eye. It will be noted that in the latter case an accidental turning of the hook member with relation to the eye member will spring the tongue into such a position that the parts may become disengaged. The engaged position of the members is illustrated in Fig. 1, wherein the hook 4 is projected vertically through the eye 8 with the end of tongue 9 located in the tongue-receiving hole 6 of the hook. This position is easily and quickly obtained by pressing the hook 4 against side of the tongue lying against the end of the eye 8 and turning the members slightly with relation to each other until the end of the hook 4 may pass by the end of the tongue 9, whereupon the tongue being slightly displaced by such pressure will spring back to its normal position and the members being turned again into the same plane the end of the tongue 9 will enter the tongue-receiving hole 6 and parts will be securely locked together in their engaged position. It is to be noted that the tongue having its end at the forward end of the eye coöperates with the hook projected at right angles to the shank portions of the hook member to secure the engagement of the members by the simple method above described, which obviates the necessity of moving the members toward each other against the strain usually incident to such movements.

The disengaging position of the members is substantially illustrated in Fig. 3, wherein the members are shown attached to the parts 19 to be united thereby—that is, with the eye sewed fast by its loops 10 and tongue 9 to the one part 19, the threads for securing the tongue being located well toward the end of the tongue and preferably at about the place indicated in the figure by the reference character 15 for a purpose hereinafter set forth. The edge 14 of the part to which the eye member is attached will preferably extend slightly beyond the member to provide a covering-strip or overlap for the junction of the two parts. Assuming that a normal strain is exerted by the parts upon each other, the operator will pull outwardly (downwardly as seen in Fig. 3) upon the edge 14, thereby bringing the members into the relative positions substantially as illustrated in said figure and pulling the end tongue 9 away from contact with the eye 8, whereupon a slight pressure exerted upon the edge of the other part 19 over the hook, as by the finger indicated at 16, will force the same out of the eye and effect the disengagement of the members without movement of the members toward each other or the exertion of any substantially increased strain on the parts united by the members.

I have shown the hook as constructed so that another method of disengaging the members may be employed, if desired, instead of or as an alternative to the method above set forth. To this end I have contracted the base of the hook 4 by bringing the parts of the wire of which it is formed together at 12. By virtue of this construction I am enabled by turning the engaged members into substantially the relative positions illustrated in Fig. 3, so that the contraction 12 engages the under side of the tongue, so that the hook then acts as a lever to lift the tongue from contact with the end of the eye 8, so that the hook may then be moved rearwardly with relation to the eye underneath the tongue and the parts thereby disengaged. This capacity of my hook and eye to be disengaged in different manners renders it useful and efficient in many different places.

It is to be noted that the feature of the hook member consisting in having its hook arranged at right angles to its shank coöperates in a peculiar manner with the feature of the eye member which consists in having its tongue extended over but not beyond the end of the eye member, whereby the members may be easily engaged and disengaged without material movements of the members toward each other.

I am aware that it has been proposed to make a hook and eye in which the hook consisted of an open loop of wire supported by and substantially at right angles to a shank and in which the eye was provided with a tongue, which extended toward but not over the end of the loop. I am also aware of a construction which has been proposed in which a hook member provided with a backwardly-bent hook is used in connection with an eye member provided with a tongue extended considerably beyond the end of the loop of the eye member; but such constructions are distinctly differentiated from mine by differences in construction, mode of operation, and result accomplished, as clearly will appear by a comparison of such constructions, their modes of operation, and results accomplished with mine.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A hook and eye, having, in combination, a hook member provided with a shank and a hook arranged at right angles to the shank, said hook being provided with a tongue-receiving hole, and an eye member provided with a loop to embrace the hook of the hook member and a tongue extended over and not beyond the end of the said eye-member loop, adapted to enter said tongue-receiving hole in the hook, substantially as described.

2. A hook and eye, having, in combination, a hook member provided with a shank and a hook arranged at right angles to the shank, said hook being provided with a tongue-receiving hole, and an eye member provided with a loop

to embrace the hook of the hook member and a tongue extended over and not beyond the end of the said eye-member loop, adapted to enter said tongue-receiving hole in the hook, the base of said hook being contracted to form a shoulder adapted to engage and displace the tongue when the members are turned with relation to each other to facilitate the disengagement of the members in the manner set forth, substantially as described.

Witness my hand to the foregoing specification this 16th day of May, 1900.

HARRISON H. EATON.

Witnesses:
H. T. FISHER,
R. B. MOSER.