

No. 628,674.

Patented July 11, 1899.

B. F. OREWILER.  
HOOK AND EYE.

(Application filed May 20, 1898.)

(No Model.)

Fig. 1.

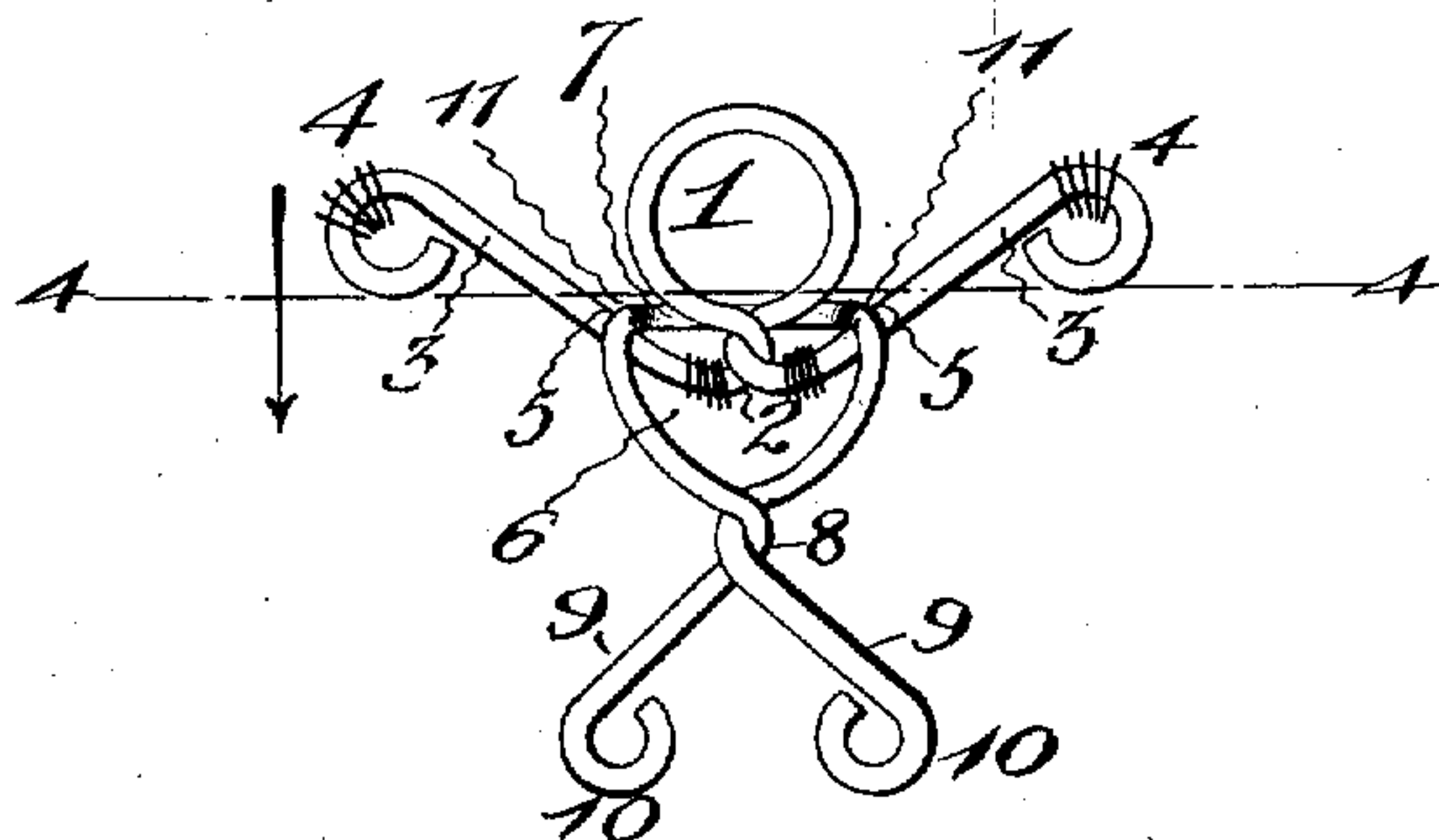


Fig. 2.

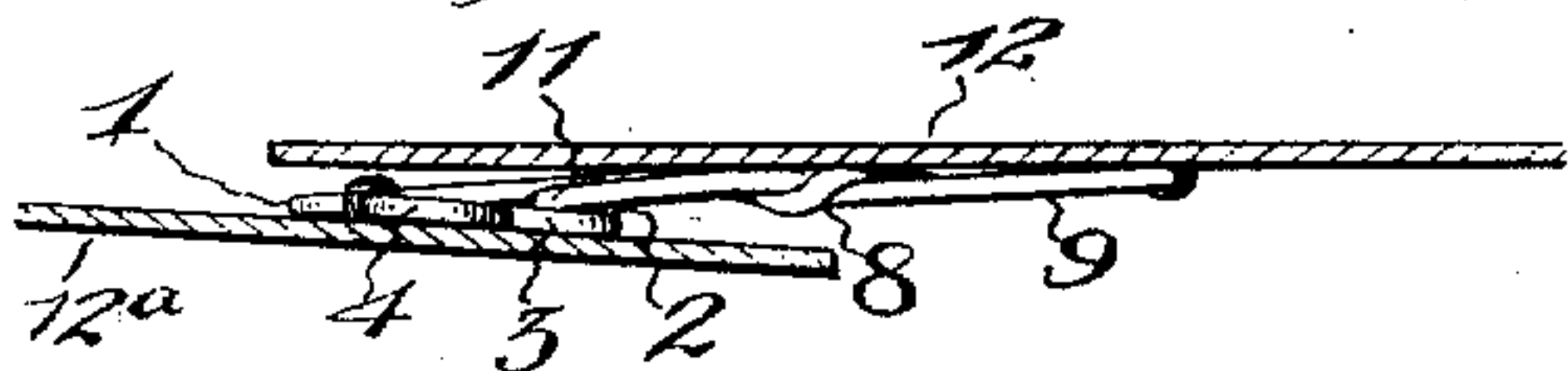


Fig. 3.

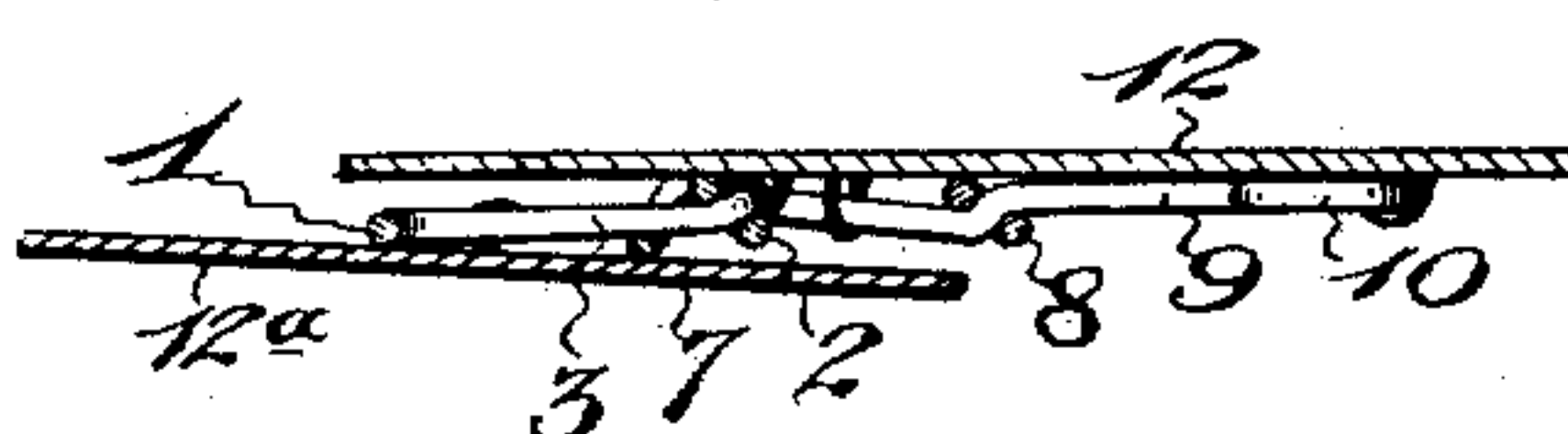


Fig. 5.



Fig. 4.



Witnesses

A. Roy Appleman

*[Signature]*

By *his* Attorneys.

Benjamin F. Orewiler, Inventor.

*CA Snow & Co*

# UNITED STATES PATENT OFFICE.

BENJAMIN F. OREWILER, OF SHELBY, OHIO, ASSIGNOR OF ONE-FIFTH TO  
GEORGE H. REINBERGER, OF CLEVELAND, OHIO.

## HOOK AND EYE.

SPECIFICATION forming part of Letters Patent No. 628,674, dated July 11, 1899.

Application filed May 20, 1898. Serial No. 681,249. (No model.)

*To all whom it may concern:*

Be it known that I, BENJAMIN F. OREWILER, a citizen of the United States, residing at Shelby, in the county of Richland and State of Ohio, have invented a new and useful Hook and Eye, of which the following is a specification.

My invention relates to garment-fasteners of the hook-and-eye type, and has for its object to provide a device of this class whereof each of the members is constructed of a single blank of wire, with the elements so related that when the members are in their engaged or operative position any strain applied thereto by the connected portions of a garment will not cause the tilting or angular disposition of the members with relation to each other, and the depth or thickness of the fastener at no point can exceed two thicknesses or two diameters of the wire of which the blanks are formed.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a plan view of a garment-fastener constructed in accordance with my invention, the members being in their engaged or operative relations. Fig. 2 is an edge view of the same, showing the members of the fastener applied to the lapping portions of a garment. Fig. 3 is a longitudinal section of the same. Fig. 4 is a transverse section taken on the plane indicated by the line 4 4 of Fig. 1. Fig. 5 is a rear end view of the hook member.

Similar reference characters indicate corresponding parts in all the figures of the drawings.

A garment-fastener of the type to which my present invention appertains is shown and described in Patent No. 592,439, granted to me on October 26, 1897, said patented fastener consisting of a hook member, of which the bill is of circular or ring shape, having its sides connected with the securing-arms by means of interlocked half-twists forming the neck of the bill, and of which the eye member is provided with an approximately circular eye having a depressed front portion to pass under the bill and side portions arranged in a com-

mon plane parallel with the bill to bear upon the attaching-arms of the hook member at opposite sides of said neck; but owing to the fact that the depressed front portion of the eye is curved in end view or is depressed at its center more than at its ends, and hence is not parallel throughout with the plane of the sides or bearing portions of said eye, I have found in practice that when the members are strained by the portions or laps of the garment to which they are attached the deflected portions of the sides of the eye will ride upon the bearing portions of the attaching-arms of the hook member, and the depressed central portion of the downwardly-deflected front end of the eye will be brought into contact and engagement with the reduced neck of the hook-bill, thus causing a relative tilting or deflection of the members of the fastener from a common plane. In order to avoid this abnormal relative arrangement of the members when strained, I have made certain changes in the relations between the elements, whereby the backward sliding of the eye with relation to the hook-bill is prevented, said engaging portion of the eye being maintained under strain in engagement with the separated side portions of the hook-bill in advance of the interlocked half-twists, and have otherwise made improvements over the patented fastener whereby the thickness of the device at no point exceeds double that of the wire of which the same is formed.

Referring to the drawings, the hook member consists of an approximately circular or ring-shaped hook-bill 1, constituting the center of the blank from which said hook member is formed, the sides of the body portion of the hook-bill being arranged in a common transverse plane, in rear of which they are bent in opposite directions to form interlocking half-twists 2, and beyond these half-twists the sides of the blank are extended to form the attaching-arms 3, terminating in thread-eyes 4, which, however, are preferably located in rear of a transverse line disposed at a tangent to the front end of the hook-bill. Obviously the neck of the hook-bill, which is formed by the interlocking laterally open half-twists 2, is of a thickness or depth (measured perpendicular to the plane of the attaching-arms 3 or perpendicular to the plane of a gar-



ment-lap to which the fastener is attached) equal to double the thickness of the blank of which the fastener is constructed; but the single-thickness attaching-arms 3 are arranged in a common plane, and the sides of the body portion of the hook-bill are similarly arranged in a common plane parallel with the common plane of the attaching-arms 3. For a purpose hereinafter explained, however, the sides of the body portion of the hook-bill are not arranged in the same plane as the attaching-arms 3, but are arranged in a plane parallel therewith and set upward or outward from the plane of the attaching-arms a distance equal to the thickness of the blank of which the fastener is constructed, whereby the inner surface of the body portion of the hook-bill is in a common plane with the outer surfaces of the attaching-arms, as clearly shown in Fig. 5. In other words, assuming that the fastener is arranged in a horizontal position, the attaching-arms are in a common horizontal plane, and the sides of the body portion of the hook-bill are in a common horizontal plane parallel with the said attaching-arms, but with the lower side of the body portion of the hook-bill in the plane of the upper sides of the attaching-arms.

The curved portions of the attaching-arms 3 adjacent to and upon opposite sides of the neck of the hook-bill form thread-seats, with which may be engaged stitches to secure the hook member of the fastener at a point adjacent to the rear end of the hook-bill, and from these thread-seats the attaching-arms diverge forward toward the attaching-eyes 4. Intermediate portions 5 of said attaching-arms, however, form bearing points or seats, for a purpose hereinafter explained, and a straight transverse line connecting these spaced bearing seats or points—namely, a line parallel with a line connecting the attaching-eyes 4—passes under the body portion of the hook-bill in front of the above-described neck portion, or, in other words, under those portions of the sides of the hook-bill which are in a common plane parallel with the plane of the attaching-arms. This will be seen by reference to Fig. 1.

The eye member of the fastener, as is the hook member, is constructed of a single blank of wire, and consists of an eye 6, which is segmental in plan, and of which the sides are provided with outwardly-open interlocking half-twists 8, extended rearward to form divergent attaching-arms 9, terminating in thread-eyes 10. The segmental eye 6 is closed at its front end by a straight transverse hook-bill-engaging bar 7, and the portions of the sides of the eye adjacent to the extremities of said bar 7 are deflected downward or toward the plane of the attaching-arms 3 of the hook member, to lie in front of said attaching-arms 3, said downwardly-deflected portions forming shoulders 11 for contact with the front sides of the arms 3 to prevent rearward movement of the eye mem-

ber with relation to the hook member when the straight transverse bar 7 is in contact with the under surfaces of the separated sides of the body portion of the hook-bill. The transverse hook-bill-engaging bar 7 is arranged throughout in a plane parallel with the sides of the eye 6 and at a distance below the plane of said sides which is equal to the thickness of the wire by which the fastener is formed, whereby the upper surface of said bar 7 is in the plane of the lower surfaces of the sides of the eye. Furthermore, the interval between the stops 11 is equal to that between the above-described bearing portions 5 of the attaching-arms 3, and hence the straight transverse bar 7, which connects said stops, passes under the hook-bill in advance of the reduced neck portion thereof, and hence under the body portion of the hook-bill in contact with the under or inner surfaces of the separated sides of the hook-bill.

Owing to the fact that the upward or outward deflection of the body portion of the hook-bill from the plane of the attaching-arms 3 at the points 5 is only sufficient to arrange the under or inner surfaces of the sides of the hook-bill in the plane of the upper or outer surfaces of the attaching-arms at said points 5 and also inasmuch as the downward or inward deflection of the uniformly straight bar 7 from the plane of the portions of the sides of the eye 6 adjacent to the stops 11 is only sufficient to arrange the upper or outer surface of said bar 7 in the plane of the under surfaces of the said sides of the eye 6, it will be seen that when the members of the garment-fastener are engaged, as shown in Fig. 1, the transverse bar 7 will lie in a common plane with the attaching-arms 3, and the sides of the eye 6 are arranged in a common plane with the body portion of the hook-bill 1. The eye is prevented from rearward displacement with relation to the hook-bill by the contact of the offset stops 11 with the front sides of the attaching-arms 3, and when said stops are in contact with said attaching-arms the intermediate portion of the bar 7 lies under the separated sides of the body portion of the hook-bill and is prevented from upward or outward displacement and also from lateral rocking movement. By preventing the cross-bar 7 of the eye from passing rearwardly to engage the hook-bill at its neck portion the eye member is prevented from contact with the threads engaging said attaching-arms 3 adjacent to the neck, and therefore the cutting out of the threads by the contact of metallic parts is prevented.

While, as above stated, the sides of the body portion of the hook-bill are in a common plane parallel with the common plane of the attaching-arms 3 at the bearing-points 5, I may, as indicated in Figs. 2 and 3, decline said hook-bill slightly toward its front end to arrange it adjacent to the plane of the garment to which it may be attached; but it will be understood that those separated portions of the sides of



the hook-bill which are on a transverse line connecting the bearing-points or connecting those points at which the offset stops 11 of the eye engage the attaching-arms 3 are set sufficiently outward from the plane of said attaching-arms to arrange the lower or inner surfaces of the former in a common plane with the upper or outer surfaces of the attaching-arms.

Thus from the foregoing description it will be seen that while the members of the garment-fastener cross each other at certain points, as at the bearing-points 5 and at the hook-bill in front of the neck portion 2, the combined thicknesses of the intersecting elements do not exceed two thicknesses of the wire forming the blanks from which the members of the fastener are constructed; and the relation between the parts is such that the members cannot when in engagement assume a relative position whereby more than two thicknesses of the wire will be in a plane perpendicular to the body portions of the members of the fastener. In other words, the maximum thickness of the fastener never exceeds two thicknesses of the wire, and therefore the laps 12 and 12<sup>a</sup> of a garment to which the eye and hook members, respectively, of the fastener are attached are at no point separated a greater distance than two thicknesses of the wire employed in the construction of the fastener.

The transverse diameter of the hook-bill is slightly in excess of the width of the eye 6 on a transverse line connecting the offset stops 11, and therefore when the eye is engaged with the hook-bill a slight transverse contraction of the latter is caused to allow the eye to pass thereover. The wire, however, of which the device is constructed is composed of sufficient resilient or spring quality to resist bending and return to its normal position after having been deflected, whereby the relative transverse diameters of the hook-bill and eye serve to prevent accidental disengagement of the members.

Having described my invention, what I claim is—

1. A garment-fastener consisting of an eye member constructed of a single length of wire bent upon itself, forming a segmental eye, of which the side portions are connected at their front ends by the transverse portion, and having its side portions brought together and interlocked by half-twists, and having the end portions diverging and terminating in thread-seats, and a hook member formed of a single length of wire bent to provide a ring or circular bill having its external diameter slightly greater than the internal diameter of said eye, and having the side portions interlocked by half-twists, and having the end portions exterior, extending forward and terminating in thread-seats, said front transverse portion of the eye being of a length equal with the diameter of the eye and being arranged throughout in a common plane with said end portions

of the hook member, and the sides of said eye, adjacent to the extremities of said transverse portion, being deflected to form offset stops 11, substantially as specified.

2. A garment-fastener consisting of an eye member constructed of a single length of wire bent upon itself, forming a segmental eye of which the front portion is straight, is equal in length with the diameter of the eye, and is depressed to arrange its upper surface in the plane of the under surfaces of the side portions of the eye, said eye having its side portions brought together and interlocked by half-twists, and having the end portions diverging and terminating in thread-seats, and a hook member, formed of a single length of wire bent to form a ring or circular bill, of which the external diameter is slightly greater than the internal diameter of the eye, and having the side portions interlocked by half-twists, and having the end portions exterior, and extending forward, and terminating in thread-seats, the side portions of the eye being deflected to form offset stops 11 for contact with the said end portions of the hook member, to limit the rearward movement of the eye member, and the sides of the ring or circular bill, in a perpendicular plane of said transverse portion of the eye, being spaced apart, and being in a common plane parallel with said end portions of the hook member, and with their under surfaces in the plane of the upper surfaces of said end portions, substantially as specified.

3. In a garment-fastener, a hook member constructed of a length of wire doubled upon itself, and bent to form a ring or circular bill, and having its side portions interlocked by intermeshing half-twists to provide for the contraction and expansion of the circular bill, and extended, forming arms at the sides of the circular bill, and spaced therefrom, and terminating in thread-seats, in combination with an eye member having a segmental eye of which the sides bear upon said attaching-arms, are deflected in front of said attaching-arms to form opposite stops 11, and are connected by a straight transverse front portion, arranged throughout its length in the plane of the said attaching-arms, slightly less in length than the external diameter of the ring or circular hook-bill, and bearing against the under surface of said hook-bill in front of the intermeshing half-twists thereof, and held from rearward displacement by the engagement of said offset stops with the attaching-arms, the under surfaces of the portions of the sides of the ring or circular bill which are engaged by said transverse portion of the eye, being in the plane of the upper surfaces of the portions of the attaching-arms which are engaged by the sides of the eye, substantially as specified.

4. In a garment-fastener, an eye member constructed of a length of wire doubled upon itself and bent to form an eye, the front portion of which is deflected from the plane of



the side portions, is of a length equal with the diameter of the eye, and is straight throughout its length, and having the side portions brought together, and interlocked by half-twists to permit contraction and expansion of the ring, and the end portions diverging and bent inward to form thread-seats, the upper surface of said front portion of the eye being, throughout its length, in the plane of the under surfaces of the side portions of the eye, substantially as specified.

5. In a garment-fastener, a hook member constructed of a length of wire doubled upon itself and bent to form a ring or circular bill, and having the end portions interlocked by intermeshing half-twists to provide for the contraction and expansion of the circular bill, and extended, forming shanks which project forward, to leave spaces at opposite sides of the bill, and terminating in thread-seats, the sides of the bill adjacent to said intermeshing half-twists being arranged with their under surfaces in the plane of the upper surfaces of the transversely-opposite-spaced end portions, substantially as specified.

6. A garment-fastener comprising a hook member having a hook-bill 1, of which single-thickness side portions are arranged in a common plane, and attaching-arms 3, of which spaced bearing-points 5 are arranged in a common plane parallel with the said side portions of the hook-bill; and an eye member having an eye of which the sides rest upon said spaced bearing-points 5, are provided with offset stops 11 which engage the front sides of the attaching-arms, and are connected by a transverse bar 7 which is arranged

throughout in a common plane with said attaching-arms, and passes under said single-thickness side portions of the hook-bill, substantially as specified.

7. A garment-fastener comprising a hook member constructed of a single blank of wire, and having a hook-bill 1, of which single-thickness side portions are separated and arranged in a common plane, and connected attaching-arms 3, of which spaced bearing-points 5 are arranged at opposite sides of the hook-bill in a common plane parallel with said side portions of the hook-bill, the upper surfaces of the attaching-arms at said points 5 being in the plane of the under surfaces of said side portions of the hook-bill; and an eye member having an eye of which the sides rest upon said spaced bearing-points 5, are provided with downwardly-offset stops 11, which engage the front sides of the attaching-arms, and are connected by a straight transverse bar 7, which, between said stops, is of a length slightly less than the external diameter of the hook-bill, is arranged throughout its length in a common plane with said attaching-arms, and passes under said single-thickness side portions of the hook-bill, the upper surface of said transverse bar 7 being in the plane of the under surfaces of the sides of the eye, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

BENJAMIN F. OREWILER.

Witnesses:

H. W. HILDEBRANT,  
EFFIE SIGLER.