(No Model.)

H. C. FRANK.

HOOK AND EYE.

No. 482,473. Patented Sept. 13, 1892.

Fig: 1.

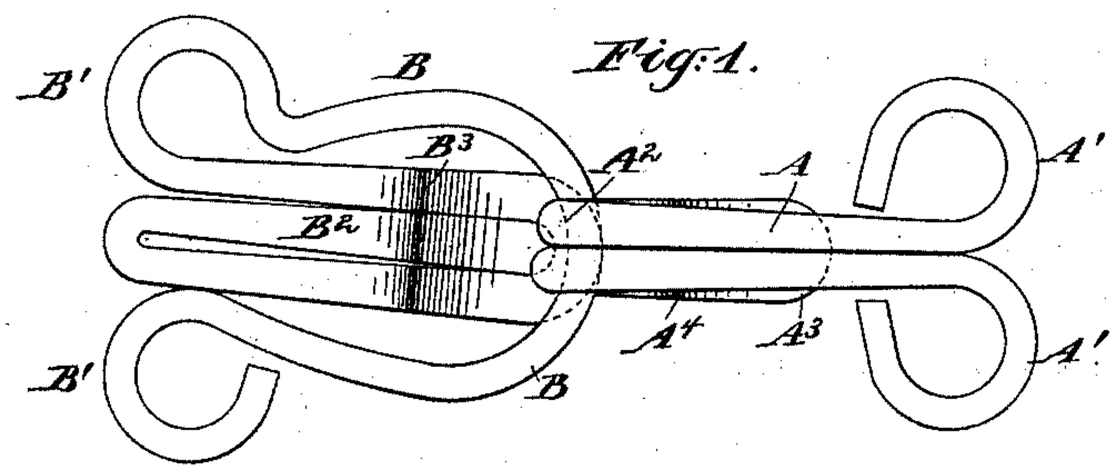


Fig: 2.

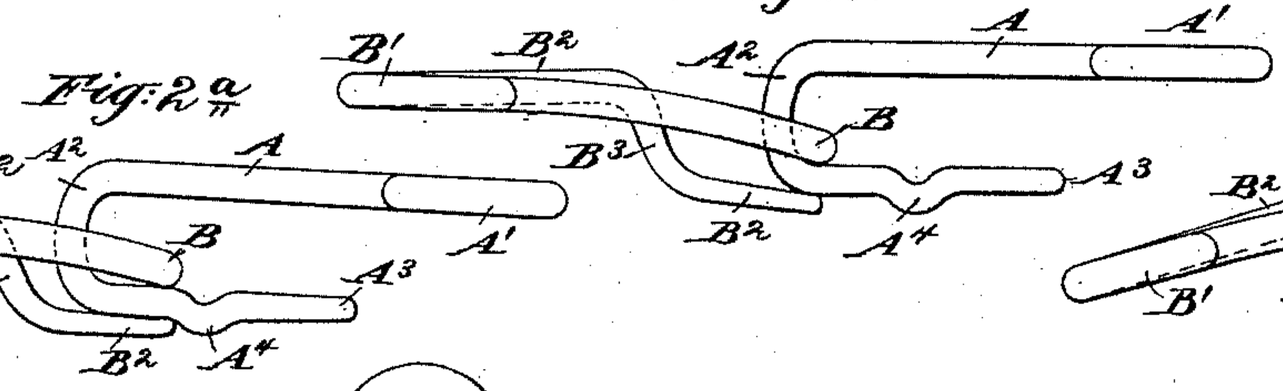


Fig: 2a

Fig: 2c

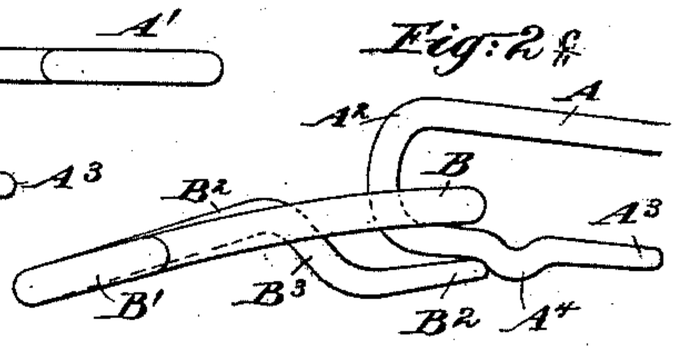


Fig: 3.

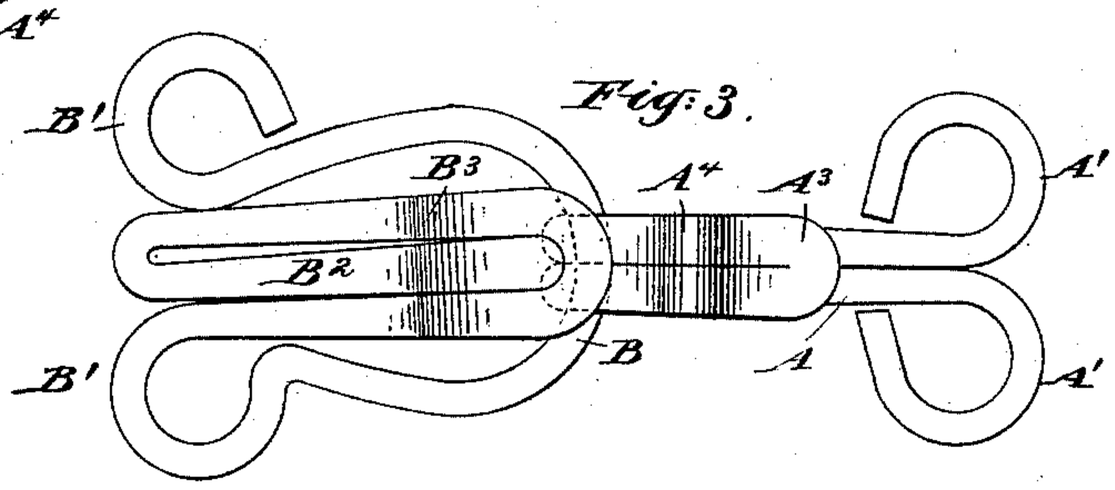


Fig: 4.

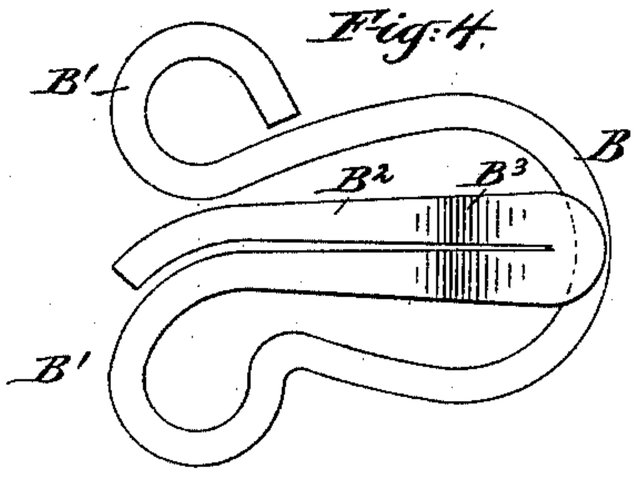


Fig: 5.

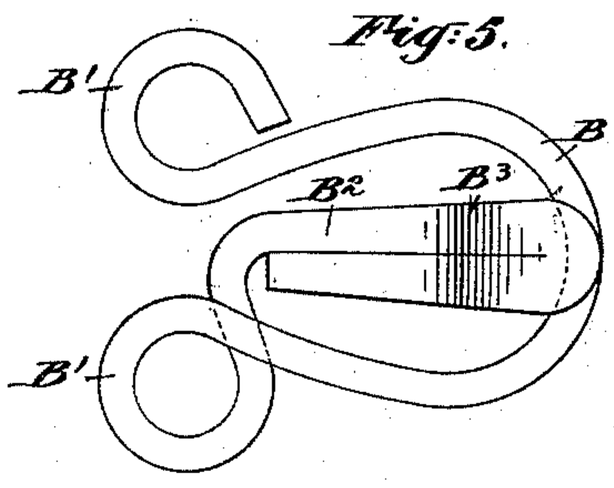


Fig: 6.

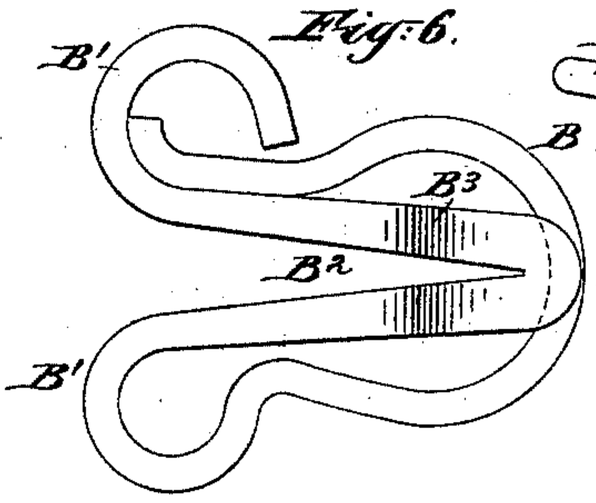
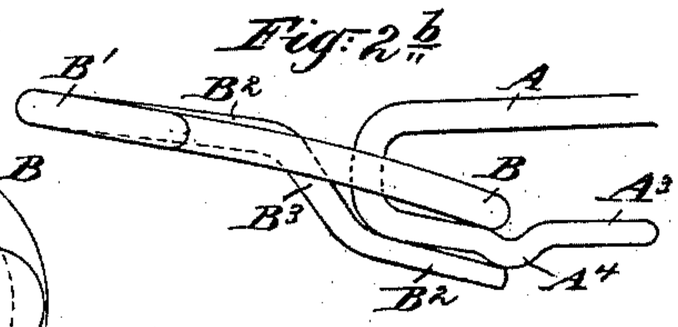


Fig: 2b



Witnesses:
Charles R. Searle.
M. F. Boyle

Inventor:
Henry C. Frank
by his attorney
Thomas Drew Stetson

UNITED STATES PATENT OFFICE.

HENRY C. FRANK, OF NEW YORK, N. Y.

HOOK AND EYE.

SPECIFICATION forming part of Letters Patent No. 482,473, dated September 13, 1892.

Application filed November 11, 1891. Serial No. 411,544. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. FRANK, a citizen of the United States, residing in the city and county of New York, in the State of New York, have invented a certain new and useful Improvement in Hooks and Eyes, of which the following is a specification.

The invention is intended, mainly, for the small hooks and eyes used for dress-fastenings, and will be described as thus applied. The improvement is partly in the hook and partly in the eye.

The eye is equipped, as usual, with two loops, by which it is conveniently sewed to the garment. One is formed in the usual manner, the other by conducting the wire around in the direction the opposite to the usual one. This latter end of the wire is also greatly extended and is caused to traverse backward and forward to form a spring-tongue, which is flattened, so as to spread the wires laterally and somewhat increase their elasticity. The tongue is, furthermore, formed with a deep offset near its mid-length.

I form the hook with a transverse corrugation a little distance from the point. When the hook is moved in the direction to unhook, this corrugation meets the end of the tongue and there is a tendency, due to the presence of this corrugation, to compel the hook to assume an inclined position relatively to the eye, so that the point of junction of the eye and hook is depressed. This insures that the bight or principal bend of the hook shall be presented fairly against the offset in the tongue of the eye. When it is desired to unhook, the eye is forcibly brought into an oppositely-inclined position relatively to the eye—that in which the junction of the hook and the eye is elevated—and is then thrust backward, or in the direction to unhook. In this position the bight or principal bend of the hook is allowed to ride up over the offset in the tongue and the hook can be detached.

The accompanying drawings form a part of this specification and represent what I consider the best means of carrying out the invention.

Figure 1 is a face view of the hook and eye engaged. Fig. 2 is an edge view of the same. Fig. 2^a shows the parts resisting a tendency to become accidentally unhooked. Fig. 2^b shows the junction depressed and the parts offering resistance by their form to disengagement. Fig. 2^c shows the parts in the position for effecting the unhooking when required. Fig. 3 is a back or inner view of the hook and eye, showing the opposite face to that presented in Fig. 1. The remaining figures show modifications. They are each a view of the eye alone, as seen from the back or inner face. Fig. 4 shows the loops being as in Fig. 3. Fig. 5 shows the loops formed in the ordinary manner, with the wire to constitute the tongue extended inward to the center, crossing the wire of the eye. In each of them the tongue is formed with only one return. Fig. 6 shows still another modification.

Similar letters of reference indicate corresponding parts in all the figures where they appear.

Referring to Figs. 1, 2, and 3, A is the shank of the hook; A′, the ordinary loops by which it is sewed to the garment; A^2, the bight or principal bend; A^3, the point, and A^4 the transverse corrugation near the point.

B is the main body or effective portion of the eye, B′ the loops by which it is sewed to the garment, and B^2 the tongue formed by extending the wire backward and forward near the center line of the eye and flattening it. A deep offset is formed near the mid-length in this tongue, as indicated by B^3. The bending and flattening of the wire may be effected with rapidity and uniformity by suitable machinery. The flattening of the tongue tends not only to increase the width of the wires, but also to increase the length. So much wire should be employed in this tongue and the offset should be such as will allow the point of the tongue to extend under the front or effective portion of the eye, as shown. When the hook is disengaged and the eye at rest, the point of the tongue B^2 touches or nearly touches the under or back face of the effective portion B of the eye. When the hook is engaged, it depresses the spring-tongue B^2, as shown in Fig. 2, and on being fully engaged the metal of the hook is gently held by the elastic force of the tongue pinching it between itself and the main portion B, as shown in Fig. 2. This friction tends to prevent unhooking.

When the tension on the hook and eye is relaxed and the parts are subjected to mechanical agitation, there is a liability of the hook to be accidentally disengaged from the eye. This is resisted in my hook, first, by the engagement of the transverse corrugations A^4 with the end of the spring-tongue B^2, and if the accidental unhooking action is allowed to proceed further the presence of this corrugation tends to tilt the hook into the position shown in Fig. 2^b. If the unhooking motion proceeds further, the bend A^2 is brought into engagement with the offset B^3 and any further movement in the direction to unhook is prevented.

When it is desired to unhook, the hook and eye are brought forcibly into a position inclined in the opposite direction, as indicated in Fig. 2^c. Now a sufficient force urging the parts in the direction to unhook will slightly depress the spring-tongue B^2 and effect the disengagement.

Modifications may be made by any good mechanic without departing from the principle or sacrificing the advantages of the invention. Figs. 4, 5, and 6 show modifications in the construction of the eye, Fig. 4 showing the loops made the same as in Fig. 3, but the tongue, having only one return, presenting considerable difference in appearance and a slight difference in action from the form shown in Fig. 3, in which the metal forming the tongue has two returns—a return from the point to the heel and again from the heel forward in the center to the point. Fig. 5 shows the loops formed in the ordinary manner, but with one end extended, the extended portion crossing behind the metal of the eye. In this form the tongue has also only one return. Fig. 6 shows one loop formed in the same manner as in Fig. 3, the other formed on an extension of the tongue. In this, also, the tongue has only one return.

I claim as my invention—

In hooks and eyes for dress-fastenings and analogous purposes, the eye described, having a spring-tongue B^2, extending forward under the front of the eye, adapted to grip the hook elastically between the tongue and the eye and formed with an offset B^3 near its mid-length, arranged to receive the bight or main bend of the hook when it is moved backward and to resist any accidental unhooking, in combination with a hook A, having a transverse corrugation A^4, arranged to meet the point of the spring-tongue and to insure that the compression of the parts together shall depress the junction of the hook and eye, and thus increase the security of the fastening, as herein specified.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

HENRY C. FRANK.

Witnesses:
CHARLES R. SEARLE,
M. F. BOYLE.