

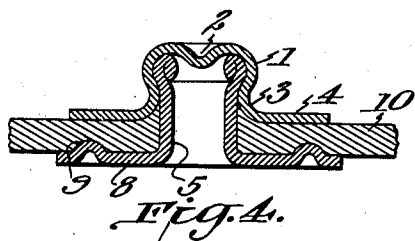
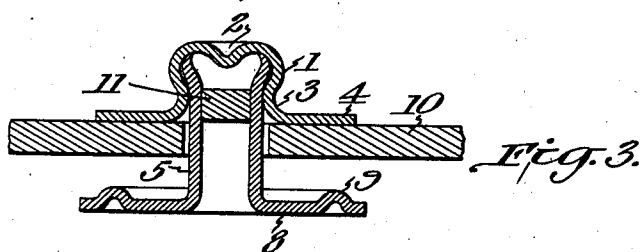
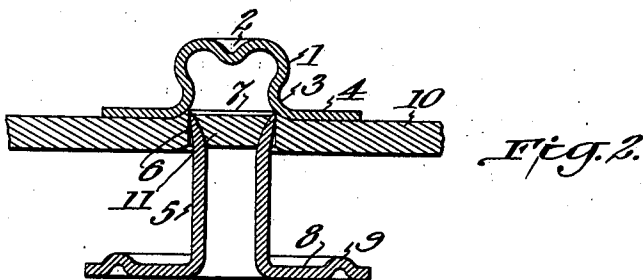
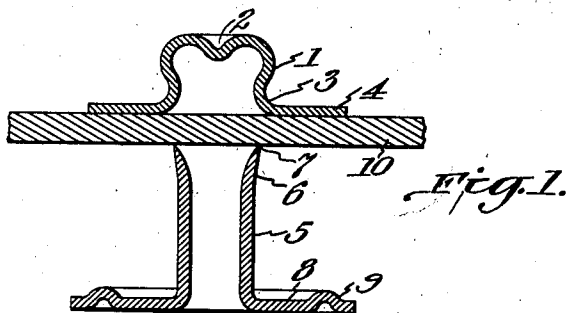
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G. A. KING

SELF PIERCING STUD AND POST FOR SNAP FASTENERS

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Inventor:

George A. King

W. H. Finckel
Attorney.

UNITED STATES PATENT OFFICE.

GEORGE A. KING, OF WATERBURY, CONNECTICUT, ASSIGNOR TO SCOVILL MANUFACTURING COMPANY, OF WATERBURY, CONNECTICUT, A CORPORATION OF CONNECTICUT.

SELF-PIERCING STUD AND POST FOR SNAP FASTENERS.

Application filed February 3, 1926. Serial No. 85,702.

To all whom it may concern:

Be it known that I, GEORGE A. KING, a citizen of the United States, residing at Waterbury, in the county of New Haven and State of Connecticut, have invented a certain new and useful Improvement in Self-Piercing Studs and Posts for Snap Fasteners, of which the following is a full, clear, and exact description.

10 The object of this invention, primarily, is to provide a self-piercing member of a snap fastener or separable fastener, which is adapted to pierce the fabric on which it is applied in the operation of setting the device, and therefore is self-piercing as that
15 term is herein used, as distinguished from those devices in which it is necessary to use a separate tool, implement or machine for perforating the fabric preliminarily to and
20 for the purpose of setting the fastening member.

It is not broadly new at this time to provide self-piercing fastener members, but so far as I am aware, such self-piercing members are adapted for use only in connection
25 with thin material, such as silk fabric and the like, and I am not aware that the self-piercing principle has hitherto been made available for use for such fasteners on thick
30 and heavy fabric, such as rubber, and laminated fabrics such as are used in arctic over-shoes and other articles.

In my efforts to adapt the self-piercing principle to snap fasteners for use on such
35 heavy material, I have obtained entirely satisfactory and practicable results by inwardly knurling the neck portion of the head or stud and sharpening and outwardly flaring the leading end of the barrel of the attaching post to such an extent that the outside diameter of such flared end will exceed
40 by a few thousandths of an inch the internal diameter of the knurled neck, and then when these parts are assembled on opposite sides of a fabric and pressure applied to unite the parts, the flared end when forced through the fabric will be engaged by the said neck and said flared end of the post
45 will be reduced in diameter as it passes up into the head or stud and will be curled inwardly or outwardly within the head or stud so as to securely clinch and thereby unite the parts of the fastener on the fabric, the cut-

out portion of the fabric escaping outwardly through the barrel of the post.

The invention consists of a self-piercing stud and post for snap fasteners having a construction and mode of operation such as just described, as I will proceed now to explain and finally claim.

In the accompanying drawings illustrating the invention, in the several figures of which like parts are similarly designated, Figure 1 illustrates the head or stud and the post, in cross-section, arranged on opposite
60 sides of a piece of fabric, as they will be preliminarily to being pressed together for piercing the fabric and uniting the parts. Fig. 2 is a similar view showing the parts in the act of piercing the fabric. Fig. 3 is
65 a similar view showing the fabric pierced and the leading end of the post inside of the head or stud and beginning to be curled. Fig. 4 is a similar view showing the parts set, with the leading end of the post curled
70 inwardly. Fig. 5 is a view similar to Fig. 4, but with the leading end of the post curled outwardly; Figs. 4 and 5 show the device in its finished form as applied to the fabric.
80

The drawings show the parts enlarged but the proportions are substantially correct.

The invention is here illustrated and will be explained in connection with a rigid head or stud 1, having the reentrant top 2, inwardly knurled neck 3 and flange 4. The
85 inside diameter of the knurled neck is less than the inside diameter of the top portion of the head or stud.

The post for attaching the device, has a
90 barrel 5, open at both ends, the leading end 6 of which is flared outwardly and its extremity 7 made as a cutting edge, the diameter of which is a few thousandths of an inch less than the internal diameter of the
95 knurled neck of the head or stud. The barrel 5 rises from a base or flange 8 which may be provided with embossments 9 to engage the fabric to prevent rotation of the parts.

When the parts are brought into juxtaposition on opposite sides of the piece of fabric or a garment, 10, in the manner indicated in Fig. 1 and pressure is applied in the direction of the part 10, the cutting edge 7 will pierce the member 10 in cooperation
100 with the resistance offered by the head or
105

stud, as illustrated in Fig. 2, and such pressure being continued the post will be driven into the cavity of the head or stud past the neck of the head or stud and the cutting edge coming in contact with the wall of the top of the head or stud will be curled either inwardly, as indicated in Figs. 3 and 4, or outwardly as indicated in Fig. 5, until the base or flange 8 of the post is brought into contact with the fabric or garment 10 and thereby the head or stud and post are firmly secured together and to the fabric or garment.

The piece of material 11 cut from the fabric or garment, is not carried up into the head or stud, but enters the post, as shown in Figs. 2 and 3, and is free to fall out of the post. This separation of the cut-out portion and its elimination from the head or stud is of material advantage in effecting secure clinching and union of the stud and post, since it offers no obstruction to the effective curling or clinching of the leading end of the post within the head or stud.

As already sufficiently indicated, the leading end of the post is purposely made sharp to form an ideal shearing surface in connection with the neck of the head or stud, which, during this operation serves as a support or bearing for the cutting edge within the stud, thus enabling the cutting through or clean-cut piercing of the material,—a result which is not always or uniformly attained when the leading edge of the post is not flared and the post itself is not hollow or tubular.

As already stated, the invention herein is designed for use particularly on thick fabrics, such as rubberized material used in arctic overshoes, which is very hard to self-pierce with a straight barrel post. By the use of the slightly flaring leading end of the post to increase the diameter of the post, and the use of a head or stud with an inside diameter at the neck a few thousandths of an inch less than the diameter of the sharp end of the post, there are obtained coacting cutting surfaces which may be relied upon to cut clean the material around the whole circumference of the desired hole. In this way, none

of the material so cut out is carried up into the head or stud, and the absence of this cut out material from the head or stud allows a more perfect chamber for the post to rivet in under pressure of the tools or dies, and practically eliminates any possibility of the disengagement of the two parts or members of the fastener after they have been once set in position by the dies.

The illustration of my invention herein contained is in the form of the male member of a stud and socket fastener or a snap fastener.

What I claim is:—

1. A male member of a stud and socket fastener or a snap fastener, comprising a stud having a knurled neck and a post having its leading end outwardly flared and sharpened and adapted in cooperation with the knurled neck of the stud to cut through the material on which it and the stud are set and thereafter be clinched within the stud.

2. A male member of a stud and socket fastener or a snap fastener, comprising a stud having a knurled neck and a post having its leading end outwardly flared and sharpened and of greater diameter than the inside diameter of the neck of the stud and adapted to cooperate with the knurled neck to cut its way through the material on which the fastener is used and thereafter be clinched within the stud.

3. A self-piercing stud and post for snap fasteners, the stud having a knurled neck and an interior configuration adapted to clinch the post, the post being tubular and having a cutting edge on its leading end and such leading end flared outwardly and thereby given a diameter in excess of the internal diameter of the knurled neck, the knurled neck and the cutting edge cooperating under pressure to cut a clean hole through material in the setting of the fastener and ensuring the discharge of the cut-out material through the post.

In testimony whereof I have hereunto set my hand this 2nd day of February, A. D. 1926.

GEORGE A. KING.