Feb. 6, 1962 W. J. HOECKELE 3,019,442

SNAP FASTENER APPLICATOR TOOLS

Filed Sept. 25, 1959

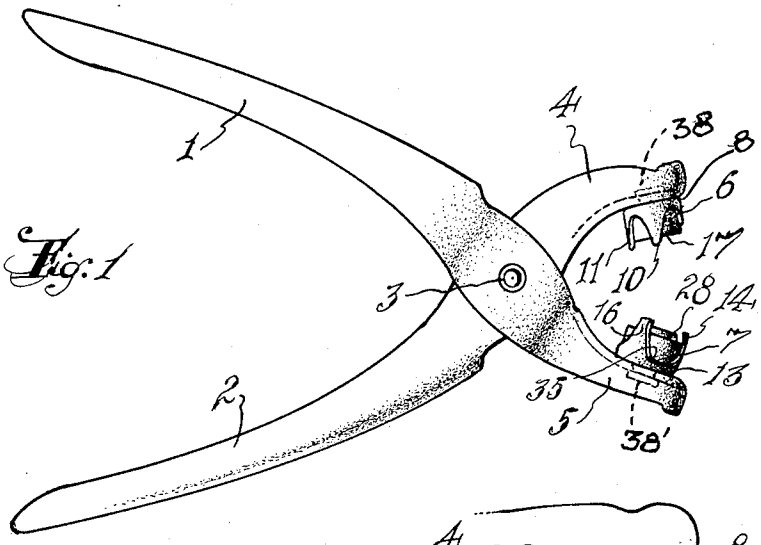


Fig. 1

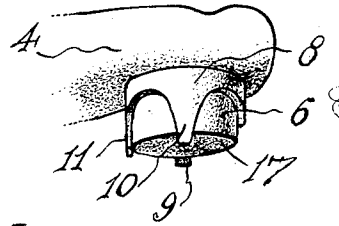


Fig. 2

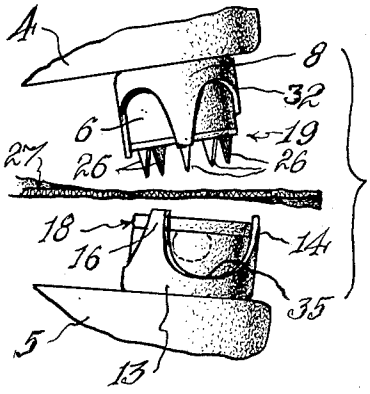


Fig. 5

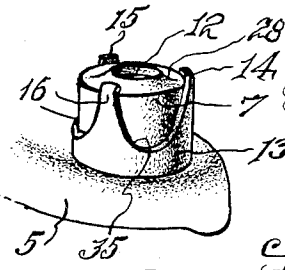


Fig. 3

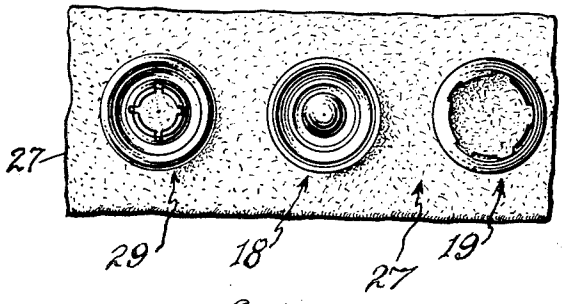


Fig. 6

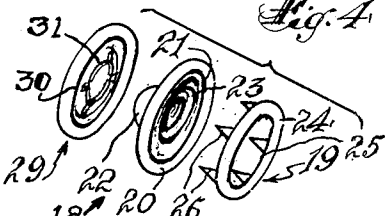


Fig. 4

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United States Patent Office 3,019,442 Patented Feb. 6, 1962

3,019,442
SNAP FASTENER APPLICATOR TOOLS

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Filed Sept. 25, 1959, Ser. No. 842,391
5 Claims. (Cl. 1—317)

This invention deals with tools mounted on pliers-type applicators used for crimping snap fasteners onto cloth and similar sheet material. More specifically, it relates to a pair of complementary crimping tools for attaching a pronged backing onto a socket or stud of a snap fastener.

As is well-known in the art, a snap fastener comprises a stud or male portion and a socket or female portion. The pressing of these two causes the snapping together thereof whereby the stud becomes locked into the socket until they are pulled apart. Since the socket and the stud must each be attached to a sheet type material, a number of means have been employed for attaching them to the material. One way is to employ a pronged backing washer or plate which is pressed against the back of the stud or socket (with the sheet material disposed therebetween). The pressure causes the prongs to puncture the sheet and, as they press against the tapered body of the fastener, they spread outwardly and the points of the prongs become imbedded under the turned flange lip at the fastener edge. Thus, the sheet material is wedged securely against each fastener portion.

The pronged backing has been attached in the art by use of machines employing tools specially adapted to hold either a stud or a socket. Accordingly, two pairs of tools are generally employed for attachment of both portions of the snap fastener to the sheet material.

The present invention involves the use of a single pair of tools which enables fastening to the sheet material of either the socket or the stud. Furthermore, it enables convenient use of a hand pliers type of applicator of simple manufacture.

The invention will be more readily understood by reference to the accompanying drawings in which FIGURE 1 illustrates a side view of a pliers-type applicator carrying tools of the present invention. FIGURE 2 is an enlarged perspective view of the prong receiving tool of the applicator, while FIGURE 3 presents a similar view of the stud-socket receiving tool of the applicator. FIGURE 4 is a perspective view of the stud, socket and prong backing combination, indicating how they are applied. FIGURE 5 is a side view of the tool portions of the pliers showing how a prong backing is applied to a stud. FIGURE 6 depicts a piece of cloth on which is fastened a socket, a stud, and a pronged backing. Similar numerals refer to similar parts in the various figures.

Referring again to the drawings, numeral 1 represents a handle portion of a pliers applicator, the other handle portion being designated by 2. These are hinged at pivot 3 which holds a coil spring (not shown) for keeping the applicator in normally open position. Jaw 4 of the applicator has mounted thereon (by rivet type means 38), a tool comprising a round base 6 having a flat metal surface 17. Disposed around and close to base 6 are flat metal fingers 9, 10 and 11 which project from plate 8 which is anchored between base 6 and applicator jaw 4. Fingers 9, 10 and 11 project above surface 17 and terminate with an inwardly bent edge adapted to hold a prong backing 19 when it is inserted therein by hand. Although more than three fingers 9, 10, and 11 may be employed, it is desirable and advantageous to employ three fingers so disposed as to leave the front portion of plate 8 (FIG. 5) finger-free, thus enabling a person to slip by hand a prong backing

19 (comprising washer 24 having projecting prongs 26) over the surface 17 of base 6 and under the curved tips of fingers 9, 10 and 11, thereby enabling the fingers to hold same without danger of injuring one's own fingers by prongs 26 which could occur if prong backing 19 had to be pushed over the fingers as is done in the case of stud 18 or socket 29.

Mounted on applicator jaw 5 (by rivet type means 38') is a tool comprising round base 7, the top of which contains depression 12 of size adequate to contain nipple 22 of stud 18. A concentrically disposed ring 28 is also provided on the top of base 7 around depression 12, having a contour similar to that of flange 23 of stud 18 (or contour 31 of socket 29) so that stud 18 (or socket 29) will fit snugly against surface 28 when it is placed thereon. As in the case of base 6, base 7 has anchored thereunder plate 13 from which project flat fingers 14, 15 and 16 also extending beyond surface 28 and also terminating with inwardly directed hooked ends capable of holding the stud or socket snapped in therebetween by hand. Three fingers have been found adequate, although more may be employed, if desired.

It will be noted that the fingers from plate 8 are not in juxtaposition with those from plate 13 when the pliers applicator is closed. The fingers on both tools are staggered so that finger 10 from plate 8, for example, is disposed over open space 35 between fingers 14 and 15 of plate 13. This has been found to give a better and tighter hold of pronged plate 19 to the material 27 and to stud 18 or socket 29.

When in use, the applicator is grasped by handles 1 and 2, and a stud, for example, is inserted into tool base 7, nipple 22 falling into base opening 12, and the stud flange edge 20 being snapped between the hooked ends of fingers 14, 15 and 16. Thereafter, a pronged backing 19 is slid over surface 17 of tool base 6 until it is firmly wedged between the hooked ends of fingers 9, 10 and 11, as depicted in FIGURE 5. The sheet material (e.g. edge of a cloth 27') to be provided with the snap fastener then is placed between the two tools, and the pliers-type handles are squeezed. This causes prongs 26 of backing 19 to penetrate the cloth and spread outwardly over curved flange surface 23 of the stud, finally imbedding themselves under lip 21 of the flange. When hand pressure is released, the spring forces the tools apart and leaves the half of the snap fastener mounted on cloth 27'.

The operation is repeated with the exception that the socket (instead of the stud) is snapped into place between fingers 14, 15 and 16 on the edge of the cloth opposite the edge now holding the stud. When the pronged backing is inserted in the other tool, the applicator is again squeezed to similarly mount the other half (socket) of the snap fastener, whereupon the fastener is now in condition to be used.

I claim:

1. In an applicator for a snap fastener attachable to sheet material and consisting of a lipped stud part, a lipped socket part and a pronged backing attachable to either part by penetration of the prongs through the sheet material and then sliding of the prongs in anchoring relation under the lip, said applicator comprising a pliers-type body with jaws on each of which is mounted an oppositely-disposed fastening tool, the improvement comprising a first tool comprising a first base having a flat top surface, a set of flexible fingers projecting from and along the side of said base and extending above its top surface and having slightly inwardly-curved ends designed to grip a pronged backing at its edge and to release same upon a forward tug thereon, and a second tool comprising a second base having a centrally-indented top surface and of surface shape complementary to that of the stud or socket, a set of flexible fingers projecting from and

along the sides of said latter base and extending above its top surface and having slightly inwardly-curved ends designed to grip a stud or a socket at its edge and to release same upon a forward tug thereon, both sets of said fingers being designed in a manner so that when the loaded jaws are closed, the prongs of the backing will penetrate the sheet material and then slide in anchored relation under the lip and, as the jaws are opened, both sets of fingers will release their grip on the edge of its respective part or backing.

2. In an applicator for a snap fastener attachable to sheet material and consisting of a lipped stud part, a lipped socket part and a pronged backing attachable to either part by penetration of the prongs through the sheet material and then sliding of the prongs in anchoring relation under the lip, said applicator comprising a pliers-type body with jaws on each of which is mounted an oppositely-disposed fastening tool, the improvement comprising a first tool comprising a first base having a flat top surface, a plate anchored between said base and its jaw, a set of flexible fingers projecting from said plate and along the side of said base and extending above its top surface and having slightly inwardly-curved ends designed to grip a pronged backing at its edge and to release same upon a forward tug thereon, and a second tool comprising a second base having a centrally-indented top surface and of surface shape complementary to that of the stud or socket, a plate anchored between said latter base and its jaw, a set of flexible fingers projecting from said latter plate and along the side of said latter base and extending above its top surface and having slightly inwardly-curved ends designed to grip a pronged backing at its edge and to release same upon a forward tug thereon, both sets of said fingers being designed in a manner so that when the loaded jaws are closed, the prongs of the backing will penetrate the sheet material and then slide in anchored relation under the lip and, as the ajws are opened, both sets of fingers will release their grip on the edge of its respective part or backing.

3. An applicator according to claim 2 in which the first tool base is free of fingers in the front for a distance

sufficient to enable one to slide said backing over said surface and between the remaining fingers.

4. An applicator according to claim 2 in which the fingers on one tool are staggered with respect to the fingers on the other tool so that their ends are not in juxtaposition when the jaws are closed.

5. In tools for crimping together pairs of snap fastener elements to thereby affix said pairs of snap fastener elements to fabric and the like, a pair of jaws, a pair of handles pivoted to each other and each fixed to one of said jaws, a pair of crimping dies carried betwen said jaws with each member of said pair of crimping dies being carried on its own one of said jaws, said pair of crimping dies comprising altogether four elements including a pair of cooperating forming elements each supported on its own one of said jaws, a pair of annular gripping elements each of which is in annularly surrounding relationship with its own one of said pair of forming elements, the radially innermost portion of each of said gripping elements being clamped intermediate the one of said jaws and the one of said forming elements associated therewith, each of said gripping elements comprising the same plurality of bendable but resilient projections extending axially toward the other of said gripping elements, said projections of each of said gripping elements being out of angular register wth the projections of the other of said gripping elements in a relationship such that when said dies are brought together the association of said projections with one or the other of said forming elements alternates in the annular succession of said projections around both of said dies considered together, one of said projections being foreshortened.

References Cited in the file of this patent

UNITED STATES PATENTS

1,513,356	Watson	Oct. 28, 1924
1,556,088	Dougherty	Oct. 6, 1925
2,036,255	Clark	Apr. 7, 1936
2,700,090	Kolak	Jan. 18, 1955