Oct. 7, 1930. J. A. DEVENDOR ET AL 1,777,718

BUTTON AND BUTTON SETTING

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Fig. 1.

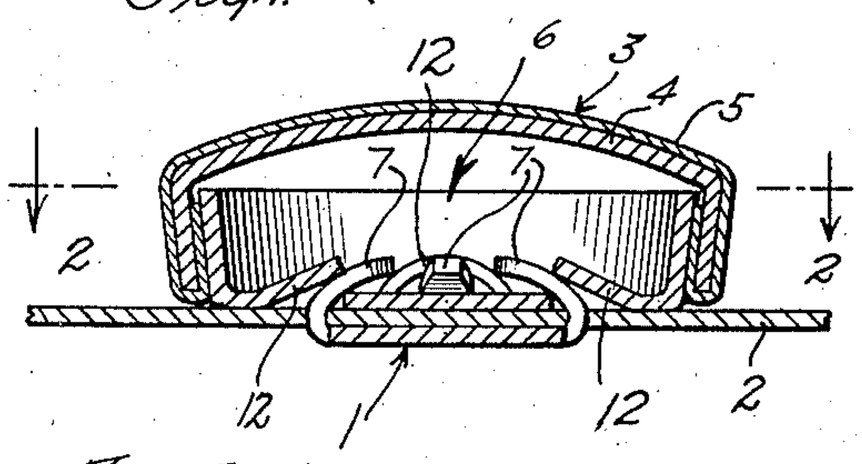

Fig. 2.

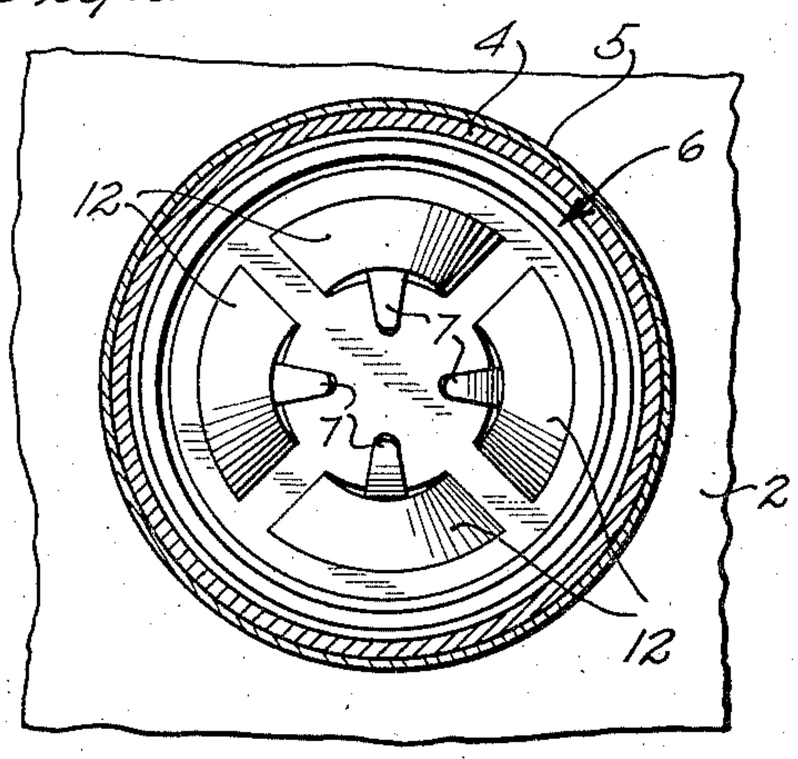

Fig. 3.

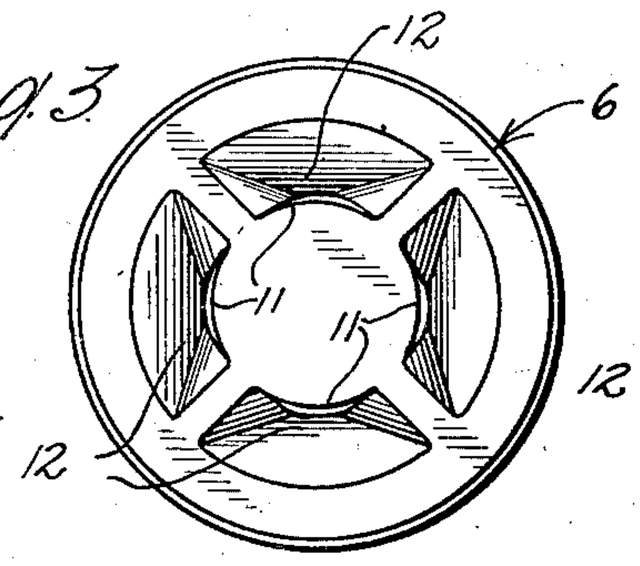

Fig. 4.

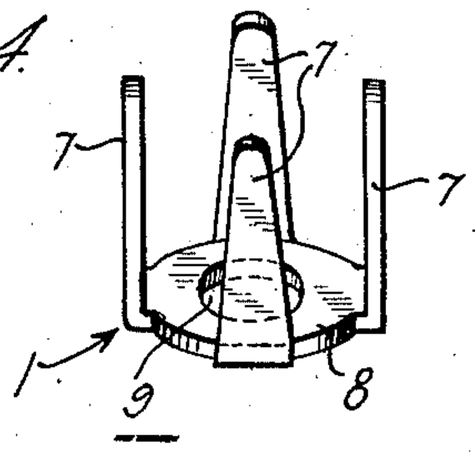

Fig. 5.

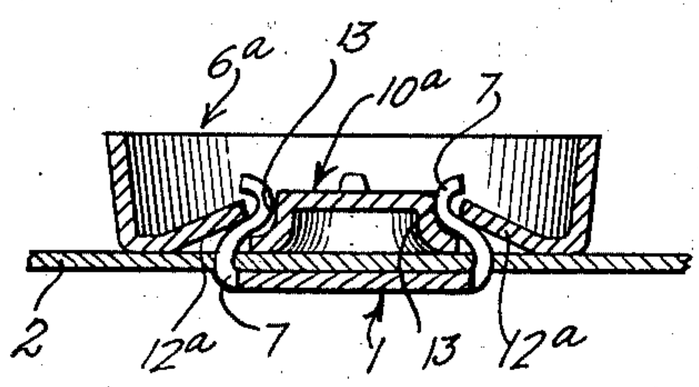

Fig. 6.

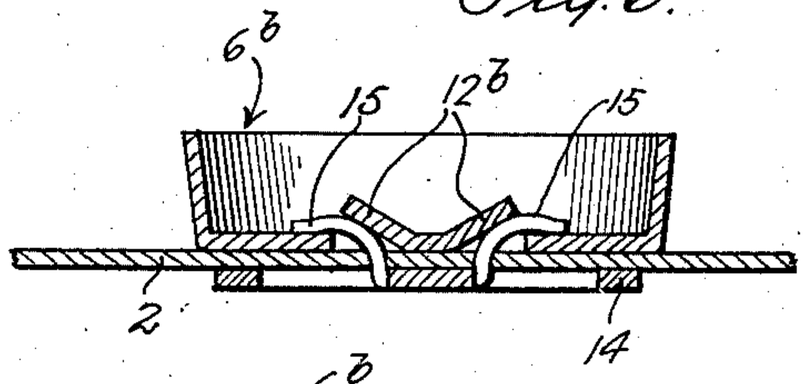

Fig. 7.

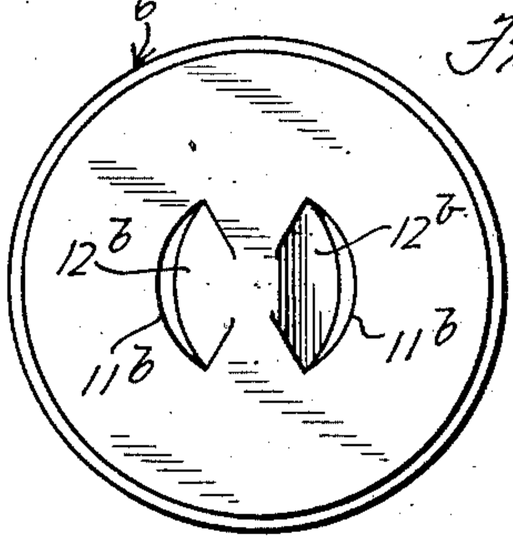

Fig. 8.

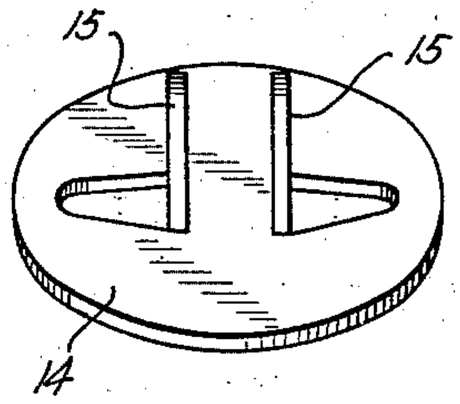

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Fig. 9

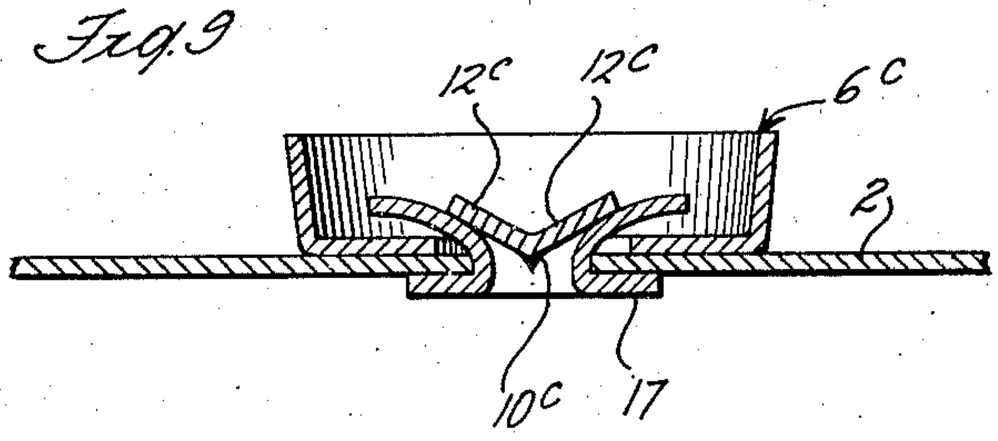


Fig. 10.

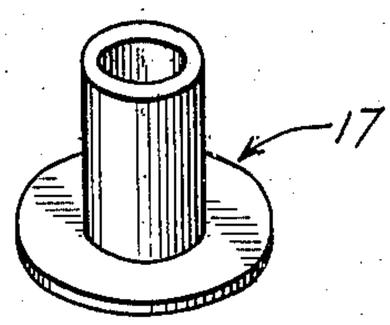


Fig. 11.

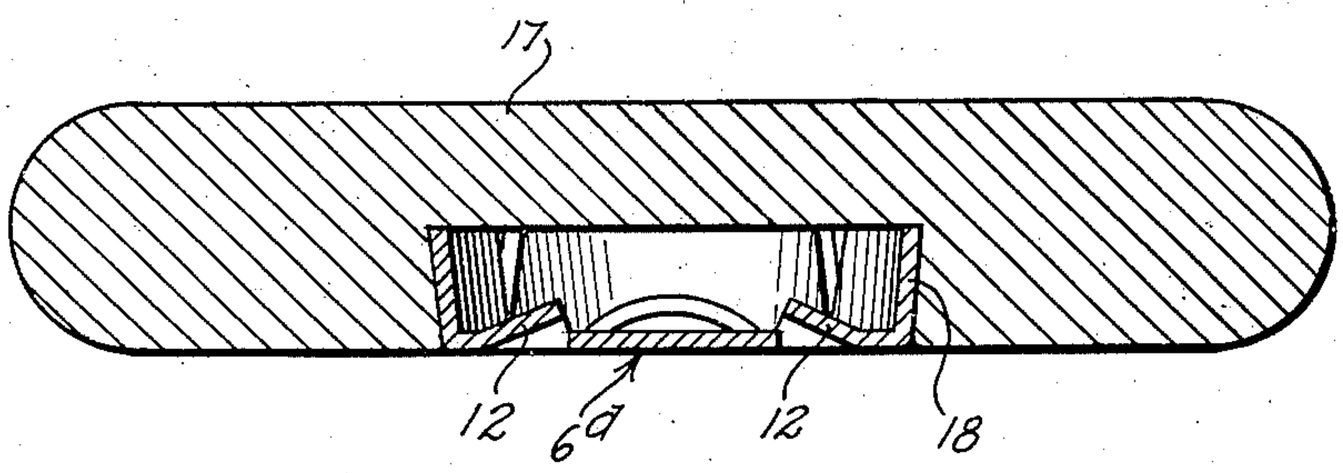
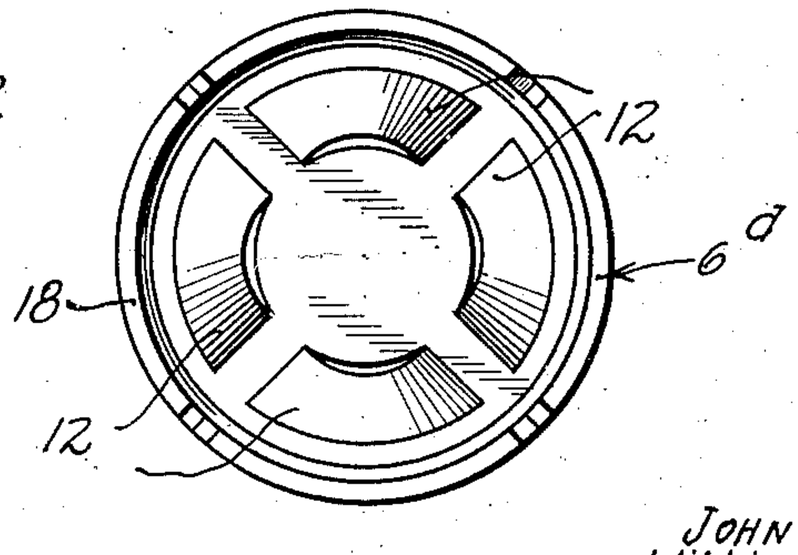


Fig. 12.



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UNITED STATES PATENT OFFICE

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BUTTON AND BUTTON SETTING

Application filed May 1, 1929. Serial No. 359,450.

This invention relates to buttons and settings therefor, and has for its principal object to provide a button and setting combination adapted to be attached conveniently, economically and securely to material by driving the setting through the material and clinching it to the button.

To this end it is an important feature of the invention that the button back is provided with openings for receiving the work penetrating portions of a setting and with clinching surfaces adjacent said openings for causing said work penetrating portions of the setting entering the back of the button to be deformed and clinched in interlocking relation with the back of the button.

In accordance with a preferred illustrative form of the invention the button desirably comprises a top or shell and a button back or collet fixed to the top and forming a chamber with the top, the collet being provided with openings for receiving the prongs or other penetrating members of a setting and with deflecting surfaces for intercepting and deflecting the setting prongs or other penetrating members and directing them in non-parallel relation through the openings into the chamber.

Other objects and advantages will hereinafter appear.

In the drawings forming part of this specification and illustrating certain preferred embodiments of the invention:

Figure 1 is a vertical, sectional view through a button and setting secured in cooperative relation to a piece of material;

Figure 2 is a horizontal, sectional view taken on the line 2—2 of Figure 1, looking in the direction of the arrows;

Figure 3 is an inverted, plan view of the collet shown in Figure 1;

Figure 4 is a perspective view of the setting employed in Figure 1;

Figure 5 is a vertical, sectional view of a collet and setting clinched to a piece of material, the collet embodying further features not disclosed in Figure 1;

Figure 6 is a vertical, sectional view of a further embodiment in which the collet is adapted to clinch the setting prongs by deflecting them outwardly;

Figure 7 is an inverted plan view of the collet of Figure 6;

Figure 8 is a perspective view of the setting employed in Figure 6;

Figure 9 is a vertical section of a further embodiment of the invention in which the setting is not initially pronged, but is both split and clinched by the collet;

Figure 10 is a perspective view of the setting employed in Figure 9;

Figure 11 is a vertical, sectional view showing a modified form of collet applied to a solid topped button; and

Figure 12 is a plan view of the collet disclosed in Figure 11.

In the illustrative form of the invention disclosed in Figures 1 to 4 a setting 1 is shown driven through a piece of material 2 and clinched to a button 3. The button includes a shell or top 4 having a cover 5 of fabric or other suitable material wrapped around it and folded inward around the flange thereof. A collet 6 of suitable metallic material is driven into the shell and the flange portion of the shell is pressed inward to grip the marginal material of the cover 5 to the collet. The collet and the shell are thus permanently secured together. The collet 6 and the shell 4 are both cup-shaped, and since their concavities face one another they cooperate to form a hollow bodied button. The collet illustrated is designed to cooperate with the setting 1, which comprises prongs 7, and a body portion 8 having a central jig opening 9 therein. The collet is designed to deflect the prongs 7 of the setting and clinch them to itself, and is, therefore, made of harder metal than the setting. The collet comprises a central portion 10 and is cut through along a series of separated arcs 11 bounding such central portion. The metal of the collet is displaced inward adjacent each slit to provide a series of prong receiving openings through which the prongs may pass, but not while in parallel relation to one another. The inwardly displaced portions 12 of the collet form anvil or clinching surfaces which intercept the prongs 7, deflect them inward

through the openings in the collet, and cause them to be wrapped around and interlocked with the central portion 10 of the collet. By this means the collet and the setting are permanently clinched to one another at a single operation to permanently secure the button 3 to the material 2. It will be seen that the prongs extend convergently into the button, and that force tending to separate the clinched setting from the bottom to be effective to produce separation must straighten out the prongs. The inner edges of the clinching portions 12 are almost in vertical alignment with the outer edges of the central portion 10, however, so that in order for the button and setting to be separated the prongs would have to be kinked very sharply. For this reason separation of the button and setting requires many times the force required for securing these members together.

The clinching portions 12 are symmetrically disposed about the center of the collet 6, and the prongs 7 are symmetrically disposed around the center of the body portion 8 of the setting 1. It is desirable that the button and the setting be accurately positioned relative to one another for the setting operation. The button may obviously be situated in a jig or holder in predetermined position for the setting operation, but it is not desirable to grip the setting peripherally. The central jig opening 9 is desirably provided in the setting body for the reception of a jig pin or plunger and serves to center the setting with reference to the button.

The form of button employed may obviously be varied by omitting the fabric covering, if desired. The shell, whether covered or uncovered, may be made of any suitable material, but either metal or celluloid is preferred in the embodiment of Figures 1 to 4.

The embodiment disclosed in Figure 5 is generally similar to that of Figure 1, but differs in that the collet is of modified construction. The collet 6^a includes clinching portions 12^a which slope toward openings that let into the collet, and the collet is used in conjunction with a setting 1 like that of Figure 4. In this form of the invention, however, a central portion of the collet is depressed to form an interior boss 10^a. As the prongs of the setting are driven against the collet they are deflected inward by the clinching portions 12^a and are directed through the openings in the collet. Upon entering the collet, however, they come into engagement with deflecting surfaces 13 on the boss 10^a which bend them in the reverse direction so that they are wrapped around the inner extremities of the clinching portions 12^a and are thereby caused to be bound very securely to the collet.

In the form of the invention shown in Figures 6 to 8 the button construction is generally similar to that of Figure 1, but the collet and setting are of modified form, so that the setting prongs are deflected outward for clinching, instead of inward. In this form of the invention the central area of the collet 6^b is bounded by slits 11^b and sectors of the central portion are displaced inward to provide openings through which the setting prongs must pass from the center toward the periphery of the button. The displaced portions of the central portion of the collet form clinching portions 12^b which slope toward the openings and which serve to intercept the setting prongs and deflect them outward through the openings. The setting in this instance consists of a metallic disc 14 having parallel prongs 15 punched from the body portion thereof. These prongs are situated relatively near together and are adapted to strike the clinching surfaces 12^b as the setting is pressed toward the collet. As a consequence, the prongs are deflected outward and are interlocked with the marginal portion of the collet, as shown best in Figure 6.

In Figures 9 and 10 disclosure is made of a collet generally similar to that of Figures 6 and 7, but adapted for use with a setting which is not initially provided with prongs. The collet 6^c has sectors of the central portion thereof displaced inward to provide clinching portions 12^c. Between these clinching portions 12^c the collet material is desirably displaced outward a little to provide slitting projections 10^c. The setting in this instance is in the form of a tubular eyelet 17. When the eyelet is driven against the projections 10^c it is slit by the projections, and the legs thus formed are deflected outward by the clinching surfaces 12^c and caused to pass through the openings in the collet and to become interlocked with the marginal portion of the collet, as seen in Figure 9.

In Figure 11 disclosure is made of a solid bodied button of the kind usually made of ivory, composition, bone, pearl or like materials having the present invention incorporated therein. The button top 16 has a cavity 17 formed in the rear face thereof, which cavity is of smaller diameter at its mouth than at its base. In other words, the side wall of the cavity is undercut. A collet 6^d is inserted in this cavity so as to form a hollow bodied button as before. The collet 6^d may be similar in every respect to the collet of Figure 1, with the exception that the flange portion 18 of the collet is provided with V-shaped notches 19, and that the flange portion 18 is normally flared and therefore frusto-conical rather than cylindrical. When applying the collet to the button top 16 the segments of the flange 18 are pressed together to enable the collet to enter the mouth of the cavity 17, but after

the collet has been inserted part way the pressure is removed from the flange segments so that upon the full insertion of the collet the flange segments spring outward to hold the collet interlocked to the button top, as shown in Figure 11. The collet disclosed in Figure 11 may be adapted for cooperation with any one of the settings herein disclosed, but as illustrated is adapted for cooperation with a setting of the type shown in Figure 4.

The term "setting" as used herein is intended to be interpreted broadly as applying to any type of fastening member adapted to have portions thereof driven into the collet and clinched in interlocking relation therewith. Such a setting may be, for example, in the form of a staple, rivet, eyelet or other driven fastening.

While we have illustrated and described in detail certain preferred forms of our invention, it is to be understood that changes may be made therein and the invention embodied in other structures. We do not, therefore, desire to limit ourselves to the specific constructions illustrated, but intend to cover our invention broadly in whatever form its principle may be utilized.

We claim:

1. In combination, a light, thin button adapted to be attached to a piece of material, comprising a flanged shell, a flanged collet secured thereto and forming with the shell a hollow bodied button, said collet having openings letting into the button body, and inwardly depressed anvil surfaces sloping toward said openings, and a pronged setting adapted to have the prongs thereof inserted through the material and deflected by the anvil surfaces of the collet through the openings in the collet.

2. In combination, a button shell having a flange, a flanged collet fixed thereto, the shell flange being substantially coextensive with the flange of the collet and a setting adapted to be driven through the collet, said collet having openings for receiving the setting, and deflecting surfaces adjacent the openings.

3. In combination, a button comprising a shell and a collet, and a pronged setting adapted to be driven through the collet and clinched thereto, said collet having a plurality of prong receiving openings disposed around the center thereof, prong deflecting surfaces sloping toward said openings for bending the prongs inward and directing them through the openings, and prong deflecting surfaces within the button for engaging the prongs after they have entered the button, and bending them in the reverse direction.

4. A button comprising a collet adapted to have a pronged setting clinched thereto, said collet having openings therein through which the setting prongs may pass, external clinching surfaces for intercepting the setting prongs and deflecting them through the openings, and internal clinching surfaces for reversely deflecting the setting prongs after they have passed through the openings.

5. In combination, a button comprising a top having an undercut cavity therein, and a collet including a body portion and a flange thereon, said flange being frusto-conical to correspond in shape to the undercut wall of the cavity and being divided into segments to facilitate insertion of the collet flange into the cavity.

6. In a button, in combination, a shell having an annular flange, a collet therein having an annular flange extending substantially parallel to the shell flange, a covering fabric extending over the shell and having a marginal portion thereof gripped by the co-action of the shell and collet flanges, the shell flange being substantially coextensive with the flange of the collet, and the collet having openings therein through which the prongs of a pronged setting may pass and having prong deflecting surfaces adjacent the openings for deflecting the setting prongs through said openings and interlocking them with the collet.

7. In a button, in combination, a flanged shell and a flanged collet therein, said collet being provided with openings for receiving setting prongs and with depressed deflecting portions for turning the prongs into said openings, the back of the collet terminating generally, however, in substantially a single plane and the shell flange being substantially coterminous with the back of the collet.

8. In a button, in combination, a flanged shell and a flanged collet therein, said collet having openings for receiving setting prongs and having offset portions to provide clinching surfaces for intercepting and bending the setting prongs and to provide lateral guiding surfaces for directing the setting prongs toward said openings.

9. In a button, in combination, a flanged shell and a flanged collet therein, said collet having openings around the center thereof for receiving setting prongs having offset portions to provide clinching surfaces for intercepting and bending the setting prongs and to provide lateral guiding surfaces for directing the setting prongs toward said openings, and having connecting bars between said offset portions connecting the central and marginal portions of the collet, said connecting bars being rounded to assist in guiding the setting prongs into the openings.

In testimony whereof we have affixed our signatures to this specification.

JOHN A. DEVENDOR.
WILLIAM A. DEVENDOR.