

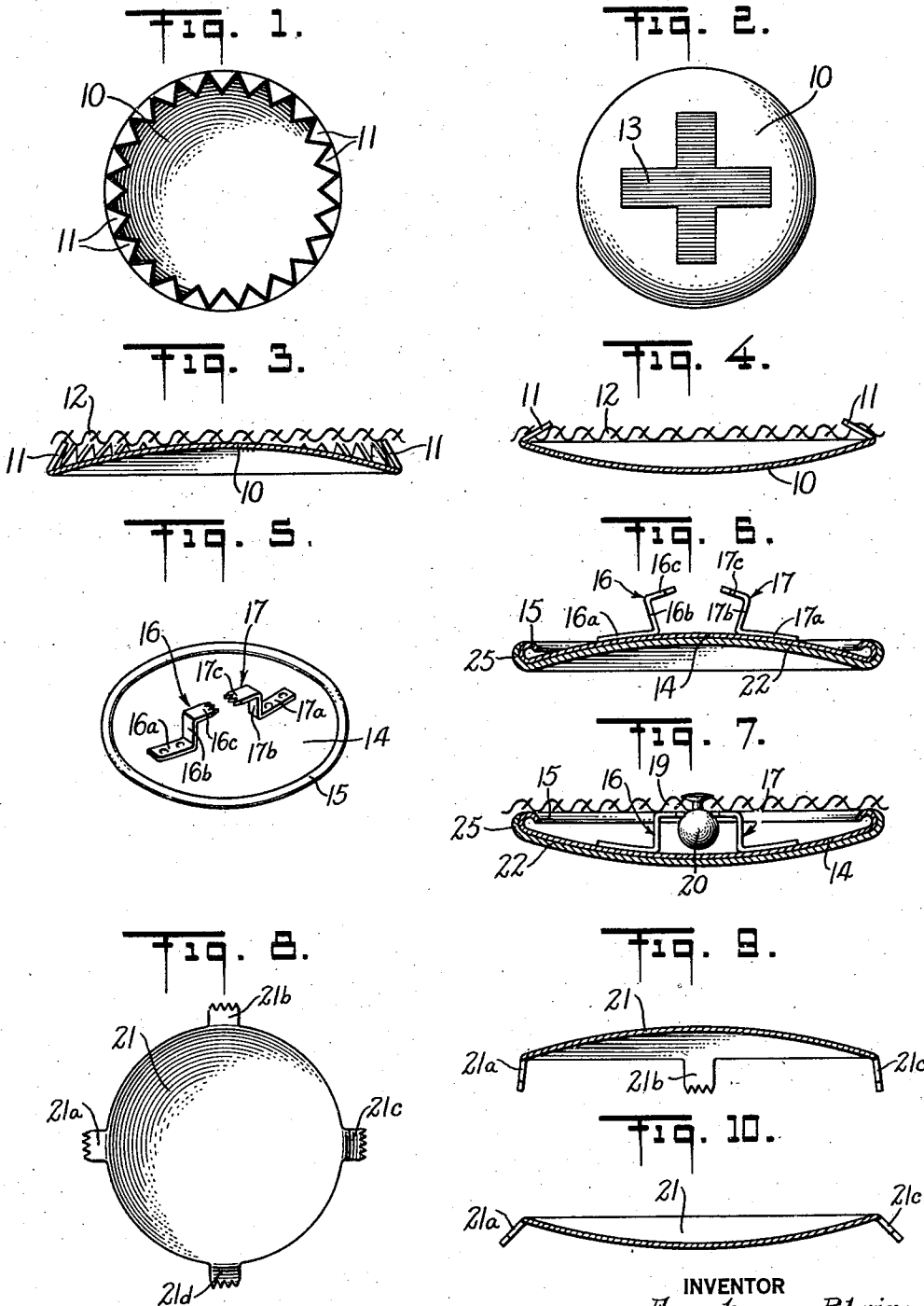
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FASTENING DEVICE

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FASTENING DEVICE

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This invention relates to a fastening device or the like.

One of the objects of this invention is to provide a simple, inexpensive, and practical fastening device well adapted to meet varying conditions of use. Another object is to provide a fastening device of the above character the use of which will be simple and which may be quickly and easily operated by the user. Another object is to provide a fastening device of the above character which will be neat and attractive in appearance, and yet be of such sturdy construction as to withstand hard usage. Another object is to provide a fastening device of the above character which may be manufactured from light and inexpensive materials. Other objects will be in part obvious and in part pointed out hereinafter.

The invention, accordingly, consists in the features of construction, combinations of elements, and arrangements of parts, as will be exemplified in the structure to be hereinafter described, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawing in which are shown several of the various possible embodiments of my invention,

Figure 1 is a bottom plan view of one embodiment of my fastening device;

Figure 2 is a top plan view of the fastening device shown in Figure 1;

Figure 3 is a sectional elevation of the fastening device shown in Figure 1, with the top flexed inwardly, positioned on a piece of material;

Figure 4 is a sectional elevation of the fastening device shown in Figure 1 with the top flexed outwardly, the device being attached to a piece of material;

Figure 5 is a perspective view of a fastening device forming another embodiment of my invention;

Figure 6 is a sectional elevation of the device shown in Figure 5 with the top flexed inwardly;

Figure 7 is a sectional elevation of the device shown in Figure 5 with the top flexed outwardly and the device fastened to a piece of material;

Figure 8 is a top plan view of another embodiment of my invention;

Figure 9 is a sectional elevation of the type of device shown in Figure 8 with the top flexed outwardly, and;

Figure 10 is a sectional elevation of the device shown in Figure 8 with the top flexed inwardly.

Similar reference characters refer to similar parts throughout the several views of the drawing.

Referring now to Figures 1, 2, 3, and 4, the body of the fastening device is a snap-acting disc 10. Around the periphery of disc 10 are a plurality of wedge-shaped projections 11, preferably integral with disc 10. As may be seen in Figure 3, these projections extend inwardly from the periphery of disc 10 at an acute angle to the bottom of said disk.

Referring to Figure 3, when the snap-acting disc 10 is flexed inwardly (upwardly as shown in Figure 3), it causes the points of projections 11 to move outwardly or away from the center of the disc. With the projections in this position, the disc is placed adjacent a piece of material 12 so that the points of the projections rest against the material. When the disc is snapped in the other direction or outwardly (downwardly as viewed in Figure 4), the points of projections 11 move toward each other or toward the center of said disk and drive into material 12, as shown in Figure 4, securely fastening the device thereto.

As seen in Figure 2, the face of disc 10 may carry a design 13 which may be formed upon or affixed to the surface of the disc. However, it should be understood that there are a plurality of different ways and methods by which designs are placed on buttons, many of which are applicable to this type of device.

Thus, I have provided a fastening device which may be inexpensively made and by which a button or the like may be securely and quickly fastened to a piece of material or the like. When it is desired to remove the device, the user presses inwardly upon the center of the disc, causing it to flex inwardly. This causes the projections to snap outwardly and free themselves from the material.

It might here be pointed out that this device eliminates the pin usually found on the back of buttons. These pins, as is well known, are liable to be driven into the user either when the pin is being placed on the user or while it is being worn. As may be seen from the above description, my construction eliminates this objectionable feature.

Referring now to Figures 5, 6, and 7, in which is shown another embodiment of my invention, the body of the fastening device comprises snap-acting disc 14, the edge of which is preferably rolled to form lip 15. A pair of claws, generally indicated at 16 and 17, are secured to the center portion of the disc by any suitable method, such as spot welding. These claws comprise body portions 16a and 17a, having projections 16b and 17b extending upwardly therefrom. The tips 16c and

17c of these projections have saw-toothed edges (Figure 5). As the claws are secured to the flexing portion of the disc, they move as the disc is flexed. Thus, when the disc is flexed inwardly, upwardly as seen in Figure 6, the points are moved apart or outwardly in directions away from the center of said disk, and when the disc is flexed in the opposite direction or outwardly (downwardly as seen in Figure 7), tips 16c and 17c nearly meet, as seen in Figure 7.

When it is desired to secure this embodiment to a piece of material, the disc is flexed inwardly. This separate tips 16c and 17c, which are then placed in contact with the material. Next, the disc is flexed outwardly causing tips 16c and 17c to move toward each other and grip the material, securing the device thereto.

In some cases, such as on women's dresses, it is desirable to change the buttons and other ornaments. In the case of a dress, to change buttons effects a change in the appearance of the dress. In Figure 7, I have shown a projection 20 on material 19, which may be made either of metal or of cord and may be secured to the material in any suitable manner. This projection provides a definite anchor to which a button of the above type may be attached. Furthermore, when buttons are being changed, this projection marks the spot where the button belongs so that after changes, the buttons are always properly positioned. Accordingly, a person could buy sets of buttons of different colors or covered with different materials and change buttons as desired.

Referring to Figures 6 and 7, I have shown a cover member 22, which may be made out of any flexible material such as Celluloid. The edge 23 of this cover member extends over the edge of the snap-acting disk, securing the cover member in place thereon. This cover may serve as a base on which a design may be placed if it is not desirable to place the design directly upon the metal face of disk 14.

Another embodiment of my device is shown in Figures 8, 9, and 10. This type comprises a center formed of a snap-acting disk 21 having arms 21a, 21b, 21c, and 21d formed thereon. The arms and the disc are preferably integral, being stamped from sheet metal, and the tips of the arms have saw-toothed edges (Figures 9 and 10). These arms extend outwardly from the snap-acting disk in contrast to the inwardly extending projections on the type of device shown in Figure 1, and thus the mode of operation is the reverse of that of the embodiment shown in Figure 1.

In operation, the disc is flexed outwardly (upwardly as viewed in Figure 9), and the ends of the arms are placed upon a piece of cloth or similar material. Then the center of the disc is pressed, which action drives the tips of the arms into the material. Then, the disc snaps inwardly (downwardly as viewed in Figure 10). This causes the ends of the arms, which at this time extend into the material to which the device is to be attached, to spread outwardly away from the center of the disk. As they separate, the tips drive deeper into the material, and at the same time stretch the material lying between them. Thus, these arms are adapted to fasten the disc to a piece of material, and it may be secured to a coat lapel by simply placing it upon the lapel and pressing its center.

Another manner of making the fastening device is to use a thermostatic snap-acting disk,

such as that disclosed in Patent No. 1,678,407, in place of the sheet metal disk described hereinabove. When the fastening device is made of a thermostatic disk, it is preferably used to fasten ornaments and like objects to dresses, and a disk adapted to flex at a temperature slightly above 100° is used.

In use, the disk is first heated to a temperature slightly above 100° to flex it in one direction. Next, it is held on the material to which it is to be attached. When the disk cools, it flexes in the opposite direction and securely fastens itself to the material. As the flexing temperature of the disk is above 100°, normal temperatures cannot cause a device of this type to release itself. In order to release it from the material, the disk is heated to a temperature above its flexing point, and then it snaps in the opening direction, releasing its hold on the material.

Thus, I have provided a fastening device which is designed to be easily, quickly, and securely attached to a piece of material or the like. Furthermore, I have provided a fastening device which eliminates the usual pin found on the back of buttons and which thus may be operated and worn by the user with a maximum of safety. I have also provided a fastening device which permits buttons or ornaments on dresses or the like to be easily and quickly changed. Thus, it will now become clear that I have provided a thoroughly practical and durable fastening device in which the several objects hereinabove mentioned, as well as many others, are accomplished.

As many possible embodiments may be made of the above invention and, as many changes might be made in the embodiment above set forth, it is to be understood that all matter hereinabove set forth, or shown in the accompanying drawing, is to be interpreted as illustrative and not in a limiting sense.

I claim:

1. In a fastening device adapted to be attached to a piece of material or the like, in combination, a snap-acting disk, and projections on said disk, the ends of said projections being sharp and in juxtaposed relationship, whereby, when said disk is flexed in one direction, the ends of said projections move away from each other, and, when said disk is flexed in the opposite direction, the ends of said projections move toward each other.

2. In a fastening device, in combination, a snap-acting disk, a pair of projections mounted on said disk, and means securing said projections to said disk, said projections extending toward each other, whereby, when said disk is flexed inwardly, the ends of said projections move outwardly, and when said disk is flexed outwardly, the ends of said projections move inwardly.

3. In a fastening device adapted to be attached to a piece of material or the like, in combination, a snap-acting disk, a plurality of projections formed substantially on the outer edge of said disk, said projections extending inwardly from the outer edge of said disk to form acute angles with one surface of said disk, whereby, when said disk is flexed outwardly, the ends of said projections move inwardly, and, when said disk is flexed inwardly, the ends of said projections move outwardly.

4. In a fastening device adapted to be attached to a piece of material or the like, in combination, a snap-acting disk, and a plurality of projections having points formed on said disk whereby, when said disk is flexed in one direction, the points of

said projections move inwardly and, when said disk is flexed in the opposite direction, the points of said projections move outwardly.

5 In a fastening device, in combination, a snap-acting disk, a pair of claws mounted on said snap-acting disk, said claws being secured to said snap-acting disk and having ends juxtapositioned in relation to each other, whereby, when said disk is flexed outwardly, the points of said
10 projections move inwardly and, when said disk is flexed inwardly, the points of said projections move outwardly.

6 In a fastening device, in combination, a snap-acting disk, and a plurality of projections formed on said disk, said projections having
15 sharp ends and extending inwardly toward an axis passing through the center of said disk, whereby, the ends of said projections move outwardly away from said axis when said disk is flexed inwardly, and move inwardly toward said
20 axis when said disk is flexed outwardly.

7 In a fastening device, in combination, a snap-acting disk, and claws secured to one surface of said snap-acting disk, said claws including
25 upwardly extending portions which terminate in tips lying in juxtapositioned relation, whereby, when said disk is flexed inwardly, said tips move outwardly away from each other, and, when said disk is flexed outwardly, said tips move in-
30 wardly toward each other.

8 In a fastening device, in combination, a snap-acting disk, and a plurality of projections on said disk, said projections extending outwardly away from an axis passing through the center
35 of said disk forming obtuse angles with one surface of said disk, whereby, when said disk is snapped in one direction, the ends of said projections move outwardly away from each other, and, when said disk is snapped in the other di-
40 rection, said projections move inwardly toward each other.

9 In a fastening device, in combination, a snap-acting disk, and a plurality of projections formed on the outer edge of said disk extending
45 outwardly therefrom, whereby, when said disk is flexed in one direction, the ends of said projections will move outwardly away from each other, and, when said disk is flexed in the other direction, the ends of said projections will move in-
50 wardly toward each other.

10 In a fastening device, in combination, a snap-acting disk, a plurality of arms formed upon the outer edge of said snap-acting disk having
55 saw-toothed ends, said arms extending outwardly away from the edge of said disk and forming obtuse angles with one surface of said disk, whereby, when said disk is flexed inwardly, said edges move outwardly away from the center of said disk, and, when said disk is flexed out-
60 wardly, said edges move inwardly toward the center of said disk.

11 In a fastening device, in combination, a piece of material, a snap-acting disk, and a plu-
65 rality of projections on said snap-acting disk, said projections being adapted to secure said disk to said material when said disk is flexed in one direction, and to release said disk from said material when said disk is flexed in the other di-
rection.

12 In a fastening device, in combination, a snap-acting member, and means extending out-
wardly from the outer edge of said snap-acting member, said means forming an obtuse angle
5 with one surface of said snap-acting member, whereby, when said member flexes in one direc-
tion, the ends of said means move away from each other, and, when said member flexes in the opposite direction, the ends of said means
10 move toward each other.

13 In a fastening device, in combination, a piece of material, a thermostatic snap-acting disk, and a plurality of projections on said snap-
acting disk, said disk by being subjected to vary-
15 ing temperatures being adapted to be connected to said material.

14 In a fastening device, in combination, a snap-acting disk capable of being snapped out of
its normal shape but adapted to snap back to its normal shape when released, a plurality of pro-
20 jections formed on said disk, said projections being so disposed with respect to the normal shape of said disk that when said disk is snapped out of its normal shape, the ends of said projections
25 move away from the center of said disk, and, when said disk snaps back to its normal position, the ends of said projections move toward said center.

15 In a fastening device adapted to be at-
tached to a piece of material or the like, in com-
30 bination, a snap-acting disk, and a plurality of projections having sharp ends extending inwardly from the outer edge of said disk in a direction toward an axis extending through the center of
35 said disk to form acute angles with the bottom surface of said disk, whereby, when said sharp ends are placed in contact with said material and said disk is flexed outwardly, said sharp ends
40 move toward each other, driving into said material and affixing said disk thereto, and, when said disk is flexed inwardly, said sharp ends move out-
wardly away from each other, releasing said disk from said material.

16 In a fastening device adapted to be at-
tached to a piece of material or the like, in com-
45 bination, a snap-acting disk, and a plurality of projections extending substantially radially from the outer edge of said disk and forming obtuse angles with the bottom surface of said disk, whereby, when said projections are placed in con-
50 tact with said material and said disk is flexed inwardly, said projections move outwardly away from each other, driving into said material to affix said disk thereto, and, when said disk is flexed outwardly, said projections move inward-
55 ly, releasing said disk from said material.

17 In a fastening device adapted to be se-
cured to a piece of material or the like, a ther-
mostatic snap-acting disk, and a plurality of pro-
60 jections having sharp ends extending from the outer edge of said disk, whereby, when said sharp ends are placed in contact with said material, the flexing occurring when said disk cools drives said sharp ends into said material, and the flexing oc-
65 ccurring when said disk is heated causes said projections to move away from said material.

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