

(No Model.)

E. P. WHITNEY.
BUTTON AND FASTENING.

No. 346,523.

Patented Aug. 3, 1886.

Fig. 1.

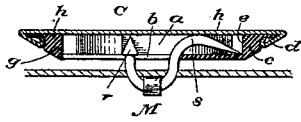


Fig. 2.

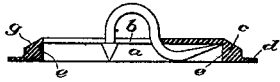


Fig. 3.

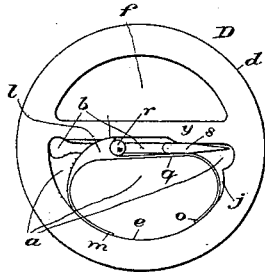


Fig. 4.

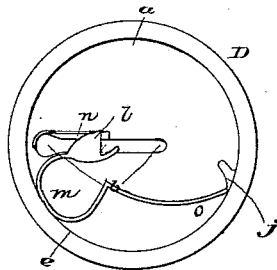


Fig. 5.

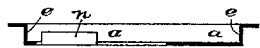


Fig. 6.

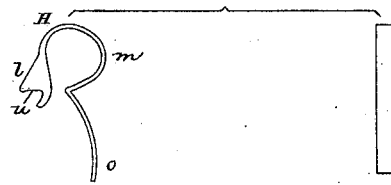


Fig. 10.

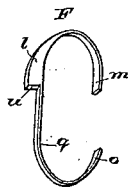


Fig. 7.

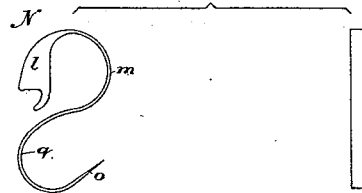


Fig. 13.

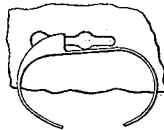


Fig. 14.

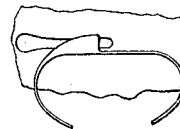


Fig. 8.

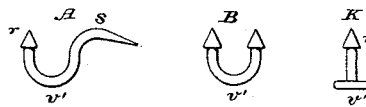


Fig. 11.



Fig. 9.

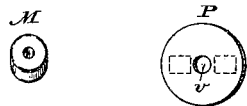
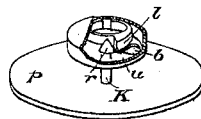


Fig. 12.



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UNITED STATES PATENT OFFICE.

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BUTTON AND FASTENING.

SPECIFICATION forming part of Letters Patent No. 346,523, dated August 3, 1886.

Application filed June 5, 1885. Serial No. 167,712. (No model.)

To all whom it may concern:

Be it known that I, ERASTUS P. WHITNEY, residing in the city, county, and State of New York, have invented a new and Improved Button and Fastening therefor, of which the following is a specification.

This invention relates to that class of buttons in which the shank is separable from the button; and it is an improvement on the fastening set forth in my Letters Patent dated March 23, 1886, No. 338,377. In that patent a detachable shank was used, which was secured to the button by means of a latch which swung across a slot in the bottom of the button, through which slot the head of the shank was inserted, the latch being automatically actuated by a spring separate therefrom. In the present invention, while retaining the other features, I have dispensed with the latch as a separate feature, and have substituted therefor a stop carried by the spring itself, which stop normally extends across the slot, and automatically resumes its position when moved therefrom by the insertion of the shank. Besides this main feature, the invention embraces other improvements in detail, which will be hereinafter more specifically set forth.

In carrying out the main feature of my invention a variety of constructions may be employed, and different modifications are essential in accommodating the fastenings to different styles of shanks. I have therefore, in order to render clear the scope of my invention, illustrated a number of modifications in the accompanying drawings.

Figure 1 is a transverse vertical section through a button as it stands in the cloth. Fig. 2 is a similar section through the bottom of a button-head, showing the shank in position. Fig. 3 is an interior plan view of the button-head, the top being removed. Fig. 4 is a similar view showing a different construction of the button-head and a different-shaped spring-fastening. Fig. 5 is a profile sectional view of the sheet-metal bottom. Fig. 6 is a detail view of the spring shown in Fig. 4. Fig. 7 is a detail view of another style of spring. Fig. 8 shows three forms of the detachable shank. Fig. 9 shows a ring and a disk-washer applicable to the shanks. Fig. 10 is a detail view of the spring shown in Fig. 3. Fig. 11 is a view of a shank and disk-washer formed in one

piece. Fig. 12 is a view of a shank with its disk arranged to constitute the button-head, the spring-latch button-head being used as a fastener, the interior of the fastener being shown. Fig. 13 is a view of a spring and slot for the use of shank B, and Fig. 14 is a view of a spring and slot for the use of shank K.

Like letters designate corresponding parts in all of the figures.

In Figs. 1 to 5, inclusive, a button, C, is shown adapted to receive the shank A. (Shown in detail in Fig. 8.) In each case the head is circular, which is the preferred shape, though it may be of any other desired shape. In Figs. 1, 2, and 3 the button-head is composed of a thin cylinder, D, which is hollowed out in its upper part to form a cavity, *a*, for the reception of the fastening devices. This cylinder has a thick circumferential wall, *c*, beveled on its lower outer edge, as at *g*, and having on its upper edge a projecting horizontal rim, *d*, which is inclosed within the "stamped-on" top *h*. The inner surface, *e*, of the wall *c* is vertical. The button shown in these three figures is molded or otherwise formed out of hard rubber or similar material. The bottom of the button-head need not, however, be made out of hard rubber; but it may be stamped or otherwise formed out of sheet metal, as is shown in Figs. 4 and 5. In each case the bottom is formed with an elongated slot, *b*, having an enlarged head to receive the shank A. The construction of this shank and its operation in connection with the slot are substantially the same as set forth in my patent above referred to.

The preferred form of fastening-spring is that shown in Fig. 6, which is also shown in position in the button-head shown in Fig. 4, although it is equally applicable to the head of the previous figures. This spring H has a semicircular body portion, *m*, which carries at one end the latch or stop *l* and at the other a limb, *o*. This peculiar construction of the spring is designed to secure the same results as if the catch were made to move in ways constructed at right angles to the slot. The button-head D in Fig. 4 is formed with an inwardly-projecting shelf, *j*, and with a turned-up projecting flap, *n*, on one side of the slot *b*. The spring H is placed in the cavity *a*, with the foot *o* resting against the shelf *j*, and the stop *l*

extending across the slot *b* and resting against the flap *n*. When in this position, the body *m* of the spring rests against the wall *e* of the cavity. The spring is thus held within the cavity with its stop *l* extending normally across the slot. The spring is prevented from displacement by the shelf *j* and the projection *n*. The stop *l* has an inclined face on the side toward the enlargement of the slot *b*; but the face *u*, toward the small end of the slot, is straight, and extends across the slot perpendicularly thereto. When it is desired to secure the shank *A* to the button-head, it is first passed through the cloth, and then inserted into the slot *b*. In inserting it in the slot *b* the enlarged head *r* is placed in the enlargement of the slot, while the point *s* is inserted in the body of the slot, the two parts of the shank straddling the stop *l* of the spring that is being inserted on either side of the stop. The shank is then pushed lengthwise of the slot. This movement brings the head *r* in contact with the inclined face of the stop *l*, which it pushes aside, the spring yielding to permit the head to pass the stop till it reaches within the body of the slot. The stop *l* then springs back across the slot, thus locking the shank within the button-head. If the shank is moved backward in the slot against the stop, it will not swing the same back across the slot, but will merely press it against the inner wall of the cavity. This spring is preferably made out of hard rubber or a similar material, with a solid latch head or stop, and with the body and foot portions thin and ribbon-like. The latch-head or stop *l* is made solid, so that it will not yield when the shank is pressed against the face *u*, it constituting an unyielding substance between the shank and the inner wall of the cavity. The spring is made of a width equal to the depth of the cavity, so as to rest therein without rattling, and it is preferably made of a selected material—such as hard rubber—on account of its non-resonant qualities, in order to still further prevent any noise. The stop *l* may be swung back across the slot to remove the shank by the insertion of a special tool, such as is set forth in my patent above mentioned.

Instead of making the spring *H* out of rubber or similar non-resonant material, it may be made of metal ribbons bent into proper shape, as clearly shown by the outline of drawings, Figs. 6 and 7. Other kinds of metal springs may be used, such as those made out of wire or stamped up out of spring sheet metal of predetermined thickness. These metal springs may be made non-resonant in order to prevent noise—as by coating them with hard rubber, for example.

In the button-head shown in Fig. 3, the interior cavity is shown as divided into two parts, *a* *b*, by a cross-bar, *y*, which is located along one side of the slot *b*. In the cavity *a* the spring is placed. In this figure the cavity is shown as adapted especially for the spring *F*. (Shown in detail in Fig. 10.) This

spring is elliptical in general shape. One side, *q*, extends alongside and parallel with the slot, while the other side is cut to form two free ends, *m* and *o*. These ends *m* and *o* occupy the same relative positions in the cavity as the corresponding parts of the spring *H*, both lying along and in contact with the wall *e*. The side *q* carries the latch-stop *l*, which extends across the slot and bears against the cross-bar *y*, which answers to the flap *n* in Fig. 4. When the shank is inserted in this button-head, the spring is compressed, the two ends *m* and *o* approaching each other, and when the head of the shank has passed the spring-stop the spring again expands and throws the stop across the slot.

Another different form of spring is shown in Fig. 7; in order to render it clear that numerous alterations may be made in the shape and character of the locking-springs without departing from the leading feature of the invention, which is a stop carried by the spring itself, which normally stands across the slot. In the spring-latch *H* illustrated it will also be observed that the latch-stop is forced across the slot at right angles thereto. This is a very important feature, since owing to it the shank may be closely held in the slot with no space to move about in.

In Fig. 8 I have shown different forms of shanks which may be employed with any of the springs. The shank *A* is a loop-shaped shaft bent up in wire or stamped out of sheet metal of predetermined thickness, with an enlarged head or barb, *r*, on its straighter arm, and a sharp point, *s*, terminating its other arm, and projecting horizontally outward in the plane of the first arm. The conical shape of head shown is preferable, since when engaged with the button-head the flat surface engages the inner margins of the slot, and hence the shank can have no vertical movement in the slot. The shank *B* has two conical heads, which are both passed through the cloth. This shank might be used with a slot like that in Fig. 3, and the heads might be inserted on one side of the latch-stop; but when this shank is used it is preferable to have a slot especially adapted to it, like that shown in Fig. 13, where the slot has two enlargements on either side of the latch-stop, so that in inserting the shank its two heads may straddle the stop. This straddling of the latch-stop is important, since it enables the slot to be made much shorter than would otherwise be required, so that smaller button-heads may be used, and at the same time it greatly facilitates the insertion of the shank. The shank may also have but a single head, as in the case of the shank *K*. This shank, however, has an enlarged disk, *v*, to hold on the under side of the cloth, in place of the loop *v* in the other shanks. When this shank is used, the slot will be shaped as in Fig. 14. When the looped shanks are used, a thick apertured ring, *M*, Figs. 1 and 9, will be passed over the loop beneath the cloth, to afford a better hold on the cloth and

to protect the same. As another variety of fastening, a circular disk-spring, P, may be used. This is shown with a central aperture, v, which adapts it for use with the shank K, the head of which is passed through the aperture v before insertion through the cloth. The dotted lines indicate apertures when the disk is to be used with either the shank A or B. This disk may be either felt or cloth, as well as metal.

Instead of having the fastening devices included within the button-head, a button-head may be formed directly on the shank, as in Figs. 11 and 12. In this case the fastening devices will be inclosed in a fastener held beneath the cloth, which fastener is in construction the same as the button-heads, as shown in Fig. 12. This arrangement is merely the construction shown in Fig. 1 turned end to end.

I claim as my invention—

1. The combination of a button-head or shoe having a cavity in its interior opening into a slot cut through its under surface, said cavity

inclosing the integral free spring-stop, its stop portion being stiff lengthwise but resilient breadthwise back and forth, and a projection across said slot when at rest, with a detachable shank whose barbed entering arm or arms move along in said slot, and are secured in said button-head or shoe through said slot by said spring-stop, all substantially as set forth, and for the purposes designed.

2. The combination of a hollow or partially hollow button-head or shoe provided with the slot and having in its interior the spring-stop H, in one piece, the latter being flexible laterally and substantially at right angles to the slot, and extending across the same at right angles thereto when at rest, with a detachable shank whose entering end, terminating in point or points, is firmly locked in said slot thereby, substantially as described and set forth.

ERASTUS P. WHITNEY.

Witnesses:

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JAMES PRICE.