M. MENKIN.

RELEASABLE-SELF FASTENING BUTTON.

APPLICATION FILED MAR. 16, 1921.

1,427,614. Patented Aug. 29, 1922.

Fig:1.

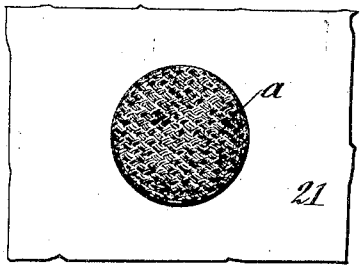


Fig:2.

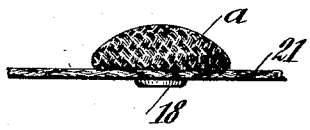


Fig:3.

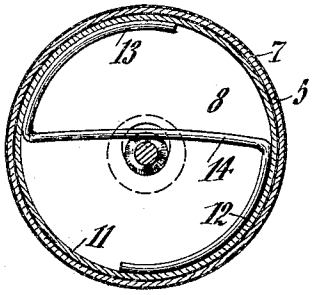


Fig:4.

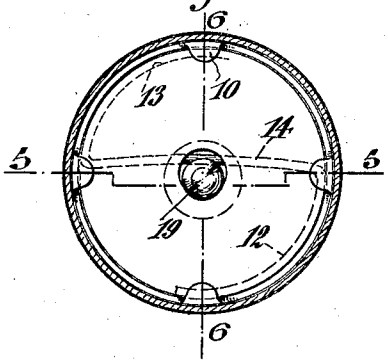


Fig:5.

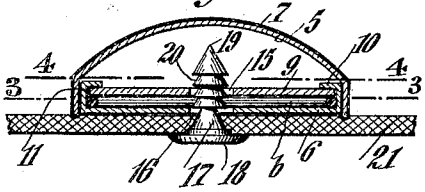
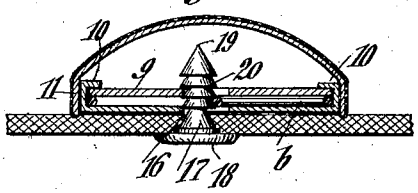


Fig:6.



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RELEASABLE SELF-FASTENING BUTTON.

1,427,614. Specification of Letters Patent. Patented Aug. 29, 1922.

Application filed March 16, 1921. Serial No. 452,662.

To all whom it may concern:

Be it known that I, MAX MENKIN, a citizen of Russia, and resident of New York, county of New York, State of New York, have invented certain new and useful Improvements in Releasable Self-Fastening Buttons, of which the following is a specification.

This invention relates to improvements in releasable self-fastening buttons for use in connection with garments, wherein it is desirable to secure the buttons to the garment without the use of thread and in such manner that will permit removal of the buttons whenever desired.

The general object of the invention is the provision of a construction consisting of comparatively few and in expensive parts which are designed so as to be readily assembled and secured together with ordinary machinery in the manufacture of the button and which are further designed so as to provide a button adapted for easy and effective attachment to a garment and which cannot be removed accidentally from the garment when arranged thereon in operative position.

To these ends the invention resides in providing a cell or chamber within the shell constituting the body of a button and adapting a spring arm for insertion into the said cell or chamber so as to be secured thereby and further, in adapting a grooved fastening shank for insertion into the cell or chamber and interlock with the said spring arm.

Other objects will appear and be better understood from that embodiment of the invention of which the following is a specification, reference being had to the accompanying drawings forming part thereof and in which:

Figure 1 is a face view of the button of this invention attached to a fragment of cloth;

Figure 2 is a side elevation of Figure 1 but showing the cloth in section;

Figure 3 is a detail sectional plan view of the button on the line 3—3 of Figure 5;

Figure 4 is a view similar to Figure 3 but on the line 4—4 of Figure 5;

Figure 5 is a vertical cross-section approximately on the line 5—5 of Figure 4 and

Figure 6 is a cross-section on the line 6—6 of Figure 4.

The shell or body A may be formed of any material found suitable for the purpose as for instance, metal and as usual, consists of the interfitting front and back plate portions designated respectively by 5 and 6 which are frictionally or otherwise held together in any preferred or desired manner.

For purposes of illustration, I have shown the back plate 6 as being flat and the front plate 5 as having a convex outer surface and covered with a layer of fabric 7. The parts 5 and 6 are also shown as having the conventional round or circular contour.

A cell or chamber 8 is formed within a shell or body A, one side of the said chamber being provided by the back plate 6 and the opposite side by the plate 9. For purposes of illustration I have shown the cell or chamber as being formed with the back plate 6 and the plate 9 as being secured in parallel relation with the plate 6 by lugs 10 which are bent inwardly from the outstanding peripheral flange 11 of the plate 6 and distanced so as to bear on the plate 9. The plate 9 is herein shown as being of metal and is spaced from the back plate 6 for a sufficient distance to nicely accommodate the spring arm B which maintains the plate 9 in proper spaced relation to the back plate 6. The spring arm B is formed of a length of spring wire, the end portions 12 and 13 of which are disposed in angular relation to the intermediate portion 14 and curved to conform to the contour of the chamber 8. The length of the intermediate portion 14 approximates the diameter of the chamber 8 and the end portions 12 and 13 are so disposed with respect to the intermediate portion 14 that flexure of the said end portions is required in order to conform the spring arm for insertion into flanged back plate 6.

Obviously, with this construction, the intermediate portion 14 will extend transversely of the center of the back plate 6 and the intermediate plate 9 and across the aligning openings 15 and 16 formed in the said plates. It will be noted by referring to Figure 5, that the plate 9 by bearing on the spring arm B operates to prevent lateral outward movement thereof and the outstanding flange 11 operates to confine the arm within the chamber 8.

The fastening shank 17 is provided at one end with an enlarged flattened head 18 and at its outside end is ground so as to provide a point 19. Between the portions 18 and 19 the said shank is roughened by a

series of peripheral undercuts 20 which constitute a series of grooves, each groove being of a size to receive the intermediate portion 14 of the spring arm 5.

With this construction the shank may be inserted for different distances into the shell or body A so as to adapt the button for use with fabrics of various thicknesses. The openings 15 and 16 conform substantially to the diameter of the shank 17 so that the insertion of the shank into the openings 15 and 16 results in the flexing of the intermediate portion 14 by the shank.

It being obvious that as the shank passes through the said openings the roughened surface thereof overrides the intermediate portion 14 until movement of the shank ceases, whereupon the intermediate portion 14 moves into engagement with the groove 20 arranged opposite thereto. It is obvious that the intermediate portion 14 is under tension when the shank is engaged therewith, so that there is a tendency on the part of the shank to tilt laterally. It will be observed, therefore, by referring to Figures 3 to 6 that the approximation in point of size between the shank and the openings 15 and 16 is such that the cells of these openings engage the shank when pressed laterally by the spring arm B so that perceptible tilting of the shank is prevented.

In the use of the device the fastening shank is inserted through the fabric 21 at a point opposite to the openings 15 and 16 and then through the said openings 15 and 16 and until the back plate of the button is adjacent to or bears upon the outer face of the fabric. In this position of the parts, the intermediate portion 14 of the spring arm B engages with one of the grooves of the shank 17 and operates to lock the shank against outward movement. It will be noted that the undercutting which forms the grooves 20 is such that the face of each groove is tapered, the slope or taper extending toward the point or free end 19. This construction provides the equivalent of inclined teeth which readily override the spring arm B when the shank is moved inwardly into the shell but which operate to interlock with the spring arm and prevent outward movement of the shank away from the shell.

It is to be noted that the intermediate portion 14 of the spring arm B traverses the openings 15 and 16 at one side of the axial center thereof so that when the body of the fastener is applied upon the shank 17, the pressure of the conical end of the shank against the portion 14 acts to bow and tension the same so that when the body member A is released the portion 14 of the spring element tends to return to its normal condition. As this portion of the spring bears only against one side of the shank at the base of one of the grooves therein, the body member A will thus be shifted to an eccentric position relative to the shank and the edges of the openings 15 and 16 at the opposite side of the shank with respect to the portion 14 of the spring will be engaged in additional grooves of the shank. In this manner there is obtained a very secure locking connection between the body of the button or fastener and the shank and liability of their disconnection by longitudinal pull upon the shaft is reduced to a minimum.

The parts shown in Figures 3 to 6 are exaggerated in size and would seem to provide a structure which would positively hold the shank against outward movement under a relatively heavy pull. But in practice where the parts are smaller than shown an outward pull on the head 18 and especially when the same is engaged with a gripping tool, will result in the shank operating to force the intermediate portion 14 laterally and thereby permit the withdrawal of the shank. The undersides of the teeth or corrugations on the shank 17 may be slightly rounded off to allow the teeth to slide past the inter-engaging edges of the plates 6 and 9. If, however, the undersides of the teeth on the shank are made straight as illustrated in the drawings, the shank 17 may be withdrawn from the shell of the button after first moving the shell against the tension of the spring arm B into concentric relation with the shank 17 and thereby withdrawing the edges of the plates 6 and 9 from the grooves of the shank. It will be thus evident that although the shank 17 is releasable, such release cannot be accidentally effected so that when the button is in use the engagement between the shell and the fastening shank is such that accidental disengagement of the parts is positively prevented.

By the provision of a series of teeth or grooves 20, the button may be used with cloth or fabric of various thicknesses in that where relatively thick cloth is employed the outer grooves or teeth will be engaged, whereas with relatively thin cloth, the inner grooves or teeth will be engaged as shown in Figures 5 and 6.

The parts 5 and 6 of the shell or body are preferably stamped from sheet metal into the shape shown. This is an ordinary procedure in the manufacture of buttons, the parts being so proportioned with respect to each other that they readily interfit when forced one into the other by a suitable brace and when so engaged they are frictionally held together. In the same instance it might be desirable to roll the edge of the part 5 around the edge of the back plate 6. Such construction, however, would be obtainable with the manufacture. The spring arm B may be bent into S-shaped form as shown,

with a suitable die and inserted into the part 6 prior to assembling the same with the part 5, after which the intermediate plate 9 is disposed upon the spring arm B and the lugs 10 bent over the outer face of the plate as shown. The placing of cloth is generally applied in the ordinary manner if its presence with the button is desired.

Although I have shown and described an ideal embodiment of my invention, it is to be understood that I am not to be limited to the details of structure and arrangement of the parts therein shown, it being obvious that many minor mechanical changes may be made within the scope claimed without departing from the spirit or sacrificing any of the advantages of the invention.

I claim:

1. A separable fastener comprising a body having a back wall provided with a central opening, the edge of which is arranged in the plane of the body of the back wall, a resilient element carried by said body and having a part traversing said opening at one side of its axial center line, and a shank provided with a plurality of annular grooves substantially equal in width to the thickness of said wall, said grooves being adapted to receive the edges of said wall, and said shank being adapted to be projected through said opening to coact with said part of the resilient element and place said element under tension whereby upon the release of the body, said element in returning to its normal condition acts to shift the body to an eccentric position relative to the shank and engage the edge of the opening in said back wall in a groove in the shank to thereby lock the parts of the fastener together.

2. A separable fastener comprising a body provided with spaced walls forming a chamber and each of said walls having a centrally located opening, a resilient element arranged to space the chamber walls apart and having a part traversing the said openings at one side of their axial center line, and a grooved shank adapted to be projected through said openings to coact with said part of the resilient element, other parts of said element engaging the marginal wall of said chamber whereby the resilient pressure of said element against one side of said shank acts to position the body relative to said shank and engage the edges of said openings in the chamber walls with the grooves of the shank.

3. A separable fastener comprising a body having a back consisting of spaced walls forming a chamber and each of said walls provided with a centrally located opening, a generally Z-shaped spring arm serving to maintain said walls in spaced relation and having its end portions grooved and bearing against the marginal wall of said chamber and an intermediate portion traversing said openings at one side of their axial center line, and a shank adapted to be projected through said openings, said shank having a conical end portion to engage the intermediate portion of the spring arm and a plurality of grooves in one of which said portion of the spring arm engages on one side of the shank, said spring arm acting against the shank upon release of the fastener body to eccentrically position said body relative to the shank and engage the edges of said openings at the opposite side of the shank in additional grooves of the shank to thereby lock the parts of the fastener ends.

In testimony that I claim the foregoing as my invention, and I have signed my name hereunto.

MAX MENKIN.