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R. P. ROCES ET AL

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SAFETY RAZOR WITH IMPROVED HANDLE

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Fig. 1

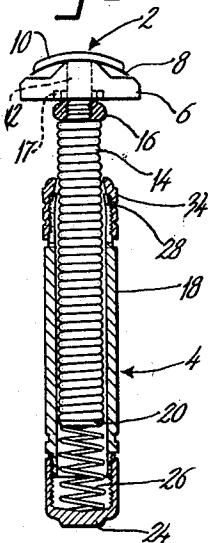


Fig. 3

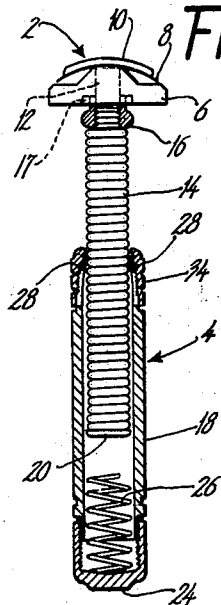


Fig. 6

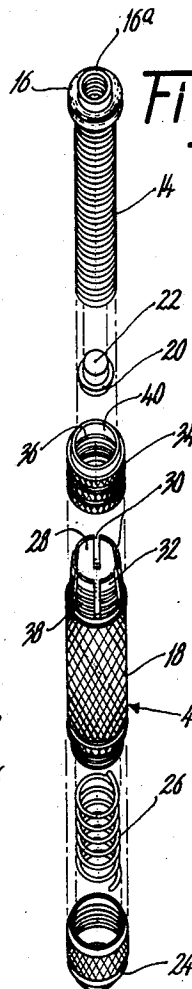
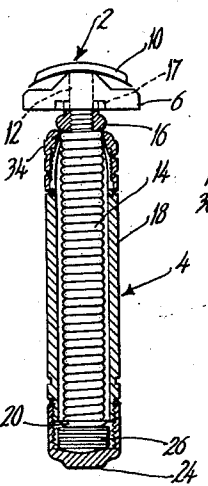
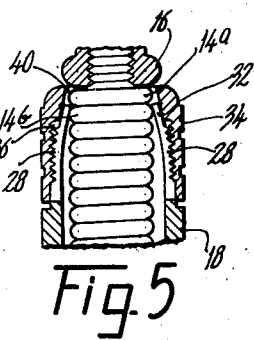


Fig. 5

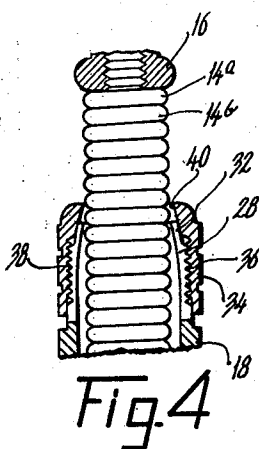


Fig. 4

Fig. 2

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SAFETY RAZOR WITH IMPROVED HANDLE

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5 Claims. (Cl. 30—85)

This invention relates to razors and more particularly to razors of the type comprising a blade holding head and a handle attached to the head between the ends thereof and extending transversely of the head for positioning the head and manipulating the razor during a shaving operation. Such razors are known in the art as safety razors.

In the usual safety razor construction, the razor is provided with a rigid handle attached to the head in fixed relation thereto. This construction is widely approved since it enables the head and the blade carried thereby to be positively actuated and controlled at all times. To enable certain important advantages to be obtained in the shaving operation, safety razor constructions have been produced in which the razor is provided with a flexible handle. This enables the shaving operation to be performed with a relatively "light touch" and allows the head of the razor to conform readily to the curves in the contour of the face or other area of the body over which the razor is passed and to adopt itself to the irregularities in the surface of the skin.

One object of the present invention is to provide a novel and improved flexible handle construction for safety razors.

Another object of the invention is to provide safety razors with a flexible handle construction in which the parts may be quickly and easily set up to give the handle different degrees of flexibility and may be securely locked in each set up condition.

Another object of the invention is to provide safety razors with an improved handle construction the parts of which may be set up to provide a rigid handle attached in fixed relation to the head and, alternatively, the parts may be set up to provide a flexible handle.

With the above and other objects in view, the invention consists in a safety razor embodying the novel and improved features, constructions and combinations of parts hereinafter described and particularly pointed out in the claims, the advantages of which will be readily understood and appreciated by those skilled in the art.

The invention will be clearly understood from the accompanying drawing illustrating a construction embodying the invention in its preferred form and the following detailed description of the construction therein shown.

In the drawing

Fig. 1 is a view of a razor embodying the invention partly in elevation and partly in section taken in a plane containing the axis of the handle and illustrating the parts in the positions which they assume under one condition.

Fig. 2 is a view similar to Fig. 1 illustrating the parts in the positions which they assume under another condition.

Fig. 3 is a view similar to Figs. 1 and 2 illustrating the parts in the positions which they assume under still another condition.

Fig. 4 is a detail view partly in elevation and partly in section taken in a plane containing the axis of the handle, illustrating, on an enlarged scale, a portion of the

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razor construction shown in Fig. 1 with the parts in substantially the positions shown in said figure.

Fig. 5 is a detail view, partly in elevation and partly in section taken in a plane containing the axis of the handle and illustrating, on an enlarged scale, a portion of the razor construction shown in Fig. 2 with the parts in substantially the positions shown in said figure, and

Fig. 6 is an exploded view illustrating the various parts of the razor construction.

In the illustrated embodiment of the invention, the razor comprises a head indicated as a whole at 2 and a handle indicated as a whole at 4 attached to the head by which handle the razor is held by the operator and manipulated during a shaving operation.

The head comprises the usual backing plate 6, a razor blade 8 engaging the backing plate and the usual clamping plate 10 for clamping the blade against the backing plate. A threaded stud 12, secured to the clamping plate, passes through openings respectively in the blade and the backing plate and is projected downwardly, Figs. 1, 2 and 3, beyond the lower face of the backing plate. A portion of the handle 4 is threaded over the projecting portion of the stud and is screwed up firmly against the lower side or face of the backing plate to attach the handle to the head and to secure the parts of the head together.

The head construction above described is substantially the same as that embodied in the usual safety razor of the Gillette type.

In the illustrated form of the invention, the handle 4 comprises a laterally flexible handle portion 14, made of spring wire coiled into a cylindrical formation with the coils held yieldingly in contact by the spring of the metal. To the uppermost coil of the spring, as shown, is secured by any suitable means a ring 16 constructed to receive within the same the stud 12, and said ring is formed with interior screw threads arranged to be threaded over the threads on said stud. The ring 16 is provided with an extension 16a of less size than the body of the ring and this extension is arranged to enter a recess 17 in the backing plate 6 and to engage the inner face of the recess when the ring 16 is screwed up tightly on the stud 12. In assembling the head and the spring 14, after the clamping plate, the blade 8, and the backing plate are fitted together, the ring 16 attached to the upper end of the spring is threaded over the stud 12 and is screwed up on the stud to force the end of extension 16a tightly against the inner face of the recess 17 in the backing plate to secure the upper part of the spring fixedly to the head and to clamp the parts of the head together.

The spring 14 is normally maintained in the substantially straight condition shown in Figs. 1, 2 and 3 by the spring of the metal of the coils which normally maintains each coil in contact with the adjacent coils throughout the circumference of each coil. The spring, when free, however, may be flexed in a direction transverse to its axis against the spring action of the coils. When released by the forces which flex the shaft, the resilience of the shaft will cause the same to return to a substantially straight condition.

In the illustrated form of the invention, the spring 14 is engaged within a sleeve 18 in which the spring is arranged to slide freely to locate the spring in different positions longitudinally of the sleeve. As shown clearly in Figs. 1, 2 and 3, the coils of the spring 14 fit relatively closely to the walls of the sleeve. The spring may be located longitudinally of the sleeve so that it is entirely enclosed by the sleeve. The spring is located in this position in the sleeve when it is desired to provide the razor with a rigid handle connected in fixed relation to the head. The spring may be located in the handle so

that the upper end portion thereof projects varying distances from the upper end of the sleeve. When the spring is located in the sleeve so that the upper end portion of the spring projects from the sleeve, the portion of the spring projecting from the sleeve forms a flexible handle portion and the flexibility thereof varies with the length of said projecting portion.

Within the lower end of the spring 14 is inserted a plug 20 shaped as shown in Fig. 6, the plug having a portion 22 which fits tightly in the spring. A cap 24 is threaded on the lower end of the sleeve 13 and a coil spring 26 is interposed between the lower end wall of the cap and the plug 20 to support the spring 14 yieldingly in the sleeve.

With this construction, the spring may be yieldingly supported by the coiled spring 26, with the upper end portion of the spring projecting from the sleeve as shown in Fig. 1. The spring 14 may be enclosed entirely within the sleeve by forcing the same downwardly into the position shown in Fig. 2 against the tension of spring 26.

Manually operable means is provided for locking the spring positively in each position in which it is located in the sleeve. This means comprises a series of flexible resilient jaws 28 formed on the upper end portion of the sleeve 18, as shown, by longitudinal slots 30 cut in the sleeve. These jaws normally either are disengaged from the spring or are engaged lightly with the spring, so that the spring is freely movable through the sleeve. The upper portions of these jaws are beveled off on the outside thereof to form cam surfaces 32. A nut 34 for contracting these jaws to engage the same with the spring 14 to lock the spring in adjusted position is rotatably mounted on the upper portion of the sleeve 18. This nut is arranged to fit over the flexible jaws 28 on the sleeve and is formed with screw threads 36 on the inside thereof for engagement with screw threads 38 formed on the outside of the jaws 28. The nut 34 is formed, adjacent its upper end, with an annular cam surface 40 for engagement with the cam surfaces 32 on the jaws 28, to force the jaws inwardly against the spring 14 to clamp the spring to the sleeve 18 and thereby lock the shaft securely in position longitudinally within the sleeve.

When the nut 34 is located longitudinally on the sleeve 18 to relieve the pressure of the cam surface 40 on the cam faces 32 on the clamping jaws 28 on the sleeve, the spring 14 is unlocked and the parts of the razor are located substantially in the positions shown in Fig. 1. It will be noted from this figure that, with the spring 14 unlocked, the spring is held in position in the sleeve 18 with the upper portion of the spring projecting some distance above the nut 34 by the coiled spring 26.

When the operator wishes to provide the razor with a rigid handle, the head of the razor, the ring 16 and spring 14 are forced downwardly to engage the ring 16 with the upper end of the nut 34 thereby compressing the spring 26 and, while the spring is held down to hold the ring against the nut, the internal threads of which are already engaged with the threads on the outside of the clamping jaws, the nut is screwed down further on the sleeve to cause the cam surface 40 on the nut, through its engagement with the cam faces 32 on the jaws, to force the jaws inwardly against the spring 14 to clamp the spring. The spring 14 and the sleeve 18 are thus locked together in the positions shown in Figs. 2 and 5.

The uppermost coil 14a of the spring 14 is fixedly secured to the ring 16 and the said coil is also fixedly secured to the coil 14b below the same by soldering or brazing or in any other suitable or convenient way.

The jaws 28 on the upper end of the sleeve 18, when forced inwardly by the locking nut 34, engage the coil 14b and clamp the same. This also clamps the coil 14a, the ring 16 and the head of the razor in fixed position with relation to the sleeve 18.

Thus when the spring 14 is located in the sleeve 18 in the position shown in Fig. 2 and is clamped in this posi-

tion by the nut 34, the sleeve, nut, coils at upper portion of spring 14, and ring 16 form a rigid handle to which the head is fixedly connected.

When the sleeve 18 and the spring 14 are clamped together in the relative positions shown in Fig. 2 and it is desired to provide the razor with a flexible handle, the nut 34 is unscrewed on the jaws 28 on the sleeve sufficiently to relieve the pressure of the cam surface 40 on the cam faces 32 on the jaws. The spring 14 is thereby unclamped with relation to the sleeve and is forced upwardly through the sleeve and the nut into the position shown in Figs. 1 and 4 by the coiled spring 26. In this position, the spring 14 projects some distance above the nut 34.

In this action the projection of the spring 14 from the sleeve may be sufficient to give the handle the desired degree of flexibility without further shifting of the shaft with relation to the sleeve. This action also places the parts of the handle in condition for the easy and convenient adjustment of the spring 14 in the sleeve to provide a handle having degrees of flexibility varying through a wide range. The inside diameters of the sleeve and the nut 34 and the outside diameters of the spring are such as to allow the spring to be shifted freely longitudinally with relation to the sleeve and nut.

When it is desired to provide the razor with a handle having a moderate degree of flexibility, the spring 14 may be left in the longitudinal position with relation to the sleeve 18 and nut 34 shown in Fig. 1 and may be locked in this position in the sleeve by screwing the nut 34 down further over the jaws 28 on the sleeve to cause the cam surface 40 on the nut, through its engagement with the cam faces 32 on the jaws, to force the jaws inwardly to clamp the spring in position. With the spring locked in this position with relation to the sleeve and nut, the portion of the spring above the nut may be flexed to a substantial degree in any direction in the shaving operation.

With the parts of the handle construction in the relative positions shown in Fig. 1, if it is desired to provide the razor with a handle having a greater degree of flexibility than it would have with the spring 14 projecting from the sleeve 18 and nut 34 for the distance shown in Fig. 1, the spring 14 is shifted outwardly in the sleeve 18 into a position such as that shown in Fig. 3. The spring is then locked in this position in the sleeve by screwing the locking nut 34 down over the jaws 28 on the sleeve to actuate the jaws to lock the spring in position. This positioning of the spring in the sleeve not only increases the flexibility of the handle substantially over the razor with the parts adjusted as shown in Fig. 1 because of the much longer portion of the shaft projecting beyond the sleeve and nut but also increases to a considerable degree the length of the handle. This increase in the length of the handle is of substantial advantage in reaching certain parts to be shaved and manipulating the razor to shave these parts.

If it is desired to provide the razor with a handle having still greater flexibility or greater length than with the locating of the spring 14 with relation to the sleeve and nut as shown in Fig. 3, this may be readily done as will be understood by those skilled in the art from the above description. The length of the spring 14 is sufficient to enable the spring 14 to be projected a considerably greater distance from the sleeve as might be required to obtain these results.

With parts in the relative positions shown in Fig. 1, if it is desired to provide the razor with a handle having a less degree of flexibility than it would have, with the spring projecting from the sleeve and nut for the distance shown in Fig. 1, the spring is shifted inwardly in the sleeve and nut against the tension of the spring 26. When the spring is located in the desired position in the sleeve and nut, the nut is screwed down further over the clamping jaws 28 to actuate the jaws to lock the spring in position.

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It should be understood that, except as defined in the claims, the invention is not limited to the particular construction of the illustrated embodiment of the invention but that this construction is merely illustrative of one form in which the invention may be embodied and that the invention may be embodied in other forms within the scope of the claims.

Having explained the nature and object of the invention and having specifically described a construction embodying the invention in its preferred form, what is claimed is:

1. A safety razor comprising a head, a handle to which the head is attached including a rigid sleeve, a coil spring mounted within the sleeve for sliding movement longitudinally of the sleeve to locate the coil spring alternatively in a position entirely within the sleeve and in positions projecting different distances from one end of the sleeve, the spring having its coils within the sleeve fitting in relatively close relation to the wall of the sleeve to be engaged by said wall to restrict the lateral flexing of the portion of the spring enclosed by the sleeve, means for fixedly attaching the head to one end of the coil spring, and means for clamping the coil spring to the sleeve to hold the spring in adjusted position longitudinally of the sleeve.

2. A safety razor comprising a head, a handle to which the head is attached including a rigid sleeve, a coil spring mounted within the sleeve for sliding movement longitudinally of the sleeve to locate the coil spring alternatively in a position entirely within the sleeve and in positions projecting different distances from one end of the sleeve, the spring having its coils within the sleeve fitting in relatively close relation to the wall of the sleeve to be engaged by said wall to restrict the lateral flexing of the portion of the spring enclosed by the sleeve, means for fixedly attaching the head to one end of the coil spring, and means for clamping the head in fixed relation to the adjacent end of the sleeve when the spring is entirely enclosed by the sleeve.

3. A safety razor comprising a head, a handle to which the head is attached including a rigid sleeve, a coil spring mounted within the sleeve for sliding movement longitudinally of the sleeve to locate the coil spring alternatively in a position entirely within the sleeve and in positions projecting different distances from one end of the sleeve, the spring having its coils within the sleeve fitting in relatively close relation to the wall of the sleeve to be engaged by said wall to restrict the lateral flexing of the portion of the spring enclosed by the sleeve, means for

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fixedly attaching the head to one end of the coil spring, and manually operable means for clamping the coil spring to the sleeve to hold the spring in adjusted position longitudinally of the sleeve.

4. A safety razor comprising a head, a handle to which the head is attached including a rigid sleeve, a coil spring mounted within the sleeve for sliding movement longitudinally of the sleeve to locate the coil spring alternatively in a position entirely within the sleeve and in positions projecting different distances from one end of the sleeve, the spring having its coils within the sleeve fitting in relatively close relation to the wall of the sleeve to be engaged by said wall to restrict the lateral flexing of the portion of the spring enclosed by the sleeve, means for fixedly attaching the head to one end of the coil spring, and means for clamping the coil spring to the sleeve to hold the spring in adjusted position longitudinally of the sleeve and for clamping the head in fixed relation to the adjacent end of the sleeve when the coil spring is substantially entirely enclosed by the sleeve.

5. A safety razor comprising a head, a handle to which the head is attached including a rigid sleeve, a coil spring mounted within the sleeve for sliding movement longitudinally of the sleeve to locate the coil spring alternatively in a position entirely within the sleeve and in positions projecting different distances from one end of the sleeve, the spring having its coils within the sleeve fitting in relatively close relation to the wall of the sleeve to be engaged by said wall to restrict the lateral flexing of the portion of the spring enclosed by the sleeve, means for fixedly attaching the head to one end of the coil spring, means for clamping the spring in position with relation to the sleeve when the spring is located entirely within the sleeve, and means for projecting the spring from the sleeve upon the actuation of said clamping means to release the spring when the spring is located in said position.

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