The present invention relates to pocket clips for pens, pencils and the like and, more particularly, to a clip that can be attached to and removed from a pocket instrument of any type.

It has become quite commonplace to carry articles in pockets, and to have these articles contain a clip or holding member to secure the articles in place. Most commonly, clips are placed on pens, pencils, and are frequently found on pocket flashlights, thermometers, and other small instruments which are adapted to be carried in the pocket but which are in danger of falling out or being lost.

In the prior art, pocket clips achieved popularity in three basic forms. A first is the spring clip which slidably mounts on the instrument and which is found on pencils, and inexpensive ballpoint pens. Such a clip is also found in the patent to James P. Nielson, No. 1,407,474 or in the design application of Sidney Linden No. D. 51,429 filed June 19, 1958, now abandoned. A second type of clip, usually made of metal, is affixed to the pocket instrument by tines or bars which penetrate into the instrument. Such a clip is found in most fountain pens, ballpoint pens, pocket flashlights, thermometers and other instruments. A third type of clip is a non-metallic gripping arm member that is an integral part of the instrument body such as, for example, a molded plastic clip as part of a plastic pen cap.

The present invention is primarily directed to a clip to supplement the latter two types, which are more or less permanently fastened to the pocket instrument. The non-metallic clip which is integrally molded with the cap or is glued or cemented to the instrument cap is relatively fragile and cannot withstand the normal usage required of a clip for a pocket instrument. Moreover, if the elastic limit of the clip is exceeded, the probability of breakage is extremely high. The preparation of a suitable mold to allow a clip to be integrally formed is an expensive and time consuming project and the results leave something to be desired. This type of clip, therefore, is rarely satisfactory.

The metallic clip which is staked or fastened to the instrument cap also has shortcomings and presents problems. If the bars or tines protrude into the inner volume surface of the cap, then the placement of the clip on the cap is limited since the protrusions may interfere with the contents of the instrument. For example, in relatively narrow diameter instruments, such as ballpoint pens and automatic pencils, inward protruding tines could interfere with the operation of the retraction mechanism for the point, or otherwise interfere with clearance of fitting elements. Similar problems can be encountered in still other instruments where a protruding tine would be undesirable and, consequently, in these applications, additional production steps must be taken to upset or otherwise flatten the tines. A staked clip is a permanent attachment and therefore a defective clip requires the discarding of an otherwise acceptable instrument or, conversely, the presence of a defect in the instrument requires the discard of an otherwise satisfactory clip. In addition, through usage, the resiliency of the clip tends to diminish. Occasionally the elastic limit of the metal is exceeded and the clip no longer grips tightly against the barrel or the cap of the instrument. Under these circumstances, the clip is no longer able to function as a device to hold the instrument in place. If the clip cannot be replaced or easily restored to its former holding ability, the instrument is no longer satisfactory as a pocket instrument.

What has been needed, and what is provided by the present invention, is an assembly that combines the desirable features of easy replacement and arbitrary location afforded by the slideable spring clip, with the positive attachment and superior appearance of the permanently affixed clip. According to the present invention, a mount-}

**United States Patent Office**

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**HOLDING CLIP FOR POCKET INSTRUMENTS**

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2 Claims. (Cl. 24—11)

The present invention relates to pocket clips for pens, pencils and the like and, more particularly, to a clip that can be attached to and removed from a pocket instrument of any type.

It has become quite commonplace to carry articles in pockets, and to have these articles contain a clip or holding member to secure the articles in place. Most commonly, clips are placed on pens, pencils, and are frequently found on pocket flashlights, thermometers, and other small instruments which are adapted to be carried in the pocket but which are in danger of falling out or being lost.

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The metallic clip which is staked or fastened to the instrument cap also has shortcomings and presents problems. If the bars or tines protrude into the inner volume surface of the cap, then the placement of the clip on the cap is limited since the protrusions may interfere with the contents of the instrument. For example, in relatively narrow diameter instruments, such as ballpoint pens and automatic pencils, inward protruding tines could interfere with the operation of the retraction mechanism for the point, or otherwise interfere with clearance of fitting elements. Similar problems can be encountered in still other instruments where a protruding tine would be undesirable and, consequently, in these applications, additional production steps must be taken to upset or otherwise flatten the tines. A staked clip is a permanent attachment and therefore a defective clip requires the discarding of an otherwise acceptable instrument or, conversely, the presence of a defect in the instrument requires the discard of an otherwise satisfactory clip. In addition, through usage, the resiliency of the clip tends to diminish. Occasionally the elastic limit of the metal is exceeded and the clip no longer grips tightly against the barrel or the cap of the instrument. Under these circumstances, the clip is no longer able to function as a device to hold the instrument in place. If the clip cannot be replaced or easily restored to its former holding ability, the instrument is no longer satisfactory as a pocket instrument.

What has been needed, and what is provided by the present invention, is an assembly that combines the desirable features of easy replacement and arbitrary location afforded by the slideable spring clip, with the positive attachment and superior appearance of the permanently affixed clip. According to the present invention, a mounting post member is permanently affixed to the pocket instrument at a desired location. This post member can be integrally molded into the body of the instrument, if of plastic or moldable material, or can be adhered using suitable adhesives. If the presence of tines on the inner surfaces of the pocket instrument is objectionable, a metal post member may be so attached. The post mem-
additional forward sliding motion more difficult, would not prevent such motion. The clip member slides forward until the tabs are free of the flanged portion. The rearward seating portion of the post member is made to equal in length, the flanged portion from the point where the clip tabs first engage the flange to where the tabs otherwise abut the post member.

In preferred embodiments, the present invention is most easily applied to ballpoint pens and pencils having plastic cap portions to which clips are to be attached. In such embodiments, the post member can be molded as an integral part of the cap member and the positioning of the post member can then be solely at the discretion of the designer. In other embodiments, for example, pocket flashlights, pocket thermometers, or pocket sighting devices which may have metal caps rather than plastic caps or metal bodies to which clips must be attached, the post member can be either metal or plastic, and can be attached in any of the well known ways.

Accordingly, it is an object of the present invention to provide a removable holding clip for pocket instruments. It is another object of the invention to provide an assembly for securing a replaceable holding clip to a pocket instrument. It is yet another object of the present invention to provide a permanent post member for pocket instruments to which a removable pocket clip can be affixed.

It is another object of the invention to provide a replaceable holding clip for pocket instruments. It is yet another object of the present invention to provide a permanent attaching point on a pocket instrument for affixing a replaceable holding clip.

The novel features which are believed to be characteristic of the invention both as to its organization and method of operation, together with further objects and advantages thereof, will be better understood from the following description considered in connection with the accompanying drawings in which several embodiments of the invention are illustrated by way of example. It is to be expressly understood, however, that the drawings are for the purpose of illustration and description only, and are not intended as a definition of the limits of the invention.

FIG. 1 is a front view of a typical pocket instrument incorporating the holding clip of the present invention; FIG. 2 is a side view, partly in section of the instrument of FIG. 1 taken along line 2—2 in the direction of the appended arrow; FIG. 3 is a front view of the cap portion only of the instrument of FIG. 1 without the holding clip, showing in greater detail the post member; FIG. 4 is a side view of the post member of FIG. 3 taken along the line 10—10 in the direction of the appended arrows; FIG. 5 is an end section view of the cap of FIG. 3 taken along line 5—5 in the direction of the appended arrows; FIG. 6 is an end section view of the cap of FIG. 3 taking along line 6—6 in the direction of the appended arrows; FIG. 7 is an end section view of the instrument of FIG. 2 taken along line 7—7 in the direction of the appended arrows; FIG. 8 is an end section view of the gripping arm portion of the clip member of FIG. 2 taken along line 8—8 in the direction of the appended arrows; FIG. 9 is a bottom view of the clip of FIG. 2 taken along line 9—9 in the direction of the appended arrows; FIG. 10 is an end view of a portion of the clip of FIG. 9 taken along line 10—10 in the direction of the appended arrows, showing the tab portions of the clip member; and FIG. 11 is a side view, partly in section of the instrument of FIG. 2 showing, in successive stages the procedure for removing a clip from the pocket instrument.

Turning first to FIG. 1, there is shown a typical embodiment of a pocket instrument incorporating the present invention, for example, a retractable, refillable, ballpoint pen 20. As shown, the pen 20 includes a retract mechanism push button 22 that protrudes from the end of the pen, a cap assembly 24, a barrel assembly 26, and a decorative tip 28 located at the end of the barrel assembly, and a decorative ring 30 encircling the barrel 26 at its juncture with the cap 24. In the view of FIG. 1, a ballpoint assembly 32 is shown protruding from the end of the barrel and, mechanism (not shown), cooperating with the push button 22 to advance the point 32 into a writing position or to retract the point to a carrying position, wholly within the barrel 26. A clip assembly 40 is shown attached to the cap 24.

Turning next to FIG. 2, there is shown, in greater detail the pen of FIG. 1. More particularly, in the broken view of FIG. 2 there is shown the helical screw portion 34 by means of which the barrel 26 is connected to the cap 24. Also, shown is a cutaway view of the decorative ring 30 showing frictional bumps 36 which hold the ring in place on the barrel portion 26.

As can be seen from FIG. 2, there is provided, integral with the cap 24, a mounting post 38 to which the clip assembly 40 is secured.

The clip assembly 40 includes, as shown in FIG. 2, and as will be described below in connection with FIGS. 8 through 10, inclusive, a gripping portion 42 of generally circular cross section to enable substantial line contact with the cap 24 at its place of engagement. The gripping portion 42 is at the forwardmost end of a resilient gripping arm 44, which biases the gripping portion 42 against the cap 24. As viewed in the figure, the upper portion of the clip assembly 40 includes a box-like portion 46 adapted to enclose the mounting post 38 and seat neatly and securely against the surface of the barrel 26. The detailed configuration of the mounting post 38 and its relation to the cap 24 can better be seen by considering FIGS. 3 and 4. As shown, the mounting post 38 has a rearmost seating portion 48 adapted to receive and engage the rear wall of the box-like portion 46 of the clip assembly 40. The overall configuration of the mounting post, as seen from the top, is generally rectangular although the view in FIG. 4 shows, with greater clarity the profile of the mounting post. The surfaces of the mounting post 38 have been carefully designed to cooperate with the particular structure of the clip assembly 40. Just forward of the seating portion 48, the mounting post angles upwardly from the surface of the cap to provide a flanged forward portion 50 to which the clip 40 can be affixed.

A vertical riser 52 adds structural strength and rigidity to the flanged forward portion 48 and facilitates alignment of the clip assembly with the mounting post 38. The seating portion 48 of the mounting post has a flat rear surface 54 which projects vertically from the surface of the cap 24 and which engages the box-like portion 46 of the clip assembly 40 to prevent motion of the clip in a downward direction as viewed in the figures. The length of the seating portion 48 measured between the rear vertical wall and the point at which the surface rises to the height of the flanged portion 52, is substantially equal to the front to rear depth of the flange of the flanged portion 52 and is generally designated by the reference character "C".

Also, shown in somewhat greater detail, is a gripping platform 56 which, in the present embodiment provides a parallel surface to engage the gripping portion 42 of the clip assembly 40. The gripping platform 56 is designed to be slightly wider than the gripping portion 42 of the clip assembly 40. The gripping platform 56 is surface, line contact with the clip assembly is provided.

FIGS. 5 and 6 are sectional views of the cap assembly of FIG. 3 and are intended to show the internal assembly of a typical ball point pen as well as the exterior view thereof. In FIG. 5, particularly, there is shown portions of the retraction assembly 60 which is controlled by
the push button 22. There is also shown an end-on view, from the bottom of the mounting post 38. It can be seen from FIG. 5 that there is great likelihood that times or other means as a weathertight joint in the intermediate recess of the cap 24 and obstruct or otherwise interfere with the retraction assembly 60, if such a method were here used to attach the clip.

In FIG. 6, the sectional view of the cap 24 includes a cross section view of an ink cartridge 62. As shown, the cartridge 62 includes a cylindrical ink chamber 64 and an ink supply 66. Of particular interest in this view, is the gripping platform 56 which, as can be seen, is a departure from the otherwise symmetrical appearance of the cap 24.

FIG. 7, which is also a sectional view of the instrument of FIG. 2 shows the remainder of the cartridge assembly 62, including the cylindrical wall 64 and the ink supply 66. The cartridge is provided with a deformation 68 that engages a bias spring 70, which works in cooperation with the retraction mechanism 60 and the push button 22. Also, shown in FIG. 7 are the several fractional bumps 56 which engage the decorative ring 50.

The construction of a typical clip assembly is shown in greater detail in FIGS. 8, 9 and 10. In FIG. 8, there is seen in cross section view, a portion of the gripping arm 44. The gripping arm 44 is of a shallow "U" construction to give added rigidity to the arm and to prevent easy deformation of the arm while retaining substantial resiliency. The underside of the box portion 46 is best seen in FIG. 9.

A pair of tabs 70 are turned and extend towards each other, with a clearance between them equal to the width of the vertical riser 53 on the mounting post 38. The front-to-rear length of the tab 70 is designed to be approximately equal to the distance "X," which is the front-to-rear distance of the flanged forward portion 50 of the mounting post 38. The front-to-rear distance separating the rear edge of the tab 70 and the rear wall 72 of the box-like portion 46, is made equal to the distance between the vertical wall 54 of the mounting post 38 and the end of the flanged portion 50. FIG. 10 shows in greater detail the exact configuration of the tabs 70 which form an enclosure adapted to fit the forward flanged portion 50 of the mounting post 38.

Turning now to FIG. 11, there is shown, in solid and dotted representation, the relative positioning of the clip assembly 40 and the cap 24 for respectively installing and removing the clip assembly. With reference also to FIG. 2, in which the clip is shown in place after installation, the procedure for affixing and removing the clip can be reviewed. When in place, the gripping portion 42 is flush against the platform 56 of the cap 24 and the arm portion 44 is substantially parallel to the cap surface.

The box-like portion 46 completely encloses the mounting post 38 and the rear wall of the box portion 72 fractionally engages the vertical wall portion 54 of the mounting post 38. The side walls of the box-like assembly 46 are substantially flush against the surface of the cap 24 and the resilient bias of the clip is such to bow the tabs 70 outward into secure engagement with the flanged portion 50 of the mounting post leaving a clearance between the upper surface of the mounting post and the inner facing surface of the box-like portion of the clip assembly. The natural, springy resiliency of the clip will maintain the box-portion secure against the cap 24. Outward movement of the end of the arm 44 aways from a post makes the box-like portion into more secure engagement with the cap.

As the clip and pen undergo use, the force on the clip away from the pen may exceed the elastic limit of the arm, and the clip assembly will be permitted to pivot slightly about the flanged portion. However, only when the clip is to be secured in a pocket, will there be any danger of losing the clip. Such conditions can be temporarily cured by bowing the arm 44 outward at a point near the box-like portion, to reassert a bias against the gripping platform 56 at which time the mounting of the clip will again be secure.

In order to remove the clip, pressure is applied to the clip to bow the arm 44 inward towards the cap, pivoting the tabs 70 against the flanged portion 50 and rotating the rear wall 72 away from the vertical wall 54 of the cap 38. Holding this deformation of the clip arm 44, the entire clip is slid in a downward direction until the rear wall 72 clears the vertical wall 54 and is otherwise free to slide in a downward direction. The sliding motion is continued until the tabs 70 clear the flanged forward portion 50 and at that point the clip can be easily removed from the mounting post 38.

To attach a clip, the box-like portion is placed over the flanged forward portion and the entire clip assembly is slid toward the back of the cap, applying a slight bowing pressure to the arm to facilitate sliding. As the tabs 70 engage the flanged forward portion 50 the sliding continues but the pressure on the arm can be substantially released while the clip is pushed upward into place. As soon as the rear wall 72 passes the vertical wall 54 of the seating portion 48, a click will be heard and the box-like portion will have secured itself around the mounting post in snug engagement to resist wobbling or other movement.

Thus there has been a novel combination of a mounting post and clip assemblies for attaching holding clips to pocket instruments. The clip, when in place is substantially secure and free from undesirable movement. However, a defective clip can be easily removed from an otherwise acceptable pocket instrument or, a defect in the pocket instrument need not result in the discard of an otherwise acceptable clip. The pocket instrument may be of plastic or metal and may have, affixed to it, a mounting post of either the same or different materials in a permanent attachment.

The clip, however, can be of a suitable resilient metal which, when mounted, gives the appearance of a permanent installation and yet, which is removable in the event of clip failure for any cause whatsoever. Such a mounting post-clip combination is applicable to pens, pencils, flashlights, thermometers, pocket optical instruments, and any other devices adapted to be carried in a pocket and held thereto by a spring clip. The clip assembly of the present invention does not require penetration of the wall of the pocket instrument but, need only be secured to the outer surface thereof.

The invention set forth described will be considered exemplary only and the scope of the invention should be limited only by the breadth of the claims appended hereto.

What I claim as new is:

1. A clip assembly for a pocket instrument comprising in combination: a post member integral with the external surface of the pocket instrument and extending outwardly therefrom, said post member having a forward flanged portion extending above the instrument, an intermediate portion tapering inward toward the instrument and terminating in a rearward seating portion having a planar surface parallel to said flanged portion, and a rear wall substantially orthogonal to said planar surface; and a clip member having resilient pocket gripping means and box-like attaching means adapted to enclose and abut against said seating means rear wall, said gripping means being normally biased for pivoting said box-like means into close fitting engagement with said post member and said rear walls, whereby said clip member, when in place, is prevented from forward sliding motion by the engagement of said rear wall with an end portion of said box-like attaching means.

2. Apparatus of claim 1 wherein said intermediate portion provides a stop surface and wherein said box-like attaching means include tab members adapted to
slidingly engage said forward flanged portion, whereby said clip member, when in place is prevented from rearward sliding motion by the engagement of said tab members with said stop surface.

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