



US 20060075672A1

(19) **United States**(12) **Patent Application Publication**
Romer(10) **Pub. No.: US 2006/0075672 A1**(43) **Pub. Date: Apr. 13, 2006**(54) **CAPS FOR ACCESSORY RECEIVING RAIL
OF A FIREARM AND METHODS OF
OPERATING THE SAME**(30) **Foreign Application Priority Data**

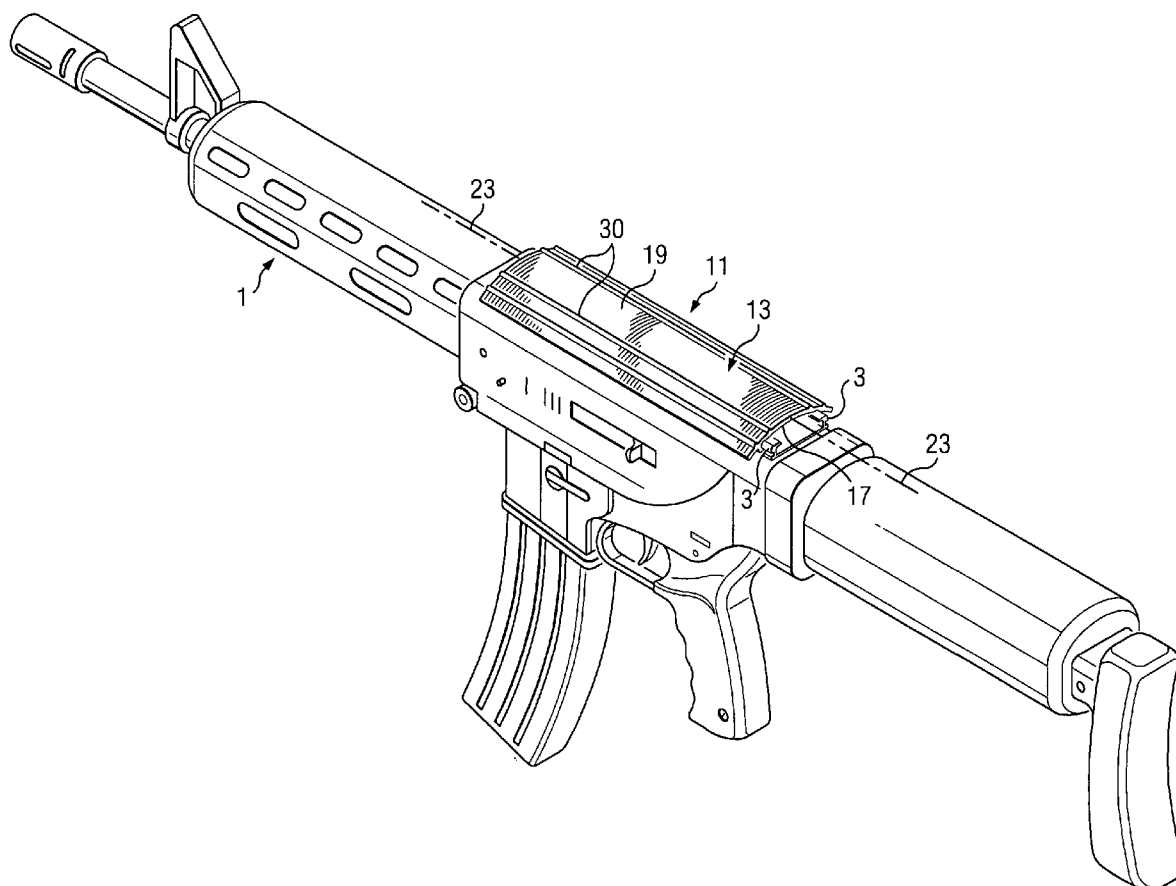
Feb. 13, 2003 (DE)..... 20302344.7

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CHICAGO, IL 60606 (US)(51) **Int. Cl.****F41C 7/00** (2006.01)(52) **U.S. Cl.** **42/10**(57) **ABSTRACT**(21) Appl. No.: **11/202,468**(22) Filed: **Aug. 12, 2005****Related U.S. Application Data**(63) Continuation of application No. PCT/EP04/01329,
filed on Feb. 12, 2004.

A cap for a receiving rail of a firearm and methods of operating the same are disclosed. An illustrated cap includes a resiliently deformable plate. The example cap also includes engaging members on the opposite sides of the center of the plate where the plate is curved such that the engaging members approach each other when the cap is unloaded.



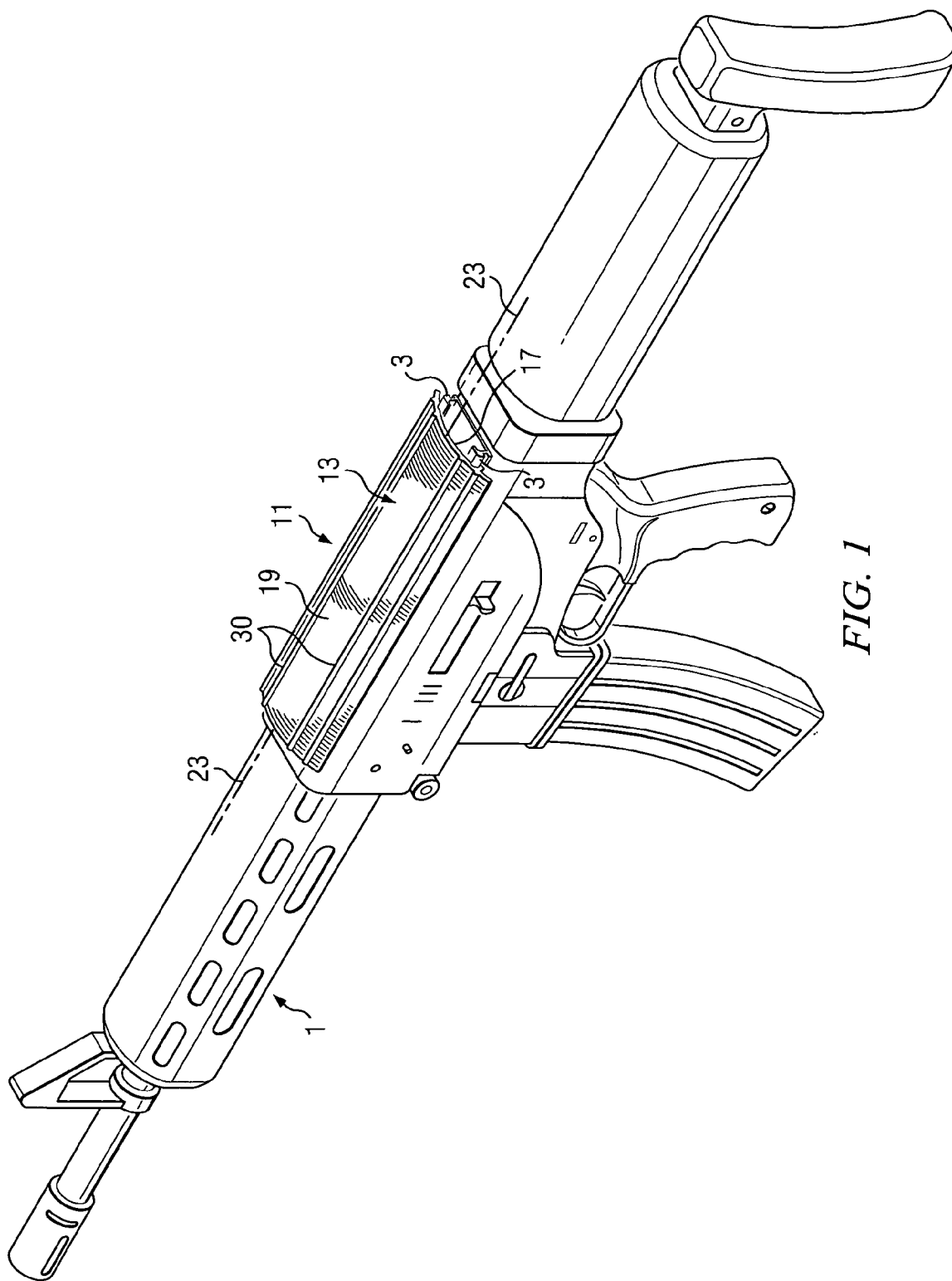
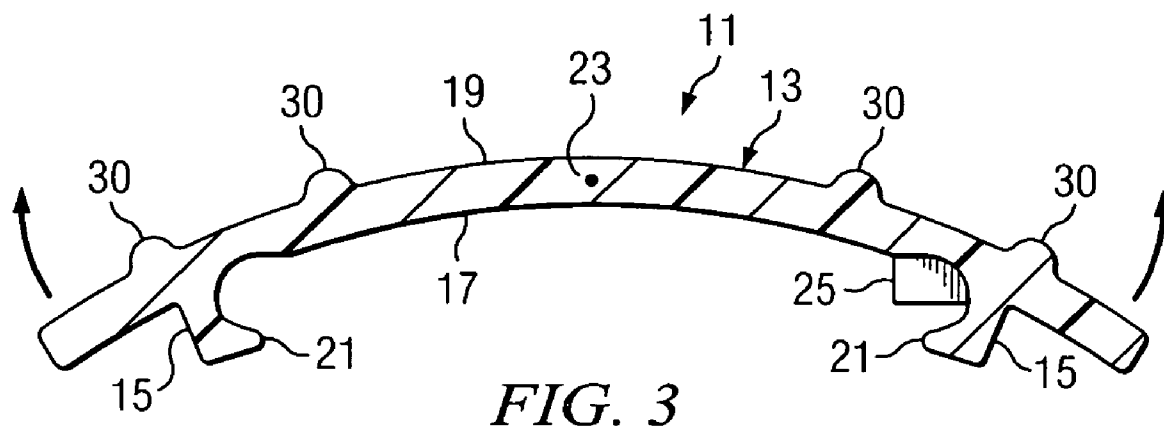
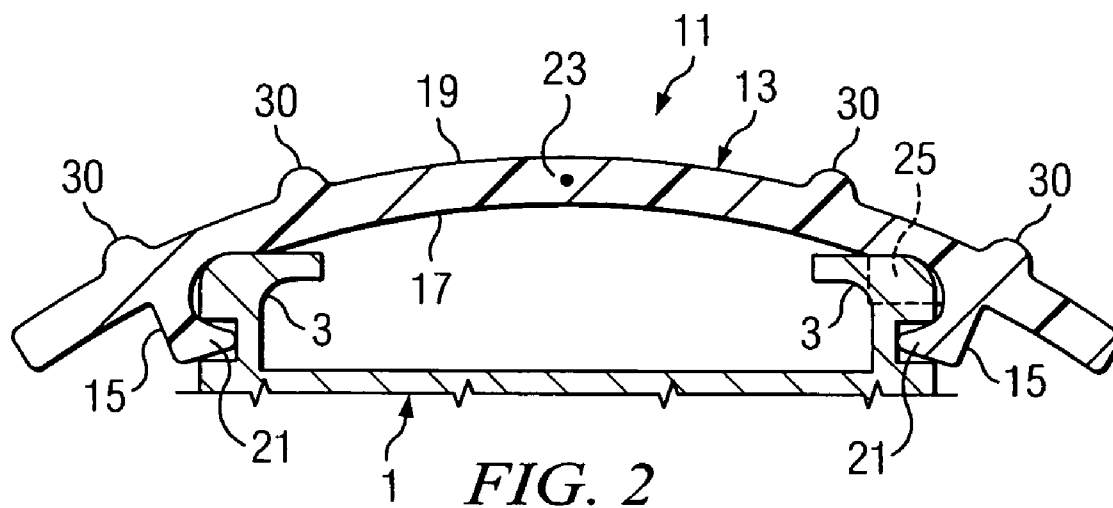


FIG. 1



CAPS FOR ACCESSORY RECEIVING RAIL OF A FIREARM AND METHODS OF OPERATING THE SAME

RELATED APPLICATION

[0001] This patent is a continuation of International Patent Application Serial No. PCT/EP2004/001329, which was filed on Feb. 12, 2004, which is hereby incorporated herein by reference.

FIELD OF THE DISCLOSURE

[0002] This disclosure relates generally to firearms, and, more particularly to caps for receiving rails of firearms, wherein opposite sides of the caps have elongated engaging rails.

BACKGROUND

[0003] Conventional small firearms, e.g. handguns, are equipped with one or more receiving rails, upon which accessories (e.g. telescopic sights, laser target devices, floodlights, night target devices, etc.) can be mounted. Some receiving rails are diamond shaped in cross-section such that an accessory with depending arms may dovetail around and grip the rail. In many cases, the accessories must be readjusted each time they are mounted. Generally, these known receiving rails and their rear parts (which may also have transverse slots) are uncovered, which can make handling of the weapon difficult or awkward for the marksmen.

[0004] Conventional weapons have tried to avoid the difficulty and awkwardness of handling such firearms by implementing covers or caps for the corresponding receiving rail. These known caps slide onto the receiving rail from the front, and are locked by spring mechanisms. The caps cover the unused portion of the receiving rail. These known caps are constructed as flat covering caps with engaging rails constructed on both sides. These engaging rails of the cap can be slipped under the borders of the dovetail construction of a receiving rail to secure the cap in place.

[0005] The use of such a cap solves the handling problems noted above, but other disadvantages with these conventional caps remain. For example, any accessory that is mounted on the front part of a receiving rail must be removed before such a prior art cap can be slipped onto the rear part of the receiving rail.

[0006] An example of a conventional cap that slides onto the receiving rail is known from U.S. Pat. No. 5,826,363. However, this known cap is very complex and rigid and cannot be deformed in a resilient manner.

[0007] A sight cap made of sheet metal is already known from German patent DE 299 535. This sight cap snaps into two longitudinal slots of the receiving rail on opposite sides of the sight. However, this cap does not sit tightly on the sight under tension, but rather must be removed by lifting the sight bracket up. Therefore, this cap is poorly suited as a cover for a receiving rail.

[0008] A cover is also known from German patent document DE 90 02 289.4 U1. This known cover can be placed over the telescopic sight, breech and trigger and held in place by Velcro® strips. This cover is not at all suitable for a receiving rail.

BRIEF DESCRIPTION OF THE DRAWING

[0009] FIG. 1 is a perspective view of an example firearm with an example cap on an example receiving rail.

[0010] FIG. 2 is a cross-sectional view of the example cap of FIG. 1 mounted on the example receiving rail.

[0011] FIG. 3 is an enlarged cross-sectional view of the example cap of FIG. 1.

DETAILED DESCRIPTION

[0012] Throughout this patent, position designations such as "above," "below," "top," "forward," "rear," etc. are referenced to a firearm held in a normal firing position (i.e., pointed away from the shooter in a generally horizontal direction).

[0013] FIG. 1 shows an example firearm 1 with an example rail 3 on which an example cap 11 is mounted. Though the firearm 1 shown in FIG. 1 is a rifle, the cap 11 may be used with any type of firearm and with any type of receiving rail 3. The cap 11 comprises a plastic plate 13, which is slightly curved in an unloaded or unstressed state. The plate 13 has an inner surface 17 and an outer surface 19. The median axis 23 of the curvature is vertical on the drawing plane of FIGS. 2 and 3.

[0014] The inner surface 17 of the plate 13 has engaging rails 15. The rails 15 are on opposite side of an equidistant from the median axis 23. The rails 15 run longitudinally into and/or out of the drawing page and are parallel to one another. Each of the engaging rails 15 has a protruding strip 21 on its free end located at a distance from the inner surface 17 of the plate 13. The protruding strips 21 of the engaging rails 15 face one another. They are arranged and constructed in such a way that they can engage opposite lateral edges of a receiving rail (not shown), which is mounted to a weapon (not shown). The lateral edges grip the receiving rail in a dovetailed manner. That is, the protruding strips 21 and the engaging rails 15 interlock with corresponding edges of the receiving rail so that a dovetail joint is formed between the cap 11 and the receiving rail.

[0015] A projection 25 is constructed adjacent one of the engaging rails 15, the length of this projection 25 corresponds to the width of a lateral slot (not shown) in the receiving rail. The projection 25 is used to guide the cap 11 into the correct position to be connected properly with the receiving rail. The mechanics of this mounting process are discussed in greater detail below.

[0016] The example cap 11 is mounted to a receiving rail in the following manner. First one of the two engaging rails 15 is hooked laterally over a lateral edge of a receiving rail. It is advantageous to use the engaging rail 15 adjacent to the projection 25 as the first to be hooked over the edge of the receiving rail because the projection 25 is guided into a lateral slot of the receiving rail. This ensures the cap 11 will make a proper and secure connection with the receiving rail. The entire length of the protruding strip 21 engages the protruding lateral edge of the receiving rail.

[0017] Next, the cap 11 is bent around the median axis 23 over the even construction of the plate 13 in the direction of the arrows so that the plate 13 is curved in a manner opposite that shown in the drawing. The plate 13 is flexible and can resiliently curve in this manner without damage and with the

ability to reassume its former shape. The bending causes the distance between the protruding strips **21** to enlarge and slightly exceed the distance between the lateral edges of the receiving rail. With the enlarged length, the cap **11** is stretched so that the other engaging rail **15** (e.g., the one without the projection **25**) and corresponding protruding strip **21** can clear the associated lateral edge of the receiving rail.

[0018] As the plate **13** is released, it bends back slightly against the direction of the arrows, until the protruding strips **21** fully engage respective ones of the two opposite lateral edges of the receiving rail and thereby bring the plate **13** up against the surface of the receiving rail. The plate **13** is resilient and tries to maintain its shape. Therefore, the plate **13** provides a contact pressure against and under the receiving rail to maintain the connection of the protruding strips **21** and engaging rails **15** with the corresponding lateral edges of the receiving rail. Also, because the projection **25** engages in a transverse slot of the receiving rail, it prevents the cap **11** from slipping in the longitudinal direction of the receiving rail. As a result of the continuous tension caused by the resilient cap, the cap **11** sits firmly on the receiving rail, without shaking or rattling.

[0019] The removal of the cap **11** occurs in the reverse order of the previously described actions, namely, by bending the plate **13** first in the direction of the arrow and then simply removing it from the receiving rail in a peeling off type of action.

[0020] A person of ordinary skill in the art will appreciate that the outer surface **19** of the plate **13** can have ribs **30** and/or other constructions to increase the rigidity of the cap **11**. When used, these structures should be constructed to not hamper the resilient bending of the cap **11** in the direction of the arrow.

[0021] A person of ordinary skill in the art will further appreciate that the illustrated example cap **11** is made from plastic that is not too hard, and remains resilient. As a result, the plastic cap **11** does not scratch or damage the receiving rail, but rather protects it from damages.

[0022] The example construction shown in the drawing is only an example. Other constructions are also possible. For example, the plate **13** can be laterally shortened by the part(s) exceeding the engaging rails **15**.

[0023] A person of ordinary skill in the art will further appreciate that the example cap **11** illustrated herein is an improvement over conventional caps because it is a simpler device that avoids the aforementioned problems of the prior art. The illustrated example cap **11** is deformable in a resilient manner. Thus, the cap **11** does not have to be slipped onto the receiving rail from the front (or from the rear), as required by the prior art, but, rather, can be simply clipped or snapped onto the receiving rail at a right angle. Also, the two engaging rails **15** approach each other in the unloaded or unstressed state because the plate **13** strives to maintain its shape as shown in the figure. By maintaining its shape, the plate **13** and the engaging rails **15** fit tightly over the receiving rail.

[0024] A person of ordinary skill in the art will further appreciate that, if the example cap **11** is used with a receiving rail, upon whose front part a targeting mechanism or other accessory is mounted, then the accessory does not have to be removed to add the cap **11** to the receiving rail. Rather the cap **11** can simply be pressed onto the available

free part of the receiving rail and will, thus, be reliably seated there. Also, the cap **11** can be removed from the receiving rail without removing the accessory. To this end, the engaging rail **15** is bent outward, and the cap **11** is then released and removed from the receiving rail and can be removed.

[0025] One advantage of the illustrated example is the inclusion of a projection **25** on the inner surface **17** of the plate **13**. The projection **25** is designed for engagement in a counter construction in or on the receiving rail. When the cap **11** is snapped onto the receiving rail, the projection **25** engages the counter construction and prevents the cap **11** from slipping in a longitudinal direction along the receiving rail, even when there is no targeting mechanism or other accessory attached to block such movement.

[0026] In the illustrated example, the projection **25** is constructed as a protuberance of an engaging rail **15**. This improvement is designed for receiving rails which have transverse slots for the attachment of accessories, as most receiving rails now do.

[0027] The cap **11** may have a simple, square surface. However, it is preferable that its corners be rounded off. Rounding the corners reduces the danger of the marksman accidentally removing the cap **11** from the receiving rail by, for example, catching his sleeve on the cap **11** and pulling it off of the receiving rail.

[0028] In a preferred example, the cap **11** is formed from a single piece of plastic. There are many benefits to the illustrated example plastic cap **11**. For instance, it can be manufactured economically and easily. It is light. It does not oxidize, and it does not damage the surface of the receiving rail. Moreover, the plastic cap **11** has the advantage that it can, if necessary, be easily shortened by, for example, cutting the cap with a sharp instrument such scissors. Markings can be made on the cap **11** to facilitate such shortening. Such markings can be positioned to not be visible when the cap **11** is fitted to the rail.

[0029] The cap **11** of the illustrated example can also be manufactured in variable lengths to adapt to the different accessories that can be mounted onto the receiving rail. Alternatively, or additionally, short, uniform caps **11** can be manufactured, which can then be snapped onto the sections of the receiving rail to be covered. The short caps **11** are placed in whatever position and amount are necessary to cover the receiving rail.

[0030] A person of ordinary skill in the art will appreciate that the engaging rails **15** do not have to be continuous. It is sufficient if individual projections are provided in place of a continuous rail. Such individual projections will ensure the secure seat of the cap **11** on the receiving rail.

[0031] Although certain example methods, apparatus and articles of manufacture have been described herein, this patent covers all methods, apparatus and articles of manufacture fairly falling within the scope of the appended claims either literally or under the doctrine of equivalents.

What is claimed is:

1. A cap for a receiving rail of a firearm, comprising:

a resiliently deformable plate; and

engaging members on the opposite sides of the center of the plate, the plate being curved such that the engaging members approach each other when the cap is unloaded.

2. A cap as defined in claim 1, where a projection is constructed adjacent one of the engaging members.

3. A cap as defined in claim 2, where the projection is a protuberance sized to engage a slot in the receiving rail.

4. A cap as defined in claim 2, wherein the projection is sized to engage a slot of the receiving rail to secure the cap against longitudinal movement along the rail.

5. A cap as defined in claim 1 where corners of the cap are rounded.

6. A cap as defined in claim 1 where the plate and engagement member are formed from a single piece plastic.

7. A cap as defined in claim 1, wherein the engaging member comprises engagement rails.

8. A cap as defined in claim 1, wherein at least one of the engagement members comprise a series of projections.

9. A cap as defined in claim 1, wherein the cap includes ribs to enhance its rigidity.

10. A cap as defined in claim 1, wherein the cap includes marking to facilitate cutting of the plate.

11. A kit, comprising:

a plurality of resiliently flexible caps to secure to a receiving rail of a firearm, each of the caps being

structure to resiliently grip an upper surface of the receiving rail.

12. A kit as defined in claim 11, wherein at least one of the caps is curved in the unstressed state and the at least one cap is flexed against its curvature to mount to the receiving rail.

13. A method of mounting a cap to a receiving rail of a firearm comprising:

engaging a first engagement member beneath a first longitudinal edge of the receiving rail;

stretching the cap to reach over a top of the receiving member; and

engaging a second engagement member beneath a second longitudinal edge of the receiving member.

14. A method as defined in claim 13 further comprising engaging a projection into a slot of the receiving rail to secure the cap against longitudinal movement relative to the rail.

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