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COMPENSATOR FOR AUTOMATIC FIREARMS

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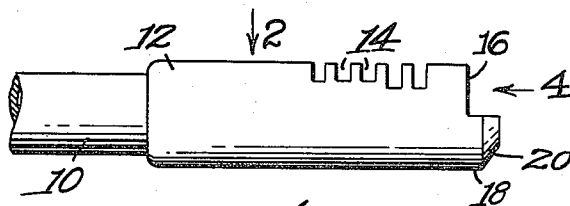


Fig. 1.

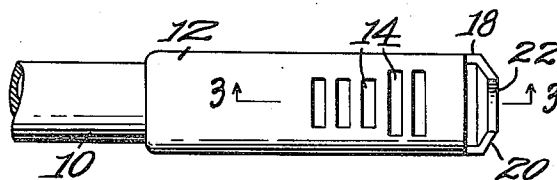


Fig. 2.

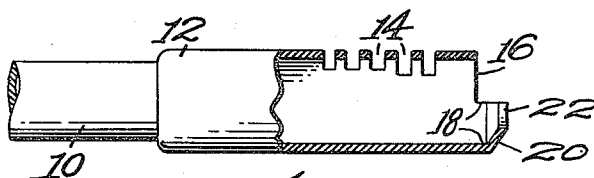


Fig. 3.

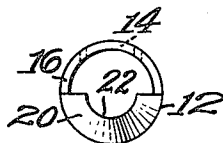


Fig. 4.

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COMPENSATOR FOR AUTOMATIC FIREARMS

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6 Claims. (Cl. 89-14)

This invention relates to compensators and climb arresters, which are particularly adapted for use with automatic firearms of the machine gun type, being herein illustrated and disclosed as applicable to .45 caliber light automatic and semi-automatic rifles.

Objects of the invention include the provision of a compensator and climb arrester for use with extreme rapid fire firearms, especially where single shots do not produce appreciable recoil or climb tendency, but rapid automatic fire produces a cumulative recoil and especially a cumulative climb effect whereby accuracy of aim is made difficult; the provision of a simple and inexpensive yet efficient compensator and climb arrester which easily lends itself to manufacture; and the provision of a climb arrester which is positive in its operation and at the same time avoids objectionable breech flash-back.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawing, in which

Fig. 1 is a view in elevation of a device embodying the present invention;

Fig. 2 is a view in plan of the device, looking in the direction of arrow 2 in Fig. 1;

Fig. 3 is a section on line 3-3 of Fig. 2; and Fig. 4 is an end view looking in the direction of arrow 4 in Fig. 1.

The muzzle climb or jump of firearms is a well-recognized problem, and many devices have been proposed to overcome it. However, there are modern rapid-fire automatic rifles of large caliber and light weight in which single shots do not produce an appreciable climb or recoil, but wherein fire of 600 projectiles per minute, for example, produces a cumulative climb, and even recoil. It has been found that prior art compensators are not particularly well adapted for these rifles, some of them even producing a reverse motion of the arm which is naturally objectionable. This invention relates to a device which overcomes this particular problem.

The numeral 10 indicates the muzzle of a short barrel for a large caliber automatic rifle of about 6 or 7 pounds weight. This firearm is adapted to use standard ammunition for side-arms, and it will be apparent that a single shot from such a gun will produce little objectionable recoil or climb, but due to the rapidity of fire, a cumulative gas effect will produce a climb and some recoil. The present compensator could be made integral with the barrel but it is contemplated that it will be a separate part attached firmly in a sin-

gle position to the muzzle, and will not particularly affect the firearm on single shots, but will overcome the cumulative climb and recoil above mentioned.

The device comprises a substantially cylindrical member 12 of larger bore than the barrel, as can be seen in Fig. 3, and this member has some convenient means of attachment (not shown) to the muzzle 10. A series of apertures or slots 14 are arranged in what may be termed the top surface of member 12, and these apertures are all similar except that they may increase in length in a direction away from the gun barrel. These slots provide for a pre-release of at least a part of the expanding gases and particularly on single shots allow release of a substantial part of the gases prior to the action of the climb arrester surfaces to be described, so that the single shots will not be as greatly affected by the device as rapid fire shots.

The forward end of member 12 is provided with an opening the full diameter of the bore thereof, and this is effected by the stopping or cutting short of the member 12 at 16, on the upper one-half thereof. The surface 16 is just normal to the axis of the member 12 and extends in a semi-circle as clearly seen in Fig. 4. The lower one-half of the member 12, however, extends forwardly for a short distance in exact continuance of its wall, see numeral 18, and this provides a semi-circular shelf in effect extending beyond the end of the member.

At the forward end of the semi-circular shelf 18, there is a partial cone-like element 20 which extends in prolongation of the shelf 18. The base of the element 20 is coextensive with the shelf 18 and narrows toward the axis of member 12. If continued, element 20 would form one-half of a hollow cone, but an aperture 22 for passage of projectiles is provided.

In the operation of the device, the gases on single shots will be partly pre-released by slots 14, and the remainder will be released at the open end of the member 12. As the shelf 18 extends beyond the open end, the gases will release with small impingement on cone-like element 20, so that a small recoil and climb preventing effect will result. However, with a rapid fire of several hundred shots per minute, the gases do not have the opportunity to be pre-released at slots 14 to as great a degree as on single shots, and a relatively greater impingement on the element 20 results, hence a greater climb and recoil arresting effect is obtained. Even here, however, the shelf 18 provides for a fairly free

release of the gases in an upward direction, since they can escape past surface 16 slightly prior to impingement on the element 20. It will be seen that there is no compression of the gases at any time due to the shelf, and that therefore there can be no flash back at the breech or the shell ejection aperture.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what I claim is:

1. In a device of the class described, a climb arrester for use with rapid-fire automatic firearms capable of firing several hundred shots per minute, said arrester comprising a substantially cylindrical hollow elongated member, an opening at the forward end of said member, a shelf partly surrounding said opening and extending therebeyond parallel to said member, and means at the forward end of said shelf to deflect explosion gases upwardly, said means comprising a semi-conical extension of said shelf.

2. A device as recited in claim 1 in which said member is provided with means to partially pre-release said gases in advance of said opening in an upward direction only.

3. A device of the class described comprising an elongated hollow cylinder having an open end, a shelf in prolongation of a substantial part of a wall of said cylinder at said open end, and an inclined projection extending from said shelf in a direction away from said cylinder and towards its axis, said projection being located wholly below said axis so as to leave all gas escaping there past completely unimpeded in an upward direction.

4. A device of the class described comprising an elongated hollow expansion chamber having one end open, said open end being of the same area as a section of said chamber, a shelf conforming in shape to said section and extending

beyond said open end, a tapered projection on said shelf extending therefrom away from said chamber, both shelf and projection being completely uncovered in an upward direction for totally unimpeded release of explosive gases in said direction.

5. A device of the class described comprising an elongated hollow substantially cylindrical gas expansion chamber, a generally semi-circular shelf in extension of said chamber at one side thereof, said shelf being of a length many times less than the length of the chamber, a projection in prolongation of said shelf, said projection being in the form of a truncated hollow half-cone, said half-cone having its base coextensive with said shelf and of the same radius, and tapering in a direction away from said chamber, said shelf and half-cone forming a cup-like extension for said chamber at said one side, said cup-like extension being open and said shelf being located wholly to one side of a diameter of said chamber.

6. A device of the class described comprising an elongated hollow substantially cylindrical gas expansion chamber, a generally semi-circular shelf in extension of said chamber at one side thereof, said shelf being of a length many times less than the length of the chamber, a projection in prolongation of said shelf, said projection being in the form of a truncated hollow half-cone, said half-cone having its base coextensive with said shelf and of the same radius, and tapering in a direction away from said chamber, said shelf and half-cone forming a cup-like extension for said chamber at said one side, said cup-like extension being completely open in an upward direction for release of explosive gases in said direction, and a series of slots in a wall of said chamber at a side thereof opposite said one side.

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