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[54] **MUZZLE BRAKE**
6 Claims, 3 Drawing Figs.

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[51] Int. Cl.....	F41c 21/18
[50] Field of Search.....	42/79; 89/14

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ABSTRACT: An internally threaded sleeve having three circumferentially spaced supports extending axially beyond one of its ends. A centrally bored, circular plate having its plane transversely disposed to the central axis of the sleeve and secured to the supports at a spaced distance from the end of the sleeve. A depression formed on the circumference of the plate for receiving the rib of a shotgun. The sleeve is threadable on external threads formed on the end of a gun barrel and held against rotational movement by the presence of the gun rib in the plate depression.

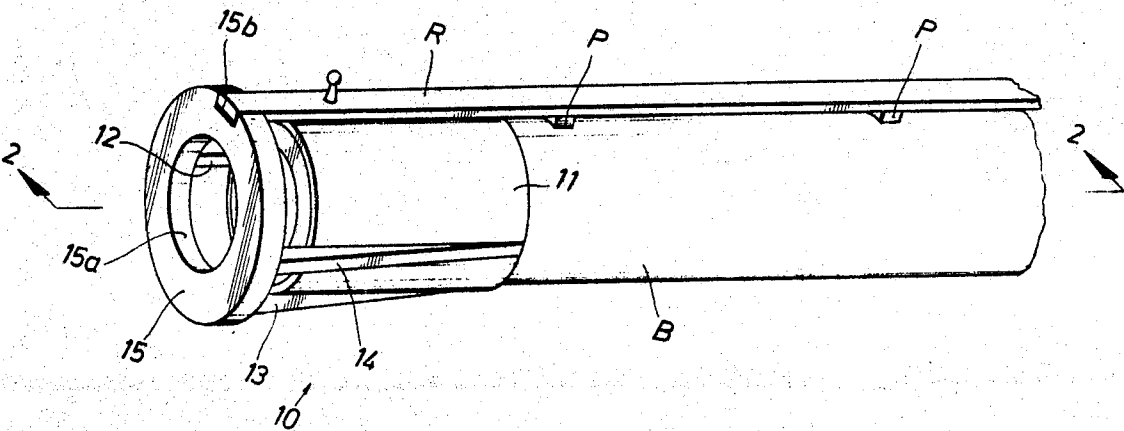


FIG. 1

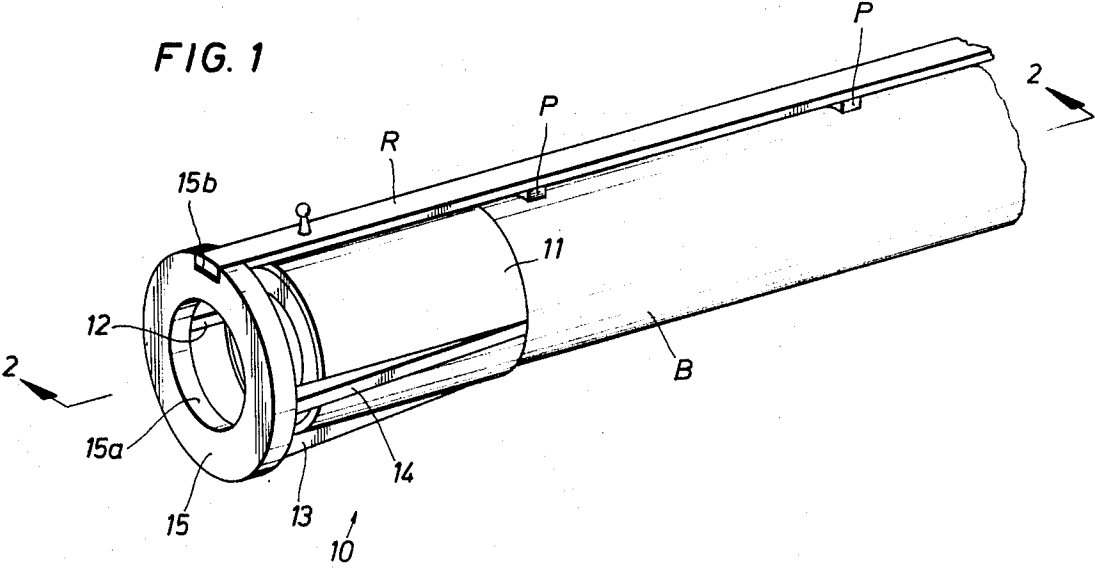


FIG. 2

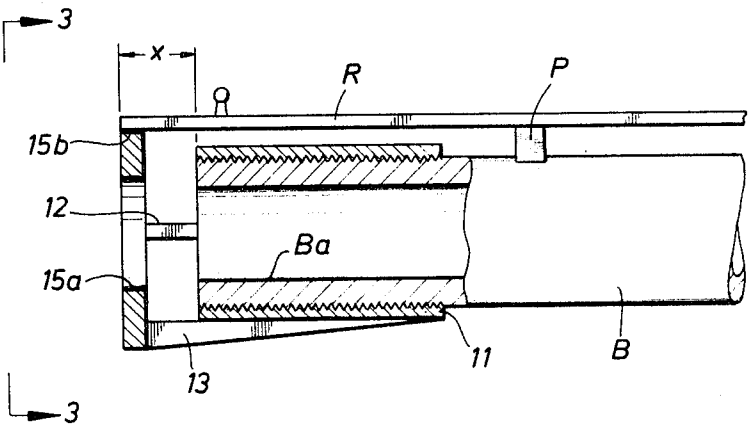
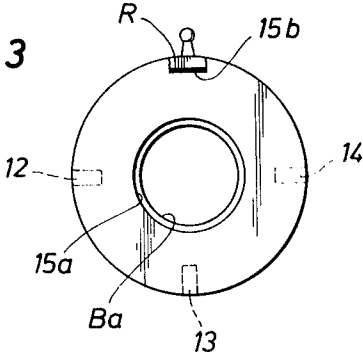


FIG. 3



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MUZZLE BRAKE

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to means for reducing the recoil produced by firearms. More specifically, the present invention relates to an improved muzzle brake for use with firearms.

2. Brief Description of the Prior Art

Various devices have been employed for reducing the recoil caused when a rifle or gun is fired. Such devices have included inertial absorbers installed at various locations in the structure of the gun or rifle. Devices of the inertial type are often undesirable in that they tend to destroy the natural balance of the firearm and are often bulky and cumbersome. Various muzzle brakes have been employed to reduce the effect of recoil and, in some cases, the use of such brakes has been more satisfactory than the inertial recoil devices.

While they have been adequate for some purposes, the muzzle brakes known to applicant have several common objections. Often the brake must be installed on the firearm by permanent means such as welding or soldering, thereby limiting the firearm to the particular performance characteristics of the brake. In removable muzzle brakes, various relatively complex locking devices have been required to prevent the brake from working free of the barrel. Such locking devices are, in some uses, required to be permanently secured to the barrel which necessitates additional modification of the firearm and further limits its general utility. In many of the muzzle brakes being presently employed, whether they be of the permanent or removable types, recoil in the firearm is not substantially reduced, the shot pattern is undesirably altered and the effective range and power of the firearm are reduced. The complex design of many of the conventional muzzle brakes which often employ a number of close tolerance ports and variable-diameter bores also makes these devices relatively expensive to produce.

SUMMARY OF THE INVENTION

The muzzle brake of the present invention is designed to effectively reduce the recoil of hand-held firearms in a simple, efficient manner by means of a single, centrally bored deflection plate employed as a reaction surface. The deflection plate is positioned and supported in front of the gun barrel by means of three supports extending from an internally threaded sleeve engaged with threads formed on the barrel.

A notch formed along the edge of the plate engages the sight rib from the gun barrel to prevent the brake from rotating and disengaging the barrel. The area of contact between the three supports and rib and the plate are equal to each other and are equally disposed circumferentially about the plate to ensure a balanced reaction force.

The design of the brake affords maximum power and range and minimizes distortion of the shot pattern. The brake is simple and inexpensive to manufacture and only minimum modification of the gun barrel is required to adapt it for use with the brake.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the muzzle brake of the present invention secured to the barrel of a shot gun;

FIG. 2 is a sectional view taken along the line 2—2 of FIG. 1; and

FIG. 3 is an end view taken along the line 3—3 of FIG. 2.

DESCRIPTION OF THE PREFERRED EMBODIMENT

One form of the muzzle brake of the present invention, designed for use with a conventional shotgun is indicated generally at 10 and includes an internally threaded sleeve 11 which is adapted to engage the end of an externally threaded gun barrel B.

Three supports 12, 13 and 14 are secured to the sleeve 11 and extend axially beyond the end thereof to support a circular reaction plate 15. The plate 15 is provided with a central bore 15a which is coaxial with the bore of the barrel B. When employed with shotguns, the diameter of the bore 15a is slightly greater than the diameter of the bore of barrel B to accommodate shot expansion between the end of the barrel and the plate. When employed with rifles, the diameter of the bore 15a may be equal to that of the rifle bore.

The upper circumferential surface of the reaction plate 15 is provided with a notch or depression 15b which receives the end of a sighting rib R secured to the top of the barrel B by a series of pedestals P. The rib R acts to lock the brake 10 against rotational movement with respect to the barrel B.

A shotgun of the type illustrated in FIGS. 1 and 2 is adapted for use with the brake 10 by first removing the end pedestal P (not illustrated) supporting the rib R and cutting off a length "x" of the barrel B. The external surface of the barrel B is then threaded to receive the sleeve 11. When attaching the brake 10 to the barrel B, the rib R is held away from the barrel to permit the brake to be rotated into engagement with the external threads on the end of the barrel. The sleeve 11 is rotated until it is in the position illustrated in the FIGS. and the rib R is then released and permitted to return to its normal position and engage in the depression 15b. The brake 10 may thereafter be removed by simply lifting the rib R out of the depression 15b and unthreading the sleeve 11 from the barrel B.

An important feature of the muzzle brake 10 is the positioning of the supports 12, 13 and 14 and the depression 15b. These four components of the brake are disposed about the plate 15 at equally spaced circumferential locations. Moreover, the cross-sectional area of each of the supports 12, 13 and 14 and the depression 15b are equal to each other whereby the positioning of the supports and depression and the cross-sectional dimensions of each ensure an axially directed reaction force on the plate 15 to prevent alteration of the direction of travel of the shot. When the Brake 10 is to be employed with a rifle, no depression is required and the supports are spaced to engage the plate at equidistant points from each other.

The effective reaction surface area of the plate 15 is dependent upon the type of shell employed and the muzzle energy of the firearm. In establishing the effective plate area, the reaction forces created by the explosion of the shell and the travel of the projectile through the barrel are first determined for the type of firearm being considered. The effective surface area of the plate 15 is then dimensioned so that an equal and opposite force is created by the reaction against the plate caused by gasses emitted from the barrel.

The foregoing disclosure and description of the invention is illustrative and explanatory thereof, and various changes in the size, shape and materials as well as in the details of the illustrated construction may be made within the scope of the appended claims without departing from the spirit of the invention.

I claim:

1. A muzzle brake for hand-held firearms comprising:

- a. an internally threaded sleeve having first and second axially spaced end;
- b. a plurality of supporting members secured externally of said sleeve and extending axially beyond said first sleeve end;
- c. a flat, centrally bored reaction plate secured to said supporting members with said central bore being concentrically aligned with said sleeve and being axially spaced from said first sleeve end; and
- d. a notch included along the outer circumferential area of said reaction plate for receiving the sighting rib of a shotgun with the cross-sectional area of said notch being equal to the area of engagement of one of said supporting members with said plate.

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- 2. The muzzle brake as defined in claim 1 wherein the area of engagement of one of said supporting members with said plate is equal to the area of engagement of any other supporting member with said plate.
- 3. The muzzle brake as defined in claim 2 wherein said flat plate is circular.
- 4. The muzzle brake as defined in claim 3 wherein said notch is disposed about said plate at equal circumferential distances between two of said supporting members.
- 5. The muzzle brake as defined in claim 4 wherein:

- a. said plurality of supporting members includes three supporting members; and
- b. said three supporting members and said notch are equally spaced about the circumference of said plate.
- 6. The muzzle brake as defined in claim 1 wherein the diameter of said central bore is greater than the internal diameter of the firearm barrel on which it is be mounted for providing unobstructed shot travel in a shotgun.

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