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3,187,632

PROJECTILE DISPERSION DEVICE FOR FIREARMS

Filed Aug. 21, 1957

Fig. 1.

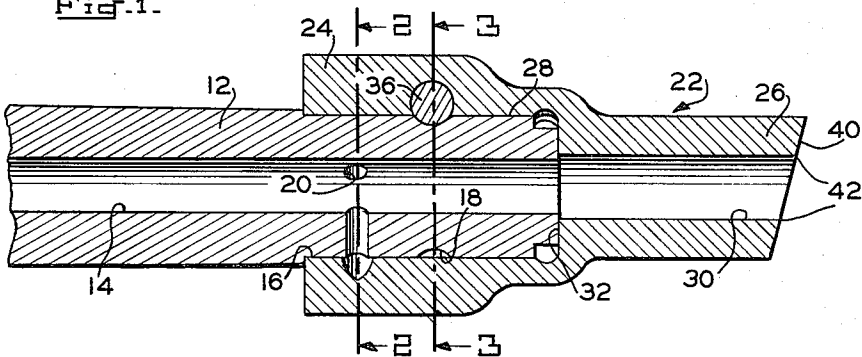


Fig. 2.

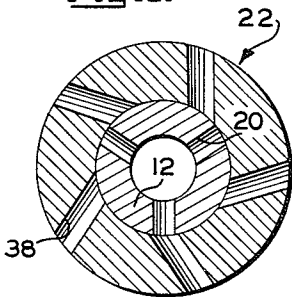


Fig. 3.

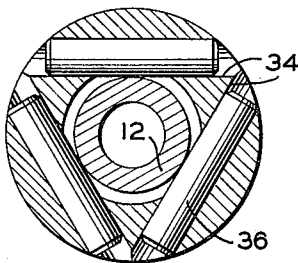


Fig. 4.

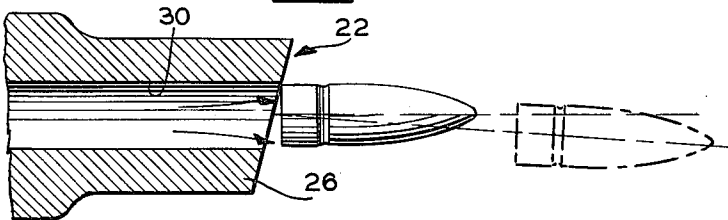
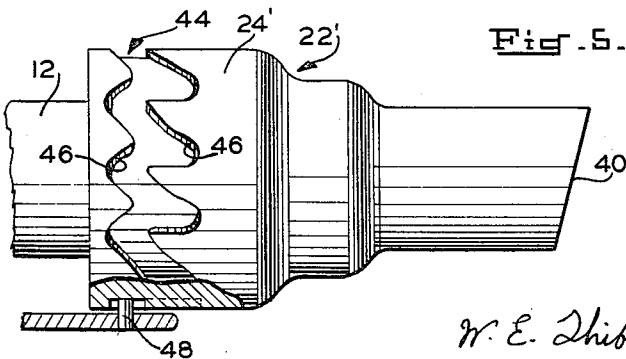


Fig. 5.



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PROJECTILE DISPERSION DEVICE FOR
FIREARMS

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1 Claim. (Cl. 89-14)

(Granted under Title 35, U.S. Code (1952), sec. 266)

The invention described herein may be manufactured and used by or for the Government for governmental purposes without the payment of any royalty thereon.

This invention relates to automatic firearms and more particularly to attachments to the barrels thereof for deflecting the projectiles from cartridges exploded therein from bore alignment at exit to produce a dispersion shot pattern at the target.

It is an object of this invention to provide means for adapting automatic firearms having barrels with rifled bores and shooting conventional type cartridges and with smooth bore barrels and shooting fin stabilized projectiles so as to automatically generate a dispersion pattern at the target and thereby increase the effectiveness of the firearm through the increase in the target area subjected to a burst of fire.

It is another object of this invention to equip the barrel of an automatic-type firearm with a muzzle piece terminated by a muzzle face disposed to the longitudinal axis of the barrel at an angle other than 90° whereby during exit from the muzzle piece the projectiles of exploded cartridges are deflected by the uneven pressure of the gases applied thereagainst and whereby the angle of deflection is determined by the angular relationship of the muzzle face to the axis of the bore.

It is a further object of this invention to provide means for rotating the muzzle piece when the firearm is operated so as to rotate the muzzle face and thus produce a circular pattern at the target, the radius of which is determined by the angle of the muzzle face.

The specific nature of the invention as well as other objects and advantages thereof will clearly appear from a description of a preferred embodiment as shown in the accompanying drawing in which:

FIG. 1 is a cross-sectional side view of the muzzle piece mounted to a firearm barrel;

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

FIG. 3 is a view taken along line 3—3 of FIG. 1;

FIG. 4 is a diagrammatic view illustrating how the oblique muzzle face of the muzzle piece produces uneven pressure against the base of the projectile when exiting therefrom; and

FIG. 5 is a partially cross-sectioned side view showing an alternate means for rotating the muzzle piece.

Shown in the figures is a firearm barrel 12 with an axial bore 14 therethrough. A cylindrical bearing surface 16 is provided on the muzzle end of barrel 12 concentric with bore 14 and such bearing surface is interrupted by an annular semicylindrical groove 18. Three ports 20 extend radially into barrel 12 to communicate with bore 14 from the portion of bearing surface 16 which is rearward of groove 18. The axes of the ports 20 are spaced equidistantly apart and are disposed in the same cross-sectional plane of barrel 12.

Rotatably mounted on bearing surface 16 is a muzzle piece 22 having a cylindrical body portion 24 and a forwardly extending extension portion 26. Body portion 24 is provided with an axial well 28 which rotatably receives bearing surface 16 and a cylindrical hole 30 concentric with such well extends forwardly therefrom through extension portion 26. The diameter of hole 30 is slightly larger than that of hole 14 and provides an extension

thereof and the junction of such hole and well 28 forms an annular shoulder 32 which is slidingly engaged by the muzzle end of barrel 12.

Provided through body portion 24 are three symmetrically-disposed chordal apertures 34 which are cylindrical in configuration. The apertures 34 have diameters similar to that of groove 18 and are arranged to communicate with well 28 and to planarly align with such groove when shoulder 32 and the muzzle end of barrel 12 are in sliding engagement. Each one of the apertures 34 receives as by press fit a rod 36, a section of which is slidingly received by groove 18 to rotatably join muzzle piece 22 to barrel 12.

Provided in body portion 24 are five passageways 38 which provide communication between well 28 and the atmosphere. The passageways 38 are symmetrically and angularly disposed in body portions 24 and are arranged to communicate singly or severally with one or more of the ports 20 during rotation of muzzle piece 22. Such rotation is produced by the angular relationship of passageways 38 relative to the axial plane of muzzle piece 22 whereby the gases are expelled from bore 14 to the atmosphere, by means of the communicating ports 20 and passageways 38 with pinwheel-like effect.

The diameters of the ports 20 and the passageways 38 are so related as to size that with the three to five relationship of the passageways and ports one or more thereof are always in communication to assure rotation of muzzle piece 22 wherever positioned when the firearm is operated.

Provided on the front end of extension portion 26 is a planar muzzle face 40 which is disposed to the longitudinal axis of bore 14 at an angle other than 90° whereby the front orifice of hole 30, noted at 42, is oblique to the longitudinal axis of the bore. Consequently, as is shown diagrammatically in FIG. 4, when the projectile of a cartridge fired in barrel 12 starts to exit from orifice 42, such orifice is cleared gradually by the base of such projectile. It is obvious that such gradual clearance of orifice 42 produces uneven pressure against the base of the projectile and because of this the projectile is deflected from alignment with bore 14. It is also obvious that with an increase in the angle of muzzle face 40 there is a corresponding increase in the period of time during which the uneven pressure is applied against base of the projectile with a resulting increase in the angular deviation of the flight of the projectile from bore alignment. As muzzle piece 22 is freely mounted on barrel 12 a burst of fire will form a circular pattern of randomly-spaced shots at the target.

If desired, the muzzle piece noted at 22' in FIG. 5, may be rotated by mechanical linkage actuated by a movable member of the firearm such as the operating rod, barrel or trigger. One of such mechanical linkages is illustrated in FIG. 5 wherein muzzle piece 22' is provided with an annular groove 44 having a plurality of cam surfaces 46 arranged continuously around body portion 24' on both sides of such groove, and there is relative longitudinal movement between such muzzle piece and a lug 48 which is slidingly engageable with successive ones of such cam surfaces to rotate the muzzle piece one pitch each time the firearm is fired. Through such mechanical means, muzzle piece 22' is indexed for each round and thereby the circular pattern at the target is formed by uniformly-spaced shots.

From the foregoing it is clearly apparent that there is herein provided a novel device for increasing the target area automatically subjected to fire by an automatic firearm with the device being simple and rugged in construction, positive in operation and easy to manufacture.

Although a particular embodiment of the invention has been described in detail herein, it is evident that many

variations may be devised within the spirit and scope thereof and the following claim is intended to include such variations.

I claim:

In an automatic firearm having a barrel for the discharge of a cartridge with a projectile and a member longitudinally movable relative to the barrel through the forces produced by the discharge of a cartridge in the barrel, the combination comprising a muzzle piece rotatably mounted to the front end of the barrel and provided with a longitudinal hole disposed therethrough concentric to the barrel for the passage of the projectile, a front face on said muzzle piece disposed at a predetermined angle relative to the longitudinal axis of said hole to produce an uneven pressure against the base of the projectile during exit from said hole to deflect the course of the projectile a predetermined degree, an angular

groove around said muzzle piece, a lug connected to the member and received by said groove, and a plurality of cooperating cam surfaces provided on opposite sides of said groove and disposed for alternate engagement by said lug during relative movement between the barrel and member for sequentially rotating said muzzle piece.

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