

Sept. 23, 1958

P. M. NETZER
MUZZLE BRAKE

2,852,983

Filed Dec. 10, 1952

2 Sheets-Sheet 1

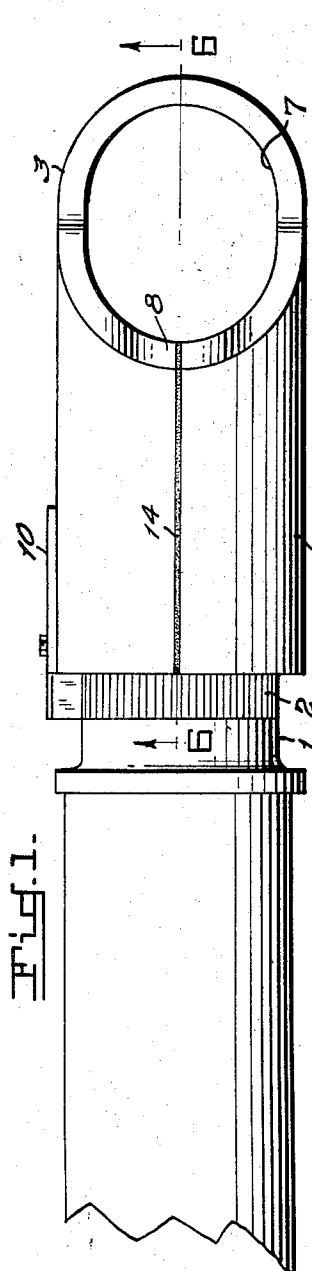


Fig. 1.

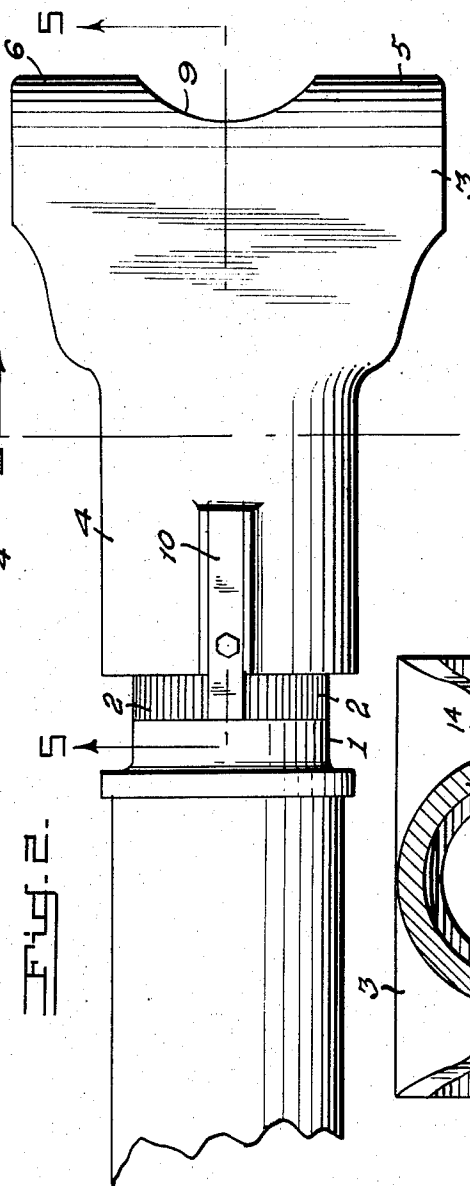


Fig. 2.

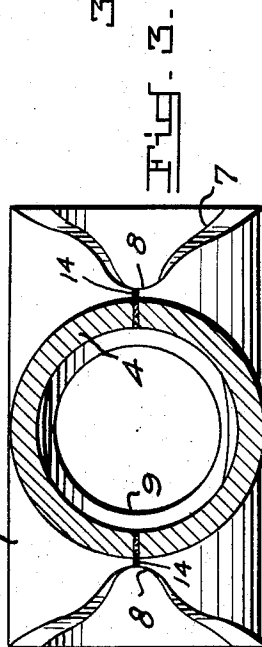


Fig. 3.

INVENTOR.
Paul M. Netzer

BY

X. E. Thibodeau, A. W. Dew & L. P. Smith
ATTORNEYS.

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P. M. NETZER

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Fig. 4.

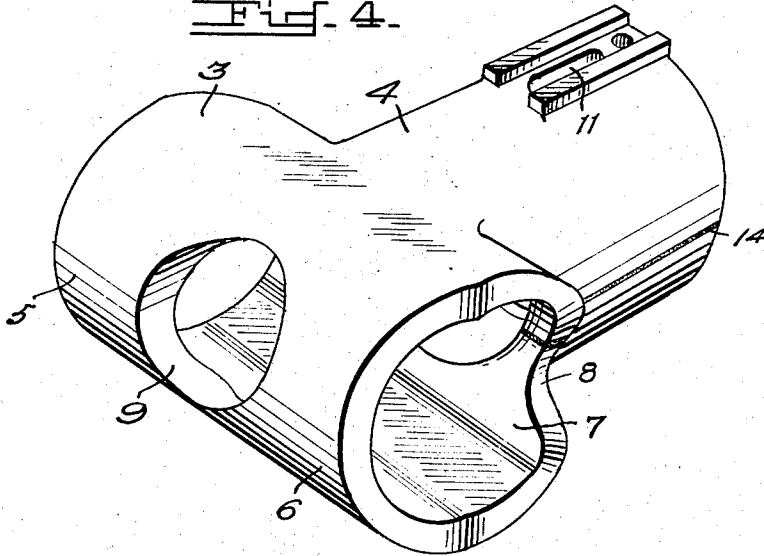


Fig. 5.

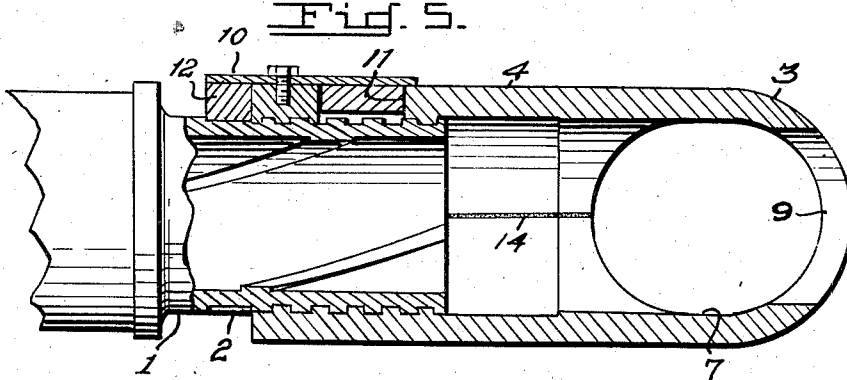
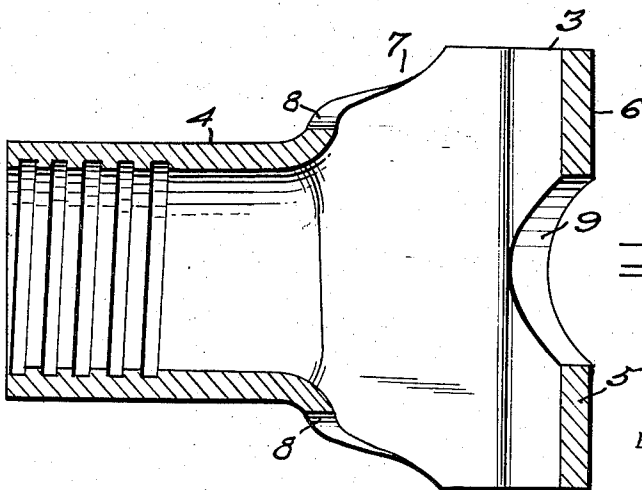


Fig. 6.



INVENTOR.
Paul M. Netzer

BY

J. E. Hibodeau, A. W. Dew + D. P. Smith
ATTORNEYS.

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MUZZLE BRAKE

Paul M. Netzer, Arlington, Va., assignor to the United States of America as represented by the Secretary of the Army

Application December 10, 1952, Serial No. 325,240

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 to me of any royalty thereon.

My invention relates generally to ordnance equipment and in particular to muzzle brakes for guns which are designed to check the energy of recoil by utilizing the gases generated upon discharge of the piece. More particularly my novel muzzle brake acts as an anti-obscuration device by directing the blast to the sides thus reducing obscuration of the target by blast cloud effect and dust disturbance.

The muzzle brakes of the prior art have been so constructed that the full force of the propellant gases are directed against the brake louvers in such a manner that the force of resistance will be directed insofar as is possible in the direction of opposition to recoil. Consequently the gases will blast back toward or upon the gun crew or upon the turret protecting them, with disastrous results. Even if the blast does not strike the crew or their protective covering still a cloud of dust is raised from the ground with the firing of each round, which dust seriously hampers the crew in the efficient performance of their duties as well as having a deleterious effect upon the complex gun mechanism.

Accordingly a broad object of my invention is to provide a muzzle brake that is an improvement over the prior art. It is another object of my invention to provide a muzzle brake that serves to simultaneously dissipate recoil energy and act as an anti-obscuration device. With these and other objects which will be obvious from the specification in view, reference is made to the drawings wherein an embodiment of my invention is illustrated by way of example and in which:

Figure 1 is a fragmentary longitudinal elevation of a gun employing my muzzle brake.

Figure 2 is a top plan view of the muzzle brake.

Figure 3 is a view taken on lines 3—3 of Figure 2 and looking in the direction of the arrows.

Figure 4 is a perspective view of my muzzle brake.

Figure 5 is a view partly in section taken on lines 5—5 of Figure 2, and looking in the direction of the arrows.

Figure 6 is a cross section view taken on lines 6—6 of Figure 1 and looking in the direction of the arrows.

Referring now to the several figures wherein like parts are designated by like reference characters, 1 indicates generally the muzzle end of a weapon externally threaded at the distal end thereof and adapted to receive the muzzle brake of my invention. A series of serrations 2 are cut in a peripheral band about the end of the barrel for a purpose that will presently be explained. Reference character 3 designates the generally T-shaped muzzle brake which is preferably fabricated from a single piece of metal cut, bent and welded into a unitary structure adapted to accomplish the intended purpose.

The muzzle brake is a single one-piece casing consisting of a first member 3 generally elliptical in transverse section and forming a bi-ported expansion chamber 7, and an internally threaded cylindrical rear torso section or second member 4. As best shown in Fig. 4, beginning at points determined by the intersection with the end edges of member 3, of a plane through the central axis

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of this member and normal to the axis of member 4, the member 3 fairs into the member 4 along smooth rearwardly—and inwardly—extending edges which define recesses 8. The rear faces of the forward wall of member 3 thus present unopposed rearwardly-concave shoulders or baffle surfaces 5 and 6, against which the propellant gases impinge to exert an unbalanced forward thrust upon the muzzle on firing of the gun. An opening 9 is provided in the forward wall for free passage of the projectile.

Figure 5 illustrates the preferred method of securing my brake to the muzzle of a weapon. The torso portion 4 is threaded to cooperate with the screw threads on muzzle 1. When the brake has been turned to its final position on the muzzle, key 10 having a foot 12 for engagement with serrations 2 is slid into keyway 11 and bolted or otherwise firmly affixed thereto whereby angular displacement under shock is eliminated.

In operation the explosion of the charge generates gases which follow the projectile through the bore of the gun. These gases upon flowing from the muzzle expand in all directions and impinge upon the inner concave baffle surfaces of shoulders 5 and 6 whereby they are violently directed outward through the elliptical passage 7. A portion of the expanding gases will flow through cut out portions 8 thereby imparting a useful reaction or braking force to the recoil motion of the gun. At the same time the resultant movement of the gases through passage 7 and out of the ends thereof is so controlled that the gases move off to the side of the weapon and do not obscure the target whereby the succeeding shot may be rapidly fired.

My novel muzzle brake is fabricated from a single sheet of metal pre-cut to form and bent back upon itself and welded along two diametrically opposed lines 14, whereby the weldments are not called upon to carry any explosive stress and the brake cannot fail in service.

It will be obvious to those skilled in the art that adjustment of the shape and size of the members may be made without departing from the spirit of the invention as defined in the appended claim.

I claim:

A muzzle brake for a gun fabricated from a single sheet of metal comprising first and second integral members forming a T and having respectively first and second mutually perpendicular axes in a horizontal plane, said first member comprising a cylindrical torso member coaxial with the bore of said gun, said second member comprising an open ended tubular member of elliptical cross-section integral with and faired into the side walls of said torso member, the forward wall of said tubular member forming the cross member of said T and defining rearwardly-concave reaction shoulders extending laterally beyond the sides of said torso member parallel with said second axis along their entire length, the rearward walls of said tubular member having a tapered cutaway portion to define a tapered recess to the rear of said reaction shoulders, an aperture in the forward wall of said tubular member aligned with the barrel of said gun to allow free passage of a projectile therethrough, internal screw threaded means at the rearward end of said torso member to attach said brake to said gun, a keyway cut through the rearward end of said torso member, and locking means including a key fitting within said keyway whereby said brake is locked against angular displacement.

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