

April 21, 1931.

M. E. BARKER

1,801,258

COMPENSATING DEVICE FOR ORDNANCE

Filed April 30, 1927

Fig. 1.

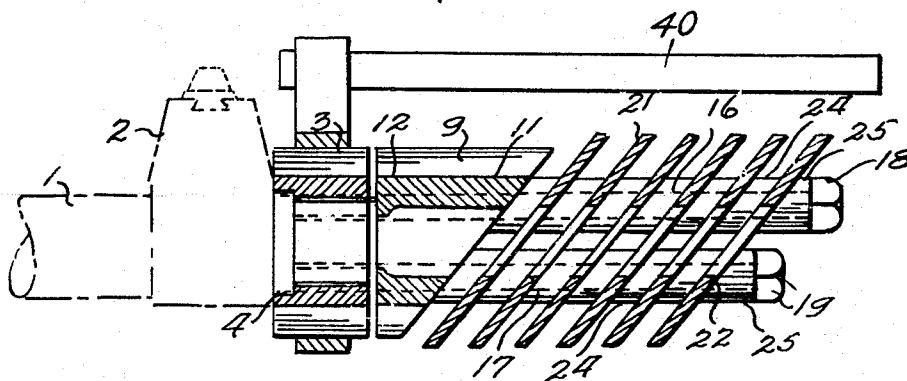


Fig. 2.

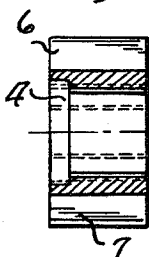


Fig. 3.

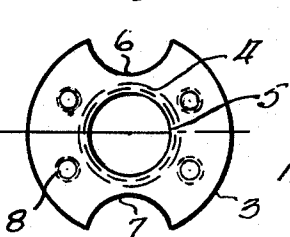


Fig. 4.

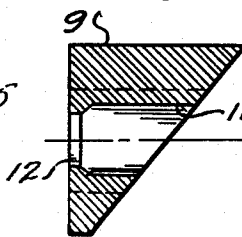


Fig. 5.

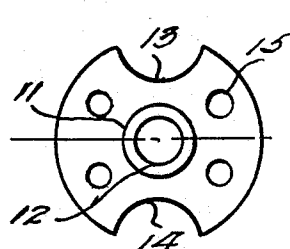


Fig. 8.

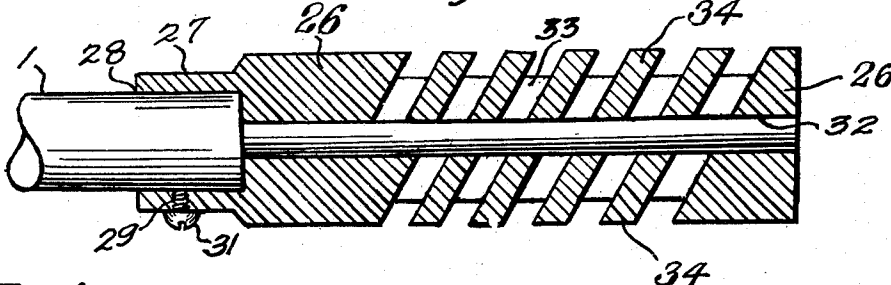


Fig. 6.

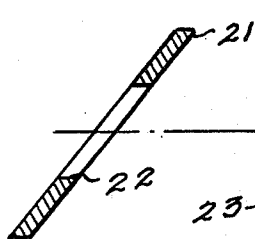


Fig. 7.

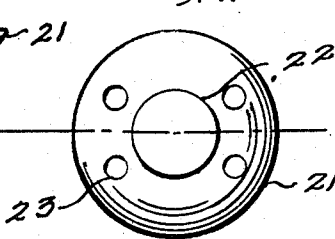
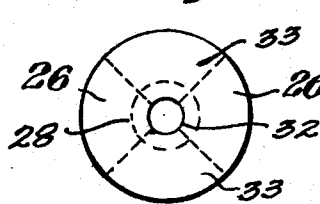


Fig. 9.



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COMPENSATING DEVICE FOR ORDNANCE

Application filed April 30, 1927. Serial No. 187,924.

(GRANTED UNDER THE ACT OF MARCH 3, 1883, AS AMENDED APRIL 30, 1928; 370 O. G. 757)

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.

5 This invention relates in general to compensators and more particularly has reference to a compensator for ordnance pieces.

Previous to this time, the recoil and jump or upward displacement of ordnance pieces 10 has been disadvantageous and inconvenient even in light rifles, and especially in such weapons as rapid fire guns they have been exceedingly difficult to hold. It has also been practically impossible to maintain a satisfactory continuous operation of the same, as the aim is constantly displaced by the shocks of successive discharges and the effects of the recoil on the operator preclude steady firing.

20 An object of this invention is to provide a compensator for ordnance pieces that will check the recoil during firing.

Another object of this invention is to provide a compensator for ordnance pieces that 25 will overcome the upward thrust or jump during firing.

A further object of this invention is to provide a compensator for ordnance pieces that may be readily attached or detached and 30 which does not interfere with normal operation of the piece.

With these and other objects in view which may be incident to my improvements, the invention consists in the parts and combinations to be hereinafter set forth and claimed, 35 with the understanding that the several necessary elements comprising my invention, may be varied in construction, proportions and arrangement, without departing from the spirit and scope of the appended claims.

40 In order to make my invention more clearly understood, I have shown in the accompanying drawings means for carrying the same into practical effect, without limiting the improvements in their useful applications to the particular constructions, which for the purpose of explanation, have been made the subject of illustration.

45 In the drawings forming a part of this specification:

Figure 1 is a side elevation sectional view of the compensator.

Fig. 2 is a side elevation sectional view of the compensator nut.

Fig. 3 is an end view of the nut shown in 55 Fig. 2.

Fig. 4 is a side elevation sectional view of the guide.

Fig. 5 is an end view of the guide shown 60 in Fig. 4.

Fig. 6 is a side elevation sectional view of one of the baffle plates.

Fig. 7 is a front view of the baffle plate shown in Fig. 6.

Fig. 8 is a modified form of the compensator made in the single piece. 65

Fig. 9 is a front view of the modified compensator shown in Fig. 8.

Referring by numerals to the drawings, wherein similar elements are designated by 70 like symbols of reference, throughout, there is shown in Fig. 1 the muzzle portion of any conventional rifle barrel 1 having mounted thereon the usual front sight 2. The muzzle of the barrel in front of the sight 2 is seated 75 in the compensator forming the subject matter of this invention formed of any suitable material, preferably some light metal alloy. The compensator comprises a nut 3 having an annular seat 4 to receive the 80 muzzle of the barrel. Any means serving to hold the compensator securely to the barrel of the piece may be utilized, such as a threaded engagement.

The nut 3 as shown in Figures 2 and 3 85 is formed with a central aperture 5 and on the top and bottom semi-cylindrical longitudinal grooves 6 and 7. These grooves are cut out to reduce the weight of the parts, hence any other method of accomplishing 90 this result may be employed. There is provided in the face of the nut a series of apertures 8 for a purpose to be hereinafter more fully described.

Adjacent to the nut 3 and in coaxial alignment therewith there is adapted to fit a guide 95 9 as shown in Fig. 1. The guide 9 is provided with a central aperture 11 having, at the rear, a reduced portion 12. The top and bottom of the guide 9 are provided with lon- 100

itudinal semi-cylindrical grooves 13 and 14 adapted to coincide with the corresponding grooves 6 and 7 on the nut 3, which also serve to reduce the weight of the parts, a series of apertures 15 in the face as shown in Fig. 5 designed to fit in coaxial alignment with the apertures 8 in the nut 3. The guide 9 is shown as having its non-cylindrical portions aligned with the adjacent surfaces of the nut 3 and the baffles 21. It is to be understood that the shape of the member 9 may be varied to conform to the particular angularity of the baffles.

The nut 3 and the guide 9 are adapted to be joined on the top by a plurality of long bolts 16 and on the bottom by a plurality of short bolts 17 having heads 18 and 19, respectively, as shown in Fig. 1. The bolts 16 and 17 are adapted to extend through the apertures 15 in the guide 9 and engage threads not shown in the apertures of the nut 3.

Mounted on the bolts 16 and 17 are a plurality of disks 21 adapted to deflect hot gases issuing from the muzzle in such a manner as will efficaciously check the recoil and jump reactions. The disks 21 are provided with a central aperture 22 as shown in Figures 6 and 7 and a series of apertures 23 on their face adapted to receive the bolts 16 and 17. The disks 21 are angularly mounted with respect to the vertical and, as shown, are set at approximately 50°. These are separated by a series of spacers 24 mounted on the bolts 16 and 17. The end disk is held by end spacers 25 as shown in Fig. 1.

There is shown in Figures 8 and 9 a modification of this invention showing a compensator constructed from a single piece of material comprising a body portion 26 having a reduced extension 27. The reduced extension 27 is provided with an annular seat 28 adapted to receive the muzzle of a rifle barrel 1. On the lower part of the reduced extension 27 there is provided a threaded aperture 29 adapted to receive a set screw 31 to screw the compensator to the barrel. It will be appreciated that a similar method may be employed to lock the nut 3 in the desired position. In coaxial alignment with the annular seat 28 is provided a longitudinal bore 32, which, in effect, is an extension of the bore of the barrel but of greater diameter. A series of inclined slots 33 are drilled in the top and bottom of the compensator with a milling cutter or any suitable tool. These communicate with the bore 32, causing the intermediate partitions 34 to serve the same function as the disks 21 shown in Fig. 1. The number of slots 33 in the top exceeds the number in the bottom. By this arrangement the downward thrust on the upper portion considerably exceeds the upward thrust on the lower portion. This excess

downward force directly opposes the upward movement or jump of the band.

It will be understood that by varying the angularity of the baffles 21 or the partitions 34 the vertical and horizontal forces exerted by the issuing gases may be varied. Thus the angle of the deflecting members may be adjusted to give the desired results with each type of ordnance piece. It is manifestly within the broad scope of the invention to increase or decrease the number of deflectors and to position these at any desired distance from the muzzle of the piece.

The operation of the compensator may readily be seen by having reference to Figures 1 and 8. The hot gases issuing from the muzzle of the barrel strike the inclined disks 21, or integral members formed by the slots 33, which act as baffle plates and deflect the gases upwardly and downwardly. The upward deflection may be considered as producing a two-component effect on the piece; the vertical component holding the barrel down and restraining the jump, and the horizontal component tending to check the recoil. On the bottom of the compensator a positive backward turn is given to the gases causing the major portion of the force to overcome the recoil. As the upward thrust on the lower part of the baffles is less than the downward thrust on the upper portion of the baffles, the net result tends to overcome the jump of the piece and check the recoil at the instant the projectile issues from the muzzle.

I have found that if the position of the compensator be shifted approximately ninety degrees in a clockwise or counter-clockwise direction an automatic traverse of a pivotally mounted ordnance piece may be obtained. This results from the differential effect caused by the inclination of the deflectors as previously explained.

In normal operation a large volume of the combustion gases are deflected upwardly through the spaces between the deflectors. This tends to obscure the target and cause inaccurate firing. Such a difficulty may be overcome by mounting a hollow tubular member 40, either on the muzzle of the piece or on the compensator, in such a manner that the bore of the tubular member constitutes a prolongation of the line of sight. This member may project slightly beyond the end of the compensator so as to insure a clear vision of the target.

There is provided by this invention a compensator for ordnance pieces adapted to check the recoil and overcome the jump and afford greater ease of operation with maximum accuracy and allow longer periods of uninterrupted firing.

It is manifest that this invention is not restricted to the specific number of baffles shown or the form of mounting as it is obvi-

ous that their number and the mode of attachment is to be determined by the particular requirement of the various types of weapons upon which the compensator is employed.

adapted to be attached to the barrel comprising, a body portion having an axial bore, baffles formed on the body portion communicating with the bore and directing the gases issuing from the piece both upwardly toward the front and downwardly toward the rear.

In testimony whereof I affix my signature.
MAURICE E. BARKER.

- 5 It is apparent that the compensator herein described is not necessarily limited for use with small arms. It is applicable likewise to mortars, field pieces and the like.
- 10 While I have shown and described the preferred embodiment of my invention, I wish it to be understood that I do not confine myself to the precise details of construction herein set forth, by way of illustration, as
- 15 it is apparent that many changes and variations may be made therein, by those skilled in the art, without departing from the spirit of the invention, or exceeding the scope of the appended claims.
- 20 I claim:
1. A compensator for an ordnance piece adapted to be attached to the barrel comprising a series of baffle plates angularly disposed with respect to the muzzle of the barrel adapted to deflect the gases issuing from the muzzle of the piece.
 2. A compensator for an ordnance piece adapted to be attached to the barrel comprising, a series of baffle plates angularly disposed with respect to the muzzle of the barrel, the plates being so formed as to allow an unimpeded path for a projectile and means to fix the position of the baffle plates.
 3. A compensator for an ordnance piece comprising a cylindrical body portion having an axial bore, inclined notches in the top and bottom of the body portion forming baffle plates having extended flat surfaces communicating with the axial bore, the number of notches in the top exceeding the number of notches in the bottom, and means to secure the compensator to the ordnance piece.
 4. A compensator for an ordnance piece comprising, an integral body portion having an axial bore, inclined notches in the top and bottom of the body portion forming baffle plates having extended flat surfaces communicating with the axial bore, and means to secure the compensator to the ordnance piece.
 5. A compensator for an ordnance piece comprising, an integral body portion having an axial bore, inclined notches in the top and bottom of the body portion, forming baffle plates communicating with the axial bore, the surfaces of the corresponding top and bottom baffle plates formed by the notches being on the same plane.
 6. A compensator for an ordnance piece adapted to be attached to the barrel comprising, a body portion, means on the body portion to deflect gases issuing from the piece both upwardly toward the front and downwardly toward the rear.
 7. A compensator for an ordnance piece

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