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COMBINATION TORQUE AND RECOIL COMPENSATOR AND BARREL BUSHING FOR GUNS

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INVENTOR.
William L. Mowrey
BY
Wayland D. Keith
HIS AGENT.

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COMBINATION TORQUE AND RECOIL COMPENSATOR AND BARREL BUSHING FOR GUNS

William L. Mowrey, Fort Worth, Tex., assignor of one-half to Palmer R. Bonds, Jr., Fort Worth, Tex.

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This invention relates to improvements in a combination muzzle brake and barrel bushing for automatic pistols and the like, and more particularly to a device to compensate for the torque created by the bullet rifling in the gun barrel and for the "jump up" of the gun barrel due to the detonation of the explosive change within the gun.

An object of this invention is to provide a recoil and torque compensator and barrel bushing that will compensate for the torque created by the rifling of the bullet in the gun barrel and which will maintain the muzzle of the gun at a substantially uniform steadiness during the discharge of the cartridges therefrom.

Another object of this invention is to provide a torque and recoil compensator and barrel bushing the use of which will decrease the muzzle blast occasioned by the discharge of projectiles from the gun.

Another object of the present invention is to increase the accuracy of the gun, due to the close tolerances of the inner barrel bushing.

Still another object of this invention is to provide a combination torque and recoil compensator and barrel bushing that is simple in construction, easy to install and to remove, and which is positive in its action.

With these objects in mind, and others that will manifest themselves as the description proceeds, reference is to be had to the accompanying drawings in which like reference characters designate like parts in the several views thereof, in which:

Fig. 1 is a side elevational view of an automatic pistol showing the torque and recoil compensator and barrel bushing installed thereon;

Fig. 2 is an enlarged fragmentary longitudinal sectional view through the muzzle end of the gun showing the combination torque compensator and barrel bushing installed therein;

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 2, looking in the direction indicated by the arrows;

Fig. 4 is a perspective view of the combination torque and recoil compensator and barrel bushing taken from the front end and a side thereof;

Fig. 5 is a view thereof similar to Fig. 4, but taken from the opposite end and side, and

Fig. 6 is a fragmentary, perspective view, partly in section, of the outer end of the slide, showing a lug receiving groove therein.

With more detailed reference to the drawing, the numeral 11 designates generally an automatic pistol having the usual slide 12 and a barrel 14. A combination torque and recoil compensator and barrel bushing, designated generally at 16, has a barrel bushing portion 18, which extends into the slide 12 and is in close fitting sliding relation with the barrel 14. A lug 20, which is formed on the combination torque and recoil compensator and barrel bushing, is adapted to engage within a complementary recess 13 formed within the slide 12, so when the combination torque and recoil compensator and barrel bushing is fitted in place, as shown in Figs. 1 and 2, and with the spring pressed plug 22 interfitted within a notch 24 formed in the outwardly extending lug 26 on the compensator, this device is held in secure relation with respect to the slide 12 and in sliding relation with respect to the gun barrel 14.

The combination torque and recoil compensator and barrel bushing 16 is slightly longer than the barrel 14, when the slide 12 is in recoil position. A chamber 28 is formed intermediate the bushing 17 and the constricted muzzle portion 30 of the combination torque and recoil compensator and barrel bushing, designated generally at 16. The constricted portion 30 being only slightly larger than the out-side diameter of the bullet passing therethrough. A slight space 32 is provided between the muzzle of the barrel 14 and the restricted opening 30, so as to form a chamber with the end portion 34 of the compensator, which chamber forms a baffle to direct a portion of the air and spent explosive gases into the chamber 28 and thence out through slotted openings 36 which are formed within the circumference of the torque and recoil compensator near the top of the device. The end portion 34 is outward of the end of the barrel, as shown in Fig. 2, when the slide is in recoiled position, therefore the explosive gases being expelled from the muzzle of the gun will react on the annular surface between the inner diameter of the chamber 32 and the opening 30 in the compensator, which reaction of force will tend to move the compensator and the slide attached thereto, in the direction of the flow of gases, which will minimize the recoil reaction. The medial plane passing through the axis of said tubular member and transversely through the segmental slots 36 is normally from zero to the left thirty degrees for a gun with counter-clockwise rifling and from zero to the right thirty degrees for a gun with clock-wise rifling, and for guns with negligible rifling, the center of the slots may be from zero to five degrees on either side to compensate for the normal "jump-up." However, it has been found that the spacing of the segmental slots 36 with the medial line of the slots approximately fifteen degrees to the left from the vertical for a forty-five caliber automatic pistol, which has counter-clockwise rifling and to the right fifteen degrees for a forty-five caliber automatic pistol having clock-wise rifling, of approximately one turn per foot, gives effective equalization of the torque, which torque is created by the rotation of the bullet within the rifled barrel. This particular arrangement of the slots, which have an angular divergence of opening of approximately seventy-two degrees, will permit sufficient air and gas to escape upward and react against the lower, imperforate portion of the compensator to cause the muzzle of the gun to be maintained downward against any substantial "jump-up."

The reaction of the air and explosive gases within the chamber 28 is constricted from readily passing outward by the constriction of the opening 30, therefore, upon escape of the air and explosive gases at the above mentioned angle, an equal reactionary force is exerted against the imperforate portion of the compensator to off-set the torque, as well as the "jump-up."

The segmental slots in the compensator may vary in length in different torque and recoil compensators and bushings, but normally the slots are of a length from forty-five to ninety degrees of the circumference of the device, and the number of slots should be sufficient to permit the escape of the proper amount of air and spent explosive gases so as to give somewhat of a jetting action of the air and explosive gases being discharged from the gun barrel, so the force of the air and explosive gases escaping at the correct angle will off-set the torque created

by the rotary movement of the bullet through the rifled barrel. At the same time the jetting action of the air and gases escaping from the gun barrel, which air and gases escape outward and substantially upward through the slots 36 and will maintain the muzzle of the gun in steady relation at the level at which the gun is being held.

The combination torque and recoil compensator and barrel bushing is not, in the strict sense, a silencer, but diverting a portion of the air and spent explosive gases out through the segmental slots gives a deadening effect which takes the harshness out of the sound of the explosion and allows more rapid firing of the gun, as less time is lost in maintaining the correct aim on the target, due to the torque and the recoil being compensated for, which recoil or "jump-up" is inherent in a pistol, the handle of which is being rigidly gripped and the muzzle of which is not maintained in fixed relation so that the explosive charge is detonated at a point above the point at which the handle of the gun is gripped.

For purposes of illustration, the device has been described for use with an automatic pistol, where it is desirable to alleviate or reduce the muzzle movement of a fire arm due to torque and recoil "jump-up."

Having thus described the invention, what is claimed is:

1. In combination with a gun having a slide surrounding a barrel, a combination torque and recoil compensator and barrel bushing comprising; an enlarged cylindrical shell having an internal diameter greater than the external diameter of the barrel of said gun, said shell being attachably secured to said slide and extending beyond the outer end of said barrel and chambering the outer end of the barrel throughout the entire relative movement of said barrel with respect to said slide, which shell has a concentric, constricted opening of substantially caliber size formed therein in axial alignment with the axis of said barrel, said bushing being in close fitting relation with said gun barrel and forming a seal therewith, said shell having transverse openings formed in the upper portion only thereof.

2. In combination with a gun having a slide surrounding the barrel of said gun, a removable combination torque and recoil compensator comprising an enlarged cylindrical shell attached to the slide of said gun and extending beyond the outer end of said barrel, when said slide is in recoiled position said cylindrical shell having a constricted opening of complementary caliber size formed therein in axial alignment with the axis of said barrel, said shell having transverse openings formed within the upper portion only thereof.

3. In a torque and recoil compensator a cylindrical member adapted to be attachably secured to an end of a slide of a pistol and being movable therewith, which cylindrical member encompasses the muzzle end of the pistol at all times, said cylindrical member having an axial opening formed therein in aligned relation with the bore of said pistol, and said cylindrical member having transverse, segmental slots formed therein near the outer end thereof, the medial plane passing transversely through said slots and the axis of said cylindrical member being divergent at an acute angle to a medial vertical plane passing diametrically through said cylindrical member, said slots being so positioned as to direct gas outward and upward at an acute angle to the medial vertical plane.

4. In a detachable torque and recoil compensator for an automatic pistol having rifling within the caliber bore thereof; a tubular member having a series of bores formed therein, which bores have a common axis but are of different diameters, the first bore being of a diameter very slightly greater than the caliber bore of said pistol, a second bore being of larger diameter and of a depth to receive the barrel of said pistol when said barrel is in extended position, to form an annular chamber therebetween, a third bore adapted to surround the barrel of said pistol in sliding, bearing relation, said tubular member having a substantially cylindrical outer portion for a portion of the length on the end of said tubular member opposite the end having said first bore, which cylindrical portion is adapted to complementarily engage the bore of the slide of said automatic pistol, a pair of outwardly extending lugs integrally secured to said tubular member exteriorly thereof and spaced apart, one of said lugs being adapted to complementarily engage a recess connecting with the bore within the slide of said pistol when said tubular member and said slide are in fitted together relation, said second lug being adapted to abut with an end of said slide of said pistol when said tubular member and said slide are in fitted together relation, which second lug is notched and adapted to complementarily receive a spring-pressed plug mounted within said slide of said pistol when said slide and said tubular member are in fitted together relation, said tubular member having a series of transverse, arcuate slotted openings formed therein which are of less than one-third the circumference thereof and are within the length of said second bore and in communication therewith, which arcuate openings are near the top of said tubular member but are so positioned that a medial plane passing therethrough and through the axis of said tubular member will be at an acute angle with respect to the vertical in the same direction as the twist of rifling, viewed from the breech, of said automatic pistol.

5. In a detachable torque and recoil compensator for an automatic pistol having a slide, the caliber bore of said pistol being rifled; a tubular member having a series of bores formed therein, which bores have a common axis but are of different diameters, the first bore being of a diameter very slightly greater than the caliber bore of said pistol, the second of said bores being of larger diameter and of a depth to receive the barrel of said pistol, when said slide is in recoiled position, to form an annular chamber therebetween, the third of said bores being adapted to surround the barrel of said pistol in sliding, bearing relation, said tubular member having a substantially cylindrical outer portion for a portion of the length thereof on the end of said tubular member opposite the end having said first bore, which cylindrical portion is adapted to complementarily engage the bore of the slide of said automatic pistol, a pair of outwardly extending lugs on said tubular member to complementarily engage said slide when said tubular member and said slide are in fitted together relation, said tubular member having transverse, segmental slotted openings formed therein near the top thereof, which slotted openings are of an arcuate length of less than one-third the circumference of said tubular member and within the length of and in communication with said second bore, the medial plane passing transversely through said segmental, slotted openings and the axis of said tubular member being divergent at an acute angle to a medial vertical plane passing diametrically through said tubular member, said medial plane passing through said segmental, slotted openings being disposed to a side of the vertical plane in the same direction as the twist of the rifling, viewed from the breech of said automatic pistol.

6. In a detachable recoil compensator for an automatic pistol; a tubular member having a series of bores formed therein, which bores have a common axis but are of different diameters, the first bore being of a diameter very slightly larger than the caliber bore of said pistol, the second of said bores being of a larger diameter and of a depth to receive the muzzle and a portion of the barrel of said pistol so the muzzle end portion of said barrel will be wholly chambered therein when said slide of said pistol is in recoiled position, to form an annular chamber therebetween, the third of said bores being adapted to surround the barrel of said pistol in sliding, bearing relation, said tubular member having a substantially cylindrical outer portion on the end thereof opposite the end having said first bore, which cylindrical portion is adapted to

complementarily engage the bore of the slide of said automatic pistol, a pair of outwardly extending lugs on said tubular member to complementarily engage said slide when said tubular member and said slide are in fitted together relation, and said tubular member having openings formed only in the upper portion thereof within the length of and in communication with said second bore.

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