United States Patent [19]

Iino

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[54] **GUN BARREL**

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Aug. 28, 1969 Japan 44/81176

[52] **U.S. Cl.** **42/79**
[51] **Int. Cl.** **F41c 21/00**
[58] **Field of Search** 42/79

[56] **References Cited**

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[57] **ABSTRACT**

A gun barrel which comprises a relatively large-diametered portion formed integrally with a barrel body in the forward end thereof and adapted to incorporate an exchangeable choke inside the muzzle of said relatively large-diametered portion, said relatively large-diametered portion being formed coaxially with the gun barrel body ; a means for securely holding said choke therein; and/or gas vents formed in the substantially upper part of said relatively large-diametered portion to release gas jets therefrom, thereby preventing an undesirable bounce of the gun barrel at firing.

In the gun barrel of the present invention, the total length of the barrel can always be constant and the replacement of chokes is easily made without causing a change in the balance of said barrel.

Moreover, an undesirable bounce of the gun barrel is effectively prevented by forming the gas vents in only the upper part of the barrel.

2 Claims, 5 Drawing Figures

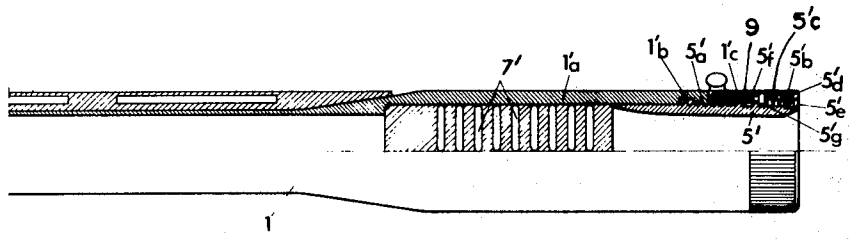


Fig. 3

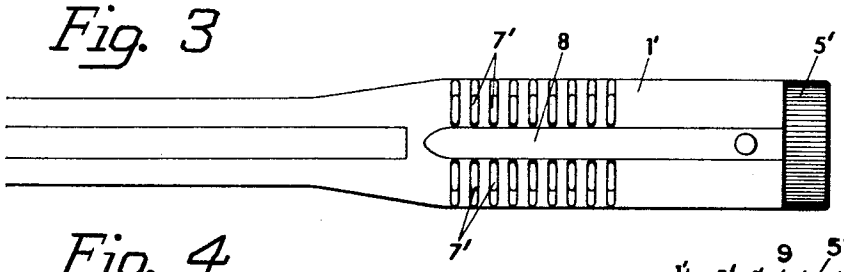


Fig. 4

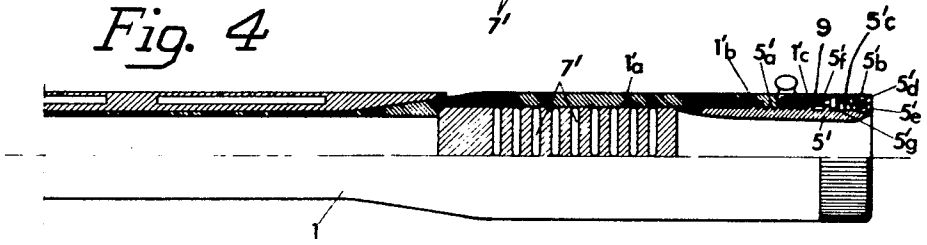


Fig. 1

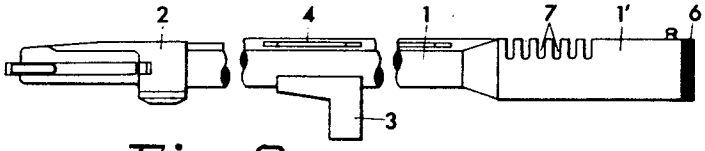


Fig. 2

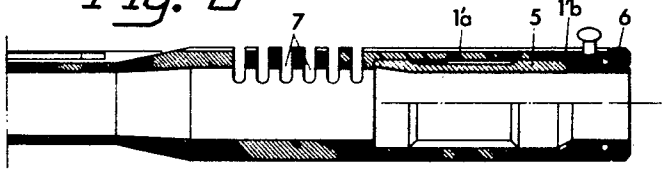
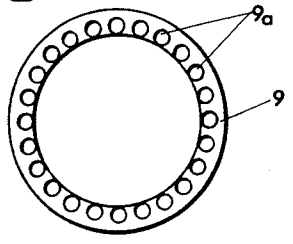


Fig. 5



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GUN BARREL

This invention relates to a gun barrel, and more particularly to improvements made in the forward end of a gun barrel to incorporate an exchangeable choke in an integrally formed muzzle portion of a gun, such as a shotgun.

Heretofore, various types of chokes are employed in shotguns for the purpose of controlling the dispersion of fired shots. In an ordinary gun barrel having a conventional exchangeable choke, a choke bearing portion is separately manufactured and attached to the barrel by brazing or screwing to form an extending portion of said barrel. In the gun barrel of such ordinary type, however, it is difficult to conform the diameters of both the barrel and the choke, and replacement of chokes brings about a change in the total length and, accordingly, in the balance of said gun barrel. The fatal defect of the gun barrel of this type is that said choke bearing portion fixed thereto by brazing or screwing is likely to be damaged in its brazed or threaded part by some forces, such as excessive recoil or gas jets at firing.

In the gun barrel according to this invention made from the view point of overcoming the above defects, the muzzle portion in the forward end of said barrel is formed with its diameter larger than that of the ordinary gun and adapted to encase an exchangeable choke inside the muzzle of said relatively large-diametered portion.

Meanwhile, in the gun barrel having the conventional choke bearing portion, gas vents are formed in the upper and lower parts thereof or symmetrically in said choke bearing portion to avoid the damage of said brazed or threaded part by unequal gas jets. In the present invention, however, gas vents are formed in only the upper part of the relatively large-diametered portion to release high pressure gas at firing in only an upward direction and the reaction of said gas jet exerts a force on the gun barrel to press said barrel downward. This downward force prevents the gun barrel from bouncing up by the recoil at firing and, accordingly, enables a shooter to take a steady aim with the gun for successive shootings.

Therefore, it is an object of the present invention to provide a gun barrel which has always constant total length of the barrel since a choke is fixedly incorporated inside the barrel itself and is free from an unfavorable change in the balance which is sometimes caused by replacement of said chokes.

It is another object of the present invention to provide a gun barrel in which gas vents are formed in only the upper part of the muzzle portion thereof to prevent an undesirable bounce of the gun barrel.

It is a further object of the present invention to provide a gun barrel which is simple in construction, since the choke bearing portion is formed integrally with the barrel, and free from troubles which inevitably occur in said brazed or threaded part in the conventional gun barrel.

According to the present invention, there is provided a gun barrel which comprises a relatively large-diametered portion formed integrally with a barrel body in the forward end thereof and adapted to incorporate an exchangeable choke inside the muzzle of said relatively large-diametered portion, said relatively large-diametered portion being formed coaxially with the gun barrel body; a means for securely holding said choke therein; and/or gas vents formed in the substantially upper part of said relatively large-diametered portion to release gas jets therefrom, thereby preventing an undesirable bounce of the gun barrel at firing.

The foregoing and other objects, features and advantages of the present invention will be made apparent from the following description taken in connection with the accompanying drawings in which;

FIG. 1 is a side view of a gun barrel showing an embodiment of the present invention;

FIG. 2 is an enlarged sectional view of the muzzle portion of the same;

FIG. 3 is a plan view of the muzzle portion of another embodiment of this invention;

FIG. 4 is a side view of the same, with the upper half shown in cross section; and

FIG. 5 is a plan view of a ring which is one of the members used in the latter embodiment.

Referring now to FIGS. 1 and 2, numeral 1 designates a gun barrel body which is formed integrally with a barrel extension 2, a barrel ring 3 and a rib 4. In the forward end of said barrel 1, there is provided a relatively large-diametered portion 1' which is formed by molding integrally with the barrel body. The relatively large-diametered portion 1' of the barrel is coaxially formed with said barrel body 1. Consequently, the axis of the choke can be strictly in alignment with the axis of the barrel body when the choke is incorporated therein.

Numeral 5 designates an exchangeable choke which is inserted in the muzzle of said relatively large-diametered portion 1' and then fixedly secured by screwing a ring 6 with its periphery threaded into a threaded part 1'*b* on the inner wall 1'*a* of the large-diameter portion 1'.

Numeral 7 designates gas vents formed in the upper part of the relatively large-diametered portion 1'. In the conventional automatic gun, the choke bearing portion is formed separately from the barrel and attached to said barrel by brazing or screwing to form an extension thereof. Therefore, it is unavoidable to form gas vents symmetrically in both the upper and lower parts or on the right and left sides of the choke bearing portion in such conventional type of gun, because a strong power of gas jets may damage the brazed or threaded part in case where the gas jets spurt out in only one direction. However, in the gun barrel of the present invention in which the relatively large-diametered portion 1' to incorporate the choke inside is formed integrally with the barrel body 1 there is no fear of breaking any brazed or threaded part, as a matter of course, and this enables the gas vents to open in only one direction viz formed in the substantially upper part of the relatively large-diametered portion. The gas jets adapted to spurt out upwardly from the thus formed gas vents effectively prevent the gun barrel from bouncing up at firing.

Referring to FIGS. 3, 4 and 5, there is illustrated another embodiment of this invention wherein the gas vents 7' are formed in two series symmetrically on both sides along the longitudinal central portion 8 in the upper half of the relatively large-diametered portion 1' of a barrel body 1, since they serve to prevent the aforementioned upward bounce of the barrel if they are provided anyway in the upper half of the barrel end.

In this embodiment, the means for securely holding the choke is formed integrally with a choke 5', and thus is different from the former embodiment wherein a separately provided threaded ring is employed. A threaded part 1'*b* is formed in the inner peripheral wall 1'*a* of the relatively large-diametered portion 1' as depicted in FIG. 4. In front of said threaded part 1'*b*, there is formed an inner peripheral wall 1'*c* having a larger diameter, to which a ring 9 having a plurality of ratchet recesses 9*a* is securely fitted. The choke 5' has a threaded part 5'*a* on the periphery thereof and a flange 5'*b* having near its periphery a hole 5'*c* with a small-diametered inner end portion 5'*f*. Inside said hole 5'*c* is inserted a pin 5'*g* having a head. The head of the pin 5'*g* is brought into an engagement with a shoulder formed between the hole 5'*c* and its small-diametered inner end portion 5' *f* by the action of a spring 5'*d* which is pressed by a screw 5'*e* screwed in the hole 5'*c* from the outside thereof. Thus, the end of the pin 5'*g* always projects out of the hole 5'*c* at its small-diametered inner end portion.

When the choke 5' with the flange 5'*b* is screwed completely into the muzzle in the barrel end, said pin 5'*g* is brought into a fixed engagement with one of the ratchet recesses 9*a* in the ring 9 thereby to check the returning or loosening rotation of the choke 5'.

As apparent from the foregoing description, the gun barrel according to this invention has such notable features that the total length of the barrel can always be constant and the replacement of chokes can be easily made without causing a change in the balance of said barrel.

Moreover, an undesirable bounce of the gun barrel is effectively prevented in this invention by forming the gas vents in only the upper part of the barrel.

What is claimed is:

1. A gun barrel, which comprises:

a gun barrel body having an integral, coaxial, relatively large-diameter portion at the forward end thereof, the inner peripheral wall of said relatively large-diameter portion having a first threaded wall part and a second wall part in front of said first wall part, said second wall part having a larger diameter than said first wall part and defining an enlarged recess;

a ring securely fitted in said recess and having a plurality of ratchet recesses therein;

a removable choke inside the muzzle end of said relatively large-diameter portion, said choke having on its periphery a threaded portion which is threadedly engaged with said threaded wall part, said choke having a flange on its forward end, said flange having near its periphery means defining a hole having a small diameter inner end portion adjacent said ring and a shoulder between said inner end portion and the remainder of said hole;

a pin disposed in said hole, said pin having a head engaging said shoulder and a small diameter end portion projecting into the inner end portion of said hole;

a spring disposed in said hole for urging the head of said pin against said shoulder and a screw threaded into the outer end of said hole for compressing the spring;

whereby when the choke is screwed completely into the muzzle end of the relatively large-diameter portion of the gun barrel body, the pin is brought into engagement with one of the ratchet recesses in the ring in order to prevent loosening rotation of the choke.

2. A gun barrel as claimed in claim 1, wherein gas vents are formed only in substantially the upper half of said relatively large-diametered portion to release gas jets therefrom only in the upward direction, thereby preventing an undesirable bounce of said barrel at firing.

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