

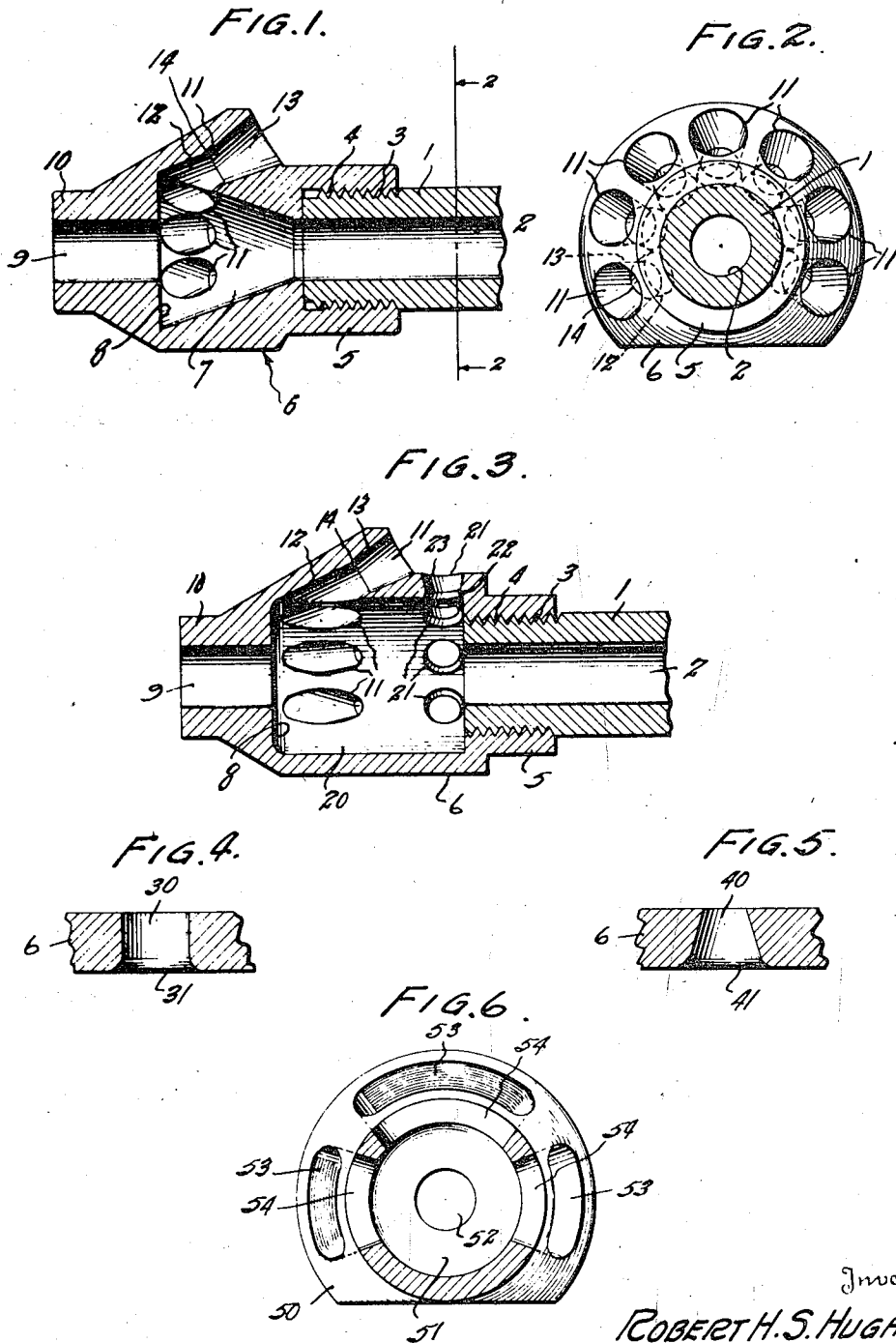
Aug. 27, 1940.

R. H. S. HUGHES

2,212,685

CONTROL DEVICE FOR CONTROL OF RECOIL

Filed March 22, 1937



Inventor

ROBERT H. S. HUGHES

By Lemmes & Lemmes

Attorney

UNITED STATES PATENT OFFICE

2,212,685

CONTROL DEVICE FOR CONTROL OF RECOIL

Robert H. S. Hughes, Baltimore, Md., assignor
of one-half to Milton Roberts, Baltimore, Md.

Application March 22, 1937, Serial No. 132,396

1 Claim. (Cl. 89—14)

My invention relates to recoil mechanism, and in particular to recoil mechanism for controlling the recoil of firearms.

My device is adapted for use with small caliber firearms or firearms of larger caliber, such as heavy artillery.

It is an object of my invention to increase the efficiency of recoil control.

Another object of my invention is to eliminate recoil where desired with a construction which will eliminate a high percentage of the entire recoil and yet which is easy and cheap to manufacture and sturdy and strong in construction.

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, 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 claim.

In order to make my invention more clearly understood, I have shown in the accompanying drawing 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.

In the drawing:

Figure 1 is a longitudinal sectional view taken through my recoil control applied to the muzzle of a firearm;

Fig. 2 is a view taken along the line 2—2 of Figure 1, looking in the direction of the arrows;

Fig. 3 is a view similar to Figure 1, showing a modification of my device;

Fig. 4 is a view showing a type of port which may be used, in which the inner end is faired or rounded;

Fig. 5 is a detail view of another type of port which may be employed, in which the port is tapered and which is provided with a rounded or faired end;

Fig. 6 is a view of a modification of my device, such view being taken on a line drawn through the secondary or auxiliary ports, and looking from the rear muzzle of the firearm.

Referring to the drawing, I have shown in Figure 1 a muzzle 1 of a gun having a bore 2 and external screw-threads 3. Fitting over the external screw-threads 3 are internal screw-threads 4 on a collar 5 of a recoil control 6. The recoil control 6 is formed with a combustion chamber 7 which has at its front a gas shoulder

8. In the gas shoulder 8 is formed a gas seal 9 which comprises a bore somewhat larger than the bore 2 of the firearm. The bore 9 of the gas seal extends through an extension 10 of the recoil control 6.

Leading into the combustion chamber 7 are a series of rearwardly directed ports 11 each comprising two sections 12 and 13. The sections 12 which lead directly into the combustion chamber 7 are enlarged at their inner ends and are tapered to a point 14. At the point 14 the ports 11 are expanded, as indicated by the drawing, see Figure 1. The ports 11 therefore form a Venturi type of construction which increases the velocity of the gases discharged from the ports 11, thus, under certain conditions of operation, considerably increasing the efficiency of the device.

The gas shoulder 8 is in general of such a size that its area substantially coincides with the base of the cone of free expanding gases in the combustion chamber 7.

In Figure 3 I have shown a device similar in certain parts of its construction to the device shown in Figure 1. Here the combustion chamber, which I have indicated by the numeral 20, is not a tapered chamber such as is shown at 7 in Figure 1. Leading into the combustion chamber 20 are auxiliary ports 21 which have a tapered lower portion 22 and a flared upper portion 23. These auxiliary ports are adapted to diminish the noise and the blast from the ports 11.

In Figure 4 is shown a type of port which I have indicated generally by the numeral 30. This port is provided with a faired or rounded inner end 31. This type of port may be employed at a position where the port 21 is shown in Figure 3, or may, in fact, be used as a main port. Also there is another type of port shown in Figure 5 which I have indicated generally by the numeral 40. This type of port is tapered and provided with an inner end 41 which is faired or rounded. The port 40 may be used either as a main port or an auxiliary port.

In Figure 6 I have shown a recoil control which I have generally indicated by the numeral 50 which is provided with a gas shoulder 51, a gas seal 52 and main ports 53 which expand from their inner ends towards their outer ends. These ports are arcuate in shape. Mounted to the rear of the arcuate main ports are auxiliary ports 54 which are arcuate in shape and adapted to lie directly behind the main ports 52 to diminish the noise and the blast.

In all of the forms of device shown in Figures

1 to 6, I may space my main and auxiliary ports around the recoil control so that the lower side of the recoil control is in general free of ports. This construction provides for minimization of climb, since there is a reaction downward from the ports at the top of the recoil control which is not balanced by any complemental upward force from ports at the bottom of the device, since ports are eliminated at the bottom side of the recoil control.

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 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 claim.

I claim:

A recoil controlling device for guns adapted to fire projectiles, comprising a body adapted for attachment to the muzzle of a gun barrel, said body having a cylindrical gas chamber therein and an inlet port and a seal port at the rear and forward ends of said chamber, respectively, and a shoulder extending laterally from the inner end of the seal port to the side wall of the chamber, and having a plurality of discharge ports extending rearwardly and outwardly from the forward part of the chamber adjacent the shoulder therein, and a series of baffle ports extending through the side wall of the chamber between the inlet end of the chamber and the rearward ends of the discharge ports, said discharge ports and baffle ports expanding in cross sectional area toward their outer ends.

ROBERT H. S. HUGHES.