Dec. 28, 1943. C. P. CAULKINS 2,337,647

GUN

Filed June 14, 1940

Fig. 1,

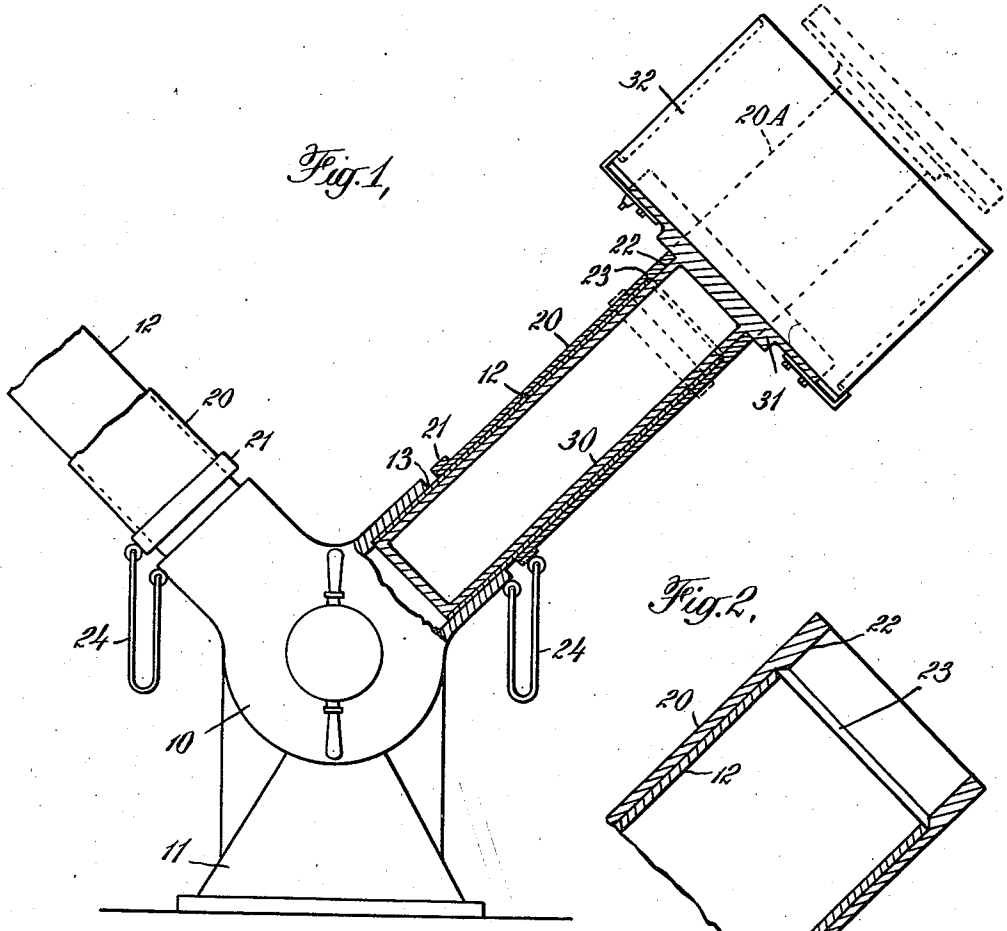
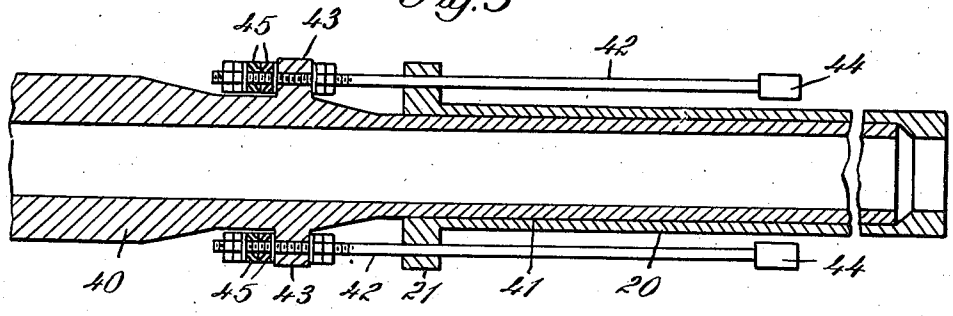


Fig. 2.

Fig. 3



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GUN

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Application June 14, 1940, Serial No. 340,459

2 Claims. (Cl. 89—1)

This invention relates to improvements in guns, and its object is to provide a telescopic gun barrel for the purpose of increasing the efficiency of the gun.

I will show an arrangement which embodies my invention applied to a gun of the type shown in United States Patent No. 1,311,780, issued to Andrew J. Stone July 27, 1919, commonly known as a Y gun, but obviously it is not limited to this specific use.

Referring to the drawing,

Fig. 1 is an elevation partly in section of a gun which is made according to and embodies my invention;

Fig. 2 is a sectional elevation on a larger scale of some of the parts shown in Fig. 1; and

Fig. 3 is a sectional elevation of a modified form of construction.

In Fig. 1, 10 designates a casing which forms an explosion chamber mounted on a pedestal 11. 12, 12 designate two barrels projecting from the casing and welded thereto at 13. The inner and outer surfaces of these barrels are smooth surfaces. On their outer surface sleeves 20 are slidably mounted. The inner ends of these sleeves are reinforced by collars 21. Their outer ends are thickened to form muzzle rings 22, the inner diameter of which corresponds with the bore of the barrels. The inner end of the muzzle rings is chamfered, as shown at 23. This chamfer forms gas pockets and also forms shoulders which limit the inward movement of the sleeves on the barrels. Means are provided for limiting the outward movement of the sleeves on the barrels, such as cables 24 shown in Fig. 1 connected to the casing 10 and to the collars 21.

The projectile comprises a hollow cylindrical stem 30 provided with a head 31 to which is secured a bomb 32.

When gas is injected into the explosion chamber under high pressure, as by the firing of a cartridge, a projectile is shot out of each barrel. A more complete description of this operation is in Patent No. 1,311,780, mentioned above.

One of the objects of this invention is to provide a Y gun of the type shown in the aforesaid patent, of minimum weight suitable for use on light high speed patrol boats. To this end I have provided the telescopically slidable sleeves herein disclosed. In the operation of a gun which embodies this improvement, some of the projectile propelling gases escape past the stem 30 into the gas pocket 23 and move the sleeve 20 outwardly. The frictional engagement of the stem with the muzzle ring also contributes to the force which moves the sleeve so that the sleeve reaches the position in which it is shown in dotted lines at 20A (Fig. 1) while the projectile is moving outwardly. The effective length of the barrel is thus lengthened, with a resultant increase of range, or the ability to throw a projectile a desired distance with a smaller powder charge. The powder is burned more completely and there is less muzzle flash or blast, less smoke emitted and the sound or noise of discharge is decreased. There is no change in the reaction as the resulting force on the gun mounting is not increased, in fact, this force is decreased when a smaller firing charge is used. The main barrel may be made shorter than usual and this keeps the center of gravity low and facilitates loading.

The invention has many advantages when applied to a rifle barrel. In Fig. 3 I have illustrated such an application. In this figure, 40 designates a rifle barrel, a portion of which has a cylindrical outer surface 41. A sleeve 20 is slidably mounted on this cylindrical surface. The means for limiting the outward movement of the sleeve is shown in this case as rods 42 passing through lugs 43 on the rifle barrel, and through holes in the reinforcing collar 21 on the inner end of the sleeve and terminating in enlarged heads 44. 45 are rubber buffers to take up the shock of the impact of the sleeve against the heads 44.

In this case the sleeve is moved outwardly by the gas which precedes the projectile. This gas centralizes the projectile as it passes through the part of the sleeve between the muzzle of the barrel 40 and the muzzle ring 22. A projectile leaving the muzzle of a rifle barrel, due to its rotation, does not immediately continue in a balanced straight line, as its balance is affected somewhat by the gases jetting from the muzzle. By the use of my invention this effect is minimized and the muzzle velocity of the projectile is increased due to the effective lengthening of the gun barrel by the extended sleeve.

It is within the scope of this invention to alter the construction so as to have the slidable sleeve inside the main barrel, and still other modifications may be made within the spirit and scope of this invention and I intend no limitations other than those imposed by the appended claims.

What I claim is:

1. A stationary gun barrel adapted to fire a projectile having a stem for insertion into the bore of the barrel, said gun barrel having a cylindrical outer surface extending to its muzzle, a

sleeve slidably mounted on said gun barrel and closely fitting the aforesaid cylindrical surface, means arranged to stop forward movement of the sleeve after it has traversed a major portion of the length of the barrel, a muzzle ring formed on the outer end of the sleeve and extending beyond the muzzle of the gun barrel, said muzzle ring being constructed with a bore substantially equal in diameter to the bore of the gun barrel and with a rearwardly inclined shoulder at its inner end which connects the bore of such part with the inner surface of the sleeve, the arrangement being such that the shoulder engages the muzzle end of the gun barrel to limit inward movement of the sleeve, and is exposed to the action of the gases of explosion in a manner to cause outward movement of the sleeve.

2. A stationary gun barrel adapted to fire a projectile having a stem for insertion into the bore of the barrel, said gun barrel having a cylindrical outer surface extending to its muzzle, a sleeve permanently mounted on said gun barrel and closely fitting the aforesaid cylindrical surface arranged to slide forwardly on the gun barrel to increase the effective length thereof, means arranged to stop forward movement of the sleeve after it has traversed a major portion of the length of the barrel, a muzzle ring formed on the outer end of the sleeve and extending beyond the muzzle of the gun barrel, said muzzle ring being constructed with a bore substantially equal in diameter to the bore of the gun barrel and arranged to fit the stem of the projectile and to have a rearwardly inclined shoulder at its inner end which connects the bore of such part with the inner surface of the sleeve, the arrangement being such that the shoulder engages the muzzle end of the gun barrel to limit inward movement of the sleeve, and is exposed to the action of the gases of explosion in a manner to cause outward movement of the sleeve.

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