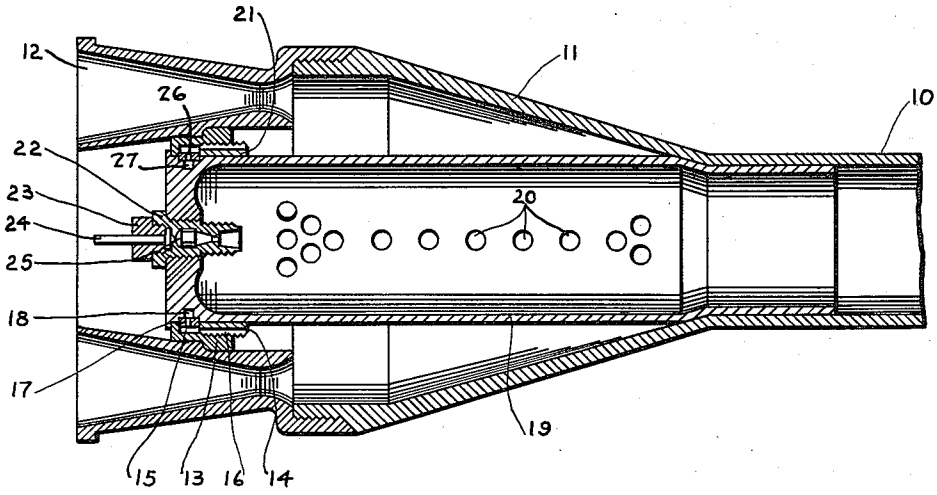
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SELF-EJECTING BREECH

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SELF-EJECTING BREECH

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2 Claims. (Cl. 89—1.7)

(Granted under Title 35, U.S. Code (1952), sec. 266)

The invention described herein may be manufactured and used by or for the Government for governmental purposes without the payment of any royalty thereon.

This invention relates to recoilless rifles, and more particularly to a recoilless rifle which dispenses with the customary breech mechanism and functions automatically to eject the shell of a spent cartridge. This has the advantage of a considerable reduction in the weight and manufacturing cost of the gun because of the simplicity of the means utilized to interlock the shell case with the rifle.

The invention is exemplified in connection with a rifle having a chamber at the breech end of which is a venturi in the form of an annulus. An annular member has its outer periphery sealed to the inner periphery of this annulus and has around its inner periphery a slot which communicates with the chamber. A split ring having radial perforations is arranged to protrude from this slot into a mating slot at the breech end of a cartridge case, this mating slot being stepped to provide an annular cavity under the ring. With this arrangement, the ring is expanded to release the case in response to the decrease in gas pressure which occurs between the firing of the gun and the separation of the projectile from the muzzle of the gun barrel.

The invention will be better understood from the following description considered in connection with the accompanying drawing and its scope is indicated by the appended claims.

The single figure of the drawing illustrates a recoilless gun having a barrel **10** and a chamber **11** which has at its breech end a venturi **12** in the form of an annulus. An annularly shaped adapter **13** is fastened to the inner periphery of this annulus and, together with a threaded ring **14**, forms a circumferential groove **15**. Extending from the chamber through the ring **14** to the groove **15** is a plurality of passageways **16**, and mounted in this groove is a split ring **17** which has a plurality of radial holes **26** around its circumference.

The illustrated gun is adapted to fire a cartridge having a case **19** which has a circumferential groove **18** at its

breech end. It will be noted that the circumferential groove **18** is stepped to receive the perforated split ring and to provide thereunder an annular cavity **27**. The case **19** has a plurality of perforations **20** and the cartridge is adapted to be fired electrically.

The firing mechanism includes an adapter nut **21**, a primer head **22**, a primer plug **23**, a firing pin **24** and an electric primer **25**.

As indicated above, release of the case of the spent cartridge is effected by means of the abrupt drop of pressure in the chamber when the projectile separates from the muzzle of the gun. Thus with the resultant reduced pressure around the outside of the split ring, the high pressure gas entrapped in the annular chamber under the split ring expands in volume and tends to escape through the holes **25** and between the ends of the split ring **17**. These escape exits however, are so small that the pressure in the cavity **27** expands the ring and releases the cartridge case. The residual pressure in the chamber then expels the cartridge case from the gun in a manner well known to those skilled in the art.

While the invention has been illustrated as applied to a particular form of gun, it will be understood by those skilled in the art that it is readily applicable to guns of various forms.

I claim:

1. The combination of a recoilless rifle and a cartridge case, said rifle including a barrel, a chamber fixed to the barrel, a chamber fixed to the breech end of said barrel, venturi forming means fixed to the breech end of said chamber and having a continuous interior circumferential surface, an annular structure having its outer periphery sealed to said surface and having around its inner periphery a circumferential groove communicating with said chamber, and cartridge locking means including a perforated split ring protruding into said groove, and said cartridge case having at its breech end a groove stepped to receive said ring and to provide thereunder an annular cavity open to said chamber through the perforations of said ring whereby the pressure reduction incident to the firing of said rifle operates to release and eject said case.

2. A combination according to claim 1 wherein said annular structure consists of an outer member and an inner member threaded into said outer member and perforated to form passageways between said groove and chamber.

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