Feb. 1, 1944. C. E. BALLEISEN 2,340,293

GAS CYLINDER UNIT FOR GUNS

Filed Nov. 5, 1941

Fig. 1.

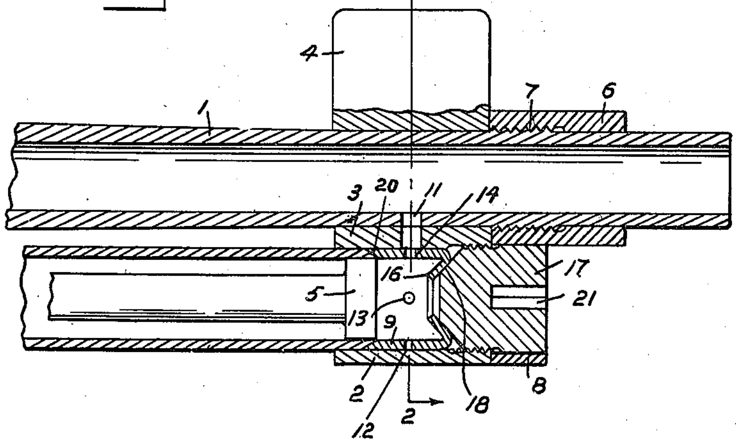


Fig. 2.

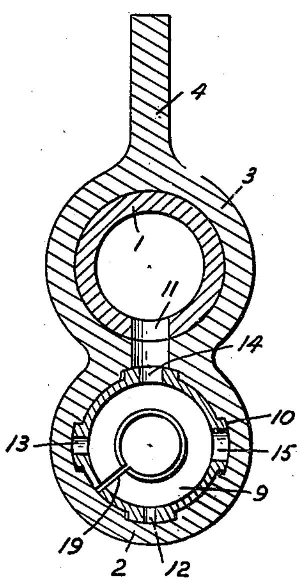


Fig. 3.

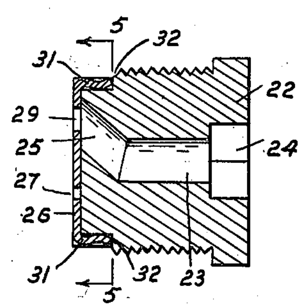


Fig. 4.

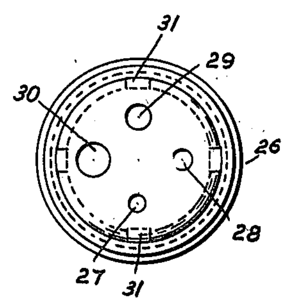
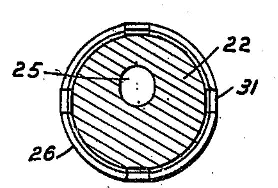


Fig. 5.



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Patented Feb. 1, 1944

2,340,293

UNITED STATES PATENT OFFICE

2,340,293

GAS CYLINDER UNIT FOR GUNS

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Application November 5, 1941, Serial No. 417,927

2 Claims. (Cl. 138—45)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

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

This invention relates to automatic guns in general and in particular to an element for regulating power input into a gas cylinder.

It has been noted that automatic guns although carefully regulated will, after a certain number of fired rounds, perform erratically. This is no doubt due to a variety of causes, but it has been found that compensation may be readily effected by providing for control of the input of the power which motivates the automatic action.

It is therefore an object of the invention to provide for regulation of the input of power into the automatic action of guns.

The specific nature of the invention as well as other objects and advantages thereof will clearly appear from a description of a preferred embodiment as shown in the accompanying drawing in which:

Figure 1 is an elevational view in axial section of the muzzle end of a gun.

Figure 2 is a section taken on the line 2—2 of Figure 1.

Figure 3 is an elevational view in axial section of a modification of a gas cylinder lock screw.

Figure 4 is a left side view of the lock screw of Figure 3, and

Figure 5 is a section taken on the line 5—5 of Figure 3.

Referring to the drawing by characters of reference, there is shown a gun barrel 1 and a gas cylinder 2 supported on the barrel by an upper loop 3 which also carries the front sight 4. A piston 5 in the cylinder transmits gas pressure to the automatic mechanism at the breach (not shown). A retaining nut 6 is threadedly attached to the barrel as at 7, and carries an extension 8 to cover the end of the gas cylinder 2.

A regulating sleeve 9 having splines 10 is received in the gas cylinder 2, which is provided with channels to receive the splines, the upper one aligned with an oversized gas port 11 in the barrel 1. In the sleeve 9 are openings 12, 13, 14, 15 of varying size for alignment selectively with the gas port 11 to modify the efflux of gases from the barrel. Conveniently these ports are shown as located in the splines, but they may be located elsewhere on the sleeve provided the splines or other holding means are so located as to align the sleeve ports with the barrel port as desired.

It is desirable to support the sleeve 9 against the gas pressures, and to this end an extremity is turned in as at 16 and placed under a radial pressure by means of a plug 17 with a bevelled basal perimeter 18. For this purpose, peripheral expansion is permitted by a slot 19 in the sleeve 9. In order to support the inner end of sleeve 9 against collapse, complementary bevels 20 are provided on the end of the sleeve 9 and the end of the piston tube 40 respectively.

The plug 17 is provided with a recess 21, here shown as square in section, for insertion of a turning tool. The plug may also be equipped with spanner holes.

To regulate, the plug 17 is removed. The sleeve 9 can then be slid out of the gas cylinder 2, rotated to the desired position and reinserted, followed by replacement of the plug 17.

In the modification of Figures 3, 4 and 5 the regulating means is carried by a plug 22 which will be carried in a lock nut similar to nut 6 of Figure 1. This regulating means will operate conversely to the type shown in Fig. 1 in that regulation is obtained by varying the sizes of ports, permitting escape of the gases to the atmosphere. Plug 22 has a through opening comprising an axial portion 23 countersunk as at 24 to provide for a form of tool insert, and a sloping inner portion 25. A regulating disk 26 having sized openings 27, 28, 29, 30 is carried on the inner face of the plug 22 by means of bent spring tongues 31 received in grooves 32 in the plug 22. The tongues and grooves are so located as to bring one of the sized openings in front of the face of the through passage in the plug. An opening is shown for each position of the disk.

To adjust the regulator of Figure 3 it is but necessary to remove the plug 22, slip off the disk 26, replace the disk in the desired position and replace the plug.

I claim:

1. A gas port regulator for use with a gun barrel having a gas port therein, said regulator comprising a cylinder having a port adapted for registry with said gas port, a ring in the cylinder provided with peripherally spaced ports of different sizes, means for positioning the ports in the ring selectively in registry with the port in the cylinder and to prevent the ring from turning, said means comprising coacting splines and grooves on the cylinder and on the ring compelling withdrawal of the ring for resetting.

2. A gas port regulator for use with a gun barrel having a gas port therein, comprising a cylinder having a port adapted for registry with said gas port, a ring in the cylinder provided with peripherally spaced ports of different sizes, means for positioning the ring ports selectively in registry with the port in the cylinder, means for preventing the ring from turning, and means for reinforcing the ring against inward pressure of the gases, said means comprising a closure plug having a bevelled end in the cylinder and a bevelled inturned end of the ring coacting with the bevelled end of the plug.

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