

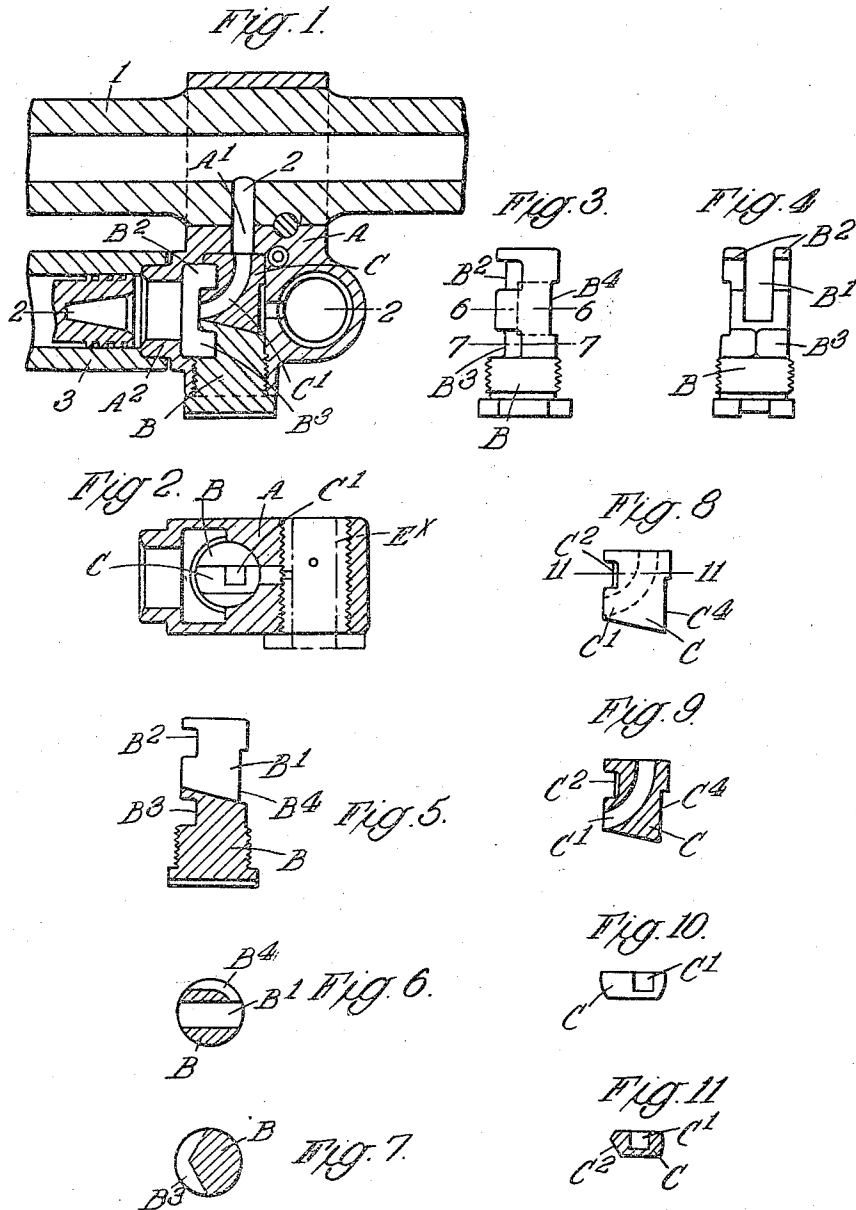
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GAS OPERATED MACHINE GUN AND AUTOMATIC SMALL ARM

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UNITED STATES PATENT OFFICE

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GAS OPERATED MACHINE GUN AND AUTOMATIC SMALL ARM

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This invention relates to machine guns and automatic small arms of the gas operated type. In such weapons as at present constructed there is what is known as a gas block containing a gas plug formed with passages which communicate with the operating cylinder for the breech mechanism and with the bore of the barrel through a port in the latter. This plug has heretofore been made in one piece and the passages have necessarily been of straight formation with one portion generally at right angles to the other, with the result that they are liable to become blocked with solid fouling matter contained in the gases of combustion from the bore of the barrel.

According to the present invention the gas plug is made in two parts, viz., a main part which is adapted to be secured in the block and a subsidiary part which fits into the main part and is provided with a curved gas passage in the form of a recess opening on to one of the faces of this subsidiary part. When the plug is in position in the block the upper end of the said recess communicates with a port in the block leading to the port in the barrel and the lower end of this passage communicates with the portion of the block to which the operating cylinder is attached. The said subsidiary part is preferably of flat formation and is disposed within a slot formed in the main part of the plug. It will be understood that when the subsidiary part is in position in the main part the gas passage is constituted by the three walls of the recess in the subsidiary part and by the contiguous wall of the slot in the main part.

In order that the said invention may be clearly understood and readily carried into effect, the same will now be described more fully with reference to the accompanying drawings, in which:—

Figure 1 is a vertical section showing a constructional form of composite gas plug according to this invention in position in a gas block carried by the gun barrel.

Figure 2 is a horizontal section of the gas block taken approximately on the line 2, 2 of Figure 1, the gas plug not being shown in section,

Figure 3 is a side view of the main part of the gas plug removed from the gas block,

Figure 4 is an end view of Figure 3,

Figure 5 is a vertical section of Figure 3,

Figures 6 and 7 are horizontal sections taken approximately on the lines 6, 6 and 7, 7 respectively of Figure 3,

Figure 8 is a side elevation of the subsidiary part of the gas plug removed from the main part,

Figure 9 is a vertical longitudinal section of the said subsidiary part,

Figure 10 is a plan of Figure 8, and

Figure 11 is a horizontal section taken approximately on the line 11, 11 of Figure 8.

A is the gas block the upper portion of which is in the form of a sleeve to surround the gun barrel 1 and the lower part has a recess to receive the gas plug. This recess terminates at its upper end in a port A¹ which registers with a port 2 formed in the gun barrel and at its left hand side, as drawn in Figure 1, the said recess communicates with the bore of the spigot portion A² which fits into the operating cylinder 3 for the breech mechanism. The said gas block is similar in its essentials to that described in prior English specification No. 252,429.

The gas plug is, as aforesaid, composed of two parts, viz., a main part B and a subsidiary part C. The said main part, which is adapted to be screwed into the recess in the block A, is formed with a diametrical slot B¹. The subsidiary part C is flat and constructed to fit closely within the slot B¹; it is formed on one of its faces with a curved recess C¹ one end of which terminates on its upper surface and the other end terminates on one of its end surfaces. The part C is inserted into the slot B¹ so that the end surface on which the curved recess C¹ terminates is directed towards the left of Figure 1 (i. e. towards the breech end of the barrel) and the composite plug is then inserted into the block A by screwing the main part B into the recess in the block. The curved passage through the gas plug for the flow of gases from the bore of the barrel to the operating cylinder is thus constituted by the three walls of the curved recess C¹ and by the contiguous

wall of the slot B¹. The said curved recess can conveniently be made by a milling operation.

The main part B of the gas plug is shown
 5 as being formed with recesses B², B³ for purposes similar to those of the corresponding recesses in the gas plug described in our aforesaid prior specification and the block A is formed with a hole A* for the reception of the
 10 customary regulating valve B* (shown in broken lines in Figure 2) to control the amount of gas to be admitted to the operating cylinder. A portion of the gases reaches this regulating valve by means of a recess B⁴ in
 15 the portion of the main part B between the recesses B², B³, the shape of the recess B⁴ being shown in Figure 6. The rear portion of the subsidiary part C is cut away (at C⁴) to coincide with the recess B⁴. The portion
 20 of the part C on which the lower end of the curved recess C¹ terminates, coincides with the portion of the main part B between the recesses B², B³ and the part C is cut away (at C²) above the portion thereof above referred
 25 to so as to coincide with the recess B². The part C has a sloping base and the bottom of the slot B¹ in the part B is similarly formed so as to ensure that the part C is placed in the slot the correct way round. It will be
 30 understood that the part C is held in position within the part B by its contact with the wall of the recess in the block A.

What we claim and desire to secure by Letters Patent of the United States is:—

35 1. For use in the gas block of a machine gun or automatic small arm of the gas operated type, a gas plug composed of a main part which is adapted to be secured in the gas block, and a subsidiary part which fits
 40 into the main part and is provided with a curved gas passage in the form of a recess opening on to one of the faces of said subsidiary part.

2. For use in the gas block of a machine
 45 gun or automatic small arm of the gas operated type, a gas plug composed of a main part which is adapted to be secured in the gas block and is formed with a slot, and a subsidiary part of flat formation which fits
 50 into said slot and is provided with a curved recess opening on to one of the faces of said subsidiary part, the gas passage being constituted by the three walls of the curved recess in the subsidiary part and by the contiguous wall of the slot in the main part.
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3. For use in a machine gun or automatic small arm of the gas operated type, the combination with the gas block, of a gas plug composed of a main part, means for securing
 60 said part in the gas block, and a subsidiary part which fits into the main part and is provided with a curved gas passage in the form of a recess opening on to one of the faces of said subsidiary part.

65 4. For use in a machine gun or automatic

small arm of the gas operated type, the combination with the gas block, of a gas plug composed of a main part formed with a slot, means for securing said part in the gas block, and a subsidiary part of flat formation which
 70 fits into said slot and is provided with a curved recess opening on to one of the faces of said subsidiary part, the gas passage being constituted by the three walls of the curved recess in the subsidiary part and by
 75 the contiguous wall of the slot in the main part.

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