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MACHINE GUN AND AUTOMATIC SMALL ARMS

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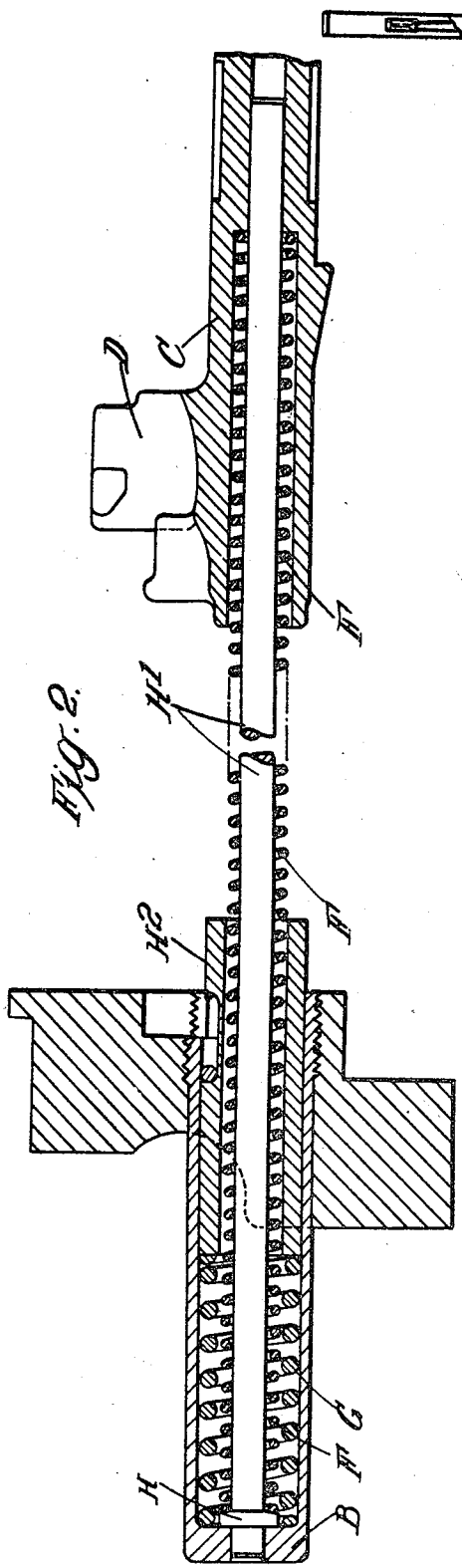

Fig. 2.

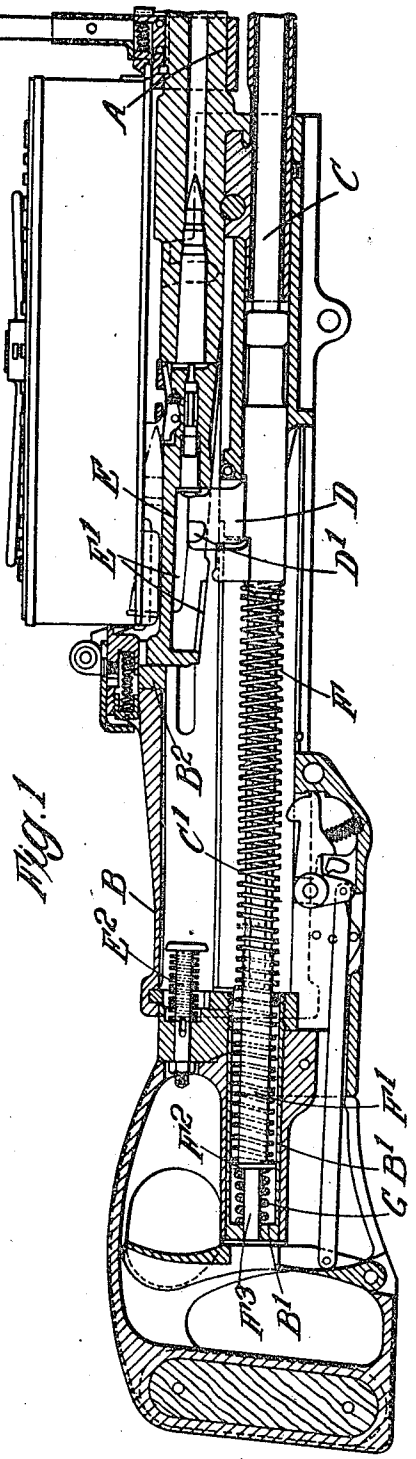

Fig. 1.

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UNITED STATES PATENT OFFICE

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MACHINE GUN AND AUTOMATIC SMALL ARMS

Application filed January 13, 1931, Serial No. 508,403, and in Great Britain February 10, 1930.

This invention relates to machine guns and automatic small arms of the gas operated type in which the operating piston connected to the breech mechanism moves rearwardly against the resistance of a helical recoil spring which reacts to move the mechanism to the forward or firing position.

The chief object of the present invention is to provide improved constructions of machine guns and automatic small arms of the above type in which a buffer spring is provided for absorbing excess recoil energy in the moving parts.

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 longitudinal section of the rear part of a gun provided with one constructional form of our improvements, and

Figure 2 is a longitudinal section of another constructional form of our improvements.

A is the gun barrel, B is part of the gun casing, C is the gas operated piston rod, D is the striker post carried by the said piston rod, E is the breech bolt which is rocked into and out of its engaging position with a portion B^2 of the gun casing by the co-operation of projections D^1 on the striker post with inclined or cam surfaces E^1 in the bolt as is well understood, F is the recoil spring and G is the buffer spring disposed behind and in line with the recoil spring F.

In the construction shown by Figure 1 the rear part of the recoil spring F surrounds a member F^1 slidably mounted in a part B^1 attached to the gun casing; the rear end of this spring bears against a collar F^2 on the said slidable member and its front end bears against the rear end of the operating piston rod C which has a key C^x on each side engaging in a guideway C^1 in the gun casing. The member F^1 has a rearward stem F^3 which passes through a hole in the rear wall of the part B^1 and the buffer spring G, which is made of stouter construction than the recoil spring F, is disposed around this stem with its front end in contact with the rear surface of the collar F^2 and its rear end in contact with the front surface of the rear wall of the part B^1. The front part of the member F′ projects a suitable distance beyond the front of the part B′ as shown.

During normal working the rearward movement of the piston rod C on firing the gun compresses the recoil spring F and the member F′ recedes slightly under the pressure of the recoil spring which is transmitted to the buffer spring G through the collar F^2 both these springs then re-acting to return the parts to the forward position. During such normal working the rear end of the piston rod C does not reach the projecting front end of the member F′. If, however, there should be excess energy in the moving parts during their rearward movement, the rear end of the piston rod C strikes the projecting end of the member F′ and the spring G thereupon comes into operation as a buffer spring. A separate buffer spring E^2 is provided for the breech bolt E.

In the modified construction according to Figure 2 the rear end of the recoil spring F is disposed within the buffer spring G and bears against a collar H on a guide rod H^1 for the former spring, the collar in turn bearing against the rear wall of the aforesaid part B^1. The rod H^1 fits within a hole in the piston rod C and the front end of the spring F enters the said piston rod and bears against a shoulder as shown. The rear end of the buffer spring G is in contact with the rear wall of the part B^1 and its front end bears against a collar or sleeve H^2 slidably carried by the said part with its front portion projecting therefrom as shown. Thus when there is excess energy in the recoiling parts the rear end of the piston rod C strikes the collar or sleeve H^2 and this brings the buffer spring G into operation.

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

1. In a machine gun or automatic small arm of the gas operated type, the combination with the breech mechanism, of an operating piston, a helical recoil spring which resists the rearward movement of the breech mecha-

nism and reacts to move the latter to the forward or firing position, a buffer spring of stouter construction than said recoil spring said buffer spring being arranged co-axially with respect to the recoil spring, a guide rod for said recoil spring the rear end of said rod bearing against a part attached to the gun casing, a collar on said rod the rear end of said recoil spring bearing against said collar, and a sleeve slidably carried by said part and bearing against said buffer spring which is arranged around the rear end of the recoil spring and with its rear end bearing against said part, the front end of said sleeve projecting beyond said part so that it can be moved rearward by the rear end of the rod of said operating piston in order to compress the buffer spring.

2. In a machine gun or automatic small arm of the gas operated type, the combination with the breech mechanism, of an operating piston rod for said mechanism, a helical recoil spring arranged behind and in line with the piston rod, a buffer spring of stouter construction than said recoil spring, said buffer spring being arranged behind and in line with said recoil spring, a slidable member, a collar on said member against the front surface of which the rear end of the recoil spring bears and against the rear surface of which the front end of the buffer spring bears, said member being arranged to be struck by the rear end of the operating piston rod when there is excess recoil energy in the moving parts, and a rearward stem on said member, said stem passing through the buffer spring and through a hole in a part attached to the gun casing.

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