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1,535,619

N. E. METHLIN

MULTIBARREL GUN

Filed July 8, 1924

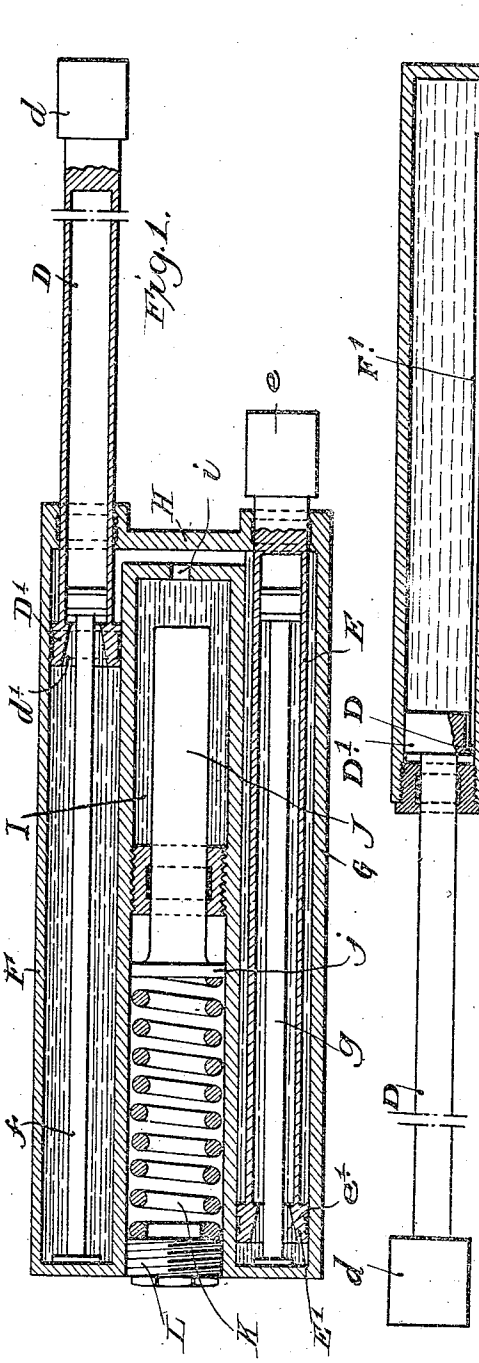


Fig. 1.

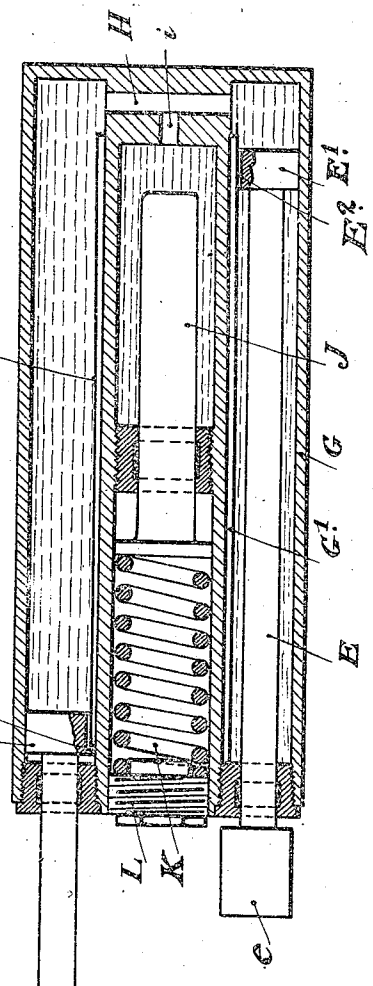


Fig. 2.

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# UNITED STATES PATENT OFFICE.

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## MULTIBARREL GUN.

Application filed July 8, 1924. Serial No. 724,871.

*To all whom it may concern:*

Be it known that I, NICOLAS EMILIEN METHLIN, a resident of Paris, France, have invented new and useful Improvements in Multibarrel Guns, which are fully set forth in the following specification.

This invention relates to multi-barrel guns and is an improvement on a construction shown in United States Patent No. 1,487,695 of March 18, 1924.

The gun described in said patent relates to multi-barrel guns comprising an even plurality of recoiling barrels, conjugated in pairs or in groups of equal numbers of barrels in such a manner that a part of the energy of the recoil of one of the two conjugated barrels or of one of the conjugated groups of barrels is utilized wholly or partially in a suitable recuperator for running-out the other conjugated barrel or conjugated groups of barrels, and vice versa, the conjugation being such as to allow of maintaining an approximately constant position of the centre of gravity of the whole of the movable parts of the gun during firing.

In one constructional form described in said patent, each of the recoil brakes of one of the gun barrels or of one group of gun barrels is in constant communication through an orifice or duct with the brake of the conjugated gun barrel or conjugated group of gun barrels. In other words the liquid that is forced into the brake cylinder, or is forced by the latter, during the recoil, in the brake of one of the barrels or group of barrels, instead of circulating in a closed circuit in this brake, is forced into the brake of the conjugated gun barrel or conjugated group of gun barrels; this said brake then acting as a recuperator for returning the conjugated gun barrel or group of conjugated gun barrels into battery position.

In that constructional form described and illustrated in Figs. 1 to 4 of said patent, the flow of the liquid from one of the brakes into the conjugated brake, in passing abruptly through the connecting duct between the two brakes, is liable to produce shocks detrimental to the stability and strength of the gun.

That drawback is obviated according to the present invention by arranging as a branch from the connecting duct between the two recuperator brakes, a hydraulic, hydro-pneumatic or other shock-absorber, which is also capable of assuring at all times a plenum of liquid in the two conjugated recuperator brakes and in their connecting duct, so as to maintain constant conditions of the recoil and returning into battery position of the conjugated barrels.

Two constructional forms of this improvement are illustrated by way of example in Figs. 1 and 2 of the accompanying drawings in which:—

Fig. 1 is a horizontal section of one form which the invention may assume and

Fig. 2 is a like section of a modified form of the invention.

The cylinders F and G are the cylinders formed in the common cradle. Each gun barrel is secured to a tubular piston rod D (E) respectively. Each rod D (E) terminates in a head $D^1$ ($E^1$) which is adapted to move liquid-tight in its respective cylinder and forms a diaphragm $d^1$, ($e^1$) around a counter-rod $f$ ($g$) engaged in the said tubular rod and carried by the end of the cylinder.

The tubular rod D is attached at its outer end $d$ to one of the gun barrels or group of gun barrels, whereas the tubular rod E is attached at its outer end $e$ to the conjugated gun barrel or conjugated group of gun barrels. The two cylinders F and G communicate with each other at their rear ends through a duct H.

According to the present invention any shock that might be produced by the abrupt forcing back of the liquid through the duct H is absorbed as a result of the connection of the said duct to a shock-absorber.

In the illustrated example this shock-absorber is constituted by a cylindrical or otherwise shaped reservoir I which may have common walls with the cylinders F and G, and in which there moves a plunger J whose outer head $j$ is subject to the action of a spring K, the initial stressing of which can be adjusted by means of a screwplug L.

Normally the plunger J has the position shown in the drawing, Figure 1. In the case of a too abrupt forcing back of the liquid through the duct H, the pressure which is transmitted through an orifice $i$ into the reservoir I, acts upon the plunger J which, being forced outwards, compresses the spring K.

The plunger J is, of course, returned into

its normal position by the expansion of the spring K which was compressed by the abrupt forcing out of the said plunger.

Should any loss of liquid occur, the expansion of the spring K, causes a greater inward penetration of the plunger J into the reservoir I, this increased penetration assuring a plenum of liquid throughout the inter-communicating chambers F, I, G and the orifices *i* and the connecting duct H.

Fig. 2 illustrates a modification which differs from the constructional form of Fig. 1, only in respect of the brake apparatus. In Fig. 2 the constriction of the flow of the liquid for braking purposes, instead of being produced in the known manner by means of a tubular piston and counter-rod, is here produced in a likewise known manner by means of a piston $D^1$ ($E^1$) having a slot $D^2$ ($E^2$) in its periphery adapted to slide along a bar $F^1$ ($G^1$) of suitable outline.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. In a device of the character described, the combination of a plurality of brake cylinders, a conduit connecting the rear ends of said cylinders, a reservoir in open communication with said conduit, and a shock-absorbing plunger in said reservoir.

2. In a device of the character described, the combination of a plurality of connected brake cylinders with a shock-absorber in operative relation with both cylinders.

3. In a device of the character described, the combination of a plurality of brake cylinders, a conduit connecting the rear ends of said cylinders, a reservoir in open communication with said conduit, a plunger projecting into said reservoir, and yielding means pressing said plunger inward.

4. In a device of the character described, the combination of a plurality of hydraulic brake cylinders, a conduit connecting the same, a hydraulic reservoir in open communication with said conduit, and a shock-absorbing plunger in said reservoir.

In testimony whereof I have signed this specification.

NICOLAS EMILIEN METHLIN.