

L. MERTENS.

MEANS FOR PREVENTING DISTORTION OF CARTRIDGE SHELLS.

APPLICATION FILED JULY 18, 1908.

898,908.

Patented Sept. 15, 1908.

Fig. 1.

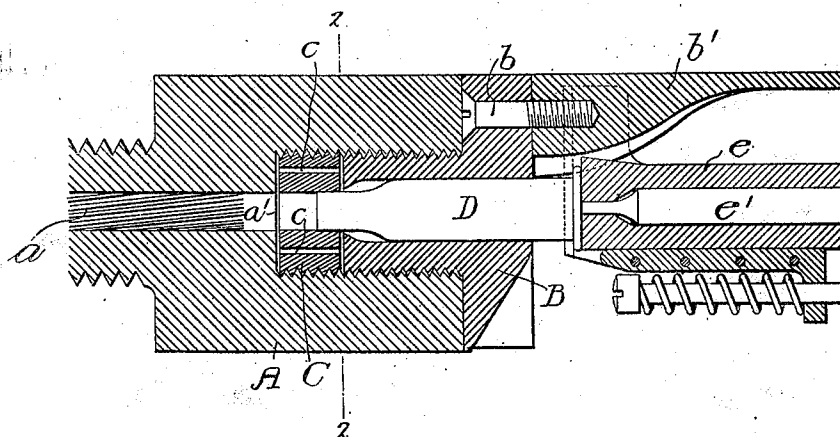
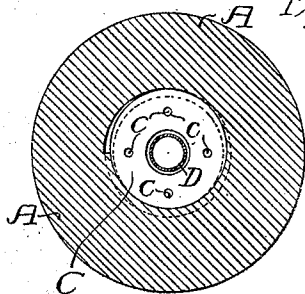


Fig. 2.



Witnesses:

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 Willis A. Burrows

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UNITED STATES PATENT OFFICE.

LUDWIG MERTENS, OF LONDON, ENGLAND.

MEANS FOR PREVENTING DISTORTION OF CARTRIDGE-SHELLS.

No. 898,908.

Specification of Letters Patent.

Patented Sept. 15, 1908.

Application filed July 18, 1908. Serial No. 444,161.

To all whom it may concern:

Be it known that I, LUDWIG MERTENS, a subject of the German Emperor, residing in London, England, have invented certain Improvements in Means for Preventing Distortion of Cartridge-Shells, of which the following is a specification.

In the operation of firearms using cartridges, and particularly those of the rapid fire automatic type, it has been found that the rapidity of action is such that the high gas pressures developed cause distortion of the cartridge shells, and also frequently result in their sticking in the barrel.

One object of my invention is to provide a firearm of such construction that distortion and sticking of the shells shall be prevented, and that by means of a relatively uncomplicated nature; it being thus possible to attain higher speeds of operation than would otherwise be the case. These objects and other advantageous ends I secure as hereinafter set forth, reference being had to the accompanying drawings, in which:—

Figure 1, is a vertical section of sufficient of the breech of a firearm to illustrate my invention, and Fig. 2, is a vertical section on the line 2—2, Fig. 1.

In the above drawings, A represents the rear end of the barrel or breech of a firearm, which in the present instance is of the automatic rapid fire type, such as is described and claimed in the U. S. Patent #891,778, issued to me June 23, 1908. The rear end of this breech is counterbored to provide a cylindrical recess of a diameter larger than the bore *a* and said recess is threaded for the reception of a correspondingly threaded block B, having a flange of substantially the same diameter as the barrel A.

Between the inner end of the threaded portion of the block B and the bottom of the recess into which it is screwed is a cylindrical piece C also threaded into the recess and so placed that there is a space communicating with the bore of the barrel between its front face and the bottom of said recess. This space or passage enters the bore *a* just in front of the forward end of the cartridge shell and there is a similar space or passage between the rear face of the piece C and the adjacent end of the block or plug B. This latter, as well as said piece C, is chambered for the reception of the cartridge shell D, and there are extending from face to face of said piece C any suitable number of holes or pas-

sages *c*, which thus connect the two above noted spaces.

Any desired mechanism may be employed for inserting and withdrawing a cartridge, and in the present instance I have illustrated the rear end of the cartridge as engaged by a portion *e* of a movable breech block through the center of which extends a firing pin *e'*. Connected by a screw *b* to the block B is a rearwardly extending cartridge guide *b'*, and in addition there are other parts illustrated which, being in no way connected with my present invention, will not be further referred to.

Under operating conditions, after a cartridge has been inserted in the block B of the barrel and the charge exploded in the well known manner, the pressure from the gases of such explosion is transmitted from the bore immediately in front of the cartridge, through the space *a'* between the piece C and the bottom of the recess formed in the rear end of the barrel A, through the passages *c*, and through the space between the rear face of the piece C and the adjacent end of the block B, into the space between the outside of the cartridge shell and the inside walls of the cartridge chamber in said block B. As a result, substantially equal pressures are exerted both within and outside of the cartridge shell, so that this latter is no way distorted, and there is no tendency to so force it against the walls of the chamber in which it is contained as to cause it to stick thereto. As a consequence of these results from this construction and arrangement of parts, it is possible to operate an automatic firearm at a much higher speed than would be otherwise attainable, and as is obvious, with a greatly increased accuracy and certainty of operation. Moreover, the strain and wear on the moving parts of the device are materially diminished.

While my invention is particularly adapted for use on automatically acting firearms, it is to be understood that it is by no means limited thereto, since it may be utilized with advantage both in other forms of infantry arms as well as in artillery.

I claim:—

1. A firearm having a cartridge chamber, means for exploding a cartridge therein, and means provided with passages placed to conduct gas from the bore of said firearm to the outside surface of a shell in said cartridge chamber so as to equalize the pressure within

and without said shell after the explosion of a charge.

2. The combination with the barrel of a firearm, of a chambered block fitting the end of the same, and means for exploding a cartridge inserted in the chamber of said block, with a structure having passages extending parallel with the bore of the firearm and connecting the chamber with said bore so as to equalize pressure inside and outside of the cartridge shell immediately after the cartridge has been fired.

3. The combination of a barrel having a threaded recess in its rear end, a piece threaded into said recess and spaced some distance from the bottom thereof, a block also threaded into the recess and spaced some distance away from said piece, there being a cartridge chamber extending through the block and the piece and a passage or passages through the piece connecting the spaces

adjacent to its two faces, with means for exploding a cartridge.

4. The combination in a firearm of a barrel having a recess in its rear end in line with its bore, a piece mounted in said recess having passages parallel to said bore, a block also entering the recess and having a chamber for the reception of a cartridge, said piece also having a central opening in line with the bore and cartridge chamber, there being passages leading respectively from the bore and the chamber to said parallel passages, with means for exploding a cartridge in said chamber.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

LUDWIG MERTENS.

Witnesses:

ZANIA SEGAL,

GILBERT FLETCHER TYSON.