(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 3 211 360 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
30.08.2017 Bulletin 2017/35

(51) Int Cl.:
F42B 5/26 *(2006.01)*

(21) Application number: **16460007.4**

(22) Date of filing: **24.02.2016**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
MA MD

(71) Applicant: **P.H. Michal Kuropatwa**
95-035 Ozorków (PL)

(72) Inventor: **BOCZKOWSKI, Gregorz**
05-091 Zabki (PL)

(74) Representative: **Kaminski, Zbigniew**
Kancelaria Patentowa,
Al. Jerozolimskie 101/18
02-011 Warszawa (PL)

(54) **SHELL CASE SEALING SYSTEM IN A HISTORICAL PERCUSSION FIREARM**

(57) The subject of invention is the shell case sealing in a historical percussion firearm, with return valve in a rear part of a shell case, characterized in that it is a re-usable return valve (1) sliding in a recess of a rear part (6) of a shell case (5), which is a cylindrical bushing (2) with a hole (10) and inner cut out (4) of conical shape with added sliding ball (3) to inside, wherein the hole (9) operating with a ball (3) is bearing the notches (7), positioned symmetrically versus axis of a shell casing.

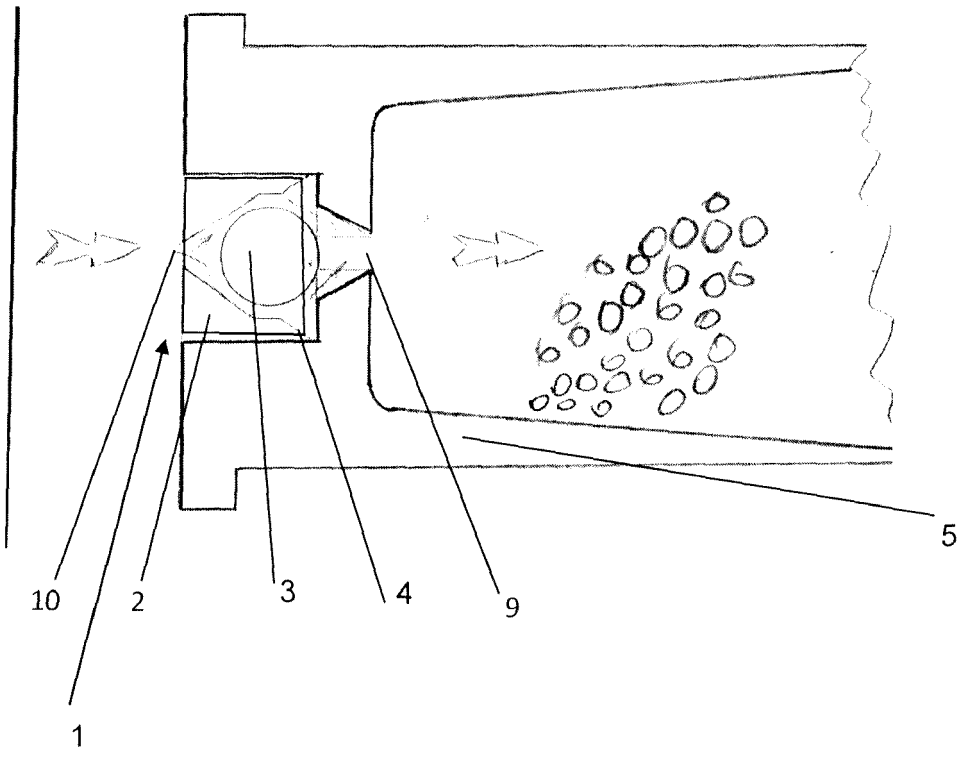

Fig.3

EP 3 211 360 A1

Description

[0001] The subject of the invention is sealing of a shell case in a historical firearm with percussion ignition system.

[0002] A bullet is fired by means of a percussion cap, which produces gases that are getting through a hole to an inside of a shell case.

[0003] There are known systems of the gun-lock / shell case sealig, manufactured by Sharps-doctor company under the name of HYDRAsystem, which are equipped with special flash channels.

[0004] Disadvantage of this solution is back-blow of gunpowder gases, which is leaving black powder residue on a gun-lock, deterioration of firearm efficiency and accuracy.

[0005] The purpose of the invention is to develop the system of shell case sealing in a way to eliminate the defects of the known solutions.

[0006] This purpose is implemented by shell case sealing in a historical percussion firearm, according to preamble No. 1 of the claim.

[0007] Thanks to the system of shell case sealing according to invention, the complete tightness of the gun-lock /shell case set is achieved, what guarantees full functionality and accuracy of a firearm.

[0008] The subject of invention is shown in an example of make on a figures, of which fig. 1 is showing in axial section the end of a shell case with visible notches, which are part of shell case sealing, and fig. 2 is showing the same end of shell case from fig. 1 but in a rear view, and fig. 3 same end of shell case with fixed return valve in a cross section, in a position before percussion cap explosion, and fig. 4 same end of shell case from fig. 3 in a position after firing the black powder charge.

[0009] The sealing, shown on four figures according to invention, consists of system solution made of a rear part 6 of a shell case 5 and return valve 1, which is put in a recess of rear part 6 of a shell case 5. In a hole 9 of rear part 6 of a shell case 5 are located angle notches 7 around flash hole 9 for gases (fig.1). These notches are conical and positioned symmetrically versus shell case axis (fig. 2). The return valve, which consists of bushing 2 and ball 3 is a reusable component and according to results of carried tests its wear could not be seen after firing 500 shots.

[0010] The second part of the sealing according to invention is return valve 1, which is a cylinder bushing 2 with a hole 10 and inner cut out 4 of cone-shape (fig. 3 and 4), with added sliding ball 3.

[0011] The bullet placed in a firearm is fired by means of a percussion cap(not visualized on figure) at the left side of a shell case 5 (fig. 3), of which gases are penetrating through a hole 10 in a bushing 2 of a return valve 1 of sealing and acting on ball 3, they are causing it to lean on hole 9 of a shell case. Then gases are penetrating deeper into inside of a shell case through notches 7, initiating ignition of the charge in a shell case (fig. 3).

[0012] As a result of gun powder ignition in a shell case 5 the gases going out from it are penetrating through notches 7 of a hole 9 to inside of a return valve 1, and acting on a ball 3 they are sliding it to opposite direction, finally causing it to lean on a conical surface of inner cut out 4 in a bushing 2 of return valve 1 (fig. 4). The ball 3 will be stuck in bushing 1, closing its hole 10, making flow out of gases impossible and as a result of it appears final secure sealing of a shell case.

[0013] In a different design solution of a sealing, the conical surface of inner cut out 4 of bushing 2 has an extra cylindrical cut out 8, which causes further stuck of ball 3 in a bushing 4 (fig. 4).

[0014] The advantage of a solution according to invention is complete sealing of a historical percussion firearm, what as a result is increasing its efficiency, allowing to achieve repeatability of shots, which was not possible because of frequent jams of mechanisms of a firearm because of much black powder residue. Earlier solutions of this kind did not ensure 100% sealing and have complex design. After firing 500 test shots using the bullets with sealing system according to invention neither misfires nor jams were observed.

[0015] Index of markings:

1	return valve
2	bushing
3	ball
4	cut out
5	shell case
6	rear part of shell case
7	notches
8	cut out
9	hole
10	hole

Claims

1. The shell case sealing in a historical percussion firearm with return valve located in a rear part of shell case, **characterized in that** it consists of reusable return valve (1) slide in a recess of rear part (6) of a shell case (5), which is a cylindrical bushing (2) with hole (10) and inner cut out (4) of conical shape, with added sliding ball (3) to inside, wherein the hole (9) operating with a ball (3) is bearing the notches (7) positioned symmetrically versus axis of a shell case.

2. The sealing according to claim 1, **characterized in that** the number of notches (7) symmetrical versus axis of a shell case (5) is unrestricted.

3. The sealing according to claim 1, **characterized in that** the conical surface of inner cut out (4) of a bushing (2) has an extra cylindrical cut out (8).

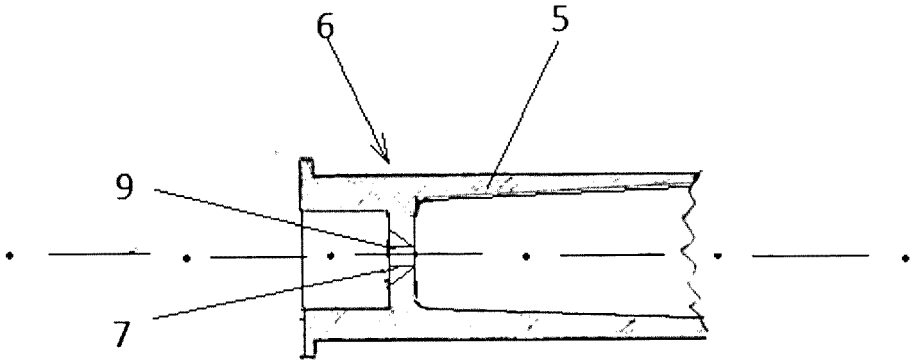

Fig.1

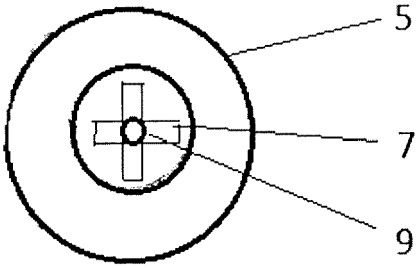

Fig.2

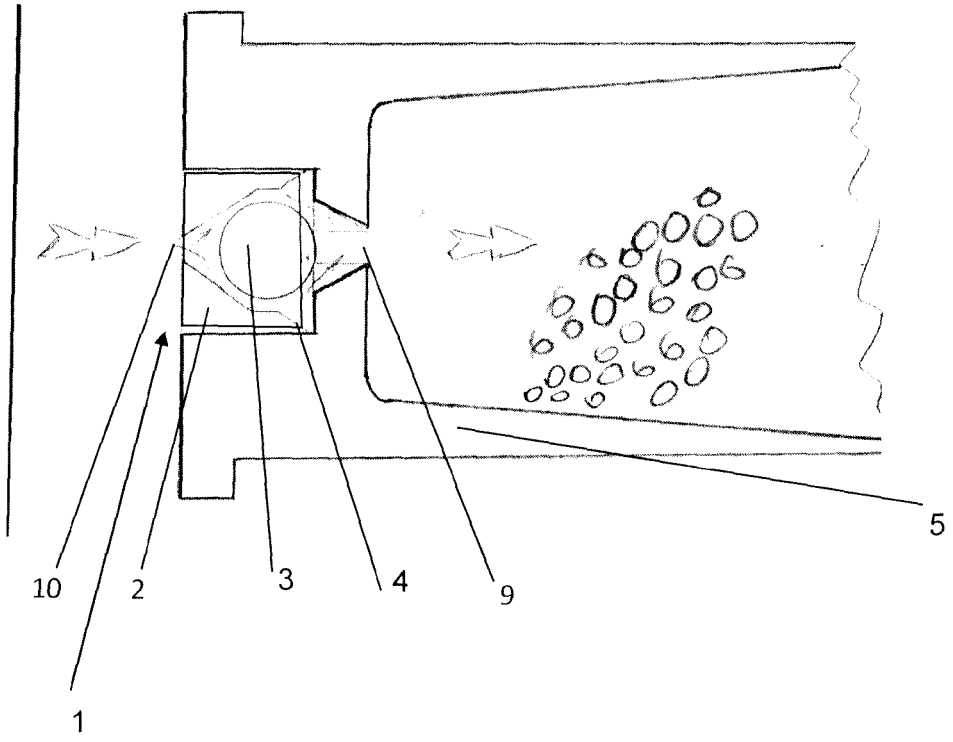

Fig.3

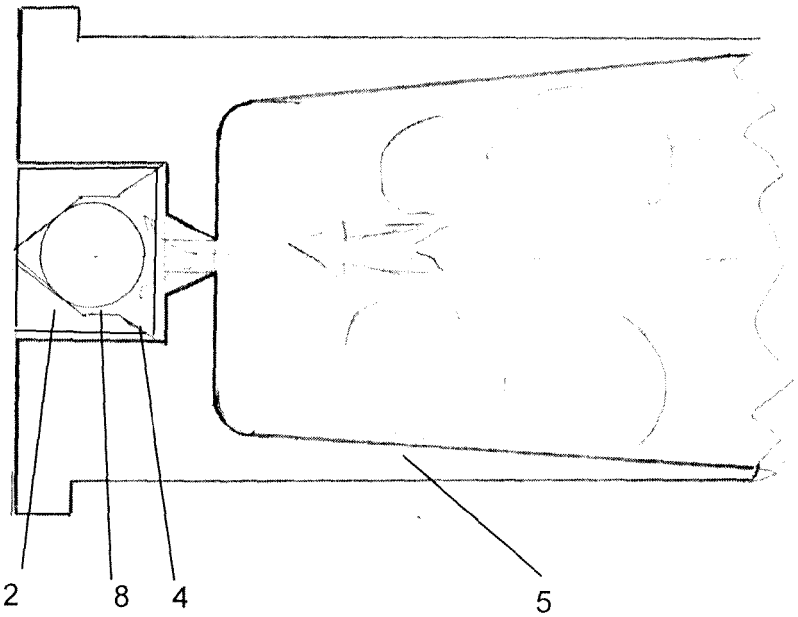

Fig.4

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 16 46 0007

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 158 494 A (B. HOTCHKISS [US]) 5 January 1875 (1875-01-05) * page 1 - page 2; claim 1; figures 1-4 *	1	INV. F42B5/26
A	US 3 760 729 A (FREEMAN D) 25 September 1973 (1973-09-25) * column 4, line 60 - column 5, line 4; figure 4 *	1	
A	EP 0 499 332 A1 (SAXBY MICHAEL ERNEST [NL]) 19 August 1992 (1992-08-19) * claim 1; figures 1-4 *	1	

TECHNICAL FIELDS SEARCHED (IPC)

F42B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	25 July 2016	Beaufumé, Cédric

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 16 46 0007

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

25-07-2016

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 158494 A	05-01-1875	NONE	
US 3760729 A	25-09-1973	NONE	
EP 0499332 A1	19-08-1992	AT 122453 T	15-05-1995
		CA 2061155 A1	15-08-1992
		DE 69202355 D1	14-06-1995
		DE 69202355 T2	18-01-1996
		EP 0499332 A1	19-08-1992
		ES 2074325 T3	01-09-1995
		NL 9100257 A	01-09-1992
		US 5187323 A	16-02-1993

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82