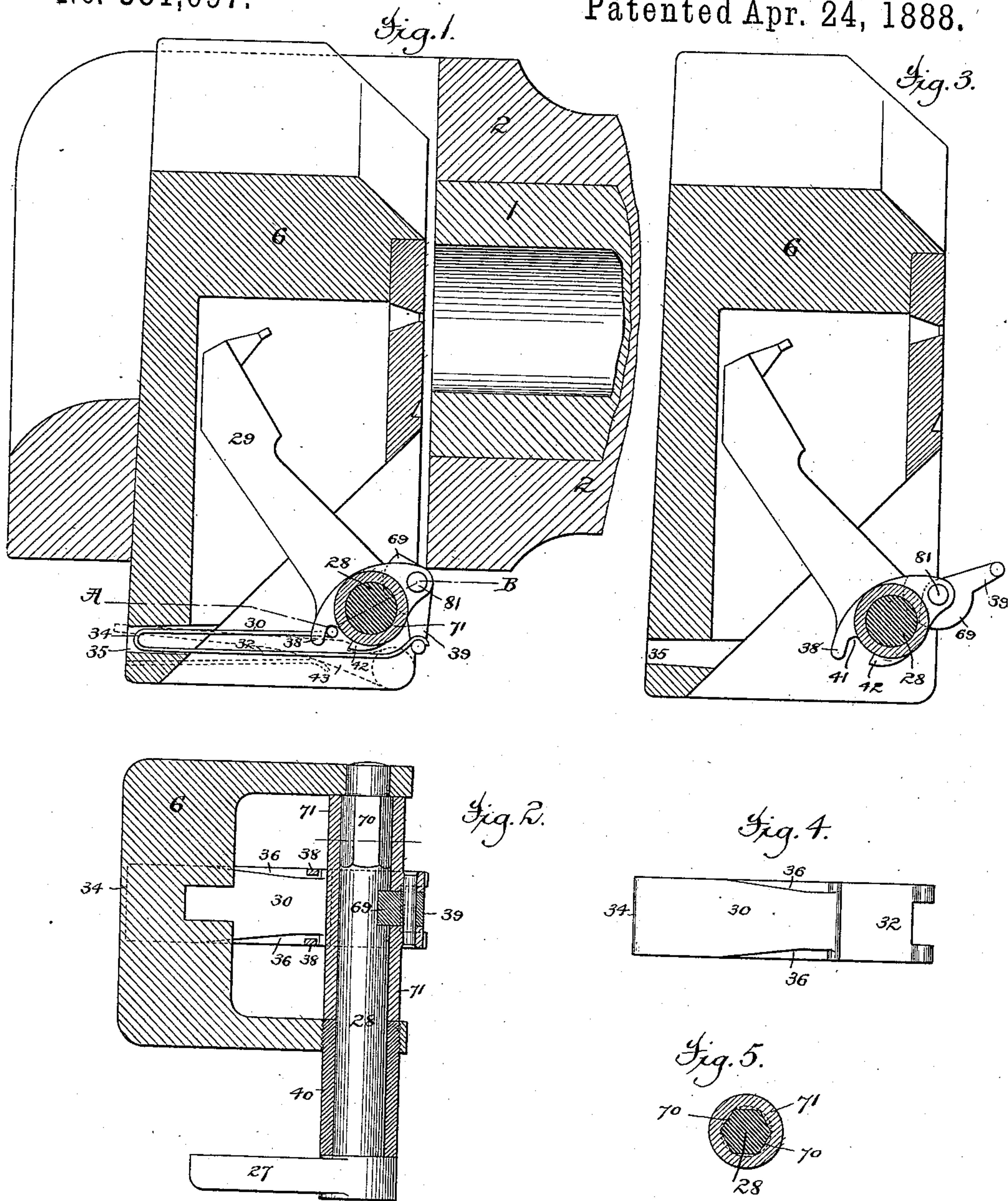


(No Model.)

B. B. HOTCHKISS, Dec'd.  
M. H. HOTCHKISS & B. C. GULLIVER, Administrators.  
BREECH LOADING ORDNANCE.

No. 381,697.

Patented Apr. 24, 1888.



Attest:

Geo. H. Graham  
A. N. Jasbera

*Inventor:*

Benjamin B. Ketchikan  
By Messrs. Philipp  
Attys.



# UNITED STATES PATENT OFFICE.

BENJAMIN B. HOTCHKISS, OF PARIS, FRANCE; MARIA H. HOTCHKISS AND BENJAMIN C. GULLIVER, ADMINISTRATORS OF BENJAMIN B. HOTCHKISS, DECEASED, ASSIGNORS TO THE HOTCHKISS ORDNANCE COMPANY, OF LONDON, ENGLAND.

## BREECH-LOADING ORDNANCE.

SPECIFICATION forming part of Letters Patent No. 381,697, dated April 24, 1888.

Application filed April 18, 1884. Serial No. 123,393. (No model.)

*To all whom it may concern:*

Be it known that I, BENJAMIN B. HOTCHKISS, a citizen of the United States, residing in the city of Paris, Republic of France, have  
5 invented certain new and useful Improvements in Breech-Loading Cannon, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

10 This invention relates to breech-loading cannon; and it consists of improvements particularly applicable to that class of breech-loading cannon for which I obtained Letters Patent in the United States, No. 270,953, granted Jan-  
15 uary 23, 1883; but it is also applicable to other systems of guns with a wedge action.

The improvements have reference, in the first place, to a novel construction of mainspring and its adaptation for imparting the percus-  
20 sive motion to the spring-hammer, with the view of diminishing the friction usually exerted on its spindle or rocking shaft, which friction is not only injurious, but detracts from the force of the impact of the hammer. To  
25 this end, I have devised a double-acting spring so constructed and arranged that it acts equally on opposite sides of the said spindle or shaft, which latter, being thus equilibrated, annuls  
30 all undue friction on the same; and, further, this spring is not attached in any way to the sliding block, its extremity being simply inserted in a recess made in the block, which thus serves to maintain it in its proper posi-  
35 tion, and under these circumstances its entire energy is made available for the blow of the hammer.

In the second place, the improvements embrace a novel construction of parts for connecting and disconnecting the hammer and its  
40 spindle or rocking shaft without the use of any special instruments, tools, or screws.

These improvements are more particularly hereinafter described and specifically named.

In the accompanying drawings I have shown  
45 such parts of a breech-loading cannon as is sufficient for the illustration and comprehension of the present improvements.

Figure 1 is a longitudinal sectional eleva-

tion of a breech and sliding breech-block of a cannon embodying my improvements. Fig. 50  
2 is a horizontal sectional view of the breech-block on the line A B, Fig. 1. Fig. 3 is a central sectional elevation of the breech-block, the main spring being removed and the connecting-link turned up in order to withdraw  
55 the hammer, spindle, or rocking shaft. Fig. 4 is a plan of the mainspring operating the hammer. Fig. 5 is a sectional elevation of the spindle or shaft of the hammer, showing the means for connecting said shaft and its  
60 tubular hub.

Reference to the aforesaid patent renders a particular description of the construction and operation of most of the parts unnecessary here; but in aid of such reference like parts  
65 are herein designated by corresponding references.

The sliding breech-block or wedge of the cannon, which is alternately raised and lowered in manner and by means of the device referred  
70 to in the aforesaid Letters Patent, is marked 6. The barrel is marked 1, and the breech-piece 2. The hammer-spindle or rocking shaft 28 is supported at one end in a bearing made in the breech-block 2 and at the other end in  
75 a tubular bearing, 40, screwed into the said block. The hammer 29 is provided with a tubular hub, 71, which is slipped over the spindle or shaft 28, the interior of which hub is six-  
80 sided, square, or otherwise given a polygonal-shaped seat at one end, in which the six-sided, square, or appropriately-shaped part 70 of the shaft 28, corresponding with the six-sided, square, or polygonal opening or seat made in the corresponding part of the tubular hub 71,  
85 engages, so as to establish a fixed connection between the said hammer and its spindle or shaft 28.

The mainspring consists of two arms, 30 32, united at their rear end, 34, which end is simply entered into an orifice, 35, cut in the breech-  
90 block 2. (See Figs. 1 and 3.) The forward end of the upper arm, 30, bears against and presses upward on a shoulder, 41, at the base of the hammer, while the forward end of the  
95 lower arm, 32, bears on the end of and presses



downward upon a link, 39, which is pivoted on a boss provided on the side of the hammer opposite the shoulder 41. The arm 30 of the spring is slightly cut away on each side at 36 5 36 for the reception of two ears, 38 38, that depend at each side below the shoulder 41, and which serve as guides to maintain the spring in position laterally, while the outer end of the arm 32 of the spring is bifurcated to form a 10 central recess for the passage of the arm of the link 39. The lever for drawing back the hammer is marked 27. The catch for the sear on the under side of the hammer-tube is marked 42. The sear is marked 43, and its spring is 15 marked 90. These three last-named parts, which may be of any appropriate construction, are shown in dotted lines in Fig. 1. In this figure the hammer is represented cocked, ready for firing. The trigger being drawn, the ham- 20 mer is released, and by the impulsion of the double spring 30 32 it strikes the cartridge with the full force of the double spring unimpeded by undue strain or friction. The link 39, the tail of which is acted on by the branch 25 32 of the mainspring, as above described, is the mechanical part or agent for connecting the hammer and its shaft. As shown in Fig. 1, these parts are shown as connected, and in Fig. 3 as disconnected. It consists of a small 30 lever hung at 81 in the boss projecting from the tubular hub 71 of the hammer, and it is provided with a segment-block, 69, which bears in a corresponding recess cut in the spindle or shaft 28. (See Figs. 1 and 2.) When the 35 parts have to be disconnected, the end of the spring 32 is first raised out of engagement with the tail of the link, and the latter is then turned about one-quarter of a revolution in its bearing, as shown in Fig. 3, whereupon the 40 spring 30 32 can be withdrawn forward from below. Then the spindle 28 may be drawn out laterally, when the hammer 29 may be removed.

The above-mentioned parts are replaced 45 and reconnected by following the reverse order of the manipulations.

Having now particularly described and as-

certained the nature of the said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In a cannon having a sliding breech-block, the combination, with the hammer, of a mainspring having one arm connected to the hammer in front of its axis and the other arm connected to the hammer in the rear of its axis, substantially as described. 50 55

2. The combination, with the breech-block, its recess 35, and the hammer 29, of the two-armed mainspring 30 32, one each of which arms is connected to the hammer at opposite 60 sides of its axis, substantially as described.

3. The combination, with the hammer having ears 38 38, for engagement with a spring, of the spring-arm 30, having removed parts, as at 36 36, adapting its end to be engaged by 65 the ears of the hammer, whereby said spring is maintained laterally, substantially as described.

4. The hammer 29, connected and supported relatively to its spindle or shaft 28 by means 70 of the polygonal seat in its tubular hub 71 and correspondingly-shaped portion 70 of the shaft 28, substantially as described.

5. The combination, with the tubular hub, of the hammer having an interior polygonal 75 seat, of its shaft 28, having a correspondingly-shaped part, 70, engaging with said seat, and the tubular bearing 40, surrounding one end of said shaft, substantially as described.

6. The combination, with the hammer-shaft 80 provided with the recess and the handle for cocking the hammer, of the hammer mounted to turn upon said shaft, and the swinging segment block 39, pivoted upon the hammer and arranged to engage with said recess to lock 85 the hammer and be disengaged therefrom to release the hammer, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

B. B. HOTCHKISS.

Witnesses:

R. H. BRANDON,  
JOHN LEMKE.

Correction in Letters Patent No. 381,697.

It is hereby certified that in Letters Patent No. 381,697, granted April 24, 1888 upon the application of Benjamin B. Hotchkiss, of Paris, France, for an improvement in "Breech-Loading Ordnance," an error appears requiring correction, as follows: The name of the administrator of the estate of said Hotchkiss, deceased, is written and printed "Benjamin C. Gulliver," whereas said name should have been written and printed *William C. Gulliver*; and that the Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 15th day of May, A. D. 1888.

[SEAL.]

H. L. MULDROW,

*First Assistant Secretary of the Interior*

Countersigned:

BENTON J. HALL,

*Commissioner of Patents.*