3 Sheets--Sheet 1.

# B. B. HOTCHKISS.

## Improvement in Machine or Battery-Guns.

No. 130,501. Patented Aug. 13, 1872.

Fig. 1.

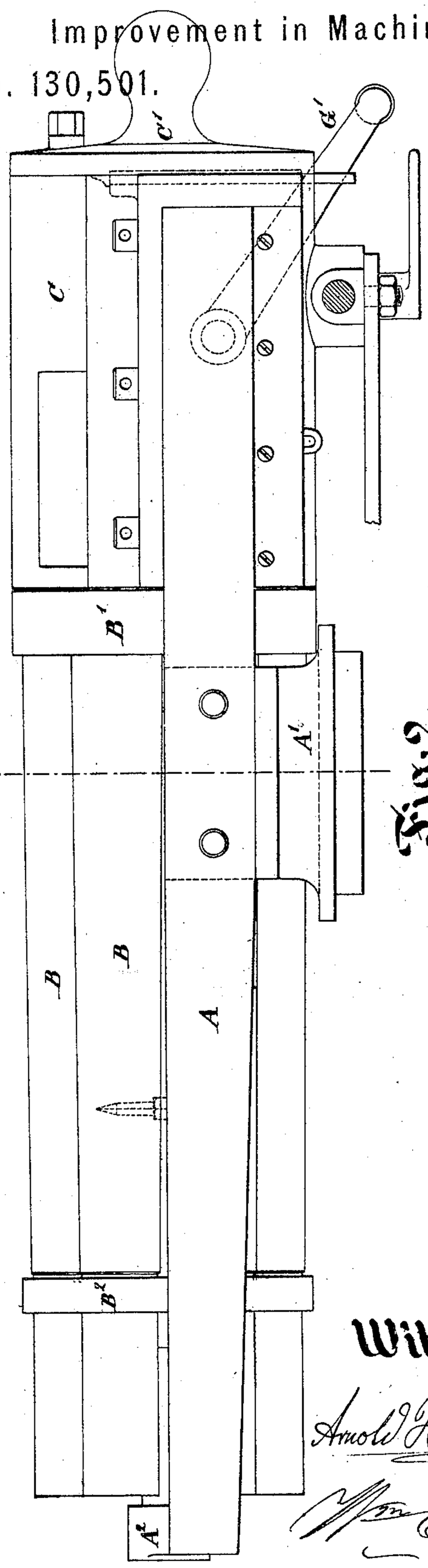
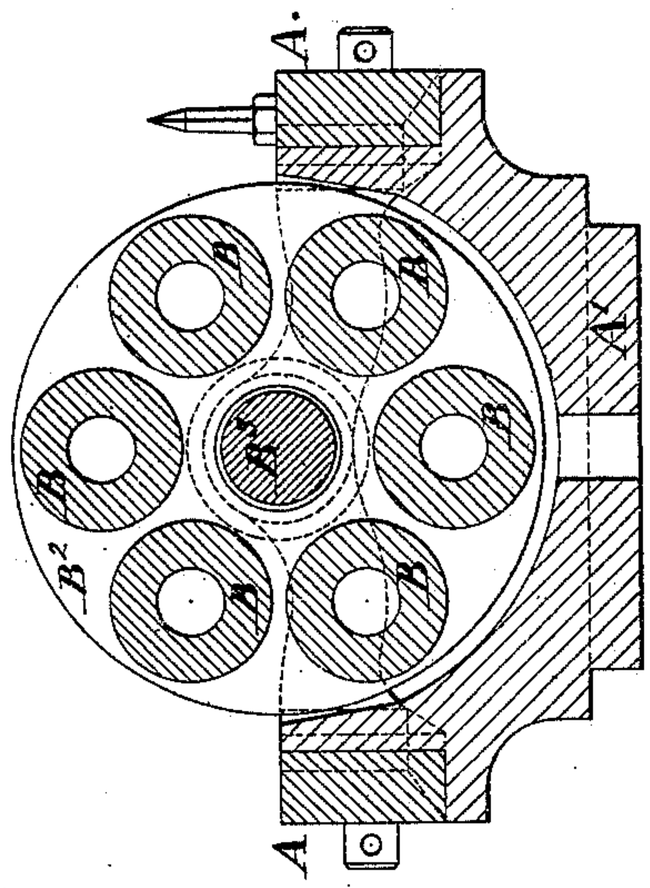



Fig. 2.




Witnesses:

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Wm. C. Dey

Inventor:

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by his attorney

D. Sutton

3 Sheets--Sheet 2.

# B. B. HOTCHKISS.

## Improvement in Machine or Battery-Guns.

No. 130,501. Patented Aug. 13, 1872.

Fig: 3.

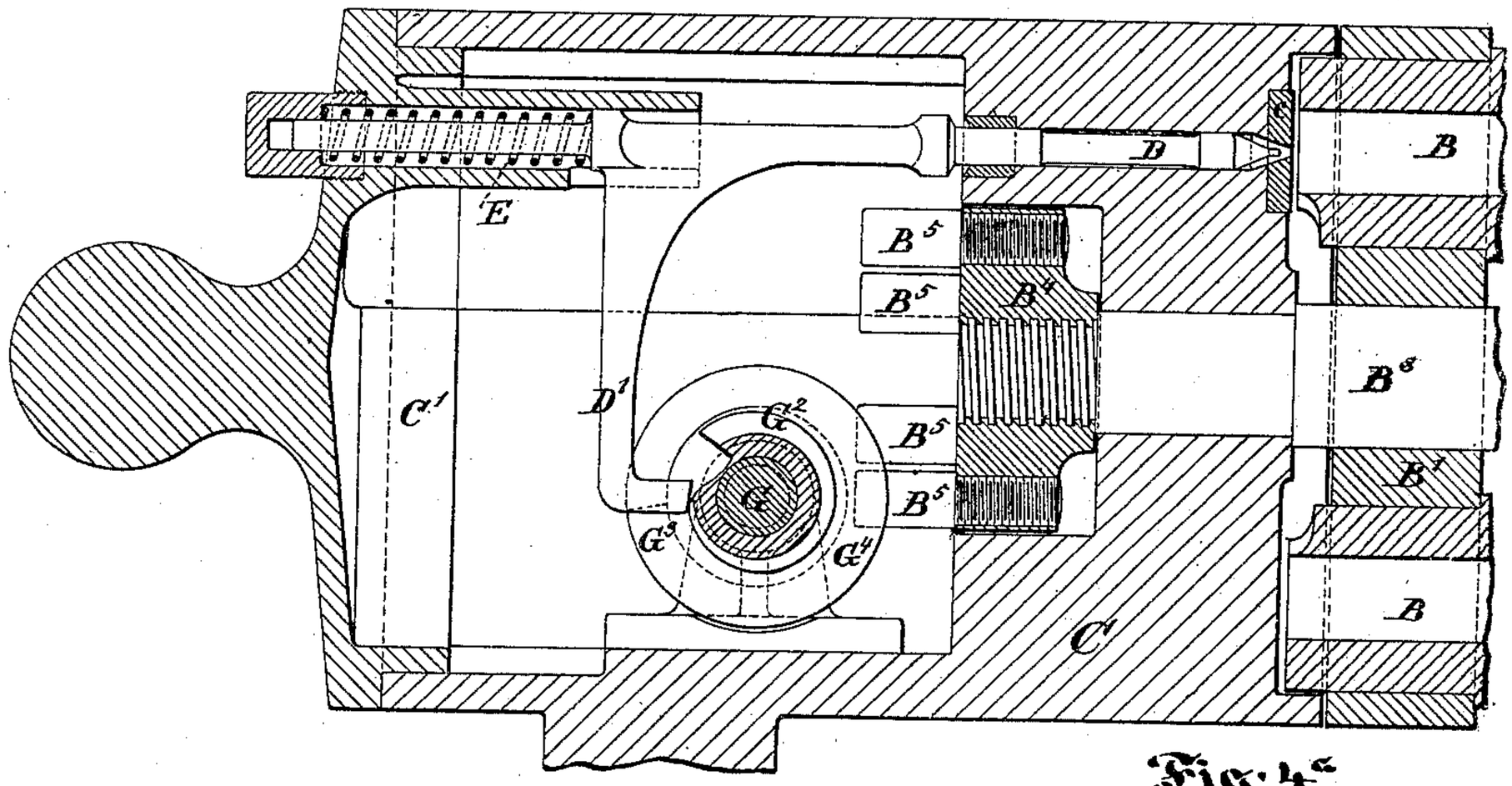



Fig: 4,

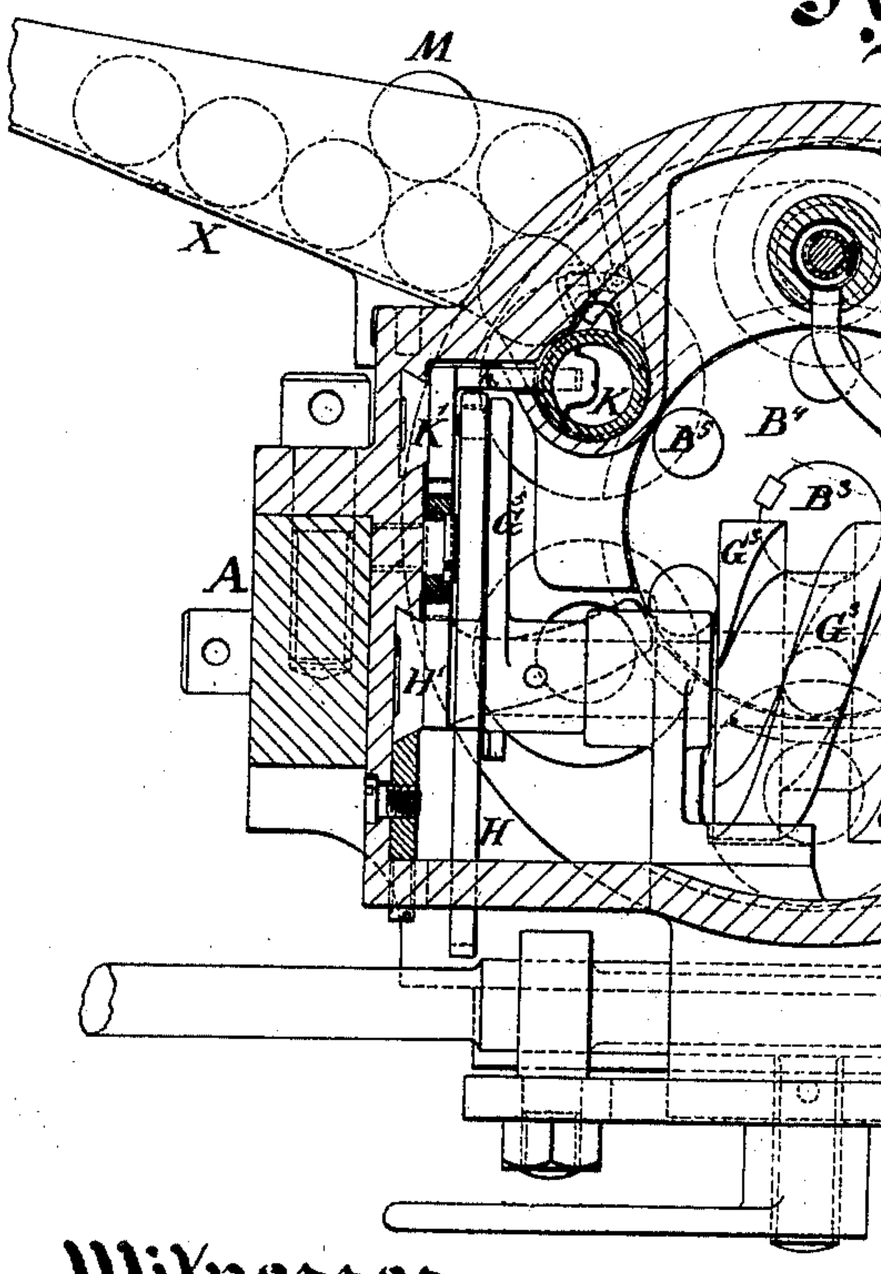
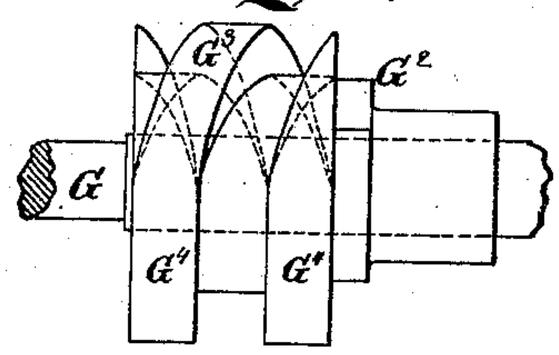



Fig: 4a,

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3 Sheets--Sheet 3.

# B. B. HOTCHKISS.

## Improvement in Machine or Battery-Guns.

No. 130,501. Patented Aug. 13, 1872.

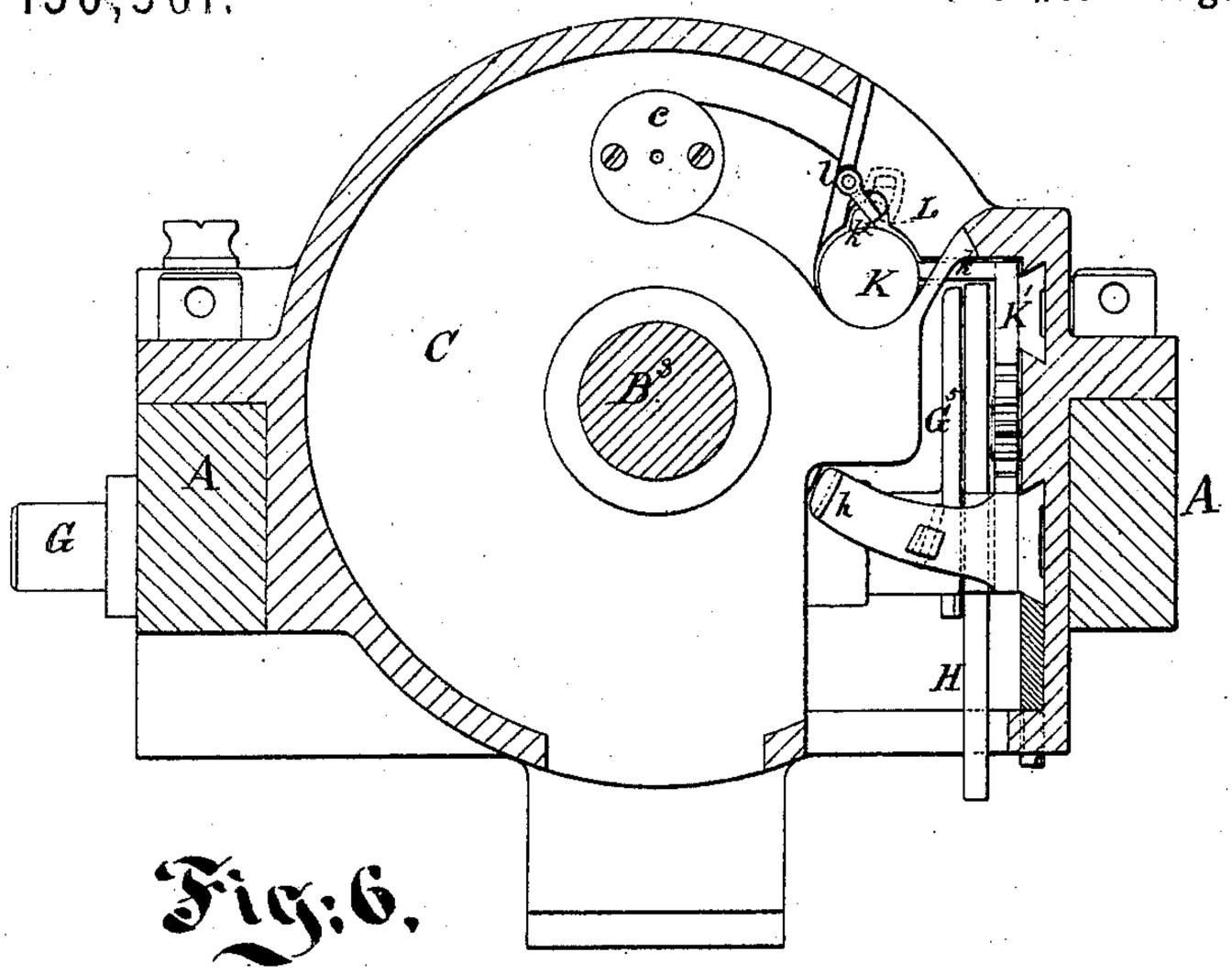



Fig: 6.

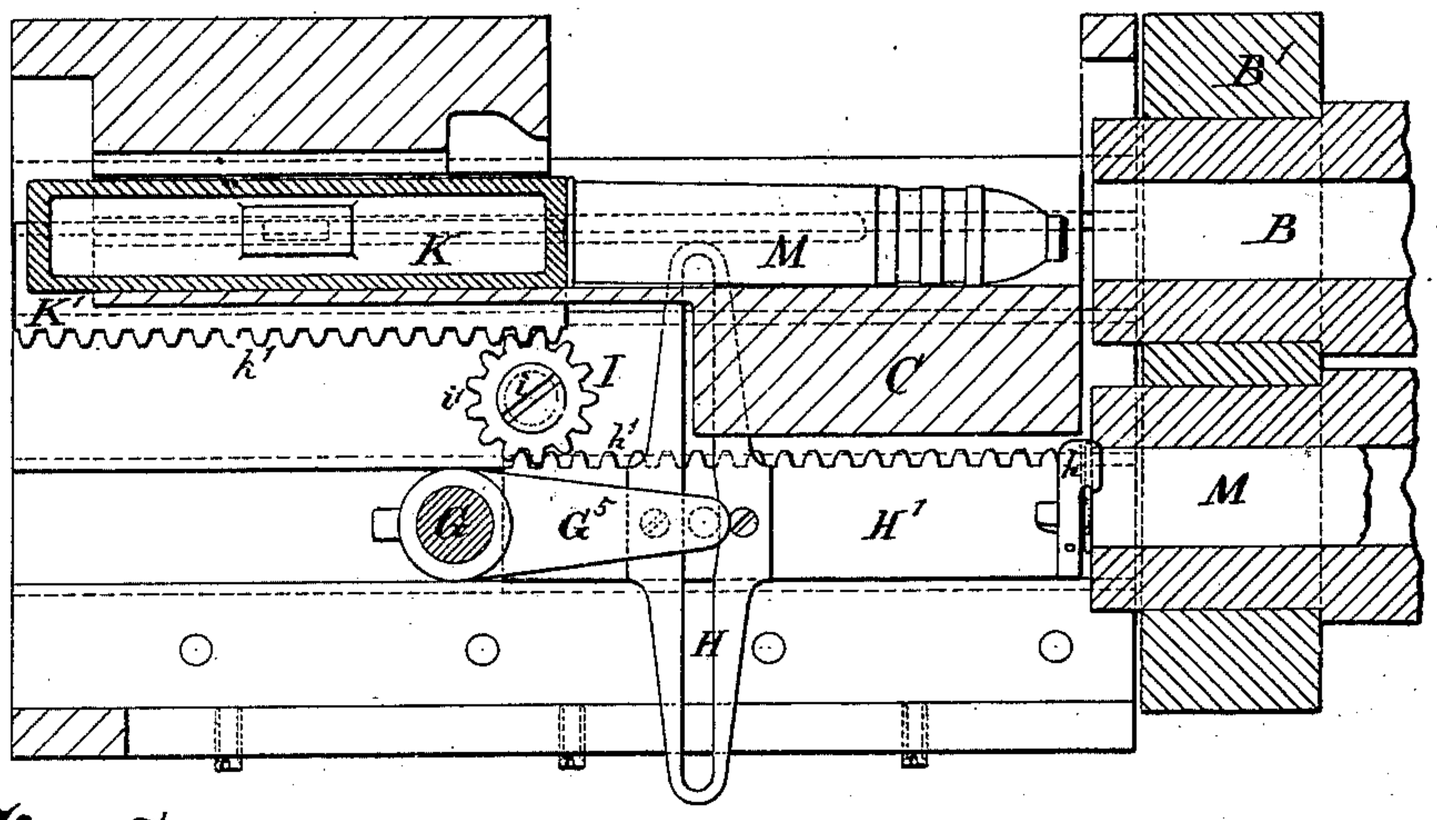



Fig: 7.

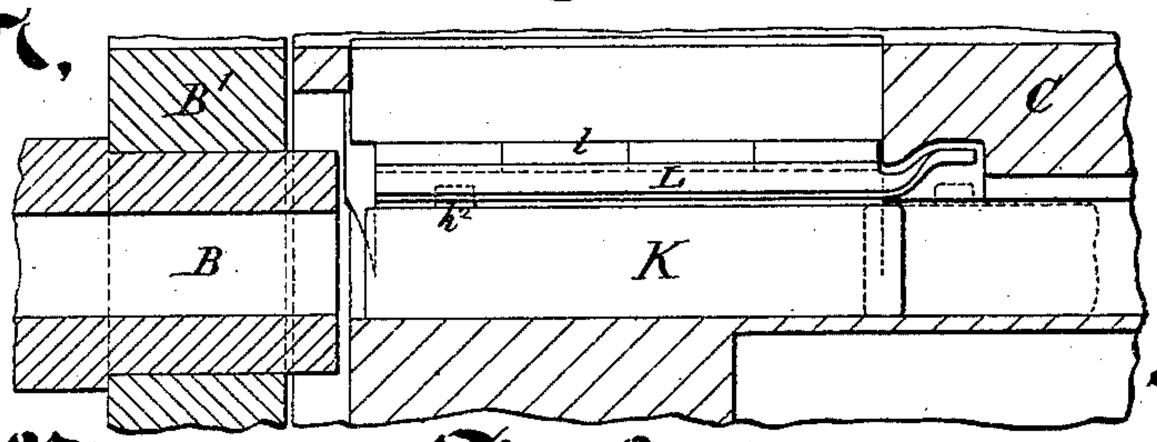
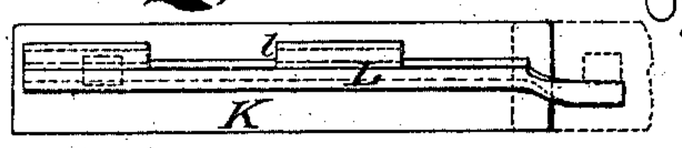



Fig: 8.

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D. D. Stetson

# UNITED STATES PATENT OFFICE.

BENJAMIN B. HOTCHKISS, OF NEW YORK, N. Y.

## IMPROVEMENT IN MACHINE OR BATTERY GUNS.

Specification forming part of Letters Patent No. **130,501**, dated August 13, 1872.

Specification describing certain Improvements in Revolving or Repeating Guns, invented by B. B. HOTCHKISS, of New York, temporarily residing in Paris, France.

The improvement is intended for use with projectiles of a moderate size—something larger than the ordinary projectiles which are discharged from pieces held to the shoulder. It may be used with projectiles of larger or smaller diameter, and with barrels either rifled or smooth. In distinction from those arms which are held in the hand as pistols, and those which are held to the shoulder as muskets, it may be termed a revolving-cannon. Many previous attempts have been made to produce such, but my invention involves important improvements over any previously known to me.

The following is a description of what I consider the best means of carrying out the invention.

The accompanying drawing forms a part of this specification, and represents a series of six barrels, capable of revolving around a central axis, which extends along between them.

Figure 1 is a side elevation of the entire construction, with the exception of the carriage, on which it is mounted. The latter may be understood to be of any ordinary or suitable construction, adapted to support it properly, and provide for its efficient and rapid transportation and manipulation. Fig. 2 is a cross-section. Fig. 3 is a central longitudinal section through the breech portion alone. It will be understood that this is one and one-half times as large a scale as Figs. 1 and 2. Fig. 4 is a cross-section of the breech part, viewed from the rear. Fig. 5 is a cross-section of the same part, viewed from the front. Fig. 6 is a longitudinal section of a portion of the breech part. This is not a central section, but is taken somewhat beyond the center. It is in the plane of the axis of the furthest barrels. Figs. 7 and 8 and represent details detached. Fig. 7 is a view from the left side of the gun, representing one barrel and a portion of the mechanism for forcing in the cartridge. Fig. 8 is a plan view of the loading-bolt or charger, with the gate above it. All these figures, from 4 to 8 inclusive, are on the same scale as Fig. 3.

Similar letters of reference indicate like parts in all the figures.

A is a stout frame-work, turning on a center, $A^1$, having a cross-piece, $A^2$, at the front, and a massive breech-piece, C, firmly fixed thereto at the rear. B B, &c., are the barrels. $B^1$ $B^2$ are stout disks or circular frames, which support them, and hold them rigidly in position parallel to each other; and $B^3$ is a stout axis, which supports the whole, and allows it to turn as required. $B^4$ is a wheel, firmly fixed on the rear extremity of the axis $B^3$; and $B^5$ are stout pins, extending rearward therefrom, and by means of which the axis, with its series of barrels, is turned and controlled by the mechanism to be described below. The mechanism which turns the barrels operates the loading-and-discharging mechanism, and also removes the shells of the cartridges after they are fired, is all contained within or attached to the breech-piece C, which it will be observed, is massive at its front face to receive and resist the concussions due to the successive explosions of the cartridges; but is hollow at and near its rear portion. Its extreme rear is closed by a removable piece, C′, as represented, it being understood that the cartridges are formed with flanged shells of copper or analogous material, in the manner now extensively adopted in such cartridges, and provided with fulminate and provisions for igniting the same by a blow at the center, which needs no special description. *c* is a stout piece of steel, fitted in place as represented, and perforated to allow the protrusion of the firing-pin to strike the cartridge. D is the firing-pin. It is mounted in the breech-piece C, and in a chamber formed as represented in the rear piece C′, and is driven forward forcibly by a coil-spring, E. The extreme rear of the chamber in which it is contained may be stopped by a removable plug, as represented in Fig. 3. An arm, $D^1$, extends downward and forward from the firing-pin D, and receives the action of the cam $G^2$, which moves it backward gradually, and allows it move forward freely and smartly at the proper time under the action of the spring E. G is a transverse shaft, actuated by a crank, $G^1$, which operates the arm $D^1$ of the striking-pin, as above intimated. This shaft G also carries a peculiar worm-thread, which is partly helical and partly circumferential, as indicated by $G^3$ and $G^4$. The form of this thread is important.

Fig. $4^a$ is a figure additional to Fig. 4, showing the shaft G and its attachments in a

position differing from the view in Fig. 4, by having one-quarter turn.

$G^3$ represents that portion of each thread which is spiral or helical, and $G^4$ represents that portion which is simply circumferential or standing in planes at right angles to the axis. The effect of the peculiar worm $G^3$ $G^4$ is to turn the collection of barrels B intermittently, while the hand-crank $G^1$ is turned steadily.

In operating the gun the hand of the attendant is applied to the hand-crank $G^1$, and the shaft G is turned steadily. During about one-half of its revolution it holds the barrels steadily in position. During this period the loading of one barrel and the firing of another are effected. An exploded shell is also extracted from still another barrel. During the other half of the rotation of the shaft G the barrels B are rotated to bring new ones into position for each of these operations.

The mechanism for properly turning and discharging will now be readily understood. The mechanism for charging the barrels and removing the shells is more complicated. A crank, $G^5$, fixed on the end of the shaft G operates in a vertical slot in a yoke, H, which is fixed on a slide, H′, guided in a horizontal groove in the side. The forward end of this slide H′, carries a hook, *h*, and suitable mechanism for engaging the hook or hooks around the flange of the cartridge at each extreme forward movement. During one-half rotation of the shaft G the yoke H, with its attachments, moves forward. In the extreme forward position the hook *h* engages with the shell of a previously-exploded cartridge, and during the return movement of the yoke H and its attachments the shell is withdrawn and allowed to fall out through an aperture in the bottom of the breech-piece C, leaving the hook *h* and its spring-catch or analogous device free to engage with the next shell on being again moved forward. The upper edge of the slide H′ is toothed, forming a rack, *h′*, which engages with the teeth *i′* of a wheel, I, which turns on a fixed pivot, *i*, fixed in the side of the breech. These teeth *i′* engage in turn with a rack, $k^1$, on the under side of a slide, K′, which is guided in a suitable groove in the side and carries an arm, *k*, which pushes forward the cartridge at the proper time. M M are cartridges. They are laid in quantities, in parallel positions, in an inclined trough, X, on the left side of the breech-piece C. Their discharge is controlled by the mechanism, so that they are allowed to pass only one at a time down into the charging-passage in the path of the charger K. At each partial rotation of a series of barrels, B, a barrel in an empty condition is brought in line with the path of the charger K, and one cartridge M having been let down into the proper position in front of it the forward movement of the charger K forces the cartridge into that barrel. It will now be understood that each rotation of the crank $G^5$, by carrying the yoke H forward, moves forward the hook or hooks *h*, with the proper accompanying mechanism, not fully represented, for seizing an exploded shell, and also moves backward the charger K; and that the next semi-revolution of the crank $G^5$, by moving the yoke H backward, withdraws the exploded shell, and by moving forward the charger K thrusts a fresh cartridge into its proper barrel above.

It is important that the cartridges M be dropped one by one into the proper positions in front of the charger K, and that the motion be properly regulated, so as to insure that the cartridge lies in the proper position. This is effected by the agency of a discharge-gate, L, which is hinged at the point *l* and extends along the whole width of the passage—or, in other words, corresponds with the length of a cartridge. This feeding-gate L is operated by the charger or loading-bolt K as follows: The gate L is bent at its rear end, (see Figs. 7 and 8,) and when the loading-bolt K is drawn to the rear a projection, $k^2$, formed thereon comes under the rear bent-up end of the gate L and allows it to drop a little. This it is sure to do from its own gravity and that of the cartridges which rest upon it. This movement causes the cartridge resting thereon to fall suddenly, in a truly horizontal position, into the loading-cavity in front of the loading-bolt K. When the said bolt K moves forward, carrying the cartridge into the barrel, the projection $k^2$ lifts the gate L sufficiently to prevent any cartridge from falling during the period while the loading-bolt is forward. It holds back the cartridges until the loading-bolt is again drawn quite to the rear. In the absence of this device the cartridges M might fall point first, instead of horizontally, into the loading-cavity, in which case the derangement of position would be liable to prevent the device from operating at all, and would be certain to compel a degree of delay in loading which is not now necessary.

In operating my invention one man places the cartridges M in the feed-trough X while the second man turns the crank $G^1$. One-half turn of the latter brings the barrel B in line with the loading-bolt K; the second half turn of the crank loads that barrel and at the same time operates the firing-pin D on one cartridge and the extractor *h* on another. The barrels remain stationary a sufficient length of time during each revolution of the crank $G^1$ to allow one barrel to be loaded, another to be fired, and the shell to be extracted from a third.

I claim as my invention—

1. In a machine-gun, the combination, with the reciprocating slide H′, of the yoke H and hook *h*, when operated substantially as specified, for the purpose of withdrawing the cartridge-shells from the barrels, as set forth.

2. The slide K′ carrying the pusher K, in combination with the crank $G^5$, yoke H, slide H′, intermediate wheel I, barrel or barrels B, and feed-trough X, whereby the cartridges are successively inserted into and withdrawn from the barrels, as specified.

3. The firing-pin or hammer D, constructed and combined as represented, with cams $G^2$ for operating said hammer, as set forth.

4. In a machine-gun, the worm or annular cams $G^3$ $G^4$ partially helical and partially circumferential, arranged, as shown, relatively to the shaft and crank G $G^1$, in combination with pins $B^5$ on the rear extension of the series of barrels B, as specified, whereby the barrels are intermittently operated for successively receiving and discharging the cartridges, as set forth.

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

B. B. HOTCHKISS.

Witnesses:
F. OLCOTT,
CH. F. THIRION.