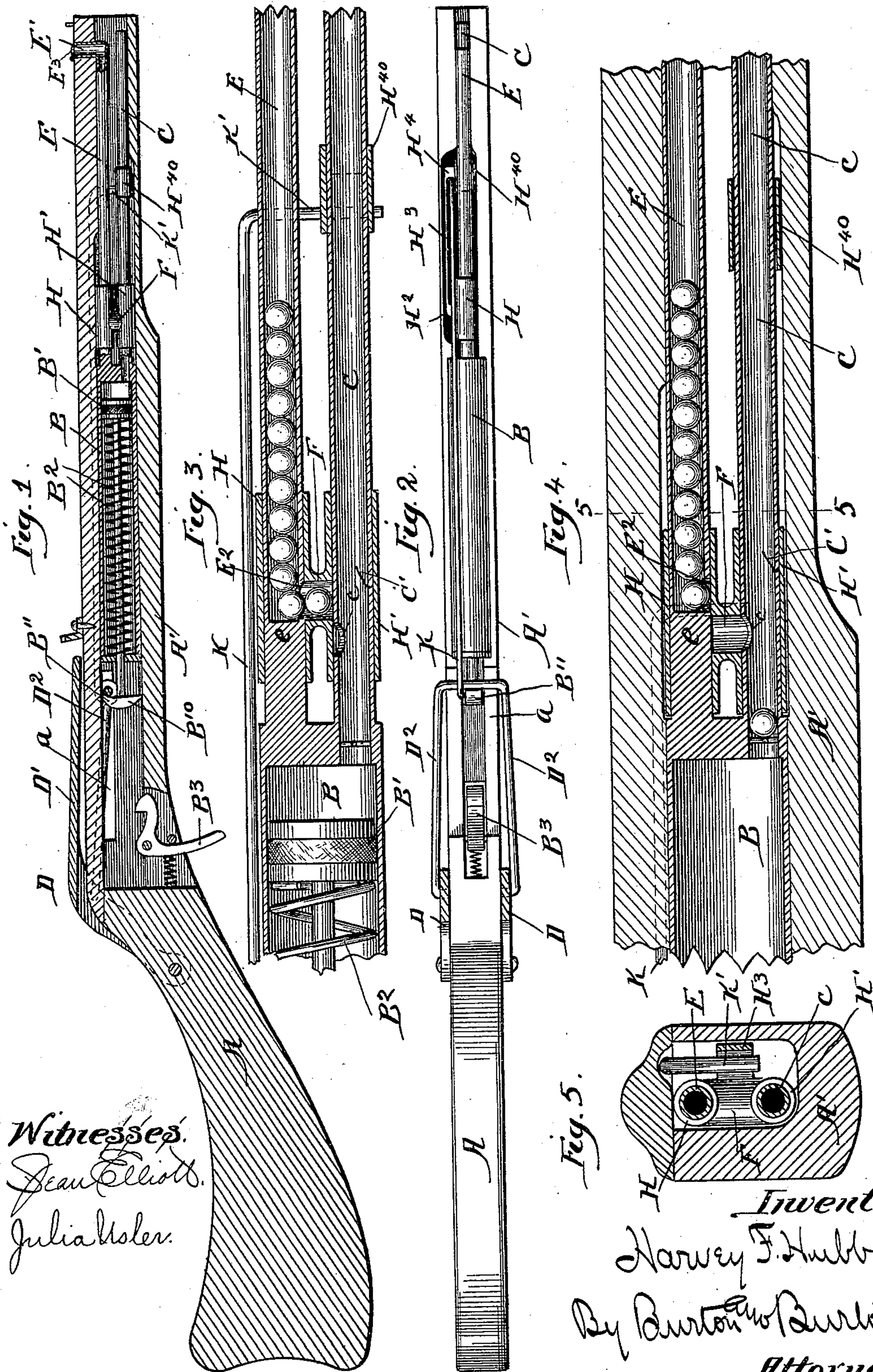


(No Model.)

H. F. HUBBARD.
MAGAZINE AIR GUN.

No. 471,176.

Patented Mar. 22, 1892.



Witnesses:
Jean Elliott.
Julia Mosler.

Fig. 5.

Inventor:
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UNITED STATES PATENT OFFICE.

HARVEY F. HUBBARD, OF MANITOWOC, WISCONSIN, ASSIGNOR OF ONE-HALF
TO F. H. HALEY, OF SAME PLACE.

MAGAZINE AIR-GUN.

SPECIFICATION forming part of Letters Patent No. 471,176, dated March 22, 1892.

Application filed March 6, 1891. Serial No. 383,945. (No model.)

To all whom it may concern:

Be it known that I, HARVEY F. HUBBARD, a citizen of the United States, residing at Manitowoc, county of Manitowoc, and State of Wisconsin, have invented certain new and useful Improvements in Magazine Toy Guns, which are fully set forth in the following specification, reference being had to the accompanying drawings, forming a part thereof.

10 This invention relates to toy guns designed for discharge of small missiles, as shot, of substantially uniform size; and it consists in providing a magazine in connection with the discharge-barrel and adapted to deliver shot
15 thereinto one by one automatically when the trigger is set for discharge, and, as herein illustrated, is particularly adapted in detail to the specific class of toy guns commonly called "air-guns"—that is, to those in which the projectile force is compressed air.

20 The particular species of air-gun to which this invention is shown as applied is one which is shown in Patent No. 434,862, granted to Charles H. Clement, dated August 19, 1890, in which the air is compressed behind the missile in the discharge movement of the piston, the piston being forced forward in a piston-chamber by the reaction of a spring which is compressed by drawing the piston down
30 by proper levers preparatory to discharging. The piston-chamber communicates at its end with the discharge-barrel, which is of small diameter relatively to the piston-chamber, so that the escape of air from the piston-chamber is too slow to prevent the piston from compressing it in the chamber in its discharge movement under the action of the spring, thereby storing the necessary force to eject the missile.

40 I do not limit myself to the application of the present invention to that specific form of gun. On the contrary, it is applicable not only to air-guns, but to other forms of mechanically-discharged guns, as will appear from the description.

50 In the drawings, Figure 1 is a longitudinal section of a toy gun of the species above indicated having my invention applied thereto. Fig. 2 is a top or edge plan. Fig. 3 is a detail section, on an enlarged scale, of the discharge-barrel and magazine, the parts being in the

normal position—that is, in the position occupied after discharge. Fig. 4 is a similar sectional detail showing the parts in the position occupied when the lever is drawn back to engage the piston-rod with the trigger to prepare for discharge and before it is restored to the normal position, this latter movement being also performed before discharge. Fig. 5 is a section at the line 5 5 on Fig. 4.

A is the gunstock or handle, comprising also the body A', in which the barrel, piston-chamber, and magazine are inclosed.

B is the piston-chamber; B', the piston therein; B², the spring which operates the piston in its discharge movement; B³, the trigger which locks the piston by engaging the hook B¹⁰ at its inner end.

C is the discharge-barrel, which communicates with the upper or outer end of the piston-chamber B.

D is the compressing-lever pivoted to the stock A, having the arm D', adapted to lie upon the upper side of the stock above the trigger, and the link D², connected to the lever at a short distance from its pivot on the stock and extending forward and lying upon the upper edge of the stock in the depression a, formed for that purpose, and engaging the ratchet-hook B¹¹, which projects upward from the trigger. As thus far described, the construction is substantially that shown in said Patent No. 434,862 to Charles H. Clement, dated August 19, 1890, and is designed to be operated by throwing the lever D back onto the stock, thereby causing its link D², which engages the piston, to pull the same back from its normal position, the link sliding in the depression a. The trigger being operated to release the piston, the spring forces the latter forward, and the air before it in the piston-chamber being compressed by its rapid movement reacts more gradually by expanding forward into the barrel and ejects therefrom the missile which has been lodged therein.

My invention consists in parts, which I will now describe, applied to this gun.

E is a magazine-tube, which is secured in the gunstock parallel with the barrel, adapted to contain in a single row or pile shot of the size designed for the discharge-barrel of the gun. It may be filled from the upper or outer

end, and, as illustrated, it is filled through the short duct or tube E' , inserted transversely to the magazine at the upper end in the cover of the gunstock. I prefer this construction rather than to continue the magazine to the end of the gunstock, because in the latter case there would be liability to mistake in charging the magazine, since the barrel and magazine would appear alike at the ends and the barrel might receive the charge instead of the magazine. As a matter of convenience in construction, the magazine extends down to the top of the piston-chamber and is secured to it, although, as will hereinafter appear, the lower portion, for a fraction of an inch at least, is not available as a magazine-space, and the bottom of the magazine may be considered as beginning at the point e , where a proper stop is provided to prevent the charge from extending below that point. On the side of the magazine toward the barrel, opposite the position which would be occupied by a shot resting on the stop or bottom of the magazine, I provide an aperture E^2 just large enough to permit the passage of the shot.

F is a short tube, which extends from the magazine to the barrel, being of the same diameter as the magazine and barrel and of suitable size, therefore, to permit the passage through it of one of the shot adapted to be used in the gun. This tube F is connected to two sleeves $H H'$, which slide on the barrel and on the magazine, respectively, the short tube F communicating into said sleeves at its ends, respectively. This structure—to wit, the short tube F and the sleeves $H H'$ —connected to it constitute a charge-conveyer or means of carrying one charge, which in the ordinary use of the gun is a single shot, from the magazine to the barrel, and to adapt the barrel to receive a charge from this conveyer I form in the barrel C , on the side toward the magazine at a short distance above the bottom of the barrel, a hole c of a size to permit shot to pass through it, said hole being out of line transversely with the hole E^2 in the magazine E . Preferably it is so far out of line that when the short tube F registers at one end with the hole E^2 the sleeve H' will completely cover the hole c , and in like manner when the other end of the tube F registers with the hole c the sleeve H will completely cover the hole E^2 . This charge-conveyer, comprising the tube F and the sleeves $H H'$, has a lateral projection H^2 serving as a stop, as heretofore explained, to the end of which is made rigid the rod or bar H^3 , which extends parallel with the magazine and barrel at a little distance therefrom for a distance nearly equal to the entire stroke of the piston, and at its upper end said rod or bar has an inwardly-projecting stop H^4 , corresponding to the stop H^2 , and which may be provided at its inner end with a short sleeve or ring H^{40} , which runs on the barrel C merely for the purpose of retaining the bar H^3 , and thereby the stop H^4 , in proximity to

the barrel. To the link D^2 , I connect loosely the rod K , which extends parallel with the piston-chamber and the barrel and magazine, and has the downwardly-projecting end K' , which protrudes between the bar H^3 and the barrel and is adapted to engage the stops H^2 and H^4 when the link D^2 is reciprocated by the lever D , and the distance between said stops is enough less than the stroke of the piston and consequent movement of the rod K that the downwardly-projecting end K' of the rod in order to complete its stroke engages said stops at each end of the stroke, and thereby moves the charge-conveyer a short distance, and the position and proportion of the parts are so calculated that this movement is just sufficient to shift the charge-conveyer from the position where one end of its cavity registers with the opening E^2 to the position where the other end registers with the opening c . The normal position shown in Fig. 1 and in Fig. 3 being that at which the link is at the upper or outer limits of its stroke is that at which the end K' of the rod K is engaged with the stop H^4 , and at this position the charge-conveyer registers with the opening E^2 in the magazine, and at this position, therefore, a shot will fall through from the magazine into the said charge-conveyer. When the lever D is rocked back, and the rod K thereby drawn down to the lower limit of its stroke, its end K' will at the latter part of that stroke encounter the stop K^2 and move the same and said charge-conveyer to the position shown in Fig. 4, where it registers with the opening c in the barrel, said charge-conveyer carrying with it in that movement the charge—usually a single shot—lodged in it, and in the same movement closing the opening E^2 and preventing the escape of any more shot. While the parts are for an instant in the position shown in Fig. 4, the charge contained in the charge-conveyer will fall through the opening c in the barrel and retreat to the bottom end thereof, assuming that the gun is held in an upwardly-inclined position, and when the lever D is rocked back to its normal position, as necessary to prepare the gun for discharge, the rod K will restore the charge to the positions shown in Figs. 1 and 3, where it closes the opening c and registers with the opening E^2 and receives, therefore, another shot preparatory to the next action. The trigger being operated, the gun will be discharged. The charge which has been lodged in the barrel C being ejected, the movement may be repeated, bringing a new charge into the barrel at each repetition until the magazine is emptied. Preferably a cover E^3 will be provided at the charging-mouth of the magazine to prevent the accidental escape of the contents, and to prevent the accidental escape otherwise than by the forcible discharge of the shot lodged in the barrel a light spring C' may be provided within the barrel above the aperture c so light that it may be pushed aside by the shot when the latter is forcibly

discharged, but obstructing the passage, so that the shot will not fall out past it with its own weight.

I claim—

5 1. In a mechanically-discharging gun, in combination with the barrel, the magazine adjacent thereto, said barrel and magazine having each a lateral aperture of size to admit one charge, a charge-conveyer having extending through it transversely to the barrel and magazine a cavity adapted to contain one charge, and means for moving it longitudinally with respect to the barrel, the cavity in said conveyer when at one position registering at one end with the magazine-aperture and covering the barrel-aperture and when at another position registering at the opposite end with the barrel-aperture and covering the magazine-aperture, whereby at each reciprocation it is adapted to convey a charge from the magazine to the barrel, substantially as set forth.

2. In a mechanically-discharging gun, in combination with the barrel, a magazine parallel thereto, a charge-conveyer extending transversely between the magazine and barrel and provided with guides on the barrel and magazine, whereby it is retained between them and adapted to reciprocate longitudinally with respect to them, the magazine and barrel having each an aperture in their opposite sides, which register with the opposite ends of the charge-conveyer at different longitudinal positions of the latter, and means for moving the charge-conveyer longitudinally with respect to the barrel and magazine, substantially as set forth.

3. In a mechanically-discharging gun, in combination with the barrel, the magazine adjacent thereto, the barrel and magazine being fixed with respect to each other and having apertures in their proximate sides, a charge-conveyer extending between them and having extended through it transversely to said barrel and magazine an aperture adapted to contain a charge, registering at one posi-

tion with the magazine-aperture and at another position with the barrel-aperture, the charge-ejecting plunger and the connections by which it is operated, and a rod operated 50 by the same connections and engaging the charge-conveyer to reciprocate it from the position at which it registers with the barrel-opening to that at which it registers with the magazine-opening, substantially as set forth. 55

4. In a mechanically-discharging gun, in combination with the discharge-plunger, the charge-receiving barrel and a magazine adjacent thereto, said barrel and magazine having corresponding apertures for the passage of a charge from the magazine to the barrel and registering at one position with the magazine-aperture and at another position with the barrel-aperture, the link D^2 , which operates the discharge-plunger, the rod K, connected thereto, and the charge-conveyer having rigid with it the stops H^2 and H^4 and said rod having the downwardly-projecting end which engages said stops, whereby the operation of said link in retracting the plunger and returning to normal position reciprocates the charge-conveyer, substantially as set forth. 60 65 70

5. In combination, substantially as set forth, the barrel C, the magazine E, parallel therewith, the charge-conveyer comprising the sleeves $H H'$, adapted to slide on said barrel and magazine, and the tube F, connecting them, the barrel and magazines having at different longitudinal positions the apertures for the passage of a charge, and means, substantially as described, for reciprocating the charge-conveyer to cause it to register alternately with the barrel-aperture and with the magazine-aperture. 75 80

In testimony whereof I have hereunto set my hand at Manitowoc, Wisconsin, in the presence of two witnesses, this 16th day of February, 1891.

HARVEY F. HUBBARD.

Witnesses:

FRED E. HARRIS,
E. D. HUBBARD.