(No Model.)

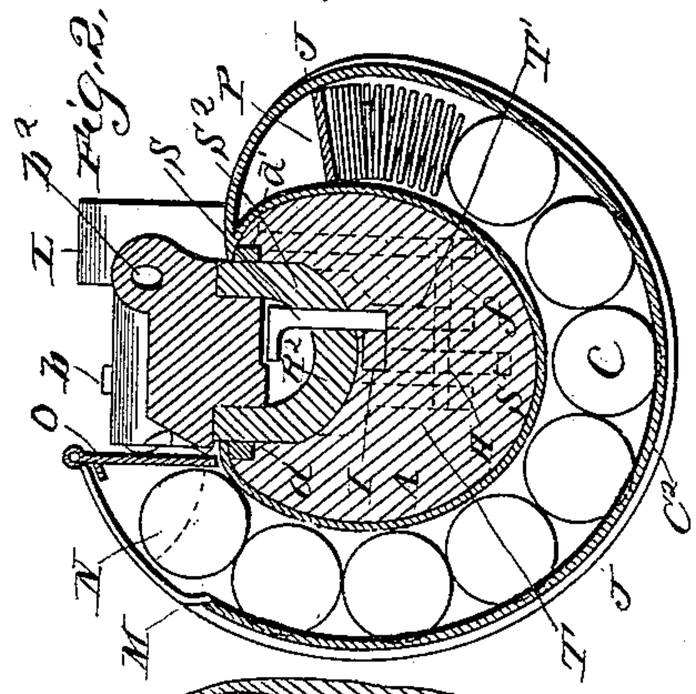
2 Sheets—Sheet 1.

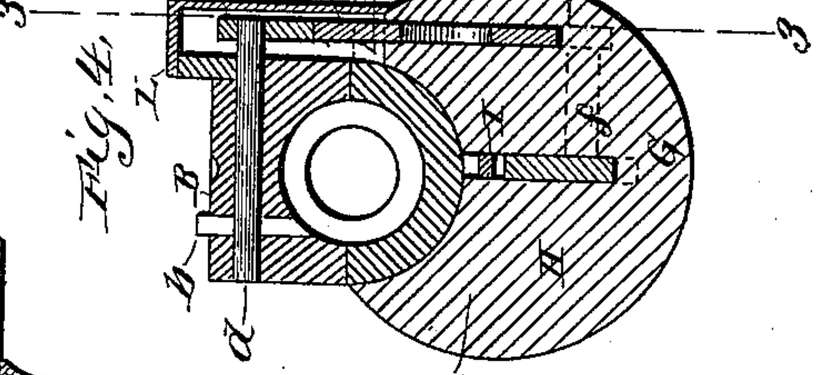
W. E. LOOMIS.

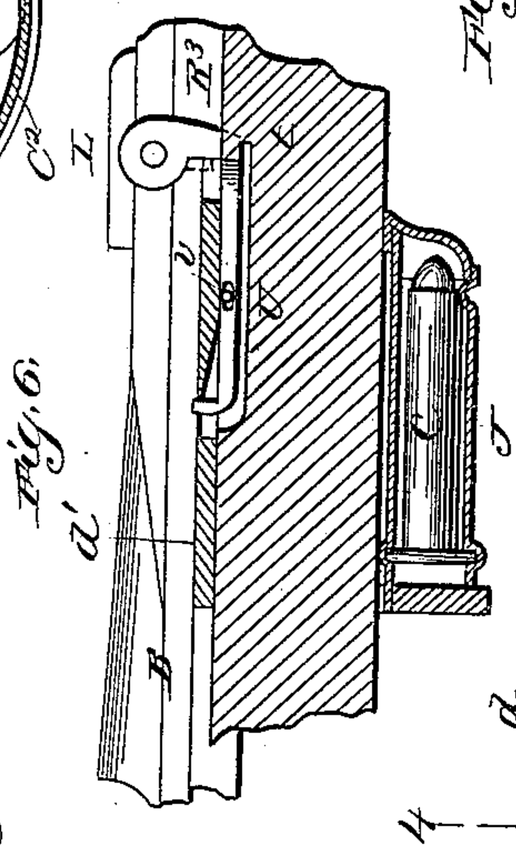
MAGAZINE GUN.

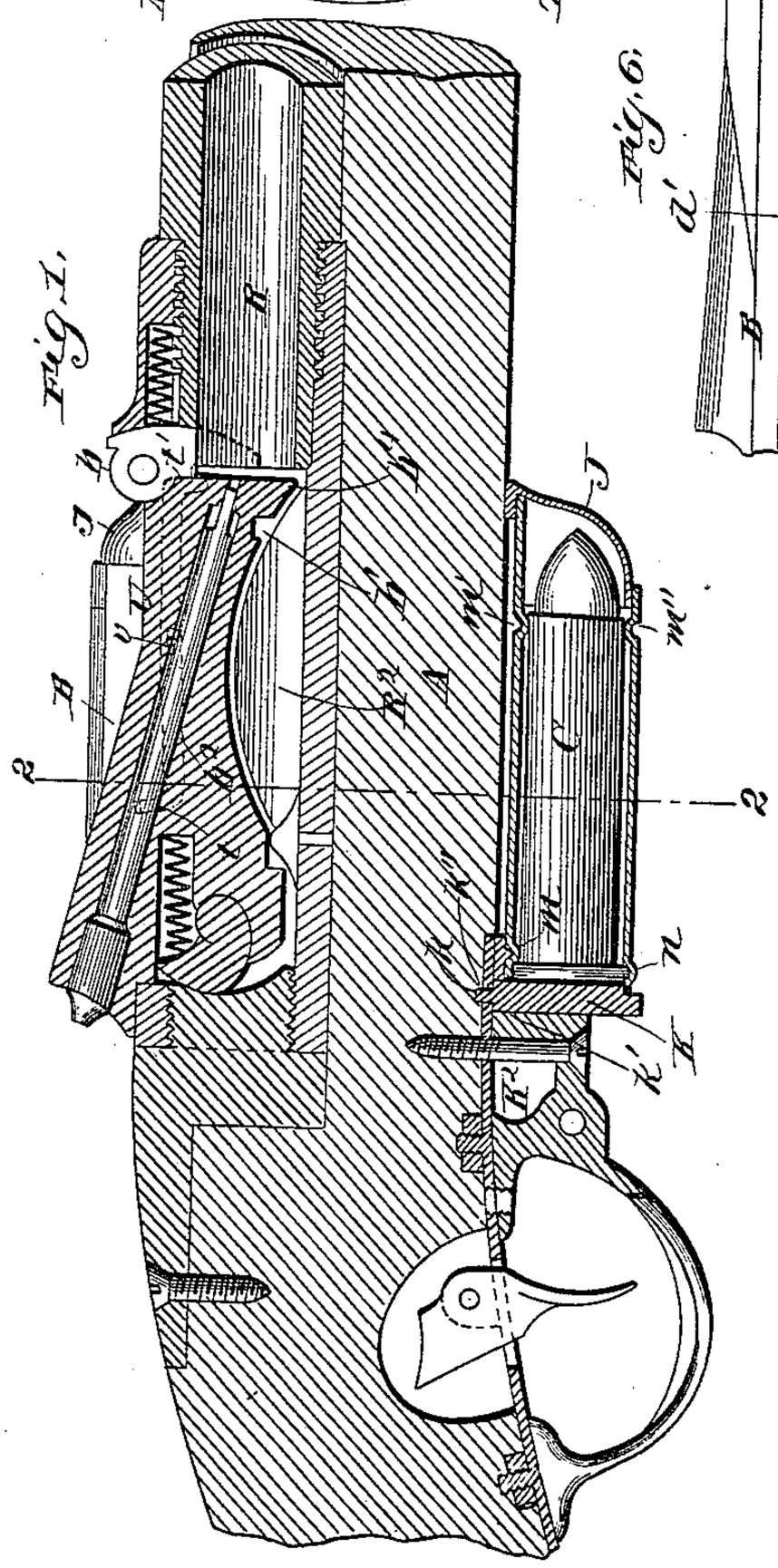
No. 477,666.

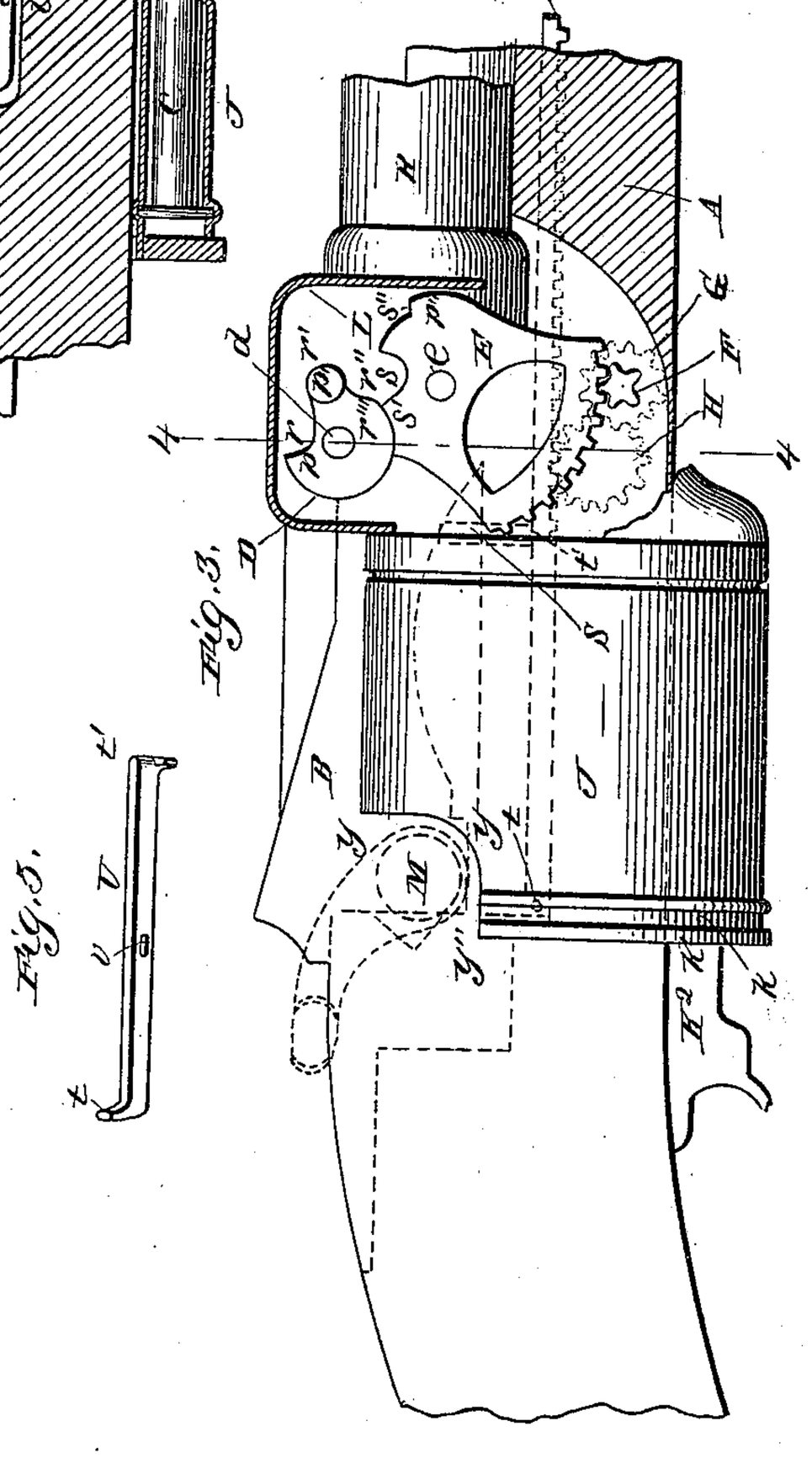
Patented June 28, 1892.











Witnesses:
John E. White
Edward Furrow

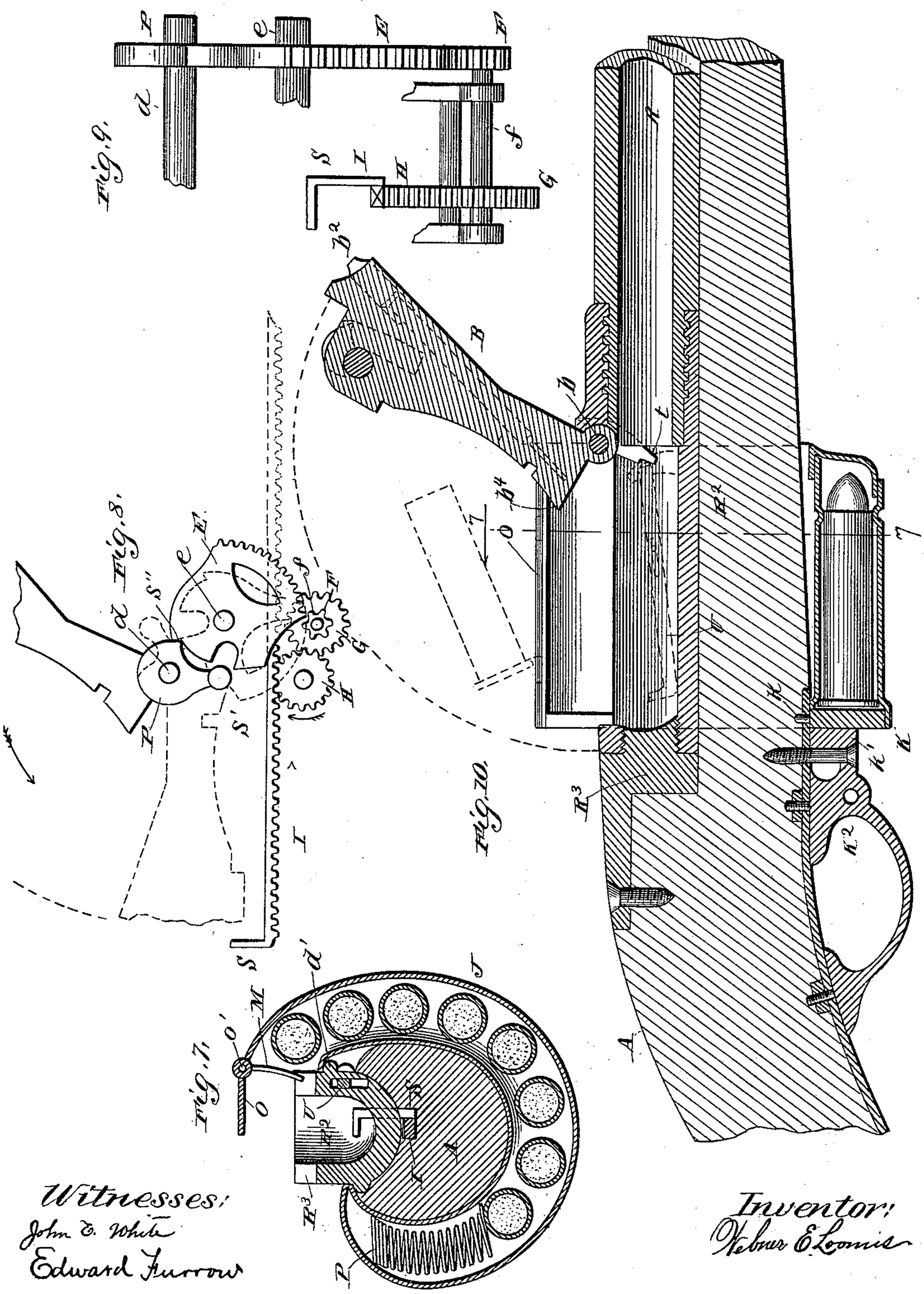
Inventor:
Webster E. Loomis

(No Model.) 2 Sheets—Sheet 2.

W. E. LOOMIS.

MAGAZINE GUN.

No. 477,666. Patented June 28, 1892.



Witnesses:
John D. White
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Webster E. Loomis

UNITED STATES PATENT OFFICE.

WEBNER E. LOOMIS, OF SPRINGFIELD, ILLINOIS.

MAGAZINE-GUN.

SPECIFICATION forming part of Letters Patent No. 477,666, dated June 28, 1892.

Application filed May 12, 1888. Serial No. 273,748. (No model.)

To all whom it may concern:

Be it known that I, WEBNER E. LOOMIS, a citizen of the United States, residing at Springfield, in the county of Sangamon and State of Illinois, have invented a new and useful Improvement in Firearms, of which the following is a specification.

The purpose of my invention is to provide simple and effective means for inserting the cartridge in breech-loading firearms, for firing the cartridge, and for discharging the empty shell; also, to provide an effective detachable magazine adapted to receive a number of cartridges and convey them in succession to the firing-chamber of the gun. This purpose I accomplish by means of the mechanism shown in the accompanying drawings, in which—

Figure 1 is a longitudinal section on the axis of the barrel. Fig. 2 is a vertical transverse section on the line 2. Fig. 3 is a partial longitudinal section on the line 3, and also shows a side view of the magazine in position on the stock. Fig. 4 is a transverse section on the line 4, looking toward the muzzle. Fig. 5 is a perspective view of the bolt for locking the door O when closed. Fig. 6 is a partial longitudinal section on the line 6, showing the bolt U in position. Fig. 7 is a vertical section on the line 7 of Fig. 10. Fig. 8 is a detached side view of the gearing, by means of which the rack I is moved. In this view the breech-block is shown raised and the rack moved back. The dotted lines indicate the position of the parts when the breech-block is down and the rack moved forward. Fig. 9 is a front view, on an enlarged scale, of the mechanism actuating the rack I. Fig. 10 is a vertical longitudinal section in the axis of the gun-barrel, showing the breech-block raised, also showing the relative positions of the extractor *b* and the locking-bolt U.

Similar letters refer to similar parts in all the drawings.

The stock A, the barrel R, the breech-pin R^3, the hinged breech-block B, the receiver R^2, the extractor *b*, and the firing-pin b^2 I do not claim as new, as the same have been heretofore used. The cartridge-magazine J consists of an annular receptacle having an outer and an inner shell, the space between these shells being such as easily to admit a number of cartridges C, disposed as shown in Fig. 2. The inner shell of the magazine conforms to the under side of the stock. The ends of the magazine are closed, as shown in Figs. 1 and 3. The upper edges of the inner shell rest upon and the magazine is supported in place by lugs *d'*, suitably secured to the sides of the breech R^3. Running around the sides of both the inner and the outer shell, near the rear end of the magazine, is spun in the metal of the shell a corrugation concave on the inside to receive the rim of the cartridge and near the other end a corrugation convex on the inside to support the end of the cartridge.

The magazine may be made of any suitable light and elastic metal, and its structure is such that its sides may be sprung slightly apart when attaching or detaching the magazine, as I will hereinafter explain. Inside the magazine and behind the cartridges is a coiled spring P, which serves to push the cartridges successively to the opening at the higher side of the magazine. At the upper side of the magazine is a door O, hinged at *o'* and having attached to it a finger M, conforming to the outer shell of the magazine, passing through a slot in the outer shell and serving, as the door O is raised, to separate the top cartridge C from the succeeding one and to push it from the magazine into the cartridge-chamber R^2. When the breech-block B is shut down, a projecting lug b^3 on the side of the breech-block impinges against the door O to close it and keeps it shut until the breech-block B is again raised. After the breech-block is raised and until after the empty shell is ejected by the extractor *b* the door O is locked by the projecting upper end *t* of the locking-bolt U. The other end *t'* of this bolt passes through a transverse hole into the receiving-chamber R^2, so that immediately after the extractor *b* has ejected the empty shell the lower end of the extractor *b* will engage with the inwardly-projecting end *t'* of the locking-bolt U, so as to move that end of the bolt U slightly backward and upward, causing the opposite end of the bolt to move downward, thereby unlocking the door O and permitting it to rise with the pressure from behind. When the breech-block B is closed, it presses down the end *t'* of the lever U and restores the lever to its locking position. The rear end K of the

magazine abuts against the shoulder k' at the front end of the trigger-guard K^2. On the upper and inside edge of the end K is a pin k, fitting in a hole in the guard-plate k''. The shoulder k' and the pin k serve to guide the magazine while being attached and to steady it when in place. On the right-hand side of the breech R^3 is secured the shell L, which incloses the mechanism by means of which the cartridge is inserted in the end of the barrel R.

Fig. 3 shows a section through the shell and a side view of part of the mechanism. I will now describe that mechanism. A vertical cam-wheel p is secured to the end of the rod d. This rod is secured in a transverse hole through the breech-block B and turns in suitable bearings on the side of the breech. By this means the cam p is rigidly connected with the breech-block B and revolves with it, as indicated by arrows. A lower vertical cam E, supported on a transverse shaft e, engages with and is turned by the cam p until the point r of the cam p stops against the shoulder s'' of the cam-wheel E. The lower part of the cam E is a segment of a cog-wheel meshing with a pinion F, secured to one end of the transverse shaft f. To the other end of the shaft f is secured the cog-wheel F, which meshes with a cog-pinion H, which meshes with the rack I, which slides in a suitable channel under the breech. At the rear end of the rack I is secured a vertical finger S, having an L-shaped top projecting upward into the cartridge-receiver R^2 and moving backward and forward in a slot s^2 through the bottom of the receiver R^2. When the breech-block B is fully raised, the finger S, propelled backward by the cam-gear which I have described, will rest near the rear end of the receiver R^2, so as to lie behind the end of the cartridge when the cartridge is inserted. As the breech-block is turned downward it gives a forward motion to the rack I by means of the gear already described, and the finger S pushes the cartridge into the end of the barrel R. When the breech is closed, the rim of the cartridge lies in the recess between the front end of the breech-block and the extractor b, so that after the discharge the empty shell may be ejected by the extractor in a manner well known. The magazine-door is locked for the time that is occupied by the breech-block in turning from the closed to the wide-open position, and the empty shell is discharged by the extractor b before the door of the magazine is opened. In raising the breech-block B the rack I is caused to move backward and the finger S is left in position to engage with and carry forward the next cartridge, and so on.

The operation of my devices is as follows: To attach the magazine J, it is grasped with one hand, the gun being held with the other, and is moved backward along the under side of the stock until the rear end of the magazine abuts against the shoulder k. The magazine is then pushed upward, its sides springing apart until the upper edges of the magazine slip over and rest upon the lugs d'. Simultaneously the pin k enters a suitable hole in the guard-plate and prevents the magazine from slipping forward. To detach the magazine, its sides are sprung apart and it is pulled downward. To load the gun, the breech-block B is raised, causing the rack I to travel backward and stop in the position indicated by dotted lines in Fig. 1. The cartridge is then dropped into the receiver R^2. The upwardly-projecting finger S then stands behind the rim of the cartridge as it lies in the receiver. The breech-block B is then turned down, imparting a forward motion to the rack I, causing the connected finger S to push the cartridge forward until it comes within the arc of the point b^4 of the breech-block B, which as it turns downward pushes the cartridge into the barrel R. The cartridge is then fired in the usual manner. To discharge the empty shell, the breech-block is raised until its edge strikes the projecting lug on top of the extractor b, throwing the extractor over the center, so that the spring behind it acts, giving a quick backward and upward motion to the lower end of the extractor b, which catches on the rim of the cartridge-shell and throws it out. At the close of the operation I have just described the breech-block B rests in the position indicated in Fig. 10. Immediately after the empty shell has been ejected the rear edge of the extractor b engages with and operates the bolt U to unlock the door O, as I have heretofore described. The door O being unlocked, the pressure of the spring P behind the cartridges pushes them around until the upper cartridge falls into the receiver R^2. When the door O is open, the finger M rests between the upper and the next cartridge, so that not more than one cartridge can fall into the receiver R^2 at the same time. The breech-block is then turned down, in its descent closing the door O, moving the bolt U to lock the door O, and giving forward motion to the rack, pushing the cartridge into the barrel, as I have already described.

I do not claim an annular detachable magazine, broadly, as detachable magazines of various forms are in common use, but restrict myself to a magazine of elastic material having sides adapted to spring apart for the convenient attachment of the magazine to the firearm, the resilient power of the material of which said magazine is made serving to retain the magazine in position on suitable supports on the firearm.

What I claim as new, and desire to secure by Letters Patent, is—

1. A detachable annular magazine of elastic material provided with means for engaging with supports on the sides of a firearm and adapted to spring apart for the adjustment of the magazine on said arm, also adapted to be held in position on said firearm by

the resilient action of the material of which said magazine is made, in combination with a firearm provided with means for supporting the magazine and means for conveying the cartridge from the magazine to the firing-chamber of the arm, as set forth, and for the purpose stated.

2. An annular detachable magazine of elastic material provided at its forward end with an internal convex corrugation adapted to support the point of the cartridge and provided at its rear end with an internal concave corrugation adapted to receive the rim of the cartridge and having its upper ends adapted to engage with and rest upon supports on the sides of the firearm, in combination with a firearm having on its sides means for supporting said magazine and means for successively feeding the cartridges from said magazine into the firing-chamber of said firearm, as set forth, and for the purpose stated.

3. In a firearm, the combination of a detachable annular magazine of elastic material having convex and concave corrugations and having its upper ends adapted to engage with and rest upon supports on the sides of said firearm, the hinged door at the upper end of said annular magazine, the finger connected with said door adapted to push the cartridges successively into the receiving-chamber of the firearm, the coiled spring within the annular magazine, the lugs on the sides of the receiver, adapted to support the annular magazine, the hinged breech-block adapted to engage with said door and hold it closed, and the mechanism operating said breech-block, as set forth, and for the purpose stated.

4. In a firearm, the combination of the stock, the barrel, a hinged breech-block, a receiving-chamber, and mechanism for conveying the cartridge from the receiving-chamber into the firing-chamber of the barrel, said mechanism consisting of a longitudinal rack within the stock, and a vertical cam secured to the pivotal pin of the hinged breech-block, actuated by the breech-block, engaging with and operating a lower vertical cam provided with a segmental cog-wheel, said cog-wheel meshing with a pinion secured to one end of a transverse shaft supported within the stock, said transverse shaft having at its other end a cog-pinion meshing with a second cog-pinion which drives said longitudinal rack, as set forth, and for the purpose stated.

5. In a firearm, the combination of the stock, the barrel, the cartridge-receiver having on its outside lugs adapted to support a detachable magazine, the hinged breech-block, the detachable annular magazine having an internal spring and provided at its upper end with a hinged door, the curved finger connected with the hinged door, the lug on the breech-block, engaging with the door to hold the door closed, the vertical cam secured to the pivotal pin of the breech-block, engaging with a lower vertical cam provided with a segmental cog-wheel, the casing inclosing said cams, and the transverse shaft within the stock, supporting at one end a pinion driven by said segmental cog-wheel and at the other end a pinion meshing with a second pinion driving a longitudinal rack within the stock, provided at its upper end with a vertical finger, as set forth, and for the purpose stated.

6. In a firearm, the combination of the stock, the barrel, the receiving-chamber, the annular magazine inclosing the stock and supported on lugs on the outside of the receiver, the hinged breech-block, the mechanism for conveying the cartridge from the receiver into the firing-chamber of the barrel, the firing-pin and means for operating the same, and the means for ejecting the empty shell from the firing-chamber, as set forth, and for the purpose stated.

7. In a firearm, the mechanism for locking the door of the annular magazine, consisting of a locking-bolt pivotally supported on the receiver having a central longitudinal slot, having at one end an upturned lug adapted to engage with the lower edge of the door and at the other end a lateral lug adapted to be engaged by the lower end of the shell-extractor and the lower annular end of the breech-block, in combination with the stock, the barrel, the receiver, the hinged breech-block, the annular magazine supported by lugs on the sides of the receiver, the shell-extractor actuating the locking-bolt to disengage it from the door, and the angular lower end of the breech-block, engaging with the lateral lug of the locking-bolt to engage the bolt with the door, as set forth, and for the purpose stated.

8. The mechanism for retaining the magazine in position on the firearm, to wit: the trigger-guard provided with a shoulder against which the end of the magazine abuts, the trigger-guard plate having a hole adapted to receive a pin on the magazine, and the pin projecting upward from the inner shell of the magazine, in combination with the annular detachable magazine, and the firearm provided with means for supporting the magazine, and mechanism for conveying the cartridge from the magazine to the firing-chamber of said firearm, as set forth, and for the purpose stated.

WEBNER E. LOOMIS.

Witnesses:
JOHN D. MCCONNELL,
THOS. S. CASEY.