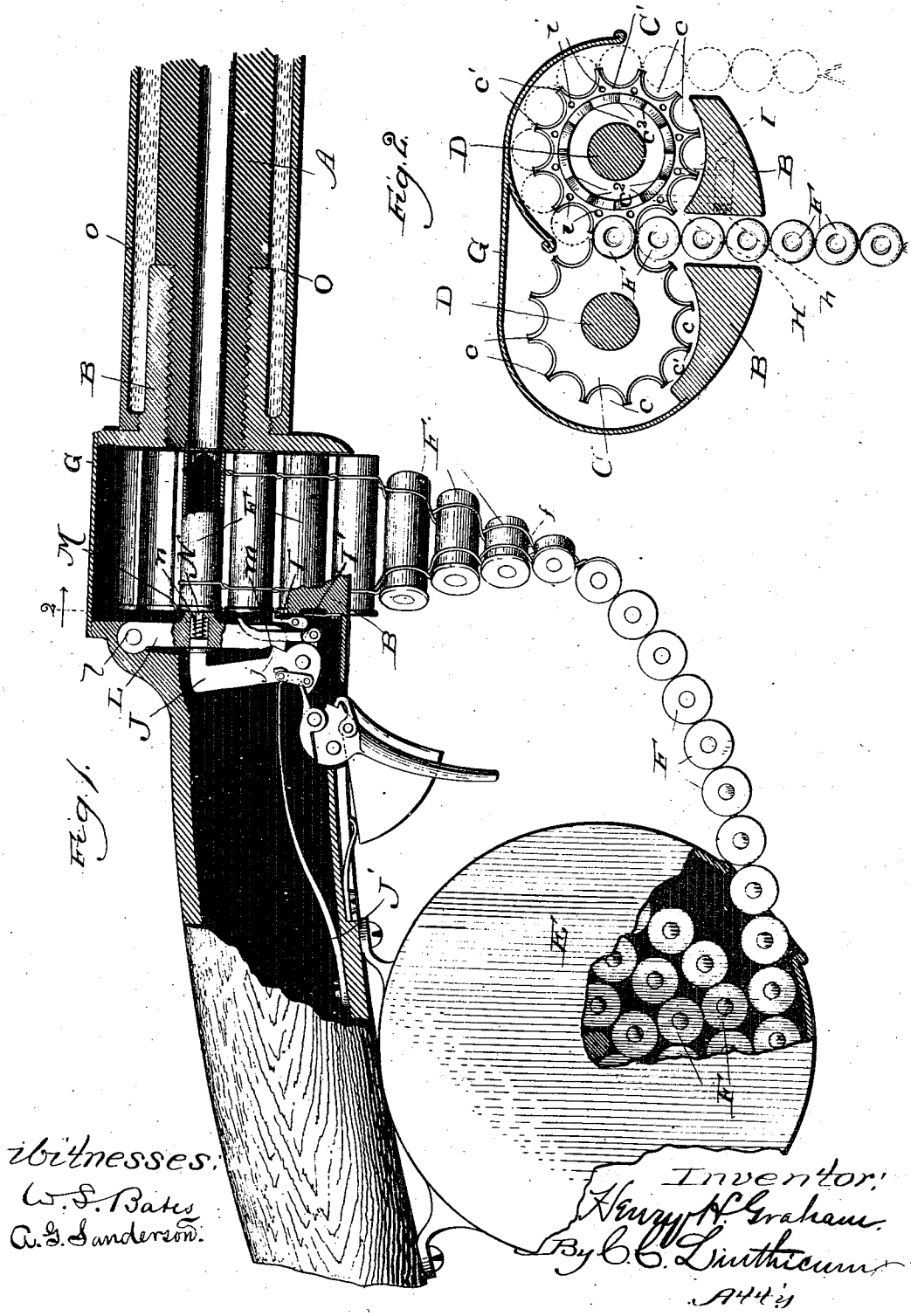
(No Model.)

H. H. GRAHAM.

MAGAZINE FIRE ARM.

No. 386,535. Patented July 24, 1888.



Witnesses:
W. S. Bates
A. D. Sanderson.

Inventor:
Henry H. Graham.
By C. C. Linthicum
Atty

UNITED STATES PATENT OFFICE.

HENRY H. GRAHAM, OF CHICAGO, ILLINOIS.

MAGAZINE FIRE-ARM.

SPECIFICATION forming part of Letters Patent No. 386,535, dated July 24, 1888.

Application filed June 9, 1887. Serial No. 240,708. (No model.)

To all whom it may concern:

Be it known that I, HENRY H. GRAHAM, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Magazine Fire-Arms, of which the following is a specification.

The invention relates more particularly to a hand fire-arm in which the cartridges are drawn from a magazine formed with or attached to the gun, and are fired in a chamber formed by two rotating cylinders grooved on their exteriors and mounted behind a single barrel.

The principal object of my invention is to construct a gun which shall be simple in its construction and operation, but capable of rapid firing.

I make use in my present invention of two cylinders grooved on their exterior and in the direction of their longest axes, to form semi-cylindrical cavities to receive the cartridges and to form a firing-chamber in alignment with the barrel, said cylinders being adapted to receive the cartridges, retain them while being fired, and eject the empty shells. In connection with these cylinders I prefer to employ a single barrel and a single hammer and to connect the cartridges by some flexible medium, such as wires, and to store them in a suitable magazine.

Other features of my invention relate to a construction of a water-jacket surrounding the barrel and intended to prevent the latter from becoming overheated.

In the accompanying drawings, Figure 1 is a side elevation, partly in section, of a gun embodying my improvements before mentioned; and Fig. 2 is a transverse vertical section taken on the line 2 2 of Fig. 1, looking toward the muzzle of the gun.

In said drawings, A is the barrel, which is shown as screwed into the breech-frame B. Mounted in the latter are the two grooved cylinders C C. E is the magazine, and F the cartridges. The breech-frame is preferably solid. It has an opening, B′, in its bottom to permit the passage of the cartridges to the cylinders. A shield or housing, G, is secured at one edge to one side of the breech-frame, and extends over the tops of the cylinders to protect them from dust, &c. The cylinders are preferably constructed of steel, of a length equal to the length of the cartridge prepared to be used and of any diameter desired. Their peripheries are provided with semi-cylindrical grooves or channels or cavities of a depth equal to about one-half the thickness of the cartridge and of a width at opening of the thickness of the latter. Any number of these channels may be provided; but it is preferable to construct the cylinder in such manner that ribs c', of sufficient thickness to withstand the shock of an exploding cartridge, shall be left between them. These cylinders are mounted side by side, preferably on shafts D D, which have bearings in the breech-frame. The cylinders are so placed that the ribs c' c' between their chambers adjoin each other and form a chamber in alignment with the bore of the barrel, and in which the cartridge is fired.

When the cartridges F are stored in a magazine, as shown in the drawings, they may be secured in a chain by interweaving them with the wires f f in any convenient manner. The first cartridge being introduced through the opening B′, the cylinders C C′ are rotated, drawing them from the magazine and presenting them successively to the firing-chamber formed by the cylinders. The continued rotation of the cylinders discharges the cartridge-shells still connected; or they may be cut off by any suitable means either at or before the firing.

The rotation of the cylinders is effected by means of the pawl or dog H, which is pivoted at h to the hammer J, and engages ratchet teeth or notches c^2 c^2, formed on the end of cylinder C′.

It will be seen from Fig. 1 that the front edge of hammer J impinges upon the rear edge of the pawl H. From this construction it results that as the hammer is being brought to a full-cock it holds the curved upper end of the dog in engagement with the ratchet-teeth on the cylinder and thrusts the dog upward, thus rotating the cylinder. The dog simply slips over the ratchet-teeth as the hammer descends. Both cylinders may be operated positively, or one, as C, may be an idler. The trigger T may be of the ordinary construction. The hammer J is held by the spring J′. The cylinders are locked in position while the explosion takes place by means of the pivoted

locking-pin I, which enters holes *i* in the end of cylinder C', and is actuated by the dog H. The pin I is normally held in engagement by the spring I'. The dog H impinges on the curved edge of the locking-pin I below its pivot, and thus operates to release said pin as the dog is thrust upward and before it engages the ratchet-teeth on the cylinder. I employ an arm or lever, L, which may be pivotally secured to the breech-frame, as at *l*, and depends between the ends of the cylinders and the hammer J. This arm has a hub, M, on its front side adapted to fit the end of the cartridge, to receive the recoil of the shell after the explosion and to transmit the shock to the hammer, whereby to cock the latter. This lever also carries the firing-pin N, having the spring *n*. The rear side of lever L has a notch, *m*, and the hammer J has a projection, *j*, entering said notch *m*. The ends of the grooves or channels *c c* nearest the hammer are chambered to form an annular groove to receive the flange of the cartridge-shell.

I have contemplated making the gun cock itself by means of the recoil from the explosion acting through the lever L upon the hammer J. This is effected by means of the cam-shaped projection *j* and notch *m*.

In operation, the cartridge being entered between the cylinders C C' by hand, the trigger is pulled back, and, acting upon hammer J, cocks it, overcoming the tension of the spring J'. The swinging of the hammer operates to throw the dog H into engagement with the teeth on the cylinders C', and rotates the latter until a cartridge is brought between adjoining channels of the cylinder and in line with the barrel. By this time the locking-pin has entered a hole in the end of the cylinder, and the latter is locked in position. The point of the trigger passes the hammer, which is then thrown down by the spring, striking the firing-pin, and the cartridge is fired. The recoil of the shell caused by the explosion forces the arm L backward, and this acts upon hammer J, throwing it back to full-cock and releasing the locking-pin I, unlocking the cylinder, and permitting the repetition of the operation. Thus it will be seen that all the firing is effected by a single operation of the hand—namely, the pulling of the trigger—and great rapidity of firing is secured.

I have provided a water-jacket, (shown at O,) which surrounds the barrel, and is designed to prevent the overheating of the latter from the rapid firing. This jacket may be provided with a safety-valve of well-known construction and set at any desired pressure, in order to warn the gunner of the conversion of the water into steam and prevent possible explosion.

It is obvious that many modifications of the several parts above described may be made without departing from the spirit of my invention—as, for example, the cartridges may be fed to the cylinders from a magazine secured above them, as shown in patents issued prior hereto. I prefer, however, to weave or connect them by means of the wires, as described.

I claim—

1. In a hand fire-arm, in combination with a barrel and suitable firing mechanism, two rotatable cylinders having grooved exteriors adapted to form, when the cylinders are rotated, a firing chamber in line with the bore of the barrel, one of said cylinders provided on its rear end with a ratchet, and a pawl actuated by the hammer and adapted to engage the ratchet, whereby to rotate the cylinders, substantially as set forth.

2. In a hand fire-arm, in combination with a barrel and suitable firing mechanism, two exteriorly-grooved rotatable cylinders, one of which is provided on its rear end with a ratchet and one with holes to receive the end of a locking-pin, a pawl actuated by the hammer and adapted to engage the ratchet, whereby to rotate the cylinder, and a spring locking-pin actuated by the pawl and adapted to enter the holes of the cylinder, whereby to lock the latter, substantially as described.

3. In a hand fire-arm, in combination with the cartridge-cylinder and hammer, a recoil-lever pivoted at one end and depending between the cartridge and hammer, and its free end adapted to engage the latter, and carrying a firing-pin, substantially as described, whereby the shock of the explosion will be received by said pivoted recoil-lever and transmitted to the hammer, so as to cock the latter.

HENRY H. GRAHAM.

Witnesses:

C. C. LINTHICUM,

J. W. DYRENFORTH.