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PATENTED JULY 2, 1907.

G. F. SCHAFER.  
EJECTOR FOR BREECH LOADING FIREARMS.

APPLICATION FILED APR. 22, 1907.

2 SHEETS—SHEET 1.

Fig. 1.

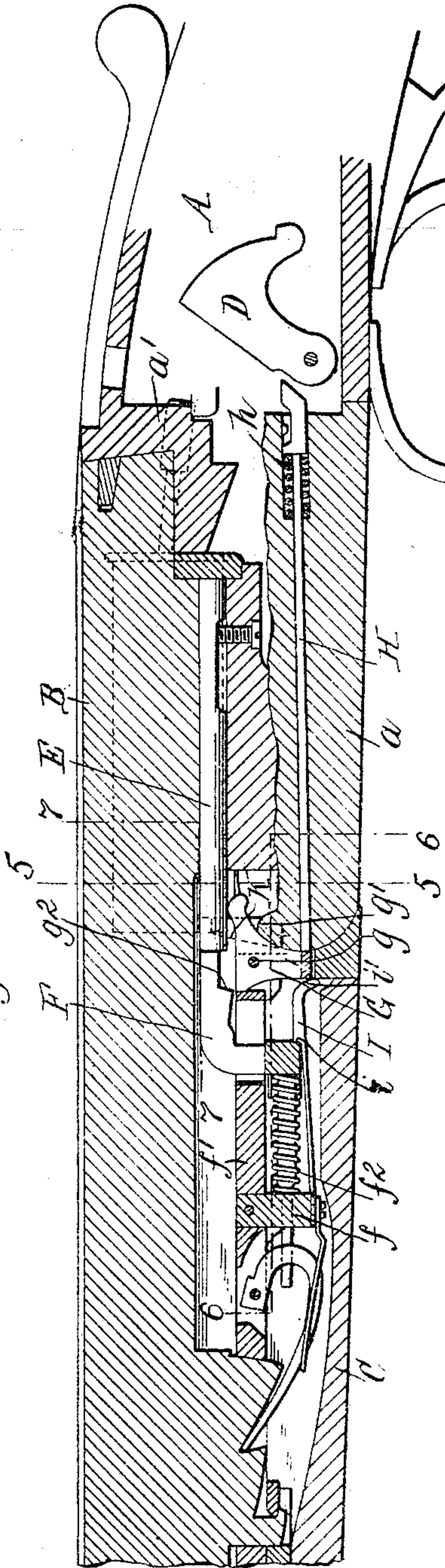
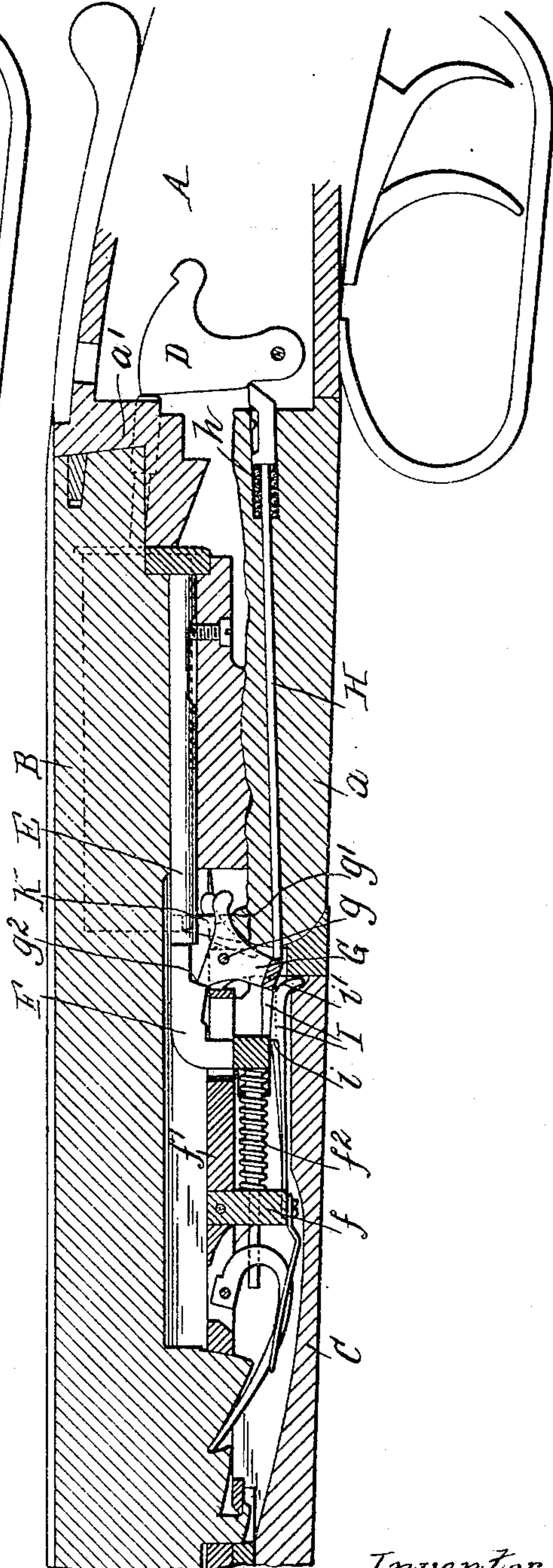


Fig. 2.



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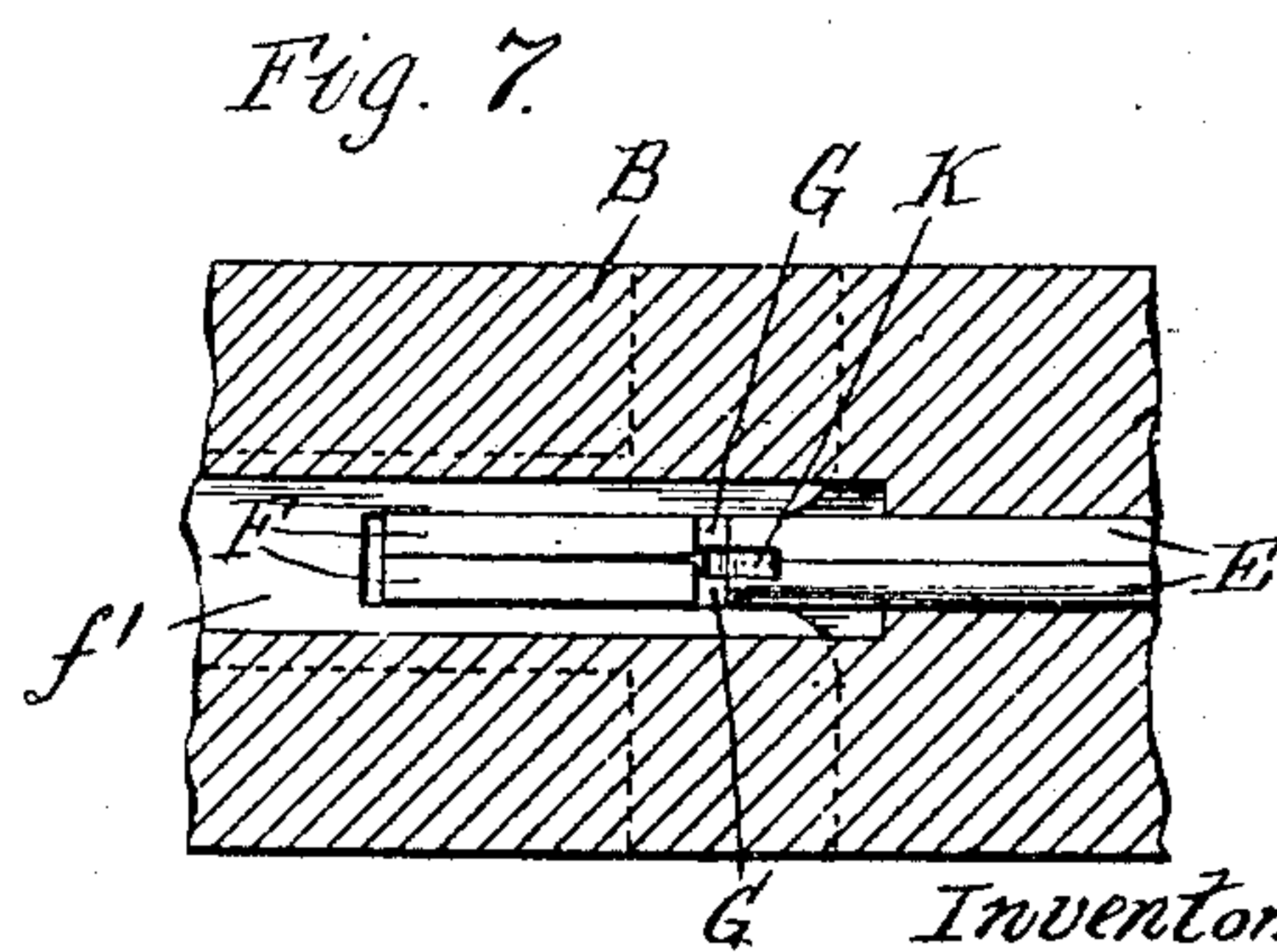
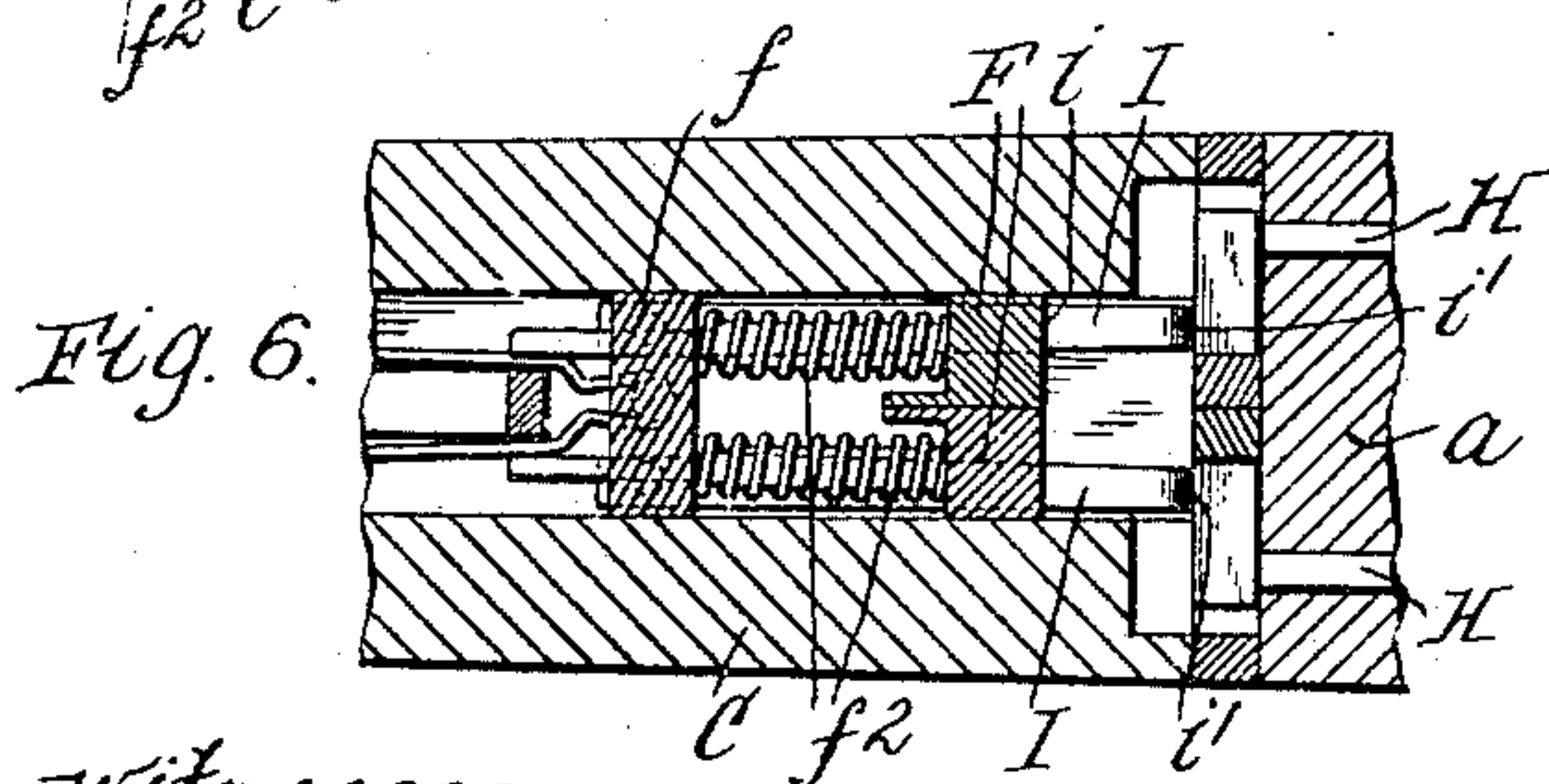
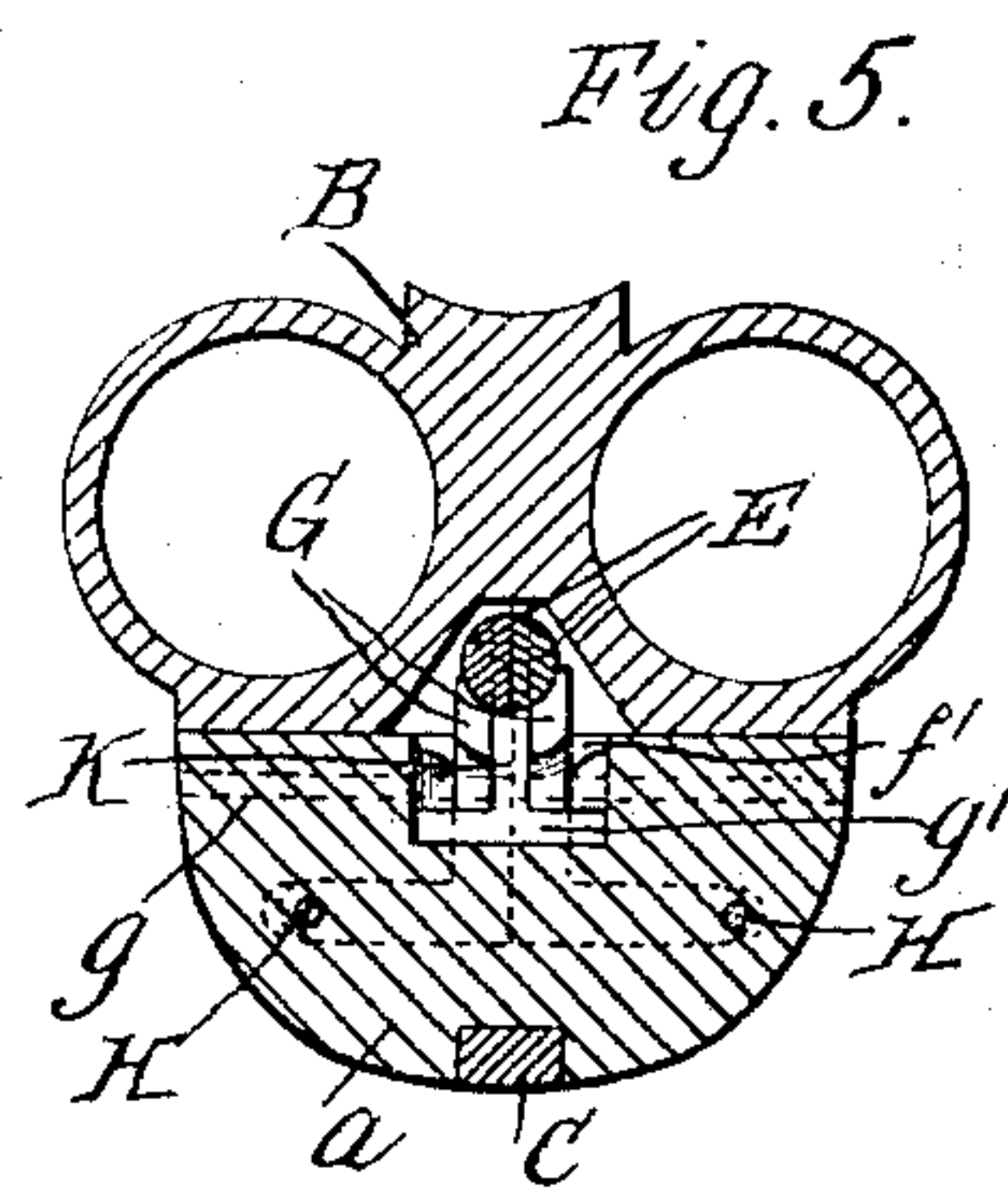
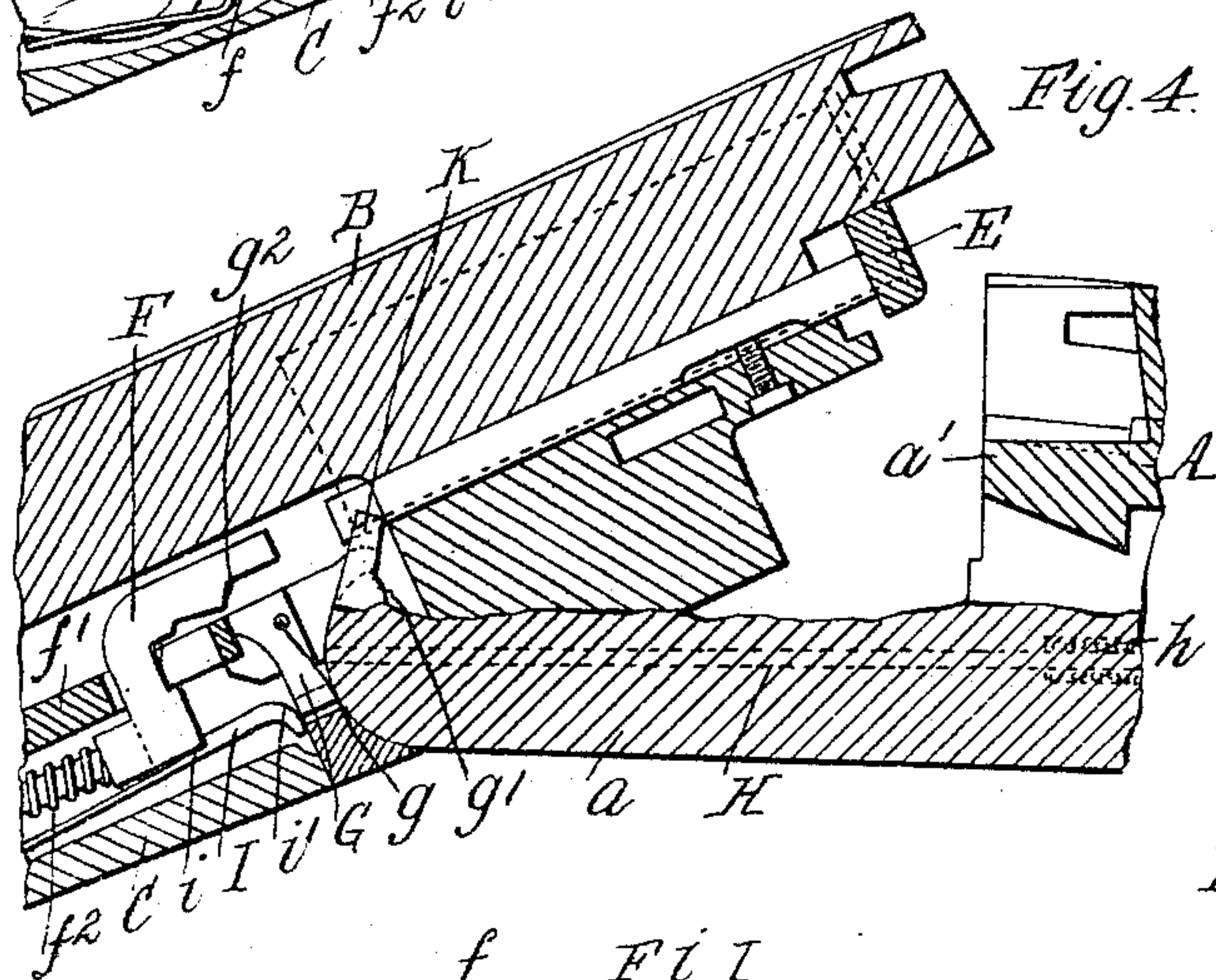
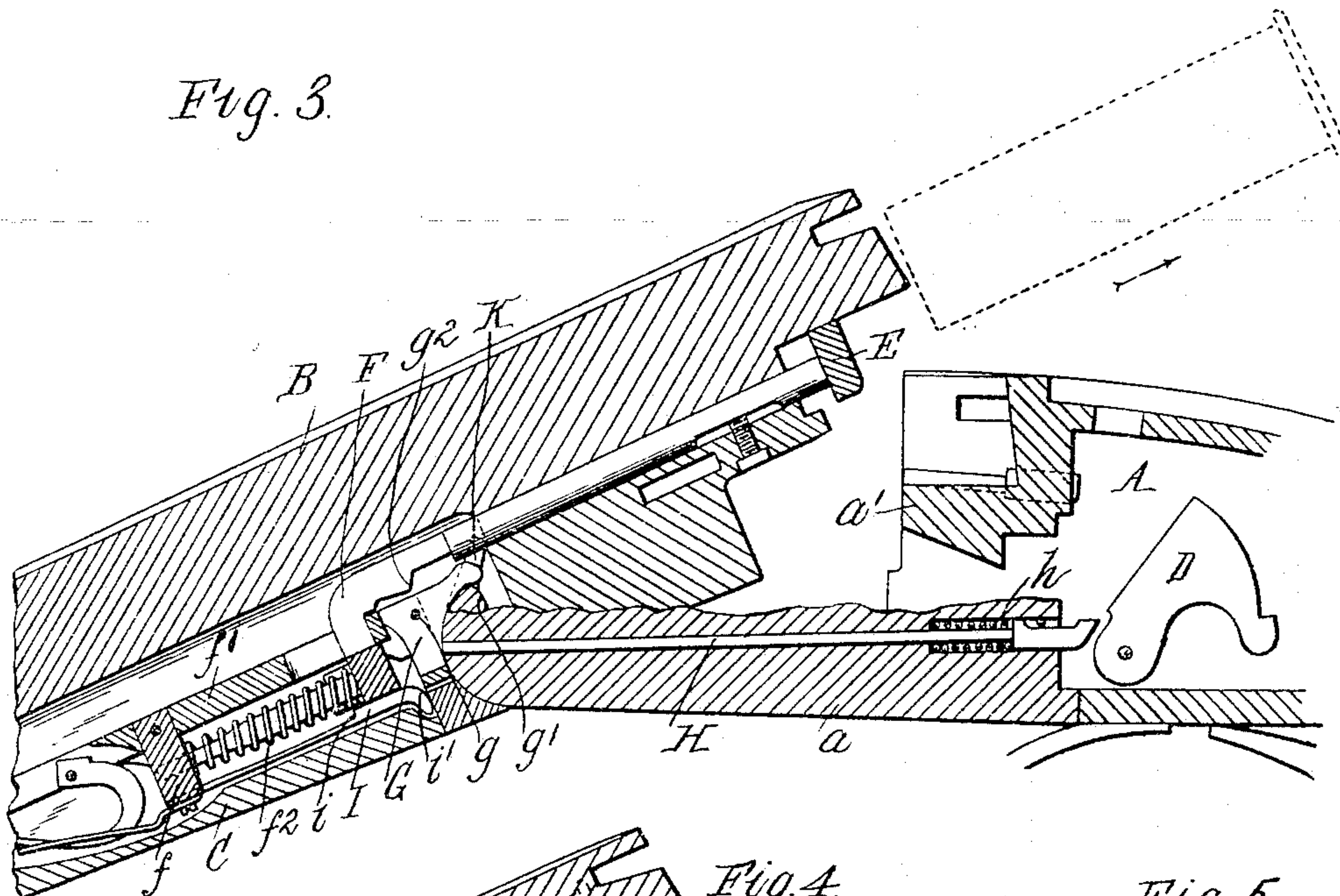
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2 SHEETS—SHEET 2.

Fig. 3.



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# UNITED STATES PATENT OFFICE.

GEORGE F. SCHAFER, OF BATAVIA, NEW YORK, ASSIGNOR TO BAKER GUN & FORGING COMPANY, OF BATAVIA, NEW YORK.

## EJECTOR FOR BREECH-LOADING FIREARMS.

No. 858,674.

Specification of Letters Patent.

Patented July 2, 1907.

Application filed April 22, 1907. Serial No. 369,458.

*To all whom it may concern:*

Be it known that I, GEORGE F. SCHAFER, a citizen of the United States, residing at Batavia, in the county of Genesee and State of New York, have invented a new and useful Improvement in Ejectors for Breech-Loading Firearms, of which the following is a specification.

This invention relates more particularly to automatic ejectors for breech-loading firearms of that type which completely eject the empty shell from the barrel when the breech is opened after the gun has been discharged, but only start the cartridge or push it far enough out of the barrel to be grasped and withdrawn by the fingers when the breech is opened before discharging the gun. Ejectors of this sort have been made heretofore, comprising the usual extractor slide which engages the shell, a spring-actuated plunger for operating the extractor slide, and a controlling sear for the plunger, which, in turn, is controlled by the firing mechanism. When the gun is discharged this sear is moved to engage the plunger, and in opening the breech, holds the plunger against the action of its spring until the breech is fully opened, when the sear releases the plunger which strikes the extractor a sharp blow and throws the shell out of the barrel. The sear is only moved to thus hold the plunger by the firing mechanism when the gun is discharged, and if the breech is opened without discharging the gun, the plunger is moved gradually by its spring and only serves to start the cartridge, or assist the usual extractor operating post or part on the gun frame in so starting the cartridge. The plunger is moved forward and its spring compressed by the act of closing the breech, and as the spring must be strong to properly operate the ejector it adds considerable to the exertion of closing the breech. The object of this invention is to provide an automatic ejector of this type of simple, efficient and desirable construction, having means for holding the ejector plunger against action by its spring when the spring has once been compressed, until the gun is discharged, and then leaving the plunger to the control of its sear to operate as above indicated, whereby the plunger spring will not have to be compressed each time the breech is opened prior to discharging the gun. The gun is equipped with the usual extractor post or part for starting the cartridge when the gun is thus opened, so that the ejector acts to either start the cartridge or eject the shell, depending upon whether or not the shell has been discharged. This object is accomplished preferably by providing a latch or detent which holds the ejector plunger when the same is moved forward and its spring compressed for the first time, and which is operated to free the plunger by the plunger sear when the latter is moved to the position to hold the plunger by the operation of the firing mechanism in discharging the gun.

In the accompanying drawings, consisting of two sheets: Figure 1 is fragmentary longitudinal sectional elevation of a double-barrel firearm provided with an ejector embodying the invention, showing the position of the parts when the hammer is cocked ready for firing. Fig. 2 is a similar view thereof, showing the position when the hammer has been tripped and the gun discharged. Fig. 3 is a similar view thereof, showing the position of the parts when the breech is opened after discharging the gun. Fig. 4 is a fragmentary longitudinal sectional elevation thereof in a different plane, showing the position of the parts when the breech is opened before discharging the gun. Fig. 5 is a cross-section thereof in line 5—5 Fig. 1. Fig. 6 is a fragmentary horizontal section thereof, in line 6—6, Fig. 1. Fig. 7 is a horizontal section, partly in plan, in line 7—7, Fig. 1.

Like letters of reference refer to like parts in the several figures.

A represents a portion of the stock or frame of the gun, having the forwardly-projecting arm *a* to which the breech ends of the barrels B are hinged and the breech block or recoil plate *a'* which closes the rear ends of the barrels, C the removable fore-end which releasably holds the barrels on the hinge connection with the frame, D one of the hammers or tumblers for striking the firing pin to discharge the gun. These parts may be of any usual or suitable construction.

A double-barrel "hammerless" gun is illustrated in the drawings, having a separate ejector for each barrel. The ejectors are arranged side by side and each is complete in itself and operates entirely independently of the other. For the sake of simplicity therefor, one ejector only will be described as if it were applied to a single-barrel gun, for which the invention is equally adapted.

E represents the extractor, which, as usual, consists of a rod arranged to slide in a suitable guide or bearing on the underside of the barrel, and having a head to engage the flange of the cartridge, F the ejector plunger for operating the extractor, and G the plunger-controlling sear. In the preferred construction of the ejector shown in the drawings the plunger has a stem arranged to slide in a suitable bearing block *f* on the fore-end iron *f'*, and a rear part arranged in front of and adapted to bear against or strike the front end of the extractor rod. The plunger is actuated by a coil spring *f*<sup>2</sup> surrounding its stem between the bearing block *f* and a shoulder on the plunger. This spring tends to force the plunger rearwardly. The plunger sear G is pivoted by a pin *g*, or in any other suitable manner, in a recess in the fore-end just in front of the barrel hinge, and has an arm or tail which extends rearwardly over a trip face or shoulder *g'* on the frame arm *a*, and a depending leg with a lateral extension or foot. In the normal position of the



plunger sear, shown in Fig. 1, it does not engage the ejector plunger and the latter could move rearwardly over the sear but for the holding device to be later described. When the sear is tilted to the position shown in Fig 2, its upper front end or nose engages a shoulder  $g^2$  on the plunger to hold the latter from rearward movement by its spring.

The ejector as thus far described is of known construction. Its operation is as follows: When the breech is closed, the extractor is moved forwardly by the engagement of its head with the breech block, and its front end, engaging the ejector plunger, shoves the same forwardly and compresses its spring  $f^2$ . The hammer is cocked as usual, in opening the breech, by suitable means not shown. If the breech is opened preparatory to tripping the hammer in discharging the gun, the sear remains in the normal position, shown in Fig. 1, and allows the ejector plunger to be moved gradually rearward by its spring to start or assist in starting the cartridge from the barrel. If, however, the hammer is tripped to discharge the gun, the plunger sear will be moved into engagement with the shoulder  $g^2$  on the plunger, see the sear for the left-hand barrel in Fig. 2. The sear can be thus operated by any usual or suitable means controlled by the firing mechanism. In the construction shown, an operating rod H is employed arranged to slide longitudinally in a hole in the frame-arm  $a$  in position for its front end to strike the foot of the sear and its rear end to be struck by the hammer when tripped. The operating rod is normally pressed rearwardly by a suitable spring  $h$ . When the hammer is tripped the operating rod H is shoved forwardly, as shown in Fig. 2, and throws the nose of the sear G up into engagement with the shoulder  $g^2$  of the plunger. In thereafter opening the breech the sear holds the plunger against rearward movement by its spring until, when the breech is nearly completely opened, the tail of the sear engages the trip shoulder on the frame arm  $a$  and is thereby moved to release the plunger, which is then thrown suddenly rearward by its spring to strike the extractor rod a quick sharp blow. This will cause the shell to be ejected completely from the barrel, as indicated by the dotted lines in Fig. 3. With the ejector mechanism thus constructed the plunger must be moved forwardly and its spring compressed each time the breech is closed.

I represents a detent or latch for engaging and holding the ejector plunger in its forward position when it has been moved to this position and its spring compressed by once closing the breech. This latch or detent preferably consists of a spring strip secured by a screw, or otherwise, at its front end to the bearing block for the plunger, and having a shoulder  $i$  adapted to engage a co-operating shoulder or face on the plunger. The detent or spring I has a rounded or beveled rear end  $i'$  located in front of the foot of the plunger sear. When the sear is tilted to engage the plunger, upon discharging the gun, its foot engages the beveled rear end of the detent and depresses the detent so as to disengage its holding shoulder from the plunger, as shown in Fig. 2. The parts are so proportioned and arranged that when the sear is tripped, in opening the breech, to release the plunger, it disengages the plunger slightly before it releases the detent I, so that the bottom face of the plunger can move over the shoulder on the detent

and thereby prevent the detent from again springing into engagement with the plunger and holding it from operation.

When provided with the plunger-holding detent I, the ejector will operate as follows: When the plunger is moved forwardly the first time the breech is closed, its spring is compressed and the detent I will snap into engagement with the plunger and positively hold it in the forward position. When the breech is opened, therefore, preparatory to discharging the gun, the plunger will be held inactive in the forward position, and when the breech is closed, the plunger spring will not again have to be compressed. The breech can be repeatedly opened and closed before the gun is fired without operating the ejector plunger, and the user of the gun is thus relieved from the labor of compressing the ejector spring except in closing the breech for the first time after the gun has been discharged. When, however, the gun is discharged and the plunger sear moved to engage the plunger, as before stated, the sear, striking the beveled rear end of the detent I, will disengage it from the plunger. When the breech is next opened the plunger will be free from the detent and will be held only by the sear G, and when the latter is tripped by the engagement of its tail with the trip shoulder on the frame arm  $a$ , the plunger will be projected rearwardly by its spring to strike the extractor rod and throw the shell from the barrel. As the detent I prevents the rearward movement of the ejector plunger except when the gun has been discharged, the plunger can have no effect in only starting the cartridge from the barrel so that it can be grasped and withdrawn by the fingers. For thus starting the cartridge the usual extractor post or lug K at the hinge end of the frame arm  $a$  is employed. When the breech is opened this post engages a shoulder at the front end of the extractor rod and moves the latter rearwardly in the usual manner. Thus by the use of this extractor post, which is commonly provided on breech-loading guns, the unexploded cartridge is started when the breech is opened before firing the gun, and the ejector acts automatically to eject the empty shell after the gun has been discharged. The mechanism described, therefore, does all that the other ejectors do, and has the advantage thereover that the ejector spring only has to be compressed once after discharging the gun.

Manifestly the invention is not limited to the particular construction of the plunger-holding detent and ejector mechanism above described and shown in the drawings, and other constructions could be employed, the essential idea being the use of a detent or retaining device of some sort which holds the ejector plunger or hammer when once set and is automatically released to place the plunger under the control of its sear when the latter is moved to operative position by firing the gun.

I claim as my invention:

1. In an ejector for breech-loading firearms, the combination of an extractor, an ejector hammer for operating the extractor, a device which is placed in controlling relation to said hammer by the firing mechanism, and means which normally hold said ejector hammer from action and are operated to release the same when said device is placed in controlling relation, substantially as set forth.

2. In an ejector for breech-loading firearms, the combination of an extractor, an ejector hammer for operating the extractor, a sear which is moved into controlling relation to said hammer by the firing mechanism of the gun,



and a detent which holds said hammer against action and which is operated to release said hammer to the control of said sear by the movement of said sear into controlling position, substantially as set forth.

5 3. In an ejector for breech-loading firearms, the combination of an extractor, an ejector hammer for operating the extractor, a sear for controlling the action of said ejector hammer, a holding detent for said ejector hammer, and means operated by the firing mechanism of the gun  
10 for placing said sear in holding relation to said ejector hammer and moving said detent to release said ejector hammer, substantially as set forth.

15 4. In an ejector for breech-loading firearms, the combination of an extractor, an ejector hammer for operating the extractor, a detent which normally holds said ejector hammer from action, and a normally inactive sear for said ejector hammer which is placed in controlling relation thereto and moves said detent to release said ejector hammer by the firing mechanism of the gun, substantially as  
20 set forth.

5. In an ejector for breech-loading firearms, the combination of an extractor, an ejector hammer for operating the extractor, a sear for controlling the action of said

ejector hammer, a holding detent for said ejector hammer, means operated by the firing mechanism of the gun for placing said sear in holding relation to said ejector hammer and moving said detent to release said ejector hammer, and a device for positively moving the extractor to start the cartridge when the breech is opened, substantially as set forth. 25

6. In an ejector for breech-loading firearms, the combination of an extractor, a spring-actuated ejector hammer for operating the extractor, a sear for controlling the action of said ejector hammer, a spring detent which normally engages said ejector hammer and holds it against the action of its spring, said detent having a part arranged to be engaged by said sear to release said ejector hammer, and means operated by the firing mechanism of the gun for moving said sear to engage said ejector hammer and release said detent from said ejector hammer, substantially as set forth. 30 35 40

Witness my hand, this 17th day of April, 1907.

GEORGE F. SCHAFER.

Witnesses:

JOSEPHINE S. BENDER,  
F. M. FARWELL.