

No. 716,685.

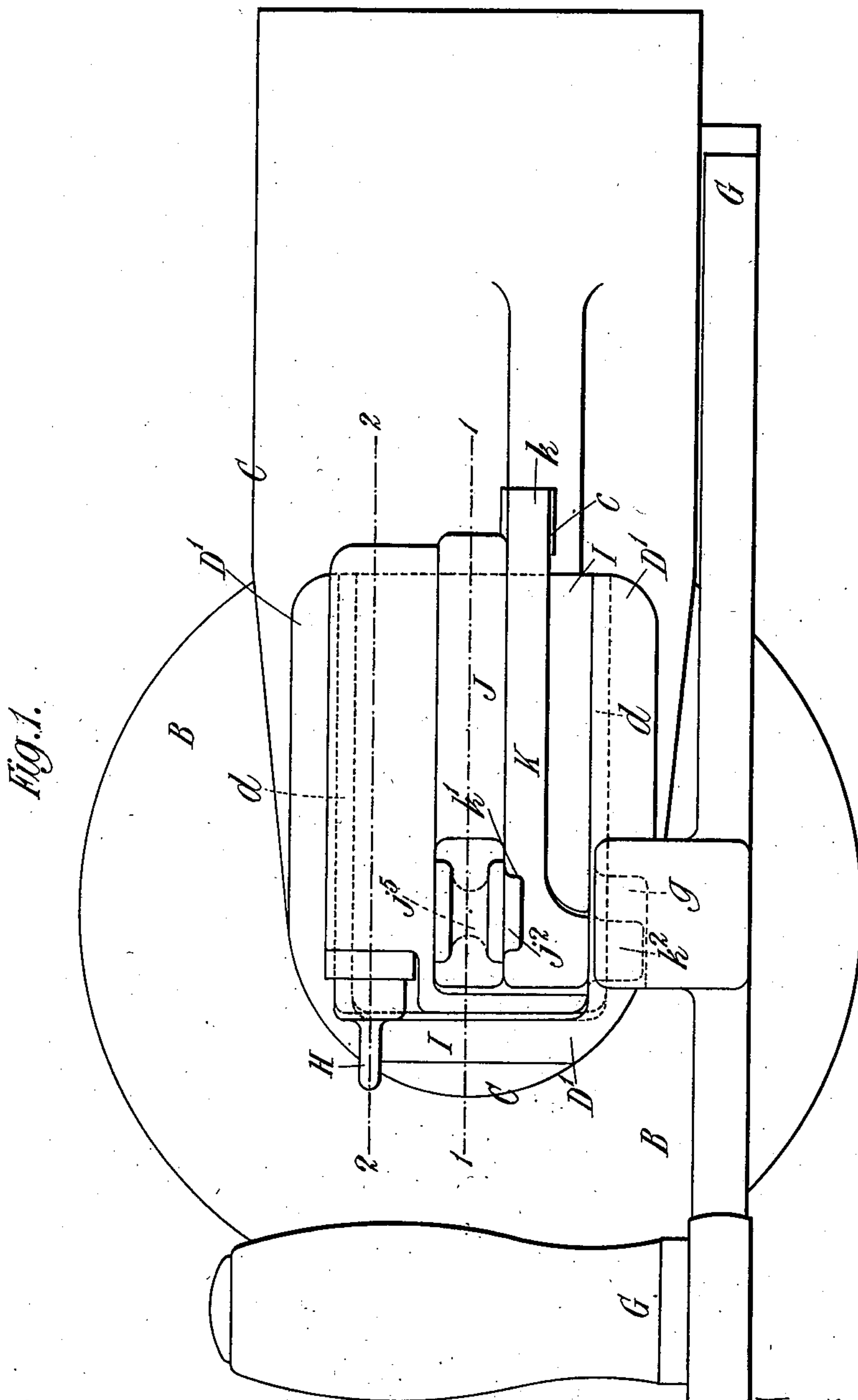
Patented Dec. 23, 1902.

A. T. DAWSON & G. T. BUCKHAM.
FIRING MECHANISM FOR GUNS.

(Application filed Feb. 28, 1902.)

(No Model.)

4 Sheets—Sheet 1.



Witnesses;
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James L. Norris.
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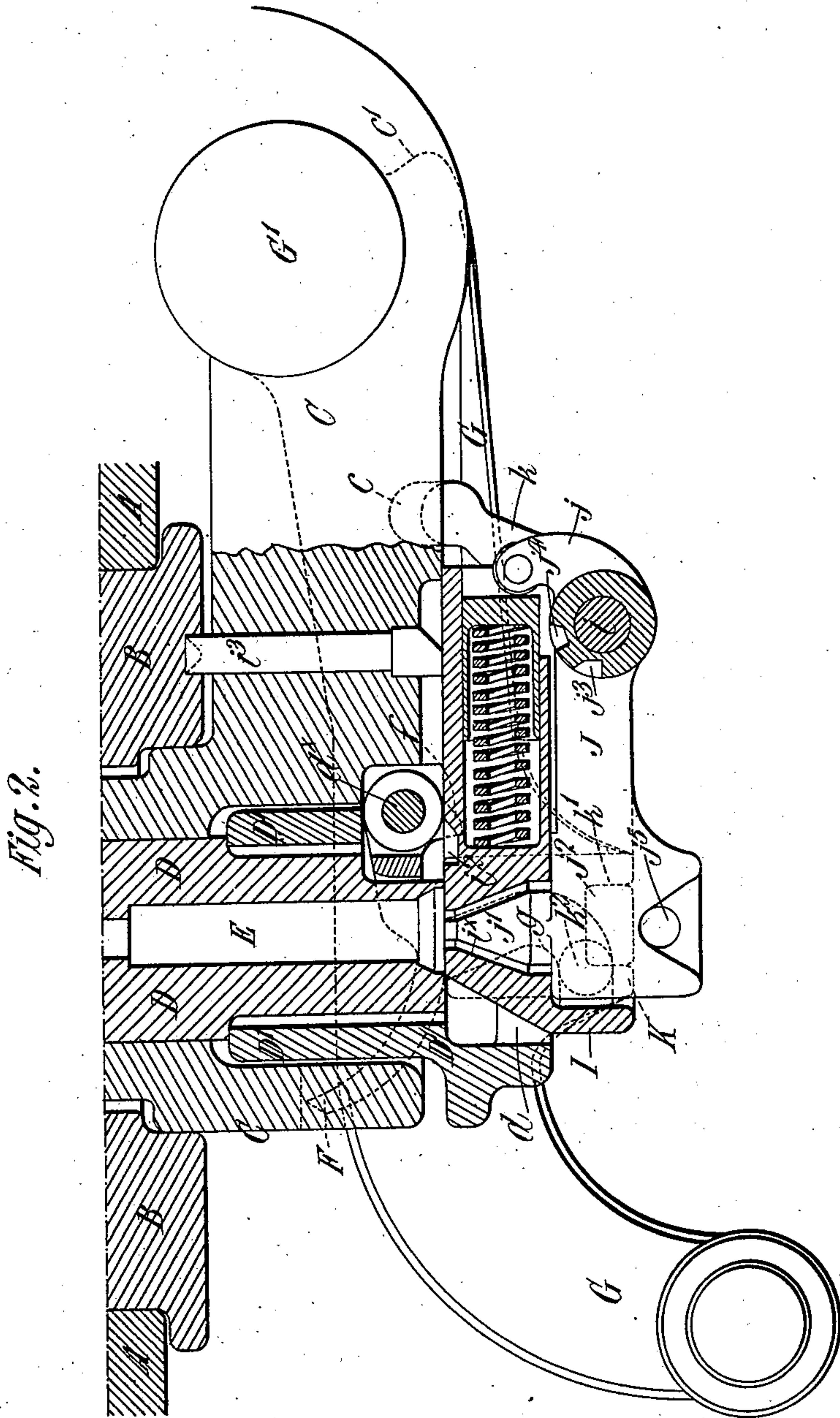
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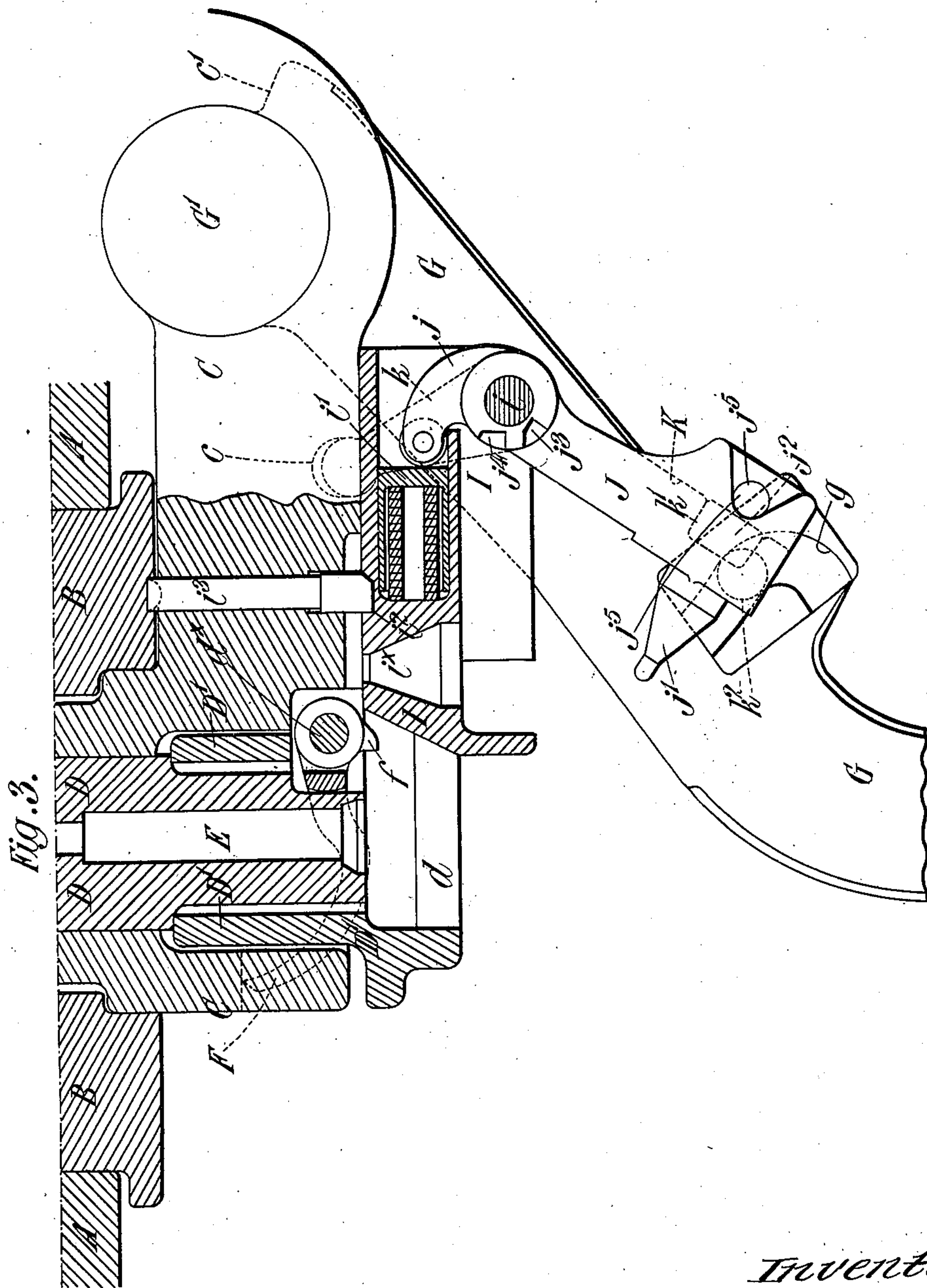
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4 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

ARTHUR TREVOR DAWSON AND GEORGE THOMAS BUCKHAM, OF WESTMINSTER, LONDON, ENGLAND, ASSIGNORS TO VICKERS SONS & MAXIM, LIMITED, OF WESTMINSTER, LONDON, ENGLAND.

FIRING MECHANISM FOR GUNS.

SPECIFICATION forming part of Letters Patent No. 716,685, dated December 23, 1902.

Application filed February 28, 1902. Serial No. 96,151. (No model.)

To all whom it may concern:

Be it known that we, ARTHUR TREVOR DAWSON, late lieutenant of Royal Navy, and GEORGE THOMAS BUCKHAM, engineer, subjects of the King of Great Britain, residing at 32 Victoria street, Westminster, in the county of London, England, have invented certain new and useful Improvements in the Firing Mechanism of Guns, of which the following is a specification.

This invention relates to the firing mechanism of guns, and particularly to the kind of such mechanism in which the firing hammer or pin is cocked during the opening of the breech.

One of the chief objects of our invention is to so construct the firing mechanism that the firing hammer or pin can be cocked directly by the hand-lever employed for operating the breech mechanism, the arrangement being such that said hammer or pin can likewise be cocked without actuating said hand-lever when necessary.

We will describe our invention with reference to the accompanying drawings, in which—

Figure 1 is a rear end elevation and Fig. 2 a horizontal section taken approximately on the line 1 1 of Fig. 1, showing our improved firing mechanism. In these figures the parts are represented in the position they occupy when the gun has been fired. Figs. 3 and 4 are horizontal sections similar to Fig. 2. Fig. 3 shows the parts of the firing mechanism in the position they occupy when just cocked by swinging the hand-lever to open the breech. Fig. 4 shows the parts of the mechanism in the position they occupy when cocked and ready to fire—that is to say, with the breech locked. Fig. 5 is a horizontal section taken on the line 2 2 of Fig. 1 and shows the trigger in the position it occupies when the hammer is cocked.

Like letters of reference indicate similar parts in all the figures.

A is the wall of the breech-chamber of the gun.

B is the breech-block. C is the swinging carrier on which said block is rotatably mounted.

D is the obturator-bolt.

E is the primer.

F is the primer-extractor.

G is the hand-lever for actuating the breech mechanism, and H is the trigger.

I is a sliding piece or frame which is adapted to work laterally in guides *d*, formed on a nut *D'*, secured onto the end of the obturator-bolt *D*. Pivotally connected with this frame by means of a pin *i* is the firing-hammer *J*, which has a short bent arm *j* at one end and the firing pin or striker *j'* at the other end. The free end of the said bent arm is furnished with a roller against which bears a spring-plunger *i'*, contained within a cavity in said sliding piece *I*. Mounted on the pin *i* of the hammer *J* is a lever *K*, (hereinafter referred to as the "cocking-lever," which is furnished with an arm *k*, that engages with a recess *c* in the swinging carrier *C*. The underside of the hammer *J* is provided with a projection *j''*, which engages with a recess *k'* in the upperside of the cocking-lever *K*, said recess being open at its rear. On the under side of the cocking-lever is a pin *k''*, engaging with a cam groove *g* in the hand-lever *G*. When said hand-lever is moved outwardly about its pivot *G'*, or in the direction to open the breech, the aforesaid pin *k''* travels in the said cam-groove, and the cocking-lever is thereby caused to turn outwardly about the hinge-pin *i* on the sliding piece *I*. In so doing the free end of the arm *k* of the cocking-lever turns in the recess *c* of the swinging carrier, as about a fulcrum, and causes the sliding frame to move laterally to the right in its guides. At the same time the hammer *J* is caused to turn outwardly about the said hinge-pin *i* by the engagement of the projection *j''* with the recess *k'* in the cocking-lever. The arm *j* of the hammer then moves the plunger *i'* inward with respect to its recess in the sliding piece *I*, thereby compressing the spring of said plunger. The boss of the hammer *J* is formed with two notches *j''* *j'''*, with the latter of which the nose of the trigger *H* engages by the action of its spring *h* as said hammer assumes its fully-cocked position. (See Fig. 5.) As the hammer assumes its fully-cocked position the sliding piece *I* completes its lateral out-

ward movement and brings a notch i^2 therein opposite a locking-bolt i^3 on the carrier, which bolt is at that time caused to protrude into said notch by the rotary unlocking movement 5 of the breech-block, on which is formed a small inclined plane. The sliding piece I is thus retained in its outward position. Fig. 3 represents the parts in this position. The continued outward movement of the hand-lever G will bring a shoulder c' thereon against a projection on the carrier, whereby the latter will be caused to swing open and withdraw the block from the breech-chamber in the well-known manner. The aforesaid locking-bolt i^3 maintains the sliding piece I in 15 proper position for the cam-groove g of the hand-lever to reengage with the pin k^2 when said hand-lever is swung inwardly to close the breech. On the inward movement of the said hand-lever the pin k^2 of the cocking-lever will as the hand-lever assumes the position represented in Fig. 3 and continues its inward movement travel in the cam-groove g of the hand-lever in the reverse direction to that 20 above stated and in so doing will by the action of the arm k cause the sliding piece I to move inwardly, or toward the left, the aforesaid bolt i^3 having been previously liberated by the rotary movement of the block as it performs its locking movement, so that said bolt will be shifted inwardly by the inclined surface of the notch i^2 acting on the correspondingly-inclined nose of said bolt i^3 . The hole i^x in the sliding piece is thus brought opposite the 35 axis of the primer E as the hand-lever completes its inward movement. The aforesaid cocking-lever K being in one piece with the arm k turns inwardly about its hinge-pin i as the sliding piece moves inwardly; but the hammer remains held in its cocked position by the trigger engaging with the notch j^4 , this inward movement of the cocking-lever independently of the hammer being permitted by the escape of the projection j^3 thereon 45 from the recess k' of the cocking-lever as the latter moves inward. The parts thus assume the position represented by Fig. 4. Then by pulling the trigger II outwardly by means of a lanyard connected with the eye h' , Fig. 5, the nose of the trigger will be withdrawn from the notch j^4 and the hammer permitted to fly forward under the action of the spring-plunger i' on the bent arm j of the hammer, whereby the firing-pin will be 55 caused to strike the primer and fire the gun. As the hammer assumes its fired position the nose of the trigger will engage with the notch j^3 of the hammer and retain the latter in such position until the hand-lever G is again moved outwardly, the turning of the hammer about the hinge-pin i then causing the inclined portion of said notch j^3 to act on the inclined portion of the nose of the trigger and force it outwardly against the resistance 65 of its spring. In order to enable the trigger to be cocked independently of the hand-lever

G, it is provided with an eye j^5 . The aforesaid primer-extractor F is mounted on a pivot-pin d^x , carried by the said nut D', and its boss is furnished with a tooth f , with which 70 a projection on the slide engages as the carrier is swung open in order to actuate said extractor in the ordinary manner.

By detaching the nut D' from the obturator-bolt D the entire firing mechanism can 75 be removed bodily from the gun.

What we claim, and desire to secure by Letters Patent of the United States, is—

1. In firing mechanism for guns, the combination with the hand-lever and the swinging 80 carrier, of a laterally-sliding piece on the carrier, a spring-controlled firing-hammer pivoted to said sliding piece, a cocking-lever also pivoted to said sliding piece, means whereby the cocking-lever in its outward movement 85 engages with and cocks the hammer and in its inward movement becomes disengaged therefrom, a trigger for retaining the hammer cocked, and means for actuating the sliding piece and the cocking-lever by the movement of the hand-lever substantially as described. 90

2. In firing mechanism for guns, the combination with the hand-lever and the swinging 95 carrier, of a laterally-sliding piece on the carrier, a spring-controlled firing-hammer pivoted to said sliding piece, a cocking-lever also pivoted to said sliding piece, a projection on said firing-hammer adapted to engage with a rearwardly-open recess in the cocking-lever, 100 a trigger for retaining the hammer cocked, and means for actuating the sliding piece and the cocking-lever by the movement of the hand-lever substantially as described.

3. In firing mechanism for guns, the combination with the hand-lever and the swinging 105 carrier of a laterally-sliding piece on the carrier, a spring-controlled firing-hammer pivoted to said sliding piece, a cocking-lever also pivoted to said sliding piece, means whereby 110 the cocking-lever in its outward movement engages with and cocks the hammer and in its inward movement becomes disengaged therefrom, a trigger for retaining the hammer cocked, a projection on the cocking-lever 115 adapted to engage with a cam-groove in the hand-lever and an arm on the cocking-lever engaging with a recess in the carrier, substantially as and for the purpose described.

4. In firing mechanism for guns, the combination with the hand-lever and the swinging 120 carrier, of a laterally-sliding piece on the carrier, a firing-hammer pivoted to said sliding piece, an arm on said hammer against which arm a spring-plunger in the sliding piece 125 bears, a cocking-lever also pivoted to said sliding piece, a projection on the firing-hammer adapted to engage with a rearwardly-open recess in the cocking-lever, a trigger for retaining the hammer cocked, a projection on 130 the cocking-lever adapted to engage with a cam-groove in the hand-lever, and an arm on

the cocking-lever engaging with a recess in the carrier substantially as and for the purpose described.

5. In firing mechanism for guns, the combination with the hand-lever and the swinging carrier, of a laterally-sliding piece on the carrier, a spring-controlled firing-hammer pivoted to said sliding piece, a cocking-lever also pivoted to said sliding piece, means whereby 10 the cocking-lever in its outward movement engages with and cocks the hammer and in its inward movement becomes disengaged therefrom, a trigger adapted to move laterally on said sliding piece, a spring for tending to keep the beveled nose of said trigger 15 engaged with one or other of two beveled notches in the boss of the firing-hammer, and means for actuating the sliding piece and the cocking-lever by the movement of the hand- 20 lever substantially as described.

6. In firing mechanism for guns, the combination with the hand-lever and the swinging carrier, of a laterally-sliding piece formed with a hole for the pin of the firing-hammer 25 to reach the detonator, of guides for said sliding piece formed on a nut secured on the end of the obturator-bolt connected with the carrier, of a locking-bolt in the carrier adapted to be acted upon at one end by the breech- 30 block in order to thrust it rearwardly and having at the other end a beveled surface to

engage with a beveled notch in the sliding piece when so thrust rearwardly, a spring-controlled firing-hammer pivoted to said sliding piece, a trigger on said sliding piece, and 35 means for actuating the sliding piece and cocking the hammer by the movement of the hand-lever substantially as described.

7. In firing mechanism for guns, the combination with the hand-lever and the swinging 40 carrier, of a laterally-sliding piece on the carrier, a spring-controlled firing-hammer pivoted to said sliding piece, a cocking-lever also pivoted to said sliding piece, means whereby the cocking-lever in its outward movement 45 engages with and cocks the hammer and in its inward movement becomes disengaged therefrom, a trigger on the sliding piece for retaining the hammer cocked, means for actuating the sliding piece and the cocking-le- 50 ver by the movement of the hand-lever, and means whereby the hammer can be cocked independently of the hand-lever substantially as described.

In testimony whereof we have hereunto set 55 our hands, in presence of two subscribing witnesses, this 19th day of February, 1902.

ARTHUR TREVOR DAWSON.

GEORGE THOMAS BUCKHAM.

Witnesses:

ST. MARIE BONVERIE,
HENRY KING.