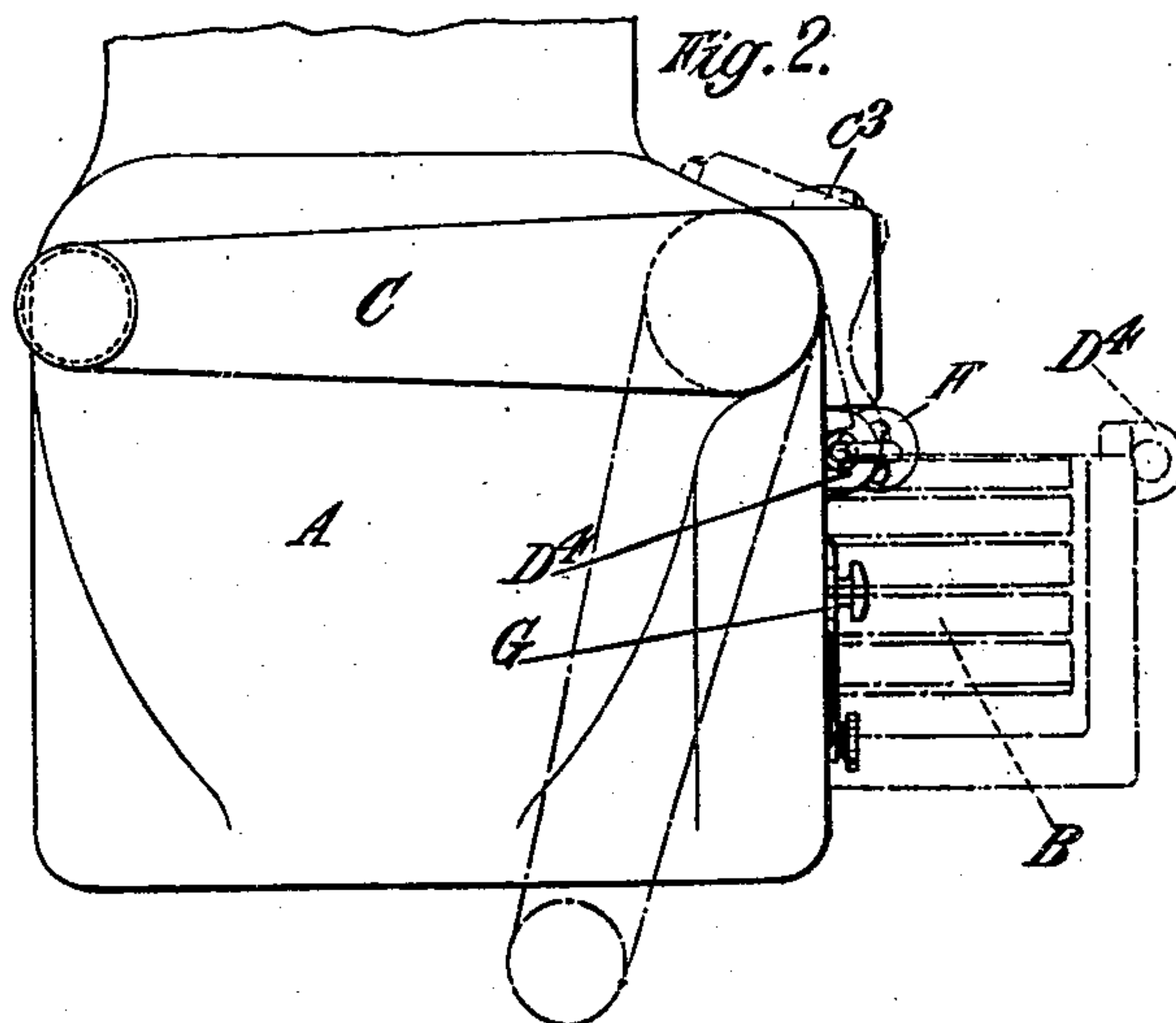
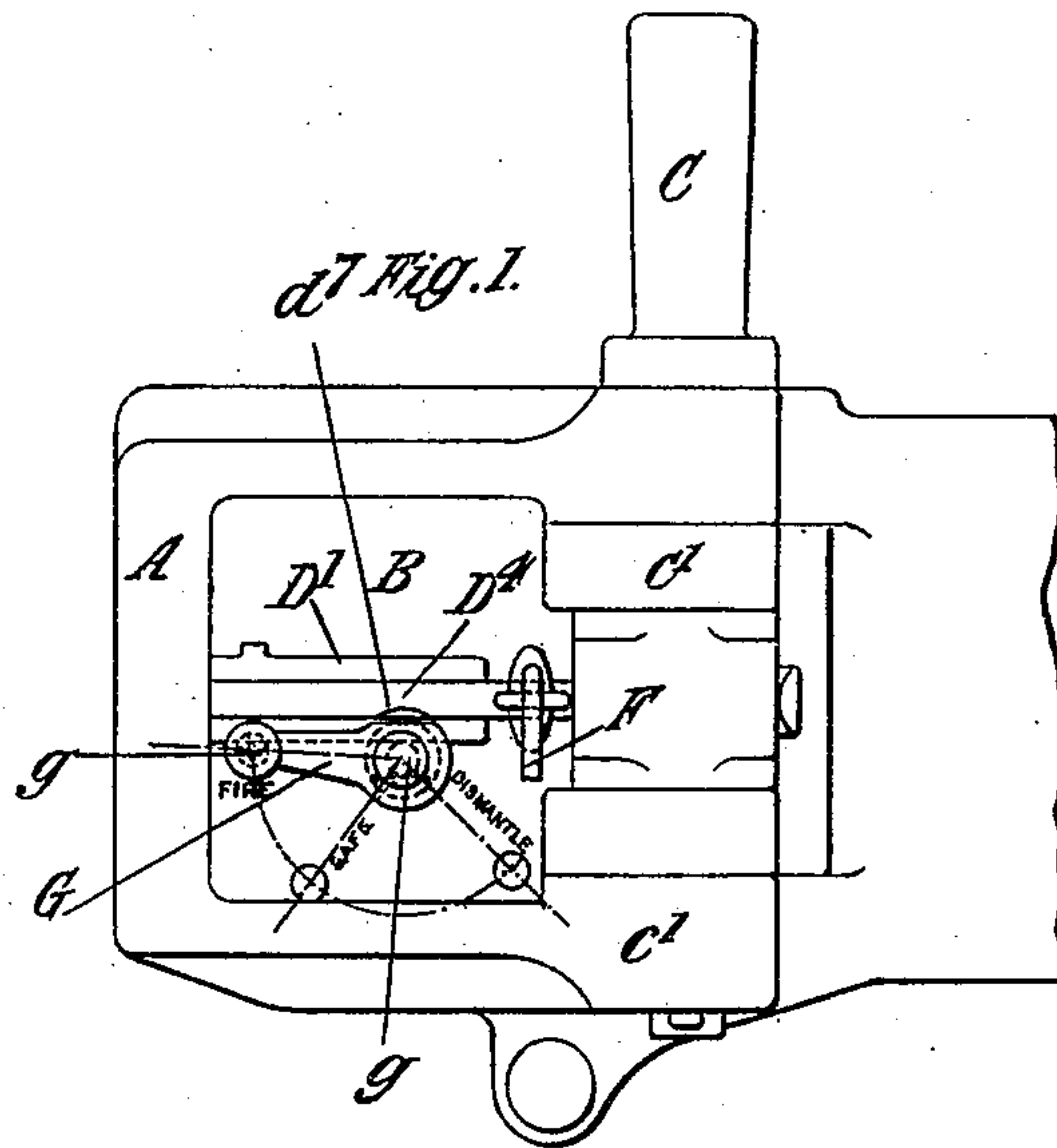


A. T. DAWSON & G. T. BUCKHAM.
BREECH MECHANISM OF GUNS.
APPLICATION FILED SEPT. 27, 1906.

898,840.

Patented Sept. 15, 1908.

5 SHEETS—SHEET 1.



Witnesses:

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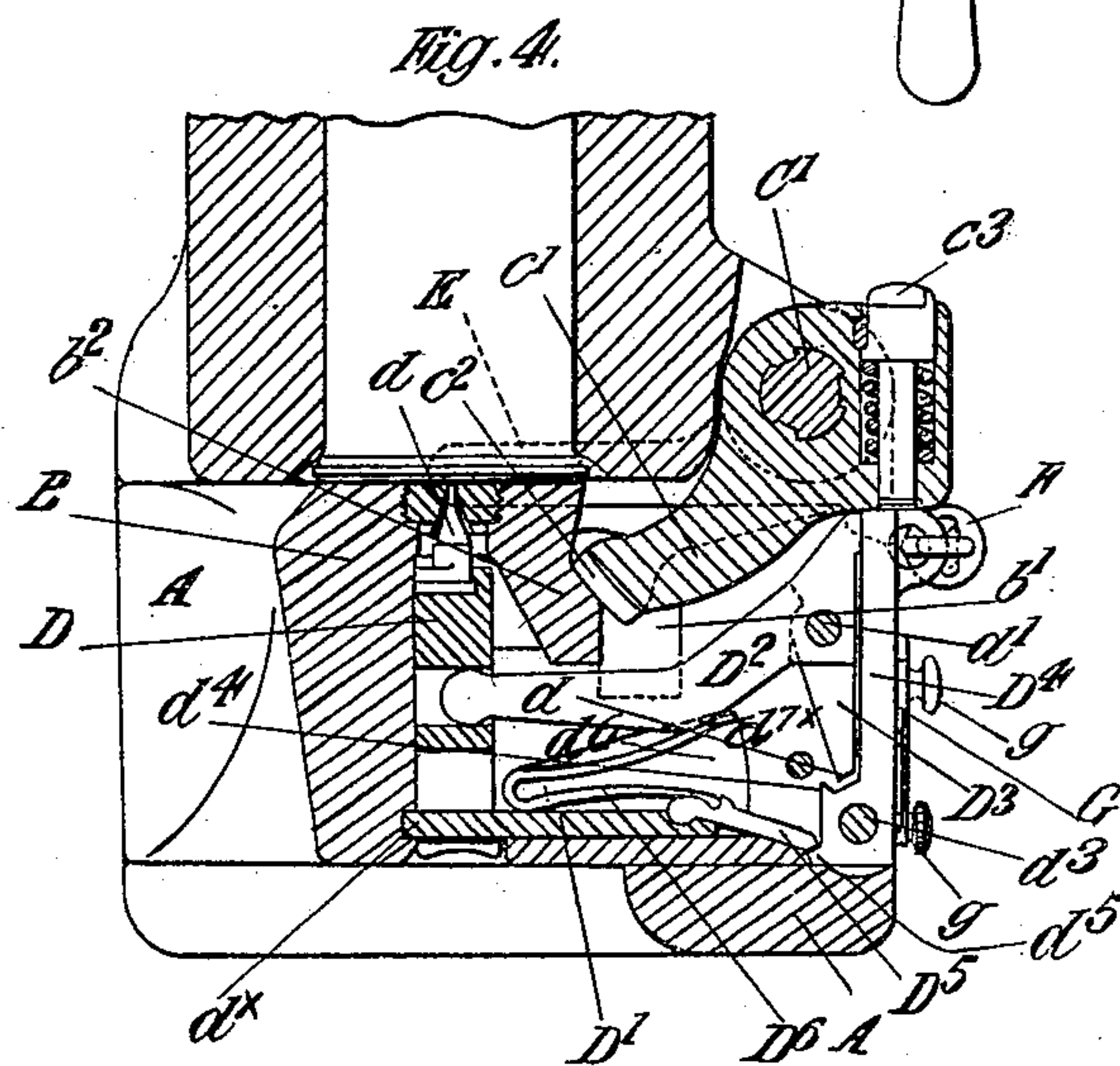
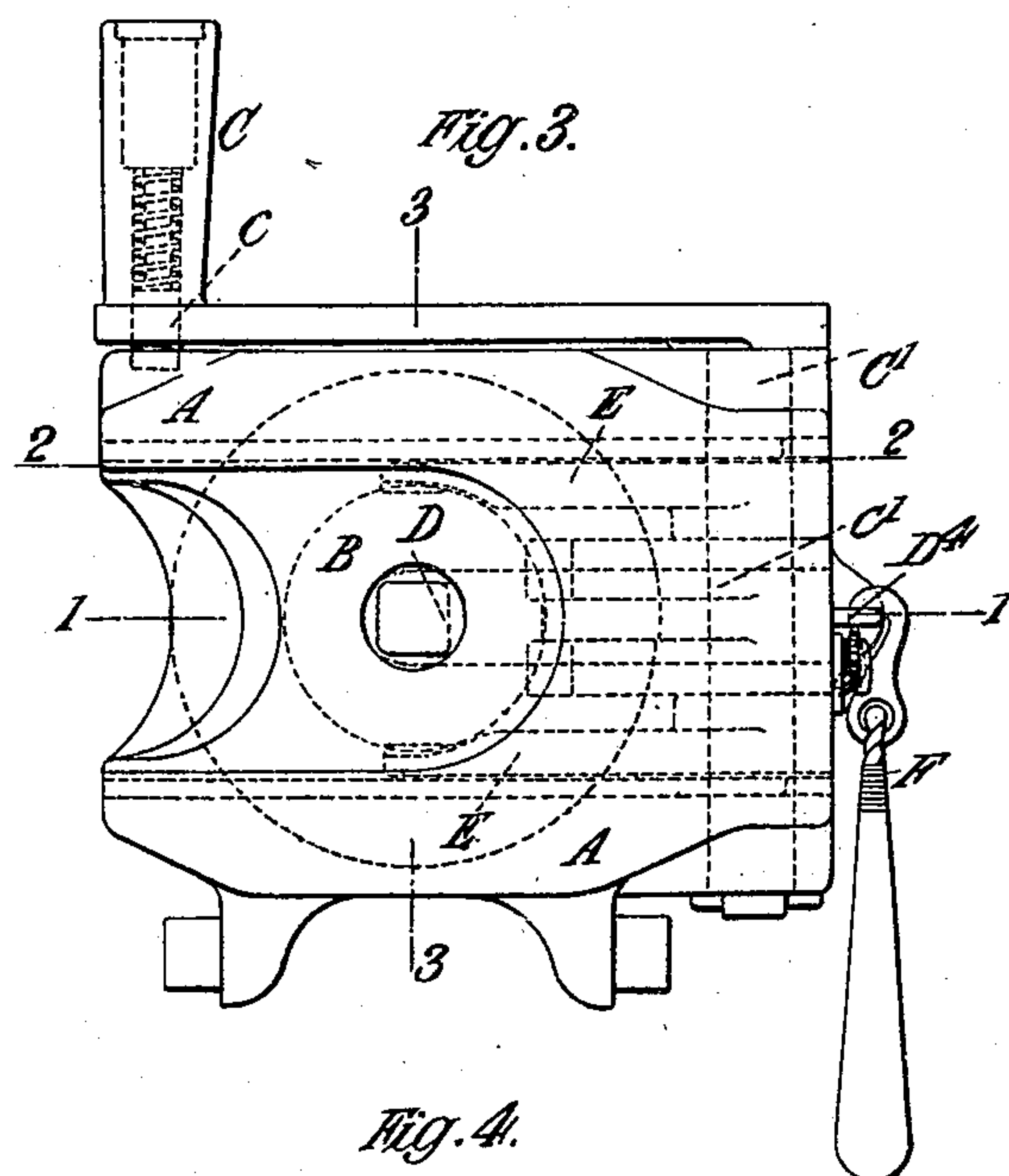
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5 SHEETS—SHEET 2.



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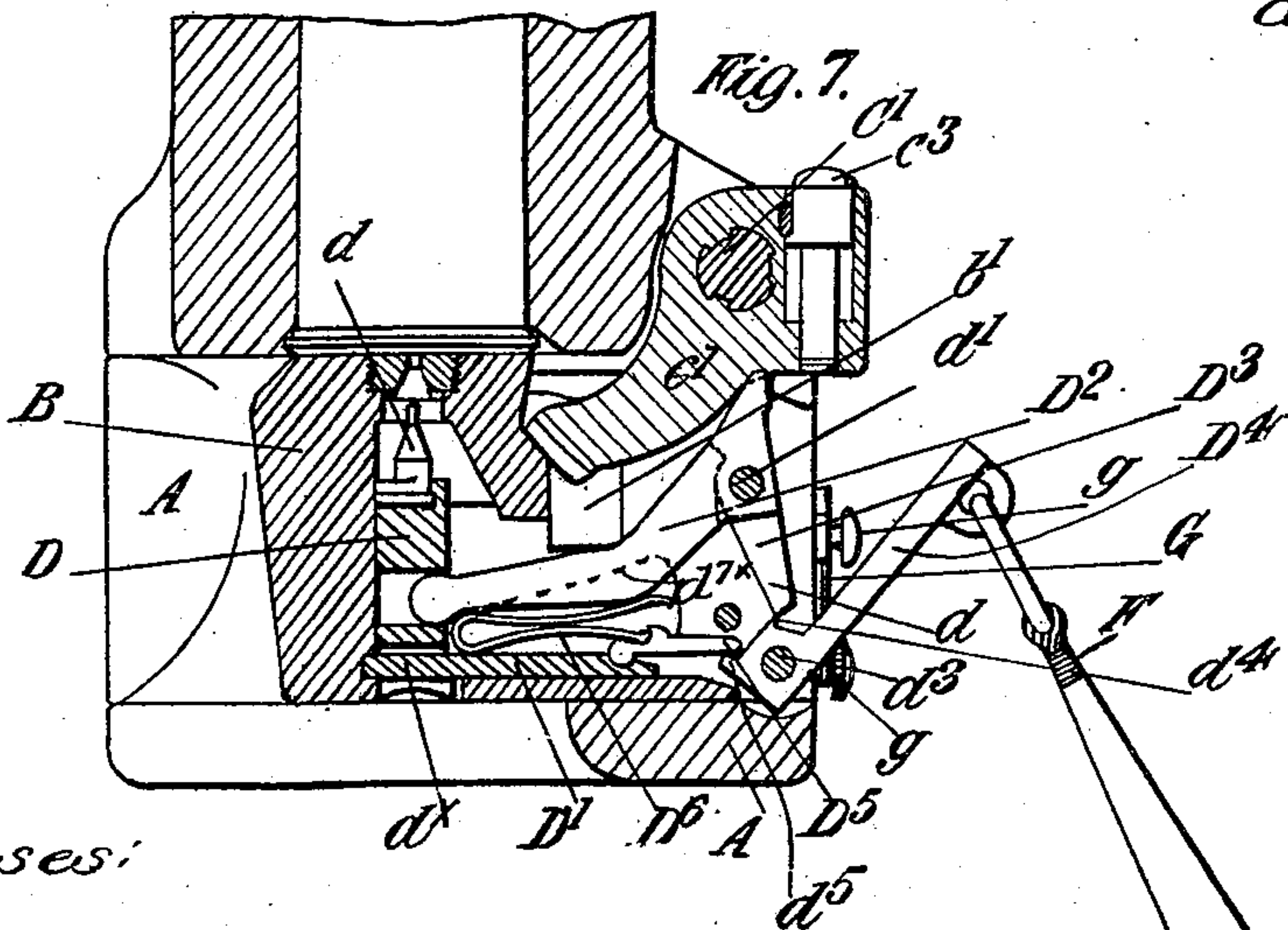
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BREECH MECHANISM OF GUNS.

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5 SHEETS—SHEET 3.



Chas. J. Smith

A. T. DAWSON & G. T. BUCKHAM.

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5 SHEETS—SHEET 4.

Fig. 8

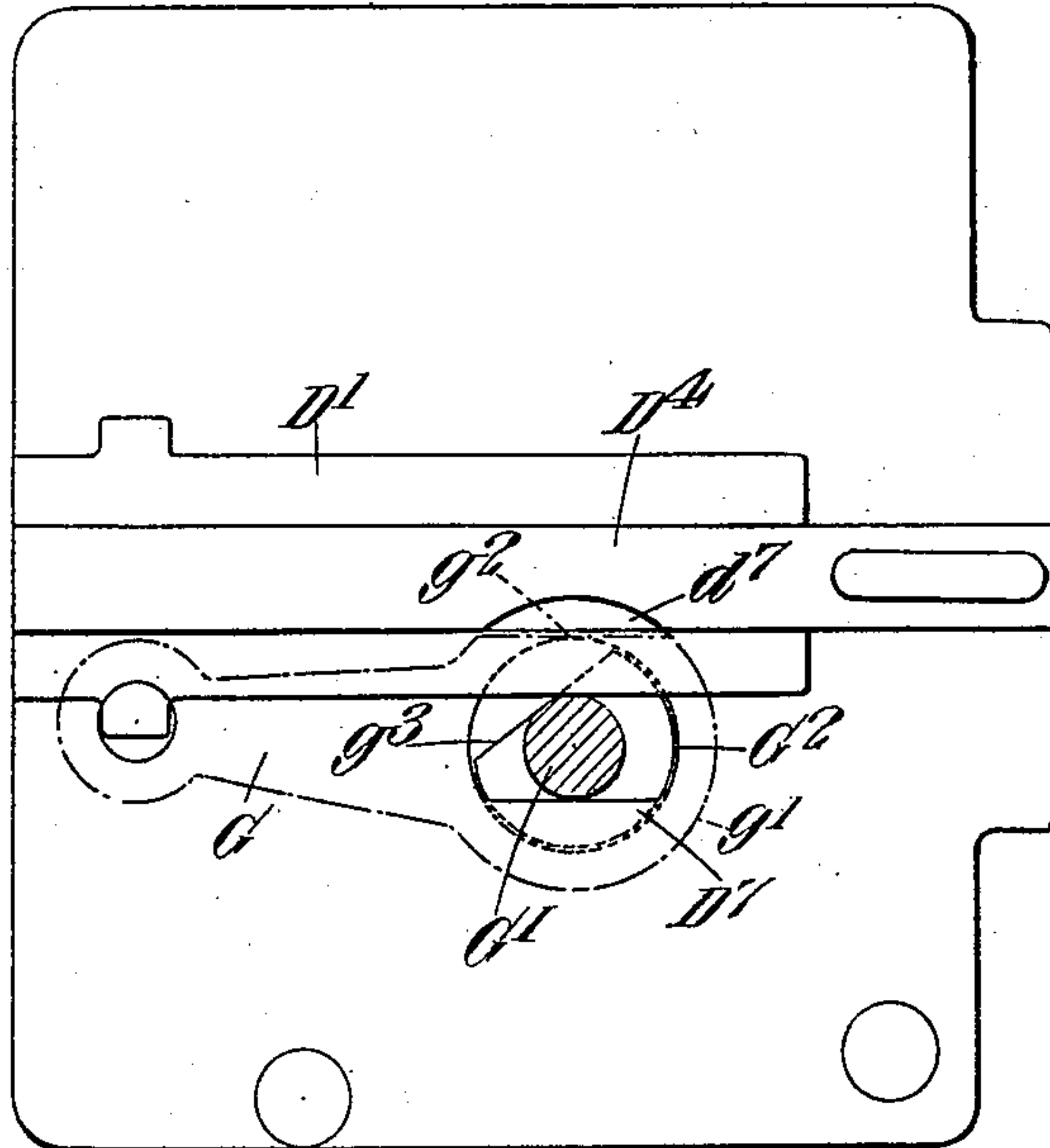
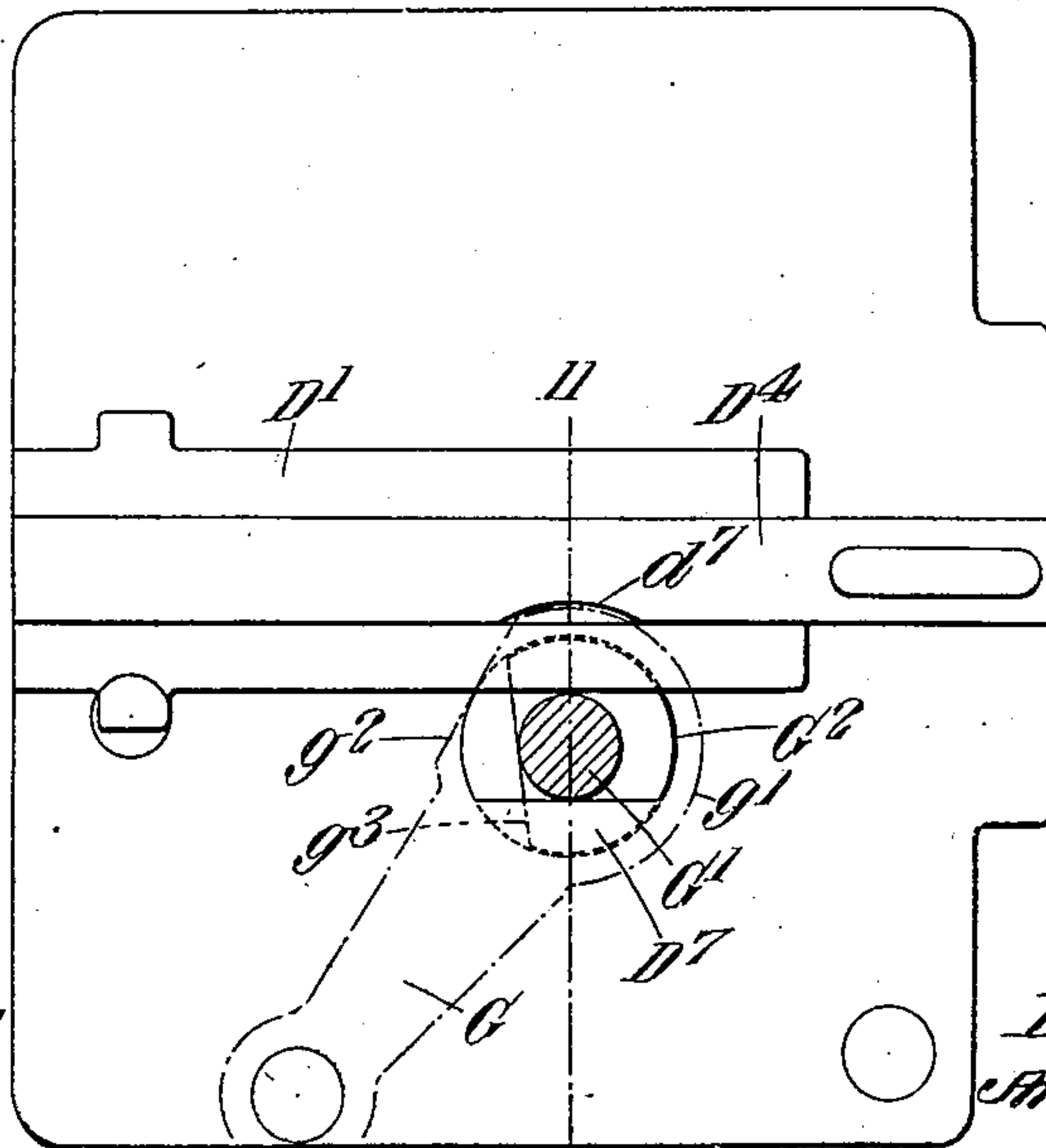


Fig. 9



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6 SHEETS—SHEET 5.

Fig. 10.

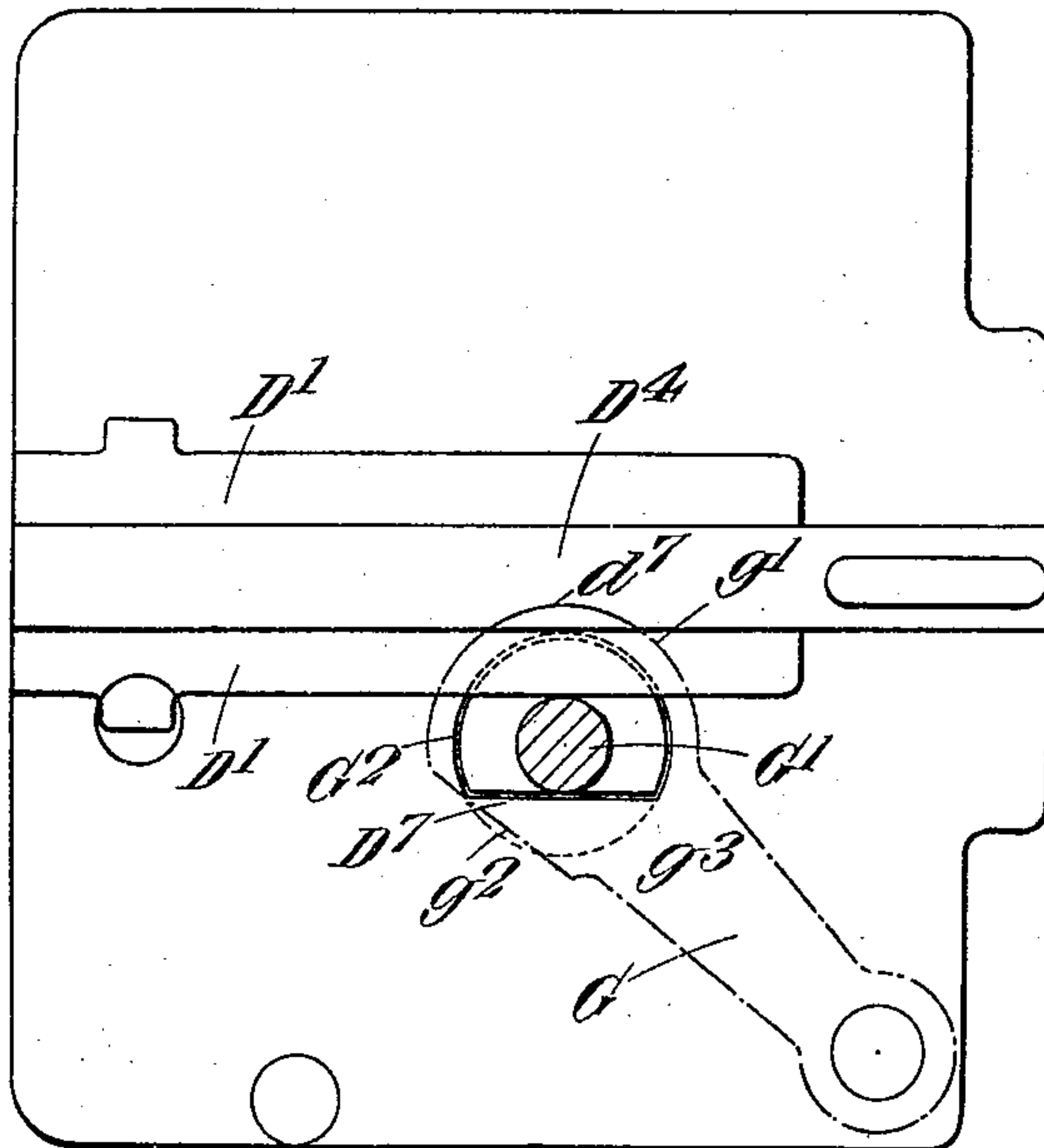
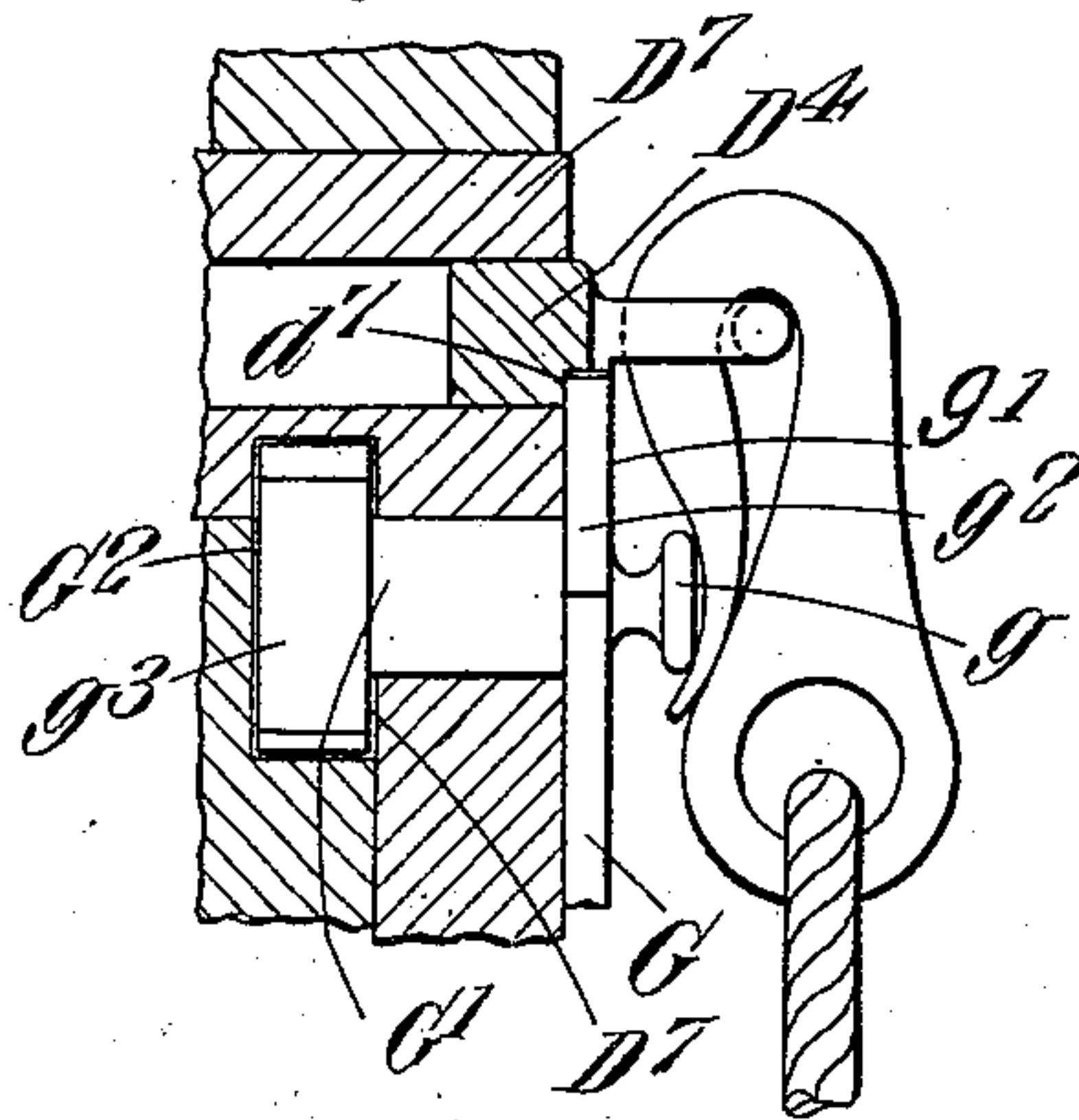


Fig. 11.



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UNITED STATES PATENT OFFICE.

ARTHUR TREVOR DAWSON AND GEORGE THOMAS BUCKHAM, OF LONDON, ENGLAND, ASSIGN-
ORS TO VICKERS SONS & MAXIM LIMITED, OF LONDON, ENGLAND.

BREECH MECHANISM OF GUNS.

No. 898,840.

Specification of Letters Patent.

Patented Sept. 15, 1908.

Application filed September 27, 1906. Serial No. 336,422.

To all whom it may concern:

Be it known that we, ARTHUR TREVOR DAWSON, lieutenant of the Royal Navy, director and superintendent of Ordnance Works, and GEORGE THOMAS BUCKHAM, engineer, both 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 Relating to the Breech Mechanism of Guns, of which the following is a specification.

This invention relates to breech mechanism which is specially applicable to guns of the kind that are mounted low down in their carriages as in the case of mountain guns, and of the kind in which the breech block is of the sliding type and adapted to move horizontally.

An important feature of our invention is the arrangement of the actuating hand lever above the breech chamber with its spindle situated vertically at one side of the chamber and adapted to carry the crank or arm for actuating the block, as well as the cartridge extractor which is made in two parts having toe pieces for suitably arranged inclines and shoulders on the block to act upon during the opening movement.

Another important feature of our invention is the firing mechanism which is of the slip lock type and comprises a lever which we term a tripping shoe that is mounted on the axis pin of the cocking lever. This tripping shoe is free to move independently in one direction but when moved in the other direction it carries with it the cocking lever and thereby retracts the firing pin to which said lever is connected. The tripping shoe is actuated by a trigger which is in the form of a pivoted bar and which when operated to actuate the tripping shoe also at the same time actuates what we term a retaining lever which is controlled by the main spring. Only one spring which is of V shape is employed and it is utilized not only to impel the firing pin forward to fire the cap of the cartridge but to return the trigger to its normal position and also to retract the point of the firing pin within the face of the breech block after firing and the firing gear resumes the normal position. The firing mechanism with the exception of the firing pin is mounted in a detachable casing which is retained in position by a safety lever. An extension on

the casing covers the firing pin hole when the firing mechanism is in position.

In order that our said invention may be clearly understood and readily carried into effect, we will proceed to describe the same more fully with reference to the accompanying drawings, in which:—

Figure 1 is a side elevation, Fig. 2 a plan, and Fig. 3 an end view of the breech end of a gun provided with our improved mechanism. Figs. 4 and 5 are longitudinal sections taken approximately on the lines 1—1 and 2—2 of Fig. 3. Fig. 6 is a vertical section on the line 3—3 of Fig. 3. Fig. 7 is a section similar to Fig. 4 but shows the parts of the firing mechanism in the position they occupy when the firing pin is fully retracted and on the point of being released to fire the gun. Fig. 7^a is a view of the detachable casing detached from the breech block. Figs. 8, 9 and 10 are side elevations showing the safety lever in different positions. Fig. 11 is a section on line 11—11 of Fig. 9.

A is the breech chamber of the gun, and B the breech block that slides horizontally therein.

C is the breech actuating hand lever.

D is the firing pin, E is the extractor and F is the lanyard pull or handle for actuating the firing mechanism.

The breech block B is adapted to move horizontally so that ready access to the breech is obtainable at all angles of elevation of the gun. The breech chamber A is provided with grooves of buttress-thread section in which correspondingly shaped ribs *b b* on the block are adapted to slide during the opening and closing movements of the block. The breech actuating hand lever C is situated above the breech chamber so that ready access can be had thereto at all angles of elevation of the gun, and a spring controlled catch *c* is arranged in the handle to restrain the said lever from turning outwardly when the gun is at high elevation. The spindle *C'* of the hand lever is situated vertically at one side of the breech chamber and carries a block-actuating crank or arm *c'* which has studs for engaging with suitable slots or recesses *b'* in the block, the said studs having a portion of their circumference removed to form a curved part *c²* concentric with the axis of the block-actuating crank or arm. This curved part *c²* engages with a correspondingly curved surface *b²* of the block and

has the effect of locking the block in its closed position as is well understood. The said block-actuating crank or arm has a spring buffer c^3 so arranged that it will bear against the side of the gun when the block assumes its fully opened position and will operate to slightly return the block and cause it to overlap the charge chamber as is usual in this class of mechanism, so that when an ensuing cartridge is introduced into the charge chamber, the block by assuming this overlapping position will prevent the cartridge from leaving the charge chamber while the breech is open and the gun at a high angle of elevation; it will also prevent the cartridge from unduly rebounding when rapid loading is being performed.

The extractor E is made in two parts as aforesaid and both of said parts are mounted on the spindle C' of the hand lever and are capable of free angular movement thereon. They have toe-pieces e (Fig. 5) against which suitably arranged inclines b^3 on the block strike, as said block performs its opening movement, thus causing the extractor to prise the cartridge case from the charge chamber of the gun. The continued opening movement of the block causes rectangular faces b^4 thereon to smartly strike the said toe-pieces whereupon the extractor promptly ejects the loosened cartridge case from the charge chamber, as the opening of the breech is completed.

The firing mechanism is contained mainly in the flat casing D' . It comprises the firing pin D with a detachable point d , and the cocking lever D^2 of which one end engages with the firing pin and the other end pivots in the casing by means of the axis-pin d' . On this axis-pin is the tripping shoe D^3 , which is free to move independently in an inward direction but which when moved in the other or outward direction carries with it the cocking lever D^2 . D^4 is the trigger which is also mounted in the said casing and as before stated is in the form of a bar which is pivoted at d^3 in a position to enable it, when pulled outwardly, to actuate the tripping shoe D^3 and at the same time to actuate the retaining lever D^5 which is controlled by the main spring D^6 . This spring is situated in a recess d^6 and its forward limb normally bears against the wall d^{7x} of said recess so as to be inoperative with respect to the cocking lever and permit the latter to be retracted, and to thus withdraw the firing pin into the safety position, by the trigger as it resumes its inward position and bears against the tripping shoe D^3 as shown in Fig. 4.

To operate the firing mechanism, the trigger is pulled by the lanyard handle F , whereupon said trigger moves outwardly about its pivot and causes a projection or shoulder d^4 near its pivot to operate the tripping shoe D^3 ,

thus turning said cocking lever about its axis-pin and retracting the firing pin until the tripping shoe is able to slip out of engagement with the trigger, whereupon the cocking lever (taking with it the firing pin) is propelled forward to fire the cartridge-cap by the main spring D^6 . The action of the main spring is, however, arrested by its recess in the case before the firing pin strikes the cap, said firing pin completing its advance by the energy of its momentum. The trigger D^4 being still held in its pulled or outward position maintains the main spring compressed by means of a projection or shoulder d^5 thereon engaging the retaining lever D^5 , and when the trigger is released, it is carried inward to its normal position by the remaining energy of the main spring. In thus moving, the shoulder d^4 of the trigger first slips past the end d of the tripping shoe D^3 by shifting the latter about its pivot d' , and then as said trigger completes its inward movement, it returns said tripping shoe to the normal position by pressing against its opposite end.

The safety lever G , formed with a flange g' , is fixed upon one end of a short axle or shaft G' which is mounted in a bearing formed in the portion D^7 of the breech block and which carries a boss or enlargement G^2 on its other end. When the lever G is in the position shown in Figs. 1 and 8 the flange g' is clear of the trigger bar D^4 owing to its flattened portion g^2 lying out of the path thereof so that the gun may be fired. In this position of the lever G the boss G^2 retains the casing D' in place.

In the position shown in Fig. 9 and marked "Safe" in Fig. 1, the flange g' of the lever G passes into the shallow recess d^7 in the trigger D^4 thus preventing the latter from being pulled by the lanyard and at the same time making it hold the cocking lever D^2 (and with it the firing pin D) rigid even when the gun is traveling over rough ground. In this position of the said lever G the boss G^2 still retains the casing D' in place.

When the aforesaid lever G is shifted into a position which is identified by the word "Dismantle" in Fig. 1, and shown in Fig. 10, the boss assumes a position in which its flattened portion g^3 is clear of the portion D^7 , and the casing D' is consequently liberated so that it may then be removed by means of the knobs g g on the lever. The entire firing mechanism can thus be detached from the gun with the exception of the firing pin, which can be removed subsequently by withdrawing it to the rear through the opening b^5 in the breech block B . When the casing D' is in place, the opening b^5 is closed by the portion d^x formed upon the said casing.

We are of course aware that it has before been proposed to arrange the breech actuating hand lever above the breech chamber, and that firing mechanism of the slip lock

type has been mounted in a frame or casing which is detachable from the breech block; we do not therefore desire our claims to be so read as to broadly include either of these 5 features.

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

1. In gun breech mechanism of the horizontally sliding block type, the combination 10 of a block-actuating hand lever situated above the breech chamber, a vertical spindle carrying said hand lever and situated at one side of the breech chamber, a block-actuating crank on said vertical spindle, a cartridge extractor mounted on said spindle, and means 15 whereby said extractor is operated by the block during the opening movement of the latter substantially as described.

2. In gun breech mechanism of the horizontally sliding block type, the combination 20 of a block-actuating hand lever situated above the breech chamber, a vertical spindle carrying said hand lever and situated at one side of the breech chamber, a block-actuating crank on said vertical spindle, a cartridge extractor mounted on said spindle, inclines 25 on said block operating on the extractor during the early part of the opening movement of the block, and shoulders on said block operating on the extractor during the completion of the opening movement of the block, substantially as and for the purposes 30 specified.

3. In gun breech mechanism of the horizontally sliding block type, firing mechanism 35 mounted in a detachable casing in the block and comprising a cocking lever engaging the firing pin, a tripping shoe, a pivoted trigger bar, a retaining lever, a main spring interposed between said cocking lever and said 40 retaining lever, means for actuating said pivoted trigger bar, means whereby the outward movement of the trigger bar causes the tripping shoe to retract the cocking lever 45 and the firing pin and to subsequently release the same, and means whereby the said retaining lever under the influence of the main spring returns the trigger bar to its normal position when it is released substantially 50 as described.

4. In gun breech mechanism of the horizontally sliding block type, firing mechanism 55 mounted in a detachable casing in the block and comprising a cocking lever mounted on an axis pin and engaging the firing pin, a tripping shoe mounted on said axis pin, a pivoted trigger bar mounted on an axis pin adjacent to the free end of the tripping shoe, a retaining lever whose free end engages with 60 the pivoted trigger bar near its fulcrum, a main spring interposed between said cocking lever and said retaining lever, means for actuating said trigger bar, means whereby the outward movement of said trigger bar causes

the tripping shoe to retract the cocking lever 65 and the firing pin and to subsequently release the same, and means whereby the said retaining lever under the influence of the main spring returns the trigger bar to its normal position when it is released substantially 70 as described.

5. In gun breech mechanism of the horizontally sliding block type, firing mechanism 75 mounted in a detachable casing in the block and comprising a cocking lever engaging the firing pin, a tripping shoe, a pivoted trigger bar, a retaining lever, a main spring interposed between said cocking lever and said 80 retaining lever, a projection near the fulcrum of said pivoted trigger bar adapted to operate the tripping shoe when the trigger bar is pulled outwardly and through it to retract the cocking lever and firing pin and to subsequently release the same, and a second projection 85 near the fulcrum of the said pivoted trigger bar with which the free end of the said retaining lever engages for returning the trigger bar to its normal position when released substantially as described.

6. In gun breech mechanism of the horizontally sliding block type, firing mechanism 90 mounted in a detachable casing in the block and comprising a cocking lever mounted on an axis pin and engaging the firing pin, a tripping shoe mounted on said axis pin and 95 adapted to operate said cocking lever, a pivoted trigger bar adapted to act upon one end of said tripping shoe when moved outward in cocking the firing pin and to act upon the opposite end of said tripping shoe 100 when moved inward after liberating the tripping shoe, a retaining lever engaging with the said pivoted trigger bar, a main spring interposed between said cocking lever and said retaining lever and means for limiting 105 the forward impulse transmitted by said spring to the cocking lever substantially as and for the purpose described.

7. In gun breech mechanism of the horizontally sliding block type, firing mechanism 110 mounted in a detachable casing in the block in combination with an angularly displaceable safety lever which in one position permits the firing mechanism to be actuated to fire the gun, in another position locks the 115 mechanism in the safety position, and in another position permits the casing and mechanism to be removed substantially as described.

In testimony whereof we have hereunto 120 set our hands in presence of two subscribing witnesses this eleventh day of September 1906.

ARTHUR TREVOR DAWSON.
GEORGE THOMAS BUCKHAM.

Witnesses:

HENRY KING,
ALFRED PEAKS.