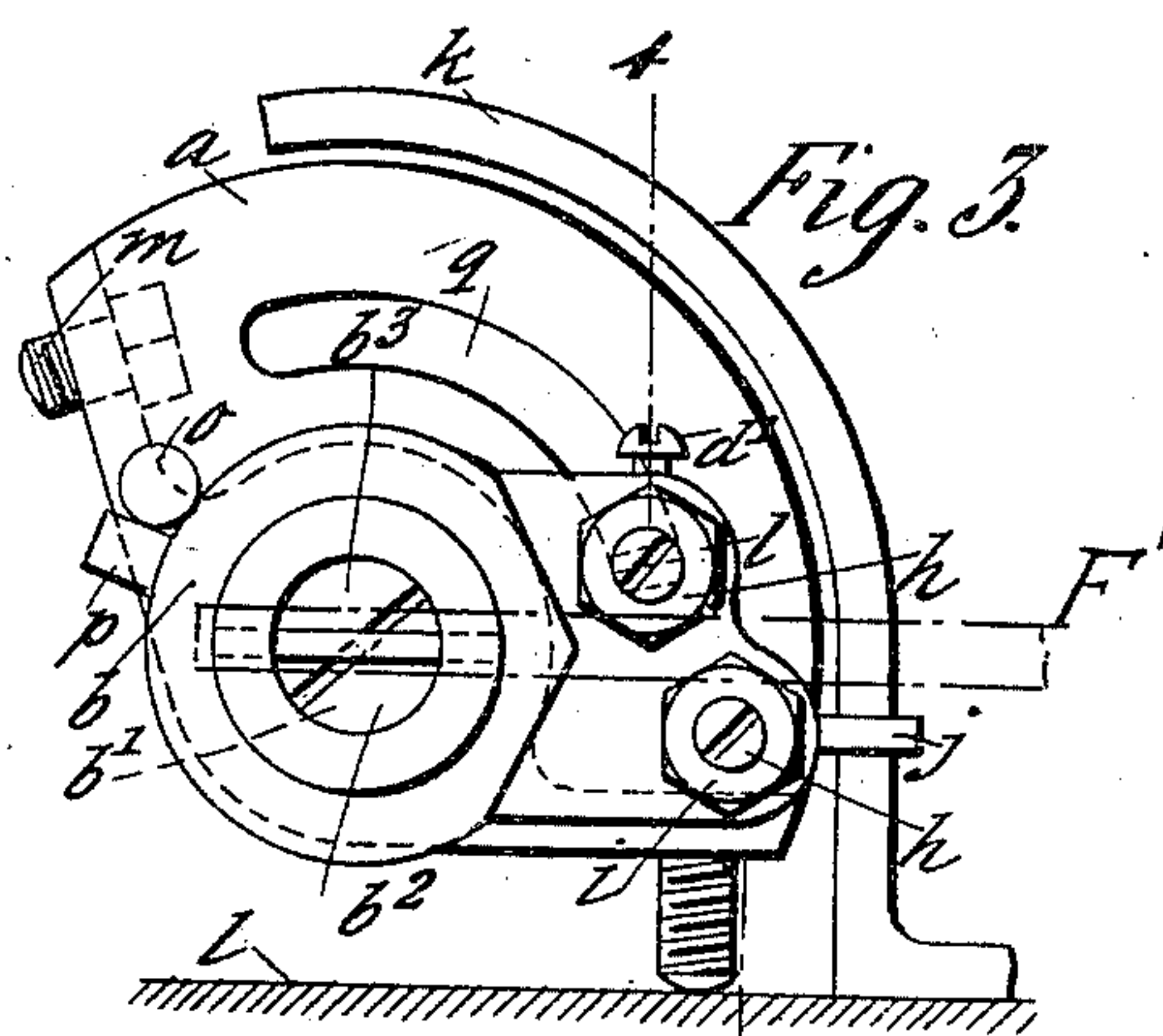
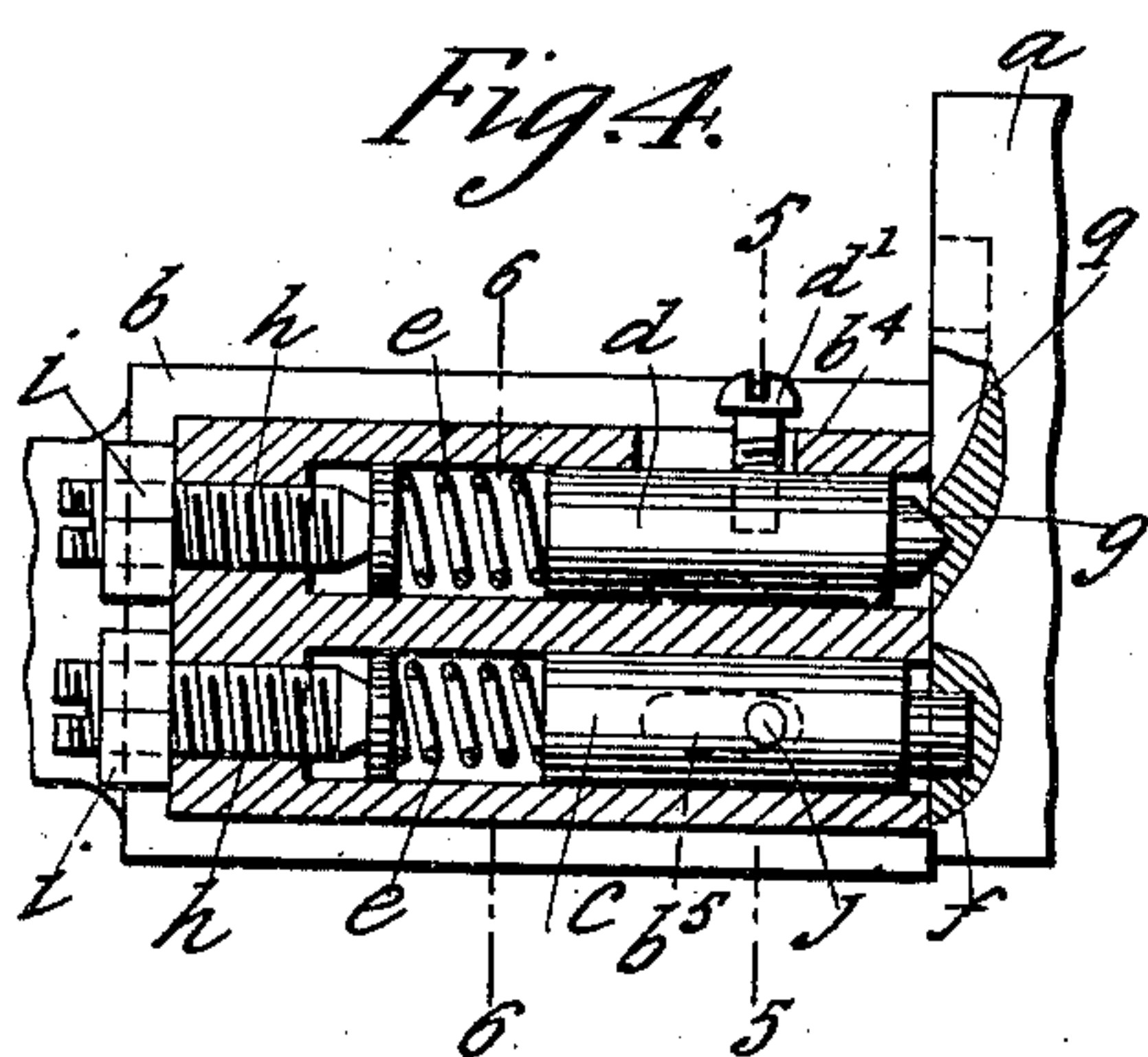
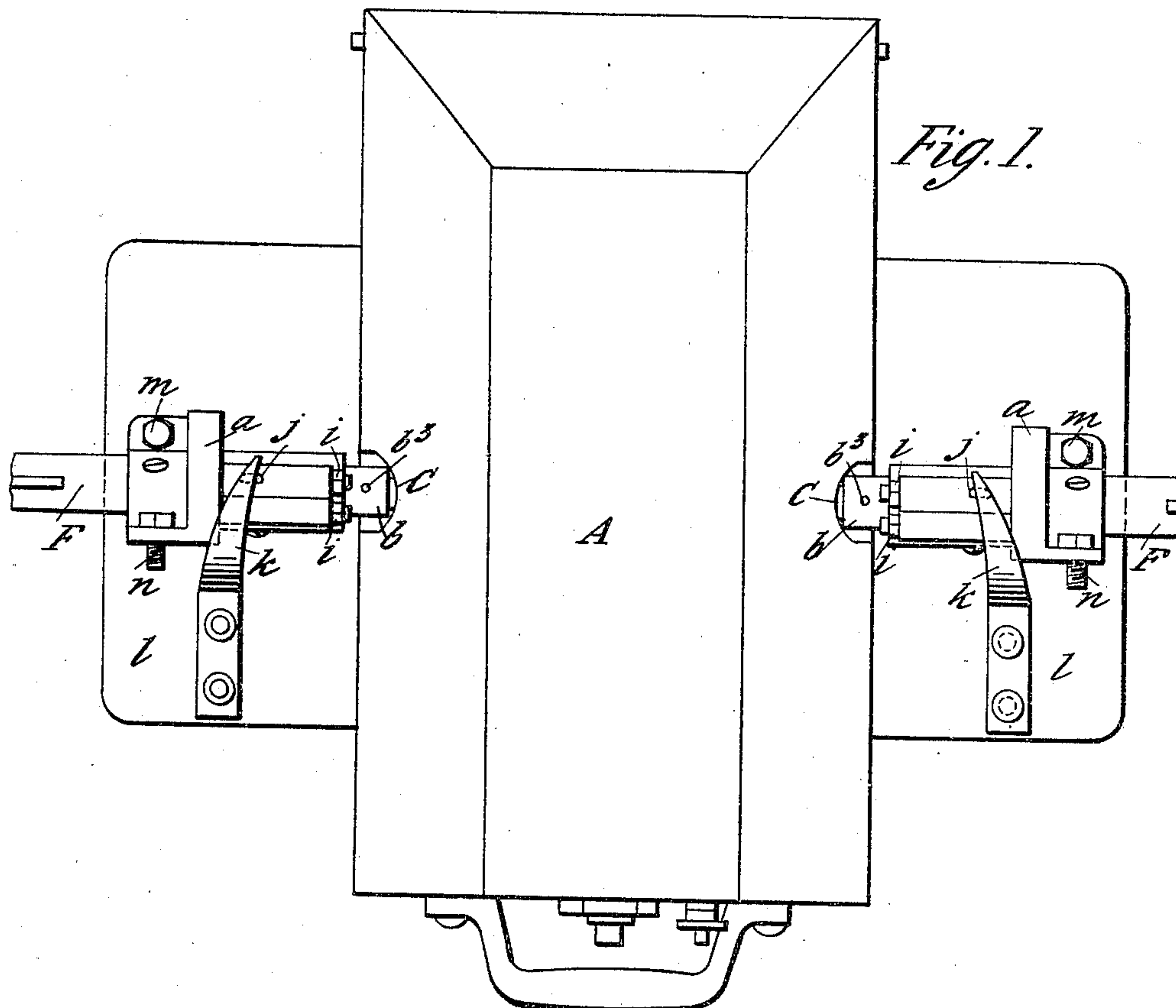


R. T. GATES.  
FIELD FIRING OR SURPRISE TARGET.  
APPLICATION FILED NOV. 18, 1909.

960,892.

Patented June 7, 1910.  
2 SHEETS—SHEET 1.



Witnesses.

*W. B. Keeler*  
*Chas. Keeler*

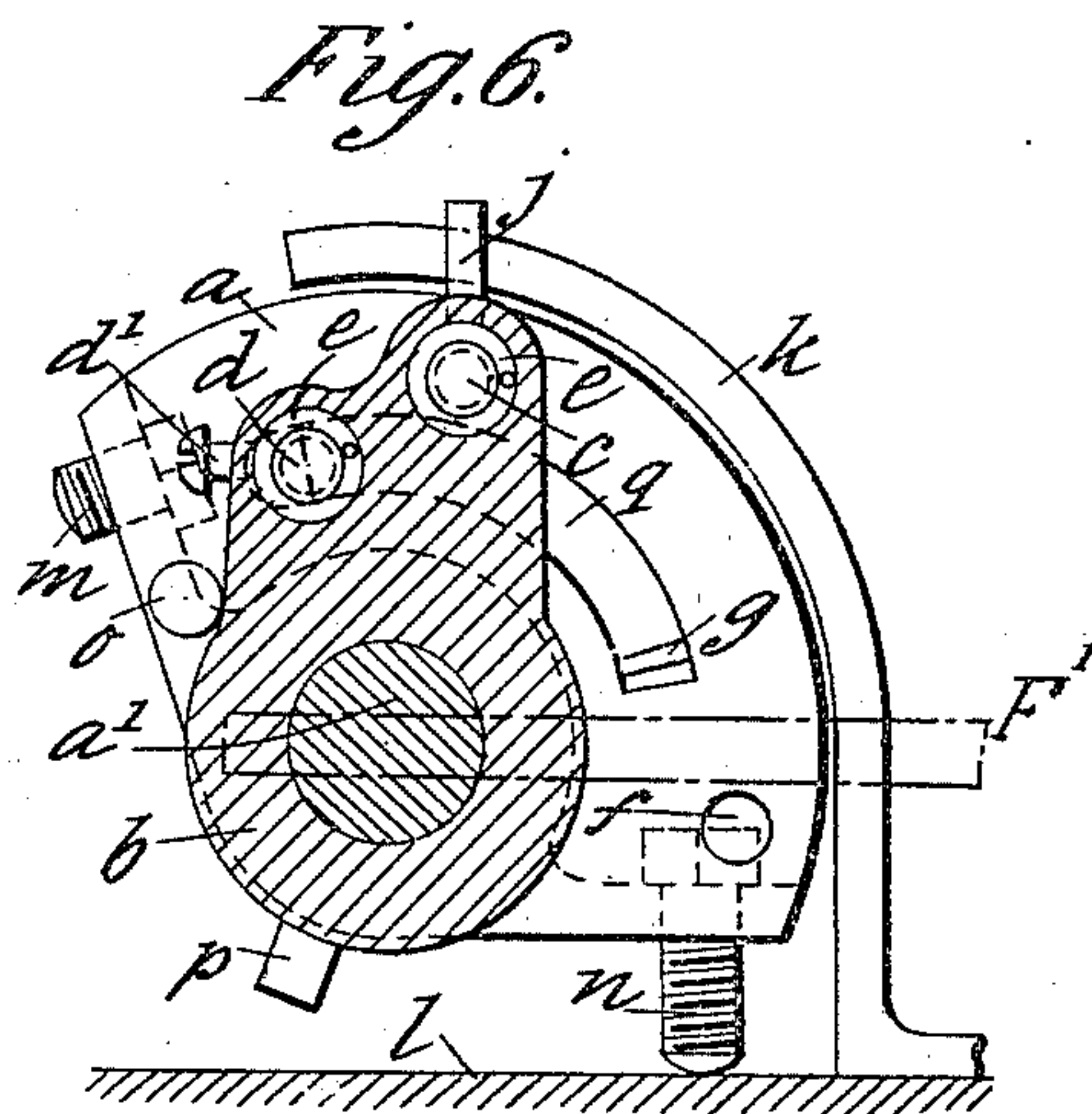
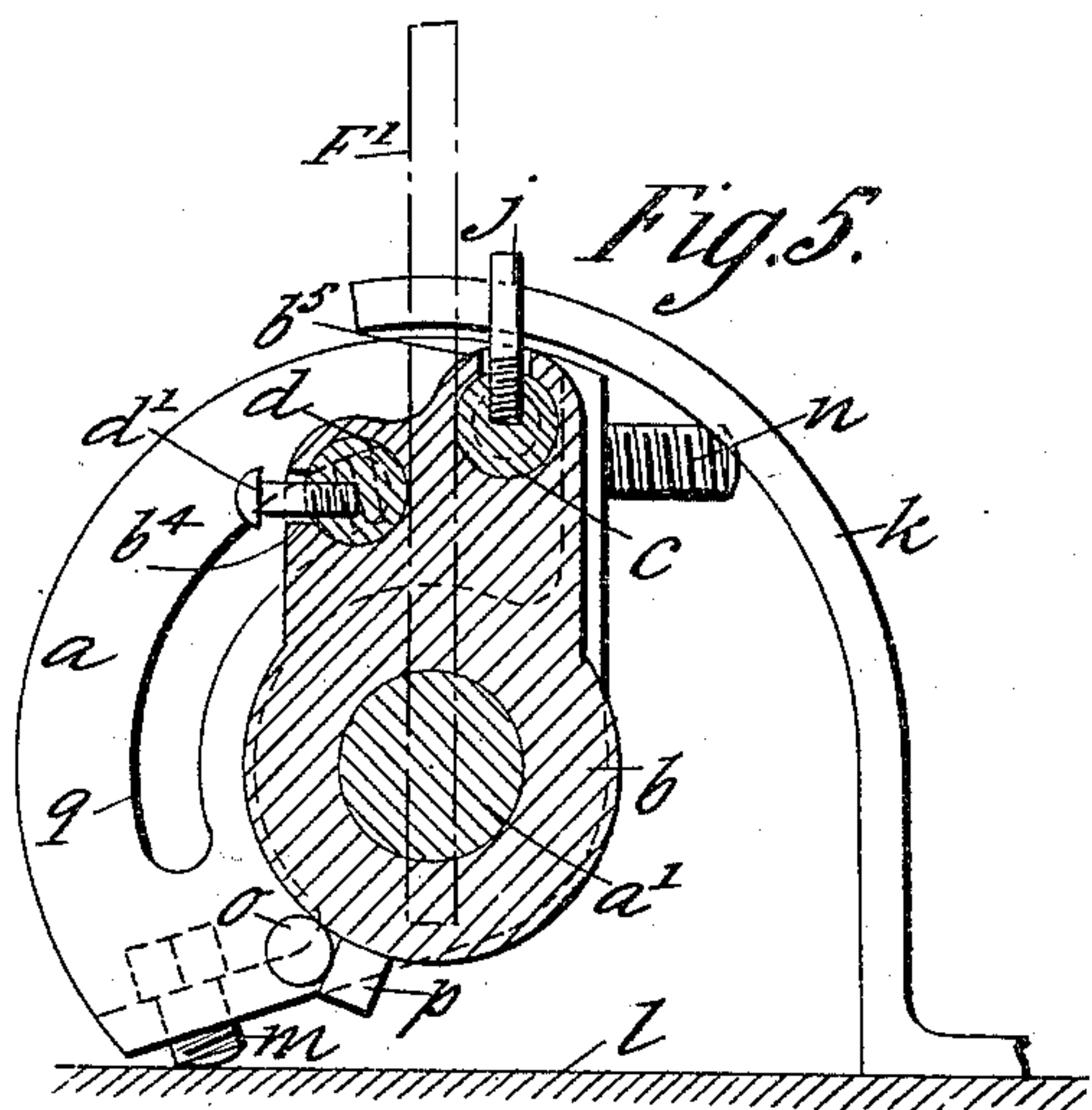
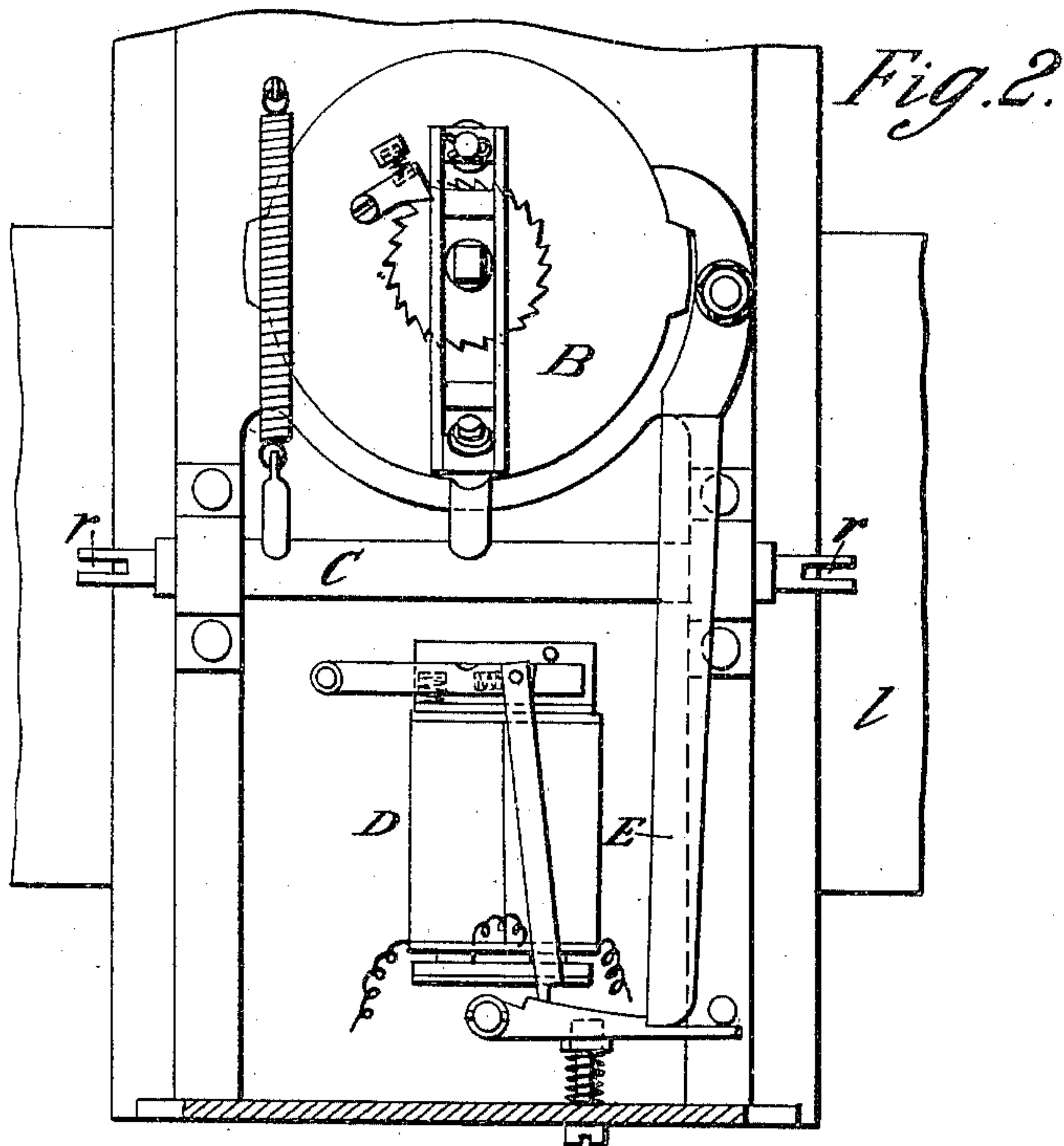
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Witnesses:

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Inventor

*Richard T. Gates*

By

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# UNITED STATES PATENT OFFICE.

RICHARD THOMAS GATES, OF LONDON, ENGLAND.

FIELD-FIRING OR SURPRISE TARGET.

960,892.

Specification of Letters Patent.

Patented June 7, 1910.

Application filed November 18, 1909. Serial No. 528,752.

To all whom it may concern:

Be it known that I, RICHARD THOMAS GATES, a subject of the King of Great Britain, residing at 20 Copthall avenue, in the city of London, England, secretary of Public Company, have invented certain new and useful Improvements in Field-Firing or Surprise Targets, of which the following is a specification.

10 This invention relates to field firing or surprise targets or to miniature or other targets which are designed to be raised and lowered as may be desired, and are mounted on a target shaft actuated by a rock shaft  
15 which is controlled from the firing point or other convenient controlling position, by means of apparatus such, for example, as is described in the specification of my application for patent filed 12th April 1909, Serial No. 489380, and it has for its object to  
20 enable such targets to drop under the impact of the bullets and to be raised again to the exposed position by the ordinary mechanism. With this object, the targets, instead of being fixed directly on the rock  
25 shaft which is oscillated to raise and lower the targets, are fixed on extensions or sleeves mounted on the rock shaft and correlated therewith by a suitable clutch device which  
30 allows the target shaft to disengage the rock shaft under the impact of the bullets so as to enable the targets to fall under such impact or by gravity, and which allows the  
35 rock shaft to assume such a position or relation with respect to the targets or target shaft when the rock shaft is oscillated by its driving mechanism in the direction to lower  
40 the targets, that when oscillated in the reverse direction it will again engage the target shaft and so raise the targets.

One construction of apparatus embodying the invention is illustrated in the accompanying drawings in which—

45 Figure 1 is a plan view of the complete apparatus; Fig. 2 a plan with cover removed showing a suitable arrangement of the actuating and controlling mechanism, which however forms no part of the present invention; Fig. 3 is an inner end view on  
50 an enlarged scale of that part of the apparatus to which the invention more particularly relates, viz. the device connecting the target shaft with the rock shaft of the actuating mechanism: Fig. 4 is a longitudinal  
55 section of the same taken on line 4—4 in Fig. 3; Fig. 5 is a transverse section on

line 5—5 in Fig. 4 showing the relation of the parts when the target is in the raised position; and Fig. 6 a section on line 6—6 in Fig. 4 showing the relation of the parts  
60 when the target has been lowered independently of the driving mechanism, as by the impact of a bullet.

In these drawings is shown the apparatus described in my specification as above referred to, in which A is the bullet proof  
65 cover, B the motor mechanism actuating the rock shaft C, and D the electromagnetic device controlling the operation of the motor through the medium of the controlling lever  
70 E, the arrangement being such that each time the magnet is momentarily energized by an electric current controlled from any suitable point, the shaft C is rocked through a definite angle in one direction or the other  
75 so as to rock the target shaft F to raise or lower the targets.

The inner end of the target shaft F is detachably mounted in a socket piece *a* which has on its inner face in alinement with the  
80 shaft F a projection *a'* rotatably fitting into the outer end of a hollow sleeve *b* and retained against an internally formed ring or collar *b'* therein by a screw *b<sup>2</sup>* in engagement with the ring and screwed into the end of  
85 the projection *a'*. The other end of the sleeve *b* is mounted (preferably detachably) on the end of the rock shaft C, and is prevented from rotating thereon by a pin *b<sup>3</sup>* passing through the sleeve and the slot *r*.  
90 Within longitudinal bores in a laterally disposed part of the sleeve *b* there are mounted two plungers *c, d* which are urged by springs *e* toward the adjacent face of the socket piece *a* in which are formed a hole *f*  
95 and a notch *g*. The end of the plunger *c* is designed to enter the hole *f* so as to lock the socket piece *a* to the sleeve *b* and therefore to the rock shaft C. The end of the plunger *d* is shaped to fit in the V-notch *g*  
100 in the face of the socket piece, a pin *d'* in the plunger guided in a longitudinal slot *b<sup>4</sup>* maintaining the proper relation of notch and plunger by preventing rotation of the latter. Means such as the set screws *h* and  
105 lock nuts *i* are provided to adjust and maintain the tension of the springs *e*. Projecting laterally from the plunger *c* through a longitudinal slot *b<sup>5</sup>* in the sleeve *b* is a pin *j* which coöperates in the manner hereinafter  
110 described with an inclined guide or cam *k* carried by a lateral extension *l* of the base



plate of the apparatus. Stops *m*, *n*, preferably adjustable, on the socket piece are arranged to abut on the plate *l* in the upright and lowered positions, respectively, of the target, and stops *o*, *p* are provided on the socket piece *a* and sleeve *b* respectively and in such relation that they are in abutment when the plungers *c*, *d* register with their respective recesses in the face of the socket piece.

Assuming the target to be in the vertical position as indicated in dotted lines at *F'* in Fig. 5, the plunger *c* is then withdrawn from the hole *f* by the engagement of the pin *j* with the cam or guide *k* and the target is kept upright solely by the engagement of the plunger *d* in the notch *g*, the plunger spring being adjusted to withstand wind pressure but to yield under the force due to the impact of a bullet on the target, allowing the plunger to disengage from the notch and the socket piece *a* carrying the target shaft to rotate independently of the sleeve *b* from the position shown in Fig. 5 to the position shown in Fig. 6. The face of the socket piece is cut away as shown at *q* along the path of the plunger *d* so as to provide clearance for the projecting end of the plunger.

When the parts are in the position shown in Fig. 6 and the controlling magnet is energized to allow the driving mechanism to rotate the rock shaft, the sleeve *b* is brought by the movement of the rock shaft from the position shown in Fig. 5 to the position shown in Fig. 3 in which the stops *o* *p* are in abutment and the ends of the plungers *c* *d* again in engagement with the cooperating recesses in the socket piece.

The various parts are now in position to raise the target when the rock shaft is again actuated by the driving mechanism, the sleeve *b* and socket *a* being coupled by the locking plunger *c* until the raising movement is almost completed, when the cam *k* comes into engagement with the pin *j* and withdraws the end of the plunger from the hole *f*. During this last part of the upward movement the spring catch *d* is assisted by the inertia of the target in maintaining the sleeve and socket in proper relation. Moreover during this last part of the upward movement of the target the moment of the force against which work is being done is, apart from any wind pressure, necessarily small and consequently the strength of the spring *e* forcing the catch *d* into the notch *g* need not be so great as to prevent it yielding subsequently to release the catch when

the target is struck by a bullet. A target shaft may be fitted as described at each end of the rock shaft and each target shaft may carry more than one "head and shoulder" or other target.

It is to be understood that the invention is not limited to the particular arrangement of catches and cooperating mechanism herein described, as the construction of these parts may be varied widely without altering the character of the invention in any way.

Having thus described the nature of my said invention and the best means I know of carrying the same into practical effect, I claim:—

1. In an apparatus of the character referred to having a target shaft for carrying a target and an actuating rock shaft, mechanism connecting the two shafts comprising a catch operative when the target is in a raised position and adapted to disengage under the impact of a bullet on the target, whereby the latter is free to fall.

2. In apparatus of the character referred to having a target shaft for carrying a target and an actuating rock shaft, mechanism connecting the two shafts comprising a catch operating to raise the target, means for rendering the catch inoperative in the raised position of the target, and a catch operative when the target is in a raised position and adapted to disengage under the impact of a bullet on the target, whereby the latter is free to fall.

3. In apparatus of the character referred to, an actuating rock shaft, a sleeve removably fixed to the rock shaft, a socket piece rotatably mounted on the sleeve member, a target shaft for carrying a target detachably mounted in the socket piece, a pair of spring urged catches adapted to connect the sleeve member and the socket piece, means for rendering one of the catches inoperative when the socket piece is rotated into a position wherein the target is raised, and adjustable means adapted to retain the second catch in an operative position against wind pressure but to yield under the force due to the impact of a bullet on the target whereby the socket piece is free to rotate and the target to fall.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

RICHARD THOMAS GATES.

Witnesses:

JOSEPH MILLARD,  
W. J. SKERTEN.