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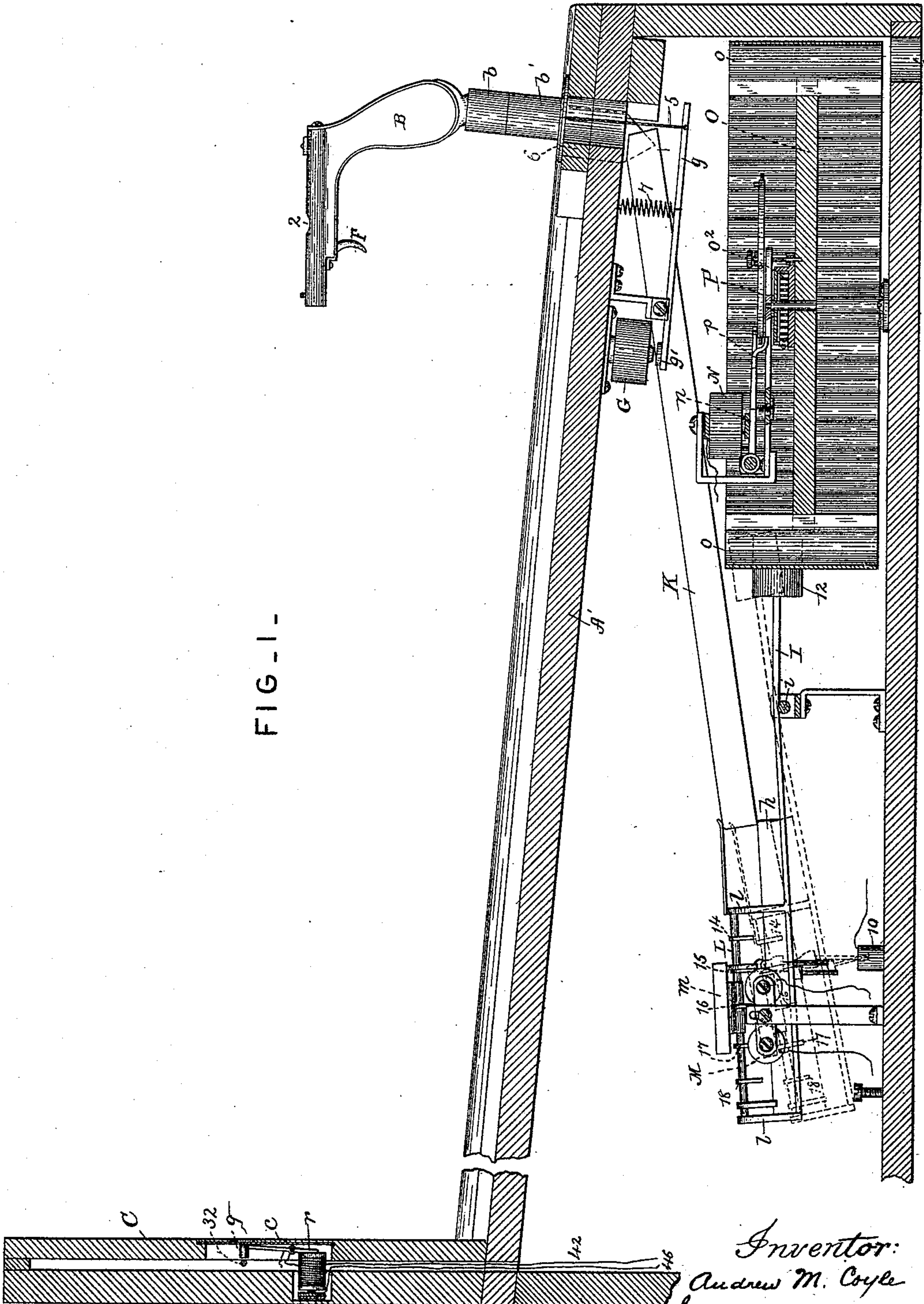
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A. M. COYLE.
COIN OPERATED SHOOTING GALLERY.

No. 441,613.

Patented Nov. 25, 1890.

FIG. 1—



Attest { Jas. A. McLachlan
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Inventor:
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by
A. Pollok
his attorney

(No Model.)

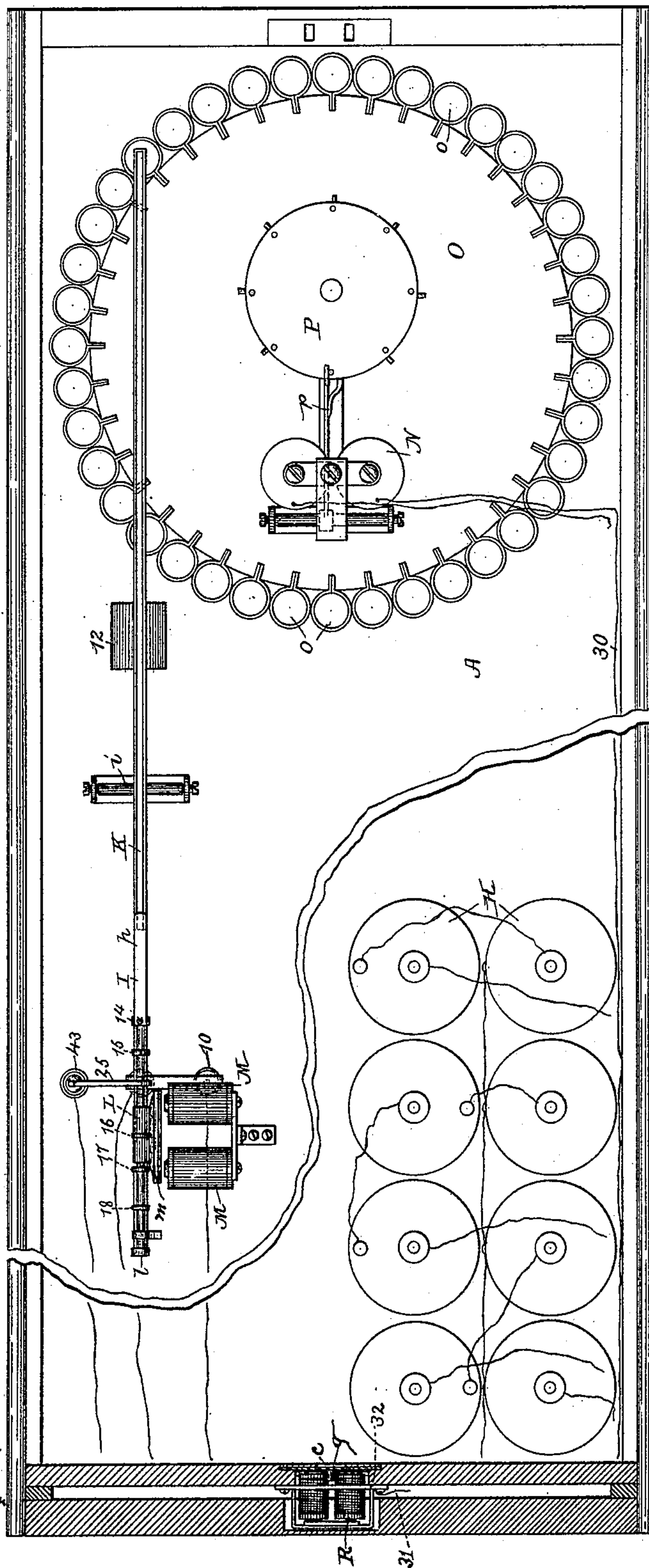
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FIG. 11.



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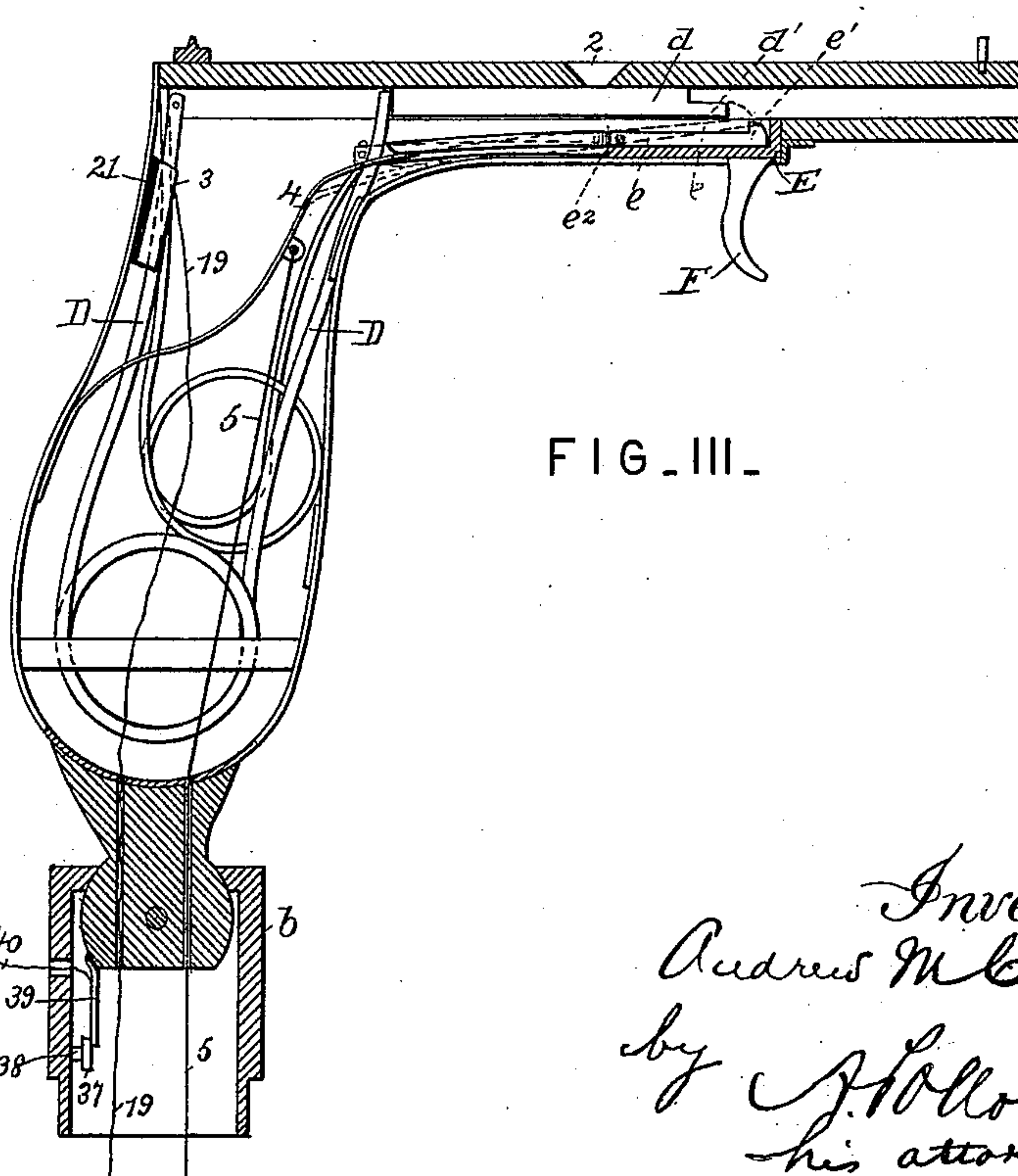
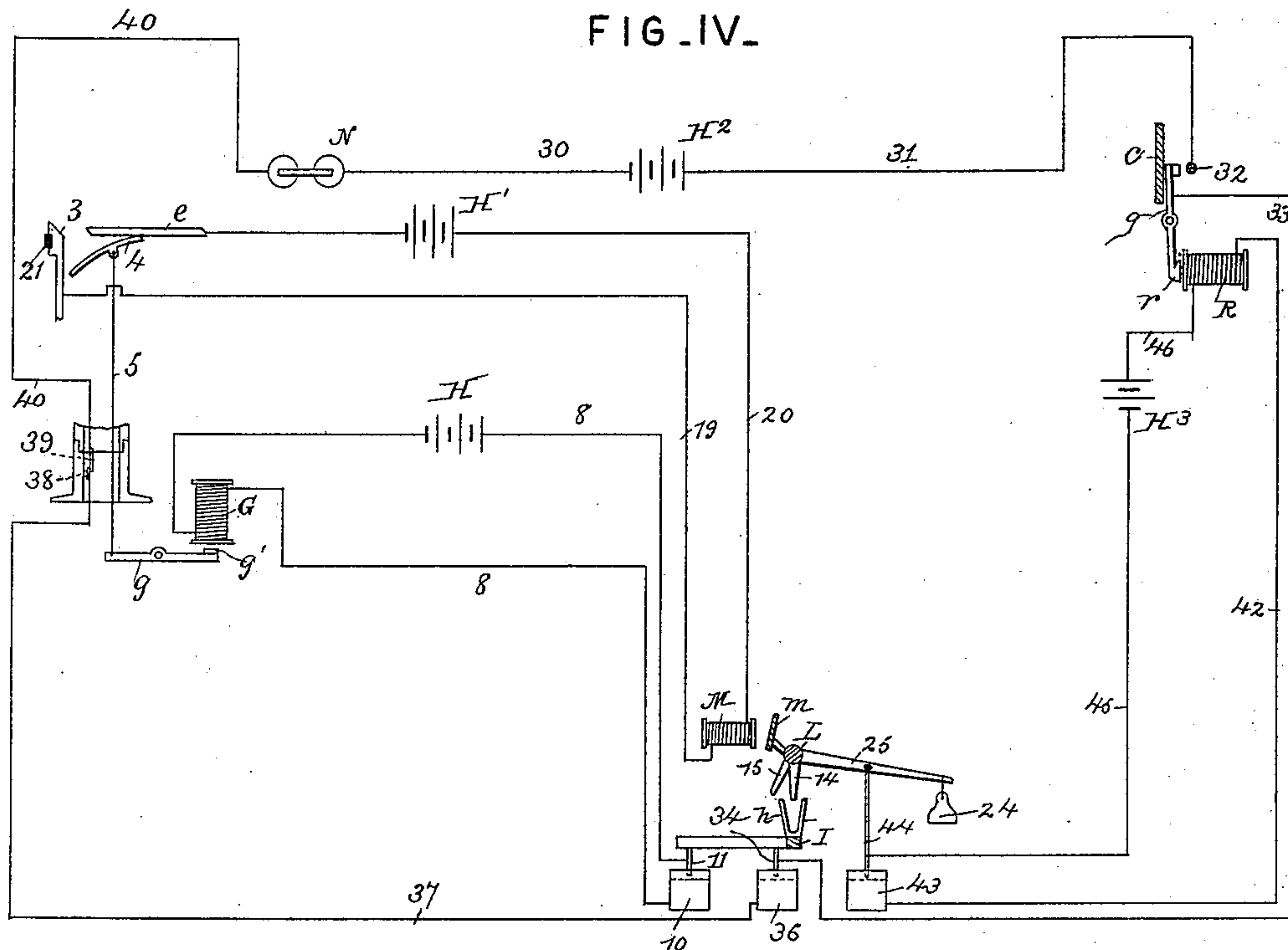
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Inventor:
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UNITED STATES PATENT OFFICE.

ANDREW M. COYLE, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR, BY
MESNE ASSIGNMENTS, TO HENRY GUSTAVE ROGERS, OF SAME PLACE.

COIN-OPERATED SHOOTING-GALLERY.

SPECIFICATION forming part of Letters Patent No. 441,613, dated November 25, 1890.

Application filed August 31, 1889. Serial No. 322,502. (No model.)

To all whom it may concern:

Be it known that I, ANDREW M. COYLE, of Washington, in the District of Columbia, have invented a new and useful Coin-Operated Shooting-Gallery, which is fully set forth in the following specification.

This invention relates to the construction of coin-controlled mechanism or apparatus which is set into operation by the deposit therein of a coin of determined value. It has reference more particularly to what may be termed an "automatic shooting-gallery."

The object of the invention is to produce an apparatus which can be set in places frequented by the public, and in which the deposit of a coin puts the mechanism into operative condition, whereby the user for the time being can fire one or more shots at a target which forms part of the apparatus.

The invention contemplates a further operation to take place when by a successful aim the target is struck. This part of the invention is susceptible of infinite variation; but it is preferred, with a view to rendering the apparatus more popular and to offer an inducement for skillful shooting, to arrange a prize-delivery mechanism, which is operated when the target is struck. This prize-delivery mechanism is set into operation by the closing of an electric circuit, so that it is obvious that mechanism of another sort or description adapted to be set into operation by the closing of a circuit could be substituted for the prize-delivery mechanism without departing from the spirit of the invention.

The invention comprises a shooter—such as a toy pistol or any equivalent device for discharging a projectile—and controlling mechanism operated by the deposit of a coin for putting the shooter into operative condition, so that one or more shots can be fired at the target when a coin of proper denomination has been deposited.

The invention further comprises controlling mechanism of special construction so contrived that after the coin has been deposited the user can fire two (or a greater number) of shots before the shooter again becomes inoperative. Preferably the shooter is controlled by an electro-magnet whose cir-

cuit is closed by the weight of the coin depressing a lever which carries one of the contacts of this circuit. The said lever, as herein shown, has an inclined way or passage along which the coin travels, and mechanism is provided whereby the coin is permitted to traverse the passage step by step, as the successive shots are fired, falling off the lever after the last shot is discharged, and thereby permitting the lever to rise to its normal position. The rise of the lever breaks the circuit controlling the operation of the shooter, which thereupon becomes inoperative until another coin is inserted. The invention, however, is not limited to these details.

It will be within the invention to provide the shooter with any suitable locking mechanism adapted to be released by the insertion of a coin.

The invention further comprises connections between the target and the prize-delivery mechanism or its substitute, whereby the latter is set into operation when the former is struck by a projectile. Here again it is preferred to employ an electro-magnet whose circuit is broken at the target and a contact-maker which closes said circuit, being actuated by the impact of the projectile against the target. It would be feasible to inclose the target in a glass case to prevent interference therewith, for it is obvious that means must be provided to prevent the prize-delivery mechanism being operated by striking against the target with the hand; but it is preferred to employ controlling mechanism for this purpose, and such mechanism constitutes part of the present invention. As hereinafter described, the contact-maker of the prize-delivery circuit is normally held in the position to keep the circuit open by a magnet whose armature is attached to said contact-maker. When the trigger of the shooter is pulled to discharge a projectile, the magnet which holds the contact-maker is temporarily demagnetized by the breaking of its circuit, so that if the target be struck at that instant the prize-delivery mechanism will be actuated. For greater precaution the circuit of the prize-delivery mechanism is also broken at a point within the mounting of the

shooter, and contacts are there so arranged that the said circuit will be closed only while the shooter is aimed correctly or with approximate correctness at the target.

5 The invention includes other features, details of construction, and combinations and arrangements of parts, as hereinafter set forth.

10 In the accompanying drawings, which form part of this specification, Figure I is a longitudinal section, partly in elevation, of an apparatus constructed in accordance with the invention; Fig. II, a plan view of parts within the box or casing. Fig. III is a sectional view of the pistol on a larger scale, and Fig. 15 IV is a diagram illustrating the electric circuit wires and connections.

A represents an oblong box or case of wood having a hinged lid A', which is fastened by 20 a lock. On the lid are placed at one end the shooter B, and at the other end the upright frame C, which carries the target c, shown as a disk.

The shooter, as shown, is a spring-pistol, 25 swiveled in the upper part b of a pedestal, so that it can oscillate in a vertical plane. The part b is swiveled in the lower part b', so that the former can turn in a horizontal plane. These two connections constitute, practically, 30 a universal joint, so that free aim can be taken with the pistol; but the range of its motion is so limited that in any event the shot must strike some part of the target-frame. This is a desirable precaution against 35 injury by careless shooting.

The pistol B has a mainspring D and a striker or plunger d, which works in the barrel of the pistol, and from which projects a tooth or catch d'.

40 A traveler E is connected with the trigger F, and carries a latch e, pivoted to said traveler at e². The tooth e' on the end of latch e'' will, when the latch is tilted up at that end, as shown in dotted lines, Fig. III, engage 45 the tooth d' on striker d and carry the latter back, compressing the mainspring. A shot or projectile is inserted in hole 2 in the barrel of the pistol, and when by the retraction of the trigger latch e reaches the block 3, it 50 is raised by the inclined end of the latter, releasing the striker and mainspring, and thus discharging the projectile.

A light spring 4 is placed under the latch e, and normally raises that end, thus keeping its 55 tooth e' out of the path of tooth d' of the striker. Consequently under ordinary conditions the pistol is inoperative, for the retraction of the trigger does not affect the mainspring. From spring 4 a cord 5 is led through the pistol-mounting into the interior of the box, and 60 through this cord the spring 4 is depressed, when a coin is inserted in the coin-slot 6, whereupon the latch e tilts by gravity, bringing its tooth into position to engage the 65 striker. Thus the shooter is put into operative position. Following the cord 5 it will be seen that the lower end is attached to one

end of a lever g, which carries at its other 70 end the armature g' of a magnet G. The armature is retracted by a light spring 7. The circuit-wires 8 of this magnet are led through sufficient number of cells of battery H (see 75 Figs. II and IV) to a mercury-cup 10 and a contact-point 11, between which the circuit is normally open. Contact-point 11 is carried 75 by a lever I, pivoted at i, (see Fig. IV,) and having at one end a counter-weight 12, which normally holds it in the position shown in Fig. I. This lever, which is the coin-operated 80 controlling-lever, has an inclined groove or passage h, which is immediately under coin-chute K. Consequently when a coin falls into this passage, its weight depresses lever I, as indicated in dotted lines, Fig. I, closing 85 the circuit of magnet G, which thereupon attracts its armature-tilting lever g, which depresses spring 4, through cord 5, and permits latch e to take the position necessary for the engagement with tooth d' on striker d. It is 90 evident that so long as lever I is thus depressed by the weight of a coin the shooter can be operated.

The lever I carries a spindle L, journaled 95 in bearings l, projected upwardly from said lever, and spindle L is provided with a series of detents 14, 15, 16, 17, and 18. The detents 14, 16, and 18 normally project into the coin-passage h in position to arrest the motion of the coin, while the detents 15 and 17 project 100 obliquely to the coin-passage. The coin as it falls into the coin-passage is at once arrested by the first detent 14. (See Fig. IV.) Spindle L also carries an armature m, which, when coin-lever I is depressed, is brought 105 within the field of its magnet M. The circuit of this magnet is formed by wires 19 and 20. The former runs to the block 3 in the pistol B, said block being electrically insulated from the metallic mounting of the 110 pistol by a strip 21 of insulating material. The other wire 20, after passing through the battery H', Fig. IV, is led to the metallic mounting of the pistol. Latch e is in electrical connection with this mounting, being 115 carried by traveler E, which is always in contact with the mounting, so that when the end of said latch touches block 3 on the retraction of the trigger to discharge a shot, the circuit of the magnet M is closed and its armature 120 attracted, thereby turning spindle L sufficiently to withdraw detent 14 from the path of the coin, which is thereupon carried forward in the coin-passage by gravity; but the motion of the spindle L brings the next detent 15 into the path of the coin and the latter 125 is arrested thereby. The closing of the circuit of magnet M is only momentary, for the user at once releases the trigger for the purpose of firing another shot. Upon this, armature m is returned to its normal position 130 by the counter-weight 24 on an arm 25, Fig. IV, of spindle L, detent 15 is withdrawn, and the coin advances until arrested by detent 16. At the second shot the same motions are repeated,

the coin advancing as far as detent 18; but as soon as this is withdrawn by the discharge of the shooter for the third time the coin falls off lever I into a receptacle arranged to receive it, and said lever is at once returned to its normal position by the counter-weight 12 breaking the several contacts that were effected by the weight of the coin, and removing armature *m* from the field of its magnet M.

By the mechanism above described the deposit of a coin puts the shooter into operative condition for the discharge of three shots. To provide for a greater or less number for a single payment, it is necessary only to vary the number of the detents on spindle L.

I will now proceed to describe the means whereby the striking of the target is signalized automatically by setting other mechanism into operation, and whereby such mechanism fails to respond in case the target is struck in an unauthorized manner.

N is the magnet, whose circuit is closed by the striking of the target. As herein shown, this magnet is arranged to control a package-delivery apparatus of known construction. It consists of a rotatable disk O, provided with a series of tubular chambers *o*, adapted to pass in succession over a discharge-orifice *o'*. The power to rotate this disk is furnished by a coil-spring *o*², and it is controlled by an escapement-wheel P and escapement-lever *p*, the latter being attached to and actuated by the armature *n* of magnet N. The circuit of this magnet may be traced by wire 30, Fig. IV, to the battery H², thence by wire 31 to the contact-strip 32, behind the target, where the circuit is normally open, thence by contact-maker *q* and wire 33 to the contact-point 34, carried by lever I, where another break in the circuit occurs. From mercury-cup 36, into which this contact-point dips when the lever I is depressed by a coin, the circuit proceeds by wire 37 to a fixed contact 38 inside the pistol-mounting, where a third break in the circuit occurs. From the corresponding movable contact 39, carried by the part *b* of the pedestal, the circuit continues by wire 40 back to magnet N. The movable contact 39 touches fixed contact 38 only when the pistol is aimed with approximate correctness at the target. Unless this occurs, though the circuit be closed at the other two normally-open points, the package-delivery disk will not operate. Moreover, to close the circuit at the mercury-cup 36 a coin must be on lever I. It only remains to be shown under what conditions the circuit will be closed at the third break—namely, that behind the target. Contact-maker *q* is a pivoted lever. Its upper end rests against or close to the back of the target or bull's-eye *c*, and if the contact-maker were free a sudden stroke on the target would throw it over against strip 32, where it would remain until restored to its normal position. The lower end of part *q* carries the armature *r* of a small magnet R, and it will be seen that so

long as the circuit of this magnet is closed its energy will keep the contact-maker off its anvil-strip 32. The circuit of magnet R (see Fig. IV) is by wire 42 to mercury-cup 43, thence by contact-point 44 and wire 45 to battery H³, and thence by wire 46 back to magnet R. Contact-point 44 is carried by the arm 25 of spindle L, already described. When lever I is depressed by a coin, the circuit of magnet R is closed, and it holds contact-maker *q* away from contact-strip 32. When, however, by the retraction of the trigger, the circuit of magnet M is momentarily closed and spindle L turned, as already described, the arm 25 is lifted, raising contact-point 44 out of its mercury-cup, and thus breaking the circuit of magnet R, which is again closed as soon as the trigger is released. When this occurs, magnet R attracts its armature, withdrawing contact-maker *q* from its anvil 32. Thus, during a very brief period, commencing the instant a projectile is discharged from the shooter, contact-maker *q* is free from the control of its magnet, and if the projectile at this instant discharged strikes the target *c* the force of the blow will throw the contact-maker *q* into contact with strip 32, the circuit of magnet N will be completely closed, and the delivery mechanism will rotate one step, delivering an article through the orifice *o'*.

It will be observed that the attraction of armature *m* by its magnet M, which occurs when the trigger is drawn back, has two effects—namely, it permits the coin to advance one step through the coin-passage and it releases contact-maker *q* from the control of its magnet.

It will be obvious from what has already been said that the invention is not limited to details of construction, but could be embodied in mechanism different from what has been herein described, and that parts of the apparatus could be used without the whole, if so desired.

Having now fully described my said invention and the manner in which the principle thereof may be practically applied, what I claim is—

1. The combination, with a shooting device, of coin-operated mechanism controlling said shooting device, whereby the latter is rendered operative to discharge a projectile by the payment of a proper coin, substantially as described.

2. The combination, with a shooter and a suitable case, of a coin-operated lever within said case and connecting mechanism between said lever and shooter, substantially as specified, whereby the latter can be operated when the former is depressed by a coin, as set forth.

3. In a toy shooting-gallery, the combination, with a shooter, a suitable case, and a target, of a coin-operated lever within said case, an electric circuit closed by the depression of said lever, a magnet in said circuit, and connections between the armature of said magnet and the discharging mechanism of the

shooter, whereby the latter is rendered operative when said magnet is energized by the closing of its circuit, substantially as described.

4. The combination, with a coin-operated controlling-lever having a coin-passage and adapted to be depressed by the weight of a coin, of a series of detents arranged in the path of the coin and means for withdrawing said detents, substantially as described.

5. The combination, with a shooter, of a coin-operated controlling-lever therefor, said lever being provided with a coin-passage, a series of detents for arresting at intervals the progress of the coin through said passage, and means, operated electrically by the motions of the trigger, for removing said detents *seriatim* from the path of the coin, substantially as described.

6. The combination of the mainspring of the shooting device, the striker having a tooth, a pivoted latch adapted in one position to engage said tooth, a carrier for said latch operated by the trigger, a spring normally keeping the latch out of contact with said tooth, a coin-operated lever, and connections between the same and said spring, whereby the deposit of a coin releases the latch and permits it to engage said tooth to retract the striker, substantially as described.

7. The combination, with the shooter, of the coin-operated controlling-lever provided with an inclined coin-passage, an electric circuit, contacts actuated by said lever for closing said circuit, an electro-magnet in said circuit, an armature for said magnet connected, as specified, with the operative mechanism of the shooter, a series of detents for arresting at intervals the motion of the coin through the inclined coin-passage, an electro-magnet for removing the detents, and a circuit for said last-named magnet adapted to be closed by the motions of the trigger, substantially as described.

8. The combination of the shooting device connected with its support by a universal joint, a target, an electric circuit, and a contact-maker adapted to close said circuit when the target is struck by a projectile from said shooting device, substantially as described.

9. The combination of a shooting device mounted on a suitable case, coin-operated controlling mechanism therefor in said case, a target-frame and target also supported on said case, a contact-maker inclosed in the target-frame and adapted to be shifted when the target is struck, and an electric circuit in said case normally open at said contact-maker, substantially as described.

10. The combination of a shooting device on a suitable case, a coin-operated controlling-lever in said case, a target on said case, a contact-maker normally resting against the rear of the target and inclosed in the target-frame, an electric circuit normally open at

said contact-maker, and contacts included in said circuit, one of which is carried by said controlling-lever, substantially as described.

11. The combination of the shooter or propelling device, the target, and the goods-delivery mechanism, substantially as described.

12. The combination of the shooter, the target, the package-delivery mechanism, and electric circuits and connections, whereby the delivery mechanism is actuated by the striking of the target, substantially as described.

13. The combination of the shooter, the coin-operated controlling mechanism therefor, the target, the package-delivery mechanism, an electric circuit including a magnet, which controls the delivery mechanism, and a contact-maker in said circuit adapted to close the same when the target is struck, substantially as described.

14. The combination of the shooter, the target, an electric circuit, a contact-maker therein normally resting against the rear of the target, a magnet for holding the contact-maker away from its anvil-contact, and electrical contacts and connections, as specified, whereby the circuit of the last-named magnet is broken and the contact-maker momentarily released when the trigger of the shooter is retracted to discharge a projectile, substantially as described.

15. The combination of the shooter, the coin-operated controlling-lever therefor, a target, an electric circuit having a contact-maker adapted to close by a blow against the target, a movable contact in said circuit carried by said coin-lever, an electric circuit and magnet controlling the contact-maker, said circuit being also closed by said coin-lever, a third circuit adapted to be closed by the retraction of the trigger, a magnet in the last-named circuit, and an armature therefor connected with a contact in the circuit of the magnet-controlling said contact-maker, and acting to open said circuit momentarily and release the contact-maker when the trigger is drawn to discharge a projectile at the target, substantially as described.

16. The combination of the shooter mounted on a universal joint, the target, an electric circuit normally open at a point behind said target, a contact-maker adapted to close said circuit upon the striking of the target, and contacts in said circuit arranged within the mounting of the shooter and disposed so as to close the circuit when the shooter is brought in line with the target, substantially as described.

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

ANDREW M. COYLE.

Witnesses:

PHILIP MAURO,
JOSEPH K. HAGMANN.