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PROVISIONAL SPECIFICATION.

“Improvements in or relating to Target Practice Apparatus and the like and in or relating to Targets for use in connection therewith—where no Projectile is Employed”.

We, THOMAS LINFORTH JONES, Engineer and Manager of the undermentioned Company; and the AUTO-ELECTRIC RIFLE & TARGET COMPANY LIMITED, all of 105 Shaftesbury Avenue, London, W.: do hereby declare the nature of this invention to be as follows:—

5 This invention relates to improvements in apparatus whereby a gun, pistol, or the like, may be sighted and aimed at a target, and the result of such sighting and aiming (on the trigger being pulled) indicated on said target without however any missile issuing or any explosive being used.

10 The said invention may be used for purposes of amusement and fitted up for example as an automatic coin-in-the-slot machine or may be arranged to work without such coin-controlled mechanism and it is specially useful for affording practice to any one desirous of becoming a proficient and accurate marksman as by its means one is enabled to locate correctly or approximately that portion of the target which would have been hit had a bullet issued from
15 the weapon at the moment the trigger was pulled after sighting and aiming.

To effect the object of the said invention we mount an actual rifle, pistol or other fire-arm (or we may employ only imitation weapons; but for the sake of brevity we shall hereinafter refer to said rifle gun or pistol *etc.*—whether real or simulated—as the “gun”) upon a stand of any convenient height upon
20 which it is supported by a universal joint knuckle joint or the like in such a way that it or its muzzle may be elevated or depressed or deflected to either side, and these movements need only be sufficient to permit of the gun being aimed at any portion of the target or close thereto—by suitable mechanism hereinafter more fully described we arrange that every movement of the gun
25 or its muzzle whether vertical or horizontal or gyratory causes a vertical pointer depending from the gun to move over and about the surface of a horizontally disposed plate or cup in which are a series of contacts in such a manner that when the gun is correctly aimed at any particular part of the target said pointer is immediately over one of said contacts and such relative position is
30 always maintained, on the trigger being pulled the plate containing said contacts rises and such contact as may be under the pointer is pressed up against it.

Said target may be divided up into as many parts or zones as may be desired and the aiming of the gun at each in like manner causes the pointer to move correspondingly or in suchwise as to rest over a corresponding contact—said
35 contacts are insulated from one another but are each electrically connected up to a corresponding terminal in each zone of the target in such a manner that on “discharge” of the gun the pointer is caused to touch any one of the contacts and thereby its particular circuit is closed.

For the purpose of affording a ready means of indication on the target we
40 fix upon the target a number of small electric glow lamps equal in number to the number of zones into which the target is divided—each of said glow lamps is in circuit with one of the terminals on the target so that when the afore-said pointer touches any one contact its corresponding lamp is caused to glow.

The whole of the mechanism is brought into operative position by the move-

[Price 8d.]

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ment of one lever and on the trigger being pulled the original or normal position is restored.

When used as an automatic or coin in the slot machine we arrange that the said lever is disconnected with the rest of the mechanism except when a suitable coin is dropped into the slot in which case it falls between the ends of two levers and taking the place of a joint pin between them enables the necessary pressure to be transmitted—as the coin has to bear this pressure flatwise a genuine coin or something equally strong must be used and discs of lead or tin would not serve to operate the machine and to this extent fraud is obviated by this device.

On the lever being pulled completely over, the gun is “cocked” and the released coin drops into any convenient receptacle.

To make the invention the more clear we will now refer to the accompanying drawings:—

In these drawings we have shewn the apparatus fitted up as an automatic coin-in-the-slot machine but it is obvious that by dispensing with the coin operating part of the invention and substituting a fixed joint for the joint otherwise effected by the interposition of the coin the apparatus will work equally well.

Like figures and letters of reference denote like parts.

Fig. 1 is a side elevation on a small scale of the gun supported on a stand together with the electrically connected target.

Figs. 2 and 3 are respectively a side and end elevation of the gun and its stand on a larger scale and are partly in section to show the mechanism inside the stand.

Figs. 4 and 5 are also sectional side and end elevations and show on a larger scale, but with the gun removed, the coin operating mechanism and other parts connected thereto.

Fig. 6 is a plan of the view shown in Fig. 5.

Fig. 7 is a side view, same as Fig. 4 but with several of the parts left out in order to show more clearly the action of the hand lever and the coin control—the lever is here shown in two positions, up and down.

Figs. 8 9 and 10 are respectively side and end elevations and plan and show more particularly the vertically sliding plate containing the electrically connected and insulated cups and their position in reference to the pointer previously referred to.

Fig. 11 is a side elevation of the stock of the gun and shows the trigger releasing action.

Fig. 12 is front elevation of the target.

Fig. 13 shows a cross-section of the same.

Fig. 14 is also a front elevation of the target but with the front plate holding the lamps removed.

The gun 1 is carried on the hollow gun column 2, the lower part of which moves in the gun support 3 in which is contained the mechanism for:—

- (1) “Cocking” or setting the gun ready for “discharging”.
- (2) Operating the gyratory arm by which is closed one or other of a number of independent electric circuits according to the aim of the gun.
- (3) Coin-operated mechanism (if used) for enabling the gun to be cocked or set ready for use only when a coin or token of proper value or denomination is placed in the slot.

(4) Mechanism for regulating the duration of time during which each individual circuit when it is closed (on the discharge of the gun) is allowed to remain closed—and thereby regulating the length of time during which the target lamp in said circuit is permitted to glow.

4 is the support which carries the target (see Fig. 1) between which and the gun 1 and its mount 3 a number of separate circuit wires 5 are connected and operate as hereinafter explained; the number of such circuit wires 5 depending

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on the number of divisions into which the target *etc.* is divided—for example as illustrated in Figs. 12 13 and 14 the target proper, consisting of the three circles 6 7 and 8, has nineteen divisions each of which separate divisions has a small incandescent lamp 11 which can be seen through an aperture 9 in said target; while outside the target proper 6, 7, 8, the part 10 (which may conveniently be termed the “miss indicator part”) is provided with say four lamps, to show through the four apertures 9^a which serve to indicate not only when the aim has been right off the target proper, but shows in which direction the marksman was off the target.

It will be obvious that we may use any other desired shape of target, and may employ any other suitable number of divisions on said target—a corresponding number of lamps 11 being provided according to the number of divisions into which the target is divided; and the lamps may be rendered visible otherwise than through apertures 9 as illustrated—as for example the target 6, 7, 8, 10, may be made of a transparent or translucent material through which can be seen whichever lamp is caused to glow on the discharge of the gun as hereinafter explained.

12, 12 are the contact springs (see Figs. 13 and 14) inserted between the lamps 11 and the contact screws 13, to which latter the circuit wires 5 are connected; each respective contact 13 being in circuit with only one lamp 11; and each said lamp 11 and its contacts 12 and 13 and its circuit wire 5 being insulated from and separate from all the other circuits and lamps, so that any one lamp can be illuminated without any of the others being caused to glow.

Through the gun column 2 a slidable rod 14 (Figs. 2 3 and 11) passes and is suitably guided and is provided at its upper end with a mushroom head or conoidal shaped head 15, which latter is adapted when it is raised from the position below the slidable connecting rod 16 (see Fig. 11) to force said rod 16 back out of its path.

Said rod 16 is connected at 17 to the trigger 18 of the gun, and provided also with a spring 19 which returns said rod 16 under the head 15 of the rod 14 and thereby retains the latter in the “set” position *i.e.* in the cocked position ready for the “discharge”.

This rod 14 (which is released by pulling the trigger 18 and thereby withdrawing the sliding rod or catch 16) is slotted just below the centre or point 20 about which latter the gun column 2 can be moved, and the tongue 21 (which is rigidly fixed to the lever 22 pivoted at 23—see Fig. 11) passes through this slot in the lower part of said rod 14 just below the said axial point 20 (see Fig. 11) so that vertical movement is on the one hand imparted by said tongue 21 to move the rod 14 upwards to set the gun, and then in turn said rod 14 prevents the return movement of the tongue 21 and lever 22 (and its connecting mechanism) until the trigger 18 is pulled and the rod 14 allowed to drop.

24 is a rod pivoted at its upper end to the lever 22 (see Fig. 2) and at its lower end this rod 24 is connected to a flexible chain 25 which passes round a pulley 26 journaled or mounted in the lower part of the frame 3 (see Figs. 2 and 3) the other end of this chain 25 being connected to the sliding frame 27 which is normally kept pressed upwards by the springs 28 acting against the fixed plate 29—see Figs. 2 3 8 9 and 10.

This slidable frame 27 carries the contact device or cup 30 (see Figs. 8 to 10) which contact device interiorly is formed as a cup advantageously with conical or inwardly converging side walls 31 and the bottom of said cup 30 is provided with a number of contacts 32 and 33 insulated from one another and corresponding in number to the number of divisions on the target *etc.*; thus with the target as illustrated in Fig. 12 with nineteen divisions in the target proper, and four divisions surrounding said target proper, making 23 divisions in all, there would be twenty three separate and independent contacts arranged at the bottom of the cup 30—namely nineteen contacts 32 for the target proper,

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and four contacts 33 for the divisions off the target—for the purpose of illuminating the lamps 11 showing through the apertures 9 and 9^a respectively.

34 is the flexible cable connecting the group of contacts 32-33 through the terminal board 35 and circuit wires 5—to the respective lamps 11 in the target as aforesaid.

When the rod 14 is raised to set or cock the gun, the lever 22 is also raised by means of the cocking lever 54 and through the connecting rod 24 and chain 25, the sliding frame 27 with the contact device 30 is moved down out of contact with the end 36 of the gyratory arm 37, which latter forms part of the circuit to the lamps as hereinafter explained; while immediately on the trigger being pulled and the rod 14 allowed to drop, thereby the slidable frame 27 is released and (through the re-action of the compressed springs 28) same is forced up against the point 36 of said gyratory arm 37 and closes the circuit through one or other of the contacts 32 and 33 and remains in this position with the point 36 touching one or other of the contacts in the cup 30 until the gun is re-set—whereupon the cup 30 is moved down below the position shown in Fig. 8 until the gun is discharged again, and so on.

The circuit through the contact in the cup 30 and gyratory arm or needle 37 is completed through the frame of the dash-pot 38 and piston rod 39 thereof and spring contact arm 40 (which is insulated from the frame) to the battery except when the piston rod 39 of said dash-pot is in its outermost position as shown in Fig. 2 in which position a sleeve or piece of insulating material on the inner end of the piston rod 39 bears against the spring 40 and thus breaks at this point the electric circuit to the lamps.

When the aforesaid lever 22 is raised as aforesaid in setting the gun, it simultaneously moves a rigid arm or bell-crank 41 fixed to said lever 22 (or fixed to the axis 23 thereof) and the outermost end 42 of said lever as it is moved in the direction of the arrow 43 (see Fig. 2) engages the outer end of the piston rod 39 and forces the piston into the barrel of the dash-pot 38 against the action of a spring (not shown) and there retains said piston until the gun is "discharged" whereupon the circuit to one of the lamps is completed as aforesaid, while the "live" part of said piston rod 39 remains in contact with the contact spring 40 that is until the re-action of the spring in the dash-pot forces the piston outwards again into the position shown in Fig. 2 whereupon electrical contact at 40 is broken as before explained—and the illuminated lamp is then and thereby extinguished.

The means for imparting gyratory movement to the point 36 of the arm 37 are as follows:—

The gun column 2 extends rigidly downwards below the lower end of the rod 14 and terminates about the point 2^a shown in Fig. 2 where it acts upon the rod 44 which latter in turn is jointed to the gyratory arm 37 (see Fig. 2) through the flexible joint 45 which latter consists of the sleeve 45 containing the spring 46 to one end of which spring the arm 44 is connected and to the other end of the spring 46 the arm 37 is connected.

—Thus the arm 37 with point 36 spring connection 45 and connecting rod 44 practically form collectively a complete gyratory arm.

Below the point where the lower end 2^a of the gun column 2 acts on the rod 44 there is introduced a slidable bearing formed by the ball joint or slidable ball 47 resting in a suitable socket in the movable bracket 48 and vertically slidable upon the rod 44 as and for the purposes hereinafter explained.

Said movable bracket 48 is carried on the downwardly extending member or arm 49 which is pivoted or adapted to turn on the axis or centre 50 (see Figs. 2 3 and 6) the upper part 51 of this pivoted member being forked at 52 (Fig. 3) in which forks 52 a pin 53 (hereinafter described) engages so as to be adapted to rock said member 49 51 from right to left or *vice-versa* upon the pivot 50 shown in Fig. 3.

This pin 53 is fixed to the gun column 2 (see Fig. 11) so that as and when

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said gun column is rotated round its vertical axis by deflecting the gun 1 (*i.e.* by turning it round its vertical axis) thereby the pin 53 is moved round said vertical axis and moves with it the upper end 51 of the pivoted member 49 51 the lower part 49 of which is consequently swung and moves with it the
 5 bracket 47 which latter accordingly controls or moves the aforesaid gyratory arm 44, 47, 45, 37, 36; while it will readily be seen that as the gun 1 is elevated or depressed the column 2 (supporting it) will correspondingly move the point 36 of the said gyratory arm over the contacts.

Furthermore the facility for adjustment of the bracket 48 upon the gyratory
 10 rod 44 *etc.* constitutes an important feature of the present invention as herein-after explained.

The motive force by means of which (1) the vertically sliding frame 27 is depressed (2) the dash-pot piston forced inwards and (3) by which generally the mechanism is put into position ready to operate on pulling the trigger—
 15 is applied by hand pressure on the outside end of the lever 54.

In the drawings this handle 54 is shewn only so as to operate in connection with the coin-controlled mechanism; but it is obvious that we may if desired dispense with the coin-controlled mechanism and in such case we may employ any simple connection or joint between the hand lever 54 and the shaft 23 to
 20 which the lever 22 is fixed, as this would suffice for our purpose where the machine is not coin-controlled. We will now however describe the target apparatus with coin-controlled mechanism as shewn on the drawings.

Said hand lever 54 extends to the exterior of the casing through a slot in the casing 3, and is pivoted inside said casing on the shaft 23 and being forked takes its bearing towards the extremity of either end of the shaft 23—said
 25 lever 54 is extended beyond the point at which it is pivoted and at such an angle as to bring its short nose or stout extremity 54^a between the two levers 55 which are in rigid connection with the levers 22 and 42.

When the mechanism is in its normal position the hand lever can be moved
 30 up and down without affecting the mechanism because the nose 54^a of the lever 54 can pass freely between the two levers 55; but when a coin is dropped in between 54^a and 55 it forms an obstruction to the movement of the end 54^a of the lever 54 which can only be removed or overcome by a corresponding movement on the part of the lever 55.

In order that a coin may be introduced, a slot of proper dimensions is furnished at any convenient point preferably on the top of the stand as at 56 and the levers 55 are extended upwards so as to form a guide for the reception of the coin 57—from which guide the said coin slides down the lever 55 and is prevented from dropping out by a projecting piece 54^b on the nose 54^a see Fig. 7.
 40

When the hand lever 54 is raised and by the interposition of the coin the levers 55 are thrown back and thereby "cocking" the gun, the said levers are retained in that position owing to the locking action taking place between the head 15 (of the rod 14) and the detent 16; but on the hand pressure being released the lever 54 is drawn down by the spring 59 and the coin relieved from
 45 the pressure of the nose piece 54^a is free to fall into the shoot 60 whence it can then be directed into any convenient money box or other suitable receptacle 61 such as shown in Figs. 3 to 5.

Two bent wires 58 58 are provided to guide the coin on its fall into the shoot 60.

The above form of coin control is only an example of how such control can be obtained; and obviously any other suitable coin controlled mechanism may be applied.

The bracket 48 (see Fig. 2) carrying the joint arrangement 47 is vertically adjusted on the downwardly extending member 44 by vertically adjusting said
 55 bracket 48 on its supporting rod 49 pivoted at 50 by which latter said bracket 48 is swung or moved; and this vertical adjustment of the bracket 48 on the member 49 may be effected in any suitable manner and by any suitable means—

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for example, as shown in the drawings, by attaching said bracket 48 to the sleeve 62 provided with a set screw 63 (see Fig. 3) by which means the bracket 48 is rigidly fixed to the member 49 at any desired height; and the vertical adjustment of said bracket upon said member 49 is a very important feature of the present invention as by this means variation can be obtained of the distances apart of the points of control exercised by the gun column 2 2^a upon the gyratory arm 37 whereby this practice apparatus can readily be adjusted or set to different distances of the gun from the target or adjusted for different sized targets. 5

64 is a hammer (Fig. 3) carried by the pivoted arm 65 pivoted to the frame 66, and at its other end operated by the contact cup 30 so that when the latter is operated on "discharge" of the gun, thereby the hammer 64 on the spring arm 64^a is caused to strike the side of the case or act as a "clapper" so as to produce a noise at the discharge. 10

In addition to the foregoing improvements the present invention also comprises the following:— 15

For the purpose of mounting an actual rifle or other small arm (such as a sporting gun if desired) for use on the apparatus, a vice or clamping arrangement is provided on the upper part of the gun column; a suitable clamping device being formed according to this invention by two upwardly extending jaws or arms forming a somewhat U-shaped device or holder on the top end of the gun column one of such jaws being recessed concave or otherwise formed so as to be adapted to fit or embrace or engage the small-arm (and for this purpose it may be lined if desired) while the other said fixed jaw has a screw passing therethrough the inner end of which carries or is otherwise arranged to act on or control a movable jaw of concave or other suitable form (lined or otherwise) adapted to embrace or engage the opposite side of said fire-arm so that the latter can be thus clamped (as in a vice) on the upper part of the gun column. 20 25

—Any suitable means being provided to rotate said clamping screw, or in place of the latter any other suitable means may be employed to operate the vice. 30

In order to enable a military rifle or other fire-arm to be used in this apparatus without injuring or altering or otherwise interfering with such rifle the following device may be employed according to this invention:— 35

The slidable connecting rod or detent (such as the detent 16 in the drawings) is arranged with a spring acting between a collar thereon and a fixed bracket or bearing in which said bolt or detent slides; and on the rear end of said slidable rod there is adjustably mounted a bracket or arm arranged so as to extend in the path of the movement of the trigger of the gun—this bracket or arm being advantageously arranged as an upwardly and rearwardly extending fork, the two ends of said fork extending on either side of the trigger guard, and a bolt or roller device can then be passed through and be secured in position across the two upwardly extending ends of said arm, such bolt or roller being thus brought into position against or just behind the trigger so that when the latter is "pulled" thereby the slidable rod or detent is moved and the apparatus operated as before described thus the rifle or other gun mounted on the apparatus is not interfered with but remains in exactly the same condition as before its application to the apparatus. 40 45

A further feature of improvement according to the present invention relates to the construction of a simulated gun or weapon and according to this part of the invention the part representing the lock and central part of such weapon is permanently or otherwise fixed to the gun column but forwardly is adapted to have different lengths or types of barrel *etc.* applied thereto according to whether it is desired to have the weapon as a gun or pistol *etc.* while rearwardly said central part is adapted to have different forms of gun stock or 50 55

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pistol stock or handle applied thereto so as to thus enable the change to be made readily or any desired form of weapon represented as desired.

The arrangement for holding different forms of gun stock may advantageously consist of a forked rearwardly extending end part with cut-away or recessed portions on each vertical side face of this mount the fore-end or fore-part of the gun stock or pistol stock being formed or arranged as a counterpart or otherwise so as to be adapted to fit on said mount and be there secured by screws or other suitable means.

Dated this 10th day of April 1905.

TONGUE & BIRKBECK,
Agents for the Applicant.

COMPLETE SPECIFICATION.

“Improvements in or relating to Target Practice Apparatus and the like and in or relating to Targets for use in connection therewith—where no Projectile is Employed”.

We, THOMAS LINFORTH JONES, Engineer and Manager of the undermentioned Company; and the AUTO-ELECTRIC RIFLE & TARGET COMPANY LIMITED, all of 105 Shaftesbury Avenue, London, W: do hereby declare the nature of this invention and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement:—

Heretofore as is well-known there have been employed target apparatuses & the like where no projectile is employed and wherein the spot aimed at by the marksman is indicated electrically at the target either visually or audibly or both and wherein a gun or pistol or a device simulating a gun or pistol is employed but no explosive—and as aforesaid no projectile—is used. Such machines have also been combined with coin-in-the-slot mechanism.

This invention relates to apparatus of the aforesaid type and consists of certain improvements which will be hereinafter fully described and the novel features thereof finally pointed out in the claims.

This said invention may be used for purposes of amusement and fitted up for example as an automatic coin-in-the-slot machine or may be arranged to work without such coin-controlled mechanism and it is specially useful for affording practice to anyone desirous of becoming a proficient and accurate marksman as by its means one is enabled to locate correctly or approximately that portion of the target which would have been hit had a bullet issued from the weapon at the moment the trigger was pulled after sighting and aiming.

We will now describe the present invention with reference to the accompanying drawings:—

In these drawings we have shewn the apparatus fitted up as an automatic coin-in-the-slot machine but it is obvious that by dispensing with the coin-operating part of the invention & substituting a fixed joint for the joint otherwise effected by the interposition of the coin the apparatus will work equally well.

Like figures and letters of reference denote like parts.

Fig. 1 is a side elevation on a small scale of the gun supported on a stand together with the electrically connected target.

Figs. 2 and 3 are respectively a side and end elevation of the gun and its stand on a larger scale and are partly in section to show the mechanism inside the stand.

Figs. 4 and 5 are also sectional side and end elevations and show on a larger scale, but with the gun removed, the coin operating mechanism and other parts connected thereto.

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Fig. 6 is a plan of the view shown in Fig. 5.

Fig. 7 is a side view, same as Fig. 5 but with several of the parts left out in order to show more clearly the action of the hand lever and the coin control—the lever is here shown in two positions, up and down.

Figs. 8 9 and 10 are respectively side and end elevations and plan and show more particularly the vertically sliding plate containing the electrically connected and insulated cups and their position in reference to the pointer previously referred to.

Fig. 11 is a side elevation of the stock of the gun and shows the trigger releasing action.

Fig. 12 is front elevation of the target.

Fig. 13 shows a cross-section of the same.

Fig. 14 is also a front elevation of the target but with the front plate holding the lamps removed.

The gun 1 is carried on the hollow gun column 2, the lower part of which moves in the gun support 3 in which is contained the mechanism for:—

- (1) "Cocking" or setting the gun ready for "discharging".
- (2) Operating the gyratory arm by which is closed one or other of a number of independent electric circuits according to the aim of the gun.
- (3) Coin-operated mechanism (if used) for enabling the gun to be cocked or set ready for use only when a coin or token of proper value or denomination is placed in the slot.
- (4) Mechanism for regulating the duration of time during which each individual circuit when it is closed (on the discharge of the gun) is allowed to remain closed—and thereby regulating the length of time during which the target lamp in said circuit is permitted to glow.

4 is the support which carries the target (see Fig. 1) between which and the gun 1 and its mount 3 a number of separate circuit wires 5 are connected and operate as hereinafter explained; the number of such circuit wires 5 depending on the number of divisions into which the target *etc.* is divided—for example as illustrated in Figs. 12 13 and 14 the target proper, consisting of the three circles 6 7 and 8, has nineteen divisions each of which separate divisions has a small incandescent lamp 11 which can be seen through an aperture 9 in said target; while outside the target proper 6, 7, 8, the part 10 (which may conveniently be termed the "miss indicator part") is provided with say four lamps, to show through the four apertures 9* which serve to indicate not only when the aim has been right off the target proper, but shows in which direction the marksman was off the target.

It will be obvious that we may use any other desired shape of target, and may employ any other suitable number of divisions on said target—a corresponding number of lamps 11 being provided according to the number of divisions into which the target is divided; and the lamps may be rendered visible otherwise than through apertures 9 as illustrated—as for example the target 6, 7, 8, 10, may be made of a transparent or translucent material through which can be seen whichever lamp is caused to glow on the discharge of the gun as hereinafter explained.

12, 12 are the contact springs (see Figs. 13 and 14) inserted between the lamps 11 and the contact screws 13, to which latter the circuit wires 5 are connected; each respective contact 13 being in circuit with only one lamp 11; and each said lamp 11 and its contacts 12 and 13 and its circuit wire 5 being insulated from and separate from all the other circuits and lamps, so that any one lamp can be illuminated without any of the others being caused to glow.

Through the gun column 2 a slidable rod 14 (Figs. 2 3 and 11) passes and is suitably guided and is provided at its upper end with a mushroom head or conoidal shaped head 15, which latter is adapted when it is raised from the position below the slidable connecting rod 16 (see Fig. 11) to force said rod 16 back out of its path.

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Said rod 16 is connected at 17 to the trigger 18 of the gun, and provided also with a spring 19 which returns said rod 16 under the head 15 of the rod 14 and thereby retains the latter in the "set" position *i.e.* in the cocked position ready for the "discharge".

5 This rod 14 (which is released by pulling the trigger 18 and thereby withdrawing the sliding rod or catch 16) is slotted just below the centre or point 20 about which latter the gun column 2 can be moved, and the tongue 21 (which is rigidly fixed to the lever 22 pivoted at 23—see Fig. 11) passes through this slot in the lower part of said rod 14 just below the said axial point 20 (see
10 Fig. 11) so that vertical movement is on the one hand imparted by said tongue 21 to move the rod 14 upwards to set the gun, and then in turn said rod 14 prevents the return movement of the tongue 21 and lever 22 (and its connecting mechanism) until the trigger 18 is pulled and the rod 14 allowed to drop.

15 24 is a rod pivoted at its upper end to the lever 22 (see Fig. 2) and at its lower end this rod 24 is connected to a flexible chain 25 which passes round a pulley 26 journaled or mounted in the lower part of the frame 3 (see Figs. 2 and 3) the other end of this chain 25 being connected to the sliding frame 27 which is normally kept pressed upwards by the springs 28 acting against the
20 fixed plate 29—see Figs. 2 3 8 9 and 10.

This slidable frame 27 carries the contact device or cup 30 (see Figs. 8 to 10) which contact device interiorly is formed as a cup advantageously with conical or inwardly converging side walls 31 and the bottom of said cup 30 is provided with a number of contacts 32 and 33 insulated from one another and
25 corresponding in number to the number of divisions on the target *etc.*; thus with the target as illustrated in Fig. 12 with nineteen divisions in the target proper, and four divisions surrounding said target proper, making 23 divisions in all, there would be twenty three separate and independent contacts arranged at the bottom of the cup 30—namely nineteen contacts 32 for the target proper,
30 and four contacts 33 for the divisions off the target—for the purpose of illuminating the lamps 11 showing through the apertures 9 and 9^a respectively.

34 is the flexible cable connecting the group of contacts 32 33 through the terminal board 35 and circuit wires 5—to the respective lamps 11 in the target as aforesaid.

35 When the rod 14 is raised to set or cock the gun, the lever 22 is also raised by means of the cocking lever 54 and through the connecting rod 24 and chain 25, the sliding frame 27 with the contact device 30 is moved down out of contact with the end 36 of the gyratory arm 37, which latter forms part of the circuit to the lamps as hereinafter explained; while immediately on the
40 trigger being pulled and the rod 14 allowed to drop, thereby the slidable frame 27 is released and (through the reaction of the compressed springs 28) same is forced up against the point 36 of said gyratory arm 37 and closes the circuit through one or other of the contacts 32 and 33 and remains in this position with the point 36 touching one or other of the contacts in the cup 30
45 until the gun is re-set—whereupon the cup 30 is moved down below the position shown in Fig. 8 until the gun is discharged again, and so on.

The circuit through the contact in the cup 30 and gyratory arm or needle 37 is completed through the frame of the dash-pot 38 and piston rod 39 thereof and spring contact arm 40 (which is insulated from the frame) to the battery
50 except when the piston rod 39 of said dash-pot is in its outermost position as shown in Fig. 2 in which position a sleeve or piece of insulating material on the inner end of the piston rod 39 bears against the spring 40 and thus breaks at this point the electric circuit to the lamps.

When the aforesaid lever 22 is raised as aforesaid in setting the gun, it
55 simultaneously moves a rigid arm or bell-crank 41 fixed to said lever 22 (or fixed to the axis 23 thereof) and the outermost end 42 of said lever as it is moved

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in the direction of the arrow 43 (see Fig. 2) engages the outer end of the piston rod 39 and forces the piston into the barrel of the dash-pot 38 against the action of a spring (not shown) and there retains said piston until the gun is "discharged" whereupon the circuit to one of the lamps is completed as aforesaid, while the "live" part of said piston rod 39 remains in contact with the contact spring 40 that is until the re-action of the spring in the dash-pot forces the piston outwards again into the position shown in Fig. 2 whereupon electrical contact at 40 is broken as before explained—and the illuminated lamp is then and thereby extinguished. 5

The dash-pot 38 for regulating the length of time during which any lamp is permitted to glow may be provided with any suitable means to vary the speed of said dash-pot so as to thereby vary the time during which each lamp remains alight for example the inlet or exit of air to the dash-pot may be controlled by providing said dash-pot with means to vary the size or extent of the aperture or apertures through which such air passes to or from the interior of said dash-pot such devices for regulating the speed of the dash-pot being well-known and in common use in dash-pots employed for regulating the speed of photographic shutters. 10 15

The means for imparting gyratory movement to the point 36 of the arm 37 are as follows:— 20

The gun column 2 extends rigidly downwards below the lower end of the rod 14 and terminates about the point 2^a shown in Figs. 2 and 4 where it acts upon the rod 44 which latter in turn is jointed to the gyratory arm 37 (see Fig. 2) through the flexible joint 45 which latter consists of the sleeve 45 containing the spring 46 to one end of which spring the arm or rod 44 is connected and to the other end of the spring 46 the arm or rod 37 is connected. This rod 37 has a collar 37^a fixed thereon and a spring 37^b thereon interposed between said collar 37^a and the slotted sleeve 37^c in which latter the lower end of the rod 37 is secured by the pin 37^d (see Fig. 3) travelling in the slot in said slotted sleeve 37^c to the lower end of this sleeve 37^c the needle point 37^e is attached so that upon the point 36 of the latter being struck by one of the contacts 32 or 33 on the upward movement of the slidable frame 27 as before described the needle 37^e and sleeve 37^c to which it is attached can slide upwards upon the rod 37 and thereby compress the spring 37^b which returns the point 36 to its normal position when the point 36 is released. 25 30 35

—This slidable spring connection of the parts 37 and 37^e thus avoiding bending or injury of the parts through the striking of the point 36 by the aforesaid contact devices 32, 33, 27.

—Thus the arm 37 37^a, 37^b, 37^c, 37^d, 37^e with point 36 spring connection 45 and connecting rod 44 practically form collectively a complete gyratory arm. 40

Below the point where the lower end 2^a of the gun column 2 acts on the rod 44 there is introduced a slidable bearing formed by the ball joint or slidable ball 47 resting in a suitable socket in the movable bracket 48 and vertically slidable upon the rod 44 as and for the purposes hereinafter explained.

Said movable bracket 48 is carried on the downwardly extending member or arm 49 which is pivoted or adapted to turn on the axis or centre 50 (see Figs. 2, 3, and 6) the upper part 51 of this pivoted member being forked at 52 (Fig. 3) in which forks 52 a pin 53 (hereinafter described) engages so as to be adapted to rock said member 49, 51, from right to left or *vice-versa* upon the pivot 50 shown in Fig. 3. 45 50

This pin 53 is fixed to the gun column 2 (see Fig. 11) so that as and when said gun column is rotated round its vertical axis by deflecting the gun 1 (*i.e.* by turning it round its vertical axis) thereby the pin 53 is moved round said vertical axis and moves with it the upper end 51 of the pivoted member 49, 51, the lower part 49 of which is consequently swung and moves with it the bracket 47 which latter accordingly controls or moves the aforesaid gyratory arm 44, 47, 45, 37, 36; while it will readily be seen that as the gun 1 is 55

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elevated or depressed the column 2 (supporting it) will correspondingly move the point 36 of the said gyratory arm over the contacts.

Furthermore the facility for adjustment of the bracket 48 upon the gyratory rod 44 *etc.* constitutes an important feature of the present invention as hereinafter explained.

The motive force by means of which (1) the vertically sliding frame 37 is depressed (2) the dash-pot piston forced inwards and (3) by which generally the mechanism is put into position ready to operate on pulling the trigger—is applied by hand pressure on the outside end of the lever 54.

In the drawings this handle 54 is shewn only so as to operate in connection with the coin-controlled mechanism; but it is obvious that we may if desired dispense with the coin-controlled mechanism and in such case we may employ any simple connection or joint between the hand lever 54 and the shaft 23 to which the lever 22 is fixed as this would suffice for our purpose where the machine is not coin-controlled. We will now however describe the target apparatus with coin-controlled mechanism as shewn on the drawings.

Said hand lever 54 extends to the exterior of the casing through a slot in the casing 3, and is pivoted inside said casing on the shaft 23 and being forked takes its bearing towards the extremity of either end of the shaft 23—said lever 54 is extended beyond the point at which it is pivoted and at such an angle as to bring its short nose or stout extremity 54^a between the two levers 55 which are in rigid connection with the levers 22 and 42.

When the mechanism is in its normal position the hand lever can be moved up and down without affecting the mechanism because the nose 54^a of the lever 54 can pass freely between the two levers 55; but when a coin is dropped in between 54^a and 55 it forms an obstruction to the movement of the end 54^a of the lever 54 which can only be removed or overcome by a corresponding movement on the part of the lever 55.

In order that a coin may be introduced, a slot of proper dimensions is furnished at any convenient point preferably on the top of the stand as at 56 and the levers 55 are extended upwards so as to form a guide for the reception of the coin 57—from which guide the said coin slides down the lever 55 and is prevented from dropping out by a projecting piece 54^b on the nose 54^a see Fig. 7.

When the hand lever 54 is raised and by the interposition of the coin the levers 55 are thrown back and thereby “cocking” the gun, the said levers are retained in that position owing to the locking action taking place between the head 15 (of the rod 14) and the detent 16; but on the hand pressure being released the lever 54 is drawn down by the spring 59 and the coin relieved from the pressure of the nose piece 54^a is free to fall into the shoot 60 whence it can then be directed into any convenient money box or other suitable receptacle 61 such as shown in Figs. 3 to 5.

Two bent wires 58 58 are provided to guide the coin on its fall into the shoot 60.

The above form of coin control is only an example of how such control can be obtained; and obviously any other suitable coin-controlled mechanism may be applied.

The bracket 48 (see Fig. 2) carrying the joint arrangement 47 is vertically adjusted on the downwardly extending member 44 by vertically adjusting said bracket 48 on its supporting rod 49 pivoted at 50 by which latter said bracket 48 is swung or moved; and this vertical adjustment of the bracket 48 on the member 49 may be effected in any suitable manner and by any suitable means—for example, as shown in the drawings, by attaching said bracket 48 to the sleeve 62 provided with a set screw 63 (see Fig. 3) by which means the bracket 48 is rigidly fixed to the member 49 at any desired height; and the vertical adjustment of said bracket upon said member 49 is a very important feature of the present invention as by this means variation can be obtained of the distances apart of the points of control exercised by the gun column 2 2^a upon the

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gyratory arm 37 whereby this practice apparatus can readily be adjusted or set to different distances of the gun from the target or adjusted for different sized targets.

64 is a hammer (Fig. 3) carried by the pivoted arm 65 pivoted to the frame 66, and at its other end operated by the contact cup 30 so that when the latter is operated on "discharge" of the gun, thereby the hammer 64 on the spring arm 64^a is caused to strike the side of the case or act as a "clapper" so as to produce a noise at the discharge.

In addition to the foregoing improvements the present invention also comprises the following:—

For the purpose of mounting an actual rifle or other small arm (such as a sporting gun if desired) for use on the apparatus, a vice or clamping arrangement is provided on the upper part of the gun column; a suitable clamping device being formed according to this invention by two upwardly extending jaws or arms forming a somewhat U-shaped device or holder on the top end of the gun column one of such jaws being recessed concave or otherwise formed so as to be adapted to fit or embrace or engage the small-arm (and for this purpose it may be lined if desired) while the other said fixed jaw has a screw passing therethrough the inner end of which carries or is otherwise arranged to act on or control a movable jaw of concave or other suitable form (lined or otherwise) adapted to embrace or engage the opposite side of said fire-arm so that the latter can be thus clamped (as in a vice) on the upper part of the gun column.

—Any suitable means are provided to rotate said clamping screw, or in place of the latter any other suitable means may be employed to operate the vice.

In order to enable a military rifle or other fire-arm to be used in this apparatus without injuring or altering or otherwise interfering with such rifle the following device may be employed according to this invention:—

The slidable connecting rod or detent (such as the detent 16 in the drawings) is arranged with a spring acting between a collar thereon and a fixed bracket or bearing in which said bolt or detent slides; and on the rear end of said slidable rod there is adjustably mounted a bracket or arm arranged so as to extend in the path of the movement of the trigger of the gun—this bracket or arm being advantageously arranged as an upwardly and rearwardly extending fork, the two ends of said fork extending on either side of the trigger guard, and a bolt or roller device can then be passed through and be secured in position across the two upwardly extending ends of said arm, such bolt or roller being thus brought into position against or just behind the trigger so that when the latter is "pulled" thereby the slidable rod or detent is moved and the apparatus operated as before described thus the rifle or other gun mounted on the apparatus is not interfered with but remains in exactly the same condition as before its application to the apparatus.

A further feature of improvement according to the present invention relates to the construction of a simulated gun or weapon and according to this part of the invention the part representing the lock and central part of such weapon is permanently or otherwise fixed to the gun column but forwardly is adapted to have different lengths or types of barrel *etc.* applied thereto according to whether it is desired to have the weapon as a gun or pistol *etc.* while rearwardly said central part is adapted to have different forms of gun stock or pistol stock or handle applied thereto so as to thus enable the change to be made readily or any desired form of weapon represented as desired.

The arrangement for holding different forms of gun stock may advantageously consist of a forked rearwardly extending end part with cut-away or recessed portions on each vertical side face of this mount the fore-end or fore-part of the gun stock or pistol stock being formed or arranged as a counterpart or other-

Improvements in or relating to Target Practice Apparatus, &c.

wise so as to be adapted to fit on said mount and be there secured by screws or other suitable means.

It will be understood that in carrying the present invention into practice we may employ either an actual rifle pistol or other fire-arm or imitation weapons
5 may be employed; and by the use of the term "gun" in the foregoing specification we mean and intend to include thereunder any suitable rifle gun or pistol or the like—whether real or simulated.

Having now particularly described and ascertained the nature of our said
10 invention and in what manner the same is to be performed we declare that what we claim is:—

1. In a target practice apparatus wherein on pulling the trigger of the "gun" (whether same be real or simulated) electrical connection is completed between the gun and that portion of the target at which the gun is aimed so as to automatically indicate such aim on the face of the target without the issuance of
15 any projectile; the arrangement whereby variation can be obtained of the distance apart of the points of leverage upon the gyratory arm (which closes any one of a number of separate electric circuits in connection with the target) for the purpose of enabling said practice apparatus to be adjusted or set to suit different distances of the gun from the target or adjusted for different sized
20 targets.

2. In target practice apparatus as claimed above the arrangement whereby upon "discharge" of the "gun", one out of a number of separate electric lamp circuits is temporarily closed and a lamp (or lamps) in such closed circuit (which is thereby caused to glow) is located on the target in such a position as
25 to thereby indicate by its glow the point of the target at which the gun was actually aimed at the moment of discharge.

3. In target practice apparatus as claimed in above Claim 2; the arrangement of a dash-pot for regulating the length of time during which any lamp is permitted to glow and means to vary the speed of said dash-pot so as to
30 thereby vary the time during which each lamp remains alight.

4. In a target practice apparatus of the character claimed above; the provision of coin-in-the-slot mechanism whereby the former can only be operated on insertion of the proper coin in the latter substantially as described.

5. In target practice apparatus of the type which automatically indicates the aim on a target without the issuance of any projectile and wherein a series of
35 separate electric circuits are each so arranged that an electrical connection is completed between the gun and that portion of the target representing the point on the target at which the gun is aimed at the moment of its discharge; the arrangement and combination with and upon a target of a plurality of
40 electric lamps distributed on said target and connected with said electric circuits whereby when any one of such electric circuits is closed the lamp (or lamps) in such circuit will thereby be caused to glow in such a position on the target as to indicate by its glow the point on the target at which the gun was aimed at the moment of discharge, means to maintain said lamp in circuit for a given
45 period, and means to then automatically extinguish the lamp.

6. In a target practice apparatus of the type which automatically indicates the aim on a target without the issuance of any projectile and wherein a series of separate electric circuits are each so arranged that an electrical connection is completed between the gun and that portion of the target representing the
50 point on the target at which the "gun" is aimed at the moment of its discharge; the arrangement and combination with a gun column such as 2, for supporting a military or other rifle from the underside, of a crutch on the upper part of said gun column adapted to receive said rifle therein, means to lock or clamp such rifle in position in said crutch, and means carried on said
55 gun column adapted to be operated by the trigger of said rifle to release the

Improvements in or relating to Target Practice Apparatus, &c.

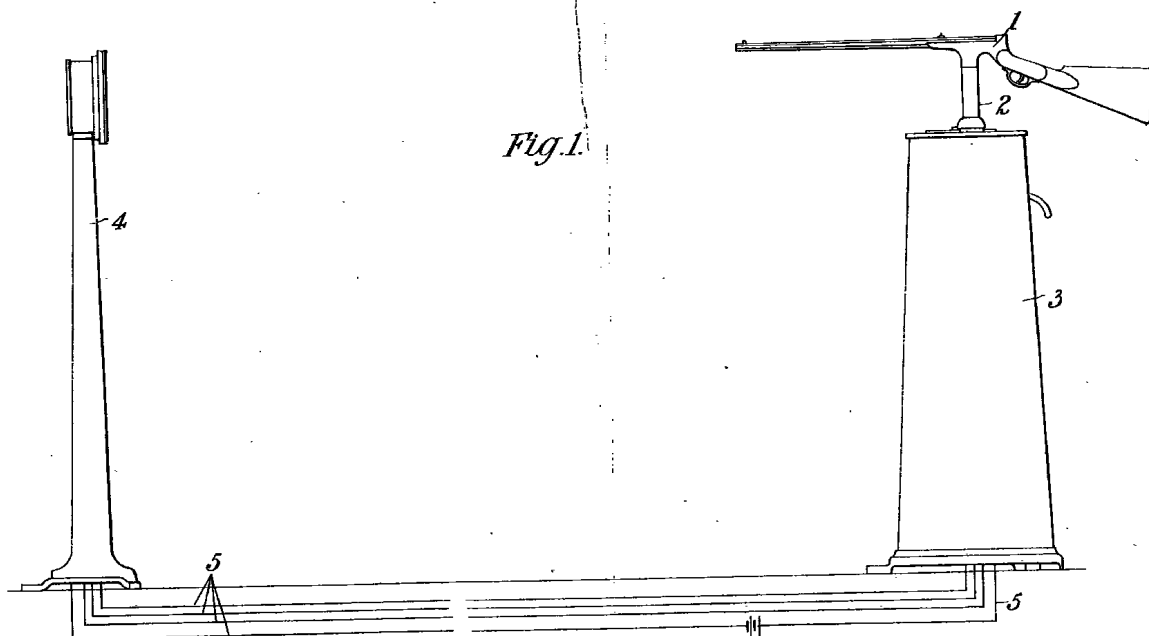
slidable rod such as 14 and thereby close any one of said circuits substantially as and for the purposes set forth.

7. Target practice apparatus with target and gun or rifle for use in connection therewith where no projectile is employed all constructed combined and arranged to act substantially in the manner and for the purposes hereinbefore described with reference to and as illustrated in the drawings hereunto annexed.

Dated this 11th day of November 1905.

TONGUE & BIRKBECK,
Birkbeck Bank Chambers, Chancery Lane, London, W.C.
Agents for the Applicants.

Fig. 1.



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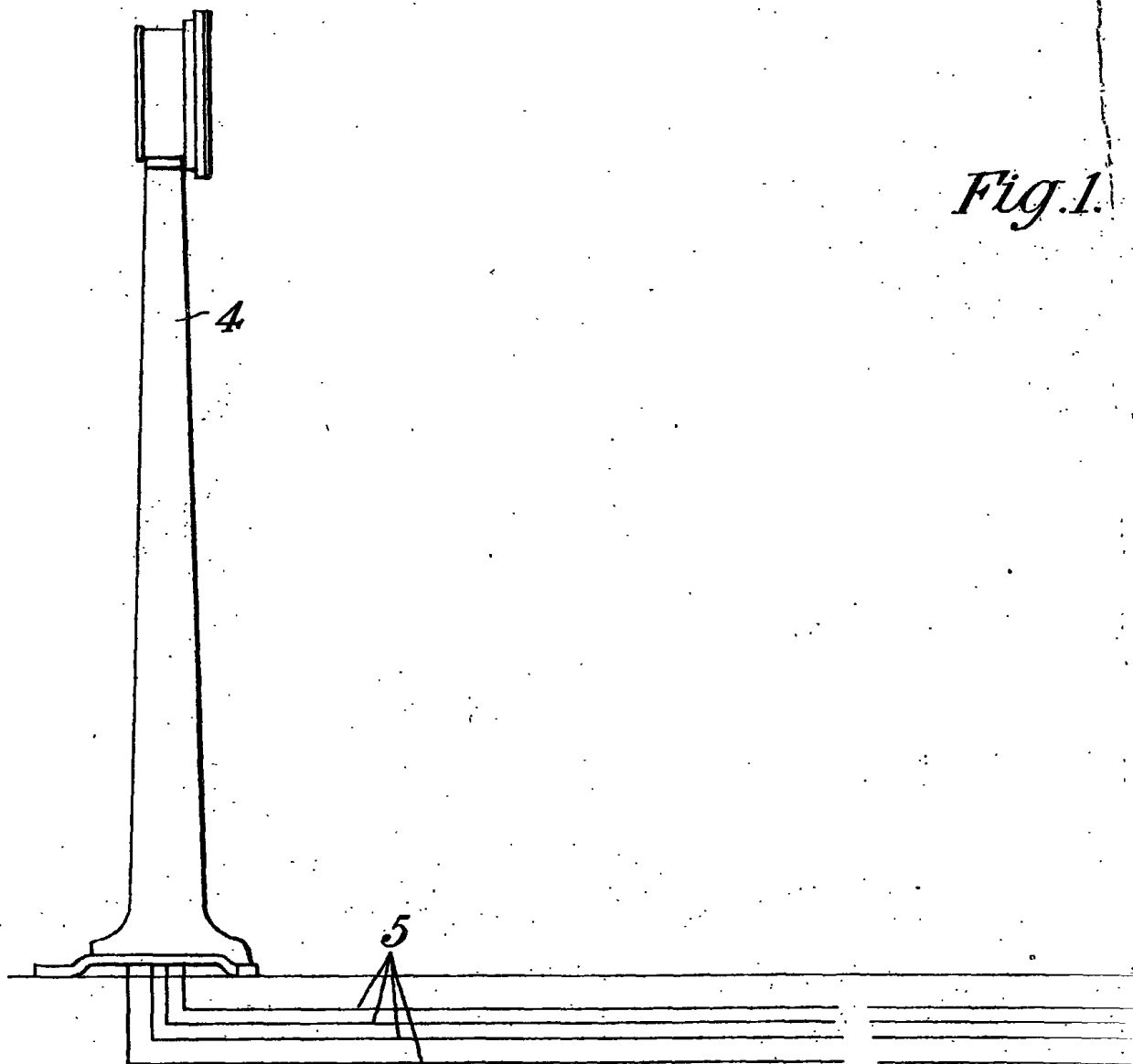
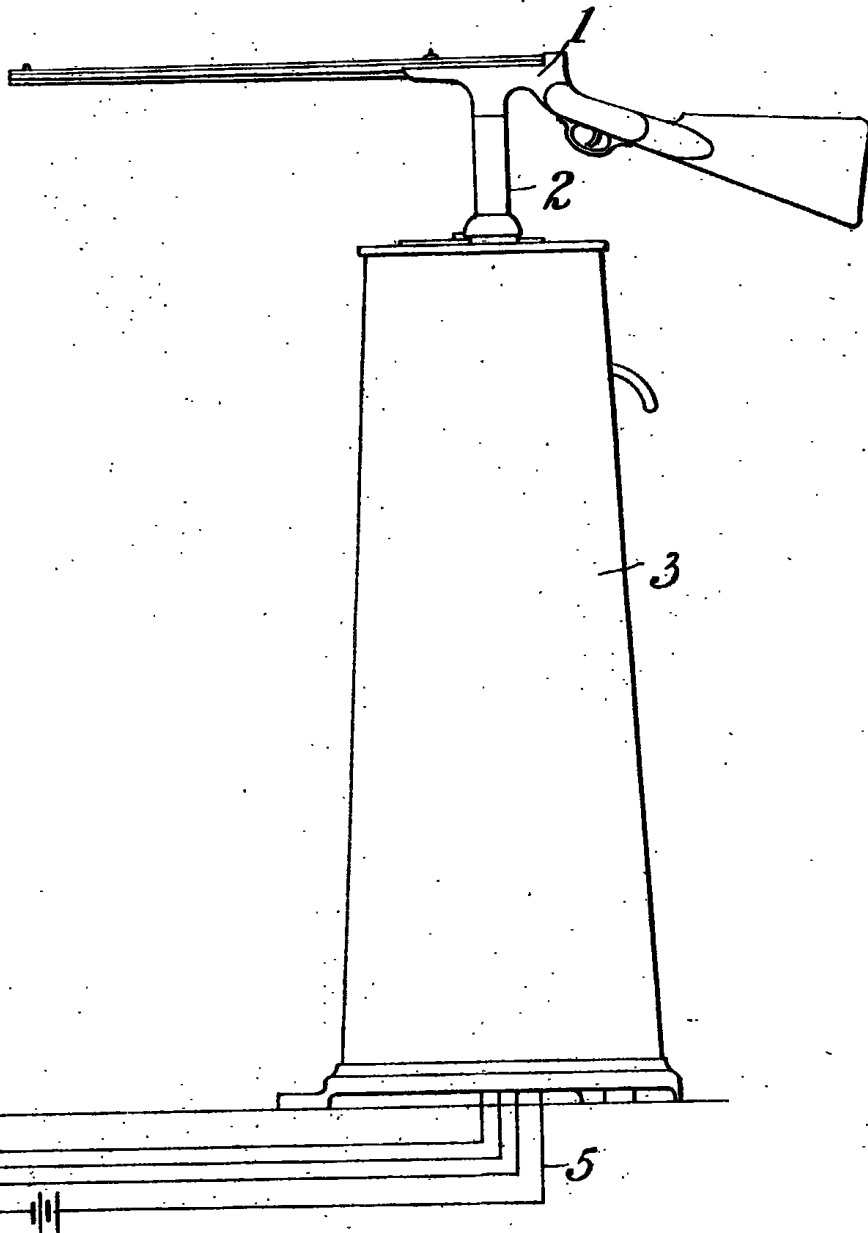
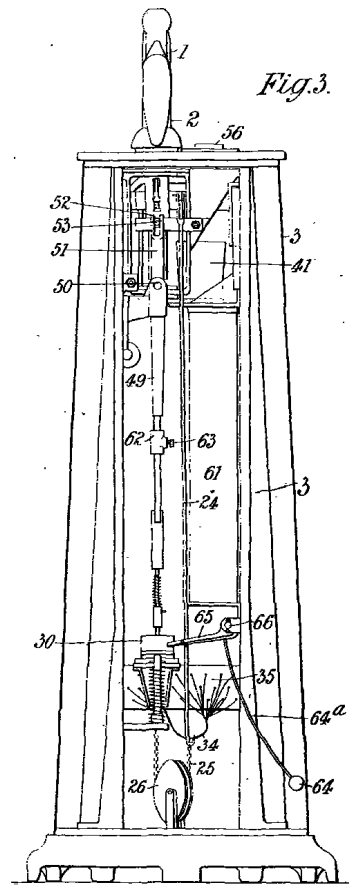
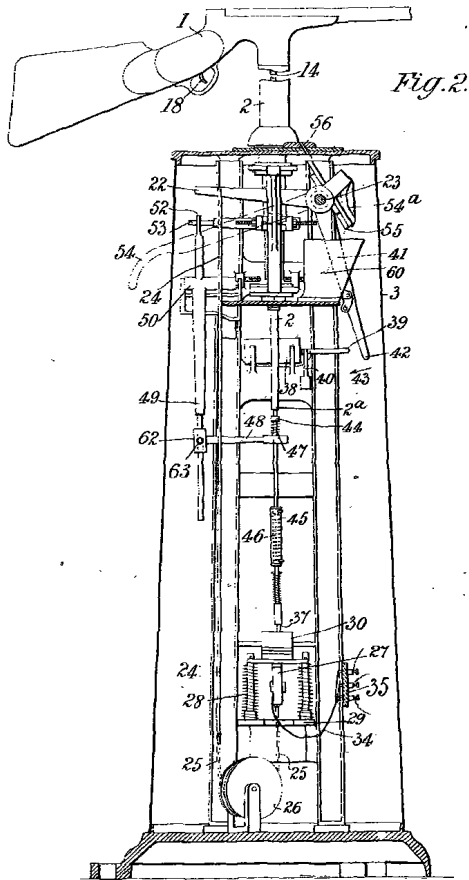


Fig. 1.



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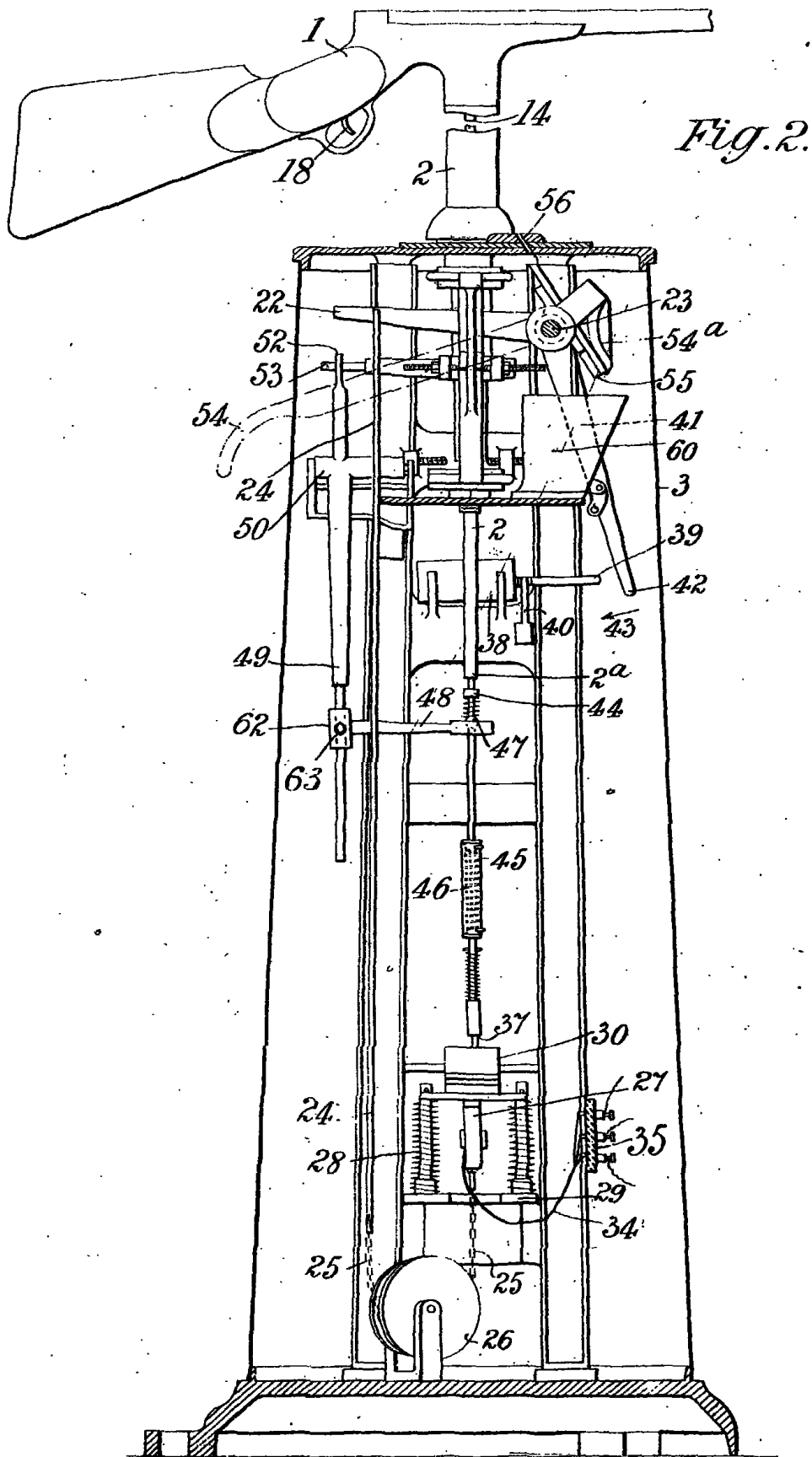
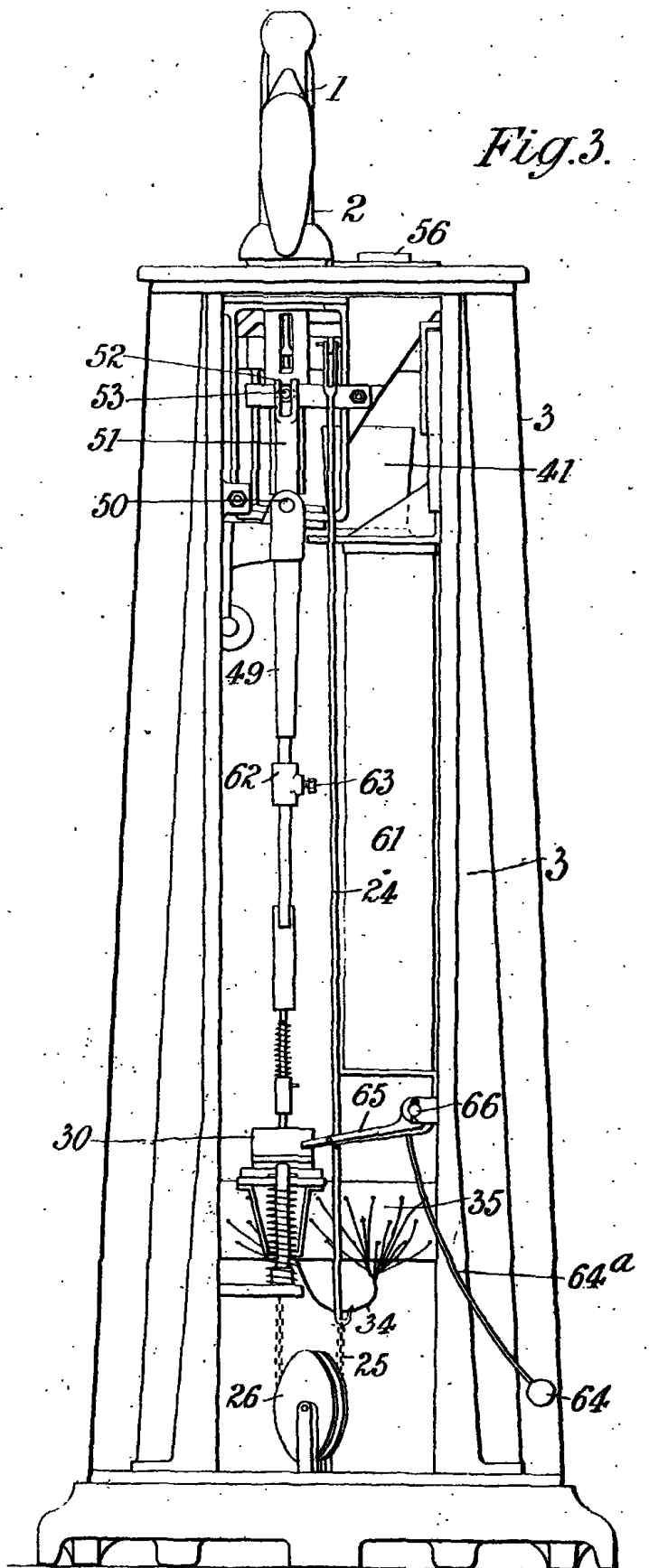
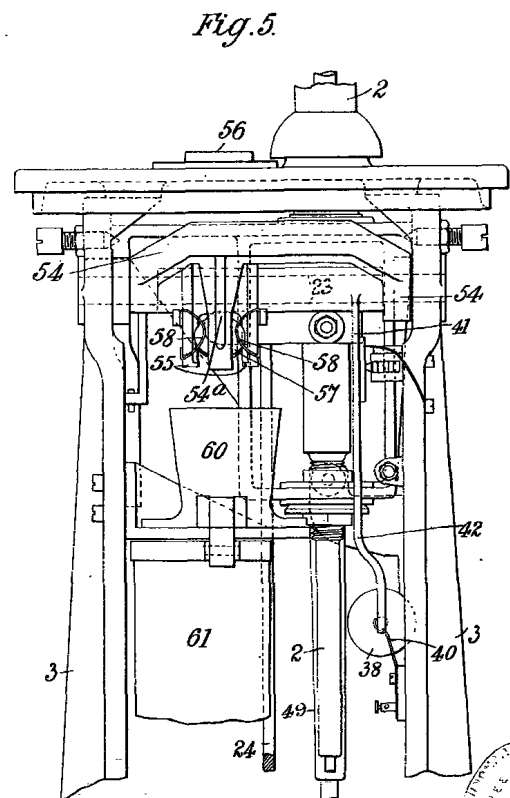
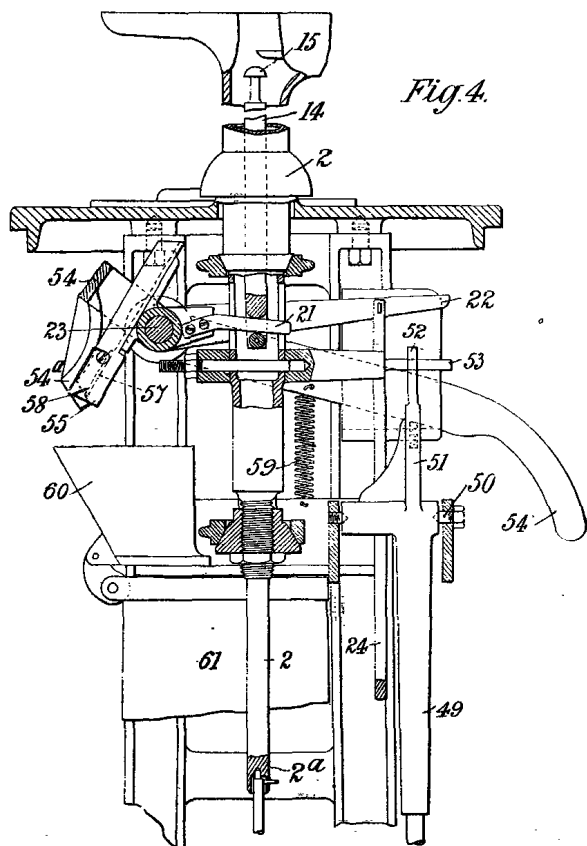


Fig.3.



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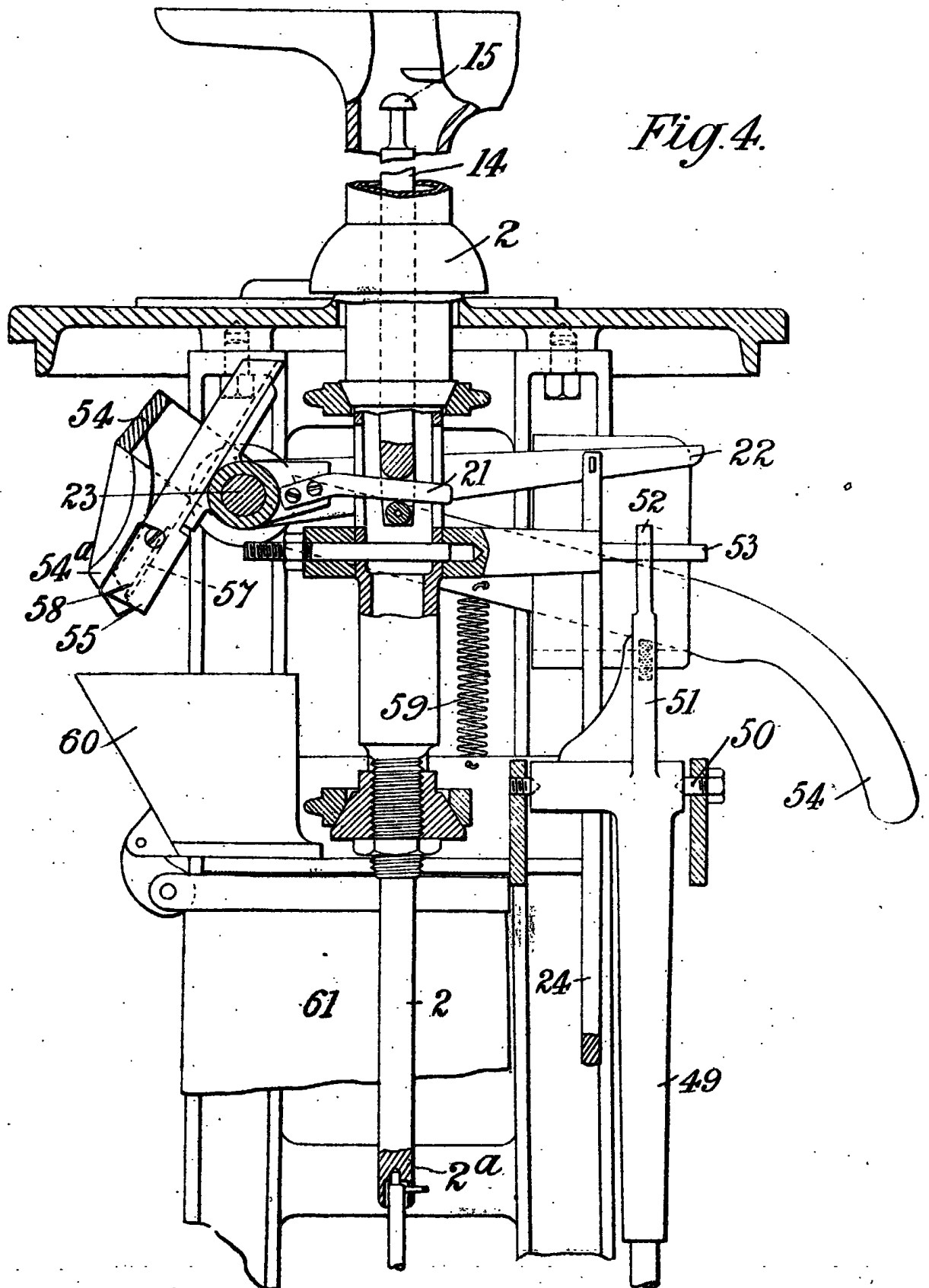


Fig. 5.

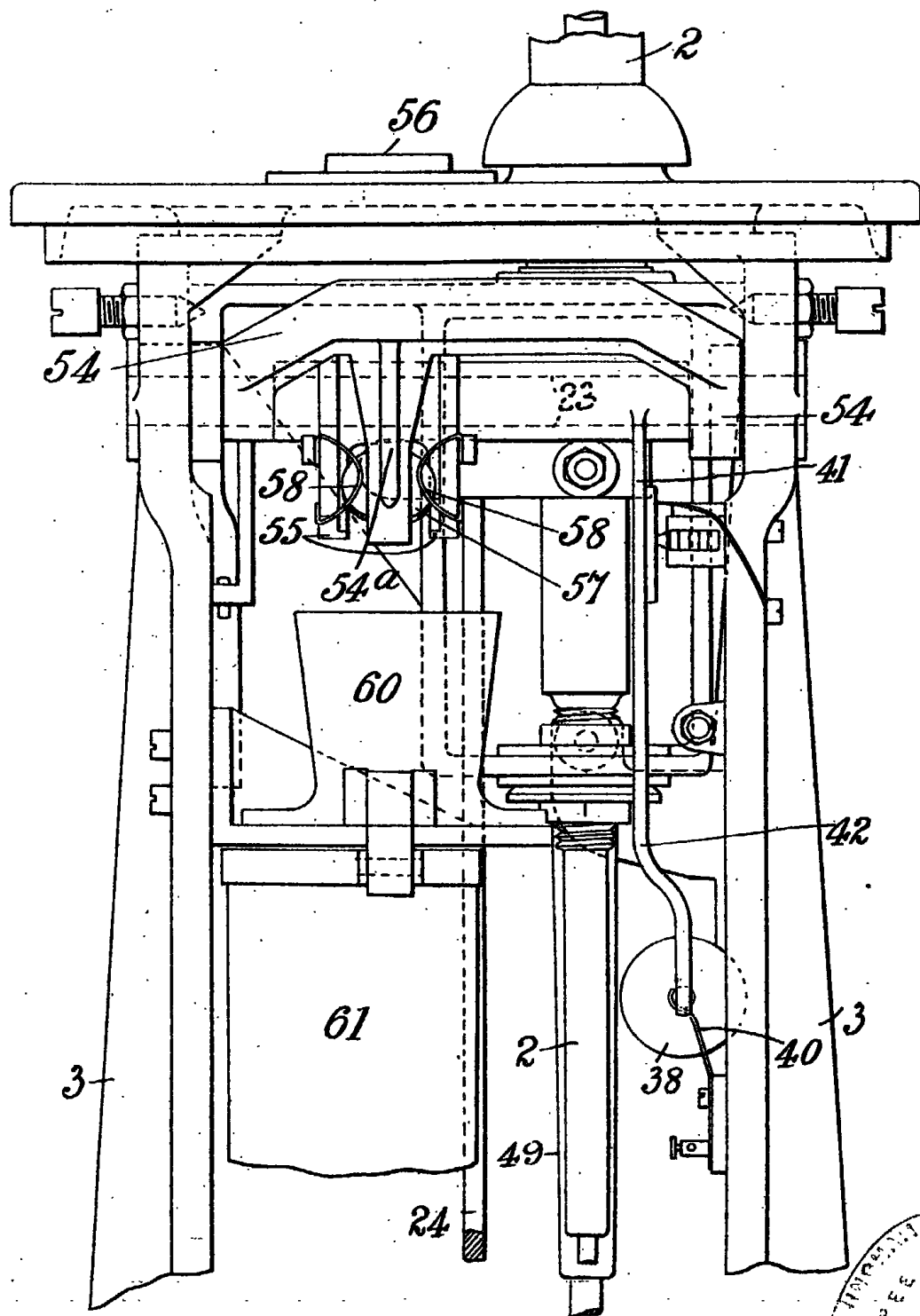


Fig. 6.

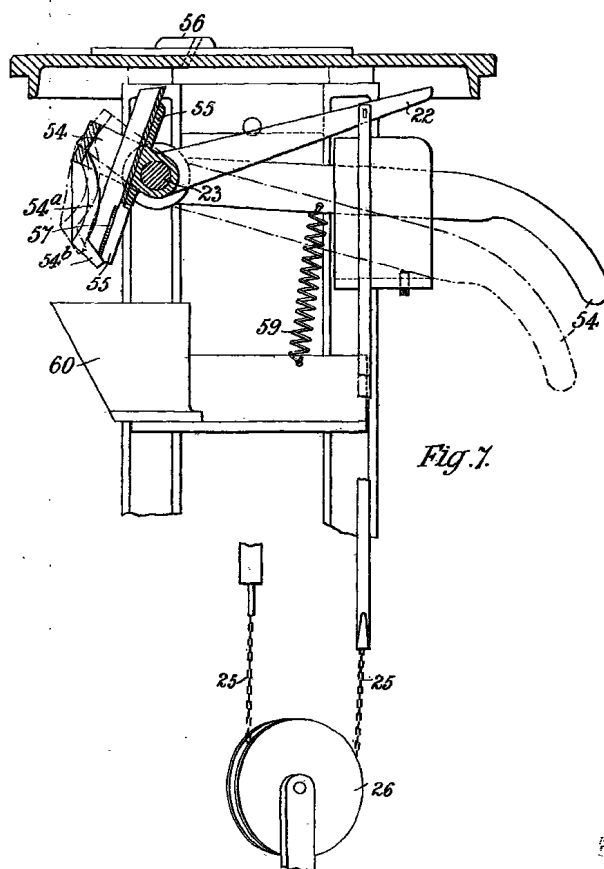
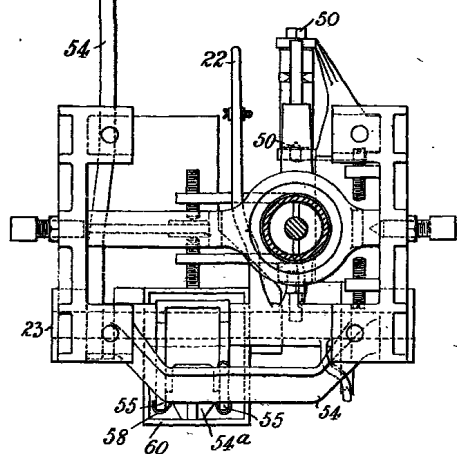
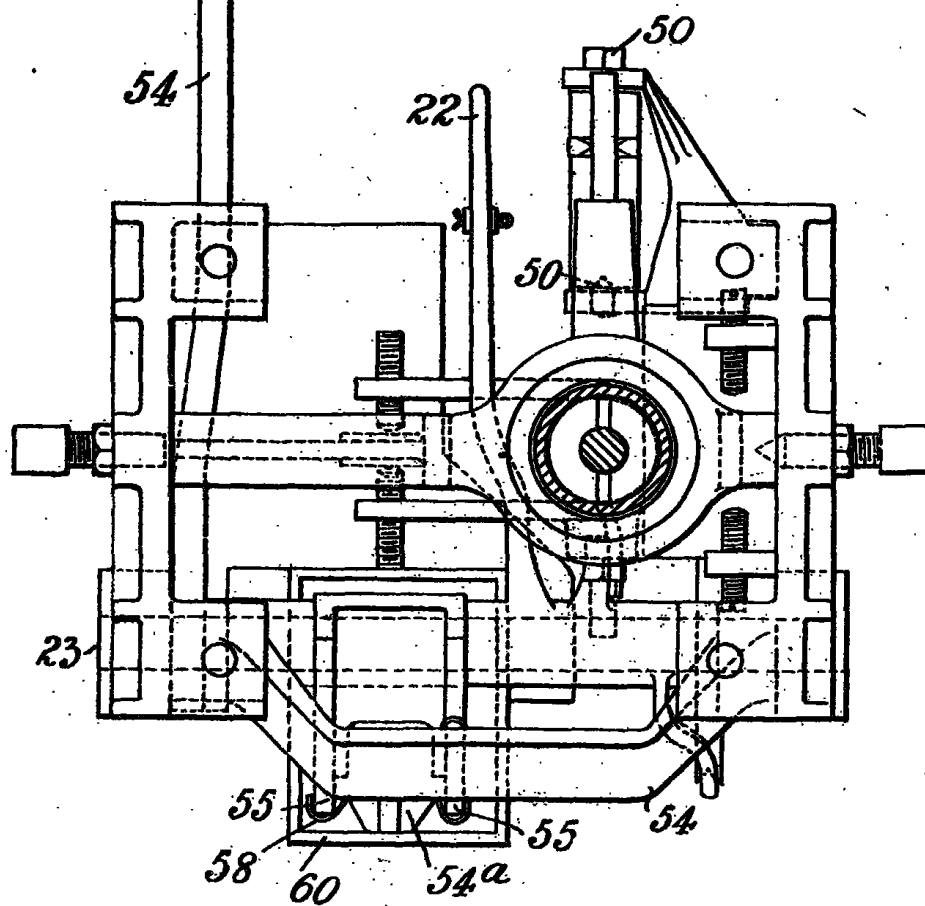


Fig. 7.

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Fig. 6.



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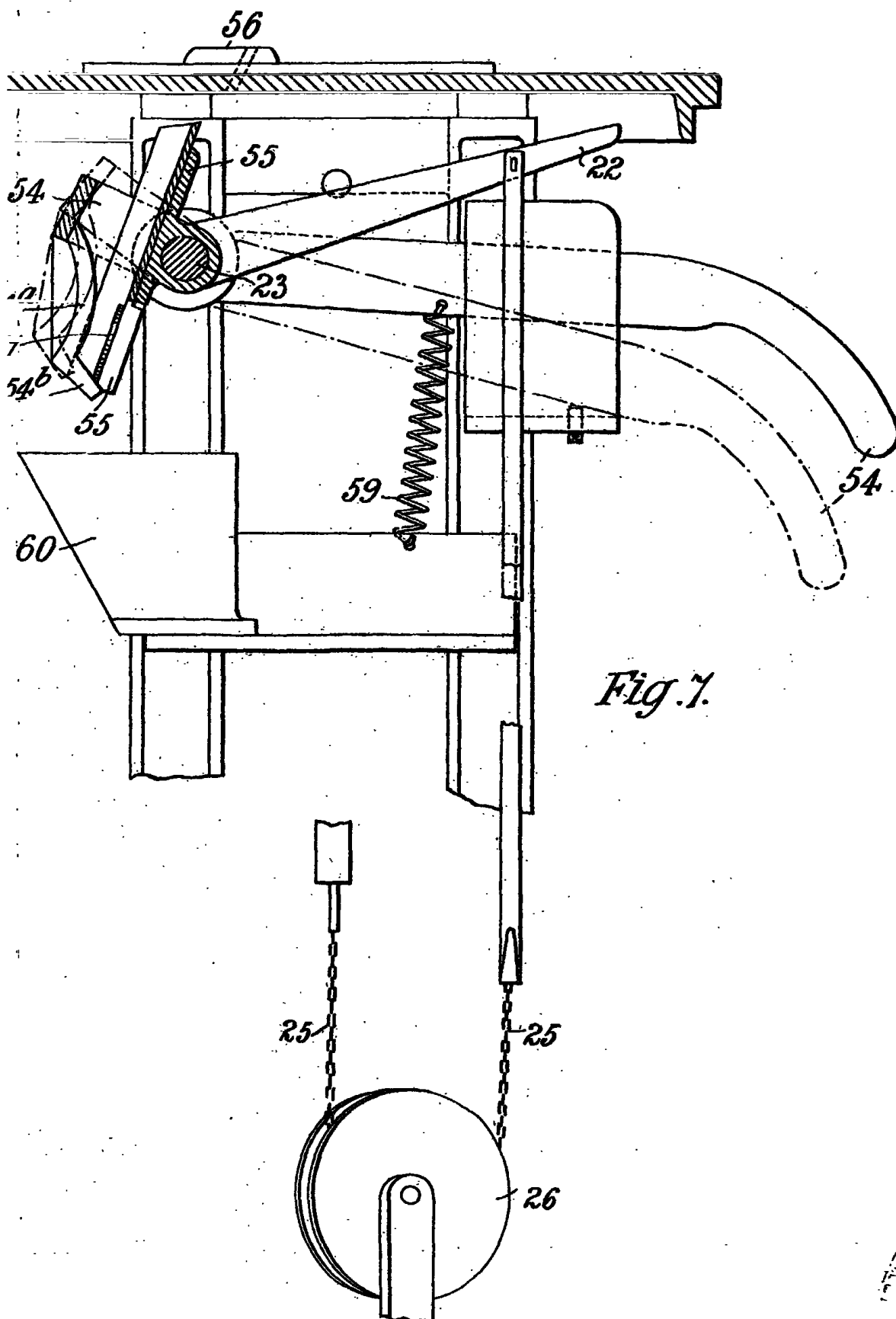


Fig. 7.

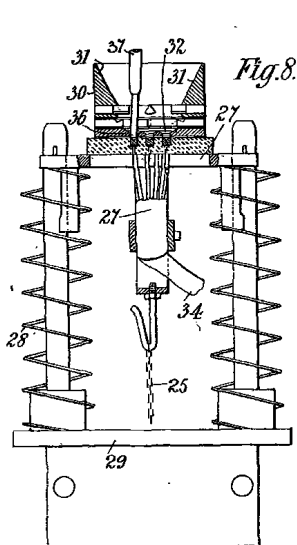


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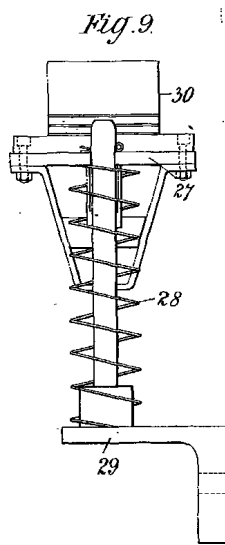


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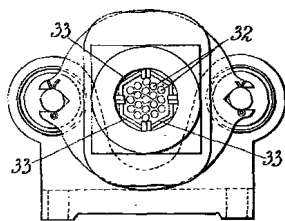


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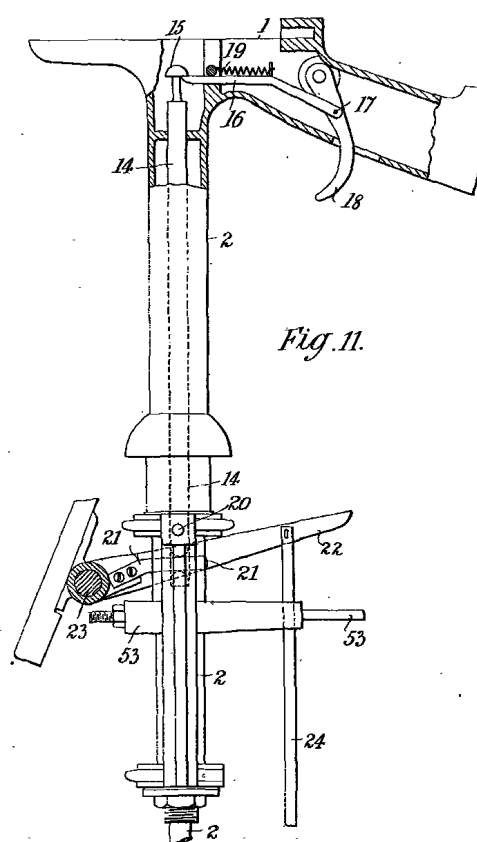
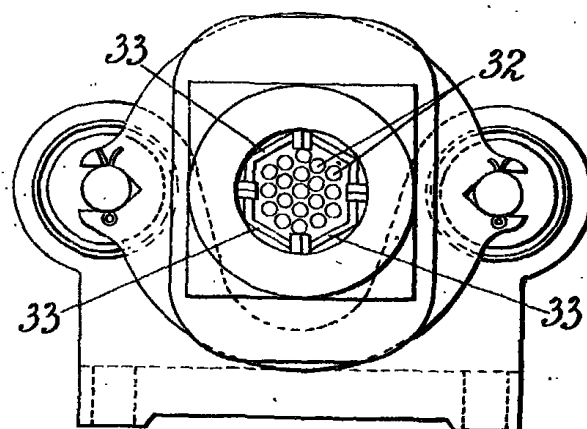
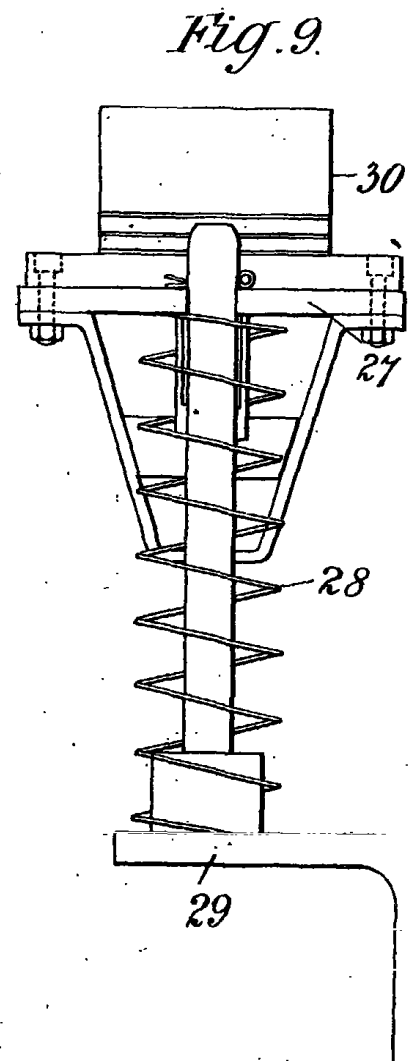
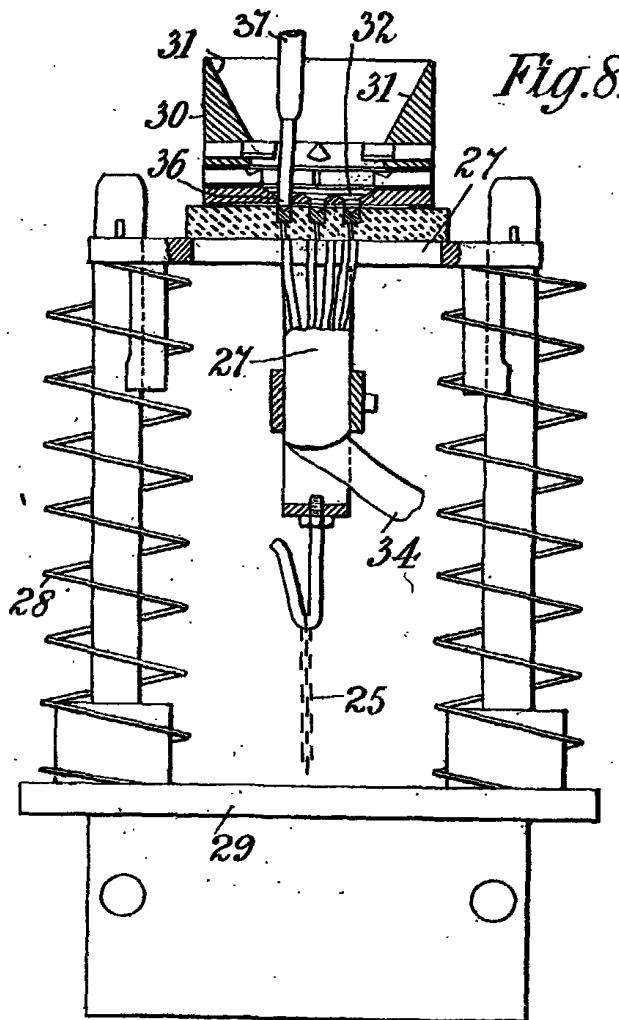


Fig. 11.

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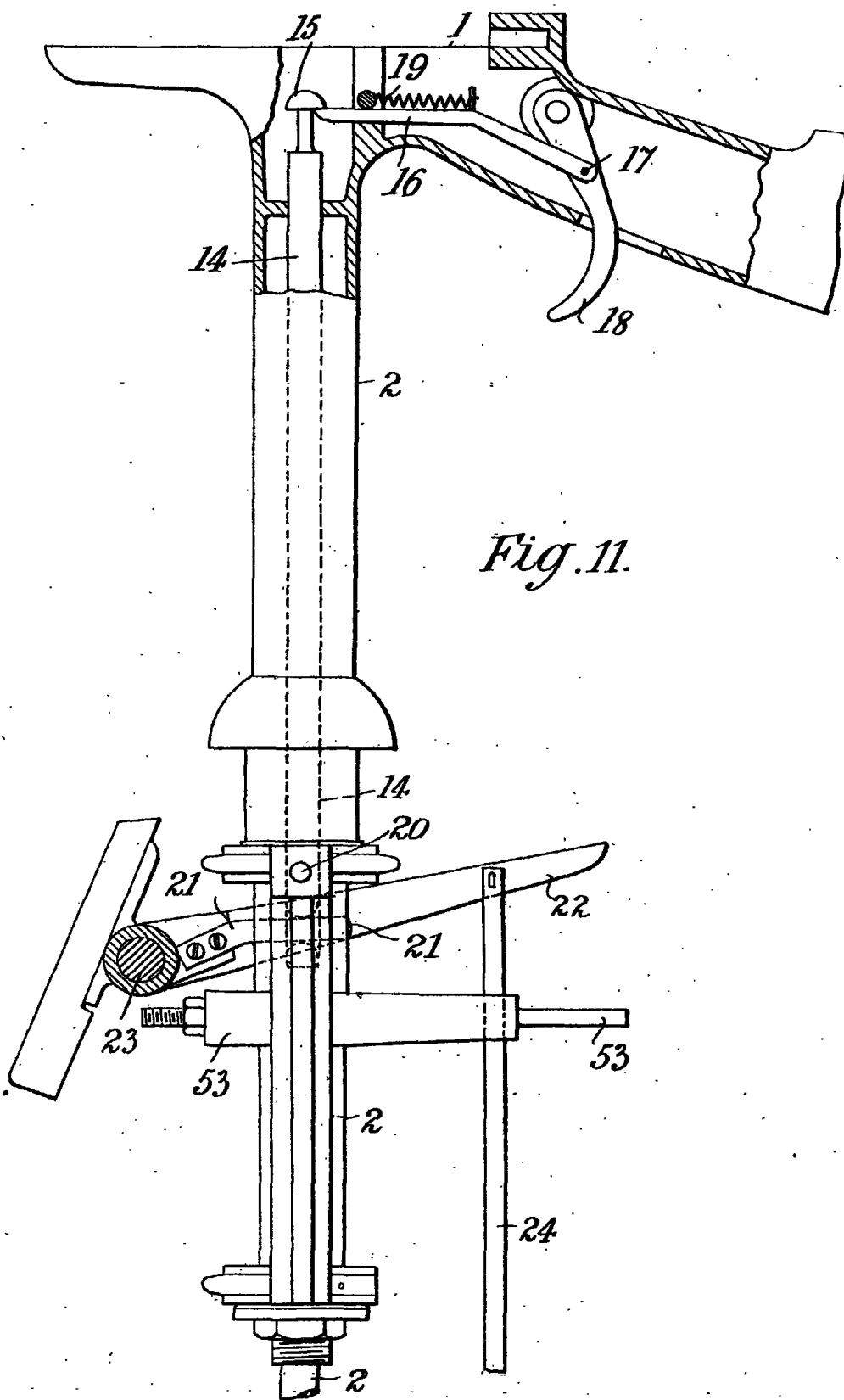


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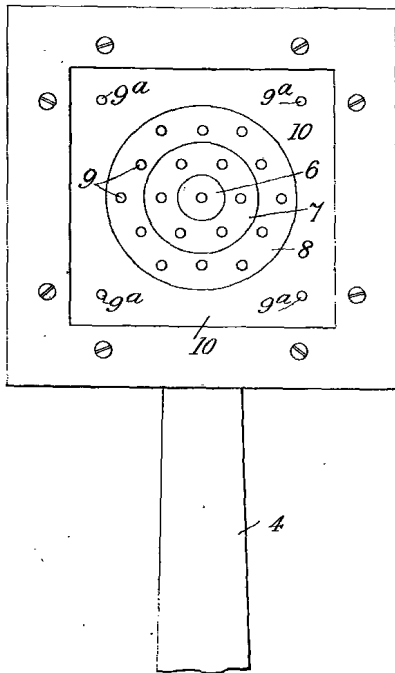


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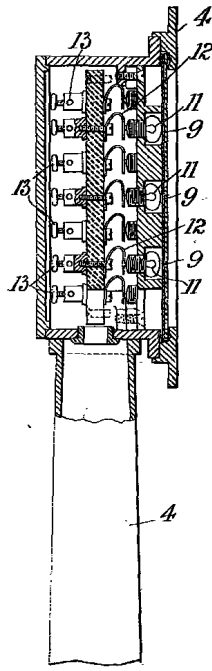
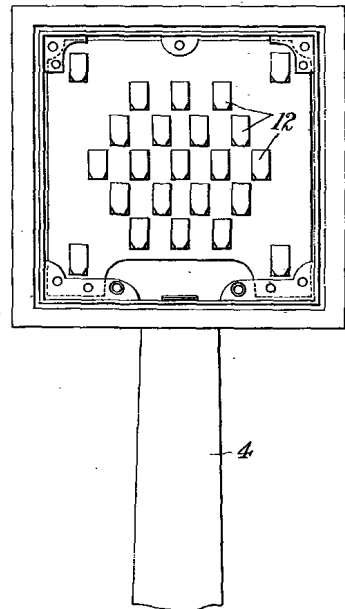
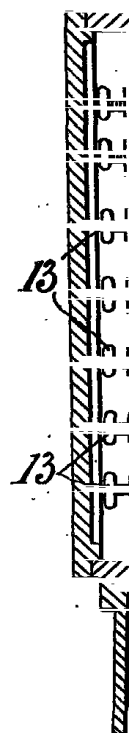
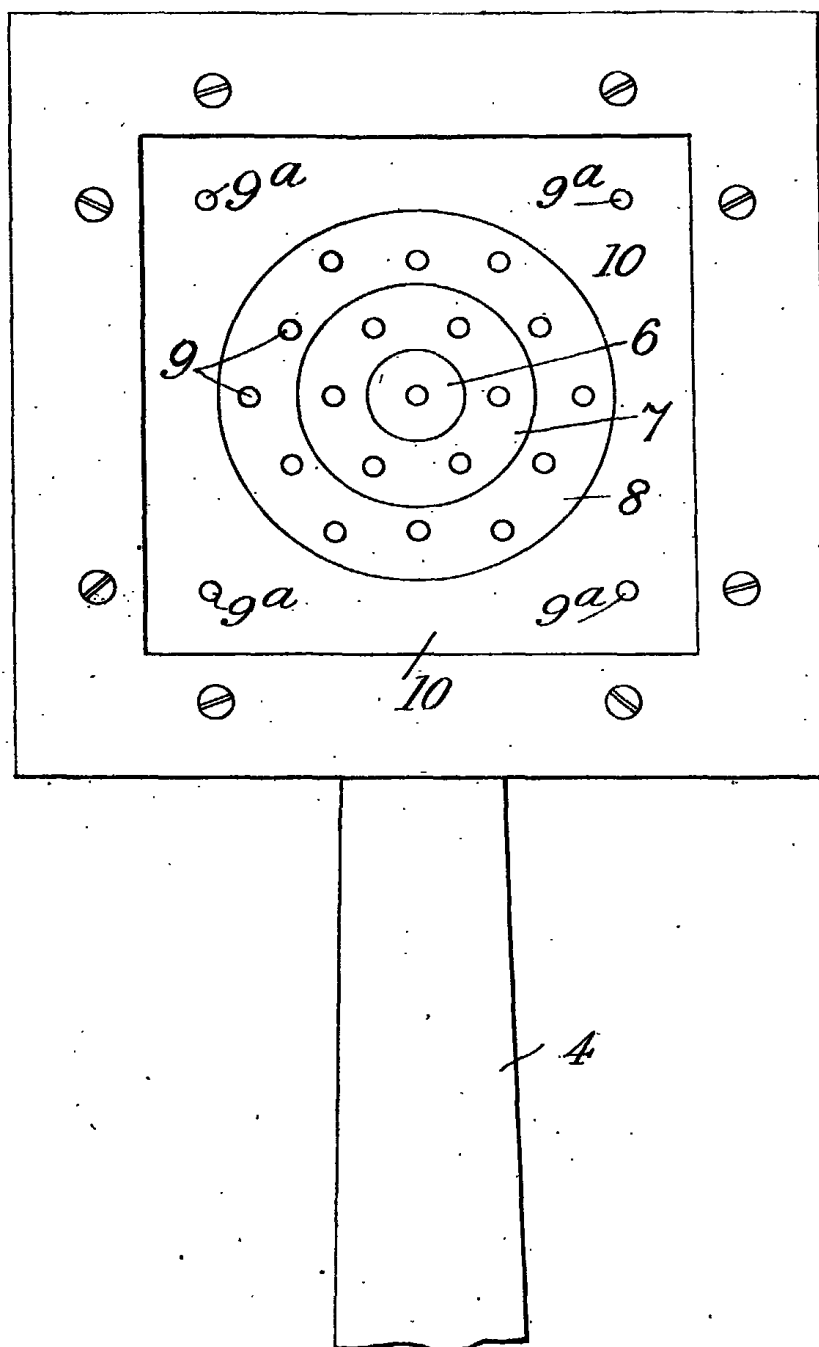


Fig. 14.



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Fig. 12.



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Fig. 13.

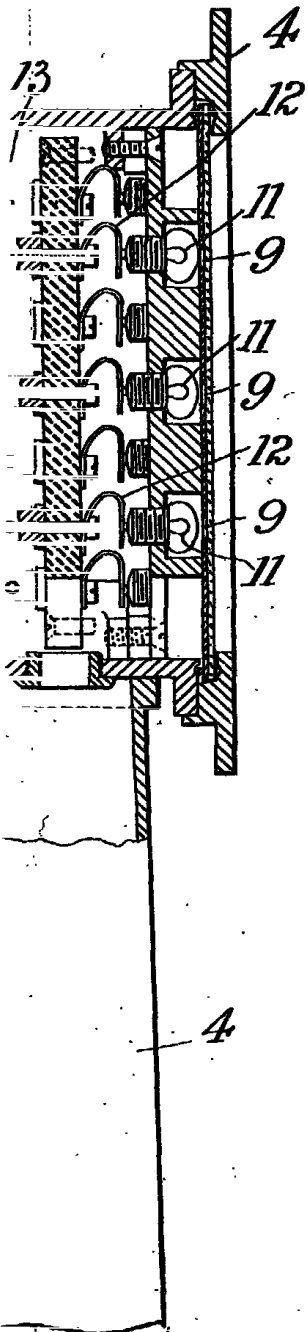


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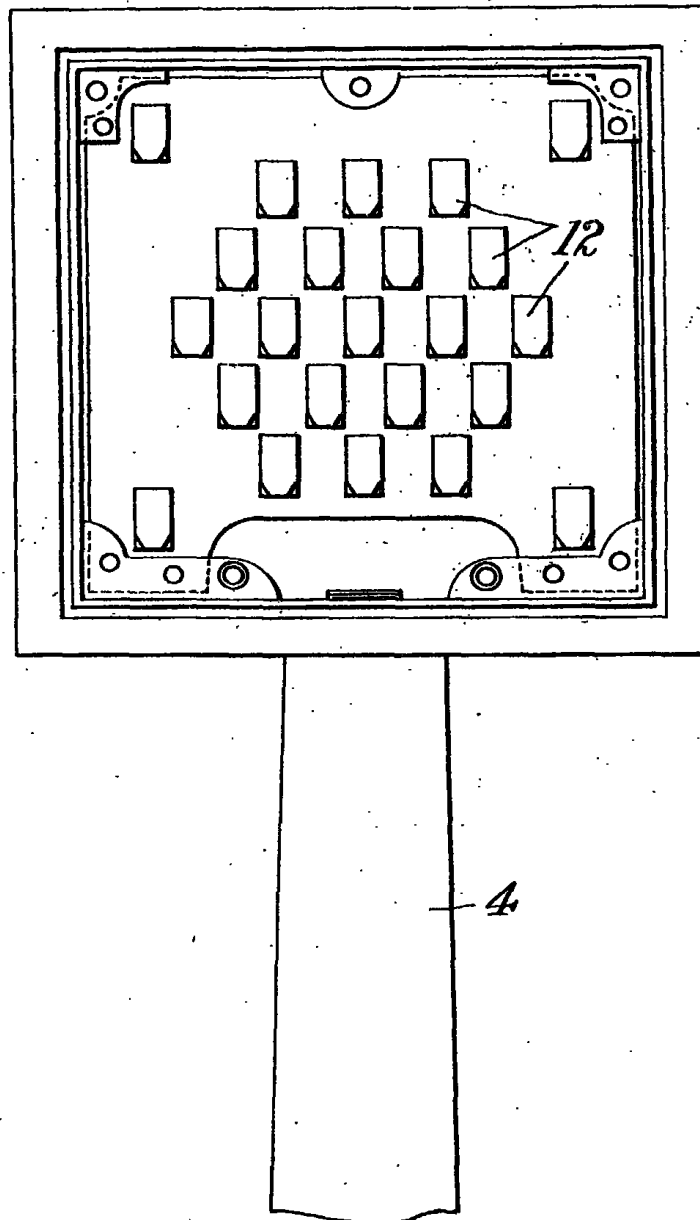
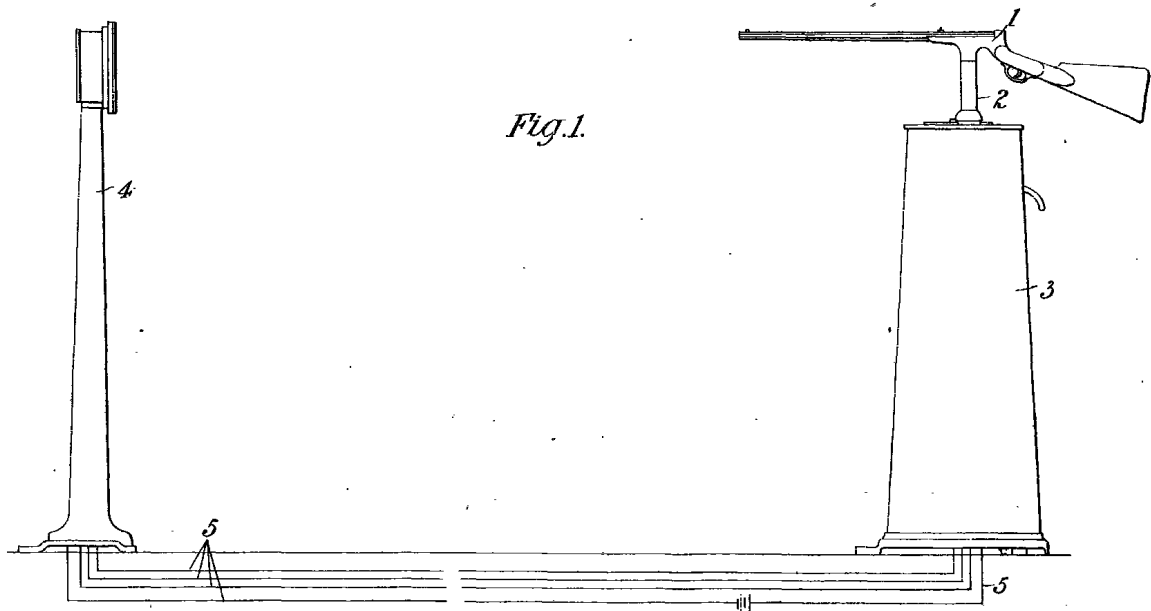


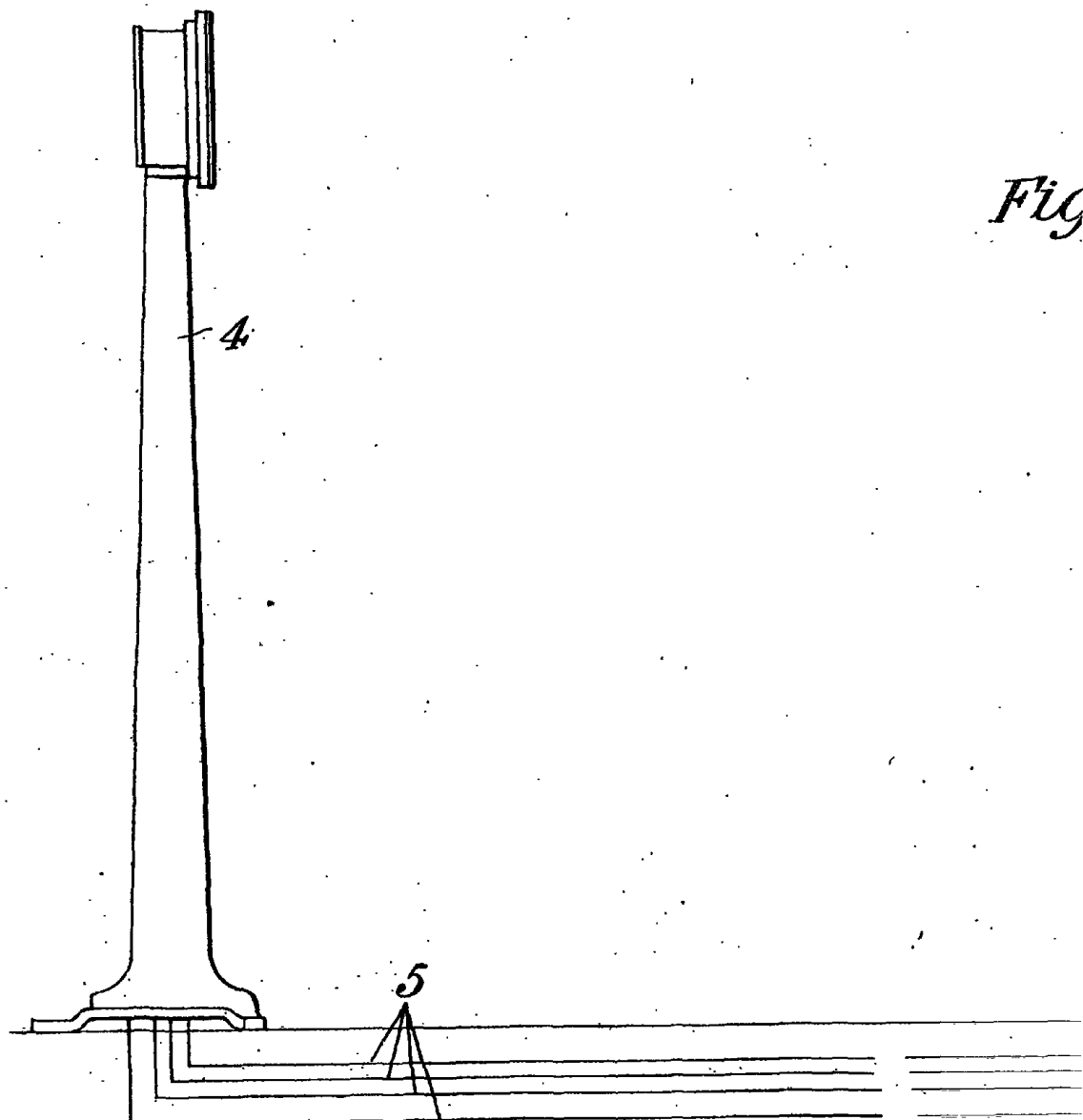
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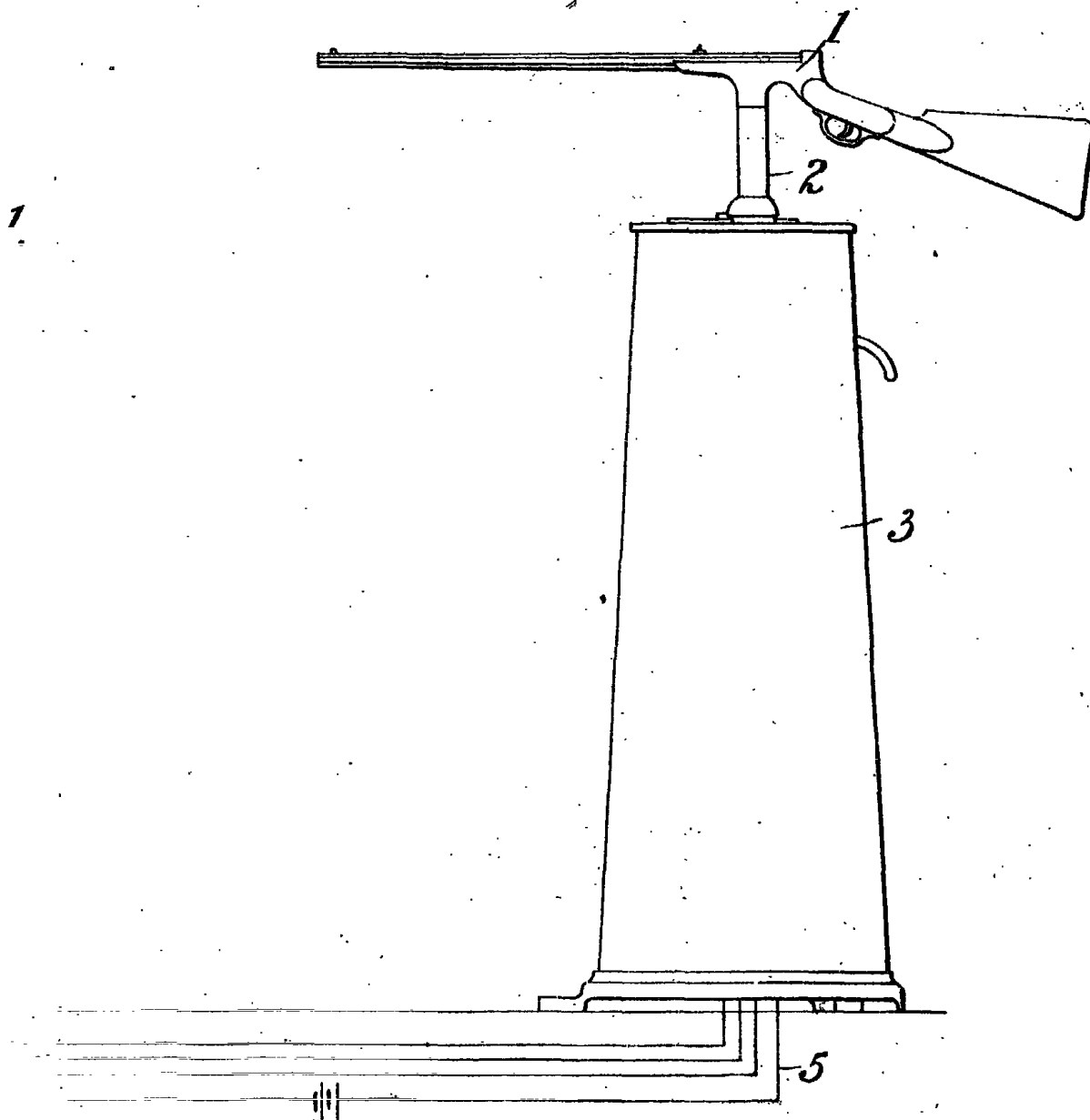


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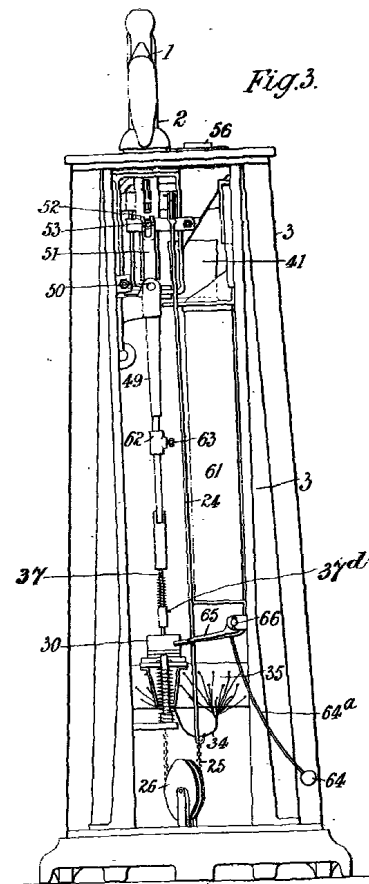
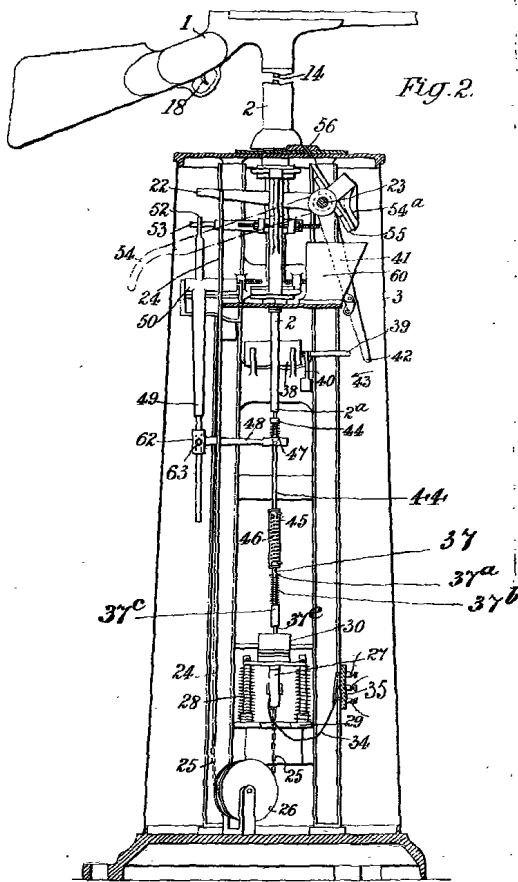
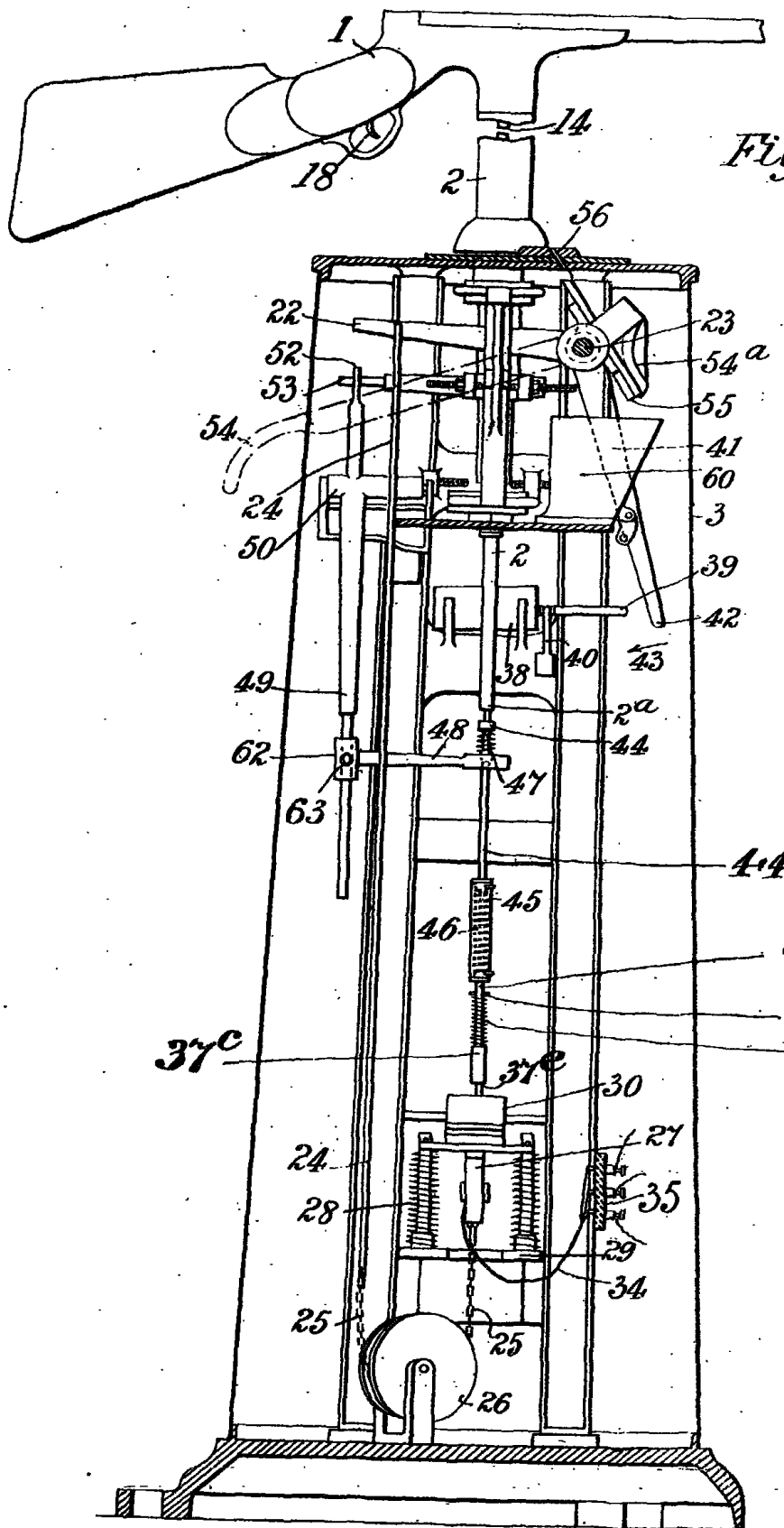
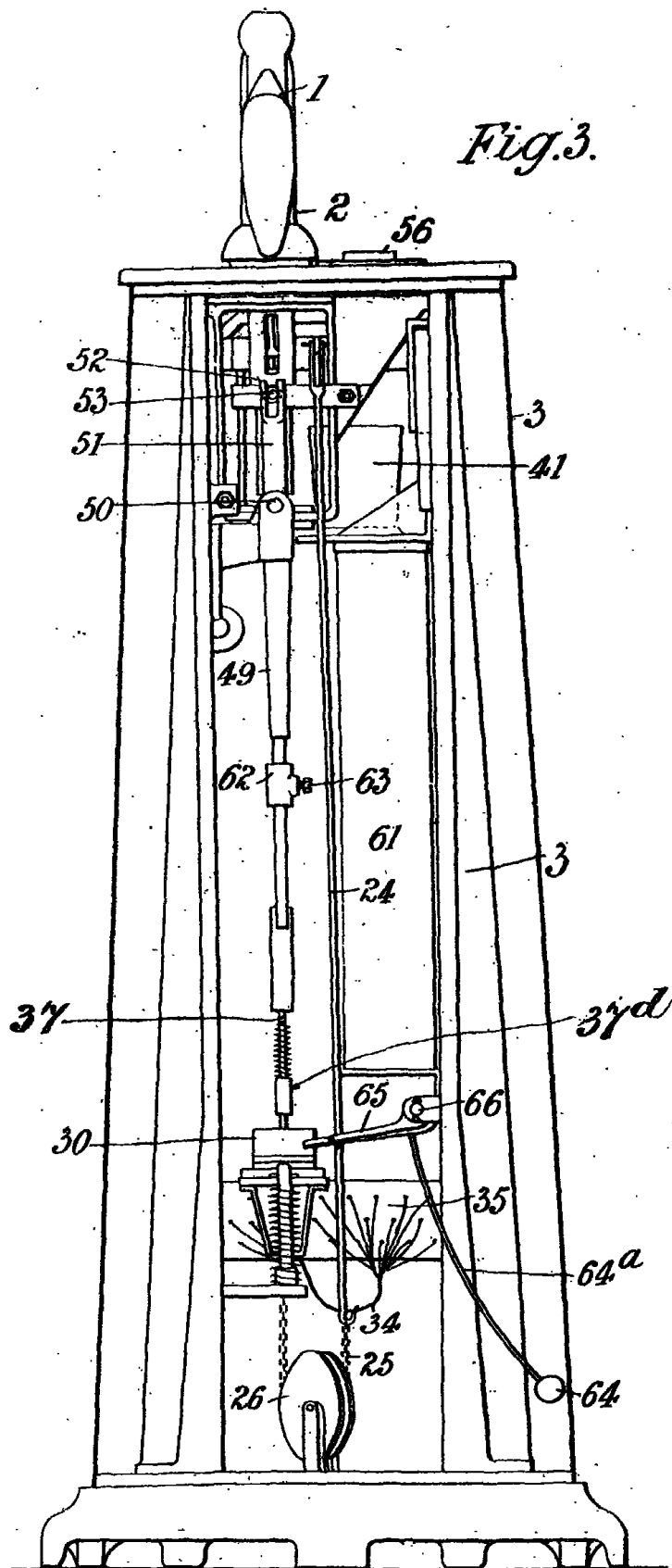


Fig. 2.

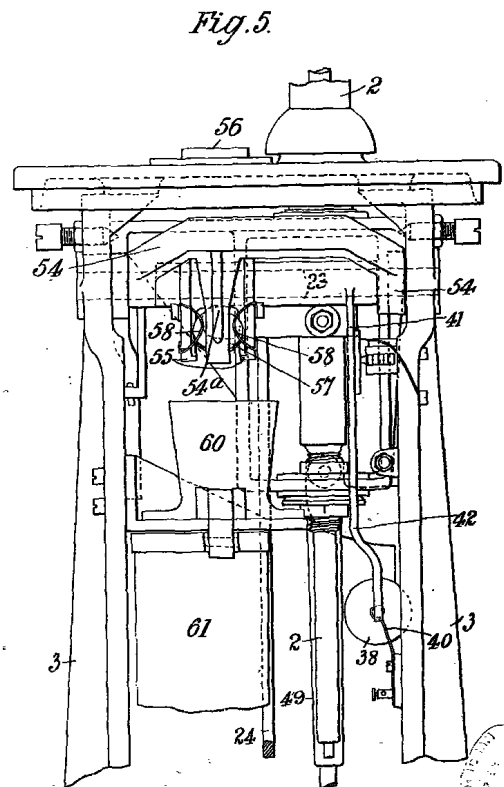
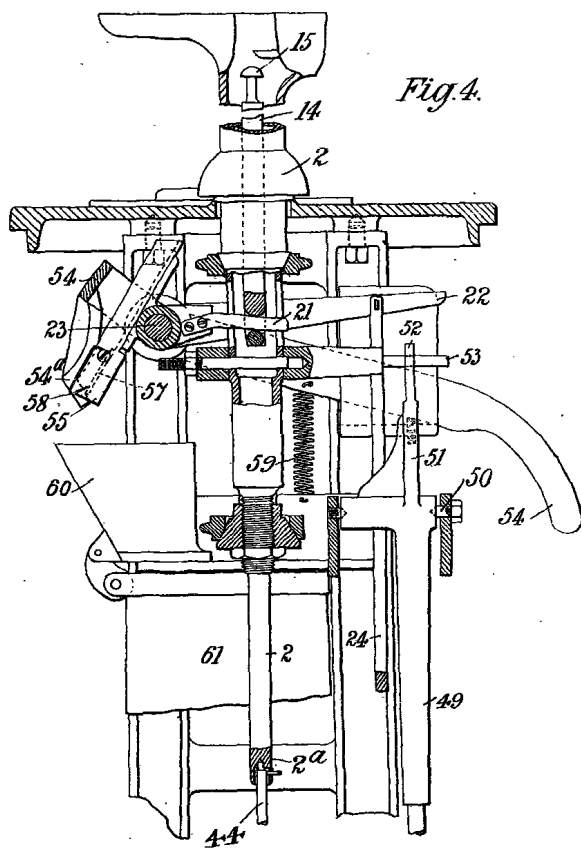


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Fig.3.



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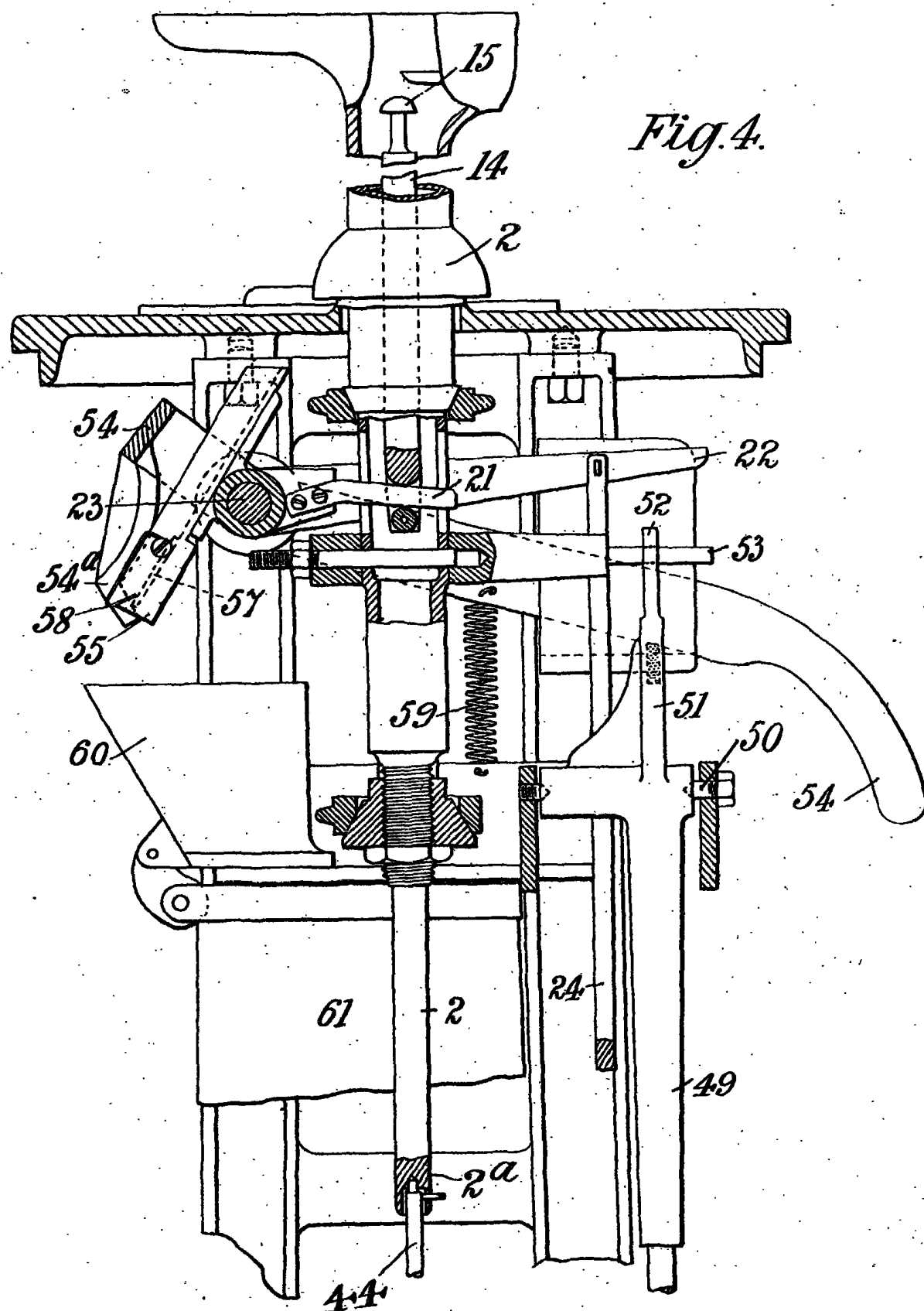
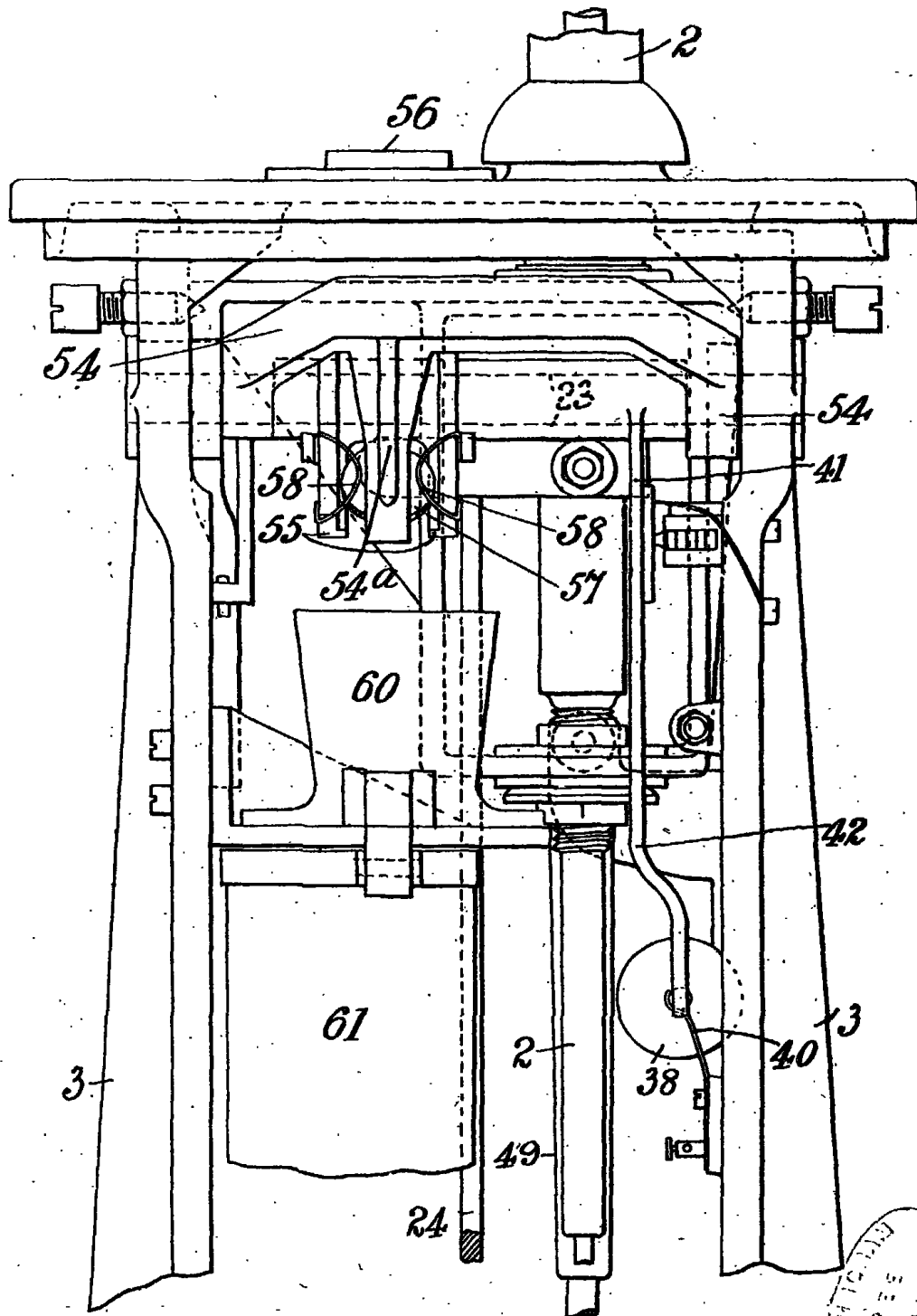


Fig. 5.



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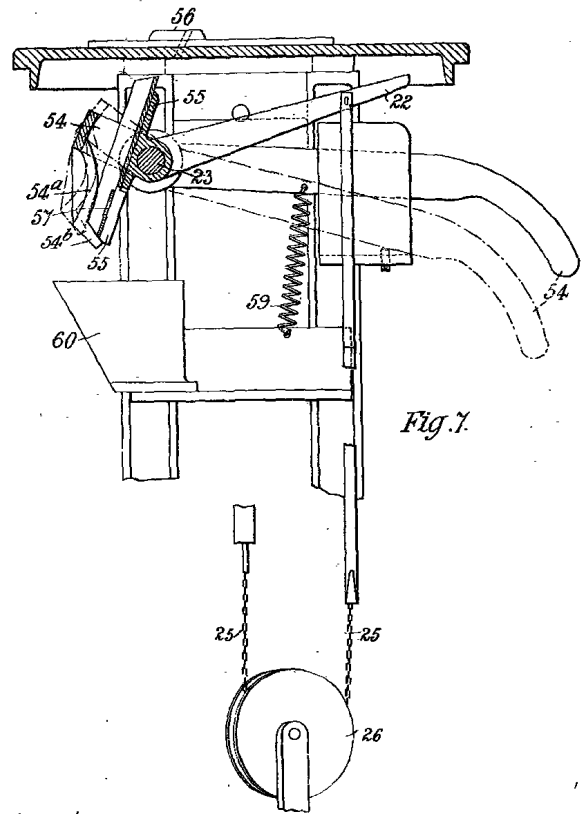
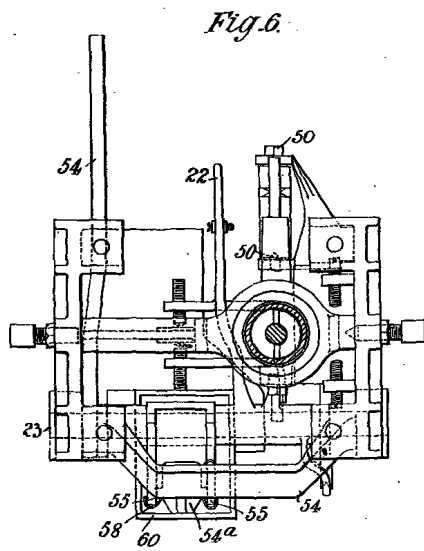
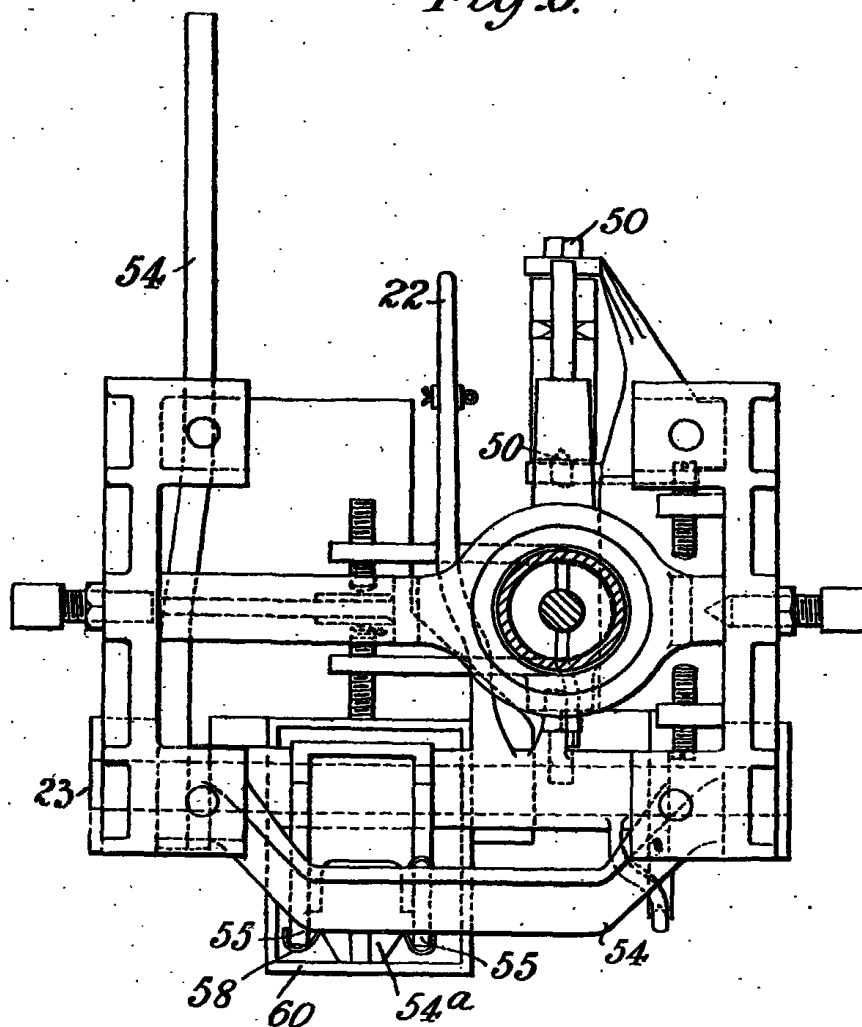


Fig. 6.



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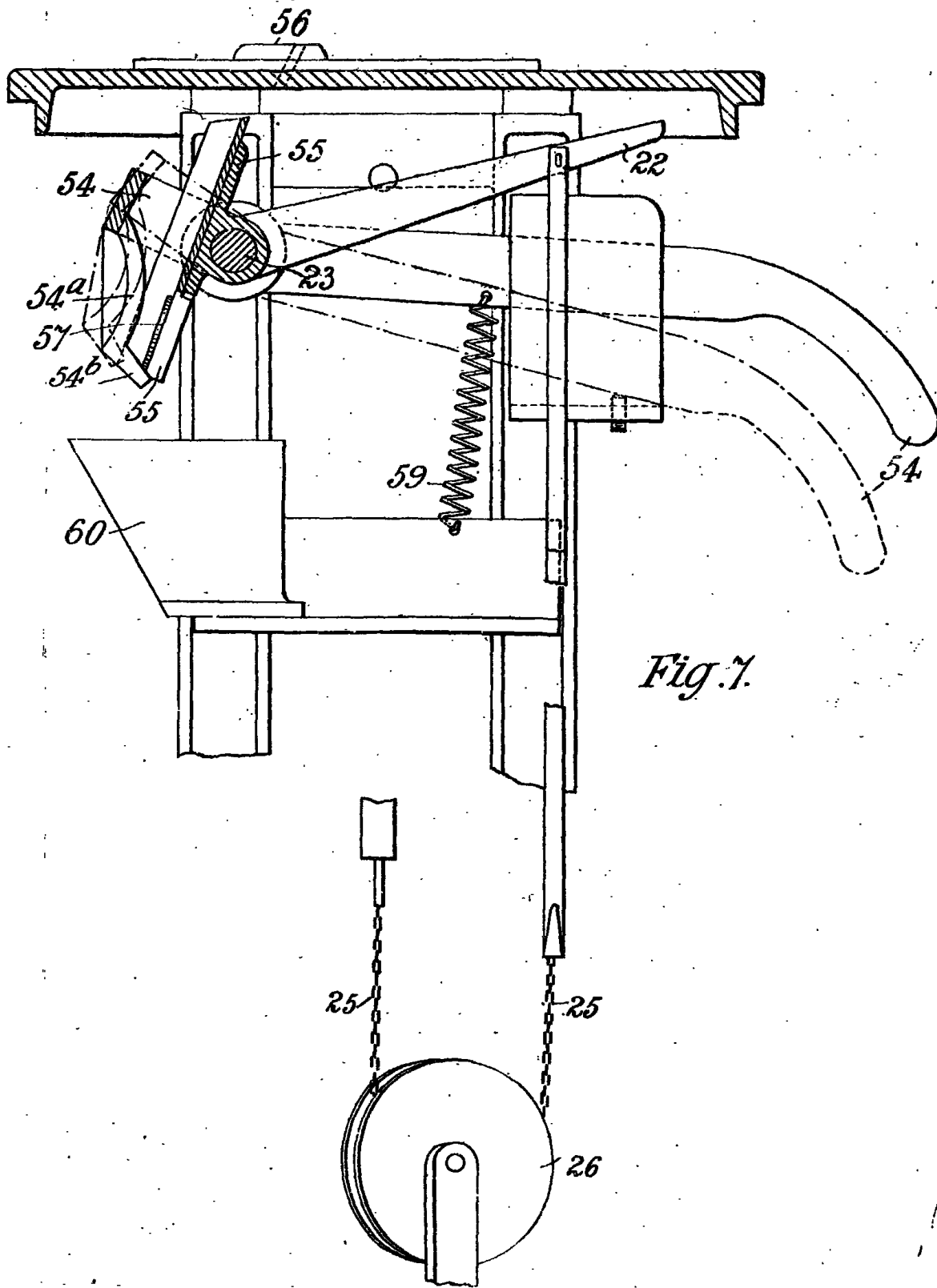
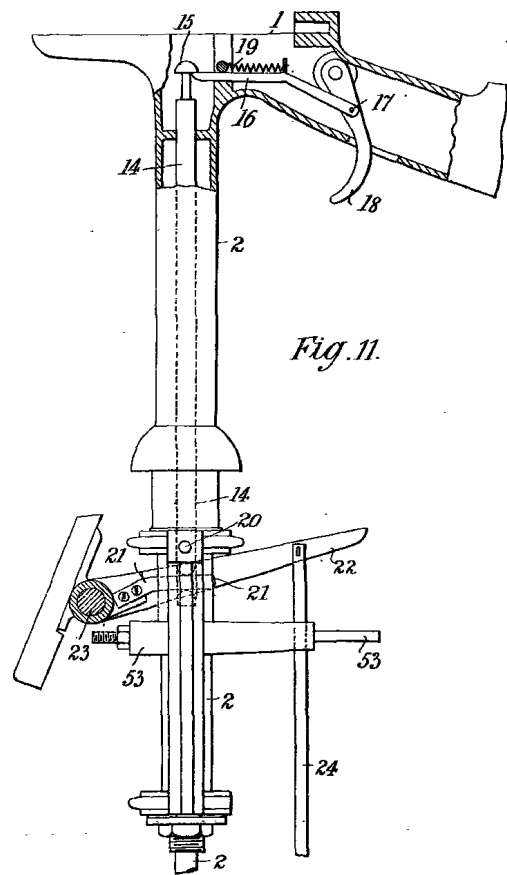
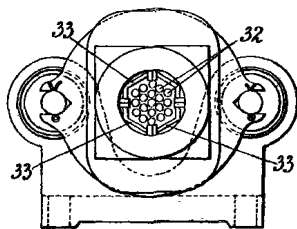
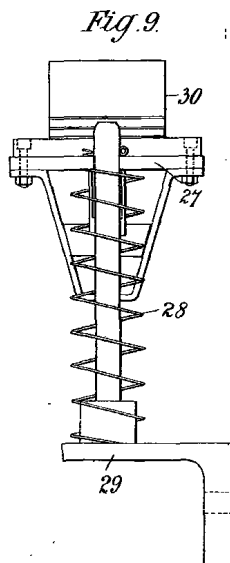
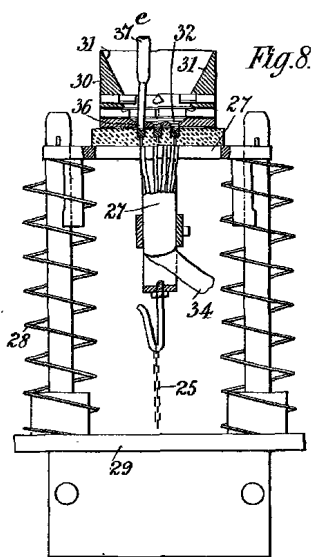
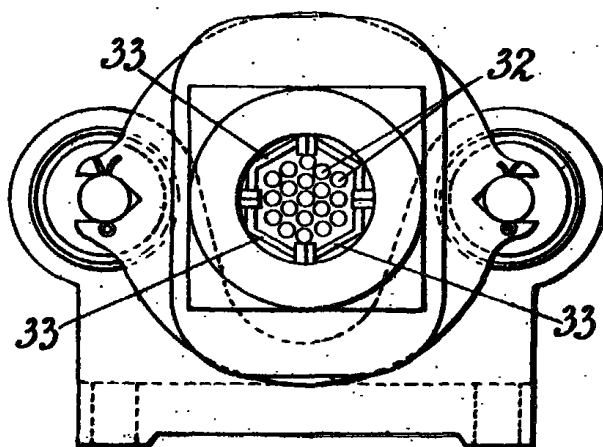
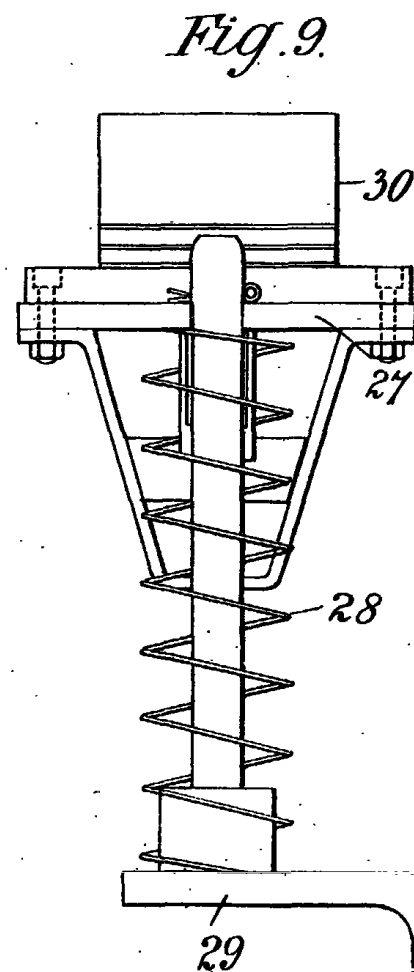
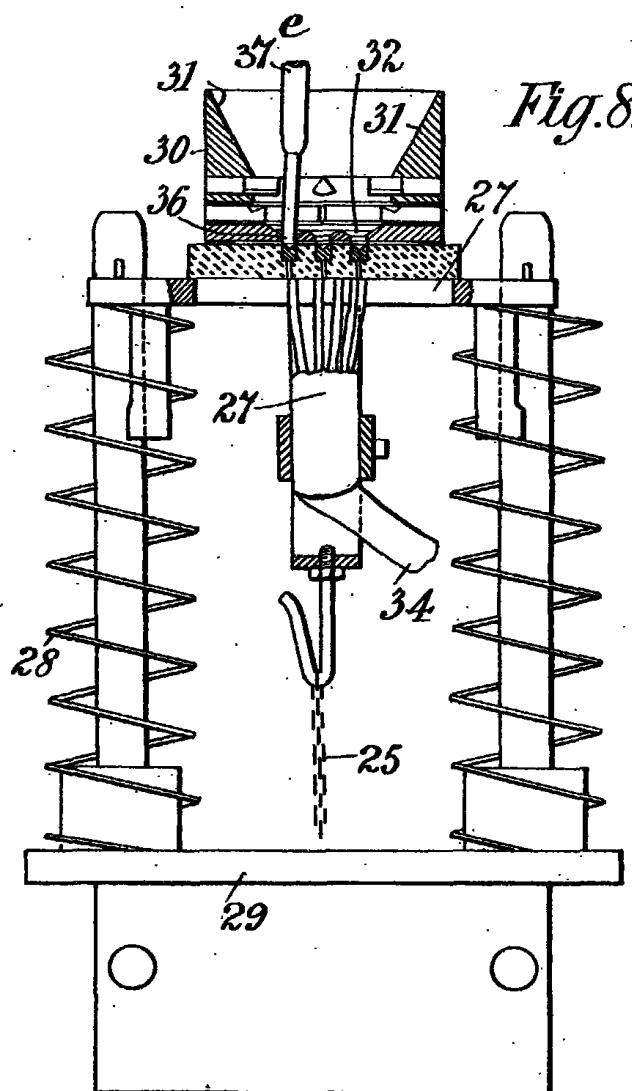


Fig. 7.

[This Drawing is a reproduction of the Original on a reduced scale]



[This Drawing is a reproduction of the Original on a reduced scale.]



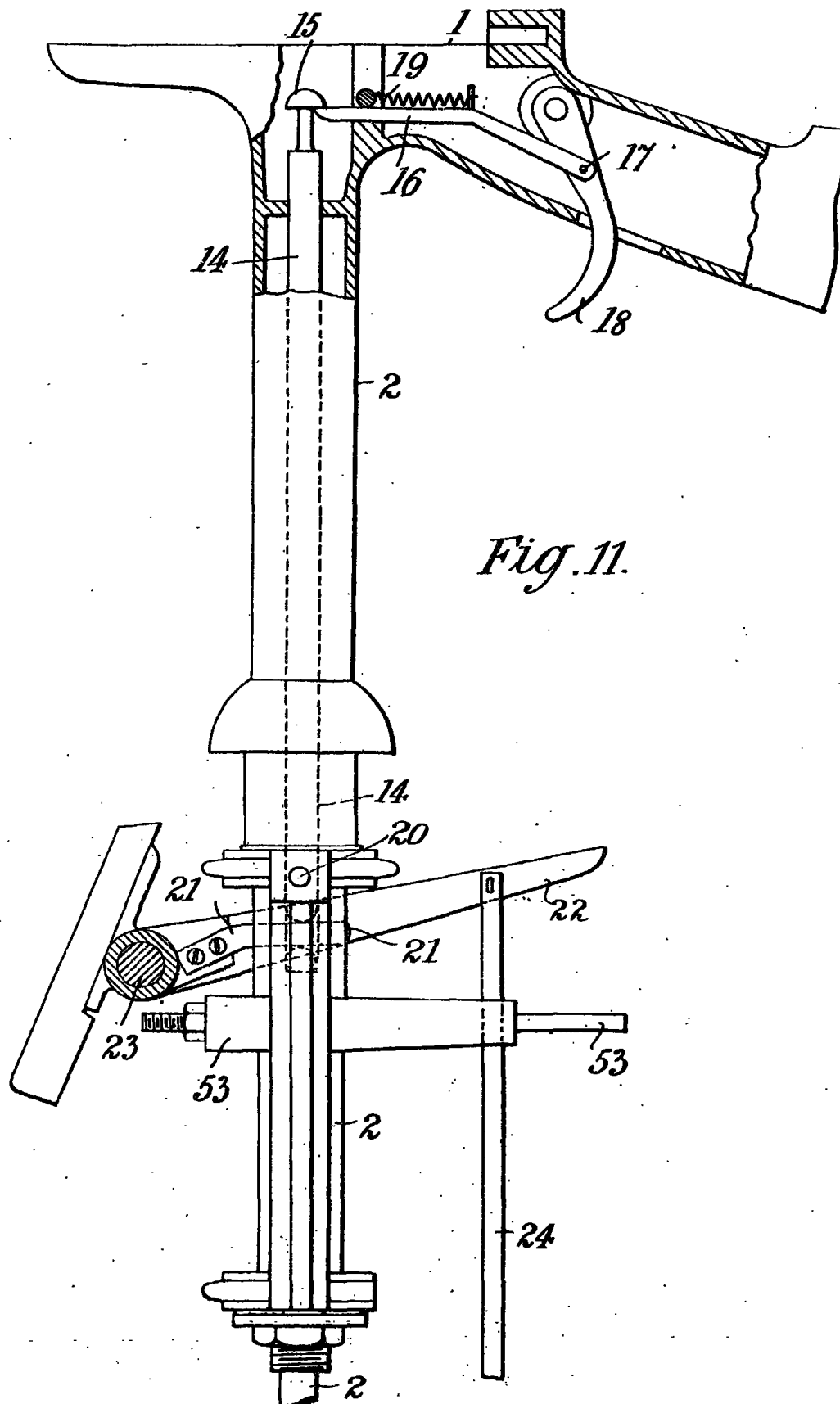


Fig. 12.

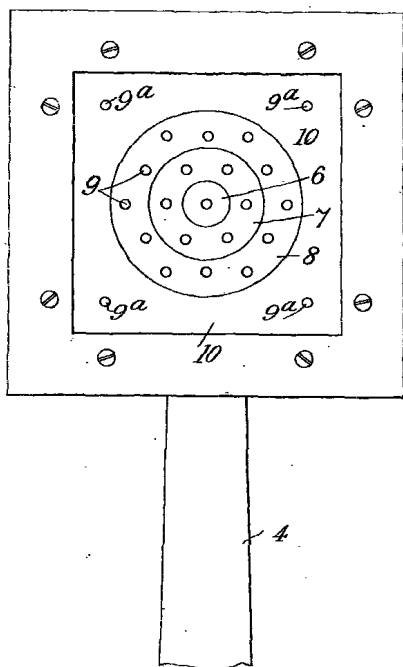


Fig. 13.

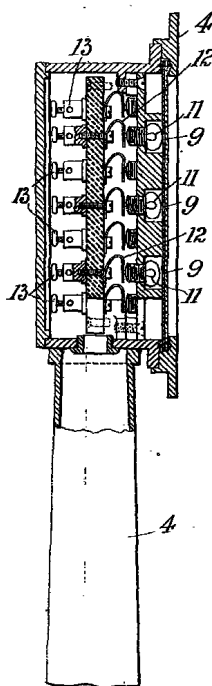
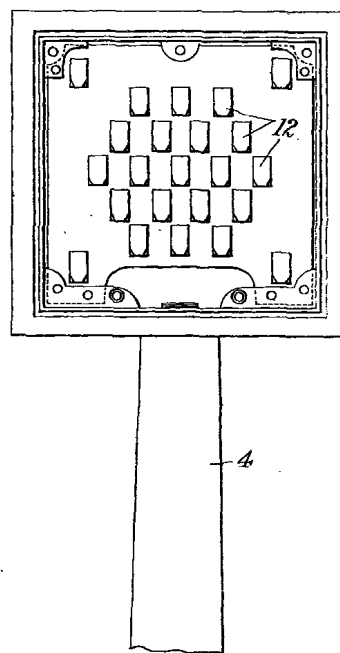
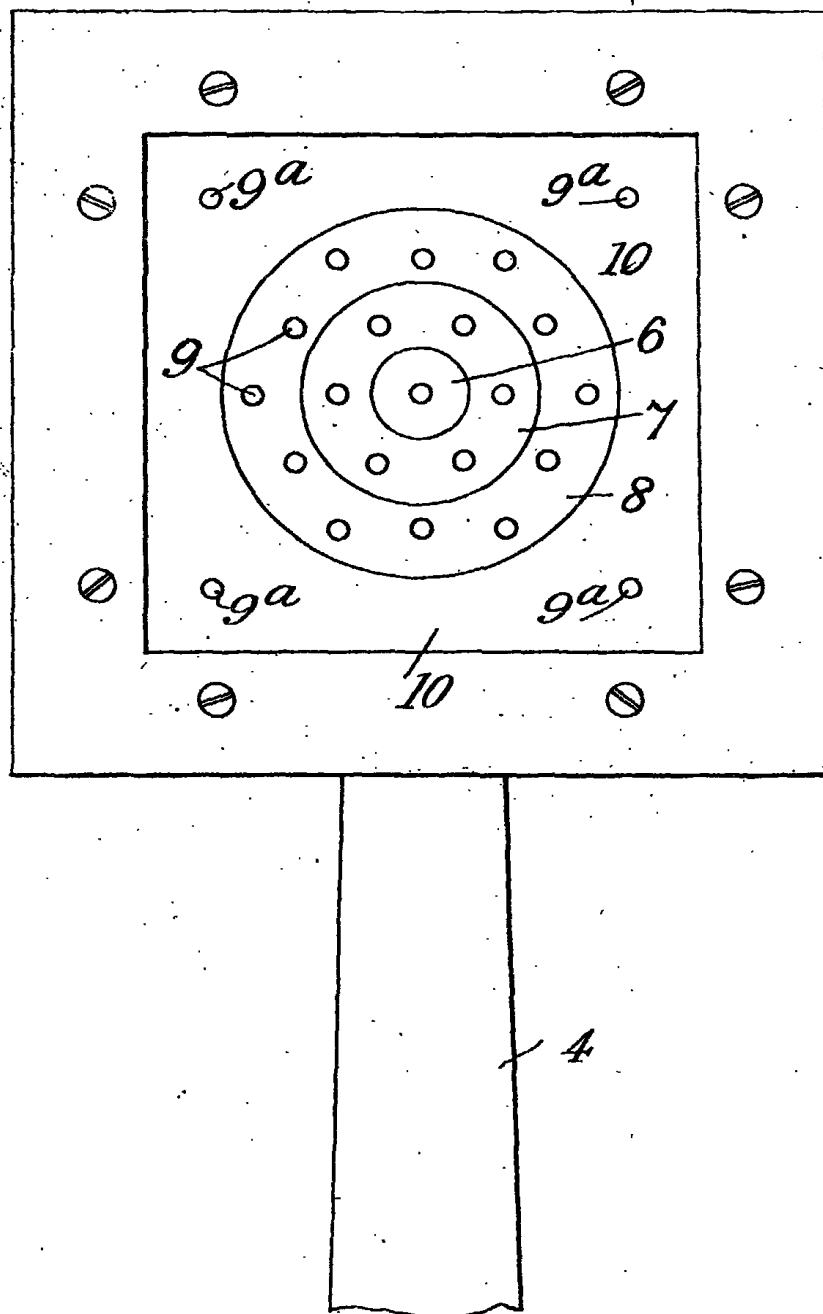


Fig. 14.



[This Drawing is a reproduction of the Original on a reduced scale.]

Fig. 12.



[This Drawing is a reproduction of the Original on a reduced scale.]

Fig.13.

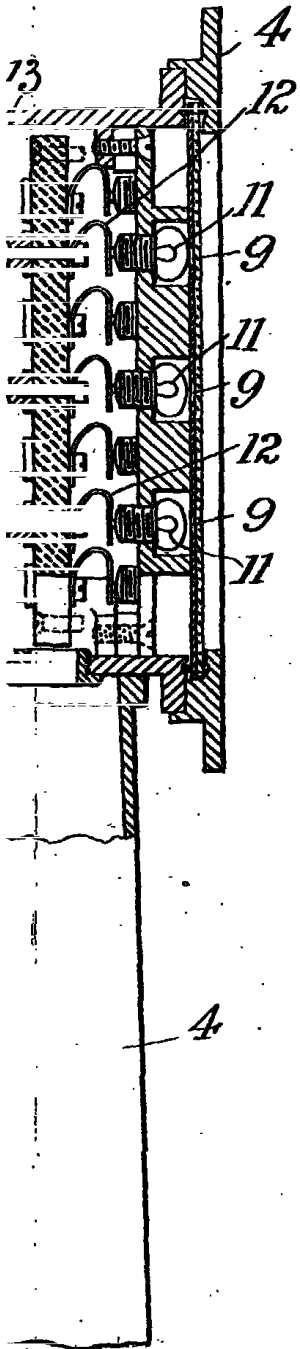


Fig.14.

