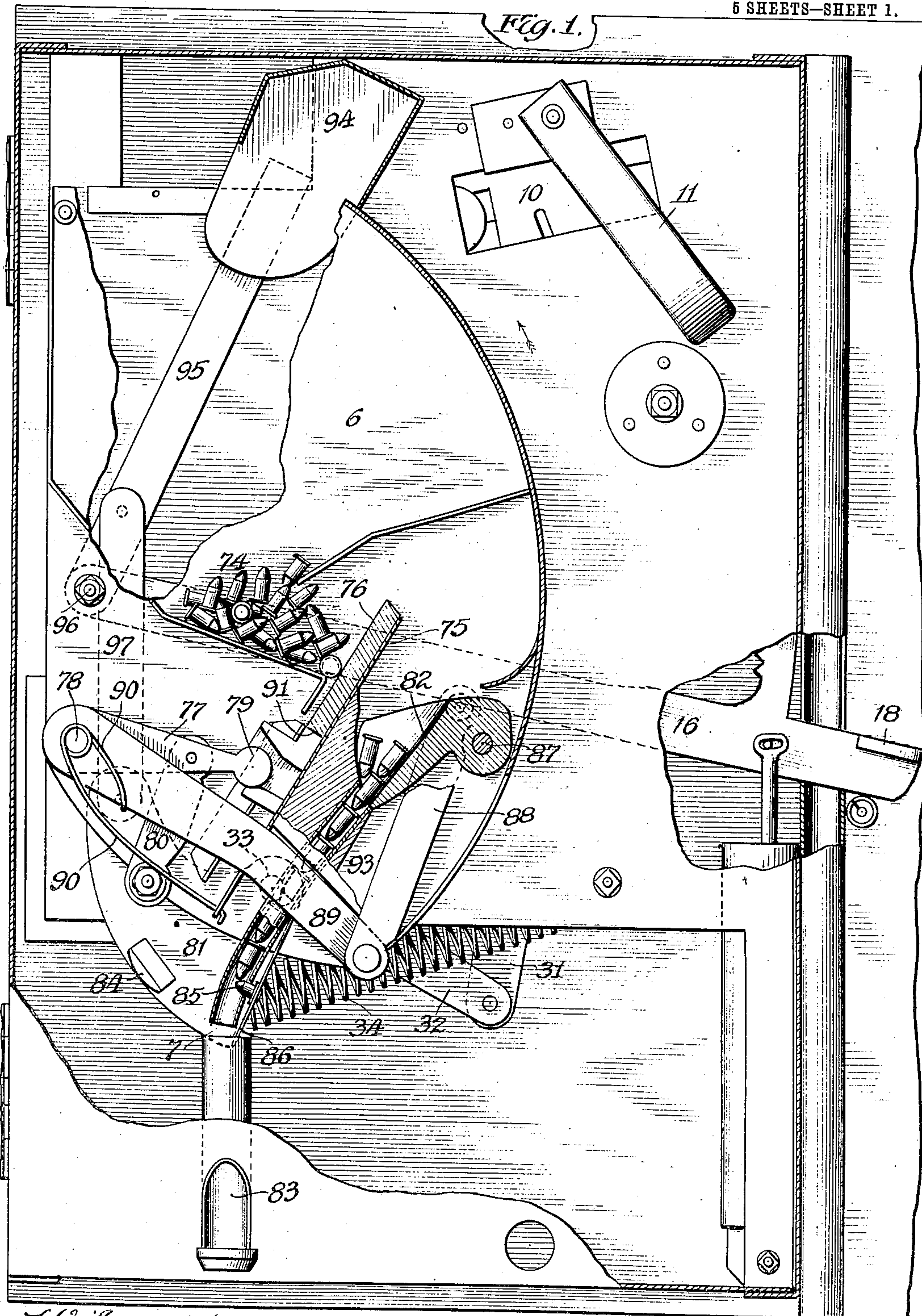


C. E. MORRIS.
VENDING MACHINE.
APPLICATION FILED AUG. 26, 1907.

898,765.

Patented Sept. 15, 1908.

5 SHEETS—SHEET 1.



Witnesses
Ray White,
M. A. Olsen.

Charles E. Morris,
By *Rummler & Rummler, Attys*

C. E. MORRIS.

VENDING MACHINE.

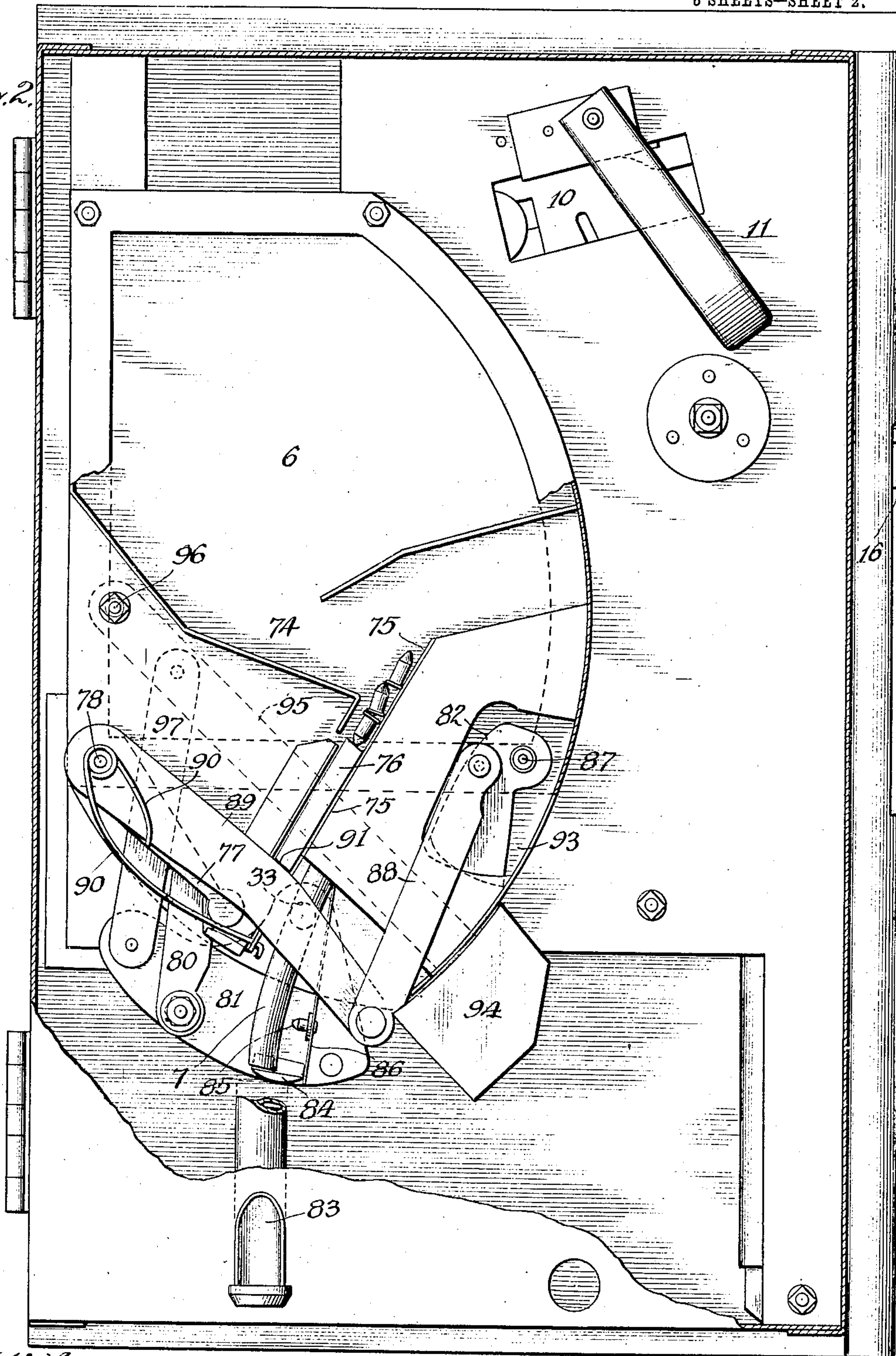
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5 SHEETS—SHEET 2.

Fig. 2.



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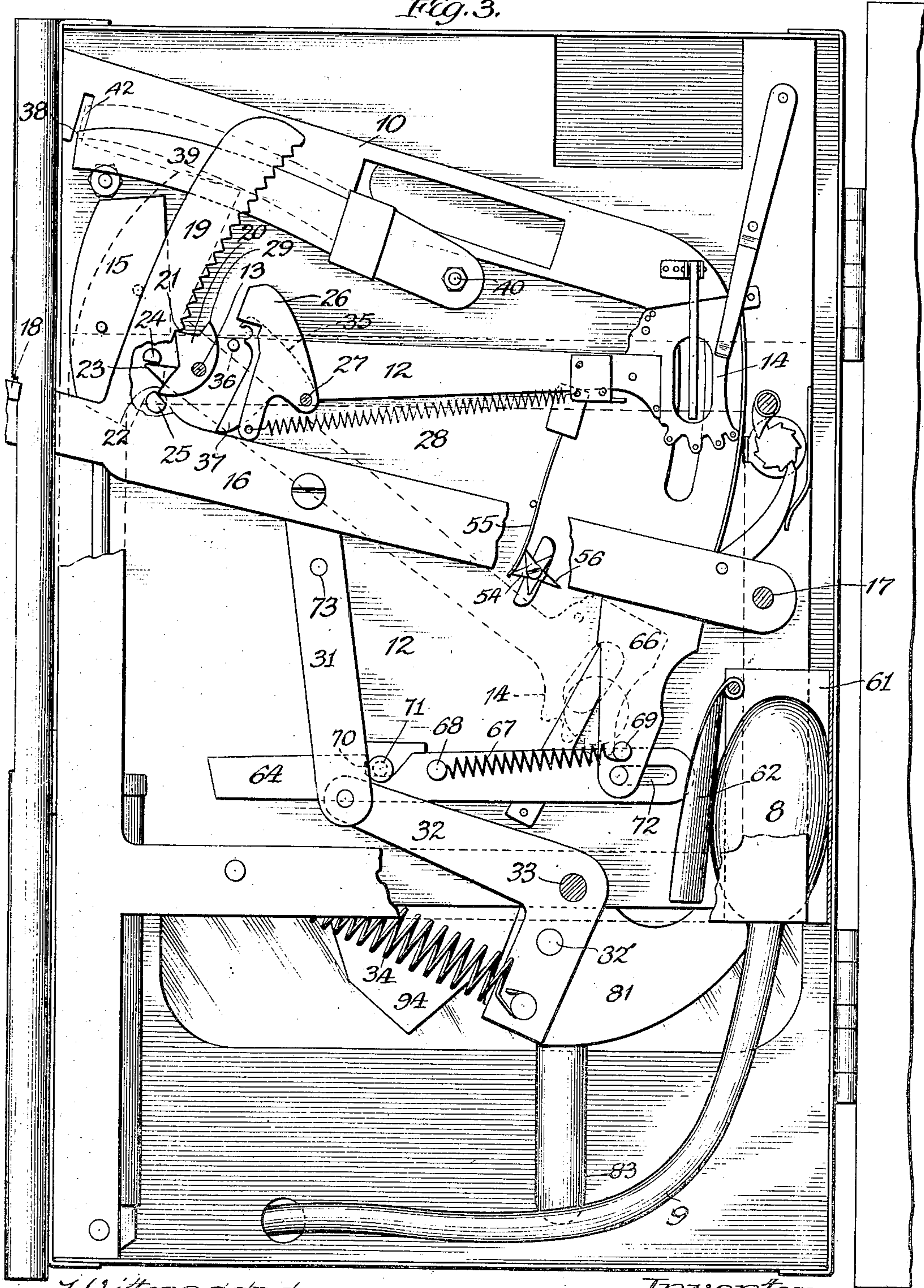
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6 SHEETS—SHEET 3.

Fig. 3.



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5 SHEETS—SHEET 4.

Fig. 4.

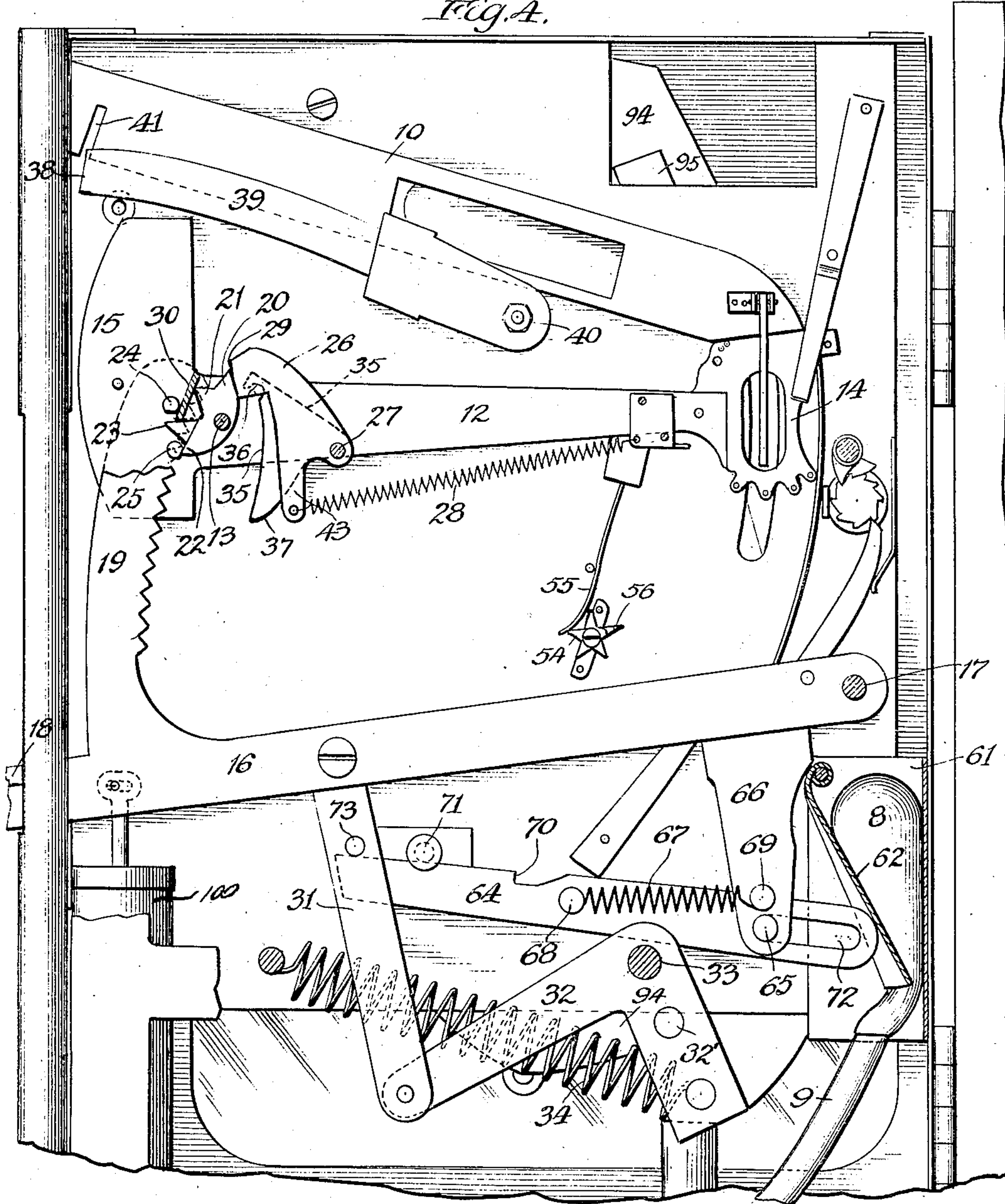
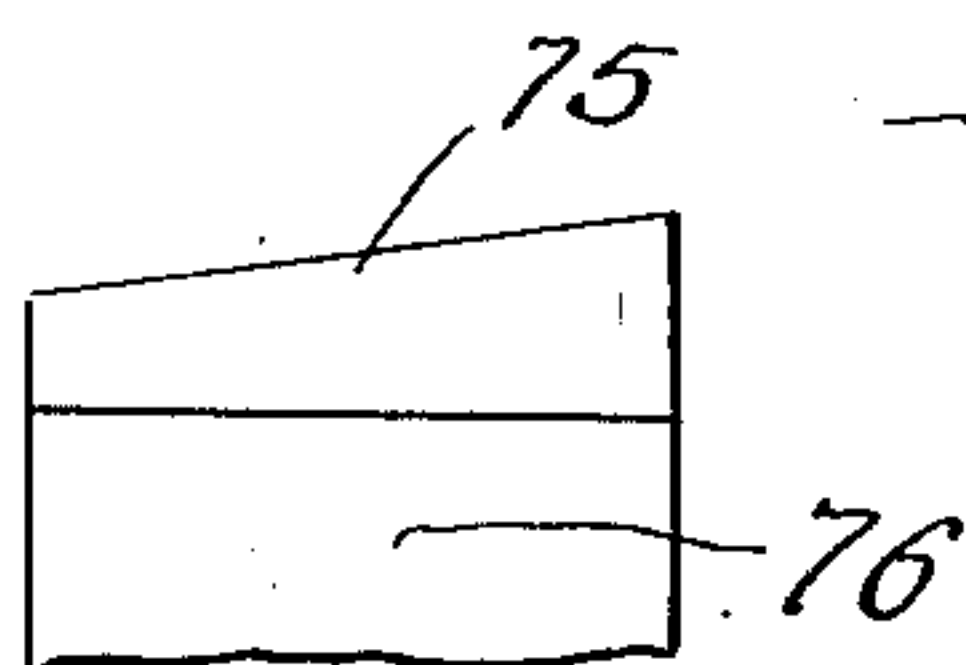


Fig. 13



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5 SHEETS—SHEET 5.

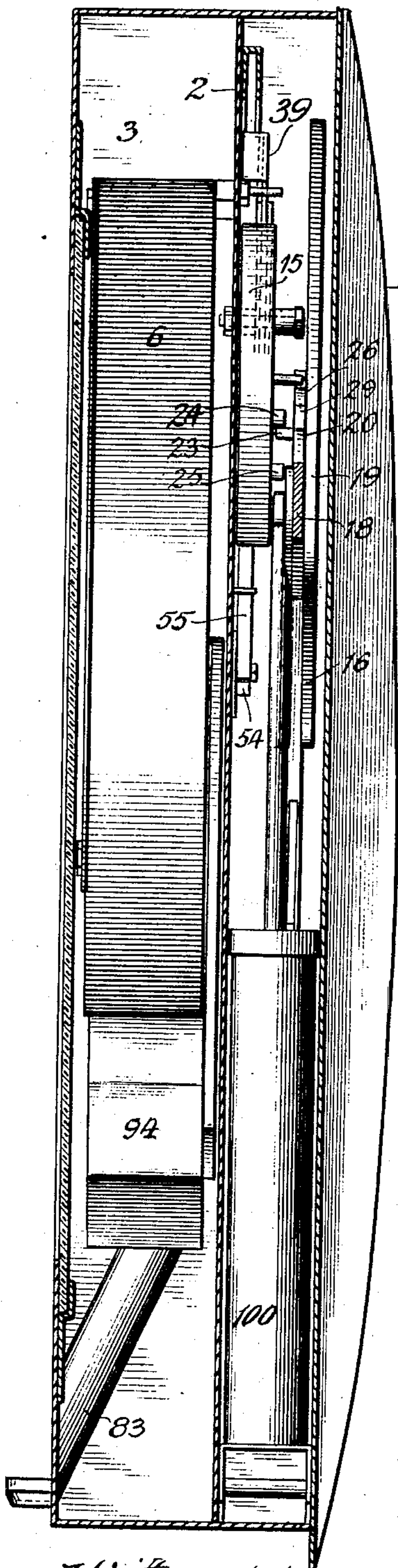


Fig. 5.

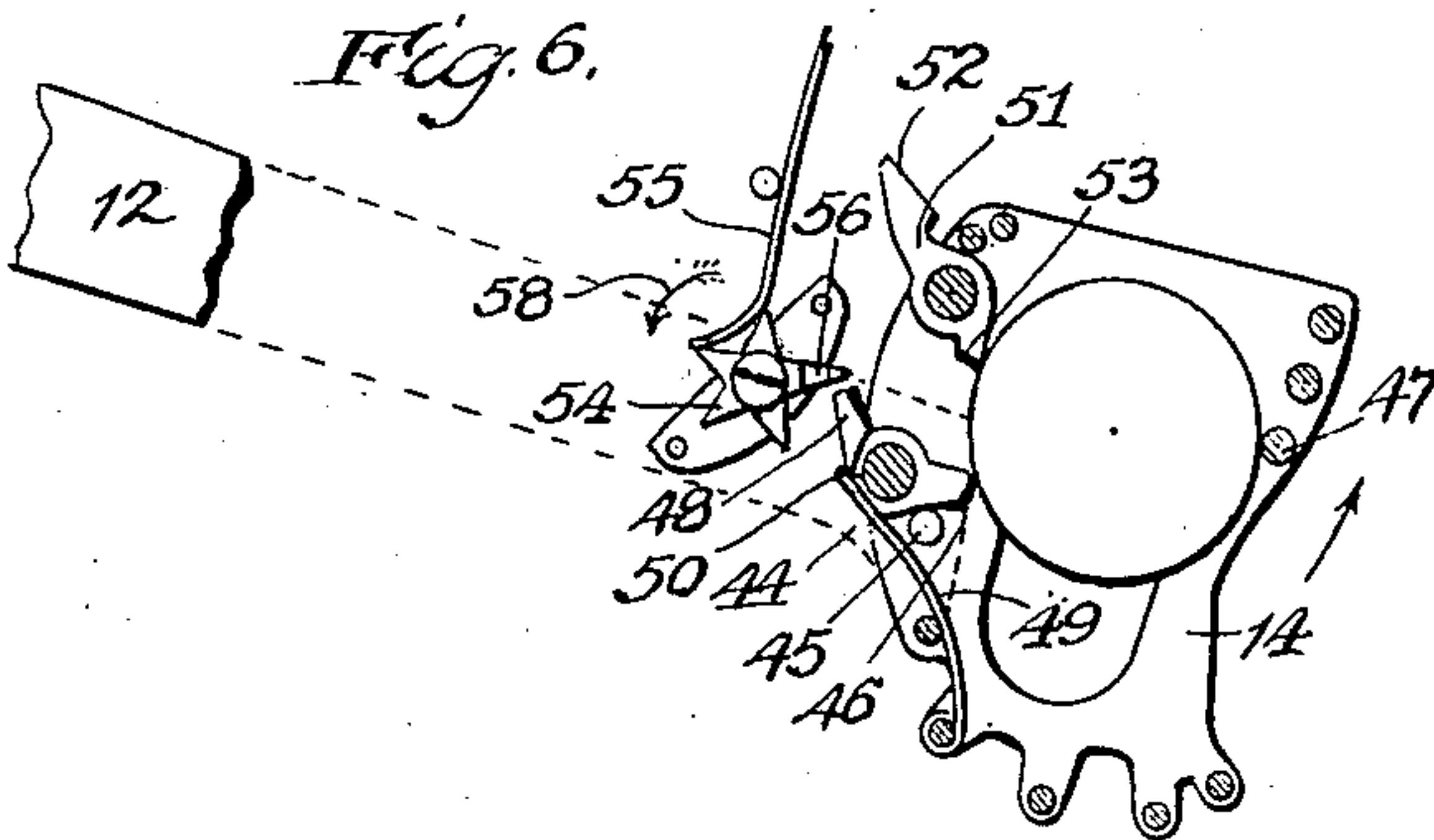


Fig. 6.

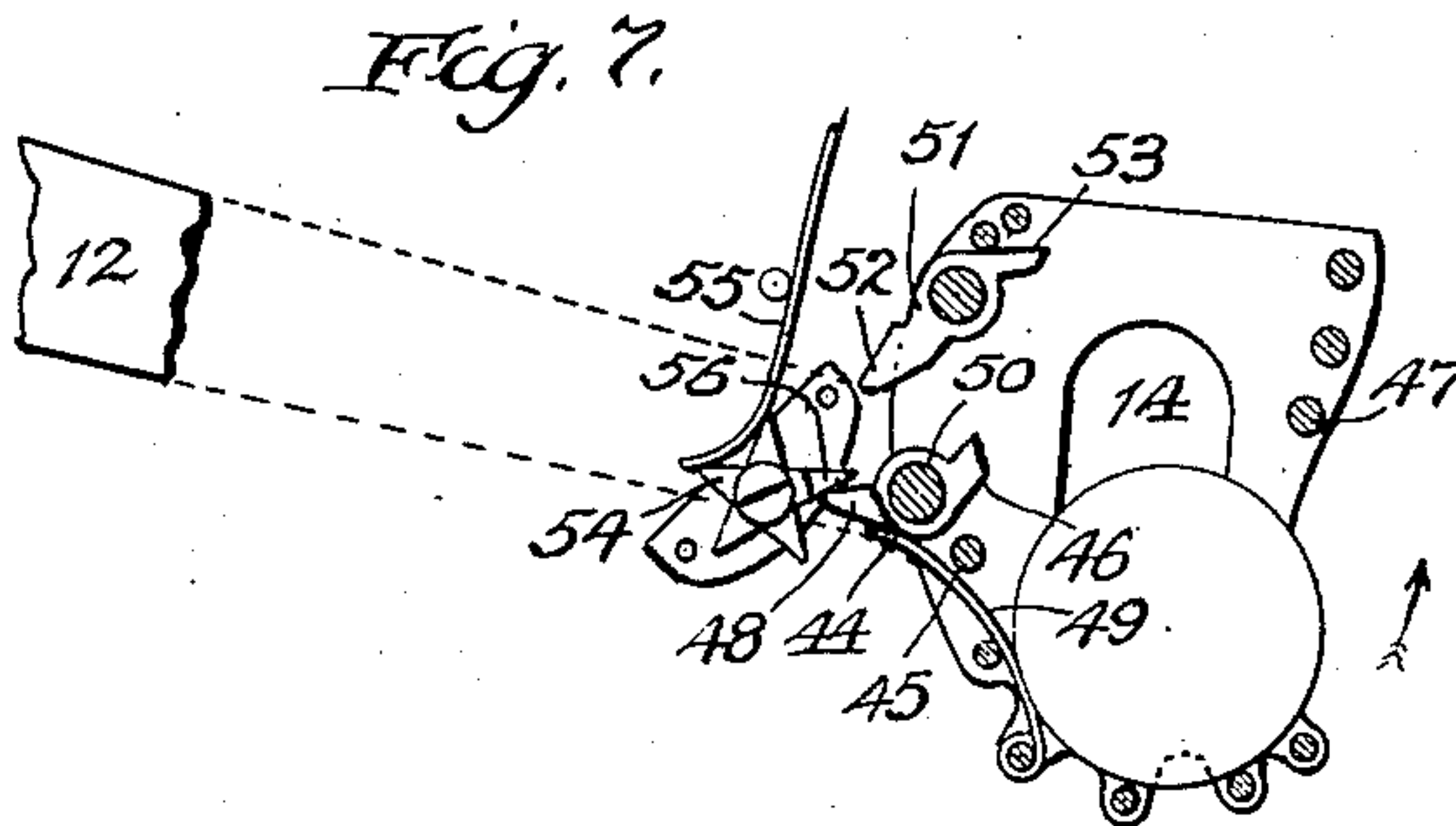


Fig. 7.

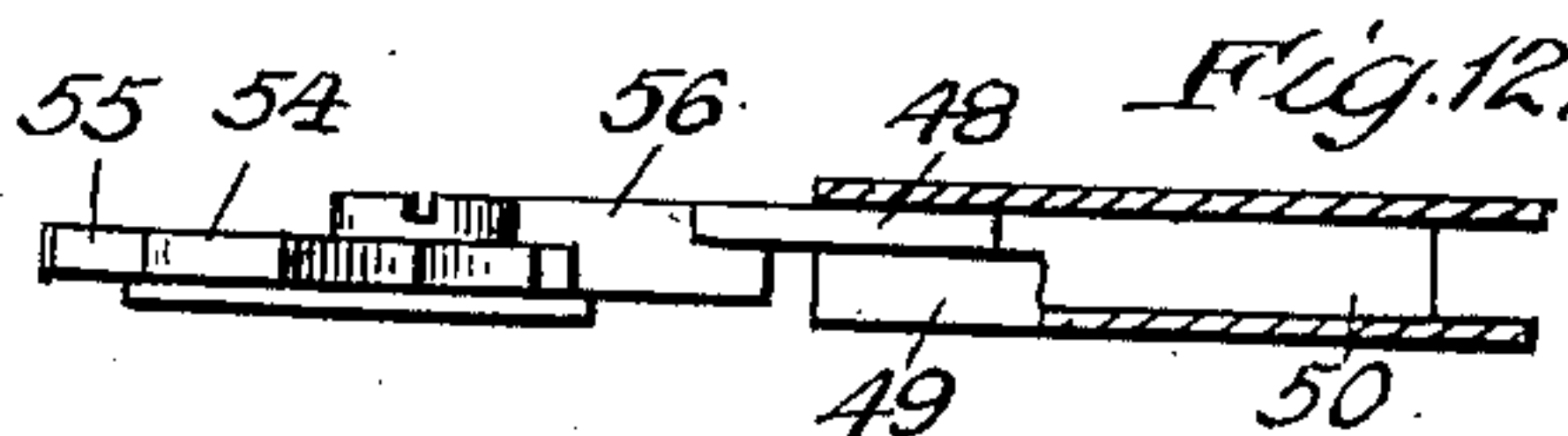


Fig. 12.

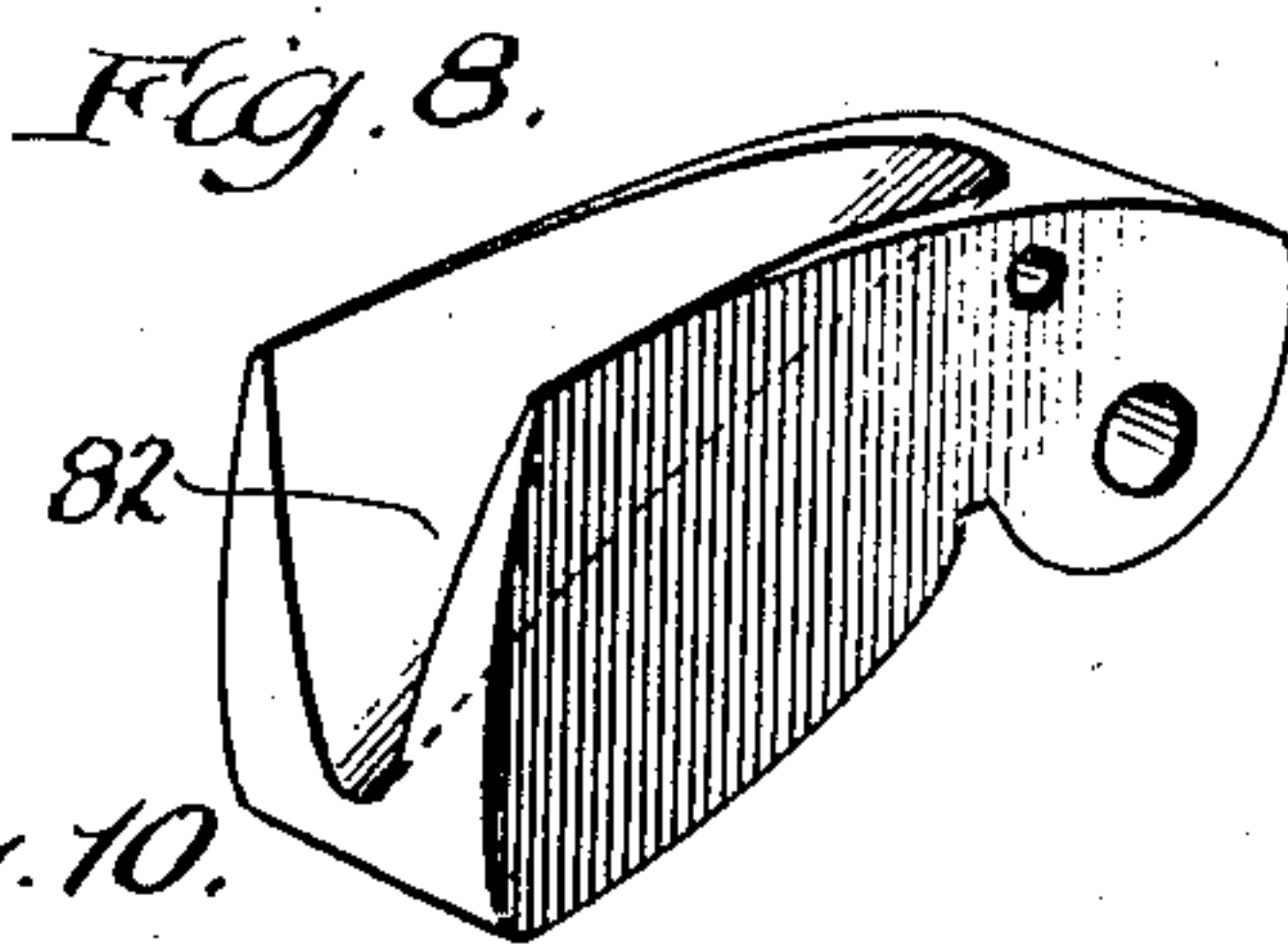


Fig. 8.

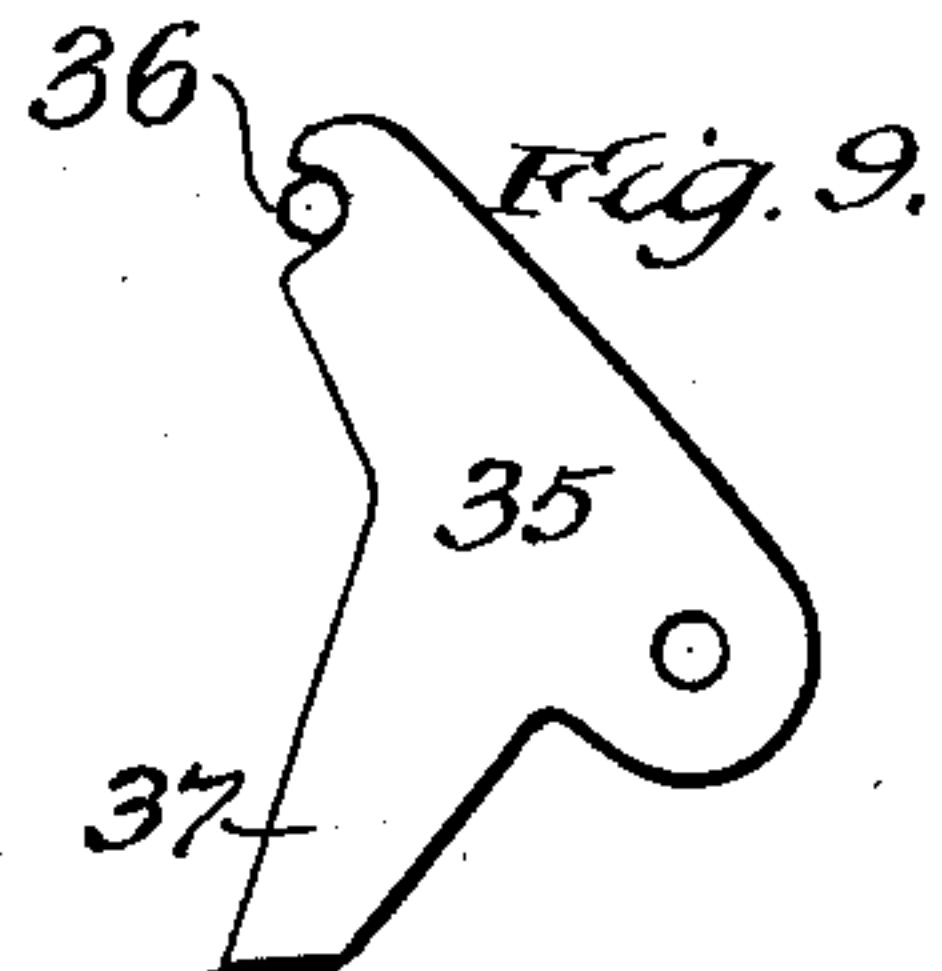


Fig. 9.

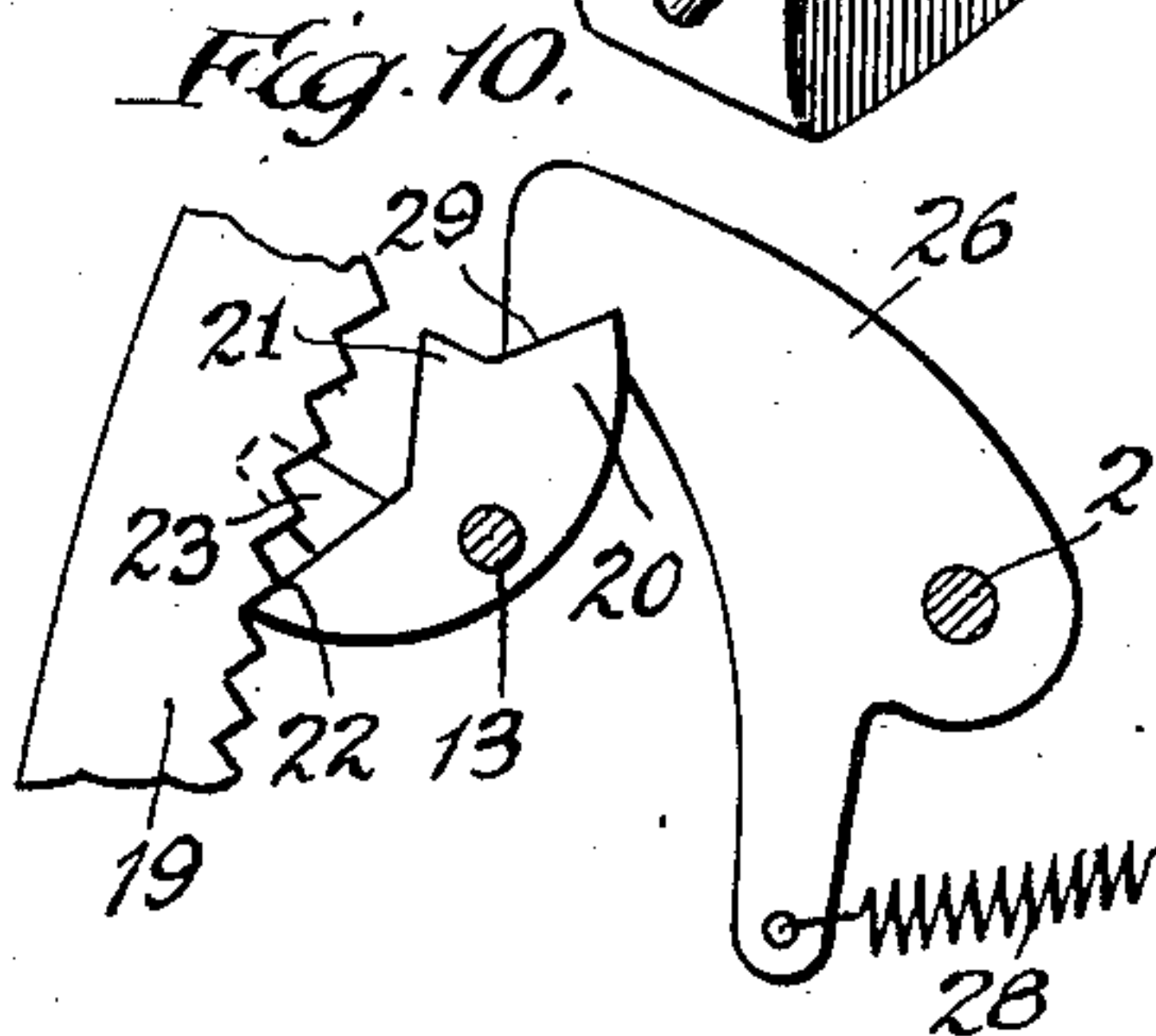


Fig. 10.

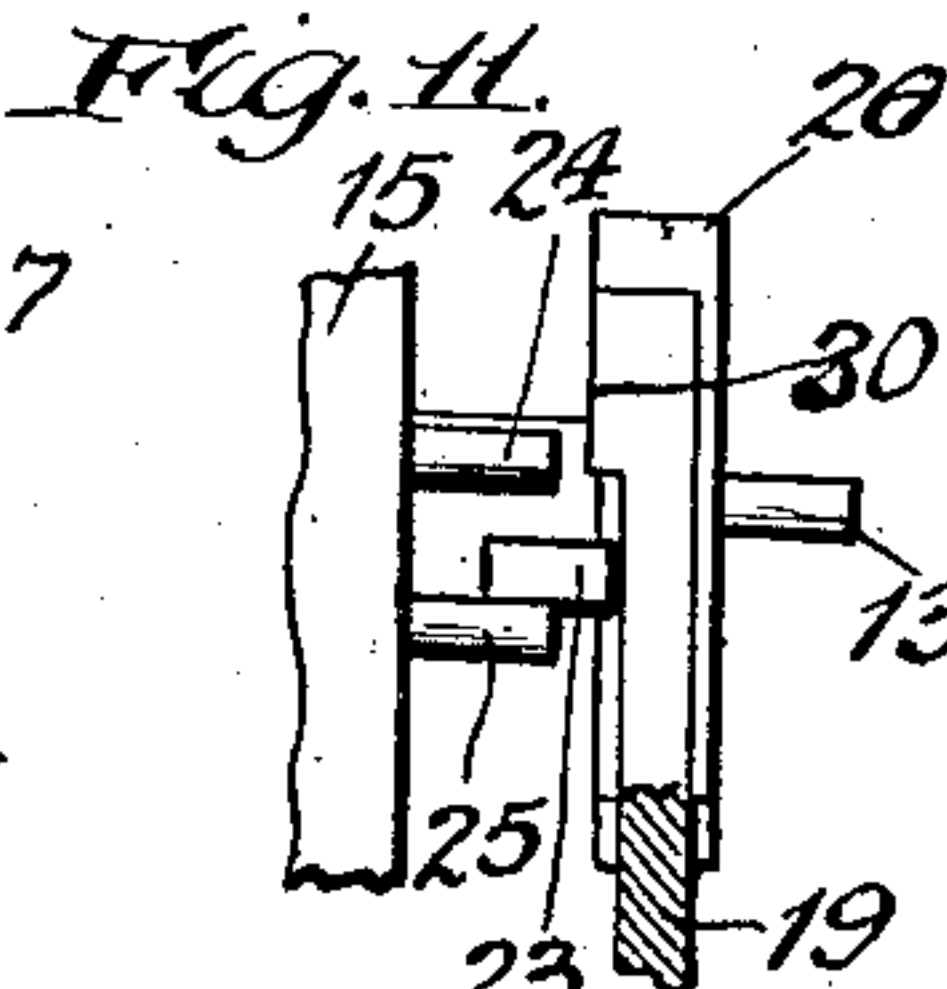


Fig. 11.

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UNITED STATES PATENT OFFICE.

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VENDING-MACHINE.

No. 898,765.

Specification of Letters Patent.

Patented Sept. 15, 1908.

Application filed August 26, 1907. Serial No. 390,166.

To all whom it may concern:

Be it known that I, CHARLES E. MORRIS, a citizen of the United States of America, and a resident of Lane, Franklin county, Kansas, have invented certain new and useful Improvements in Vending-Machines, of which the following is a specification.

The main objects of this invention are to provide an improved form of vending apparatus suitable for being coin controlled and adapted to deliver cartridges and at the same time operate a pneumatically controlled device, such as the gun lock in my co-pending application for patent on shooting galleries, filed October 11, 1906, Serial No. 338,485; to provide improved means for insuring positive delivery of a predetermined number of articles at each operation of the machine when the articles are placed in the machine in bulk without being carefully stacked; to provide a device of this class in which the articles previous to delivery are automatically arranged one above the other on end in a discharge chute and in which, at each operation of the mechanism for discharging articles from said chute, a quantity in excess of the number discharged will be delivered to the upper end of said chute; and to provide suitable means for returning to the storage receptacle all articles which do not properly enter said discharge chute when delivered thereto. These objects are accomplished by the device shown in the accompanying drawings in which:—

Figure 1 is a front elevation, partly in section and partly broken away, of a cartridge vending machine constructed according to this invention and illustrating the relation of the parts when the operating lever is in its depressed position. Fig. 2 is a corresponding view showing the parts in their normal position. Fig. 3 is a rear elevation of the same showing the general arrangement of the check controlled operating mechanism in its normal or initial position, some parts of the casing and frame being partly broken away. Fig. 4 is a view corresponding to Fig. 3, but showing the operating lever depressed, and the other parts in relative positions corresponding to this position of said lever. Fig. 5 is an end elevation illustrating the general arrangement of the parts in a plane transverse to the planes of Figs. 1 to 4 inclusive, the casing being in section. Fig. 6 is a sectional detail of the coin pocket in the trip arm

which controls the operation of the device. Fig. 7 is a similar view showing the same at the instant when the coin is released. Fig. 8 is a perspective view of the movable hopper section which guides the articles falling from the storage receptacle to the upper end of the article delivery chute. Fig. 9 is a detail of the latch dog which holds the coin trip against a second movement until the operating lever returns to its initial position. Fig. 10 is a detail showing one of the positions of the ratchet pawl and its dog. Fig. 11 is an end elevation showing the relation of the lugs of the ratchet pawl 20 with those on the coin trip 12 and the rack 19. Fig. 12 is a detail, showing, in bottom plan, the counting wheel and coin releasing pawl. Fig. 13 is a detail, showing the shape of the upper edge of the wall 75.

In the construction shown in the drawings, the casing 1 is subdivided by the partition 2, the article storage and delivery mechanism being in the compartment 3 at one side of said partition and the check controlled mechanism being at the other side in the compartment 4, Fig. 5.

The device comprises an article storage receptacle 6 in which a quantity of cartridges is stored in bulk, a cartridge delivery chute 7 in which the cartridges are arranged on end one above the other, mechanism for discharging cartridges from the receptacle 6, and causing them to fall into the upper end of the discharge chute 7, mechanism for delivering cartridges in succession from the article chute, mechanism for returning to the receptacle cartridges which fail to properly enter the article chute or which are in excess of the number required to fill it, an air bulb 8 connected by a flexible tube 9 with the gun, as in my said copending application, and check controlled mechanism for operating the cartridge delivery device and at the same time compressing the bulb 8 to unlock the firing mechanism of the gun.

The check controlled mechanism herein shown is made the subject of a copending application filed August 22nd, 1907, Serial No. 389,695, and therefore not claimed herein. The check controlled mechanism is fully described in my said copending application and will be herein described only with sufficient clearness to give a clear understanding of the complete machine.

The coin chute is shown at 10 and its slug

detecting mechanism is indicated at 11 in Figs. 1 and 2. The coin trip lever 12 is pivotally mounted at 13 in the supporting frame and has a coin pocket or seat 14, at its end in position to be in line with the delivery end of the coin chute 10, when the arm 12 is in the position shown in Fig. 3. The arm 12 is counterbalanced by a weight 15 so that it will normally return to the position shown in Fig. 3 but will be caused to swing down to the positions shown by dotted lines in said figure when a coin of suitable weight is seated in the pocket 14. The operating lever 16 is pivotally mounted in the supporting frame at 17 and extends outward through the casing where it is provided with a handle 18 which is preferably in the form of a short knob suitable to be pressed by the thumb, but so close to the front of the casing as to render it difficult to strike it a sharp blow and possibly cause injury to the mechanism within.

The operating lever arm 16 is provided with a rack sector 19 having thereon a series of teeth adapted to be engaged by a double pointed pawl 20 to control the movement of the lever 16, as will hereinafter appear. The pawl 20 is mounted upon the same pivot 13 which carries the arm 12. The point 21 of the pawl 20 is so disposed as to be movable into and out of engagement with the teeth on the rack 19, so as to prevent the downward movement of the operating lever 16, and the point 22 of said pawl is so disposed as to prevent a return movement of said lever. The pawl 20 is provided with an arm 23 lying in a different plane from the points 21 and 22 and adapted to be engaged by a pair of studs 24 and 25 on the arm 12. A spring pressed dog 26 is pivotally mounted on a pin 27 on the supporting frame and is of suitable form to engage the pawl 20 and hold it yielding in either of its two operating positions. The dog 26 is normally urged into engagement with the pawl 20 by means of the spring 28. When the dog 26 holds the point 21 of the pawl 20 in engagement with the rack 19, it engages said pawl as shown in Fig. 4 and when the point 22 is in engagement with the rack 19, the dog 26 engages the pawl 20 by hooking over the point 29, as shown in Fig. 10.

When the lever 16 is shifted down to the position shown in Fig. 4, the stop 30 on the rear side of the rack 19 engages the arm 23 of the pawl 20; and said arm, through engagement with the stud 25 on the trip arm 12, swings said trip arm back to its normal position as in Fig. 4, regardless of whether there is a coin seated in the pocket 14 or not. The rack 19 is partly broken away in Fig. 4 so as to show the relation of the stop 30 with said arm, said view illustrating the position of the parts at the instant after the arm 12 is returned to its initial position and while the lever 16 is still at the lower end of its stroke.

The lever 16 is connected by a link 31 with a bent lever 32, which is fulcrumed at 33 and one arm of which is connected with a tension spring 34 which normally urges the operating lever 16 upwardly to its normal initial position as in Fig. 3.

When the parts are in the position shown in Fig. 4, downward movement of the trip arm 12 is prevented by means of the pawl 35, which normally falls by gravity to the position shown in Fig. 4, so as to engage the stud 36 on the arm 12 and prevent such downward movement of said arm. The pawl 35 has a downwardly extending tail 37 which is engaged by the lever 16 when in its normal position and lifts the pawl 35 out of engagement with the stud 36 so as to permit the arm 12 to freely swing down under the weight of a coin in the pocket 14.

The coin chute is provided with a shutter 38 which is carried by an arm 39 pivoted at 40. The shutter 38 is movable into and out of a slot 41 in the coin chute and, through engagement with the counterweight 15, is forced across the path of coins entering the coin chute so as to prevent such coins from entering whenever the trip arm 12 is in its lowered position, as shown by dotted lines in Fig. 3.

The construction of the coin pocket 14 is best seen from Figs. 3, 4, 6 and 7. The upper part of the pocket is open so that the coins may readily fall into it from the chute 10. The edge also has an opening through which the coin may fall when the arm is in its lowered position.

The balancing of the arm 12 is such that any coin of suitable character and proportion which passes the coin detecting mechanism in the coin chute, will, on entering the pocket, cause the arm 12 to swing down to the position shown by dotted lines in Fig. 3. This causes the stud 25 to swing upward into engagement with the arm 23 of the pawl 20, and to rock said pawl so as to release the tooth 21 from engagement with the ratchet teeth and throw the point 22 into such engagement. This position of the pawl is shown in Fig. 10. This movement of the pawl 20 releases the arm 16 so that the operator may freely depress said arm. As soon as the arm 16 moves out of engagement with the tail 43 of the pawl 26, said pawl is thrown down by the spring 28 into the position shown in Fig. 10, and it then yieldingly urges the tooth 22 of the pawl 20 into engagement with the rack teeth. The dog 26 holds the pawl 20 in this position until the lever 16 has been depressed to the limit of its downward movement, as shown in Fig. 4. Just before the operating lever 16 reaches its downward limit, the lug 30 engages the arm 23 of the pawl 20, swinging said arm downward and tripping the point 29 of said pawl, so that it is engaged by the dog 26, as in Fig. 130

4. The operating lever 16 is then free to be lifted to its initial position by the spring 34. As the pawl 20 is rocked by the lug 30 during the latter part of the downward stroke of the lever 16, the arm 23 of said pawl engages the stud 25 and lifts the arm 12 back to its initial position as in Fig. 4.

The device for releasing the gun lock consists of an air bulb 8 confined in a pocket 61, having one wall in the form of a pivoted flap 62, adapted to swing inward against the bulb for compressing it. The bulb is connected by a flexible tube 63 with the gun lock (not shown). In order to suddenly contract the bulb, so as to insure perfect operation of the gun release, a trip hammer 64 is provided for swinging the flap 62. This hammer comprises a bar slidably mounted on a pin 65 on a depending arm 66 extending downward from the operating lever 16. The bar 64 is urged into the position shown in Fig. 4 with respect to the arm 66 by means of a spring 67 which extends between the stud 68 on the bar 64 and another 69 on the arm 66. The spring 67 also urges the end of the bar 64 which is at the left of Fig. 4 upward, so that when the lever 16 is in its normal initial position, the parts will be in the position shown in Fig. 3 and a shoulder 70 of the bar 64 will be brought into engagement with the stud 71. When the operating lever 16 is swung downward the pin 65 swings over toward the right-hand end of the slot 72 and as soon as the stud 73 on the link 31 engages the upper edge of the bar 64 it forces the shoulder 70 out of engagement with the stud 71. The spring 67 then suddenly throws the bar 64 toward the right, compressing the bulb 8 and causing the impulse in the air which releases the gun lock. The lifting of the operating lever after the action of the spring 34 returns the bar 64 to its normal initial position.

The cartridge delivery apparatus comprises the storage receptacle 6, Fig. 2, and has a throat 74 extending downwardly toward one side so as to conduct the cartridges against the inclined wall 75. A vertically reciprocating slide member 76 moves upwardly along said wall and its top surface is of sufficient area to carry upward and discharge over the top of the wall 75 a plurality of cartridges at each upward movement of the member 76. Movement is imparted to the member 76 through a ball and socket connection at 79. The member 76 is connected by a link 80 with a sector 81 pivotally mounted on the same stud 33, which carries the bent lever 32 hereinbefore mentioned and is rigidly connected therewith at 32'. The member 76 therefore moves up and down once with each operation of the operating arm 16. The cartridges which fall over the wall 75 are conducted by means of a trough-shaped member or hopper 82 into the article chute 7. This chute is vertically disposed and is of

suitable size to hold a series of cartridges on end, one resting upon the other. When the parts are in the normal position of rest shown in Fig. 2, a transversely extending lip 84 of the sector 81 closes the lower end of the article chute 7 as is shown in Fig. 2 and the sector 81 is in the position there shown. The downward movement of the operating lever 16 swings the sector 81 to the position shown in Fig. 1, lifting the member 76. The lip 84 is now moved away from the bottom end of the article chute 7 and allows the nearest cartridge to fall into the delivery chute 83 which is in alinement with the chute 7 and extends to a pocket in the outside of the casing.

The discharge of more than one cartridge is prevented by a pin 85 which enters a hole in the side of the chute 7, being normally urged across the chute 7 by a spring 86. An extension of this spring is engaged by the edge of the lip 84 when the parts are in the position shown in Fig. 2 and withdraws the pin 85 as shown. The hopper 82 is pivotally mounted at 87 and is connected by a link 88 with an arm 89 loosely mounted on the stud 78 and normally urged upward by a spring 90. The arm 89 normally holds the hopper 82 in the position shown in Fig. 1 but as the member 76 descends after having discharged cartridges over the wall 75 a shoulder 91 on said member 76 engages the arm 89 as in Fig. 2, so as to cause the hopper 82 to tilt and discharge into the chute 93 any cartridges which have failed to enter the article chute 7. The chute 93 conducts them to a bucket 94. This bucket is carried by an arm 95 pivoted at 96 on a horizontal axis and connected by a link 97 with the sector 81. When the parts are in their normal initial position, hereinbefore described, the bucket 94 is in the position shown in Fig. 2. When the operating lever 16 is depressed, the swinging of the sector 81 to the position shown in Fig. 1 as hereinbefore described, lifts the bucket 94 to the position shown in Fig. 1 and causes it to return its contents to the receptacle 6. By arranging the member 76 so as to discharge more than one cartridge at a time over the wall 75, it is insured that cartridges are supplied to the article chute 7 more rapidly than they are discharged therefrom and said chute is accordingly always kept full as long as there are cartridges in the machine.

The operation of the device shown is as follows: When a coin is inserted into the coin chute it falls into the pocket 14 and its weight causes the arm 12 to swing down to its lowest position when the coin is spilled out. The balance weight 15 on the arm 12 holds the arm in its lowered position, as already described, until the operator swings down the operating lever 16. The downward movement of the operating lever 16 carries the stud 73 into engagement with the

arm 64, releasing said arm from the stud 71, whereupon the spring 67 forces the arm 64 against the flap 62 and compresses the bulb 8 and releases the gun. The same downward movement of the lever 16 brings the cartridge delivery mechanism into the position shown in Fig. 1, the member 76 moving upward and discharging a number of cartridges over the wall 75, causing them to fall into the article delivery chute 7, the lip 84 moving to one side so as to open the lower end of the chute 7 and permit a cartridge to fall therefrom, and the arm 95 lifting the bucket 94 so as to discharge its contents into the hopper 6. The bucket 94 returns to its normal initial position as in Fig. 2 before the hopper 82 is swung back into position for discharging its contents into said bucket through the engagement of the shoulder 91 with the arm 89, as described.

The upper edge of the wall 75 is longitudinally inclined with respect to the upper end of the member 76, as in Fig. 13. This causes the cartridges in falling over the top of the wall 75 to be turned so that they fall endwise into the hopper.

The specific form of check operated mechanism, herein illustrated, is fully described and claimed in my copending application. A double acting dash pot 100 is connected with the operating lever 16 to prevent a violent movement of said lever in either direction. The device is also provided with registering mechanism indicated at 101 in Figs. 3 and 4 which counts the operations of the operating lever. If desired the register may be inclosed by a separate casing within the other so as to prevent a person who has access to the main casing from having access to the register. The register casing is not shown in the drawings.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In a vending machine, the combination of an article receptacle, means for discharging articles from said receptacle, an article chute for delivering the articles in succession, a hopper adapted to guide articles between said receptacle and chute, mechanism for causing said hopper to discharge toward one side such articles as fail to enter said chute, and mechanism for returning to said receptacle the articles so discharged from said hopper.

2. The combination of an article receptacle having a contracted throat, a reciprocating member movable across said throat for successively discharging articles therefrom, an article chute for delivering articles so discharged and having an open mouth at its upper end, mechanism for discharging articles at the lower end of said chute, said reciprocating member being adapted to deliver articles to said chute at a greater rate than said articles are discharged therefrom, and

mechanism for returning to said receptacle articles which fail to enter said article chute.

3. The combination of an article storage receptacle, a vertically disposed article chute having an open upper end, means for delivering articles from said article receptacle to the upper end of said chute, mechanism for discharging articles from said chute, said means being operated through the operation of said mechanism and at each operation adapted to discharge from said storage receptacle a number of articles in excess of the number discharged from said chute, and means for returning to said storage receptacle articles which are discharged therefrom when said article chute is full.

4. In a vending machine, the combination of an article chute open at its upper end, a movable hopper mounted at the upper end of said chute and adapted to guide articles to said chute, means for intermittently delivering articles to said hopper, mechanism for shifting said hopper to cause the same to discharge toward one side articles which fail to enter said article chute, and mechanism for returning the articles so discharged to said delivery mechanism.

5. The combination of a chute adapted to support a series of articles endwise one above the other, a movable hopper mounted at the upper end of said chute and adapted to direct such articles endwise into said chute, said hopper being movable toward one side of said chute for discharging such of its contents as fail to enter said chute, mechanism for alternately shifting said hopper into and out of alinement with said chute, and mechanism adapted to receive the articles discharged from said hopper when out of alinement with said chute and to return such articles to said hopper when the same has returned to alinement with said chute.

6. In a vending machine, the combination of a vertically disposed article chute adapted to support a plurality of articles one above the other, a hopper mounted at the upper end of said chute for guiding articles thereto and movable into and out of alinement therewith, mechanism for intermittently moving said hopper into and out of alinement with said chute, intermittently operative means for discharging articles from said receptacle to said hopper when said hopper is in alinement with said chute, and means for returning to said receptacle articles discharged from said hopper when the same is out of alinement with said chute.

7. In a vending machine, the combination of an article chute adapted to support a series of similar articles one above the other, a hopper mounted at the upper end of said chute for guiding articles thereto and movable into and out of alinement with said chute, an article storage receptacle mounted above and at one side of said hopper and hav-

ing a downwardly disposed discharge throat, an inclined wall extending across said throat and normally adapted to prevent the discharge of articles therefrom, a reciprocating member mounted near said wall and adapted at each operation to discharge articles from said throat past said wall, mechanism controlling the movement of said hopper and adapted to hold the same in alinement with said chute during the discharging operation of said member and adapted to shift the same out of alinement with said chute during the intervals between successive discharging operations of said member and mechanism for returning to said receptacle the articles which are discharged toward one side of said article chute by said hopper.

8. In a vending machine, the combination of an article chute adapted to support a plurality of oblong articles on end one above the other, mechanism for discharging articles in succession from said chute, a hopper mounted at the upper end of said chute and adapted to guide articles into said chute and being movable into and out of alinement with said chute, mechanism controlled by the operation of said article discharging mechanism and adapted to deliver to said hopper at each operation of said discharging mechanism a number of articles in excess of the number discharged by said discharging mechanism at such operation, mechanism coacting with said article delivering mechanism and adapted to shift said hopper toward one side for discharging its contents away from said chute during the intervals between the successive operations of said delivering mechanism.

9. In a vending machine, the combination of an article chute adapted to support a plurality of oblong articles on end one above the other, mechanism for discharging articles in succession from said chute, a movable hopper mounted at the upper end of said chute and having therein a trough shaped passage for guiding articles into said chute, said passage being suitably shaped and disposed to cause the articles to be delivered endwise into said chute, means coacting with said discharging mechanism, and adapted to deliver to said hopper at each operation of said discharging mechanism a

quantity of articles in excess of the number discharged by said discharging mechanism at such operation, and mechanism coacting with said discharging mechanism for shifting said hopper to discharge therefrom such articles as fail to enter said chute.

10. The combination of a vertically disposed article chute open at its upper end, a hopper pivotally mounted at the upper end of said chute and adapted to be swung into and out of alinement with said chute, means for supplying a plurality of articles to said hopper, and mechanism adapted to receive articles discharged by said hopper when out of alinement with said chute and return said articles to said article supplying means.

11. In a vending machine, the combination of a vertically disposed article chute adapted to hold a series of oblong articles on end one above the other and being open at its upper end, a hopper at the upper end of said article chute for guiding articles into the same, a wall at one side of said hopper, an article receptacle having a discharge throat for delivering articles against said wall, a slide movable along said wall and adapted to force the adjacent articles over the upper edge thereof, said upper edge of the wall being inclined longitudinally with respect to the upper surface of said slide, so as to cause articles falling over it to fall endwise into said hopper.

12. In a vending machine, the combination of a receptacle for holding a quantity of oblong articles, a discharge throat extending toward one side from said receptacle, a vertically disposed wall adapted to normally prevent the discharge of articles from said throat, a member movable along said wall and adapted to lift articles from said throat, and discharge them over the top of said wall, the adjacent parts of the tops of said wall and member being inclined longitudinally in opposite directions and adapted to cause articles to be turned so as to fall endwise over said wall.

Signed at Lane, this 21 day of August, 1907.

CHARLES E. MORRIS.

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