

(No Model.)

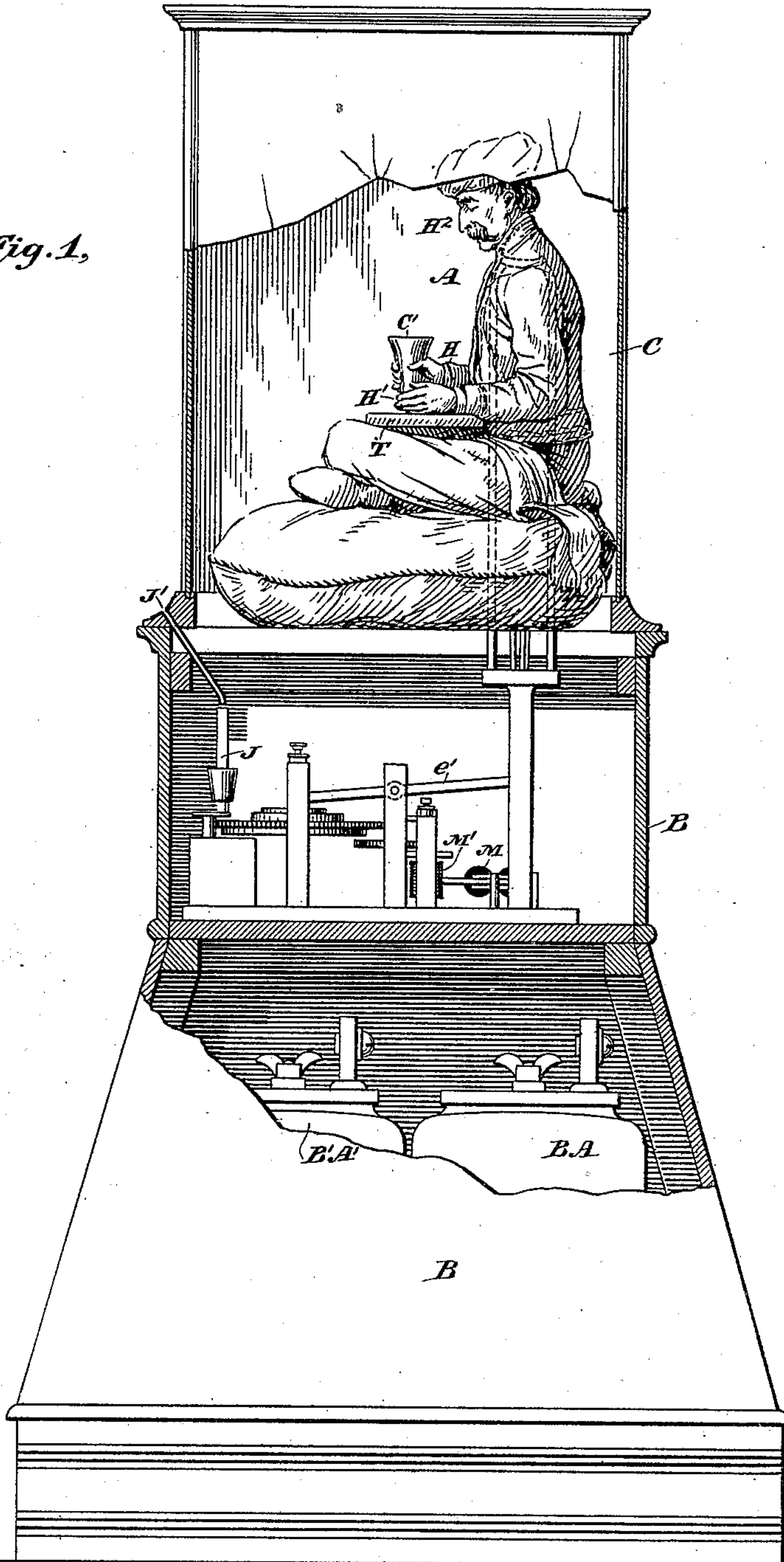
6 Sheets—Sheet 1.

W. G. SPIEGEL.
AUTOMATON.

No. 397,398.

Patented Feb. 5, 1889.

Fig. 1,



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6 Sheets—Sheet 2.

Patented Feb. 5, 1889.

No. 397,398.

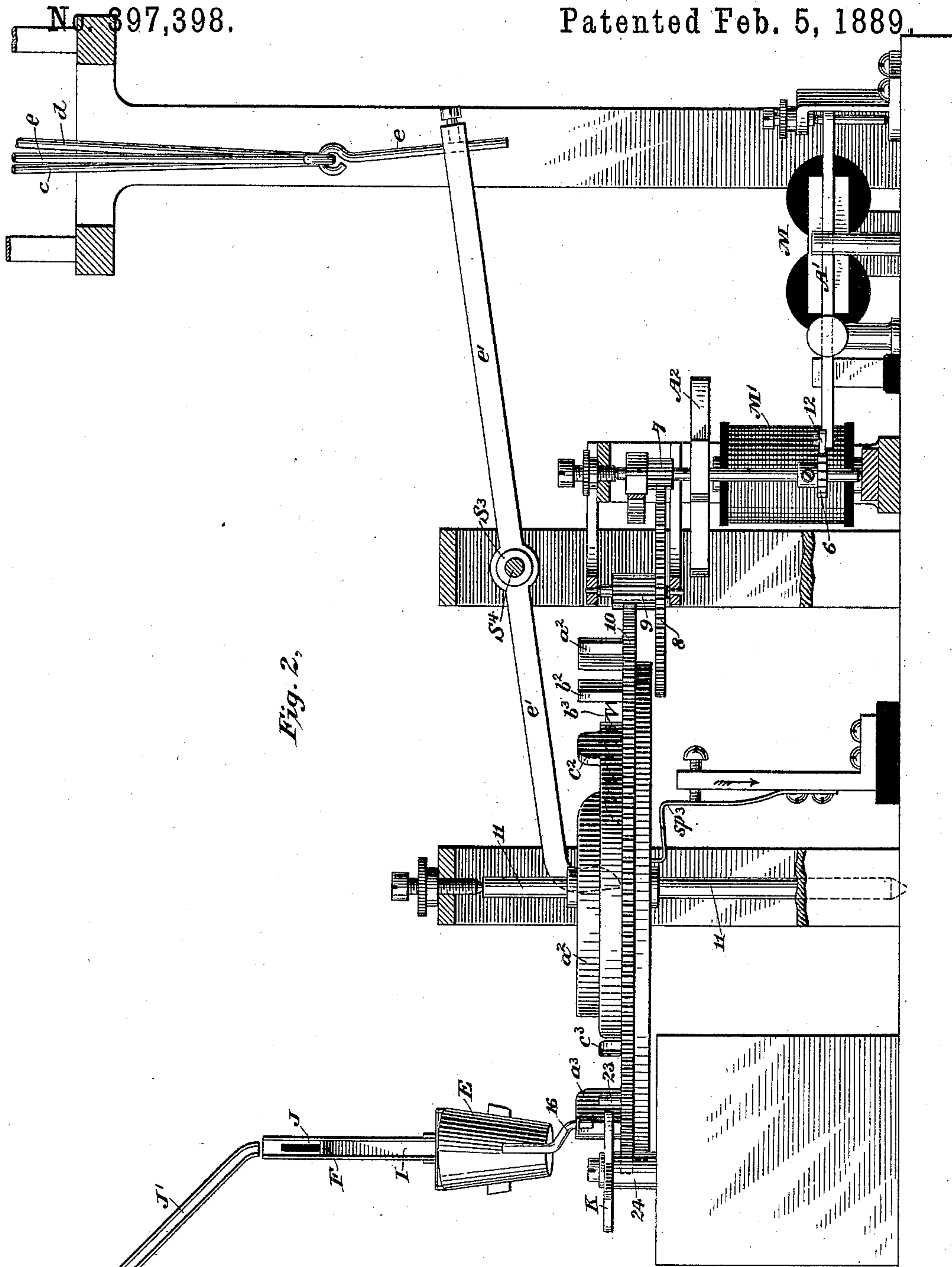


Fig. 2.

Witnesses

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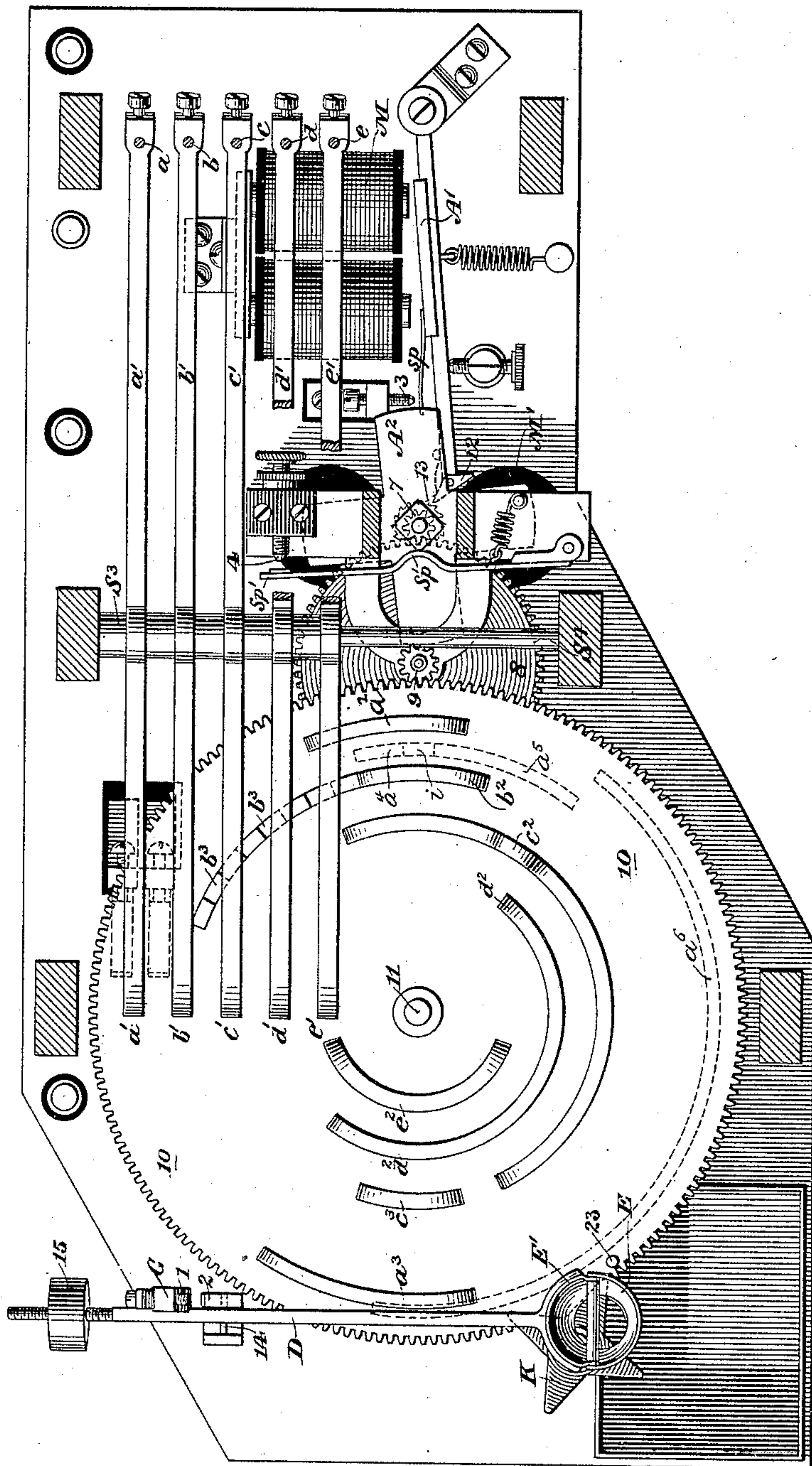
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Fig. 3.



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AUTOMATON.

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Fig. 4.

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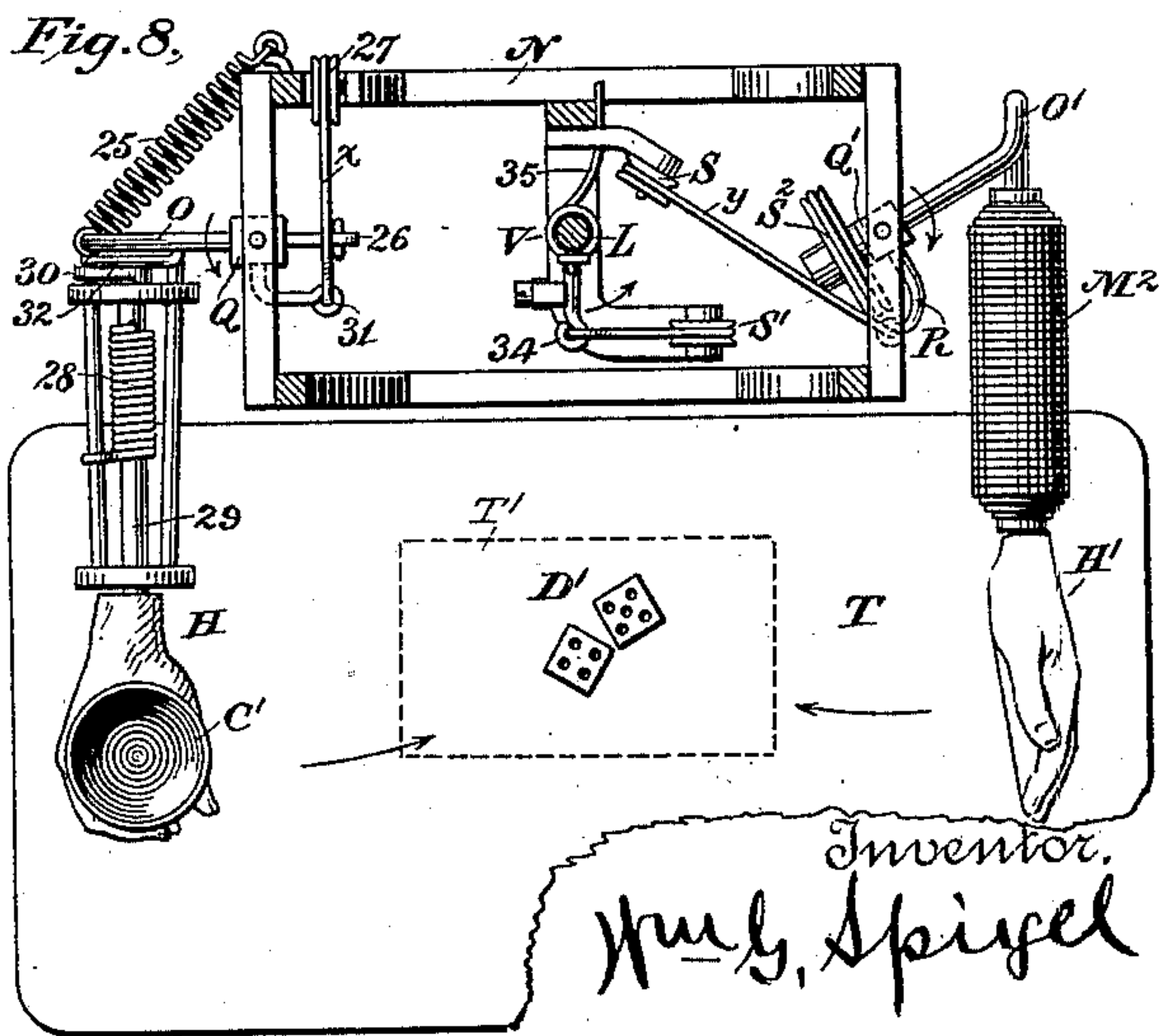
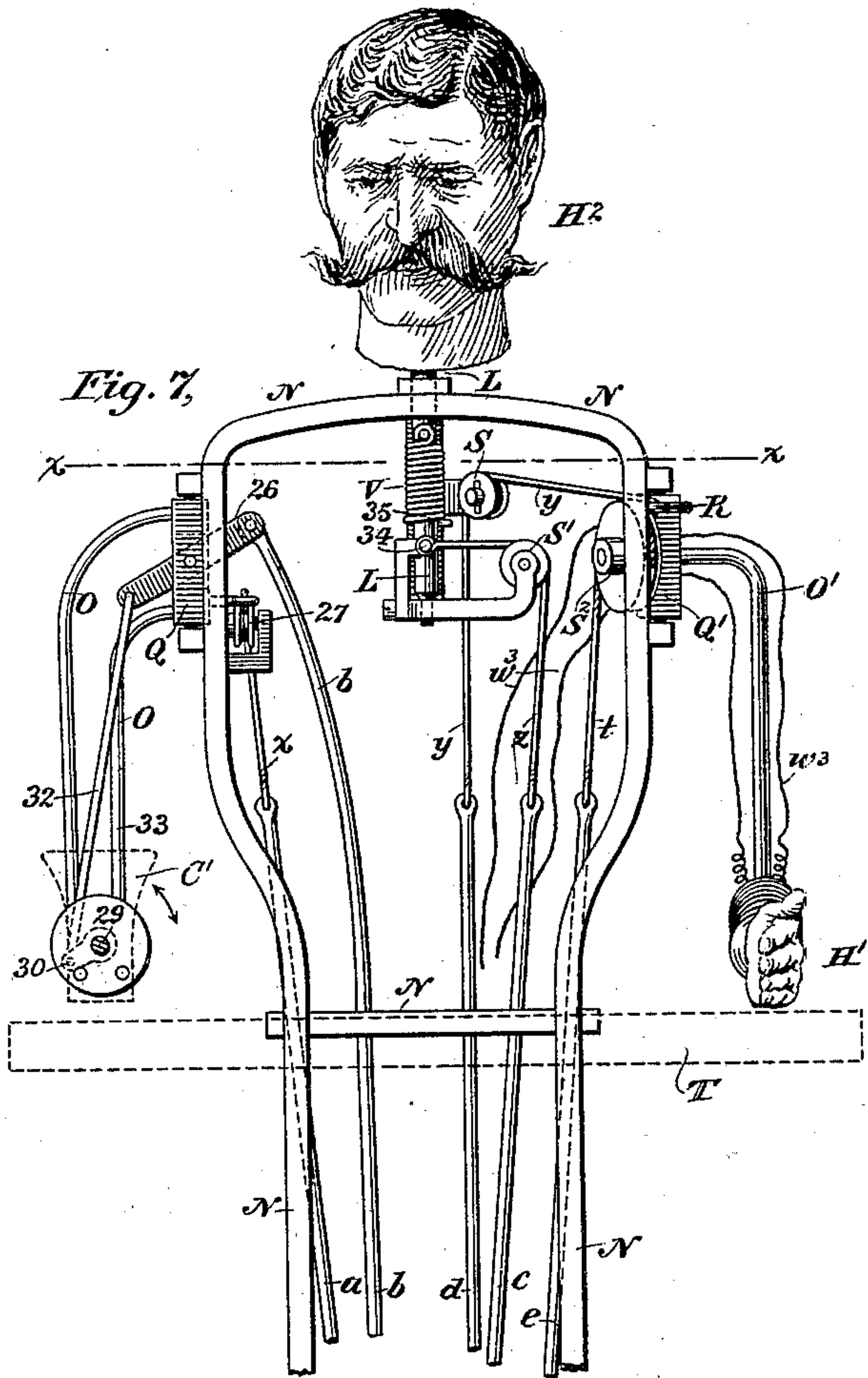
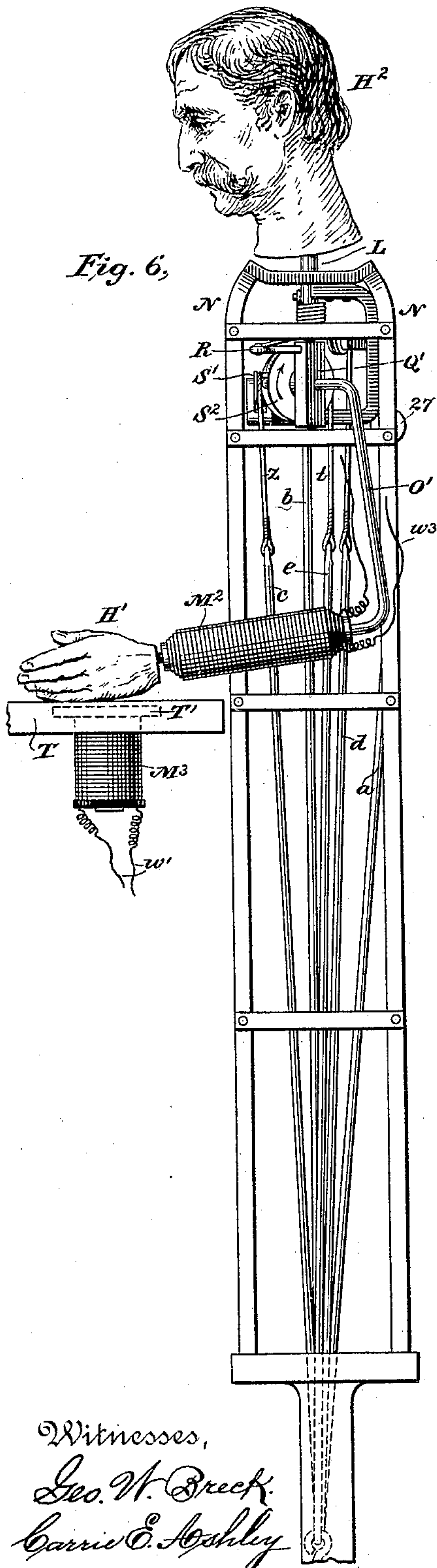
(No Model.)

6 Sheets—Sheet 5.

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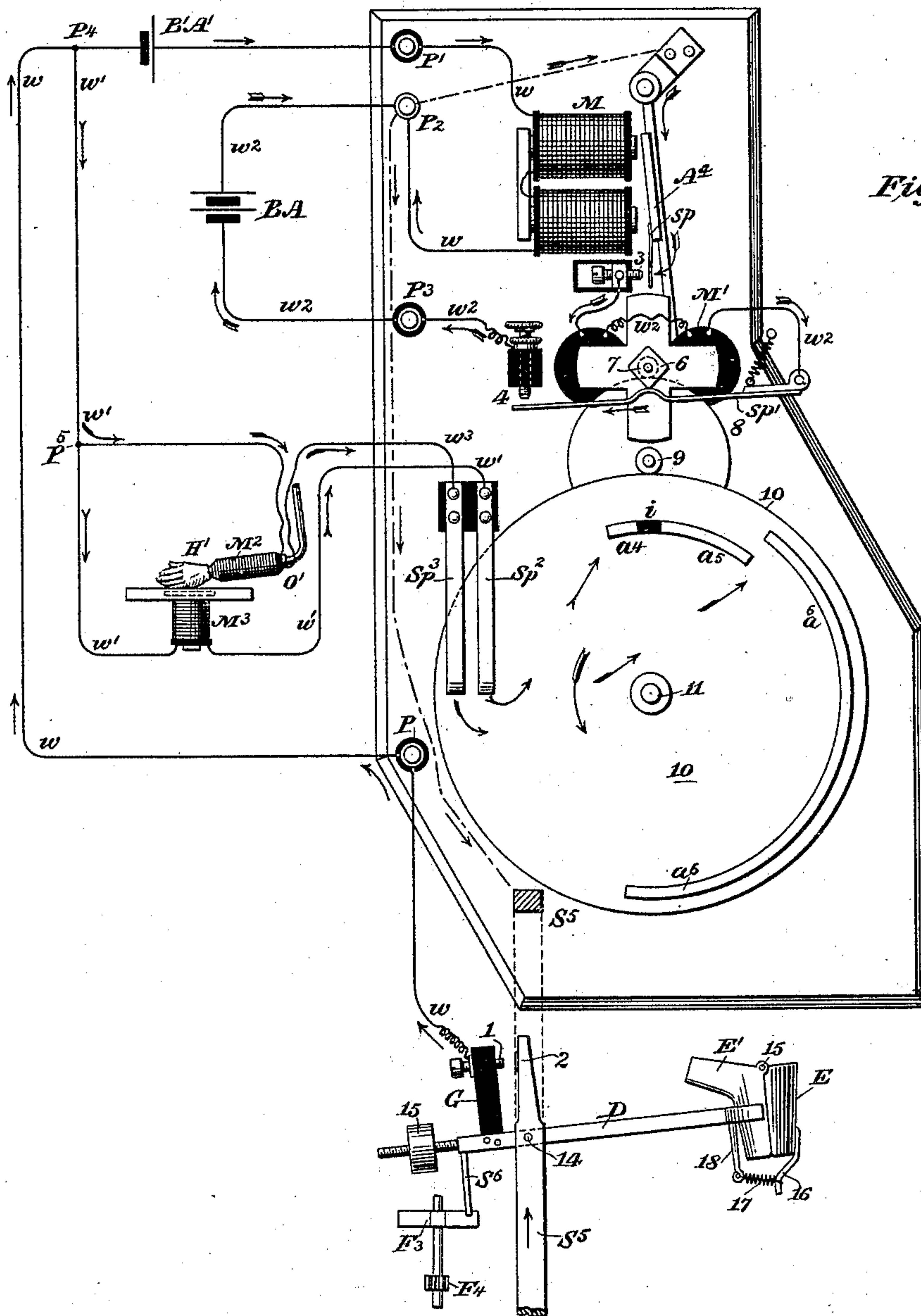
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UNITED STATES PATENT OFFICE.

WILLIAM G. SPIEGEL, OF NEW YORK, N. Y., ASSIGNOR TO JAMES WILLIAM PATTERSON, OF SAME PLACE.

AUTOMATON.

SPECIFICATION forming part of Letters Patent No. 397,398, dated February 5, 1889.

Application filed February 16, 1888. Serial No. 264,225. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM G. SPIEGEL, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a new and useful Automaton or Automatic Image or Device, of which the following is a specification.

My invention relates to improvements in automatons or automatic images designed for display in public places; and its object is to provide an automaton or automatic device which shall through the agency of mechanism hereinafter described perform the operation of throwing dice from a cup held in one of its hands and afterward restore said dice to the cup, the operative parts of said automaton finally assuming their normal position. I attain these objects by the mechanism illustrated in the accompanying drawings and described in the following specification, but particularly pointed out in the claims which follow the specification.

The device will be better understood by reference to the drawings in detail, in which—

Figure 1 is a side elevation showing the apparatus in operative position, the retaining-case and the base for supporting the apparatus being broken away, so as to show the figure of the automaton in said case and the operative mechanism in the base beneath. Fig. 2 is a side elevation, partly in section, showing the driving mechanism and connections for manipulating the several parts of the automaton. Fig. 3 is a plan view of Fig. 2. Fig. 4 is an end elevation shown on a plane ninety degrees from that seen in Fig. 2. Fig. 5 is a detail view of the starting and stopping mechanism. Fig. 6 is a side elevation of the interior mechanism of the automaton proper. Fig. 7 is a front elevation thereof. Fig. 8 is a horizontal sectional view of Fig. 7, taken on line $x x$; and Fig. 9 is a diagrammatic view, partly in plan, showing the electrical connections of the apparatus, together with the starting and stopping mechanism shown in the lower part of Fig. 5.

A, Fig. 1, represents the body of the image, having a head, H^2 , and arms $H H'$, in one of which, as H , is a dice box or cup, C' . This image is represented in Fig. 1 as a Turk in sitting

posture within the case C, while the driving mechanism is located in the base B, and the batteries $B A B' A'$, for furnishing the motive power, are in the lower part of said base.

10, Figs. 2, 3, and 4, is a cog-wheel of large area affixed to a vertical shaft, 11, and carrying a series of concentric cam-surfaces, $a^2, a^3, b^2, b^3, c^2, c^3, d^2$, and e^2 , on its upper face, with two concentric electrical contact-surfaces, a^1, a^5 , and a^6 , on its under surface, and a small insulating-space, i , located between $a^1 a^5$. This cog-wheel 10 meshes with a pinion, 9, on the same shaft with a smaller cog-wheel, 8, which in turn meshes with a pinion, 7, on the shaft carrying the cross-armature lever A^2 of an electric motor, M' .

$a' b' c' d' e'$ are horizontal levers pivoted on a loose sleeve, S^3 , surrounding a fixed shaft, S^4 , attached to the frame of the machine. These levers move independently and are adapted to bear, respectively, at their left-hand ends, as shown in Figs. 2 and 3, upon the cam-surfaces a^2, b^2, c^2, d^2 , and e^2 , &c., while their other ends are attached, respectively, by set-screws, as shown in Figs. 2 and 3, to a series of vertical rods, $a b c d e$, and they in turn through a series of cords and levers, as will be hereinafter explained, to the arms and head of the figure in such a manner as to give the desired motions to said parts during the operation of throwing the dice and restoring them to the box. The head H^2 is fixed pivotally to the frame N by a rod, L, having the spiral spring V attached to it, with a bearing, 35, against the frame N at its rear, (see Fig. 8,) and an arm, 34, in turn is attached to rod L, and is connected to a cord, z , passing over the pulley S' to the rod c . It is the function of these parts to give to the head a lateral motion, as will be hereinafter described. The hand H is affixed to the forearm 29, which latter consists of a bar which is attached pivotally in the lower portion of the arm O, and it (O) in turn is pivotally secured to the frame N, as shown at Q in Figs. 7 and 8. The arm O is formed of two bars bent at the elbow portion thereof, and has a projecting arm, 31, Fig. 8, which is attached near the central portion of the pivoted part Q to said arm, and has its free end connected to the cord x , pass-

ing over pulley 27 to the upper end of the rod *a*.

25 is a spiral spring having its ends attached, respectively, to the arm O and frame N, and adapted to act against the stress put upon arm 31 by cord *x*. At the rear end of the forearm 29 is a crank, 30, having its outer end attached to a rod, 32, and a lever, 26, pivoted to the pivotal portion Q of the arm O. The other end of the lever 26 is connected directly with a vertical rod, *b*.

28 is a spiral spring affixed at one end to the forearm 29, which bears the hand H, and at the other to the lower portion of the arm O, as shown in Fig. 8, the function of which spring is to counteract the action of the rod *b*. This includes the operative portions of the right-hand arm of the figure. The left arm O' is of magnetic material, and is pivoted in the same manner as the arm O to the frame N at Q', and has a hand, H', on its forearm, which is of magnetic material, as iron.

M² is a magnet designed to magnetize the hand.

R is a lever secured to the pivotal portion Q' of the arm O', the outer end of which lever is attached to the cord *y*, passing over a pulley, S, and having its other end attached to the vertical rod *d*.

S² is a pulley affixed to the inner end of the arm O', which latter is pivoted in the part Q'.

t is a cord having one end fixed to the pulley S² and the other to the vertical rod *e*. This constitutes the operative portions of the arm O'.

T is a table, upon which the dice D' are thrown from the cup C'.

T' is a rectangular piece of magnetic material beneath the cloth of the table and magnetically connected at its center to the core of the magnet M³, located beneath the table. (See Figs. 6 and 8.) The dice D' are hollow and of magnetic material. This constitutes the operative parts of the automaton proper, with the exception of the electrical circuits and their connections, which I will describe later on, after first having described the starting and stopping mechanism, which is designed to be operated by inserting a coin—usually a five-cent nickel—into the tube J', (see Fig. 1,) through which it descends to the pocket J, (see Figs. 1, 2, 4, and 5,) ultimately reaching the split pocket E E', attached to the outer end of a lever, D, pivotally secured to the standard S⁵ at the point 14. The rear end of the lever D is provided with an adjustable weight, 15, and an upright, G, carrying an electrical contact-maker, 1. A second electrical contact, 2, is carried by standard S⁵, attached to the metal frame.

22 is an adjustment-screw for regulating the throw of the lever D.

E' is the fixed portion of the split pocket for holding the nickel V², while the portion E is pivotally secured to the part E' at the point 15, and has a projecting arm or lug, 16, connected to a standard, 18, on lever D by a spiral

spring, 17, so that so long as no pressure is brought to bear on the lug or arm 16 the split pocket E E' will retain the nickel in the position shown at V² in Fig. 5.

F is a coin-retaining lever pivoted at 19 to the pocket J, and adapted, when the lever D is held in the forward position by the weight of the nickel V², to prevent the entrance of a second nickel, V³, into the chute I by the action of the spring 21 on the short arm F' of said lever, the light spring 20 being insufficient to overcome the weight of a coin when acting alone.

I will now describe the electrical connections.

Referring to Fig. 9, M is a starting-magnet connected by the circuit *w*, as shown by the tailless arrows, through battery B' A' and frame of the machine, to the contact-points 1 2—the former on the insulated prolongation G of the starting-lever D, and the latter on the vertical metal standard S⁵, secured to the metal frame. The armature A' of starting-magnet M is pivoted to the frame, as shown, and has the usual retractile spring and back-stop. Upon its free end is a pawl adapted to take in its forward movement in the teeth of the ratchet-wheel 13 on a vertical shaft, which carries the cross-armature A² of the propelling-motor M'. This armature-lever A² also has a contact-spring, Sp, adapted to make contact on its forward stroke with the contact-screw 3, thus completing the normally-open circuit of the battery B A through the motor-magnets and the wire *w*² and commutator-spring Sp' when the motor is started, as will be explained. The pinion 7 on the armature-shaft meshes with the cog-wheel 8, and it in turn transmits the power given it through the pinion 9 to the large cog-wheel 10, as already explained. The large battery B A is designed exclusively for the use of the motor, while the small battery B' A' operates the starting-magnet M, as explained, and also serves the double function of energizing magnets M² and M³—the former on the forearm of O' and the latter under the table T. The circuit to the magnet M² is by wire *w*' *w*³ to the spring Sp³ on the under side of the wheel 10, where contact is made at the proper time through the metallic bearing *a*⁶, so as to energize the hand H', as will be hereinafter described. The circuit through the table-magnet M³ is from the same battery, B' A', by the wire *w*', as shown by the split-tail arrows, contact-spring Sp², and surface *a*⁶, lying under the wheel 10, as shown in Figs. 4 and 9. Electrical contact is made from the battery B' A' through the magnet M³ at the proper time, as will be described, through the metallic contact-surfaces *a*⁴ *a*⁵, concentric with *a*⁶. The binding-posts P P' P³ are all insulated from the metallic frame of the apparatus, as are also springs Sp³ Sp² and the contact-screw 1 on the extension G of the starting-lever D and contact-screws 3 and 4.

K is a star-wheel journaled on the upright

24, with its teeth lying in the path of a pin, 23, on the wheel 10, and adapted, when rotated and whenever lever D is tilted forward in the position shown in Fig. 5, to act upon the lug 16 of the split pocket E E'.

S⁶ (shown in Figs. 5 and 9) is a stop-pin designed to replace the electrical portions of the coin-operating device when a mechanical motor is used in place of an electrical motor, and is so arranged that when the lever is tilted into the position shown in dotted lines in Fig. 5 it will project into the path of fly-fan F³ on the shaft F⁴, connected through a train of gear in the usual manner to a mechanical weight or spring motor.

I will now describe the mode of operation. Suppose the dice D' (seen in Fig. 8) to be in the cup C' and the apparatus to be in the position shown in Figs. 1 and 4. Now drop a coin into the spout J'. It passes down into the cup J, finding its way to the split pocket E E', the first lever, F, failing to stop it in this instance, because the spring 20, acting upon the short arm F', is not sufficiently strong of itself to prevent the entrance of the coin into the spout I. The lever D now tilts upon the fulcrum 14, carrying with it the projecting lug or arm 16, which latter is projected into the path of the teeth of star-wheel K. At the same instant the contact-screw 1 on the other end of the lever D comes into metallic contact with the point 2 on the standard S⁵, and the coin is held in the position shown in Fig. 5 at V². This action closes the circuit from battery B' A' as follows: as shown by the tailless arrows, by wire *w*, binding-post P, wire *w*, point P⁴, battery B' A', binding-post P', magnet M, wire *w*, binding-post P², through the frame of the machine, as shown by the tailless arrows and broken line, to the standard S⁵ and point 2 on the upper end of said standard. This energizes magnet M and causes its armature-lever A' to be drawn forward quickly, thus giving the armature a sudden impetus, and at the same time closing the circuit of battery B A through the motor-magnets as follows: as shown by the feathered arrows, by wire *w*², binding-post P², the frame and the rear end of the armature A', contact-spring Sp, to contact-screw 3, motor-magnets M', wire *w*², commutator-spring Sp', contact 4, wire *w*², binding-post P³, wire *w*², back to battery B A, it being understood, of course, that the impetus given armature A² causes its commutator 6 to allow the commutator-spring Sp' to make contact with 4 on its forward stroke. The armature A² will continue to rotate, and its commutator will automatically make and break the circuit at the point 4. This operation causes the train of gearing 7 8 9 to impart a rotary motion to the large cog-wheel 10 in the direction shown by the large arrow in Fig. 9, and this cog-wheel will continue to rotate until the motor-circuit is broken at the points Sp and 3, which will take place after the wheel 10 has made one complete revolution, as will be hereinafter described.

As the wheel 10 rotates, the first concentric cam, b³, consisting of a series of ratchet-teeth, as clearly shown in Figs. 2 and 3, tends to give to the horizontal lever b' a series of vertical oscillations, thereby imparting to the rod b, and through it and levers 26, link 32, and crank 30, and the forearm and hand H, a series of shaking impulses, the spring 28 (seen in Fig. 8) tending always to restore the arm to its normal position. This action shakes the dice in the box C', and continues until the wheel 10 has made a fraction of a revolution and the end of lever b' brought into contact with the elevated portion of cam b², thereby giving to the forearm a twist to such an extent as to allow the dice to turn upon the table in the position shown in Fig. 8. Just prior to this moment, however, cams a² and c² come into play under the ends of the levers a' and c', the former causing the lever a' to actuate the rod a and to transmit its power through the cord x over the pulley 27 to the fixed arm 31, thereby turning the arm O about its pivot Q, carrying with it the forearm and hand H against the action of the spring 25 in the direction of the left-hand arrow, as shown in Fig. 8. This motion brings the hand to the center of the table. The cam c², acting at the same time as the cam a² on the lever c', transmits its power through the vertical rod c and the cord z, passing over pulley S', which is attached at its other end to the fixed lever 34 on the vertical rod L, carrying the head H². This causes the head to be turned slightly to the left, following the direction of the hand H with the eyes, and the action is opposed by the spiral spring V, attached to the rod L, and having a spring-bearing, 35, against the frame N. Just before the dice are thrown, as already explained, the contact-spring Sp² on the under side of the wheel 10 comes into electrical contact with the contact-surface a⁴, and the circuit is closed from the battery B' A' through the wires w' and table-magnet M³, spring Sp², contact-surface a⁴, frame of the machine, binding-post P², (shown at the upper left-hand corner of Fig. 9,) wire w, magnet M, binding-post P', back to battery B' A'. This action causes the piece of iron T' in the table T to be magnetized until the dice are thrown, thereby magnetizing the dice and holding them near the center of the table, so as to prevent any possibility of their being thrown off the table. In order to prevent the dice from being held together in irregular positions by reason of the magnetism in them when thrown together, I provide an insulated space, i, which breaks the circuit, demagnetizes them for an instant, and allows them to settle in the middle of the table with their faces lying squarely thereon. Immediately after, the circuit is remade in a similar manner through a⁵ and Sp², and the dice are held firmly in position until it becomes necessary to return them again to the box, as will be described. Just after the dice are thrown the raised portion of the cam c² passes under the le-

ver c' , giving to the head an additional change of direction to the left in a manner already described, and thereby causing the head with the eyes to be turned in the direction of the left hand, II' , preparatory to bringing it into action to return the dice to the box. This is brought about by cam d^2 , which now comes into play under the lever d' , transmitting its motion to the rod d , and through the cord y , over pulley S , to the fixed arm R , attached to the pivotal portion Q' of the left-hand arm, O' , thereby causing said arm O' , and with it the hand II' , to be swung toward the dice, as shown by the right-hand arrow in Fig. 8. At the same instant that the cam d^2 begins to act upon lever d' the contact-spring Sp^3 on the under side of the wheel 10 (see Figs. 3, 4, and 9) is brought into contact with the long concentric contact-surface a^6 , and an electrical circuit is closed from the battery $B' A'$, the circuit of said battery having first been broken through the magnet M^3 between the surface a^5 under the wheel 10 and the contact-spring Sp^2 . This circuit between Sp^3 and a^6 is closed as follows: as shown by the side tail arrows, by w^3 , magnet M^2 on the forearm of O' , battery $B' A'$, magnets M , wire w , binding-post P^2 , to the frame of the machine, to the contact-surface a^6 . This magnetizes the hand H' , and as it is swung around in the direction shown by the right-hand arrow in Fig. 8, under the influence of cam d^2 and lever d' , as already explained, the dice are brought into magnetic contact with said hand and are firmly held attached to it. Just prior to this movement, however, the head H^2 has been caused to return to its central position under the influence of cam c^2 and lever c' , which position it maintains until it reaches a point just preceding cam c^3 . While the head is in this central position, as the wheel continues to rotate, the cam e^2 comes into play under the last lever, e' , thereby causing it to transmit motion to rod e , and through cord t to the fixed pulley S^2 , attached to the inner end of the arm O' , giving to said arm a vertical motion. Under the action of the two levers e' and d' and their cams e^2 and d^2 , as already described, a compound motion is given to the hand H' , carrying it to the left and upward. This motion continues and the head continues in the central position until the wheel 10 reaches such a position as to carry the end of the lever c' off the cam c^2 , thus giving to the head a motion to the extreme right and causing the eyes to be turned in the direction of the cup, said cup having been returned to its normal position after the lever a' passed off the cam a^2 in the early part of the operation. The lever a' now rides upon the cam a^3 and causes the right hand, H , bearing the cup C' , to be again carried in the direction of the arrow shown in Fig. 8, while the head is again carried to the left, so that the eyes follow the direction of the cup by the action of the cam c^3 on the lever c' . This continues until the cup is carried under the dice held by the

hand II' , when the circuit is broken between Sp^3 and a^6 , as shown in Figs. 3 and 9, and the hand II' demagnetized, thus allowing the dice D' to drop into the cup C' . c^3 now passes from under the lever c' , and the head is again carried to the right into its normal position, and as the wheel advances the lever a' rides off the cam a^3 and permits the arm O and hand II , bearing cup C' , to return to their normal position. The wheel 10 continues to rotate until the pin 23 on the upper exterior surface comes into contact with one of the teeth of the star-wheel K , causing one of its teeth to strike against the lug 16, attached to the lower end of the pivotal portion of the split pocket $E E'$, acting against the spring 17, thereby releasing the coin V^2 . (Shown in Fig. 5.) The removal of the coin permits the lever D to return to its normal position, (shown in dotted lines,) and if a second coin, V^3 , has been in the meantime put into the pocket J it will be released and the operation repeated. The coin V^2 when released falls into a money-drawer (not shown, but located within the base B) under lock and key.

I do not limit myself to the use of an electrical motor in the propulsion of the mechanical portions of this apparatus, as it is obvious that a spring, weight, or other motor might be used and the operation thereof controlled by means of a stop, S^6 , on the end of the stopping-lever D and a fly-fan, F^3 , connected through a train of gear and the operative portions of said motor. In the event of the use of a mechanical motor the electrical devices would be avoided save those running to magnet M^2 on the forearm of O' and the magnet M^3 beneath the table, the connections of which would be the same as now shown; nor do I limit myself to the use of the coin-operating, starting, and stopping mechanism with my specific apparatus, as it is obvious that this mechanism might be used on any well-known form of apparatus designed to be operated or controlled by the weight of coins—such, for instance, as automatic weighing-scales, miniature steamers and engines, electrical grip-testers, &c.; nor do I limit my apparatus to the sole purpose of the manipulation of dice, as it is obvious that the movements here disclosed might be utilized for many analogous purposes—such, for instance, as the waving of a banner attached to the forearm or hand H , or to either or both arms, or to any use designed to attract the attention of passers-by or to interest any one who would be pleased to see such a device operate, it being my intention to claim, broadly, such an automatic device and its application to all of the uses to which either it as a whole or any of its parts may be put.

What I do claim, and desire to secure by Letters Patent of the United States, is—

1. An automaton having a pivoted arm carrying a box, dice in said box, and a projecting operating-arm connected to the upper part of said pivoted arm for oscillating the same, whereby the dice are thrown from said

box, said parts being combined substantially as described.

2. An automaton having a pivoted forearm carrying a box containing dice, and a rod connected to said forearm for imparting an oscillating motion thereto, so as to shake said dice within said box, said parts being combined substantially as described.

3. An automaton having a pivoted arm with a forearm pivoted therein, the forearm carrying a box containing dice, a projecting operating-arm connected to the upper part of said arm for oscillating the same, and a rod connected to said forearm, said parts being combined substantially as described.

4. An automaton having a pivoted arm carrying a box containing magnetic dice, a projecting arm attached to the upper part of said pivoted arm for oscillating the same, a table with a piece of magnetic material therein, and an electro-magnet for magnetizing said magnetic material, said parts being combined substantially as described.

5. An automaton having a pivoted arm carrying a box containing magnetic dice, a projecting arm connected to the upper part of said pivoted arm for oscillating the same, a table with a piece of magnetic material therein, an electric battery and circuit including an electro-magnet, a wheel with a contact-spring, and electric contact-surfaces having an insulated space, said parts being combined substantially as described.

6. An automaton having an arm with a forearm pivoted therein and carrying dice, a projecting arm for oscillating said arm and a rod for oscillating said forearm, a pivoted arm with a magnetic hand, and an electric battery in circuit with an electro-magnet for energizing said magnetic hand, said parts being combined substantially as described.

7. An automaton having a starting mechanism consisting of a tube adapted to receive a coin, a pocket, a chute leading from said pocket, a split pocket, a weighted lever to which said split pocket is attached, and an upright carrying an electrical contact-maker secured to said lever, said parts being combined substantially as described.

8. An automaton having a starting mechanism consisting of a pocket, a coin-retaining lever in said pocket, a chute leading from said pocket, a weighted lever with a split pocket at one end, and provided with an upright having an electric contact-maker, said parts being combined substantially as described.

9. An automaton having a starting mechanism consisting of a pocket with a coin-retaining lever, a chute, a weighted lever with standard thereon, a split pocket having a lug on its pivoted part, the fixed part of said pocket being secured to said weighted lever, a spring connected to said standard and lug, and an upright on said lever having an electrical contact-maker, said parts being combined substantially as described.

10. An automaton having a tube, a pocket with chute leading therefrom, a split pocket with the lug 16, a starting-lever to which said split pocket is attached, the electrical contact-maker 1, secured to said starting-lever, the star-wheel K, a train of gearing, and the wheel 10, having on its upper face concentric cams, a pivoted arm with forearm carrying box with dice, and rods, arms, cords, and levers connected to said arm and operated by said cams for oscillating the arm, substantially as described.

11. An automaton having a starting mechanism consisting of a tube, a pocket with coin-retaining lever F therein, a chute, the split pocket E E', the pivoted starting-lever D, having the part E of the split pocket secured thereto, and part E' being pivoted to part E and having the lug 16, the standard 18, secured to the lever D, spring 17, connected to standard 18 and lug 16, and the springs 20 and 21, bearing against the lever F, said parts being combined substantially as described.

12. In an automaton, a tube with pocket, a chute leading therefrom, a starting-lever with split pocket having the lug 16 secured thereto, the contact-maker 1, secured to said starting-lever, the standard S⁵, with contact-maker 2, electric batteries and connecting-wires, and the star-wheel K, said parts being combined substantially as described.

13. In an automaton, a starting-lever with split pocket having the lug 16, the contact-maker 1, secured to said starting-lever, a standard with contact-point 2, an electric motor, the star-wheel K, the magnet M, with armature-lever A', and battery B A, with circuit, said parts being combined substantially as described.

14. The combination of the rotary wheel K, the train of gearing 7, 3, and 9, the cog-wheel 10, with concentric cams thereon, pivoted levers operated by said cams, and the arms O O', operated by said levers, said parts being combined substantially as described.

15. In an automaton, the pivoted arm O, having a box carrying dice, the arm 31, connected to said arm O, a cord and a rod connected to said arm 31 and to a pivoted lever, and the wheel 10, having on its upper face a cam adapted to operate said pivoted lever, said parts being combined substantially as described.

16. The pivoted arm O, having the forearm 29 pivoted thereon and carrying the hand H, with the cup having dice therein connected to said arm 29, the rod 32, pivotally connected to said arm 30, the pivoted lever 26, the rod b, connected to said lever and to pivoted lever b', the wheel 10, having on its upper face a cam adapted to operate the lever b', and a motor for operating said wheel 10, said parts being combined substantially as described.

17. The pivoted arm O', with metallic hand H', in combination with the lever R, secured to said arm O', and a cord, y, the rod d, se-

cured to cord *y* and to pivoted lever *d'*, and the wheel 10, with cam thereon adapted to operate said wheels, said parts being combined substantially as described.

5 18. The combination of the arm *O'*, having the metallic hand *H'*, with the cord *t*, secured to said arm; the rod *e*, attached to said cord, and a pivoted lever adapted to impart a rising motion to said rod *e*, whereby the said arm is
10 oscillated, substantially as and for the purpose set forth.

19. The wheel 10, having concentric electric surfaces *a¹* *a⁵*, with an insulated space between the same, a motor for said wheel, a
15 pivoted arm with a box carrying dice, arms, levers, and rods connected to said pivoted arm and operated by cams on said wheel, a table with a piece of magnetic material located therein, and a magnet for magnetizing said
20 magnetic material, said parts being combined substantially as described.

20. An automaton having a head connected to the rod *L*, the coiled spring *V*, with bearing 35, attached to the frame *N*, the arm 34, attached to the rod *L*, the cord *Z*, running over a pulley and attached to the pivoted lever *c*, the wheel 10, with cam on upper surface thereof, adapted to actuate said lever *c*, and a motor for said wheel, said parts being combined
30 substantially as described.

21. An automaton with arm having a forearm pivoted therein, a box carried by said forearm and containing dice, a rod connected

to said forearm for oscillating the same, and the spring 25, secured to the forearm and to the frame of the automaton, said parts being combined substantially as described. 35

22. An automaton having a starting and stopping mechanism controlled by the weight of a coin, arms pivotally connected to a frame, 40 one of said arms having a pivoted forearm carrying a box with dice, and the other arm having a magnetic hand for restoring said dice to the box, levers, cords, and rods connected to said arms, pivoted levers operating
45 said rods, a wheel with cams operating said pivoted levers, a motor for operating said wheel, a table with a piece of iron therein on which dice is thrown, and a magnet for magnetizing said piece of iron at predetermined
50 periods, said parts being combined substantially as described.

23. An automaton having a pivoted arm with a forearm pivoted therein and carrying a box containing dice, a projecting arm for
55 oscillating said arm and a rod for oscillating said forearm, a pivoted arm with a magnetic hand, an electric battery, wires and magnet for energizing said magnetic hand, and rods, cords, and levers for operating said magnetic
60 hand, said parts being combined substantially as and for the purpose set forth.

WM. G. SPIEGEL.

Witnesses:

O. J. KINTNER,
J. F. QUINN.