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PATENTED NOV. 7, 1905.

O. M. LISSAK.

MACHINE FOR ASSEMBLING CARTRIDGES IN CLIPS.

APPLICATION FILED SEPT. 21, 1904.

5 SHEETS—SHEET 1.

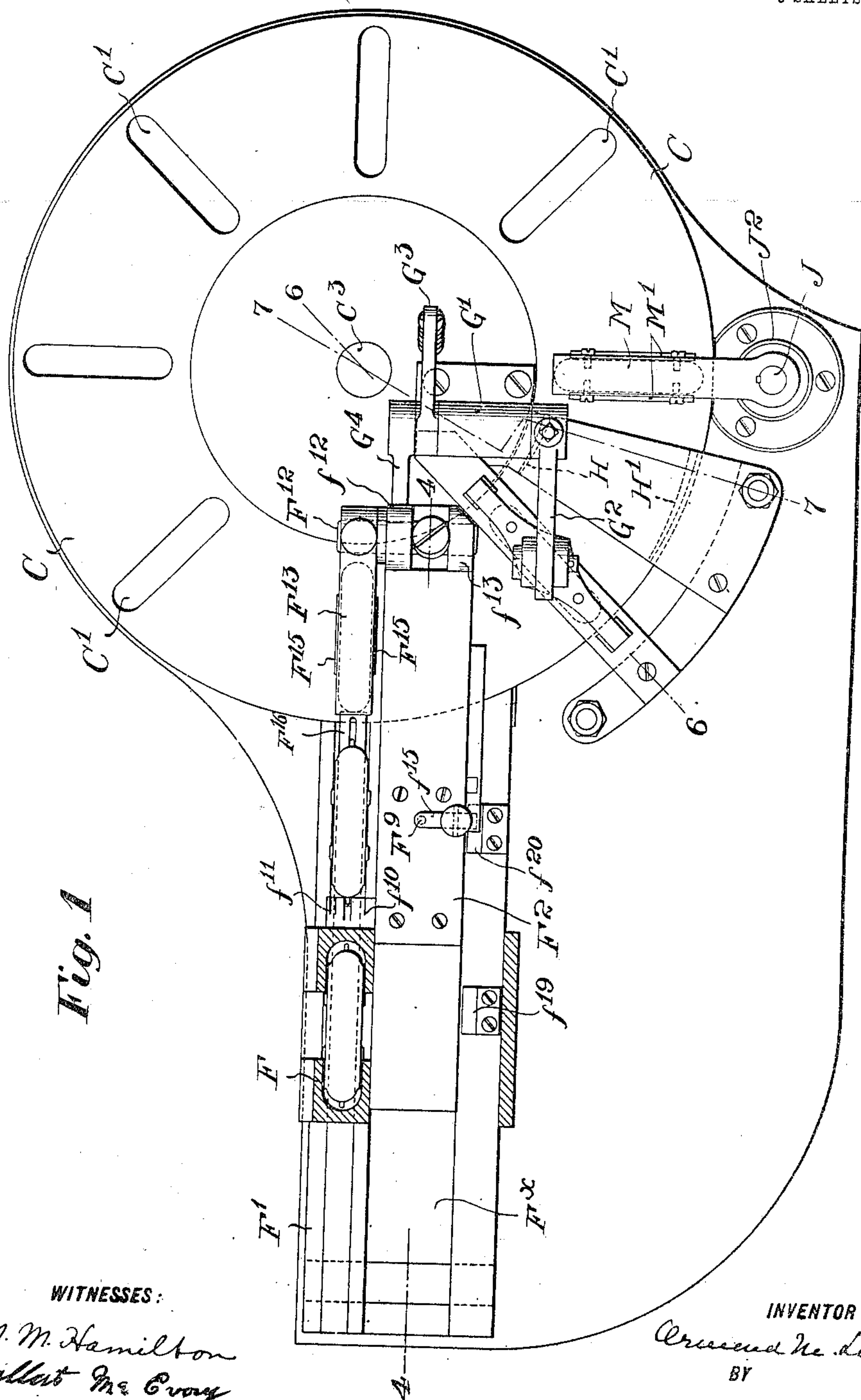


Fig. 1

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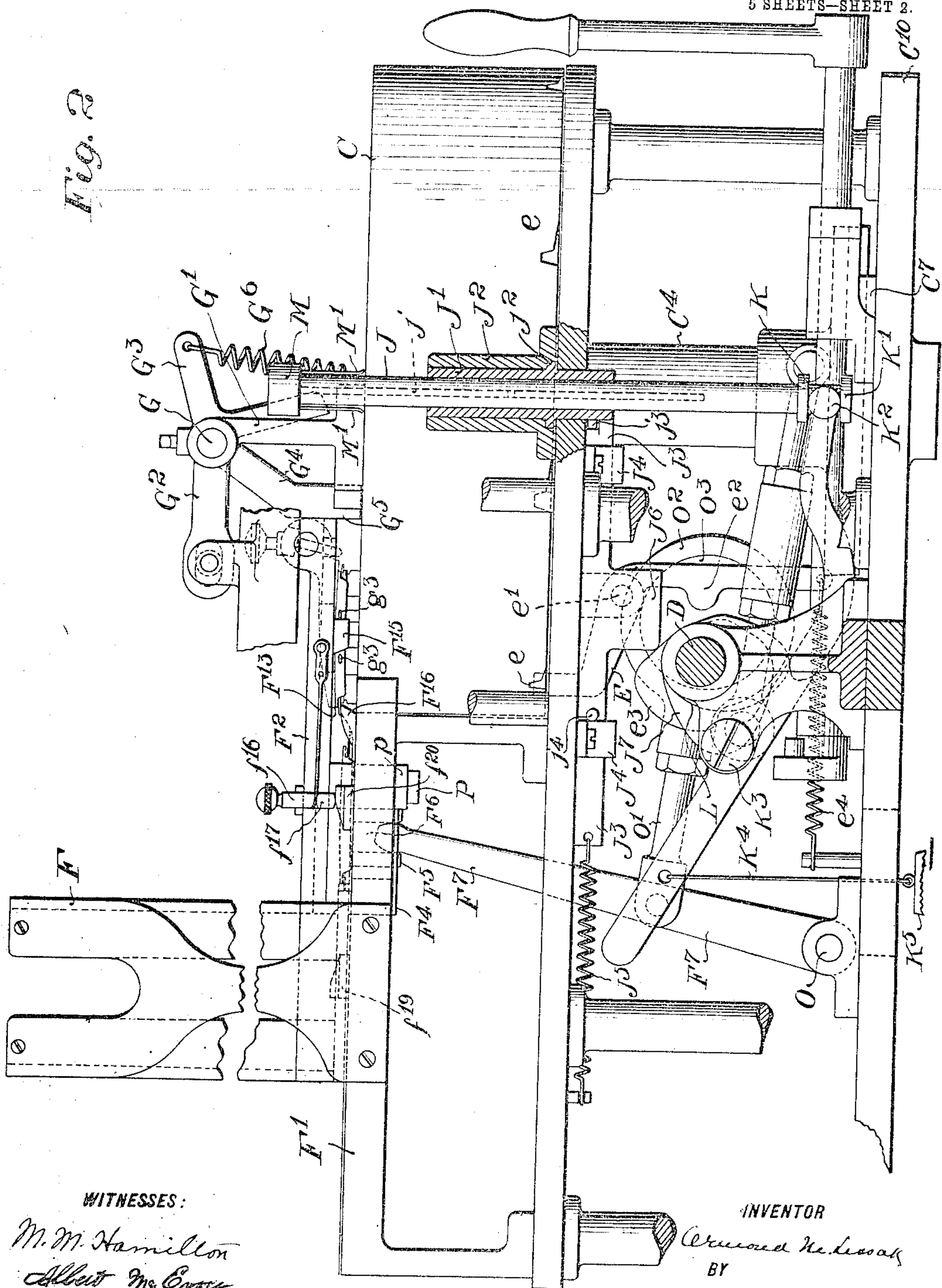
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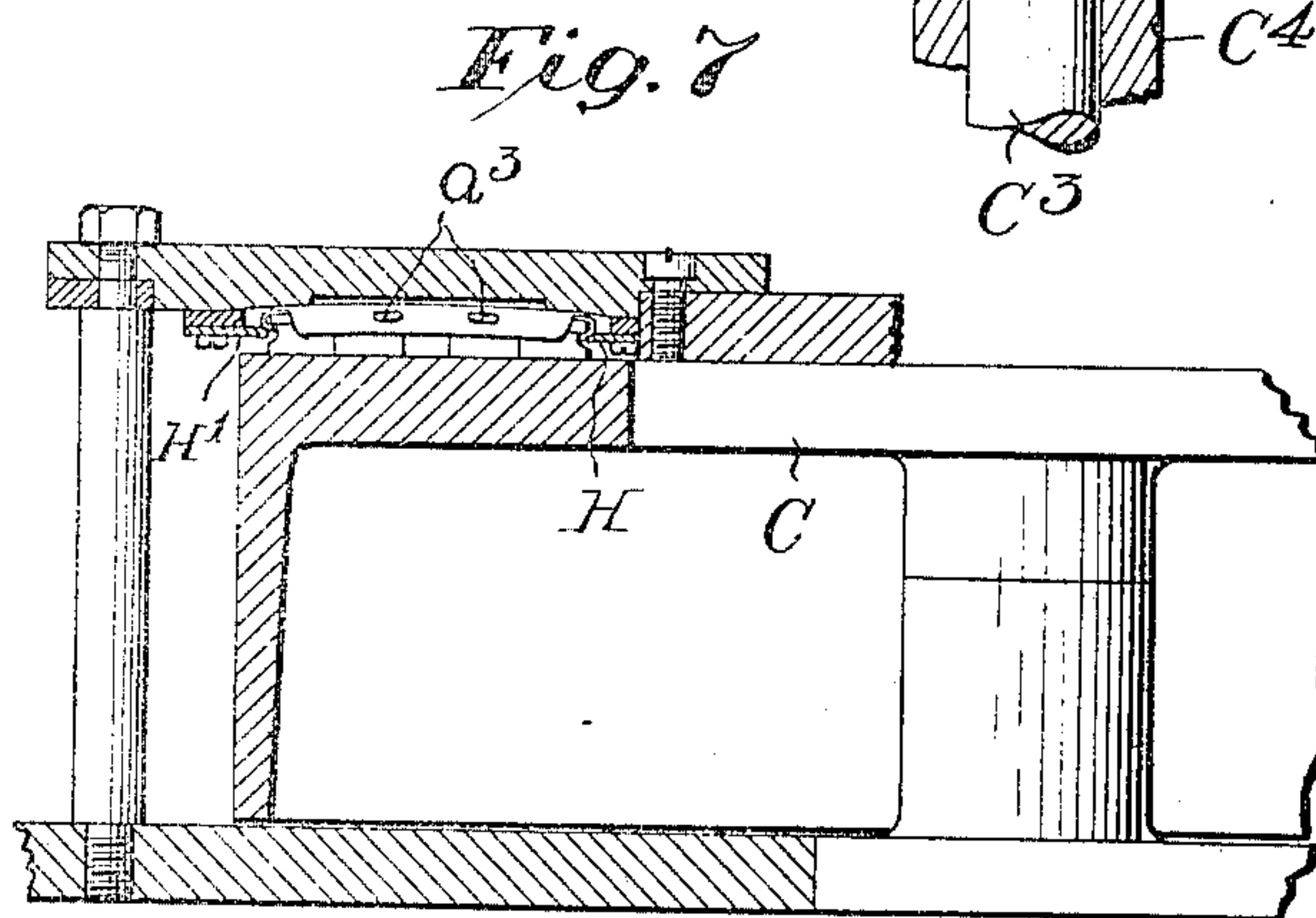
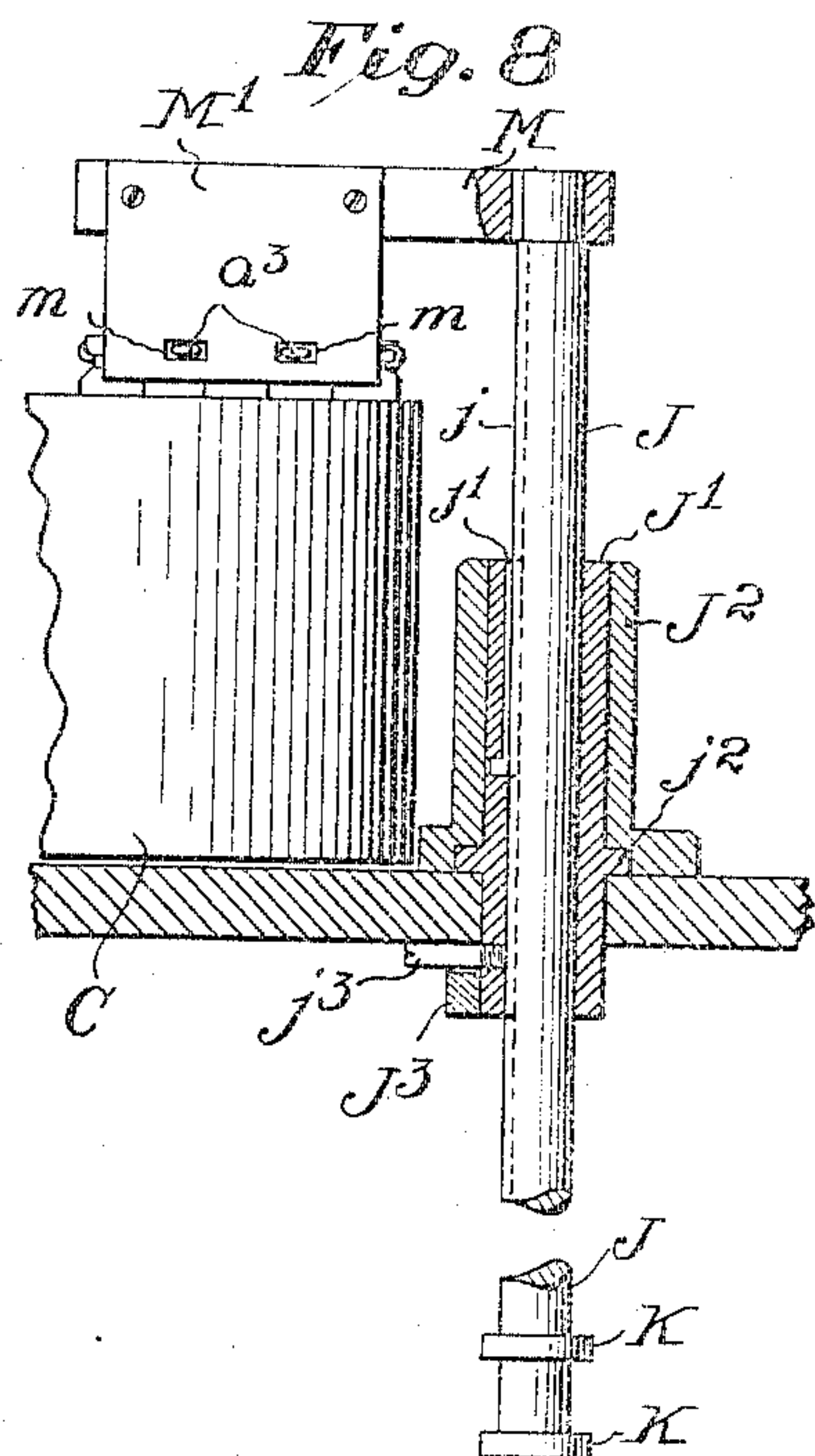
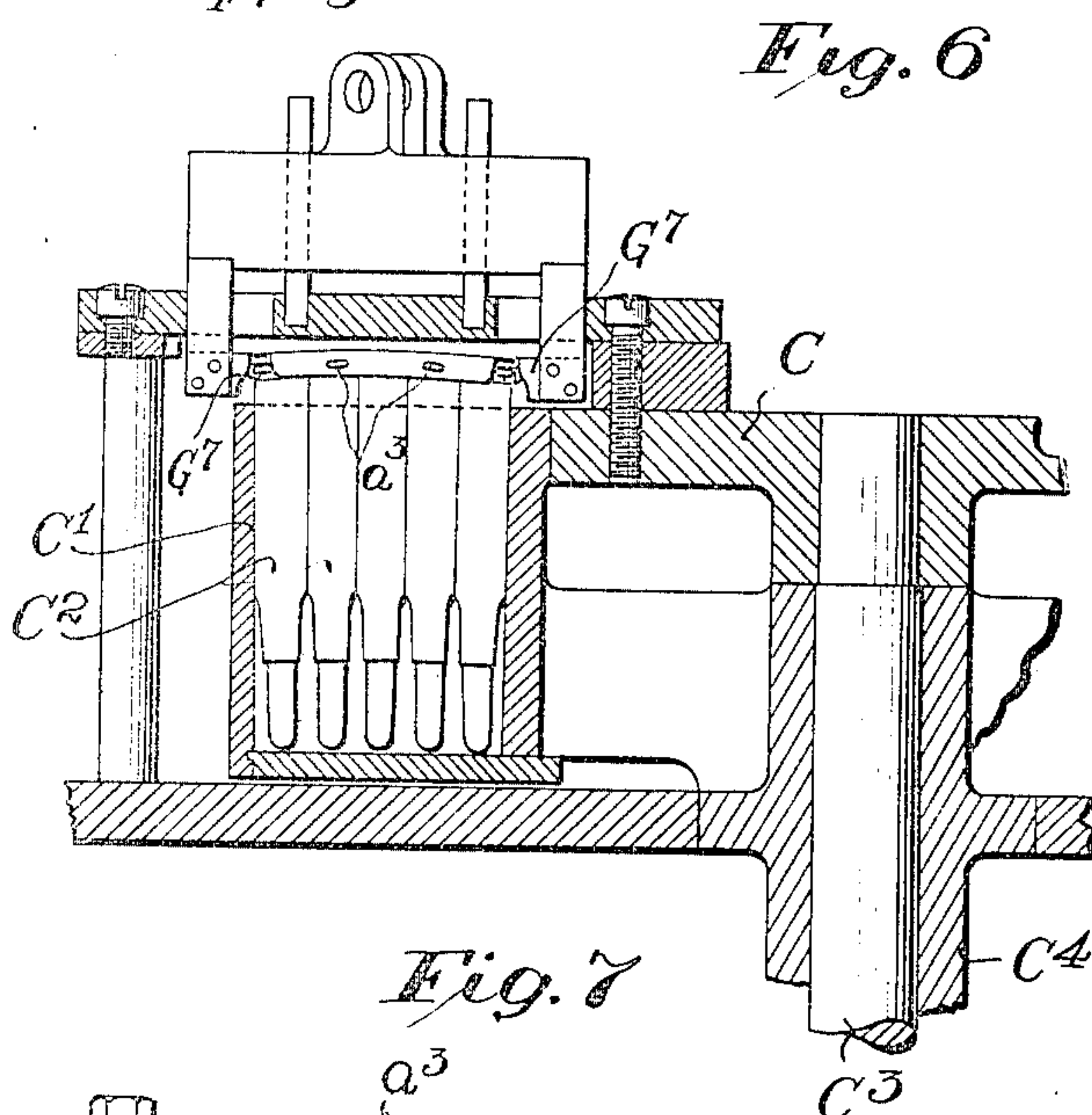
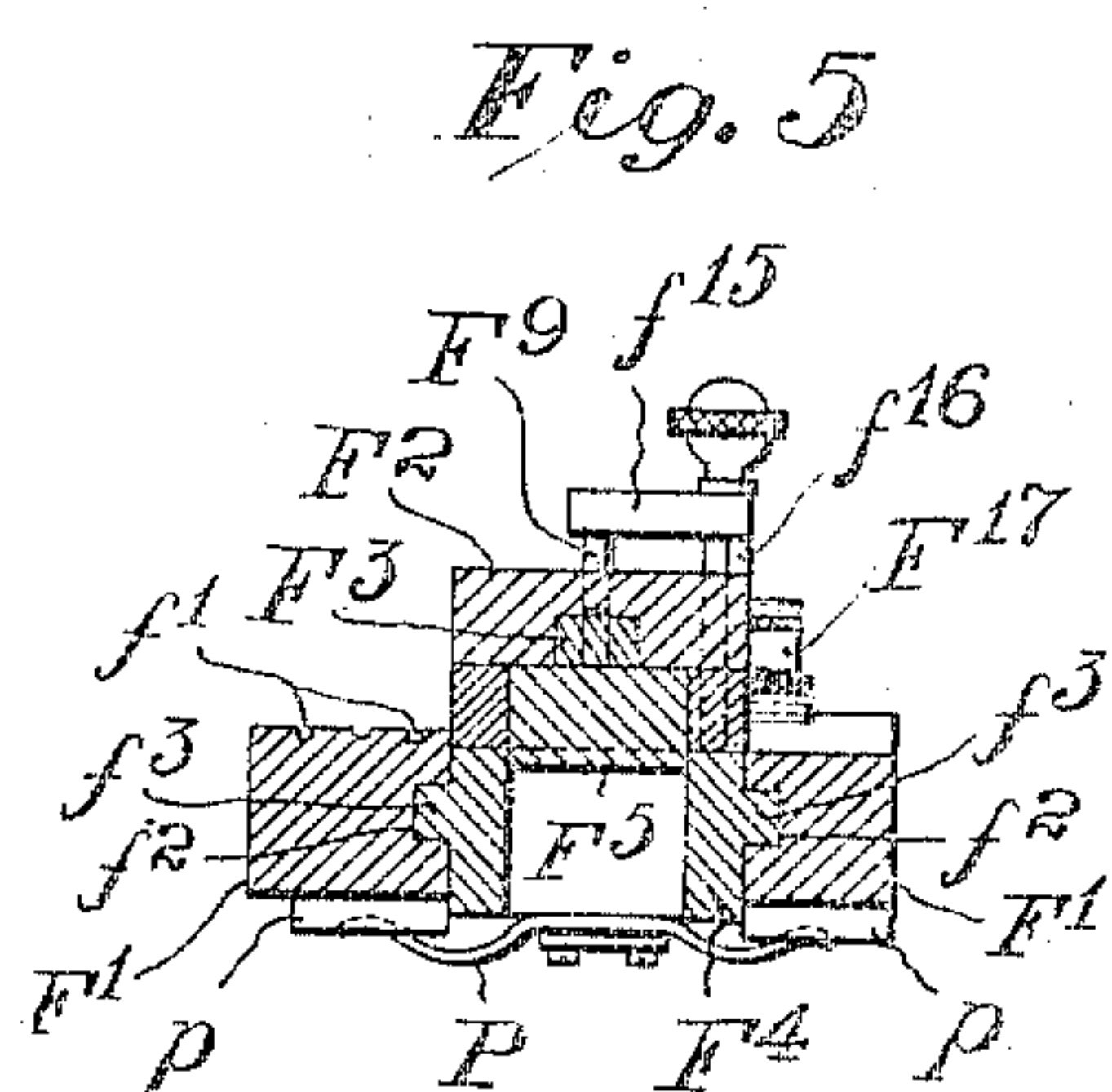
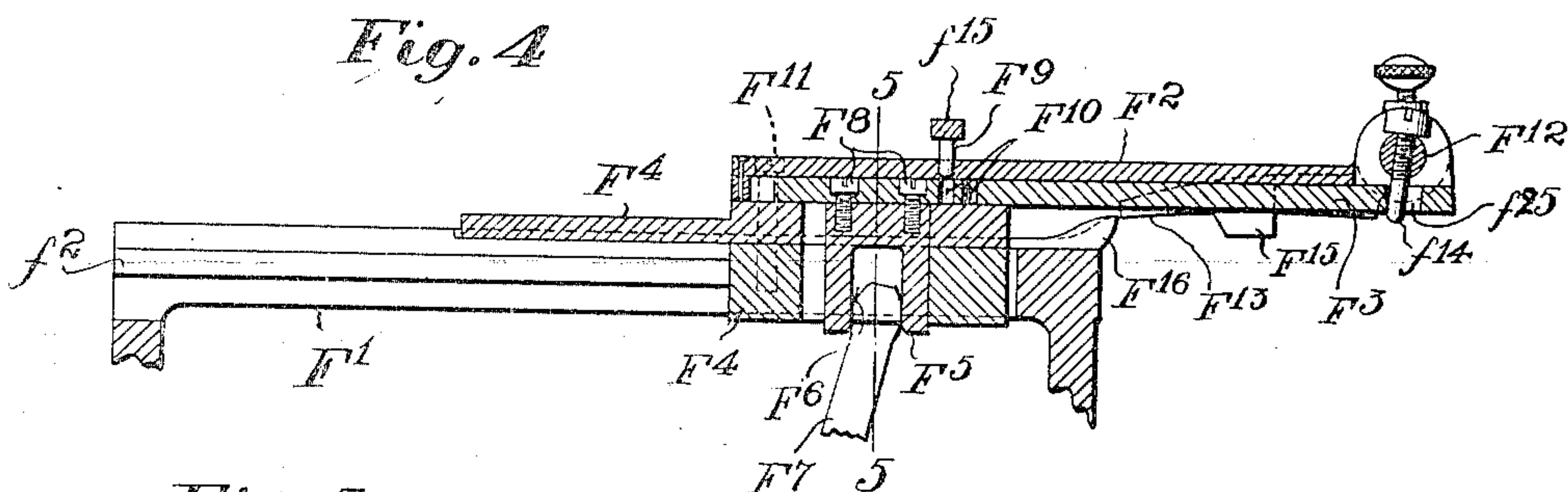
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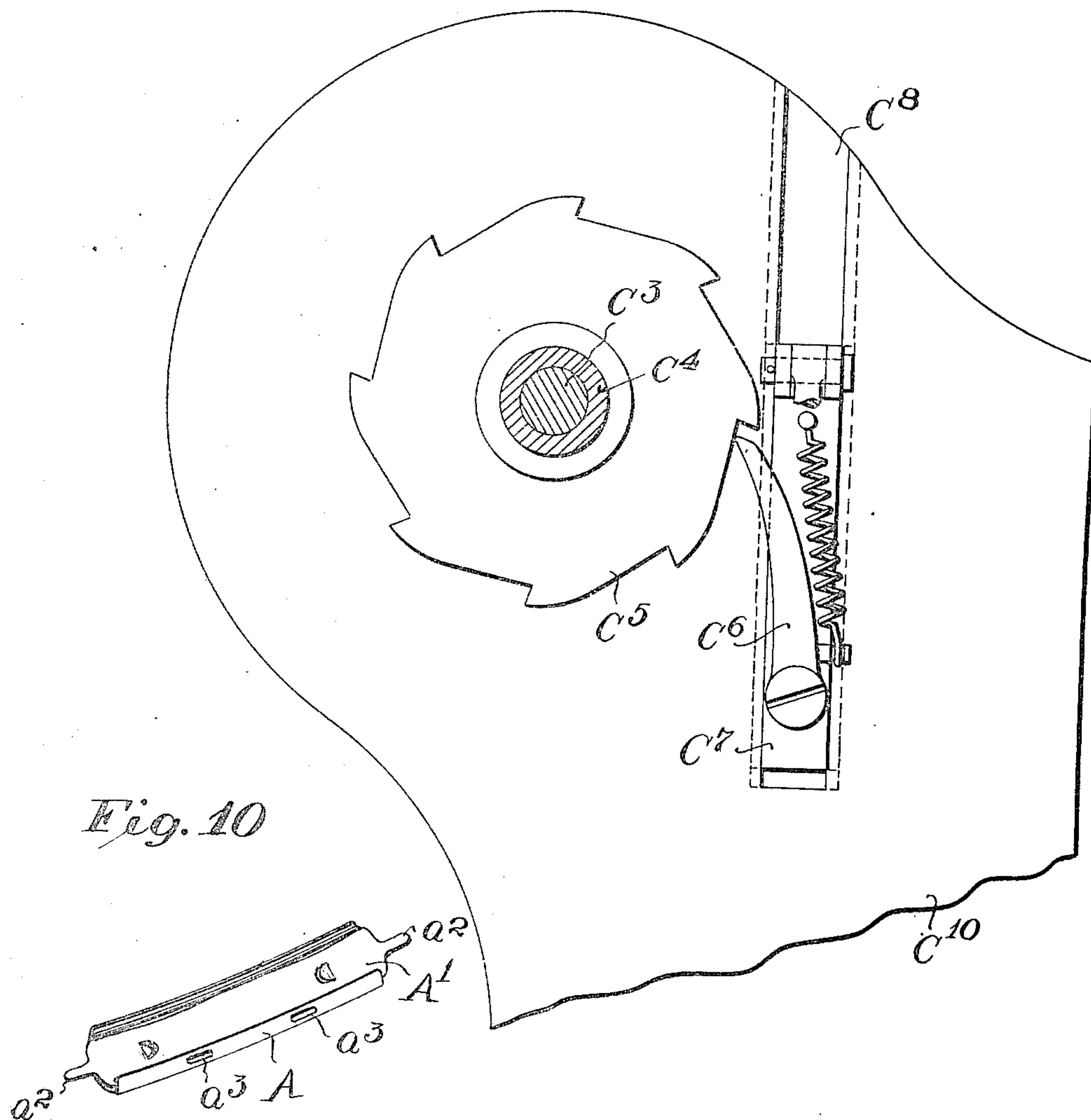
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5 SHEETS—SHEET 5.

Fig. 9



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MACHINE FOR ASSEMBLING CARTRIDGES IN CLIPS.

No. 804,018.

Specification of Letters Patent.

Patented Nov. 7, 1905.

Application filed September 21, 1904. Serial No. 225,312.

To all whom it may concern:

Be it known that I, ORMOND M. LISSAK, a citizen of the United States, residing at Westpoint, county of Orange, and State of New York, have invented a new and useful Improvement in Machines for Assembling Cartridges in Clips, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

The object of my invention is to provide a machine which will automatically insert and secure a plurality of cartridges in a clip so that they may be transported in groups of cartridges and may be used in service in that manner.

I will first describe the embodiment of my invention illustrated in the accompanying drawings and then point out the invention in the claims.

In the drawings, Figure 1 is a plan, part in section. Fig. 2 is a side elevation, part in section. Fig. 3 is an end elevation, part in section. Fig. 4 is a detail section on line 4 4 of Fig. 1. Fig. 5 is a detail section on line 5 5 of Fig. 4. Fig. 6 is a detail section on line 6 6 of Fig. 1. Fig. 7 is a detail section on line 7 7 of Fig. 1. Fig. 8 is a detail, part in section. Fig. 9 is a detail view. Fig. 10 is a perspective view of clip assembled ready to receive cartridges. Fig. 11 is a partial end elevation of Fig. 8.

The clip in which the cartridges are to be assembled consists of the body portion A, which is provided with internal flanges adapted to enter the grooves in the head of the cartridge, and a spring-bar A', against which the heads of the cartridges rest, and by means of which the contact of the groove and the flange is maintained, this spring portion having the projecting tongues a', which when the cartridge is assembled in the clip are bent down over the head into the groove of the cartridge. The exterior side walls of the body of the clip also have lugs a'', the purpose of which will hereinafter appear. The purpose of my machine is to automatically move this clip in place over a series of cartridges and turn the tongues at the end of the springs over against and within the groove in the head of the cartridge. The machine illustrated in the drawings by which this is accomplished is as follows: C is a table having a plurality of slots C', each slot adapted to contain, contiguous to each other, a plurality of cartridges C'', inserted therein with their heads projecting up-

ward beyond the slot, as shown in Fig. 6. C³ is a vertical rod projecting from the bed-plate C¹⁰ of the machine. Surrounding this rod is the sleeve C⁴, upon which the table is supported. At the lower end of this sleeve and secured so as to revolve therewith is the ratchet-wheel C⁵. C⁶ is a pawl operating this ratchet-wheel. This pawl is pivoted to a bar or slide C⁷, supported in a groove C⁸ in the bed-plate of the machine. Connected to this slide or bar C⁷ is the crank C⁹, connected to the main shaft D of the machine. This main shaft is rotated by the pulley D', operated by a belt (not shown) from a source of power. (Not shown.)

As may be seen, in the rotation of the shaft D the pawl C⁶ is moved forward and backward, in the forward movement moving the table a certain distance, and during the period of the retraction of the pawl the table remains at rest, so therefore the table moves during one-half the rotation of the shaft and remains at rest during the other half of the rotation.

In order to maintain the table positively locked during the retraction of the pawl, I provide the following mechanism: On the lower face of the table are a series of orifices e, into which the end of a pivoted dog E is adapted to enter. This dog E is pivoted at e' and has the tailpiece e'' contacting with the cam e''' on the main shaft D. This cam is of such construction that in one portion of its movement it withdraws the dog E from the orifice e, while in another portion of its movement it allows a spring e'', connected to said tailpiece e'', to force the dog into the detent or orifice e. The cam is so placed on the shaft that it operates to release the dog during the forward movement of the pawl and allows the spring to hold the dog in connection with the orifice during the retracting movement of the pawl.

The orifices or detents e, like the grooves C', are placed around the table a distance apart equal to the movement of the table under the action of the pawl upon the ratchet.

F is a hopper having an open bottom and supported upon the bed-plate F' of the machine so that its bottom is above the bed-plate F' a distance equal to the thickness of a clip. This bed-plate F' has notches f' to receive the walls of the clip. Upon this bed-plate F' are mounted what I term the "assembling-plungers," by means of which plunger I force a clip so that it will surround the heads

of a group of cartridges in line with it. There are two plungers, one made up of the parts F^2 and F^4 , the other of the parts F^3 and F^5 . F^x is a groove in the bed-plate F^1 , in the walls of which are longitudinal grooves f^2 . The plunger part F^4 has the tongues or projections f^3 , which rest in the grooves f^2 . These grooves f^2 are parallel to the radial line of the table. The part F^5 has a cut-away portion F^6 , in which one end of a lever F^7 rests. The part F^4 has a cut-away portion in which the part F^5 rests. The part F^5 is connected to a supplemental slide F^3 by means of the screws F^8 and the parts F^2 has the pin F^9 , adapted to enter slots F^{10} in the part F^3 . The part F^2 is connected to part F^4 by screws F^{11} . The part F^4 has at its forward end at one side the projections f^{10} f^{11} , spaced apart to strike the end of the clip between the projecting spring-tongue.

F^{12} is a rock-shaft supported in bearings formed on lugs f^{12} f^{13} , projecting from part F^2 . The pin f^{14} , connected to this rock-shaft, passes through an orifice f^{25} in the part F^3 . Connected to the top of the pin F^9 is the overhang f^{15} , connected to a plunger f^{16} , guided in the slide F^2 , having the overhang portion F^{17} , which is in line with the cams f^{19} and f^{20} at or near each end of the travel of the plunger parts. When the plunger parts are in their retracted position, the portion F^5 of the plunger is in contact with the left-hand wall of the orifice formed in the portion F^4 and pin F^9 is freed from the part F^3 . In the initial movement of the plunger the parts F^5 and F^3 move together until the portion F^5 strikes the right-hand wall of the orifice, the portions F^2 and F^4 remaining at rest. In this manner the part F^3 will tilt the pin f^{14} , rocking the shaft F^{12} . The projection F^{17} will also in this movement pass beyond the cam f^{19} , so that when the part F^5 has reached the limit of its free movement in its slot the pin F^9 will enter the slot f^{10} , and the parts F^2 and F^4 will then also move with the parts F^3 and F^5 . In the forward movement of these parts together the projection F^{17} strikes the forward cam f^{20} , the pin F^9 will then be lifted out of the slot or orifice f^{10} , so that the parts F^3 and F^5 in their initial rearward movement will have a movement free from the parts F^2 and F^4 the distance which the part F^5 can move in its groove. This free movement continues until the projection F^{17} passes down the forward cam f^{20} , when the pin F^9 will again enter an orifice F^{10} in the slide F^3 , and the parts F^2 , F^3 , F^4 , and F^5 will move together until the rear cam is reached, when the pin will be released from its slide. The initial forward movement of the parts F^5 and F^3 free from parts F^2 and F^4 causes part F^3 to act on pin f^{14} and rock shaft F^{12} in one direction. The initial free rearward movement of parts F^3 and F^5 produces a reverse action on shaft F^{12} . The rock-shaft F^{12} carries an arm F^{13} , which has inde-

pendent ears or lugs F^{15} , which are adapted to enter between the lugs a^3 a^3 , projecting from the side walls of the body of the clip.

Movement is given to the plunger mechanism in the following manner: The lever F^7 , as before described, is pivoted at its lower end O to the bed of the machine. Inter-medially it is pivotally connected with a rod O' , which rod O' is connected to or forms a projection from an eccentric-strap O^2 , surrounding an eccentric O^3 on the main shaft, which eccentric is so placed on the shaft as to give a forward movement to the lever while the table is at rest and a retracted movement while the machine is in motion.

When the parts just described are in their retracted position, the lower clip in the hopper is in line with the part F^4 , so that its projecting portions f^{10} and f^{11} are on opposite sides of the projecting tongue of the spring. When motion is initially given to the plunger mechanism, a clip which is in line with the projecting portion is moved forward, the parts F^3 and F^5 having a certain free movement independent of the parts F^2 and F^4 tilt the lever F^{13} , which, so far as the initial clip is concerned, has no effect. A further movement of the parts together forces the initial clip into alinement with the initial retracted position of the lever F^{13} . In the next forward movement of the parts a second clip will be pushed forward, and the lugs on the lever F^{13} will lie between the lugs on the exterior of the wall of the first-mentioned clip and pull it forward, the pin F^9 being released near the end of the stroke, as before described. On the return stroke of the parts the rock-shaft will be tilted in the opposite direction, releasing the projections from the lever F^{13} from between the lugs on the clip.

In practice the intermittent motion of the table is such that when the table is at rest one of the orifices C' is in line of travel of the clips under the influence of the plunger mechanism. The operation then is as above described, the clip being forced by the plunger mechanism in line with the retracted position of the lever F^{13} , and on the subsequent forward movement of the plunger mechanism this clip is grasped by the lever F^{13} and carried over the heads of the cartridges and the flange in the clip enters the grooves in the heads of the cartridges. F^{16} is a fixed guide in line of travel of the clips under the action of the plunger mechanism and positively guides the clips in line with the heads of the cartridges.

In order to prevent with certainty the parts F^2 and F^4 moving with the parts F^3 and F^5 , as described, I provide the following construction: Connected to the part F^4 is a leaf-spring P, the outer ends of which are provided with the shoes p , which bear against the under surface of the bed-plate F^1 , so that the part F^4 and through it the part F^2 is prevented from

moving by frictional contact of the part F^5 with the part F^4 .

I turn the tongues at the end of the clip-spring at right angles to their initial position in the following manner: G is a rock-shaft supported upon a bracket G' from the frame of the machine. Upon this rock-shaft are the pivoted arms G^2 , G^3 , and G^4 . The arm G^4 has a depending portion G^5 in line with the end of the part F^2 near its outermost position. Connected to the arm G^2 are two vertical cams G^7 , which are adapted in their movement to pass on opposite ends of the clip, striking the projecting tongues of the spring. Connected to the arm G^3 is a spring G^6 . When the plunger mechanism reaches nearly its outermost position—that is, when the lever F^{13} has moved the clip in coöperative relation with the group of cartridges—the end of said part F^2 strikes the end G^5 of the lever G^4 , rocking the arm G^2 , moving its cams G^7 vertically, and striking the tongues or projections from the spring and moving them at right angles. The last-mentioned mechanism is placed beyond the first-mentioned mechanism the distance of the movement of the table.

I bend the projecting tongue over the head into the groove of the cartridge in the following manner: In the intermittent movement of the table beyond the position where the clip is placed upon the cartridges and the tongues bent over I have in the frame of the machine in line with opposite ends of the groove C' two wedge-cams H and H' in line with the depending ends or tongues of the spring, and in the movement of the table the depending ends of the spring strike these wedge-shaped cams H and H' , and the spring is bent into the groove of the cartridge.

The next step in my machine is the removal of the clip with its contained cartridges from the groove C' and its delivery into a chute. This occurs at a portion of the table beyond where the clips have been placed on the cartridges and the projecting tongues of the spring bent into the grooves in the heads of the cartridge. I accomplish this in the following manner: J is a spindle having an exterior groove or splineway j , in which rests a feather or spline j' of a sleeve J' . This sleeve is secured by a flange j^2 in the bearings J^2 . This sleeve has a pin j^3 , which works in a detent in the rod J^3 , working in bearings J^4 on the bed-plate of the machine, in which bearings it can slide. A spring J^5 normally holds the rod J^3 in its retracted position. A pin j^4 , contacting with the lug J^4 , limits the retracted movement of the bar J^3 . Projecting from the bar J^3 is a lug J^6 , which contacts with a cam J^7 on the main shaft of the machine. This cam gives the bar an intermittent movement and is so timed to give this intermittent movement while the table is in motion.

The lower end of the spindle J has the col-

lars $K K'$, between which rests the bifurcated end of the arm K^2 . The arm K^2 is pivoted at K^3 and has at its opposite end cord K^4 and weight K^5 . In contact with the arm is a cam L on the shaft of the machine which moves the arm in one position of the cam against the weight, while the weight moves the arm in the opposite direction. The cam is so adjusted and constructed that these movements both take place while the table is at rest.

At the upper end of the spindle J is the projecting arm M , carrying the depending spring-plates M' , spaced apart the width of the clip, and provided with orifices m , adapted to engage the projecting lugs a^3 on the outer walls of the cartridge-clip. This arm M and the frame M' are located in the machine, so that one of the orifices C' will be in line with the plates M' when the table is at rest, which, as may be seen by the drawings, is beyond the point where the clips are placed upon the cartridges and the tongues bent in position. As before described, the vertical movement given to the spindle is given while the table is at rest. Under the action of the cam the spindle descends against the action of the weight, engaging the orifices m with the lugs on the clip. The cam then releases the lever, and the weight lifts the spindle, the plate, and with it the clip and contained cartridges, free from the orifices C' . The table then moves forward, and a swinging movement is given to the spindle, as before described, which causes the spindle, with its clip and contained cartridges, to swing. In swinging the lower ends of the cartridges strike the projecting end of the chute N , which releases the cartridge-clip from the plate, and the clip and cartridges fall down the chute.

Having now fully described my invention, what I claim, and desire to protect by Letters Patent, is—

1. In a machine for assembling cartridges in a clip, in combination, a plunger, a second plunger having a cut-away portion in which a portion of the first plunger rests and has a limited free movement, means to reciprocate said first plunger, a clip-engaging device carried by the second plunger, connection between the plungers whereby, in the initial movement of the first plunger in one direction, said device is moved into operative position and in the initial movement in the opposite direction is moved out of operative position, a pin adapted to connect the two plungers, and a cam at each end of the travel together of said plungers adapted to engage and disengage said pin connection.

2. In a machine for assembling cartridges in a clip, in combination, a plunger, a guide arranged to hold the clip in line with said plunger, a clip-engaging device carried by said plunger, a second plunger, means to reciprocate said plungers, connection between said plungers whereby the second plunger has an

initial movement in each direction independent of the first plunger, and means during said initial movement in one direction to bring said clip-engaging device into operative position and in the other direction out of operative position, whereby a clip is first moved by the clip-engaging portion of the first plunger in line with the clip-engaging device of the said plunger.

3. In a machine for assembling cartridges in a clip, in combination, a support adapted to contain a plurality of cartridges, a guide, adapted to contain clips, in line with the heads of said cartridges, a plunger carrying a clip-engaging device, means to move said clip-engaging device into operative position to engage a clip in said guide, and means to move said plunger forward to carry the clip across the heads of the cartridges.

4. In a machine for assembling cartridges in a clip, in combination, a support adapted to contain a plurality of cartridges, a guide, adapted to contain clips, in line with the heads of said cartridges, a plunger carrying a clip-engaging device, means to move said clip-engaging device into operative position to engage a clip in said guide, means to move said plunger forward to carry the clip across the heads of the cartridges, means to release said clip-engaging device at the extreme forward movement of the plunger, and means to return said clip-engaging device to its initial position.

5. In a machine for assembling cartridges in a clip, in combination, a support adapted to contain a plurality of cartridges, a guide, adapted to contain clips, in line with the heads of the cartridges, a plunger having a clip-engaging portion to move said clips, said plunger having a clip-engaging device, in advance of the engaging portion of said plunger, a second plunger and connection between said plungers, whereby the second plunger has an initial movement independent of the first plunger, means to move said clip-engaging device into operative position to engage a clip in said guide, and means to move said plungers forward to carry the clips across the heads of the cartridges, whereby the first plunger moves a clip in line with clip-engaging device and the clip-engaging device positively carries the clip across the heads of the cartridges.

6. In a machine for assembling cartridges in a clip, in combination, a support adapted to contain a plurality of cartridges, a guide, adapted to contain clips, in line with the heads of the cartridges, a plunger having a clip-engaging portion, said plunger having a clip-engaging device, in advance of the engaging portion of said plunger, a second plunger and connection between said plungers whereby the second plunger has an initial movement independent of the first plunger, means to move said clip-engaging device into operative position to engage a clip in said guide, means to

move said plungers forward to carry the clips across the heads of the cartridges, means to release said clip-engaging device at the extreme forward position of the first plunger and means to return said clip-engaging device to its initial position, whereby the first plunger moves a clip in line with clip-engaging device and the clip-engaging device positively carries the clip across the heads of the cartridges.

7. In a machine for assembling cartridges, in a clip, in combination, a plunger, a rock-shaft supported thereby, an arm carried by said rock-shaft, ears or lugs spaced apart on said arm and adapted to enter between lugs on a clip, a pin projecting from said rock-shaft, a second plunger, an orifice in said plunger in which said pin rests and connection between said plungers whereby initially the second plunger has a limited movement independent of the first plunger, whereby initially the shaft is rocked and the arm brought into operative or inoperative position.

8. In a machine for assembling cartridges in a clip, in combination, a guide adapted to contain clips having projecting lugs, a plunger, means to reciprocate said plunger in line with said clips, a rock-shaft supported by said plunger, an arm carried by said rock-shaft, ears or lugs spaced upon said arm and adapted to enter between the lugs on said clip, a pin projecting from said rock-shaft, a second plunger, there being an orifice in said second plunger in which said pin rests and connection between said plungers whereby initially the second plunger has a limited movement independent of the first plunger, whereby initially the shaft is rocked and the arm brought into operative or inoperative position.

9. In a machine of the character described, in combination, a plunger having a rock-shaft, a clip-engaging device carried by said rock-shaft, a pin projecting from said shaft, a second plunger, an orifice in said plunger in which said pin rests and connections between said plungers whereby the second plunger has a limited movement independent of the first plunger whereby initially the shaft is rocked and the clip-engaging device moved into operative or inoperative position.

10. In a machine of the character described, in combination, a guide adapted to contain clips, a plunger, means to reciprocate said plunger in line with said clips, a rock-shaft supported by said plunger, a clip-engaging device carried by the rock-shaft, a pin projecting from said rock-shaft, a second plunger, there being an orifice in the second plunger in which said pin rests, and connection between said plungers, whereby initially the second plunger has a limited movement independent of the first plunger, whereby initially the shaft is rocked and the clip-engaging device moved into operative or inoperative position.

11. In combination, a table having slots each

adapted to contain a plurality of cartridges, a guide, adapted to contain clips, in line with the heads of said cartridges in one position of the table, a plunger carrying a clip-engaging device, means to move said clip-engaging device into operative position to engage a clip in said guide, operative mechanism and connections between the operative mechanism and said table and plunger adapted respectively to give said table an intermittent rotary movement and the plunger an intermittent reciprocating movement, the connections being so arranged as to give each a movement when the other is at rest.

12. In combination, a table, having slots each adapted to contain a plurality of cartridges, a guide, adapted to contain clips, in line with the heads of the cartridges in one position of the table, a plunger having a clip-engaging portion adapted to move said clips, a clip-engaging device carried by said plunger in advance of the clip-engaging portion of said plunger, a second plunger, connection between said plungers whereby the first plunger has an initial movement independent of the second plunger, means intermittently to move said clip-engaging device into operative position to engage a clip in said guide, means intermittently to move said plungers forward to carry the clips across the heads of the cartridges, and means to intermittently rotate said table.

13. In combination, a table having slots each adapted to contain a plurality of cartridges, a guide adapted to contain clips, in line with the heads of the cartridges in one position of the table, a plunger having a clip-engaging portion adapted to move said clip, a clip-engaging device, carried by said plunger in advance of the clip-engaging portion of said plunger, a second plunger, connection between said plungers, whereby the first plunger has an initial movement independent of the second plunger, means to intermittently move said clip-engaging device into operative position to engage a clip in said guide, means to intermittently move said plungers forward to carry the clips across the heads of the cartridges, means to intermittently release said clip-engaging device at the extreme forward movement of said plunger, means to intermittently return said clip-engaging device to its initial position, and means to intermittently rotate said table.

14. In a machine of the character described, in combination, two reciprocating plungers, adapted to operate substantially as and for the purpose described, a pin carried by one plunger and orifices in the other plunger in which said pin is adapted to rest, cams, one adjacent to each end of the path of movement of the plunger, said cams being arranged to release the pin from an orifice during the movement in one direction and to allow said pin to enter

the orifice during the movement in the other direction.

15. In a machine of the character described, in combination, two reciprocating plungers, adapted to operate substantially as and for the purpose described, a pin carried by one plunger and orifices in the other plunger, said pin having an overhang, a plunger connected to said overhang, cams, one adjacent to each end of the path of movement of the plunger in line with the overhang portion, said cams being arranged to release the pin from an orifice during the movement of the plunger in one direction and allowing said pin to enter an orifice during the movement in the other direction.

16. In a machine of the character and for the purpose described, in combination, a table, means to give said table a rotary movement, a slot in said table adapted to support a plurality of cartridges assembled in a clip provided with depending tongues, wedge-shaped cams in lines of travel of opposite end of said slot and adapted in the movement of the table to be struck by said tongues.

17. In a machine of the character described, as a means of removing the cartridges assembled in the clips, in combination, an arm, depending spring-plates, spaced apart the width of a clip, means to give said arm a downward, upward and a swinging movement, and a fixed piece in line of movement of the cartridges carried by the plate in its swinging movement.

18. In a machine of the character described, as a means of removing the cartridges assembled in the clips, in combination, a device adapted to engage the assembled cartridges, means to give said device successively a downward, upward and a swinging movement, and a fixed device in line with and adapted in the swinging movement of the device to be struck by the cartridges and release the assembled cartridges from said device.

19. In a machine of the character described, as a means of removing the cartridges assembled in the clips, in combination, a spindle supported so as to move vertically and oscillate, an engaging device carried by said spindle and adapted to engage the clip and assembled cartridges, means to give said spindle a movement up and down, and means to oscillate said spindle.

20. In a machine of the character described, as a means of removing the cartridges assembled in the clips, in combination, a spindle supported so as to move vertically and oscillate, an engaging device carried by said spindle and adapted to engage the clip and assembled cartridges, means to give said spindle successively a vertical movement and to oscillate said spindle.

21. In a machine of the character described, as a means of removing the cartridges assembled in the clips, in combination, a spindle sup-

ported so as to move vertically and oscillate, spring-plates spaced apart the width of the clip carried by said spindle and adapted to engage the clip and assembled cartridges, means
5 to give said spindle a vertical movement up and down, and means to oscillate said spindle.

22. In a machine of the character described, as a means of removing the cartridges assembled in the clips, in combination, a spindle supported so as to move vertically and oscillate,
10 spring-plates spaced apart the width of the clip carried by said spindle and adapted to engage the clip and assembled cartridges, means to give said spindle successively a vertical
15 movement up and down, and to oscillate said spindle.

23. In a machine for the purpose of assembling cartridges in a clip, in combination, a table provided with a slot adapted to contain a
20 plurality of cartridges, a guide, adapted to contain a clip in line with the heads of the cartridges, and mechanism to force the clip over the heads of the cartridges.

24. In a machine for the purpose of assembling cartridges in a clip, provided with projecting tongues, in combination, a rotary table provided with a slot adapted to contain a plurality of cartridges, mechanism to force a clip
25 upon the heads of the cartridges, mechanism to turn the projecting tongues at right angles, said mechanisms being supported in position to act successively with respect to the cartridges in the slot, on the rotation of the table,
30 means to operate said mechanisms, and means to rotate the table.

25. In a machine for the purpose of assembling cartridges in a clip, provided with projecting tongues, in combination, a rotary table provided with a slot adapted to contain a
40 plurality of cartridges, mechanism to force a clip upon the heads of the cartridges, mechanism to turn the projecting tongues at right angles, said mechanisms being supported in position to act successively with respect to the cartridges in the slot, on the rotation of the table,
45 mechanism intermediate of the clip-discharging mechanism and tongue-bending mechanism to force said tongues into the grooves in the heads of the cartridges, means to operate said mechanisms and means to rotate said table.

26. In a machine for the purpose of assembling cartridges, in a clip, in combination, a rotary table provided with a plurality of slots
55 each adapted to contain a plurality of cartridges, a guide adapted to contain clips in line with said slots in the table, successively, at the dwell of the table, and means to force a clip over the cartridges during the dwell of the table.

27. In a machine for the purpose of assembling cartridges in a clip provided with projecting tongues, in combination, a rotary table provided with a plurality of slots, each adapted
65 to contain a plurality of cartridges, mechanism

to force a clip upon the heads of the cartridges, mechanism to turn the projecting tongues at right angles, said mechanisms being supported to act successively with respect to the cartridges in a slot and simultaneously
70 with respect to the cartridges in successive slots, means to cause said mechanisms to act simultaneously, and means to rotate said table.

28. In a machine for the purpose of assembling cartridges in a clip, provided with projecting tongues, in combination, a rotary table provided with a plurality of slots, each adapted to contain a plurality of cartridges, mechanism to force a clip upon the heads of the cartridges, mechanism to turn the projecting
75 tongues at right angles, said mechanisms being supported in position to act successively with respect to the cartridges in a slot, and simultaneously with respect to the cartridges in successive slots, means to operate said
80 mechanisms, and means to rotate said table.

29. In a machine for the purpose of assembling cartridges in a clip provided with projecting tongues, in combination, a rotary table provided with a plurality of slots, each adapted to contain a plurality of cartridges, mechanism to force a clip upon the heads of the cartridges, mechanism to turn the projecting
85 tongues at right angles, mechanisms to force said tongues into the grooves in the heads of the cartridges, said mechanisms being supported to act simultaneously with respect to the cartridges in successive slots, and successively with respect to the cartridges in a slot and means to cause said mechanisms to act.

30. In a machine for the purpose of assembling cartridges in a clip, provided with projecting tongues, in combination, a rotary table provided with a plurality of slots adapted to contain a plurality of cartridges, mechanism
90 to force a clip upon the heads of the cartridges, mechanism to turn the projecting tongues at right angles, mechanism to force said tongues into the grooves in the heads of the cartridges, mechanism adapted to remove
95 said assembled cartridges from the table, said mechanisms being supported to act successively with respect to the cartridges in a slot, and simultaneously with respect to the cartridges in successive slots, means to cause said
100 mechanisms to act, and means to rotate said table.

31. In a machine for the purpose of assembling and securing cartridges in a clip, in combination, a table provided with a slot adapted to receive a plurality of cartridges, means to give said table a step-by-step movement, mechanism adjacent to the slot in one position of the table, to force a clip over the heads of the cartridges, mechanism to remove the clip
105 and contained cartridges adjacent to the slot at a subsequent position of the table, and means to operate said mechanisms during the dwell of the table.

32. In a machine for the purpose of assembling-- 13

bling and securing cartridges in a clip, in combination, a table provided with a slot adapted to receive a plurality of cartridges, means to give said table a step-by-step movement, mechanism, adjacent to the slot in one position of the table, to force a clip over the heads of the cartridges, mechanism, adjacent to the slot at another position of the table, to force down the clip-tongues, mechanism, adjacent to the slot at a third position of the table, to remove the clip and contained cartridges, and means to operate said mechanisms during the dwell of the table.

33. In a machine for the purpose of assembling and securing cartridges in a clip, in combination, a table provided with a slot adapted to receive a plurality of cartridges, means to give said table a step-by-step movement, mechanism, adjacent to the slot in one position of the table, to force a clip over the heads of the cartridges, mechanism, adjacent to the slot at another position of the table, to force down the clip-tongues, mechanism, adjacent to the slot at a third position of the table, to remove the clip and contained cartridges, means to operate said mechanisms during the dwell of the table, and a device in line with the clip, in the movement of the table between the tongue-turning mechanism and the discharging mechanism to bend inward the tongue into the groove in the cartridge-head.

34. In a machine for the purpose of assembling and securing cartridges in a clip, in combination, a table provided with a plurality of slots spaced apart, each adapted to receive a plurality of cartridges, means to give said ta-

ble a step-by-step movement the distance between slots, mechanism to force a clip over the heads of the cartridges, mechanism to turn the tongues of the clip downward, and mechanism to remove the clip and contained cartridges, said mechanisms being adjacent to the table and spaced apart the distance between slots, and means to simultaneously operate said mechanisms during the dwell of the table.

35. In a machine for the purpose of assembling and securing cartridges in a clip, in combination, a table provided with a plurality of slots, spaced apart, each adapted to receive a plurality of cartridges, means to give said table a step-by-step movement the distance between slots, mechanism to force a clip over the heads of the cartridges, mechanism to turn the tongues of the clip downward, and mechanism to remove the clip and contained cartridges, said mechanisms being adjacent to the table and spaced apart the distance between slots, means to simultaneously operate said mechanisms during the dwell of the table, and a device in line with the clip in the movement of the table, between the tongue-turning mechanism and the discharging mechanism, adapted to bend inward the tongue into the groove in the cartridge-head.

In testimony of which invention I have hereunto set my hand, at West Point, on this 2d day of September, 1904.

ORMOND M. LISSAK.

Witnesses:

WM. WARD,
F. W. COE.