

March 23, 1926.

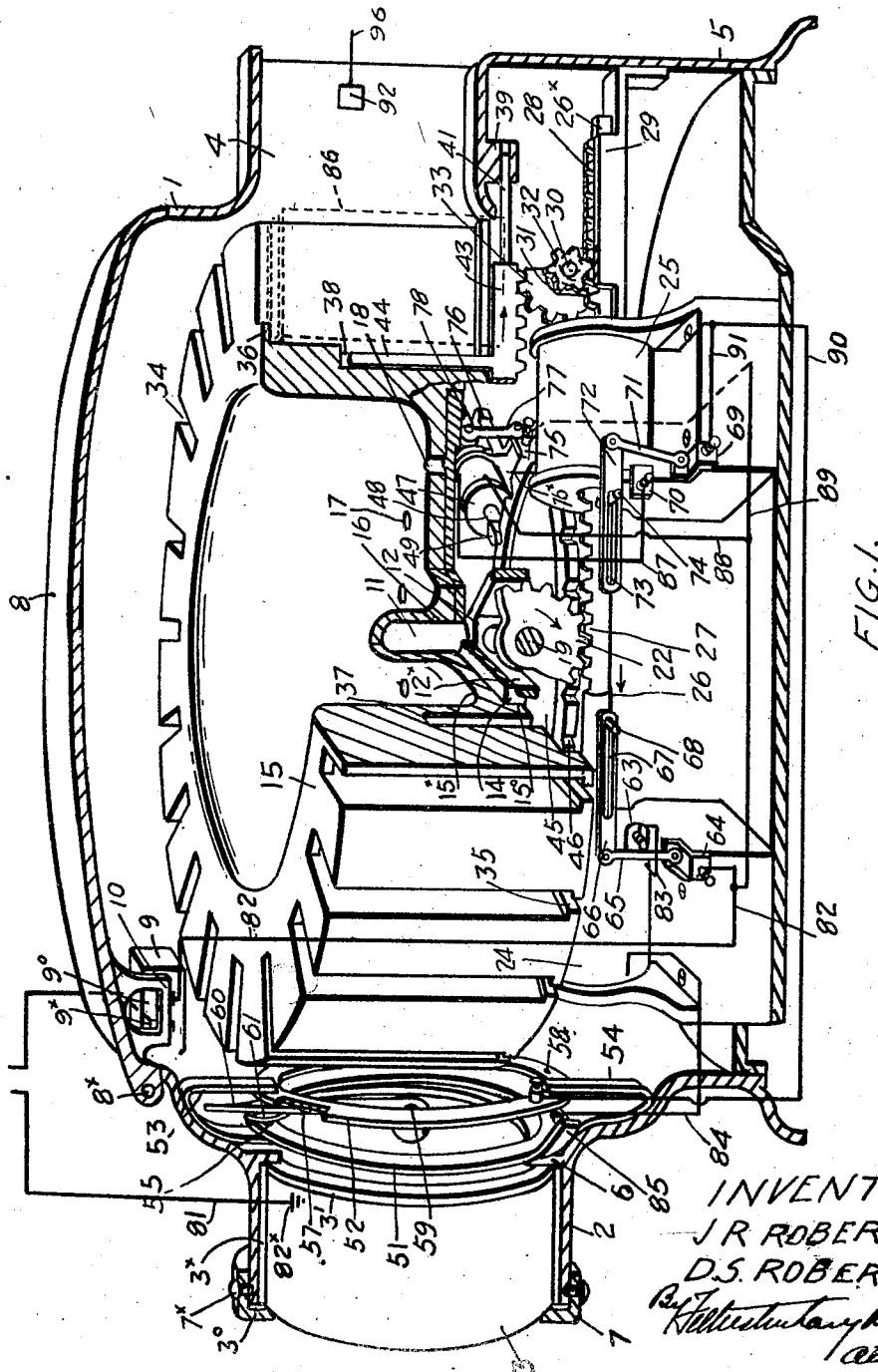
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J. R. ROBERTSON ET AL

AUTOMATIC MACHINE FOR EJECTING MEMOS AND THE LIKE

Filed Feb. 20, 1925

4 Sheets-Sheet 1



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4 Sheets-Sheet 2

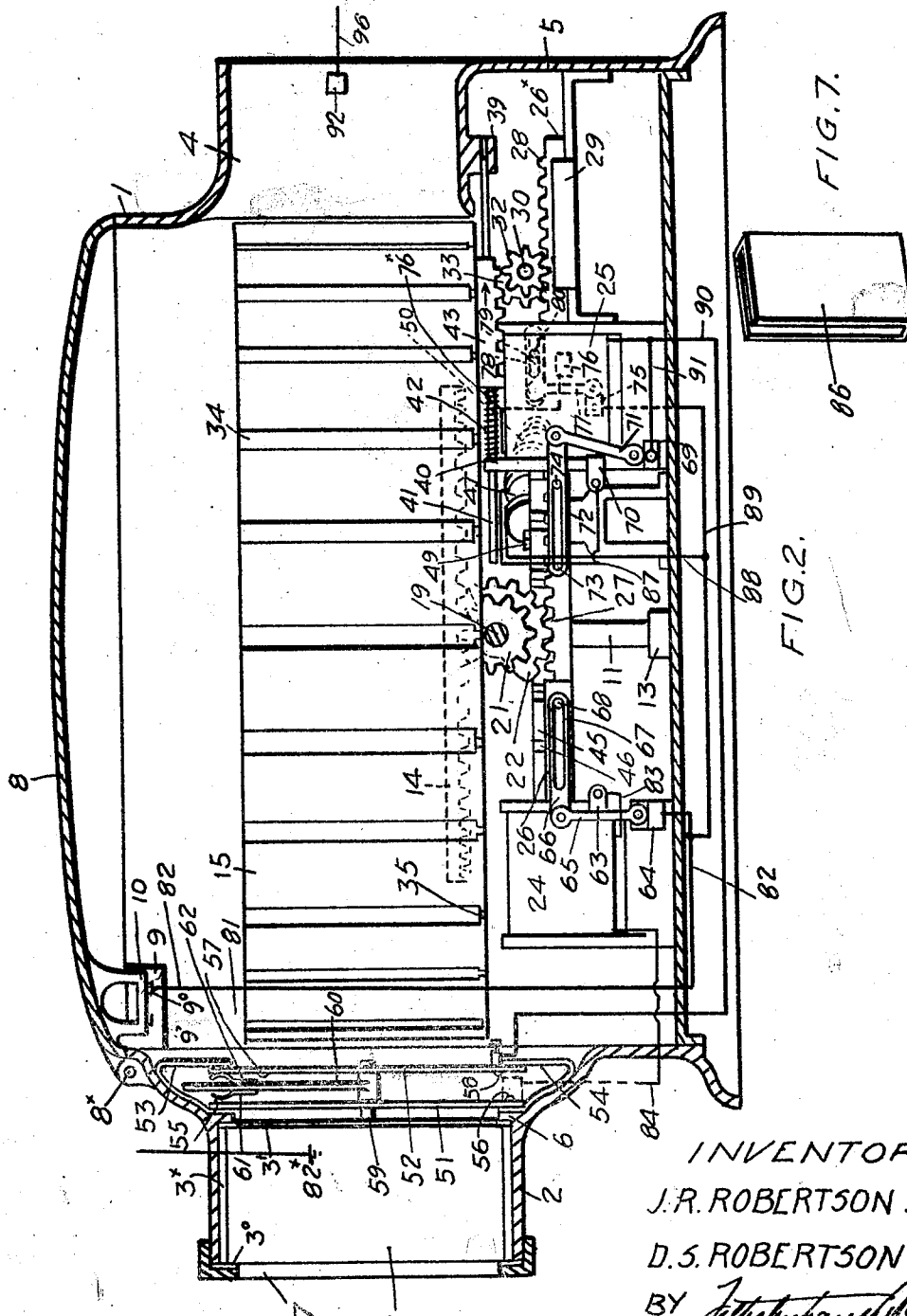


FIG. 2.

FIG. 7.

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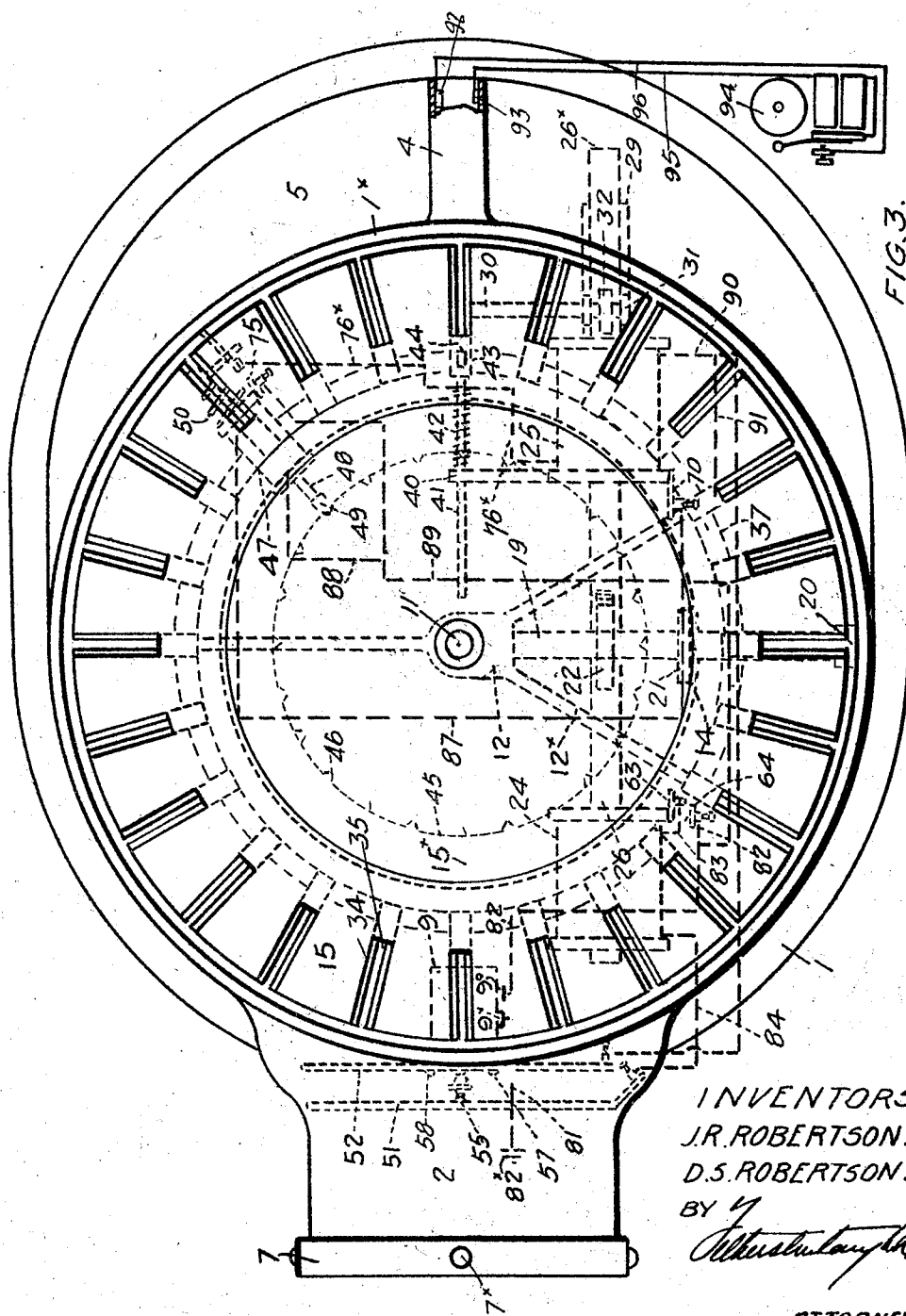
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4 Sheets-Sheet 4

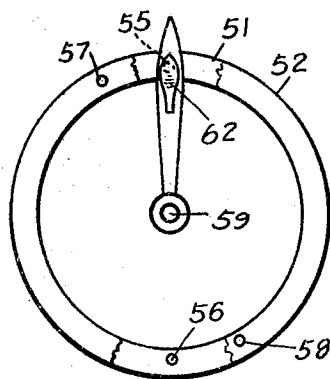


FIG. 4

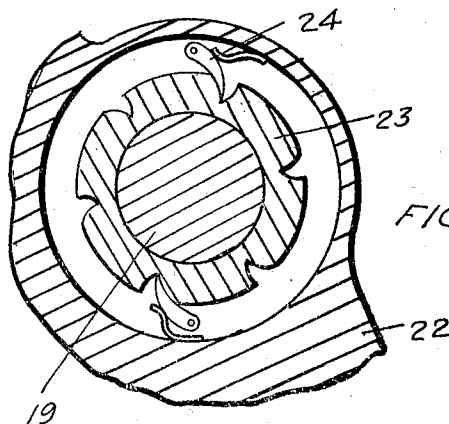


FIG. 5.

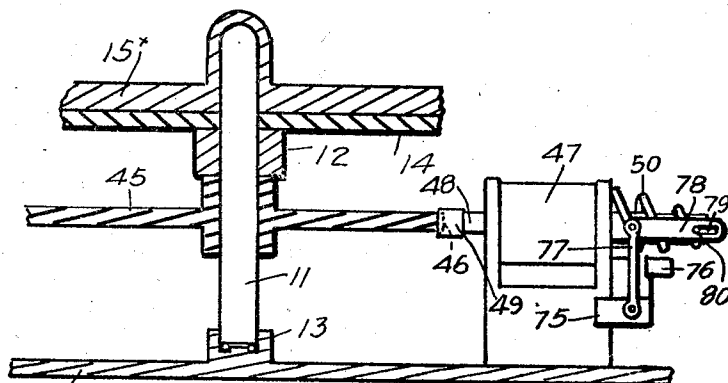


FIG. 6.

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UNITED STATES PATENT OFFICE.

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AUTOMATIC MACHINE FOR EJECTING MEMOS AND THE LIKE.

Application filed February 20, 1925. Serial No. 10,685.

To all whom it may concern:

Be it known that we, JAMES RUSSELL ROBERTSON and DAVID SAMUEL ROBERTSON, both subjects of the King of Great Britain, and residents of the city of Toronto, in the county of York, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Automatic Machines for Ejecting Memos and the like, of which the following is the specification.

Our invention relates to improvements in automatic machines for ejecting memos and the like, and the object of the invention is to devise a machine in which memos and the like may be placed and automatically ejected each individually at predetermined intervals of time so as to be brought to notice, and it consists essentially of the arrangement and construction of parts as hereinafter more particularly explained.

Fig. 1 is a sectional perspective view through our machine.

Fig. 2 is a sectional view through the main casing of our machine and showing the operative parts contained therein, in full elevation.

Fig. 3 is a plan view of our machine showing the casing cover removed.

Fig. 4 is a detail in elevation of the contact rings and the clock hands coacting therewith.

Fig. 5 is an enlarged detail view of the ratchet connection between the segmental gears and the carrying shafts.

Fig. 6 is an enlarged sectional detail showing the connection between the memo case carrier and the stop wheel by which the position of the carrier at each movement is positively determined.

Fig. 7 is a perspective detail of one of our memo cases.

In the drawings like characters of reference indicate corresponding parts in each figure.

1 indicates the main casing of our machine, the body of which is cylindrical as indicated at 1*, and from one side of which extends a cylindrical hollow protuberance 2 forming a container for a clock body 3. 4 is a memo case ejecting chute extending radially from the casing body 1*. The body 1* of the casing 1 is provided in its lower portion with an enlargement 5 which is preferably in the form of a cylindrical seg-

ment merging at each side into the body 1* of the main casing. The exterior diameter of such enlargement preferably coincides with the outer end of the chute 4.

The clock body 3 is insulated from the main casing 1 by means of an insulating sleeve 3* surrounding the clock body and insulating rings 3° and 3¹ located at each end of the clock body as clearly indicated in Figure 2.

6 is an annular retaining lip adapted to hold the clock body 3 from inward movement. 7 is an annular retaining ring extending around the outer end of the protuberance 2 and secured thereto by set screws 7* or any other suitable means. The annular ring 7 bears against the outer face of the insulating ring 3° to hold the clock body from outward movement. 8 is a cover for our casing hinged at 8*. 9 is a contact box provided with a contact 9*. 10 is a contact arm carried by the cover 8 and carrying a contact 9° engaging the contact 9* when the cover is in the closed position so as to close the circuit passing through such contacts. 11 is a vertical shaft journaled at its lower end in a step bearing 13 and intermediately of its height in the bearing member 12, supported by arms 12* from the walls of the casing body 1* or by any other suitable means. 14 is a bevelled disk gear secured to the shaft 11. 15 is a memo case carrier. The body of the memo case carrier 15 is annular in form and provided with a web 15*, provided with a central orifice 16 through which the upper end of the shaft 11 freely extends. The lower face of the web 15* is preferably recessed as indicated at 15° to receive the disk gear 14.

17 are annular series of perforations formed in the web 15*. 18 is a pin projection extending upward from the disk gear 14 into one of the perforations 17, so as to hold the memo case carrier in any position to which it may be adjusted circumferentially for a purpose which will hereinafter appear.

19 is a shaft located in a radial position and journaled at one end in the member 12 and at the opposite end in a suitable support bearing 20. 21 is a bevelled gear secured to the shaft 19 and meshing with the teeth of the disk gear 14. 22 is a seg-

mental gear which is mounted upon the shaft 19 and connected thereto by the pawl and ratchet mechanism illustrated in Figure 5. In this figure, 23 is a ratchet secured to the shaft 19. 24 are spring pressed pawls carried by the segmental gear 22 and engaging with the ratchet 23, so as to permit the free movement of the segmental gear 22 in the direction indicated by arrow, see Fig. 1, and an engaging movement with the gear 22 when revolved in the opposite direction.

24 and 25 are solenoids secured in the main casing so as to be in axial alignment, one with the other. 26 is a solenoid core extending through both solenoids 24 and 25, and provided with a gear rack 27 with which the teeth of the segmental gear 22 mesh. The solenoid core 26 is provided at its right hand end with an extension 26* which is of non-magnetic material and in which is formed a rack 28, such extension being slidably held in a guideway 29. 30 is a horizontal shaft mounted in bearings 31 and upon which is secured a gear 32 meshing with the teeth of the rack 28. 33 is a segmental gear connected to the shaft 30 by a ratchet mechanism similar to that described in connection with Fig. 5, but adapted to permit a free movement of the segmental gear 33 in an opposite direction to the free movement of the segmental gear 22.

The memo case carrier 14 is provided with a series of memo case containing recesses 34, such recesses being arranged radially and open at the top and periphery of the carrier and provided in their bottom wall with radial slots 35. 36 is a shoulder formed at the upper end of the rear wall of the recess, beneath which the rear end of the memo case fits, so as to prevent any tendency to upward movement of the case. 37 is an annular recess extending concentrically around the carrier and into which each of the radial slots 35 open. The rear wall also of each recess 34 is slotted vertically, as indicated at 38 to correspond with the height of the annular recess 37. 39 and 40 are bearing portions carried by any suitable portion of the machine and in which is slidably held a rod 41, so formed as to prevent rotation within its bearings and yet provide for free longitudinal movement. 42 is a tension spring secured at one end to the rod 41 and at the opposite end to the bearing 40. 43 is a rack formed integral with the rod 41, the teeth of such rack engaging the teeth of the segmental gear 33. 44 is a finger extending upward from the rack 43 into the annular recess 37 and located when the carrier 14 is in a stationary position radially opposite the slots 38 and 35, so that when the finger 44 is moved radially outward by means of the intermesh-

ing rack 43 and segmental gear 33, such finger passes through the recesses 34 carrying the memo pocket contained therein, radially outward into the chute 4. 45 is a stop wheel provided with peripheral notches 46 corresponding in number to the number of recesses formed in the memo case carrier 15.

47 is a solenoid provided with a core 48, provided at its inner end with a locking head 49 adapted to fit into any one of the notches 46. The notches 46 and engaging portion of the locking head 49 are preferably acute angular, so as to permit of their ready engagement. 50 is a spring connected at one end to the frame of the solenoid 47 and at its opposite end to the outer end of the core 48. It must be understood that the locking head 49 bears continuously against the periphery of the stop wheel 45, so as to engage with any one of the notches when freed by the demagnetization of the solenoid 47.

We will now describe the means by which the solenoids 24 and 25 and 47 are energized to operate the mechanism hereinbefore described.

51 and 52 are metallic contact rings mounted in insulating brackets 53 and 54 so as to be insulated from the main casing of the machine. 55 and 56 are contacts carried by the ring 51, and 57 and 58 are contacts carried by the ring 52. 59 is the main shaft of the clock 3. 60 is a hand carried by the rear end of the shaft 59, such hand extending radially between the rings 51 and 52 so as to project outward therefrom, such hand being provided with contact fingers 61 and 62 adapted to engage alternately with the contacts 55, 57 and 56 and 58. 63 and 64 are contact plates carried by the frame of the solenoid 24. 65 is an arm pivotally mounted at its lower end upon the plate 64 and pivotally connected at its upper end to the link 66, provided with a longitudinal slot 67 through which a pin 68 extends. The pin 68 is carried by the core 26 so as to move therewith.

69 and 70 are contact plates carried by the supporting frame of the solenoid 25. 71 is an arm pivotally mounted at its lower end upon the contact pin 69 and pivotally connected at its upper end to a link 72, provided with a longitudinal slot 73 through which a pin 74, also carried by the core 26 passes.

It will be noted that in the normal position of the machine shown, the arm 65 is in contact with the contact plate 63 and the arm 71 is out of contact with the contact plate 70.

75 and 76 are contacts carried by the frame of the solenoid 47. 77 is an arm pivotally mounted at its lower end upon the contact plate 75 and pivotally connected at

its upper end to a link 78, and provided with a longitudinal slot 79, through which a pin 80 carried by the core 48 extends. 81 is a wire leading from the line, the opposite end of the wire being grounded as indicated at 82* on any suitable portion of the clock body 3. 82 is a wire leading from the contact 9° to the contact plate 64. 83 is a wire connecting the contact plate 63 with the winding of the solenoid 24. 84 is a wire leading from the opposite end of the winding of the solenoid 24 to the contact ring 51 as indicated at 85. By this means it will be seen that as the hand 60 is carried in a clockwise direction to engage with the contact 55, the circuit is closed leading from the contact plate 9* to 9°. It will of course be understood that these contact plates are connected to a terminal of a lighting circuit A. When the cover 8 is in the closed position so that the contact 9° of the arm 10 engages the contact 9*, the circuit is formed, passing through the wire 82, contact plates 64, arm 65, contact plate 63, wire 83, winding of the solenoid 24 and from thence through the wire 84, contact ring 51, contact 55, clock hand 60, through the body of the clock to the ground wire 81. By this means the solenoid 24 is energized drawing the core 26 in the direction of arrow. By the longitudinal movement of the core 26 the racks 27 and 28 meshing respectively with the segmental gear 22 and gear 32 revolve these gears. It will be understood from what has been before stated that this movement imparted to the segmental gear 22 is in idle movement and the corresponding movement to the gear 32 is a working movement, the gear 32 being revolved and thereby revolving the segmental gear 33 carrying the rack 43 in the direction of arrow, against the tension spring 42. By this movement the finger 44 is carried radially outward against the back wall of the memo container 86, illustrated in Figures 1 and 7 thereby carrying such memo container outward into the chute 4 so as to eject the same. It will be understood that the segmental gear 33 completes its rotation so that at the end of the longitudinal movement of the rack 43, it passes out of engagement therewith and permits the tension spring 42 to operate and carry the rack back to its normal position, so as to return the finger 44. By the longitudinal movement of the solenoid core 26, the pin 68 is carried into engagement with the left hand end of the slot 67 so as to carry the arm 65 out of engagement with the contact plate 63 and thereby break the circuit passing through the solenoid 24. Simultaneously the pin 74 engages the left hand end of the slot 73 so as to carry the arm 71 into engagement with the contact plate 70, thereby closing the circuit which we will now describe.

87 is a wire leading from the contact plate 70 to one end of the winding of the solenoid 47. 88 is a wire leading from the opposite end of the winding of the solenoid 47, being tapped at the opposite end into a wire 89, which wire 89 is tapped at one end into the wire 82 and extends at its opposite end to the contact plate 75. 90 is a wire leading from one end of the winding of the solenoid 25 and at its opposite end to the contact ring 52. 91 is a wire extending from the contact plate 69 and tapped into the wire 90 at its opposite end. When the contact between the arm 65 and contact plate 63 is broken and the contact between the arm 71 and contact plate 70 is made, a circuit is formed through the solenoid 47 by means of the wire 87 passing from the contact plate 70 to one end of the solenoid winding and by the wire 88 leading from the other end of the solenoid winding 47, wire 89, wire 82, contact 9°, bridging contact 10, contact 9* and then by wire 81 through the body of the clock 3 to the hand 60, the circuit being completed when the hand is carried into engagement with the contact 57 on the ring 52 by passing through the wire 90, wire 91, contact plate 69, arm 71, contact plate 70, wire 87 to the other end of the winding of the solenoid 47, the solenoid 47 being thus energized. The core 48 of the solenoid 47 is then drawn longitudinally outward so as to carry the locking head 49 out of engagement with the notch 46 of the stop wheel 45, thereby freeing the wheel and in consequence freeing the memo container carrier 14 to permit its being revolved to carry the next memo container and its containing recess 34 opposite to the discharge chute 4.

By the above described movement of the core 48, the arm 77 is carried into engagement with the contact 76 by means of the pin 80 engaging the outer end of the slot of the link 78. By this means the circuit is closed through the solenoid 25, the circuit through the solenoid 24 remaining broken. This circuit passes from one end of the winding of the solenoid 25 through the wire 90, ring 52, contact 57, hand 60, clock body 3, wire 81, and by contact 9*, contact 9°, wire 82, wire 89, contact 75, arm 77, contact 76, wire 76* to the other end of the winding of the solenoid 25. By this means the core 26 is carried in the opposite direction to arrow, also revolving the segmental gear 22 in the opposite direction to arrow, the bevelled gear 21 engaging the disk gear, so as to revolve the same in a clockwise direction, carrying the memo carrier 15 in a corresponding direction by reason of its engagement therewith through the projection 18 and one of the orifices 17, into which such projection extends. It will be understood that at the end of the return movement of

the core 26, the pin 74 engages the right hand end of the slot 73 so as to carry the arm 71 out of engagement with the contact plate 70 and thereby break the circuit passing through the solenoid 47 so as to permit the spring 50 to act and return the core 48 inward and the locking head 49 into engagement with the periphery of the stop wheel 45, so that as the memo case carrier is carried into the next succeeding position the stop wheel 49 will be forced into engagement with the next succeeding notch 46, thereby hold the memo case carrier definitely in position to eject the next memo case.

It will of course be understood that when the core 27 moves in the opposite direction to arrow, that the movement imparted to the segmental gear 33 is an idle movement. It will also of course be understood that when the rack 43 is returned, it will be in such a position as to re-engage with the first tooth of the segmental gear 33 in the position shown in the drawing ready for the next movement.

In order to bring to the notice of the attendant, the ejection of a memo case, we have provided the following device.

92 and 93 are contacts carried by the side walls of the ejecting chute 4. 94 is an annunciator bell. 95 is a wire leading from one contact 92 to one terminal of the annunciator, and 96 is a wire leading from the contact 93 to the other terminal of the annunciator.

It will of course be understood that the memo cases are preferably metallic and of conducting material, so that when they are forced into the chute 4 they are carried between the contacts 92 and 93 to engage therewith and thereby bridge the circuit so as to make it continuous through the electromagnet windings of the annunciator and thereby ring the annunciator bell. This operation of course will be only momentary, as the memo case passes between the contacts 92 and 93 as it is ejected through the mouth of the ejecting chute.

From this description it will be seen that we have devised a very simple, positive machine which will hold a number of memos and eject them at any predetermined intervals of time, so that they will be brought directly to the notice of the person for whom they are intended.

It may be stated that the projection 18 and the series of orifices 17 are provided so that the memo case carrier may be set to any desired starting position. For example, the memo carrier may be filled with memos which are to be ejected at intervals from nine o'clock onward.

The person to whom the memos are to be brought to the notice of, may not arrive at the office until after nine o'clock and when he arrives at the office he starts the machine

and if he arrives at ten o'clock he would have to set his memo carrier in the machine in such a position that the recesses 34 corresponding to the ten o'clock memo would be set at the starting position in alignment with the ejecting orifice of the ejecting chute 4.

What we claim as our invention is:

1. In an automatic memo ejecting machine, a main casing provided with a discharge chute, a movable member provided with a series of memo receiving recesses, means for moving the member to carry the recesses successively into alignment with the inner end of the ejecting chute by a step by step movement, and a time clock for controlling such movement.

2. An automatic memo ejecting machine comprising a main casing provided with an ejecting chute, a member revolubly mounted within the casing and having radial memo containing recesses, means for revolving the member to carry the recesses successively by a step by step movement to a position opposite the inner end of the ejecting chute, and a time clock for timing such step by step movement.

3. An automatic memo ejecting machine comprising a main casing, an ejecting chute extending from the casing, a cylindrical member having a series of radially extending memo containing recesses, means for revolubly mounting the cylindrical member within the casing, means for imparting a step by step movement to the member to carry each recess in succession at predetermined intervals of time opposite the inner end of the ejecting chute to discharge, a time clock and electrical operating means controlled by the time clock for imparting such step by step movement to the cylindrical memo containing member.

4. In an automatic memo ejecting machine, a main casing provided with a discharge chute, a movable member provided with a series of memo receiving recesses, means for moving the member to carry the recesses into alignment with the inner end of the ejecting chute by a step by step movement, a time clock for controlling such movement, and means also controlled by the time clock for positively carrying the memos from each memo container recess into and through the ejecting chute as each recess is brought in a line therewith.

5. In an automatic memo ejecting machine, a main casing provided with a discharge chute, a movable member provided with a series of memo receiving recesses, means for moving the member to carry the recesses into alignment with the inner end of the ejecting chute by a step by step movement, a time clock for controlling such movement, finger discharging means, and means controlled by the time clock for operating

the finger discharging means to eject the memos successively from each recess as it is brought opposite the ejecting chute.

6. In an automatic memo ejecting machine, a main casing provided with a discharge chute, a movable member provided with a series of memo receiving recesses, means for moving the member to carry the recesses into alignment with the inner end of the ejecting chute by a step by step movement, a time clock for controlling such movement, an annular recess in which the inner end of each radial recess opens, a finger extending up into the annular recess, and means controlled by the time clock for carrying such finger radially outward through each radially extending recess as it is brought opposite to the ejecting chute.

7. An automatic memo ejecting machine comprising a main casing provided with an ejecting chute extending from the casing, a cylindrical member having radially extending memo containing recesses, means for revolvably mounting the cylindrical member within the container, means for imparting a step by step movement to the cylindrical member to carry the recesses thereof successively into alignment with the ejecting chute, a time clock, a solenoid, a core coacting therewith, an electric circuit in which the solenoid is incorporated, means operated by the time clock for alternately making and breaking the circuit through the solenoid, a gear connection between the solenoid core and cylindrical member for imparting a rotary movement to such member as the core moves in one direction, and means for permitting the said gear connection to idle as the core moves in the opposite direction.

8. An automatic memo ejecting machine comprising a main casing, a cylindrical member revolvably mounted within the casing having a series of radial memo containing recesses, means for imparting a step by step movement to the cylindrical member, a time clock for controlling such movement, and means for temporarily locking the cylindrical member in a stationary position during the ejection of the memos from each recess into the ejecting chute, and means for ejecting the memos into the chute as each recess is carried into alignment with said ejecting chute.

9. An automatic memo ejecting machine comprising a main casing, an ejecting chute extending from the main casing, a cylindrical member revolvably mounted within the casing, a time clock, means for imparting a step by step movement to the cylindrical member, means for temporarily locking the cylindrical member in a stationary position as each recess is brought opposite to the ejecting chute, an ejecting finger for ejecting memos from each recess as it is brought into alignment with the ejecting chute, and

means controlled by the time clock whereby the step by step rotary movement of the cylindrical member, the locking operation and the movement of the ejecting finger are controlled to operate in succession.

10. An automatic memo ejecting machine comprising a casing, an ejecting chute extending from the casing, a memo carrier having memo holding recesses, a solenoid and core for operating the carrier, means for releasably locking the carrier after each movement, a second solenoid and core for operating the locking means, means for ejecting the memos from the carrier recesses successively into the chute, a third core and solenoid for operating the ejecting means, a time clock, and circuits controlled by the time clock for energizing the solenoids in the order described aforesaid.

11. An automatic memo ejecting machine comprising a casing, an ejecting chute extending from the casing, a memo carrier having memo holding recesses, a solenoid and core for operating the carrier, means for releasably locking the carrier after each movement, a second solenoid and core for operating the locking means, means for ejecting the memos from the carrier recesses successively into the chute, a third core and solenoid for operating the ejecting means, and a switch mechanism for each solenoid whereby the movement of the first mentioned core in one direction breaks the circuit through the first mentioned solenoid and makes the circuit through the second and third solenoids and by movement of the core in the opposite direction makes the circuit through the first mentioned solenoid and breaks the circuit through the second and third solenoid successively, and a time clock and circuits for carrying out the aforesaid operations.

12. A memo ejecting machine comprising a main casing, an ejecting chute extending from the casing, a revolvable memo container mounted in the casing, a gear mechanism for imparting a step by step rotary movement to the memo container, an ejecting finger for ejecting memos from each memo containing recess as it is brought opposite to the ejecting chute, a gear mechanism for operating such finger, a pair of solenoids, a single core extending through said pair of solenoids, and means operated by the longitudinal movement of the core for alternately operating the gear for imparting a turning movement to the memo container, and an ejecting movement to the ejecting finger, and a time clock for energizing the solenoids.

13. A memo ejecting machine comprising a main casing, an ejecting chute extending from the casing, a revolvable memo container mounted in the casing, a gear mechanism for imparting a step by step rotary movement to the memo container, an ejecting

finger for ejecting memos from each memo containing recess as it is brought opposite to the ejecting chute, a gear mechanism for operating such finger, a pair of solenoids, a
5 single core extending from said pair of solenoids, and means operated by the longitudinal movement of the core for alternately operating the gear for imparting a turning

movement to the memo container and an ejecting movement to the ejecting finger, a 10 time clock, a switch mechanism for each solenoid operated by the longitudinal movement of the core to alternately close the circuits passing through said solenoids.

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