L. H. COBB.

REVOLVING CABINET.

APPLICATION FILED APR. 21, 1911.

997,965. Patented July 18, 1911.

2 SHEETS—SHEET 1.

Fig. 3.

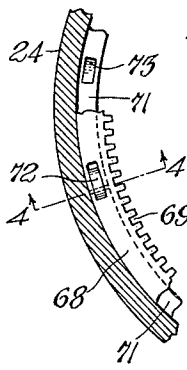

Fig. 4.

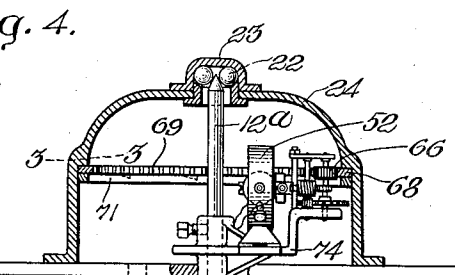

Fig. 5.

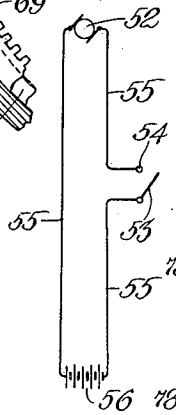

Fig. 2.

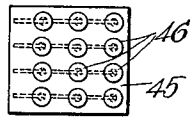

Fig. 1.

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2 SHEETS—SHEET 2.

Fig. 6.

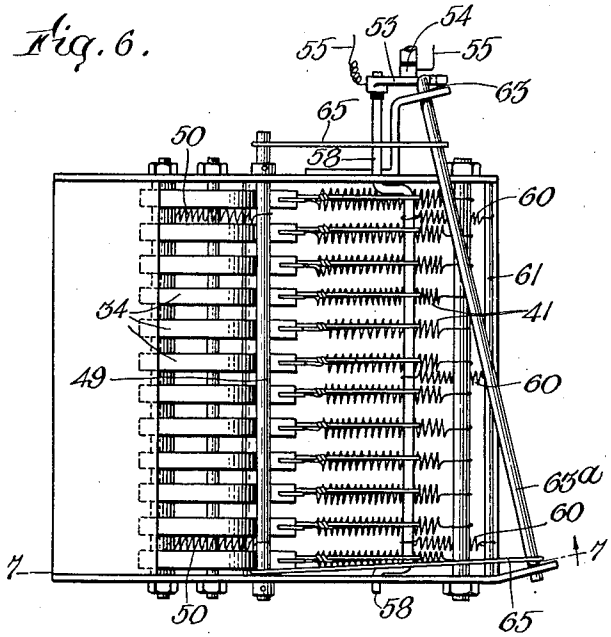


Fig. 8.

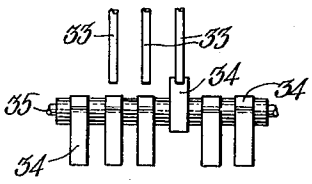
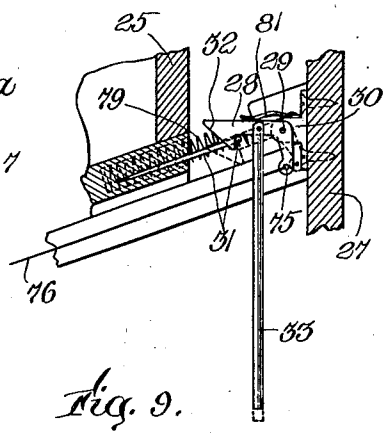


Fig. 10.



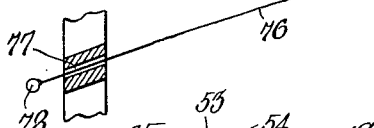


Fig. 7.

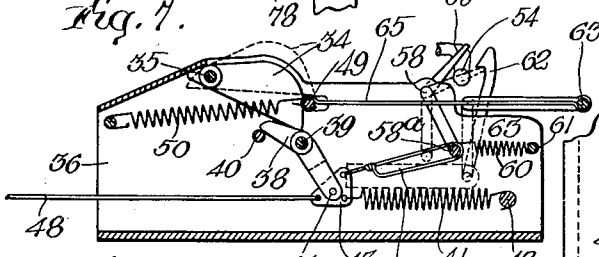


Fig. 9.

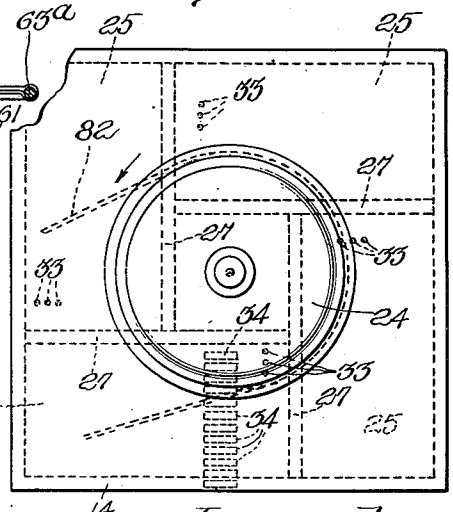
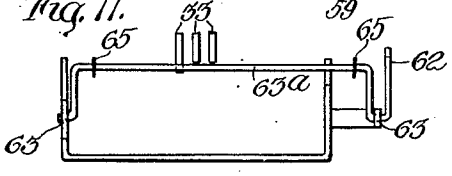


Fig. 11.



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UNITED STATES PATENT OFFICE.

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REVOLVING CABINET.

997,965. Specification of Letters Patent. Patented July 18, 1911.

Application filed April 21, 1911. Serial No. 622,512.

To all whom it may concern:

Be it known that I, LEON H. COBB, a citizen of the United States, and resident of Brockton, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Revolving Cabinets, of which the following is a specification.

This invention has for its object to provide a rotary cabinet provided with a plurality of drawers arranged in tiers, each tier of drawers opening from a definite face of the cabinet, the cabinet being provided with mechanism whereby any drawer may be selectively opened and at the same time caused to project toward the operator's station, the cabinet being adapted to be placed in convenient relation to a desk in an office and operated by a person seated at the desk who is enabled to open any drawer and bring the opened drawer to a convenient pisition for access to its contents.

The invention consists in the improvements which I will now proceed to describe and claim.

Of the accompanying drawings, which form a part of this specification,—Figure 1 represents a side elevation partly in section of a cabinet embodying my invention; Fig. 2 represents a plan view of the key board shown in section in Fig. 1; Fig. 3 represents a section on line 3—3 of Fig. 1; Fig. 4 represents a section on line 4—4 of Fig. 3; Fig. 5 represents a diagrammatic view of the motor circuit hereinafter described; Fig. 6 represents a plan view of the drawer-opening and circuit-closing and breaking mechanism hereinafter described; Fig. 7 represents a section on line 7—7 of Fig. 6; Fig. 8 represents a fragmentary elevation showing parts of the trippers and tripper-operating cams hereinafter referred to; Fig. 9 represents a top plan view of the cabinet; Fig. 10 represents a fragmentary sectional view similar to the portion of Fig. 4; Fig. 11 represents an end view of the mechanism shown by Figs. 6 and 7.

Similar reference characters indicate the same or similar parts in all the figures.

In the drawings, 12 represents a vertical standard or spindle, supported by a base 13. On said spindle is mounted to rotate horizontally a polygonal case 14 which is preferably rectangular as shown by Figs. 4 and 9, the spindle as here shown having a fixed collar 16 supporting a ring 17, the periphery of which has a groove 18 engaging a series of balls 19, these engaging a groove 20 in a circular opening in a hub 21 rigidly attached to the case. The ring 17, balls 19, and hub 21 constitute a lower antifrictional bearing which permits the free rotation of the case. To the upper end of the spindle is attached a spindle extension 12^a, having a conical tip on which bear balls 22 in a cup 23 mounted on a box 24 attached to the top of the case said extension balls and cup constituting an upper antifrictional bearing. The box 24 contains the mechanism hereinafter described which rotates the case 14.

Each side of the case is provided with a tier of drawers 25 movable on fixed inclined guides 26 in the case, the inclination of the guides being such that each drawer when unlocked as hereinafter described will slide outwardly and open by gravitation, the sides of the drawers being substantially rhomboidal as shown by Fig. 1, so that their ends are vertical.

The case is provided with internal partitions 27 relatively arranged as shown by dotted lines in Fig. 9. A portion of each partition 27 supports a series of hooked detents 28, each pivoted at 29 to an ear 30. The hook of each detent is adapted to engage a staple 31 on the inner end of the corresponding drawer, the detent having an incline 32 which is encountered by the staple when the drawer is being closed, the inward movement of the staple in contact with the incline causing the detent to rise until its hook drops into the staple and locks the drawer. To each detent is pivoted a downwardly extending rod or tripper 33 which when lifted as hereinafter described raises the detent, and releases the drawer and permits the latter to slide to its open position. The trippers 33 which raise the detents of each tier of drawers are arranged in a group side by side as shown by Fig. 9. The trippers of each group are located at different distances from the center of rotation of the case, and each group of trippers is located at a different distance from said center from the other groups, the arrangement of the trippers being such that when the case is rotated each tripper moves in a circular path

which differs from that of all the other trippers, and is brought in contact with a tripper-lifting cam 34 which is one of a straight row of cams corresponding in number to the total number of trippers. The cams 34 are mounted to swing on a rod 35 on a frame 36 which is secured to a fixed shelf or bracket 37 below the case 14, the arrangement of the cams being such that each is in the path of one (and only one) of the trippers 33, there being a separate cam for each tripper.

The cams 34 are normally in the position shown by full lines in Fig. 7, their upper edges being below the path in which the lower ends of the trippers move. Means are provided for raising any cam to the dotted line position, Fig. 7, and thus moving it into the path of the corresponding tripper (Fig. 8), any cam thus raised being adapted to raise one of the trippers when the latter is caused by a rotary movement of the case to pass over the raised cam.

To raise the cams 34 I employ a series of levers 38 pivoted on a rod 39 on the frame 36 and projecting under the cams, the swinging ends of which rest on the levers, there being one lever for each cam. The levers 38 normally bear on a fixed stop rod 40 against which they are held by springs 41 attached to a fixed rod 42, and to heads 43 pivoted at 44 to the levers.

For selectively moving any lever 38 to raise the accompanying cam I provide a series of push pieces or keys 46 movable vertically in a frame 45 located on an extension of the shelf or bracket 37 and offset considerably from the case a series of bell crank levers 47 pivoted in said frame, one arm of each lever 47 being connected with one of the keys, and wire rods 48 connecting the other arms of the levers 47 with the heads 44 on the levers 38. The number of keys 46 corresponds to the number of cams and each key is connected as described with one of the levers 38, so that the depression of any key causes the elevation of the corresponding cam 34.

When a cam 34 is rising, its outer end displaces a stop rod 49 which is normally pressed by springs 50 against the swinging ends of the cams. When the lower edge of the raised cam is above the rod 49, said rod is returned to place by the springs 50 and positively supports or locks the raised cam which is thus enabled to positively raise a tripper 33 brought by the rotation of the case into contact with the raised cam. The depression of a key 46, besides causing the elevation and positive support of a cam 34 as above described, also causes the closing of an electric circuit through a motor 52 carried by a frame affixed to the spindle 12^a and located in the box 24. The motor, which is geared as hereinafter described to the box 24, is thus energized and caused to rotate the case and bring one of the trippers 33 against the raised cam 34.

A circuit-closing switch 53 is moved by the depression of any key 46 into contact with a fixed circuit terminal by the means next described, said switch and terminal being connected by circuit wires 55 with the motor and with a source of electrical energy which is preferably a battery 56 (see diagram, Fig. 5) which may be located in the base 13.

The switch 53 is an arm attached to a rock-shaft 58 journaled in bearings in the frame 36 and provided with an elongated off set or crank portion 58^a which is connected by slotted links 59 with the pivoted heads 43 on the levers 38. Springs 60, connected with a crossbar 61 on the frame 36, and with the crank portion 58^a, normally hold the switch 53 in a raised position out of contact with the terminal 54, as shown by full lines in Fig. 7. The cam-raising movement of a lever 38 and its head 43 imparts a partial rotation to the rock-shaft 58 through the corresponding link 59 and crank portion 58^a, thus moving the switch 53 into contact with the terminal 54, as shown by dotted lines, Fig. 7. The switch is locked in the position last described by a hooked detent arm 62 on a rock-shaft 63, journaled in bearings on the frame 36, and having an elongated offset or crank portion 63^a (Fig. 11.)

When a drawer has been unlocked by the elevation of a tripper 33 and has moved away from its detent 28, said detent drops by gravitation, as indicated by dotted lines, Fig. 10, the tripper connected therewith dropping correspondingly, so that its lower end is below the lower ends of the other trippers connected with the detents of the locked drawers. The crank portion 63^a is located in the path of the lower end of the depressed tripper and is so arranged and spaced from the cams 34 that the depressed tripper strikes it and displaces the detent 62, which is returned by the springs 60 to its normal position, thus breaking the circuit and stopping the motor just after the opening of the drawer. The crank portion 63^a is moved sidewise in the arc of a circle by the pressure of the depressed tripper against it, so that the tripper passes over said crank portion. The crank portion 63^a is connected with the stop rod 49 by connecting rods 65, so that the movement of the crank portion 63^a which displaces the detent 62 also displaces the stop rod 49 and releases the raised cam 34 which thereupon drops to its normal position on the lever 38 below it.

The rotary armature of the motor 52 is connected by a train of gearing, one member 66 of which is engaged with a ring 68 having internal gear teeth 69. Said ring is inter-

posed between a shoulder 70 formed on the inner surface of the box 24 and a flange 71 rigidly attached to said box. The ring 68 is adapted to turn loosely between the shoulder 70 and flange 71 and is provided with pawls 72 adapted to slide on the upper surface of the flange 71 and to engage notches 73 formed in said flange, the form of the pawls and notches being such that when the ring 68 is rotated in one direction, its pawls 72 positively engage the ends of the notches 73 and cause the box 24 and the case 14 thereto attached to rotate with the ring.

The object of the described connection between the motor and the case 14 is to enable the motor to rotate the case in one direction and to enable the case to be rotated by hand in the same direction independent of the motor. The motor is attached to a frame or bracket 74 (Fig. 1) which is affixed to the spindle extension 12^a, the motor being thus non-movably supported within the box so that its operation imparts rotary movement to the box and to the case 14.

The structure above described, which is portable, may be located on an office floor with the frame or key board 45 in convenient proximity to a desk so that a person sitting at the desk may manipulate either of the keys 46.

When a key is depressed the motor is immediately energized as above described and at the same time one of the cams 34 is raised. The resulting rotation of the case 14 brings the tripper 33 corresponding to the raised cam 34 which contacts with said cam, the tripper being thus raised and the corresponding drawer unlocked and caused to slide to its open position. The rotary movement of the case continues until the tripper leaves the raised cam 34 and drops with the detent 28, as indicated by dotted lines in Fig. 10, and until the lower end of the depressed tripper strikes the crank portion 63^a and displaces the detent 62, thus breaking the circuit and stopping the motor. The rotation of the case immediately ceases, this occurring when the side of the case from which the opened drawer projects is adjacent to or faces the operator. It will be seen therefore, that the operator is enabled by depressing a key 46 to cause the rotation of the case 14 and the opening of any desired drawer therein, the opened drawer projecting from the case toward the operator's station. After the drawer has been used, it is closed by hand and locked by its detent 28.

To enable the operator to open any drawer without operating the described mechanism, each detent 25 is provided with an arm 75 with which is connected a wire 76 extending under the accompanying drawer to the front of the case and passing through an opening 77 therein, the outer end of the wire having a handle 78. A pull on the wire 76 will raise the detent 28 and release the drawer. A spring 79 (Fig. 10) may be located behind each drawer 25 to give an initial opening impetus to the drawer when the detent 28 is raised. Buffer springs 80 (Fig. 1) may be provided within the case to gradually arrest the drawers when they approach the outer extreme of their movement.

For the purposes of this invention, the box 24 may be considered as a part of the case 14, said box and case being rigidly connected, so that the motor acting directly on the box rotates the case through the box. The wires 76 constitute individual actuating devices whereby the detents 28 may be independently actuated to release the drawers. The cams 34 and the means for operating them including the keys 46, constitute a selecting mechanism. To insure a quick engagement of the detents 28 with the staples 31, each detent should be provided with a downwardly pressing spring 81, Figs. 1 and 10.

A spring or other motor may be substituted for the electric motor 52. The motor may be omitted and the case may be rotated by hand or through the instrumentality of any suitable mechanical device located in convenient proximity to the operator and suitably connected with the case, so that the operator after depressing a key 46 may, without leaving his station, rotate the case until the opened drawer reaches the desired position. A simple device for rotating the case would be an endless belt 82 (Fig. 9) running on a pulley affixed to the case (said pulley being, for example, the cylindrical lower portion of the box 24) and on another pulley, (not shown) located near the keyboard, so that the operator may rotate the case by pulling on the belt.

I claim:—

1. A cabinet comprising a case mounted to rotate on a substantially vertical axis and having a plurality of faces, drawers adapted to be projected automatically from said faces, detents within the case adapted to lock the drawers in their closed positions and means operable from the exterior of the case for displacing either detent to unlock and permit the projection of the corresponding drawer, said means including selecting mechanism mounted in a fixed position adjacent to the case, and devices on the case brought into coöperative relation with the selecting mechanism by the rotation of the case.

2. A cabinet comprising a case mounted to rotate on a substantially vertical axis and having a plurality of faces, drawers adapted to be projected automatically from said faces, detents within the case adapted to lock the drawers in their closed positions, trippers connected with said detents and projecting from the case, and selecting

mechanism mounted in a fixed position adjacent to the case, and having means for selectively actuating said trippers.

3. A cabinet comprising a case mounted to rotate on a substantially vertical axis and having a plurality of faces, drawers adapted to be projected automatically from said faces, detents within the case adapted to lock the drawers in their closed positions, trippers connected with said detents and projecting from the case, and a selector mounted in a fixed position adjacent to the case, and including manually operated keys and means operable thereby for selectively actuating the trippers.

4. A cabinet comprising a case mounted to rotate on a substantially vertical axis and having a plurality of faces, drawers adapted to be projected automatically from said faces, detents within the case adapted to lock the drawers in their closed positions, trippers connected with said detents and projecting from the case, a selector mounted in a fixed position adjacent to the case and including a series of cams arranged in the paths of the trippers, keys located at a distance from the cams, and operating connections between the said keys and cams.

5. A cabinet comprising a case mounted to rotate on a substantially vertical axis and having a plurality of faces, drawers adapted to be projected automatically from said faces, detents within the case adapted to lock the drawers in their closed positions, trippers connected with said detents and projecting from the case, the trippers being arranged to be moved in different paths by the rotation of the case, a series of cams mounted to oscillate on a fixed support adjacent to the case, and coinciding with the paths of the cams, means for selectively raising said cams into the paths of the trippers to actuate the same, means for locking the raised cams, each tripper being depressed after its actuation by the corresponding cam, and means operable by a depressed tripper for releasing the corresponding cam and permitting it to fall below the tripper path.

6. A cabinet comprising a case mounted to rotate on a substantially vertical axis and having a plurality of faces, drawers adapted to be projected automatically from said faces, detents within the case adapted to lock the drawers in their closed positions, a motor adapted to rotate the case, means operable from the exterior of the case for simultaneously displacing either detent and starting the motor, and means operable by the rotation of the case for stopping the motor after the unlocking and projection of a drawer.

7. A cabinet comprising a case mounted to rotate on a substantially vertical axis and having a plurality of faces, drawers adapted to be projected automatically from said faces, detents within the case adapted to lock the drawers in their closed positions, trippers connected with said detents and projecting from the case, a motor adapted to rotate the case, means operable from the exterior of the case for simultaneously actuating either tripper and starting the motor, each tripper being depressed after its actuation by the corresponding cam, and means operable by the rotation of the case through a depressed tripper for stopping the motor after the unlocking and projection of a drawer.

8. A cabinet comprising a case mounted to rotate on a substantially vertical axis, and having a plurality of faces, drawers adapted to be projected automatically from said faces, detents within the case adapted to lock the drawers in their closed positions, trippers connected with said detents and projecting from the case, the trippers being arranged to be moved in different paths by the rotation of the case, a series of cams mounted to oscillate on a fixed support adjacent to the case and coinciding with the paths of the trippers, means for selectively raising the cams into the paths of the trippers to actuate either tripper, each tripper being depressed after its actuation, an electric motor adapted to rotate the case, a switch and a fixed terminal in circuit with the motor, means for normally holding the switch in its circuit breaking position, means operable by the cam-raising means for moving the switch to its circuit closing position, means for locking said switch in the last named position, and means operable by a depressed tripper for unlocking the switch and breaking the circuit.

9. A cabinet comprising a case having a plurality of faces, drawers adapted to be projected automatically from said faces, a vertical spindle on which the case is rotatably mounted, a motor supported by said spindle, connections between the motor and case whereby the case is rotated when the motor is operated, means operable from the exterior of the case for simultaneously unlocking either drawer and starting the motor, and means operable by the rotation of the case for stopping the motor.

10. A cabinet comprising a case having a plurality of faces, drawers adapted to be projected automatically from said faces, a vertical spindle on which the case is rotatively mounted, a motor supported by said spindle, an internally toothed ring geared to the motor and loosely engaged with the case, the ring and case having complemental means for engaging the ring with the case when the ring is rotated in one direction and permitting the case to rotate independently of the ring in the opposite direction, means operable from the exterior of

the case for simultaneously unlocking either drawer and starting the motor, and means operable by the rotation of the case for stopping the motor.

11. A rotary cabinet comprising a case mounted to rotate on a substantially vertical axis and having a plurality of faces and inclined internal guides, inclined drawers adapted to open automatically by gravitation on said guides, detents within the case adapted to lock the drawers in their closed positions, and means operable from the exterior of the case for displacing either detent, said means including selecting mechanism mounted in a fixed position adjacent to the case, and devices on the case brought into coöperative relation with the selecting mechanism by the rotation of the case.

12. A rotary cabinet comprising a case mounted to rotate on a substantially vertical axis and having a plurality of faces and inclined internal guides, inclined drawers adapted to open automatically by gravitation on said guides, detents within the case adapted to lock the drawers in their closed positions, springs adapted to start the gravitating movement of the drawers, and means operable from the exterior of the case for displacing either detent, said means including selecting mechanism mounted in a fixed position adjacent to the case, and devices on the case brought into coöperative relation with the selecting mechanism by the rotation of the case.

13. A rotary cabinet comprising a case mounted to rotate on a substantially vertical axis and having a plurality of faces and inclined internal guides, inclined drawers adapted to open automatically by gravitation on said guides, detents within the case adapted to lock the drawers in their closed positions, springs adapted to start the gravitating movement of the drawers, buffers adapted to yieldingly check the outward movement of the drawers, and means operable from the exterior of the case for displacing either detent, said means including selecting mechanism mounted in a fixed position adjacent to the case, and devices on the case brought into coöperative relation with the selecting mechanism by the rotation of the case.

14. A rotary cabinet comprising a case mounted to rotate on a substantially vertical axis and having a plurality of faces and inclined internal guides, inclined drawers adapted to open automatically by gravitation on said guides, detents within the case adapted to lock the drawers in their closed positions, trippers connected with said detents and projecting from the case, selecting mechanism mounted in a fixed position adjacent to the case and having means for selectively actuating the trippers, and individual actuating devices whereby the detents may be independently actuated.

In testimony whereof I have affixed my signature, in presence of two witnesses.

LEON H. COBB.

Witnesses:
P. W. Pezzetti,
A. H. Brown.