

Feb. 28, 1939.

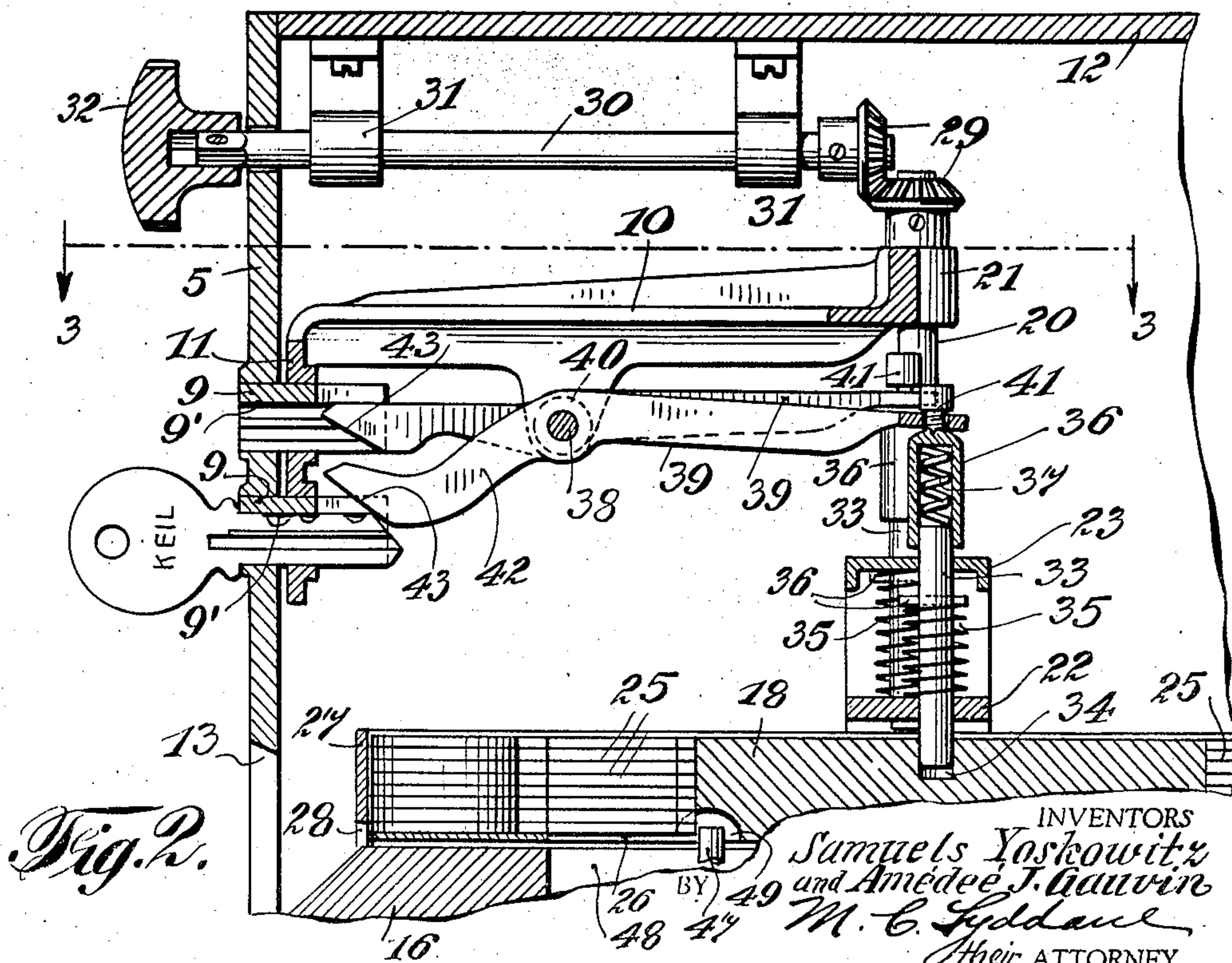
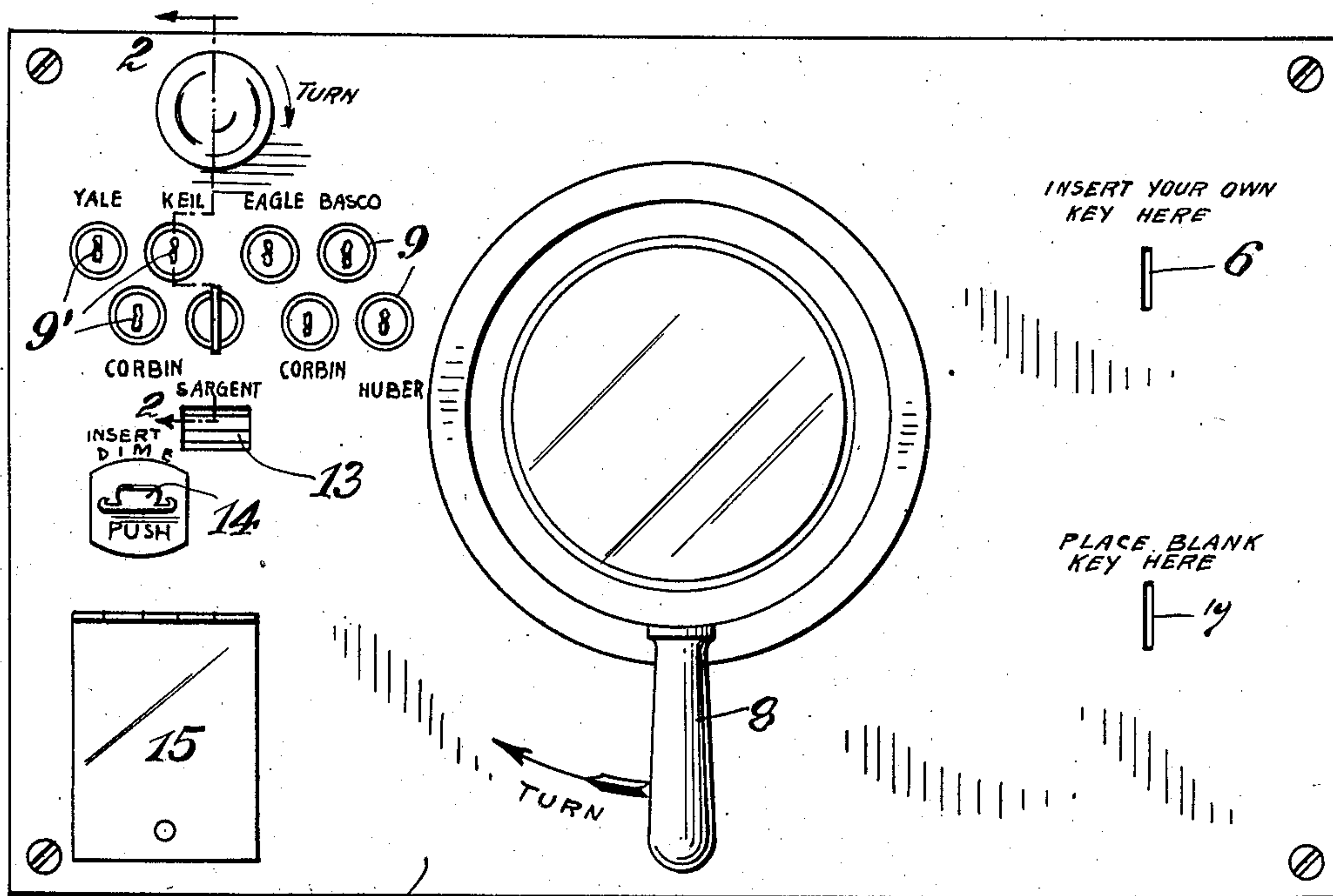
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2,148,667

KEY BLANK VENDING MECHANISM

Filed Sept. 29, 1936

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

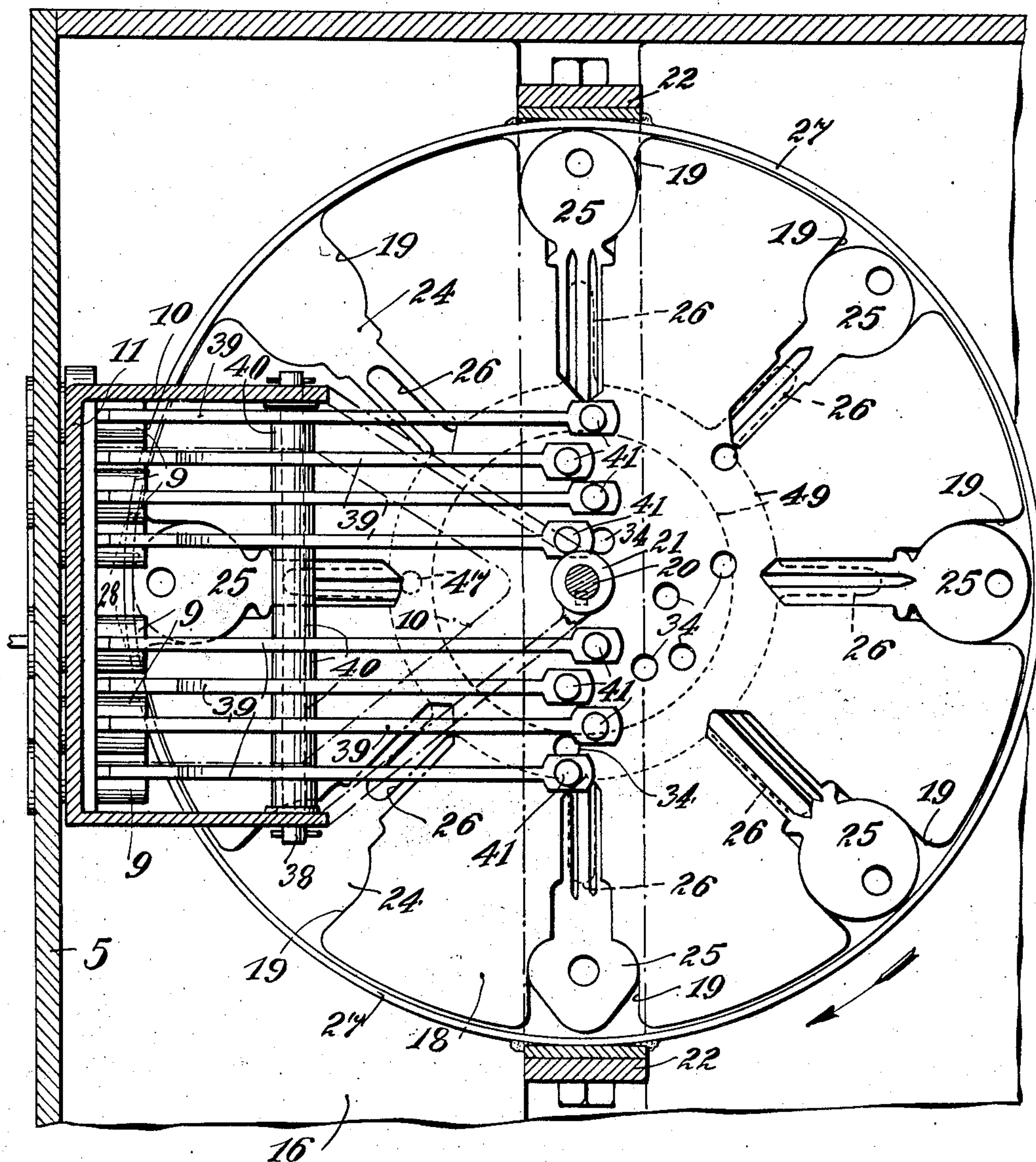


Fig. 3.

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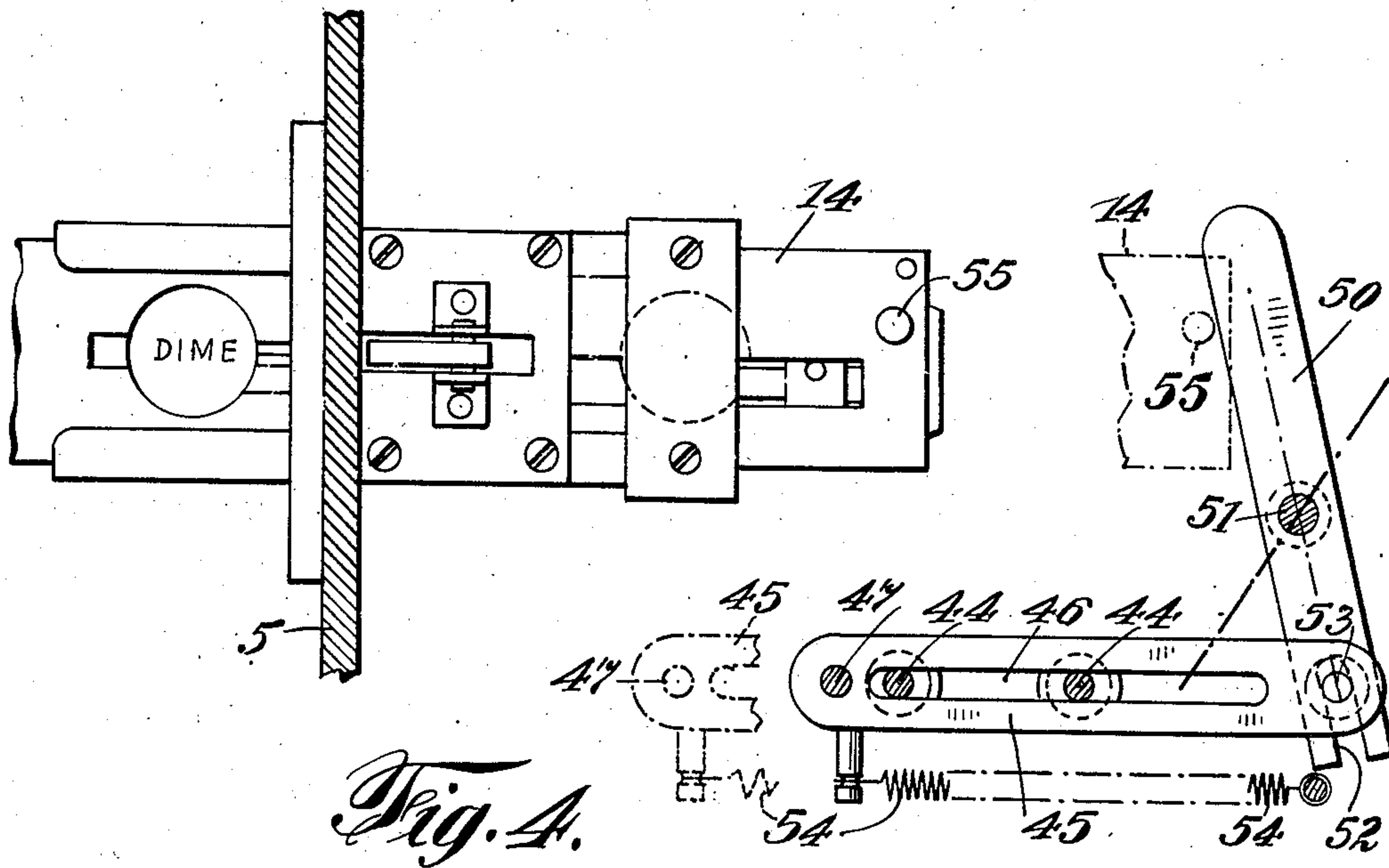


Fig. 4.

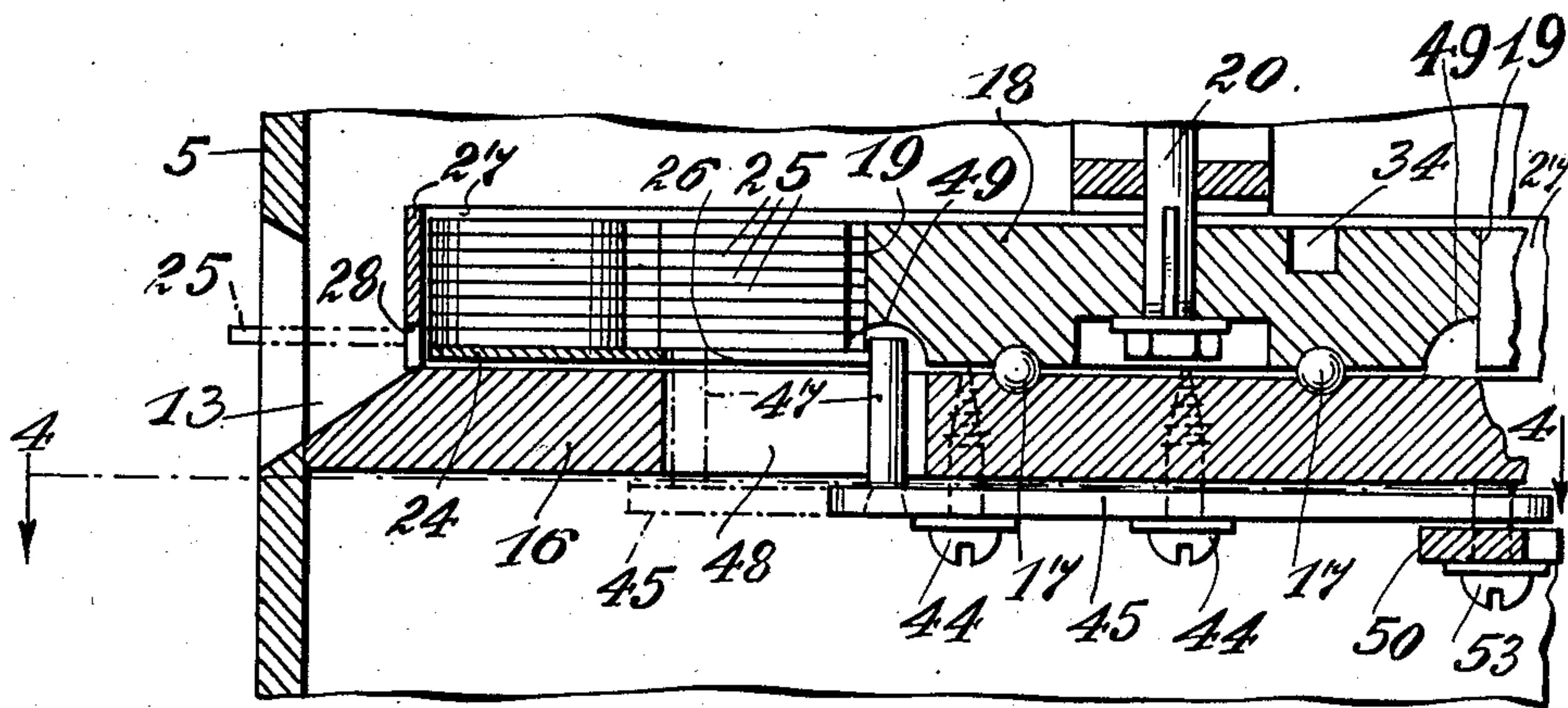


Fig. 5.

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UNITED STATES PATENT OFFICE

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KEY BLANK VENDING MECHANISM

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Application September 29, 1936, Serial No. 103,107

4 Claims. (Cl. 312—66)

This invention relates to vending or dispensing mechanism for key blanks and the like.

It is the general object and purpose of our invention to provide a machine adapted to be controlled in its operation by a patron's key of the Yale type whereby a corresponding key blank may be obtained.

Another object of the invention is to provide a machine of the above character comprising a bodily movable magazine having a series of compartments, each containing a plurality of key blanks, together with key controlled means for limiting movement of the magazine and registering the compartments thereof with a delivery opening in the wall of the machine case, and coin controlled means for delivering a single key blank from the registered compartment to said opening.

In a preferred embodiment of the invention, the magazine for the key blanks is rotatably mounted and individual stop devices actuated by patron's keys of relatively different patterns control and limit the rotation of said magazine to align one magazine compartment containing the proper blank with the delivery opening of the machine.

It is a further general object of our invention to provide a vending or dispensing mechanism for the above purpose which is comparatively simple and compact in the arrangement of its several parts, of large capacity, and positive in its functional operation.

With the above and other objects in view, our invention consists in the improved vending or dispensing mechanism for key blanks or the like, and in the form and relative arrangement of its several parts, as will be hereinafter more fully described, illustrated in the accompanying drawings and subsequently incorporated in the subjoined claims.

In the drawing, wherein we have illustrated one simple and practical embodiment of the invention, and in which similar reference characters designate corresponding parts throughout the several views;

Fig. 1 is a front elevation of a machine of one design in which our invention may be embodied.

Fig. 2 is a vertical sectional view on an enlarged scale taken substantially on the line 2—2 of Fig. 1.

Fig. 3 is a horizontal sectional view taken on the line 3—3 of Fig. 2.

Fig. 4 is a horizontal sectional view taken on the line 4—4 of Fig. 5.

Fig. 5 is a fragmentary vertical sectional view, diametrically of the magazine, and showing, in broken lines, one of the key blanks projected from the magazine compartment.

Referring in detail to the drawings and for the present, more particularly to Fig. 1, we have

shown the face plate 5 of the machine casing. In one side of the machine the coin controlled key blank delivering mechanism forming the subject matter of this application is contained, while in the other side of the casing, mechanism constituting the subject matter of separate co-pending application for patent filed Dec. 2, 1936, Ser. No. 113,841, and which grinds or cuts the key blank to the required pattern is housed. The particular design of the face plate 5 is not of essential importance and the arrangement of the various elements associated therewith, as hereinafter referred to, may vary widely from that illustrated in the drawings. As shown, the face plate, near one of its side edges, is provided with a slot 6 for the insertion of the pattern or patron's key and with a second slot 7 for the insertion of a corresponding blank to be cut or ground in accordance with the pattern or patron's key. The operation of the key cutting mechanism (not shown) is controlled by a suitable handle indicated by 8.

Adjacent to the opposite side edge of the face plate 5 a plurality of metal sleeves indicated at 9 are mounted at their outer ends in said face plate and extend inwardly therefrom through the vertically disposed depending wall 11 of a frame 10 housed within the machine casing, indicated at 12. Each of the sleeves 9 has a slot 9' extending longitudinally therethrough the opposite walls of which are cut or ground in accordance with relatively different key patterns. While we have shown only a relatively small number of these sleeves 9 they may correspond in number with the number of different key patterns made by different manufacturers. Preferably these sleeves are arranged in parallel rows and out of vertical alignment with each other.

The face plate 5 is also provided with a key blank delivery opening indicated at 13, and a coin inserting slide 14 which may be of any standard and well known design. 15 indicates the door which provides access to the coin receiving compartment or receptacle within the machine case.

Within the machine case 12 a horizontally disposed support 16 is secured and suitable anti-friction bearing means 17 is provided between the upper side of this support and the rotatable magazine 18. This magazine is provided with a plurality of radially disposed key blank receiving components 19, corresponding in number to the number of key receiving sleeves 9, and opening at their outer ends; upon the periphery of the magazine. This magazine 18 is keyed or otherwise suitably fixed to the lower end of a vertical shaft 20 journaled near its upper end in a suitable bearing 21 on the frame 10.

Above the magazine and extending diametrically across the same, vertically spaced bars 22 and 23 are arranged and suitably mounted or

supported at their opposite ends in fixed relation to the walls of the machine case.

It will be noted that these compartments generally conform in shape to the outline contour of the key blanks, and the base plate 24 is provided, in registration with the narrow portion of each compartment which receives the key shanks, with a longitudinally extending slot indicated at 26, opening upon the inner edge of the plate 24.

The purpose of these slots will be hereinafter explained.

A metal band or annulus 27 extends around the magazine 18 in clearance relation to its periphery and closes the outer open ends of the compartments 19. This metal band at its lower edge and in alignment with the delivery opening 13 is provided with a slot 28 which is of sufficient width and height to permit only the lowermost key blank 25 to be projected from a magazine compartment through said slot and delivery opening. The band or ring 27 is secured in a fixed position relative to the magazine in any suitable manner, as by welding the same at its opposite sides to the ends of the bar 22.

Any preferred means may be provided for the purpose of rotating the magazine 18. As herein shown the upper end of; the shaft 20 is geared, as at 29, to a horizontal shaft 30 mounted in suitable bearings 31 on the top wall of the case 12. This shaft projects through the face plate 5 and has a hand knob or other convenient operating member 32 fixed thereon.

A plurality of vertically movable pins 33 are mounted in the spaced bars 22 and 23 and correspond in number to the number of magazine compartments 19. These pins are arranged on opposite sides of the shaft 20 and at relatively different distances therefrom and are adapted for engagement at their lower ends in sockets or recesses 34 formed in the upper surface of the magazine 18, said sockets being correspondingly spaced at relatively different distances from the axial center of the magazine and also in circumferentially spaced relation to each other.

An expansion spring 35 surrounds each of the pins 33 and bears at its lower end against the bar 22 while the upper end thereof is engaged with a transverse stop pin or collar 36 which limits the upward movement of pin 33 to normal position by contact with the bar 23. In this normal position of the pin 33 its lower end is spaced above the upper surface of the magazine 18 and out of contact therewith.

Above the bar 23 a metal sleeve 36 is engaged at its lower end upon each pin 33 for movement relative thereto and a coil spring 37 within said sleeve bears at one end upon the upper closed end of the sleeve and at its other end against the upper end of pin 33. This spring 37 is of greater strength than the spring 35 so that when placed under compression it will act to press the pin 33 downwardly against the opposed resistance of the spring 35.

Upon a horizontal rod 38 mounted in the frame 10 the levers 39 are fulcrumed intermediate of their ends, suitable spacing sleeves 40 being arranged on said rod between the levers. The rear ends of these levers are loosely and pivotally connected by the headed screws or other suitable elements 41 to the upper ends of the respective sleeves 36. The outer end portions of certain of the levers 39 are downwardly inclined, as at 42, and the front terminal ends of each of the levers has a forwardly and upwardly inclined or beveled face, as indicated at 43. The

front ends of the levers having the angular portions 42 are normally positioned within the slots 9' of the lower row of slotted sleeves 9 while the corresponding ends of the remaining levers are similarly positioned in the slots of the upper row of sleeves 9, as will be clearly seen from reference to Fig. 2 of the drawings.

Spaced studs or screws 44 are fixed in the support 16 and project downwardly therefrom, said screws extending through a longitudinal slot 46 in the link 45 and guiding said link for rectilinear reciprocating movement. To one end of this link the upstanding pin 47 is fixed, said pin extending upwardly through the slot 48 in the support 16 and having its upper end positioned in an annular groove 49 provided in the underside of the magazine 18, at the inner ends of the compartments 19.

A lever 50 is fulcrumed immediate of the ends upon the stud or pin 51 fixed in the support 16 and one end of this lever is provided with a longitudinal slot 52 which movably receives a pin or stud 53 on the opposite end of the link 45 from the pin 47. A contractile coil spring 54 yieldingly holds the link 45 and lever 50 in the normal relative positions seen in Fig. 4 of the drawings and in which the other end of the lever 50 is positioned transversely of the path of movement of the coin slide 14. The rear end of this coin slide carries a pin 55 which is adapted to engage and actuate said lever. When no coin is inserted in the slide the inward movement of the slide is limited by suitable stop means to the position shown in broken lines so that the lever 50 will not be actuated by the pin 55. The insertion of the proper coin results in the displacement of said stop means so that there will be a further inward movement of the slide to thus effect the actuation of the lever 50. Since this type of coin slide and controlling stop means therefore is well known in the art further detailed description thereof appears to be unnecessary.

In the operation of the mechanism as above described, assuming that different key blank patterns have been supplied to the magazine compartments in accordance with the respective designations on the face plate 5 adjacent to the sleeves 9, the patron selects the proper sleeve and inserts his key in the slot 9' thereof. The rear end of the key engages the bevelled or inclined face 43 of one of the levers 39, thus raising or elevating the front end of the lever from the slot 9' while depressing the rear end of said lever. The sleeve 36 connected with said lever and the associated pin 33 are therefore forced downwardly so that the lower end of pin 33 is first caused to contact with the upper surface of the magazine 18 and sleeve 36 is then moved downwardly on the upper end of the pin 22 to place the spring 37 under compression. The operator now grasps the knob 32 and rotates shaft 30 in a clock-wise direction. Rotation is thereby transmitted through gears 29 and shaft 20 to the magazine 18. Such rotation of the magazine is continued until the recess 34 thereof which is in circumferential alignment with the particular pin 33 which has been depressed, registers with said pin whereupon spring 37 expands, further compressing spring 35 and forcing the pin downwardly into the recess 34. The magazine 18 is thereby locked against further rotation and with one of its compartments containing a key blank corresponding with the patron's key, in registering relation with the slot 28 and the delivery opening 13.

The patron now inserts a dime, or other proper coin, in the slide 14 and pushes said slide inwardly in the customary manner. Pin 55 thus engages and actuates lever 50 which in turn forces the link 45 forwardly against the yielding resistance of spring 54. The upper end of pin 47 is thus moved in the slot 48 of the support and one of the slots 26 of the magazine base plate 24 and projects the lowermost key blank in the compartment 19 forwardly through the slot 28 of the band or ring 27 and outwardly through the delivery opening 13 as shown in broken lines in Fig. 5 of the drawings. The remaining keys in said magazine compartment are prevented from moving forward with said lowermost key by the confining band or ring 27. In this manner, the key blanks will be selectively dispensed from the machine so that the patron receives a blank similar to the cross-sectional configuration of the pattern key which was inserted into one of the sleeves 9. Upon the withdrawal of this key from bearing contact with the lever 39, the spring 35 expands so that said lever as well as the pin 33 and sleeve 36 will be returned to their normal positions.

From the foregoing description, taken in connection with the accompanying drawings, the construction, manner of operation and several advantages of our improved key blank vending or dispensing mechanism will be clearly understood. It will be seen that the several parts of this mechanism, are of comparatively simple structural form, compact in their arrangement and reliable and positive in functional operation. The construction herein described provides a dispensing or vending machine for this purpose of great capacity. This is of course a prime consideration in the automatic vending of such articles as key blanks since there are several manufacturers of such key blanks, and each manufacturer produces a large variety of key patterns. Therefore it is to be understood that the magazine 18, as shown in the drawings, may be of other constructions and provided with a materially increased number of the key blank receiving compartments 19. Also in various other respects, the several structural features of our invention as above described are susceptible of more or less modification in the form and arrangement of the several co-operating elements. Accordingly it is to be understood that although we have herein disclosed one simple and practical example of our present invention, the essential features thereof may also be exemplified in various other alternative mechanical forms, and we therefore reserve the privilege of resorting to all such legitimate changes therein as may be fairly considered to be within the spirit and scope of the appended claims.

We claim:

1. In a vending machine for key blanks and the like having a delivery station, a horizontally rotatable magazine within the machine, having compartments for key blanks of relatively different structural forms, means for rotating said magazine, a plurality of slotted guides to receive patrons' keys respectively corresponding to the different keys in said compartments, stop devices corresponding in number with the compartments, and pivoted actuating lever for each of said stop devices having one of its ends normally positioned in the slot of one of said guides for operative engagement by the patron's key, whereby

the stop device is actuated to arrest rotation of the magazine and position a selected key compartment at the delivery station.

2. In a vending machine for key blanks and the like having a delivery station, a horizontally rotatable magazine within the machine, having compartments for key blanks of relatively different structural forms, means for rotating said magazine, a plurality of slotted guides to receive patrons' keys respectively corresponding to the different keys in said compartments, stop devices corresponding in number with the compartments, each including a movable pin adapted to engage a part on the magazine, a lever associated with each stop device, fulcrumed intermediate of its ends and having one end thereof normally positioned in the slot of one of said guides for operative engagement by the patron's key, and means connected with the other end of said lever including a part yieldably coacting with said pin and rendered effective upon actuation of said lever to project the pin into engagement with one of the stop parts on said magazine to arrest rotation of the latter and position a selected key compartment at the delivery station.

3. In a vending machine for key blanks and the like having a delivery station, a horizontally rotatable magazine within the machine, having compartments for key blanks of relatively different structural form, means for rotating said magazine, a plurality of slotted guides to receive patrons' keys respectively corresponding to the different keys in said compartments, a plurality of stop pins corresponding with the number of compartments mounted for vertical movement above the magazine and each adapted to engage a part on the magazine to arrest rotation of the latter and position a selected key compartment at the delivery station, means yieldably supporting said pins above the path of the stop parts on the magazine, a pivoted lever for each of said pins having one of its ends normally positioned in the slot of one of said guides for operative engagement by the patron's key, and a relatively yieldable connection between the other end of such lever and its associated pin rendered effective upon actuation of the lever to project the pin into engagement with one of the stop parts on the magazine.

4. In a vending machine for key blanks and the like having a delivery station, a horizontally rotatable magazine supporting groups of superposed key blanks of relatively different structural forms within the machine, means for rotating said magazine, means actuated by a patron's key for controlling the rotation of the magazine to bring a selected group of key blanks in register with the delivery station, a link mounted for movement radially of the magazine, a pin carried by one end of said link and having its free end disposed in the plane of the lowermost key blank in the selected group, means yieldingly holding the link in a normal position, a lever fulcrumed intermediate of its ends and operatively connected with the other end of said link, and a coin controlled slide having means to operatively engage said lever and actuate said link, whereby said pin engages and ejects the lowermost key blank of the selected group.

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