June 17, 1941. B. S. WATLING 2,246,155

DETENT RELEASE MECHANISM FOR WEIGHING SCALES

Filed Dec. 15, 1939 5 Sheets-Sheet 1

Fig. 1

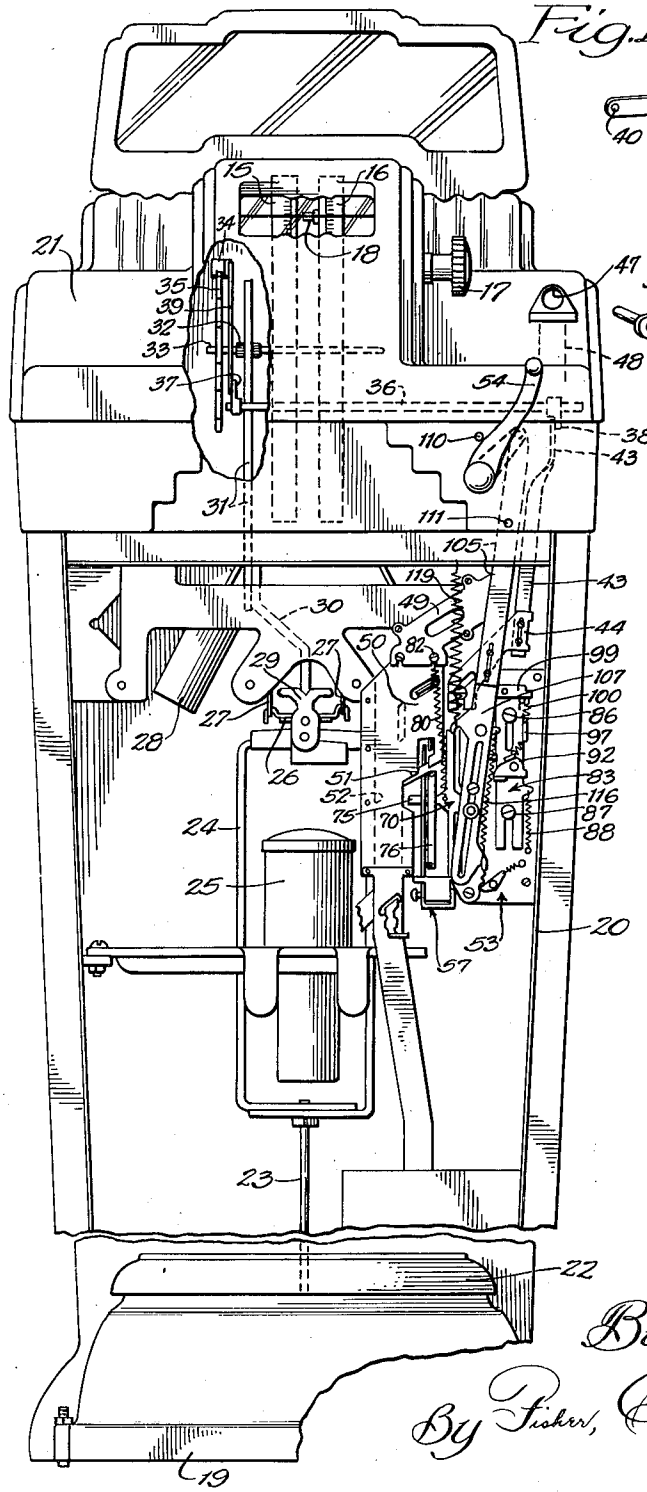
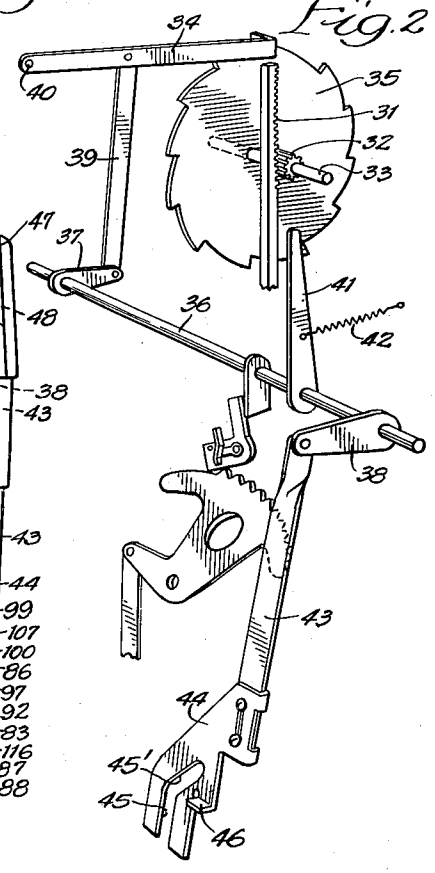


Fig. 2

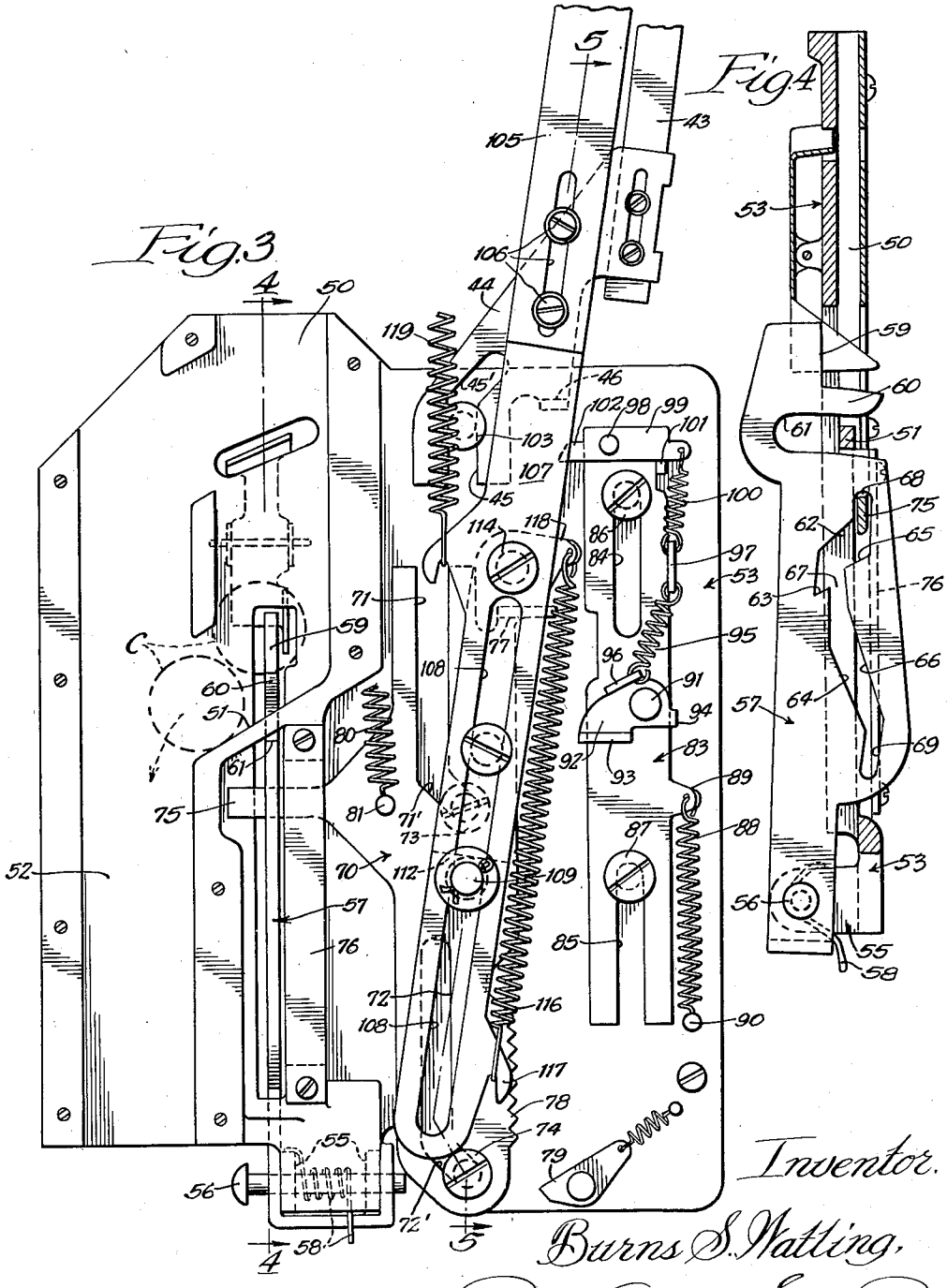


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DETENT RELEASE MECHANISM FOR WEIGHING SCALES

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DETENT RELEASE MECHANISM FOR WEIGHING SCALES

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Fig. 6

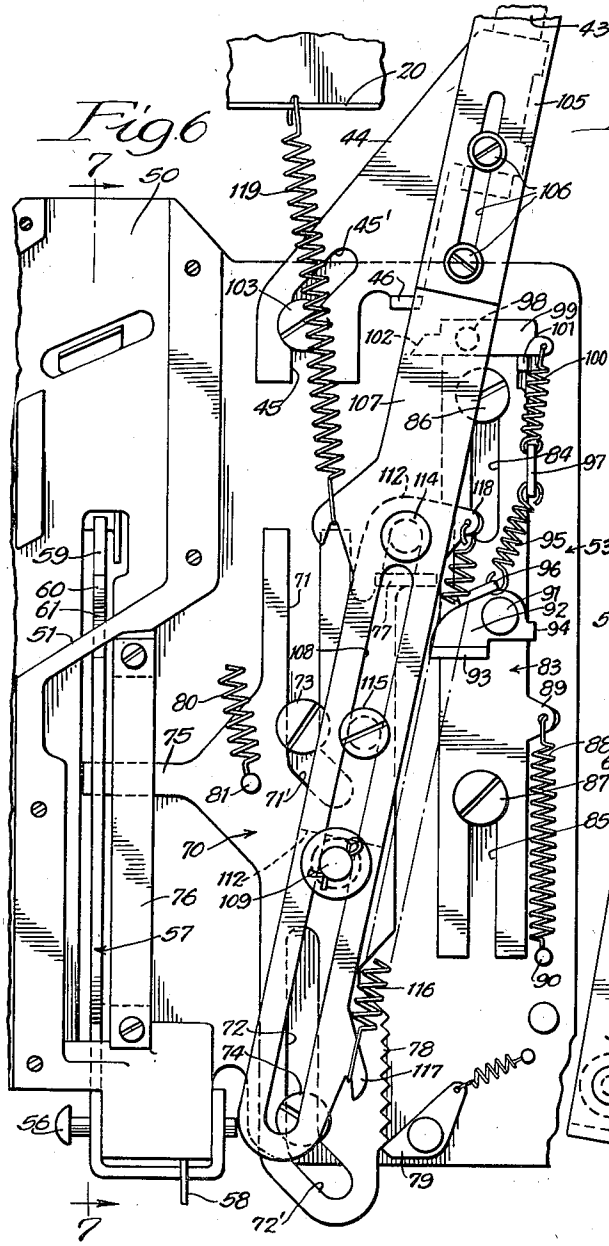


Fig. 7

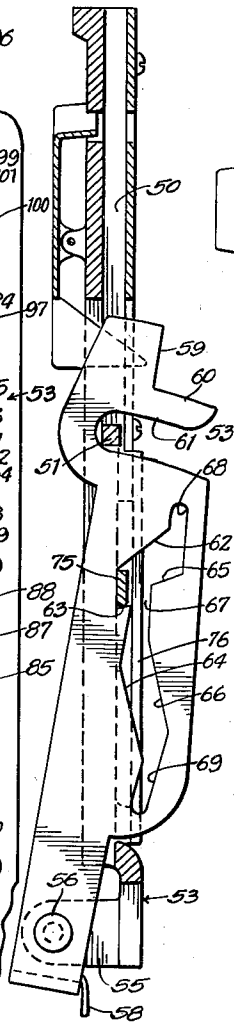
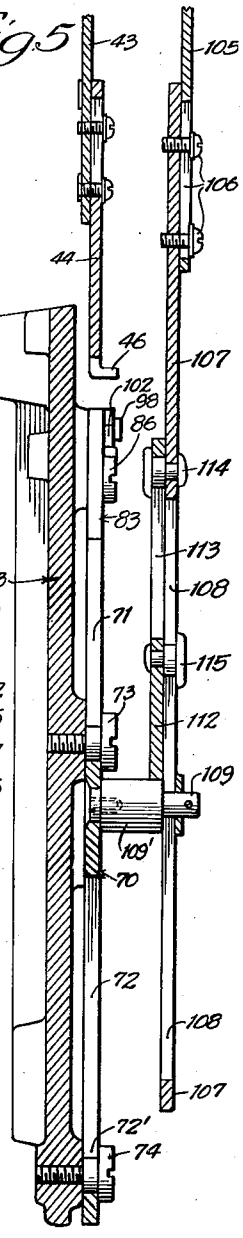


Fig. 5



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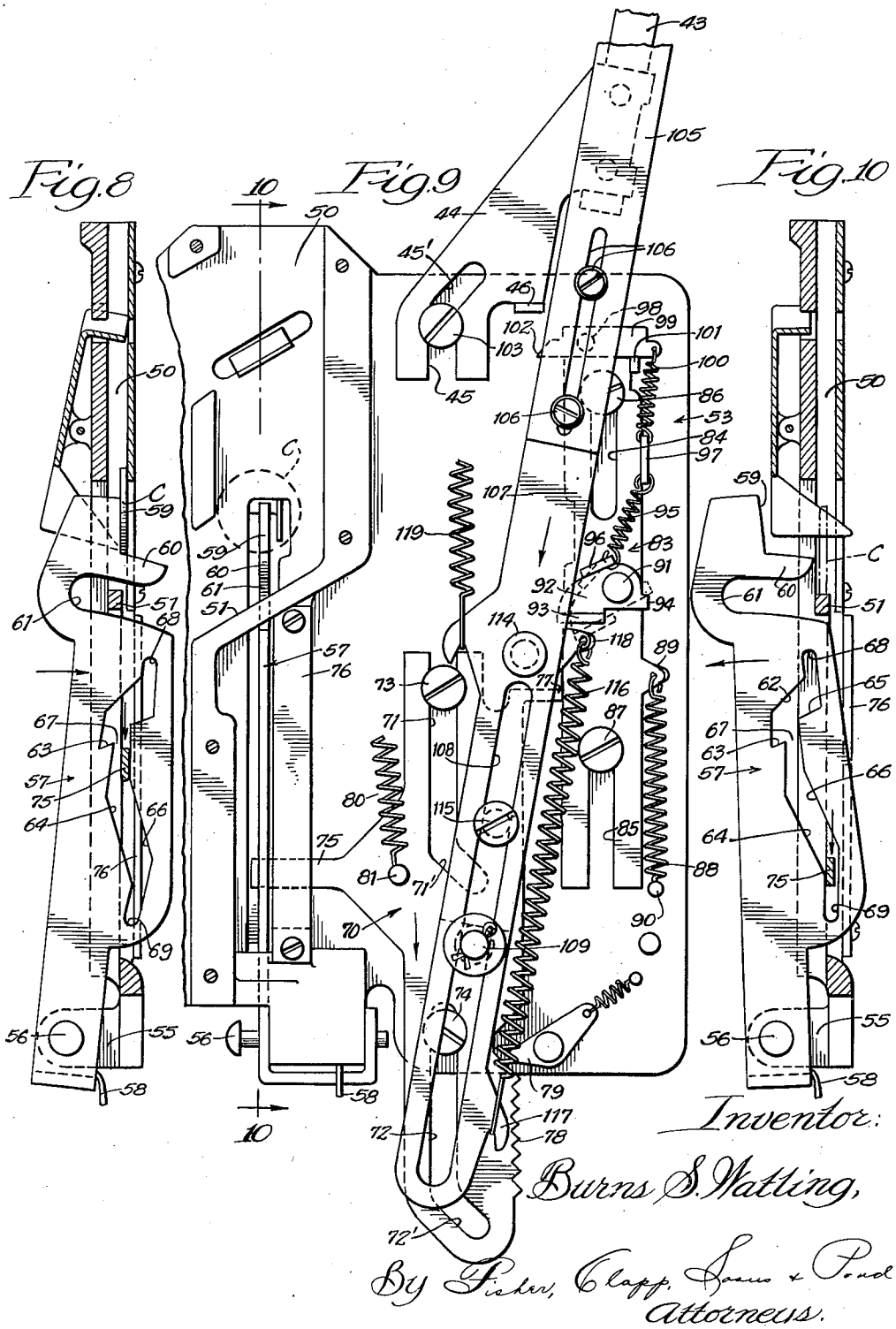
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June 17, 1941. B. S. WATLING 2,246,155

DETENT RELEASE MECHANISM FOR WEIGHING SCALES

Filed Dec. 15, 1939 5 Sheets-Sheet 4



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DETENT RELEASE MECHANISM FOR WEIGHING SCALES

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Fig. 11

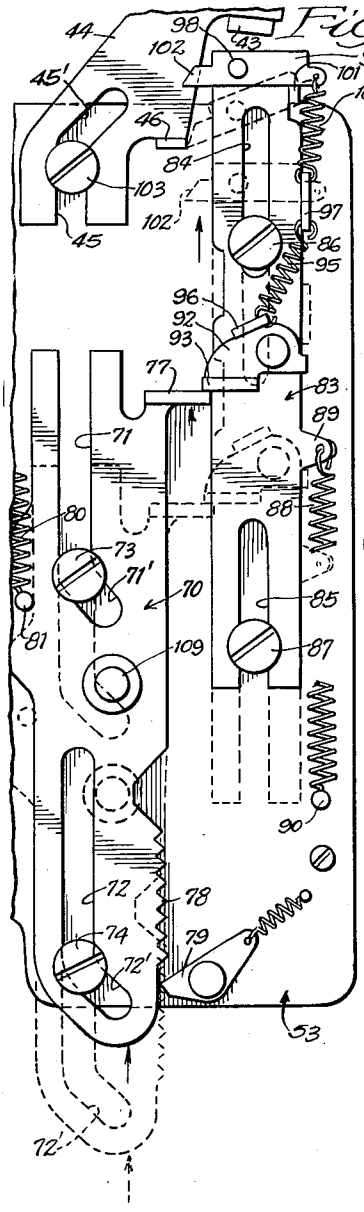


Fig. 12

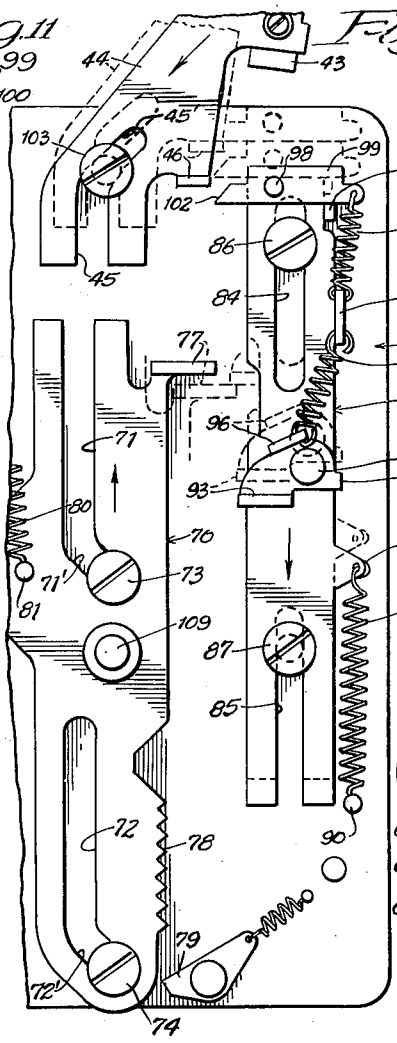


Fig. 13

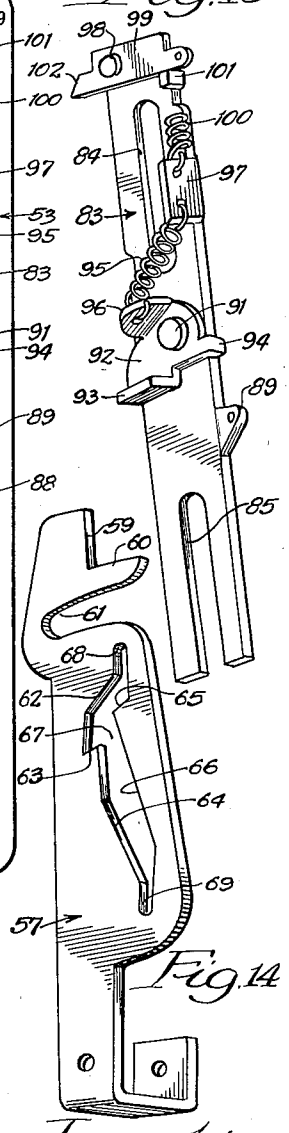


Fig. 14

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Patented June 17, 1941 2,246,155

UNITED STATES PATENT OFFICE

2,246,155

DETENT RELEASE MECHANISM FOR WEIGHING SCALES

Burns S. Watling, Chicago, Ill., assignor to Watling Scale Company, Chicago, Ill., a corporation of Illinois

Application December 15, 1939, Serial No. 309,355

16 Claims. (Cl. 194—92)

This invention relates to the general art of weighing scales, and more particularly to scales of that type employing a coin-controlled detent release mechanism in which the weight indicating mechanism is normally locked against operation by a pivoted detent pawl cooperating with a ratchet wheel on the shaft of the scale disc, and is released on the deposit of a proper coin. In some scales of this type the release is effected by manual operation of a sliding plunger in which the coin is deposited, the coin itself constituting a necessary element of the detent-release mechanism, examples of this being disclosed in my pending applications, Serial No. 198,020, filed March 25, 1938, and Serial No. 265,800, filed April 3, 1939, and in others the release of a locking member is effected by downward swing of an operating handle when a proper coin has been deposited, an example of this being disclosed in my former Patent No. 1,990,719, granted Feb. 12, 1935.

It is well known that unscrupulous persons often attempt to cheat coin-controlled weighing and vending machines by operating them without depositing a coin. One method consists in giving the plunger or handle a sudden, swift, violent movement under a force that, in some cases, will jar the locking means into release position without the use of an inserted coin, and not infrequently results in damage to the actuating member or to that portion of the operating mechanism which receives the impact of the actuating member.

It is the principal object of the present invention to provide an improved detent-releasing mechanism, more particularly although not exclusively adapted to weighing scales, that will successfully resist such manhandling and abuse, and cannot be operated except on the deposit of a proper coin or a purchased token of the size of the coin.

An illustrative embodiment of the invention is shown in the accompanying drawings, in which—

Fig. 1 is a front elevation of the scale, with the front cover plate removed, and showing the detent applied and the parts of the detent release mechanism in normal idle position.

Fig. 2 is a perspective view of the detent lifting mechanism, located in the cap or cover of the scale housing, that is operated by the underlying coin-controlled mechanism.

Fig. 3 is an enlarged front elevation of the coin-controlled detent release mechanism, including a portion of the coin chute with its front cover plate removed, and showing the parts in normal idle position.

Fig. 4 is a vertical section on the line 4—4 of Fig. 3.

Fig. 5 is a vertical section on line 5—5 of Fig. 3.

Fig. 6 is a view similar to Fig. 3, but showing a position of the parts when the operating handle has been swung part way down with no coin in the chute.

Fig. 7 is a vertical section on line 7—7 of Fig. 6, showing a stop which prevents a full down swing of the handle.

Fig. 8 is a view similar to Fig. 7, but showing a position assumed by the parts under a further down swing of the operating handle, when a proper coin has been deposited in the chute.

Fig. 9 is a view similar to Fig. 6, but showing a relative position of the parts when the handle has been swung to the limit of its down movement.

Fig. 10 is a vertical section on the line 10—10 of Fig. 9, wherein the coin has been released to the coin box.

Fig. 11 is a front elevation showing full line and dotted line positions of two relatively lifting and lifted plates, the former being shown in dotted lines in its lowermost position and in full lines in an intermediate position, and the latter being shown in dotted lines in its lowermost position and in full lines in its highest position.

Fig. 12 is a view similar to Fig. 11, but showing later assumed positions of the lifting and lifted plates, the former having been disengaged from the latter and reached its high position shown in Fig. 3, and the lifted plate having dropped from its high position, shown in dotted lines, to its low position, and, on its descent tripped the detent lifting mechanism.

Fig. 13 is a perspective elevation of the lifted member.

Fig. 14 is a perspective elevation of a pivoted detent release mechanism controlling member that is associated with the coin chute and permits or prevents the full actuation of the detent release mechanism accordingly as a coin is or is not deposited in the chute.

In the accompanying drawings, I have shown my present improvements applied to a weighing scale of the type disclosed in my pending application Serial No. 265,800 filed April 3, 1939, wherein a customer or user is given an opportunity to estimate or guess his own weight, and if he guesses his weight correctly the coin is returned to him by the mechine. Scales of this

type commonly employ a pair of scale discs, such as 15 and 16, one of which, such as 15, is weight-actuated, while the other is manually set by the customer to his estimated weight before the weight-actuated disc is released. In my last aforesaid application the manually set disc 16 is slidably mounted on a shaft and is rotated to any set position by turning a knob 17. It is also shiftable toward and from the weight-actuated disc 15. The disc 16 is equipped with pins, such as 18, that project toward the disc 15, and the latter is formed with a corresponding number of holes. If the user has correctly guessed his weight, the holes in disc 15 will register with the pins on disc 16, and when the latter is shifted sidewise, the pins will pass through the holes, and, through mechanism not herein shown, the coin is returned to the user. If the guess is incorrect, the holes do not register with the pins, and the latter can be moved only into contact with the solid portions of the disc 15 and in that event the coin is sent to the cash box of the machine.

My present improvements, however, relate solely to a coin-controlled mechanism by which a detent pawl that normally locks the weight-actuated disc 15 against turning is released upon the deposit of a proper coin, but is not released if no coin is deposited.

Referring first to Figs. 1 and 2, 19 designates the base, 20 the upright portion of the scale casing, 21 a cover or cap mounted on the upright portion 20, and 22 the scale platform. As usual in scales of this type, the platform 22 is connected through a rod 23, a frame 24 containing a dash pot 25 to steady the movement, a pivoted cross bar 26 on the upper end of frame 24, and flexible straps 27 to pivoted sector cams (not shown) from which are suspended swinging counterbalance weights 28; and from a yoke 29 in which the cross bar 26 is pivoted, a rod 30 extends upwardly and is connected to the lower end of a rack bar 31 that engages with a pinion 32 fast on the shaft 33 on which the weight-actuated scale disc 15 is keyed. A pivoted detent pawl 34 is normally engaged with a ratchet disc 35 fast on the shaft 33 so as to prevent the actuation of the scale disc 15 until the detent pawl 34 has been raised.

All of the above described parts are old and well known and need not be more particularly described.

Referring to Fig. 2, I have illustrated a simple mechanism for lifting the pawl 34 to free the shaft 33 which is adapted to cooperate with the coin-controlled detent release mechanism forming the subject-matter of this invention, and hereinafter fully described. This pawl lifting mechanism comprises a rock shaft 36, oppositely extending arms 37 and 38 fast on shaft 36, a link 39 pivotally connecting arm 37 with detent pawl 34, which latter is pivoted at 40, an upstanding arm 41 also fast on shaft 36, and a pull spring 42 acting on arm 41 in a direction to normally apply the pawl 34 to the disc 35. Pivoted to and depending from the arm 38 is a link 43 to the lower end of which is adjustably attached a depending foot 44 formed with a vertical slot 45 continuous with the lower end of an inclined cam slot 45' and a laterally offset toe 46. A downward pull on toe 46 releases the detent lever 34.

In the cap 21 is the receiving mouth 47 of a downwardly extending coin chute partially indicated at 48 in Fig. 1 that communicates at its lower end with an inclined section 49 of the chute, this latter communicating at its lower end with the upper end of a vertical section 50 (Fig. 3), this latter having a sloping bottom wall 51 through which the coin rolls into a lower vertical section 52 and thence to the coin box of the machine.

Formed as an edgewise extension of the rear wall of the chute sections 50, 51 and 52 is a vertical foundation plate designated as an entirety by 53, on which two vertically movable members 70 and 83 of the coin-controlled detent release mechanism are slidably mounted and guided, one of these members being spring-impelled in an up direction and positively moved down by the down swing of a manually operated handle 54 (Fig. 1), and the other being spring-impelled in a down direction and raised by said first named member into temporary engagement with the toe 46 of the foot 44.

On one lower corner of the foundation plate 53 are a pair of lateral lugs 55 supporting a pivot pin 56, on which is mounted the lower end of a controlling member of the detent release mechanism designated as an entirety by 57, and shown in isolated detail in Fig. 14 and in different side elevation positions in Figs. 4, 7, 8 and 10. This controlling member 57, as most clearly shown in Fig. 14, is a flat upright bar disposed in a plane at right angles to the plane of the coin chute, and it is urged to swing inwardly toward the coin chute by a torsion spring 58 (Figs. 3 and 4) encircling the pivot pin 56, anchored at one end to one of the lugs 55 and at its other end bearing on the transverse limb of the loop-shaped lower end of the member 57. On the upper end of the member 57 is a vertical stop shoulder 59, and at the base of the latter is a horizontal finger 60, these parts being movable across the lower portion of the chute section 50, and, when a coin C is deposited, engaging the latter in the manner shown in Fig. 8, temporarily arresting the latter, the coin at the same time blocking further inward swing of member 57. Next below the finger 60 is a transverse slot 61 that straddles the inclined bottom wall 51 of the chute section 50, and permits the maximum inward swing of member 57 shown in Fig. 7, which occurs when an attempt is made to operate the scale without depositing a coin. In the body of the member 57, below the transverse slot 61, is an irregularly shaped longitudinal slot, the edges of which are so formed as to provide a stop shoulder to block actuation of the detent release mechanism when it is attempted to operate the scale without a coin, and also inclined surfaces or cams that, in cooperation with a finger on one of the vertically slidable members, effect the outward swing and control the inward swing of the member 57. On the left edge of the slot, viewing Figs. 4, 7, 8, 10 and 14, is a cam 62, a stop shoulder 63, and an oppositely inclined cam 64. On the right edge of the slot is a steep cam 65, and a cam 66 opposite and similarly inclined to the cam 64. The portion of the slot between the cam 65 and the stop shoulder 63 forms a throat 67 for the normal downward passage of the finger of the slidable member, and narrow vertical upper and lower end portions 68 and 69 of the slot cooperate with said finger to hold the member 57 in the positions shown in Figs. 4 and 10 respectively. The functions of these several cams of the slot will appear in the description of the operation.

Describing next the two vertically slidable members that are mounted on the foundation

plate 53, 70 designates as a whole a flat plate that is formed with vertically alined upper and lower slots 71 and 72, continuous with the lower ends of which are inclined cam slots 71' and 72'. Upper and lower headed studs 73 and 74 mounted in the plate 53 extend through these slots and both confine the plate 70 on the plate 53 and guide the plate 70 in its vertical and lateral movements. The plate 70 is located next to the coin chute sections 50, 51 and 52, and on the edge thereon adjacent to said sections is an integral horizontal finger 75 that extends behind a vertical guide bar 76 secured to the plate 53 and through the longitudinal slot of the control member 57. On the upper end of the other edge of plate 70 is a horizontal trip lug 77, best shown in Figs. 11 and 12, and on the lower end of the same edge is a toothed rack 78 cooperating with a spring-held dog 79 to form a well-known full stroke compelling device. A pull spring 80 anchored at its lower end to a pin 81 on the plate 70 and at its upper end to a pin 82 (Fig. 1) on the coin chute section 49 urges the plate 70 upwardly.

The other vertically slidable member of the detent release mechanism consists of a plate designated as an entirety by 83 that is shown in isolated perspective in Fig. 13 and best shown in assembled front elevation in Figs. 11 and 12. This plate 83 is also formed with vertically aligned upper and lower slots 84 and 85, through which extend headed guide studs 86 and 87 mounted in the plate 53. Plate 83 is mounted along side plate 70, and is normally urged downwardly by a pull spring 88 anchored at its upper end to a lug 89 on the outer edge of plate 83 and at its lower end to a pin 90 on plate 53. Pivoted at 91 on the front face of plate 83, about midheight of the latter, is a trip lever 92 that is formed on its lower edge with a forwardly projecting lug 93 that lies in the path of the trip lug 77 during the rising movement of the latter. A tail piece 94 of the lever 92 overlaps the outer vertical edge of the plate 83, as best shown in Fig. 13, so that the lever 92 can be raised only to a horizontal position, but can swing downwardly sufficiently to permit lugs 77 and 93 to pass each other in the reverse direction. This is due to the fact that, as the tail piece 94 rises to the level of the axis of its pivot 91, it swings away from the edge of the plate 83 which it overlaps. Lever 92 is yieldably held in its horizontal position by a pull spring 95 anchored at its lower end to a top lug 96 on lever 92 and at its upper end to a forwardly projecting lug 97 on the outer edge of plate 83. Also pivoted at 98 on the upper end of plate 83 is another trip lever 99. This lever is normally held horizontal by a pull spring 100 anchored at its upper end to the outer end of lever 99 and at its lower end to lug 97. A stop lug 101 on the outer edge of plate 83 prevents the spring 100 from pulling lever 99 beyond horizontal position. On the other end of lever 99 is a nose 102 that, as the plate 83 rises, wipes across the toe 46 of the foot 44, and, as the plate 83 later descends under the pull of its spring 88, engages the toe 46 and draws the foot 44 and link 43 downwardly, thus raising the detent 34 from the ratchet wheel 35, and permitting the scale disc to turn.

The trip lug 77 and trip lever 92 constitute what I term a lift-and-let-go connection between the plates 70 and 83; and the toe 46 and lever 99 constitute what I term a pull-and-let-go connection between plate 83 and foot 44. The separation of the lugs 77 and 93 is effected during the latter portion of the rising movement of plate 70 by the engagement of the cam slots 71' and 72' with the guide studs 73 and 74, which effect a lateral shift of plate 70 away from the plate 83. And the separation of the toe 46 and the lever 99 is effected during the latter part of the down movement of the foot 44 by a lateral shift of the latter away from the plate 83 due to the engagement of the cam slot 45' with a fixed guide stud 103 engaged with the slots 45, 45'.

Describing next the means by which, on a down swing of the operating handle 54, the plate 70 and its finger 75 are forced downwardly, fast on the hub of the handle 54 is a crank arm 104 (Fig. 1), and pivoted to the outer end of arm 104 is a depending link 105 that is adjustably secured at its lower end (see Fig. 5) by a screw and slot connection, indicated generally by 106, to the upper end of a push bar 107 that is operatively connected to the plate 70. To provide for a cushioned down thrust of the push bar and the transmission of a corresponding down push on the plate 70, the push bar is preferably made in a pair of spring-connected sections, as follows. 107 designates the front section of the push bar, in the lower half of which is a long, continuous longitudinal slot 108 that slidably engages a headed guide stud 109 mounted in the plate 70, so that the push bar section 107 may have a combined downward and swinging movement as the handle 54 is operated. Incidentally, the up and down swinging movements of the handle 54 are limited by fixed stops 110 and 111 (Fig. 1). Referring to Figs. 3 and 5, lying behind and in sliding contact with the rear side of the push bar section 107 is a shorter push bar section 112, the lower end of which is stepped on an enlarged portion 109' of the stud 109 (see Fig. 5). The section 112 is formed with a longitudinal slot 113 in part registering with the upper portion of the long slot 108 in section 107. A headed stud 114 in section 107 slidably engages slot 113, and a headed stud 115 in section 112 slidably engages slot 108. Through a strong pull spring 116 anchored at its lower end to a hook 117 on one edge of bar 107 and at its upper end to a lug 118 on the upper end of bar 112, a down thrust on bar 107 is transmitted in cushioned form to bar 112 and through the latter and stud 109 to plate 70. The return or upward movement of the push bar is effected by a pull spring 119 (Fig. 6). As shown by dotted lines in Figs. 3 and 6, the upper left corner of the section 112 is rounded to reduce the metal, but otherwise such rounded corner has no significance.

Describing the operation, when the scale is idle the parts are in the positions shown in Figs. 1 to 5 inclusive, the finger 75 being in the upper end 68 of the longitudinal slot of the control member 57 and locking the latter in the position shown in Fig. 4 against the urge of spring 58. A customer steps on platform 22 and deposits a proper coin in the chute, the coin coming to rest on the finger 60. The handle 54 is then swung downwardly clockwise viewing Fig. 1. During the first part of the down stroke the plate 70 is lowered sufficiently to carry finger 75 out of the narrow upper end 68 of the slot, and this permits the control member 57 to swing inwardly until the shoulder 59 strikes the coin C, as shown in Fig. 8, arresting the inward swing of member 57 at a point where the throat 67

of the slot is in the path of the descending finger 75. Further down swing of handle 54 carries finger 75 down through throat 67, and as finger 75 encounters and slides down cam 64 member 57 is cammed outwardly, as shown in Fig. 10, releasing the coin and permitting it to roll down inclined wall 51 and thence to the coin box. At the end of the down swing of handle 54 the finger 75 is in the narrow lower end 69 of the slot, and member 57 is temporarily locked in the position shown in Fig. 10. During the down movement of plate 70 from the fully raised position appearing in Fig. 3 to the fully lowered position appearing in Fig. 9 said plate is shifted laterally to the right, and its lift lug 77 wipes idly over lug 93 of lever 92, slightly rocking the latter, and assumes a position beneath lug 93 (Figs. 9 and 11). Under the pull of spring 119 the push bar is raised, restoring handle 54 to normal position, and leaving plate 70 free to rise under the pull of its spring 80. As plate 70 rises, it raises plate 83, through engagement of lift lug 77 with lever lug 93, to the high position shown by full lines in Fig. 11, the nose 102 of lever 99 wiping idly past toe 46 during the rising movement. During the final part of this rising movement, when lever 99 has been carried well above toe 46 (Fig. 11), plate 70 is shifted laterally back from Fig. 11 position to Fig. 12 position by the cam slots 71', 72', thus disengaging lug 77 from lug 93, and allowing spring 88 to suddenly pull plate 83 down. This causes the nose 102 of lever 99 to strike toe 46 and draw down the foot 44 and link 43, thus releasing the detent of the scale weighing disc. This last movement is long enough in point of time to allow the disc to come to rest, and during the final part of the down movement of foot 44 its cam slot 45' shifts foot 44 to the left (Fig. 12) disengaging toe 46 from lever 99, and allowing plate 83 to descend to its fully lowered position shown in Figs. 3, 6, 9 and 12. During the rising movement of the plate 70 its finger 75 of course travels upwardly from its Fig. 10 position through its Fig. 8 position to its Fig. 4 position, its sliding engagement with cam 66 shifting throat 67 into its path of travel, and its later sliding engagement with cam 62 rocking member 57 outwardly to permit the finger to enter the narrow upper end 68 of the slot, as shown in Fig. 4.

The foregoing describes a complete cycle when a proper coin has been deposited.

If now it be attempted to operate the scale without depositing a coin, there will be no coin to arrest the inward swing of control member 57 at the position shown in Fig. 8, in which position the throat 67 is in the path of the finger 75, and the result is that the spring 58 swings member 57 to the limit of its inward movement shown in Fig. 7, wherein the stop 63 lies across the path of the descending finger 75 and arrests further descent of the latter. And if it be attempted to beat this by giving the handle 54 a quick, slamming movement, the sharp impact of finger 75 on the cam 65 will accelerate the spring action and throw the throat 67 across and beyond the path of the finger before the latter can enter the throat, so that the finger will, in that case also, be arrested by the stop 63. Hence, whether the handle be given a slow, even down movement or a quick, slamming movement, the detent release mechanism will not be actuated without the previous deposit of a coin.

The rear push bar section 112 and its operating spring 116 may be omitted, and the front section 107 be stepped directly on the stud 109 without impairing the operativeness of the mechanism; but the elastic, cushioned construction shown and described is preferred as saving the mechanism from physical abuse by unscrupulous persons who will not operate it in the proper and intended manner.

It will also be noted that the motive agent that directly operates the detent pawl raising mechanism is a spring 88 in which power derived from the manually operated handle has been previously stored, so that the operation of the pawl raising mechanism is always uniform.

Changes in the details of structure and arrangement of the parts may be resorted to within the scope and coverage of the claims.

I claim:

1. In a mechanism of the class described, the combination with a ratchet, a detent, and means normally holding said detent engaged with said ratchet, of detent release mechanism comprising a link operative, when shifted endwise in one direction, to retract said detent from said ratchet, and means for actuating said link in a direction to retract said detent, comprising two bodily movable members disposed side by side and means constantly urging said two members in opposite directions, means for guiding the movements of said members, manually operated means engaged with one of said members for moving it in opposition to its urging means, cooperating movement transmitting devices respectively carried by said two members and means causing one of said devices to first engage with the other device and thereby move the member carrying said other device in opposition to its urging means and then release said other device, other cooperating movement transmitting devices respectively carried by said other member and said link and means causing the device carried by said other member to first engage with the device carried by said link and thereby, under the impulse of the urging means of said other member, move said link in a direction to retract said detent and then release the device carried by said link.

2. In a mechanism of the class described, the combination with a ratchet, a detent, and means normally holding said detent engaged with said ratchet, of detent release mechanism comprising a link operative, when shifted in one direction to retract said detent from said ratchet, and means for actuating said link in a direction to retract said detent, comprising two endwise slidable plates disposed side by side and springs respectively urging said plates in opposite directions, means for guiding the movements of said plates, manually operated means engaged with one of said plates for moving it in opposition to its spring, cooperating movement transmitting devices respectively mounted on adjacent edges of said plates and means causing one of said devices to first engage with the other device and thereby shift the plate carrying said other device against the urge of its spring and then release said other device, other cooperating movement transmitting devices respectively mounted on the shifted plate and said link and means causing the device carried by said shifted plate to first engage with the device carried by said link and thereby, under the urge of the spring associated with said shifted plate, move said link in a direction to retract said detent, and then release the device carried by said link.

3. In a mechanism of the class described, the combination with a ratchet, a detent, and spring actuated means normally holding said detent engaged with said ratchet, of detent release mechanism comprising a depending link operative, when shifted downwardly, to retract said detent from said ratchet, and means for effecting a down movement of said link, comprising an endwise slidable upright plate located below said link, a spring urging said plate upwardly, a second endwise slidable upright plate located alongside said first named plate and a spring urging said second plate downwardly, cooperating plate lifting and lifted members respectively carried by said first named and second plates, and automatic means disengaging said lifting member from said lifted member during the final part of the up movement of said first named plate, cooperating link lowering and lowered members respectively carried by said second plate and link and automatic means disengaging said lowering member from said lowered member during the final part of the down movement of said second plate, means for guiding the movements of said plates and link, and manually operated means engaged with said first named plate for moving it downwardly in opposition to its spring.

4. In a mechanism of the class described, the combination with a ratchet, a detent, and spring actuated means normally holding said detent engaged with said ratchet, of a vertical foundation plate, a depending link operative to retract the detent on a down movement, and at its lower end overhanging the upper portion of said foundation plate, an upright plate mounted to slide up and down on said foundation plate, a spring urging said plate upwardly, a second upright plate mounted to slide up and down on said foundation plate alongside said first named plate, a spring urging said second plate downwardly, cooperating plate lifting and lifted members respectively carried by said first named and second plates, and automatic means disengaging said lifting member from said lifted member during the final part of the up movement of said first named plate, cooperating link lowering and lowered members respectively carried by said second plate and the lower end of said link and automatic means disengaging said lowering member from said lowered member during the final part of the down movement of said second plate, means for guiding the movements of said plates and link, and manually operated means engaged with said first named plate for moving it downwardly in opposition to its spring.

5. An embodiment of the subject-matter defined in claim 4, wherein the first named slidable plate has a vertical slot and an inclined cam slot continuous with the lower end of the vertical slot and the foundation plate carries a stud engaged with said slots for guiding said slidable plate and shifting the same laterally to disengage the lifting and lifted members during the final part of the rising movement of said slidable plate.

6. An embodiment of the subject-matter defined in claim 4, wherein the second slidable plate has means for guiding it, and the lower end of the link has a vertical slot and an inclined cam slot continuous with the upper end of the vertical slot and the foundation plate carries a fixed stud engaged with said slots for guiding said lower end and shifting the same laterally to disengage the lowering and lowered members at the end of the down movement of the link.

7. An embodiment of the subject-matter defined in claim 4, wherein the first named slidable plate has upper and lower vertical slots and inclined cam slots continuous with the lower ends of the vertical slots and the foundation plate carries fixed studs engaged with said slots for guiding said slidable plate and shifting the same laterally to disengage the lifting and lifted members during the final part of the rising movement of said slidable plate, and the second slidable plate has upper and lower vertical slots and the foundation plate carries fixed studs engaged with said last named slots, and the lower end of the link has a vertical slot and an inclined cam slot continuous with the upper end of the vertical slot and the foundation plate carries a fixed stud engaged with said last named slots for guiding said lower end and shifting the same laterally to disengage the lowering and lowered members at the end of the down movement of the link.

8. In combination with a coin chute, and a movable element of a detent release mechanism having a laterally projecting finger, a coin-controlled control member permitting or preventing a full movement of said element accordingly as a coin is or is not deposited in said chute, comprising a bar disposed adjacent to said chute and formed with a coin-engaging stop and a coin-arresting finger both movable across said chute and a slot through which said laterally projecting finger plays, said slot having on an edge thereof a stop shoulder movable into and out of the path of travel of said laterally projecting finger, and a spring urging said bar toward said chute; said coin-engaging stop when engaged with a coin preventing sufficient movement of said control bar to carry said stop shoulder into the path of said laterally projecting finger, and when not engaged with a coin permitting such sufficient movement.

9. In combination with a coin chute, and a vertically movable element of a detent release mechanism having a horizontally projecting finger, a coin-controlled control member permitting or preventing a full down movement of said element accordingly as a coin is or is not deposited in said chute, comprising a bar disposed in a plane at an angle to the plane of said chute, said bar formed with a coin-engaging stop and a coin-arresting finger both movable across said chute and a longitudinal slot beneath said coin-arresting finger through which said horizontally projecting finger plays, said slot having on an edge thereof a stop shoulder movable into and out of the path of travel of said horizontally projecting finger, and a spring urging said bar toward said chute; said coin-engaging stop when engaged with a coin preventing sufficient movement of said control bar to carry said stop shoulder into the path of said horizontally projecting finger, and when not engaged with a coin permitting such sufficient movement.

10. In combination with a coin chute, and a vertically movable element of a detent release mechanism having a horizontally projecting finger, a coin-controlled control member permitting or preventing a full down movement of said element accordingly as a coin is or is not deposited in said chute, comprising a bar disposed in a plane at right angles to the plane of said chute, said bar being pivoted at its lower end and formed on its upper end with a vertical coin-engaging stop and at the foot of said stop with

a horizontal coin-arresting finger both swingable across said chute and a longitudinal slot beneath said coin-arresting finger through which said horizontally projecting finger plays, said slot having on one edge thereof a stop shoulder movable into and out of the path of travel of said horizontally projecting finger, and a spring acting on said bar to urge its upper end across said chute; said vertical coin-engaging stop when engaged with a coin preventing sufficient swing of said control bar to carry said stop shoulder into the path of said horizontally projecting finger, and when not engaged with a coin permitting such sufficient swing.

11. An embodiment of the subject-matter of claim 9, wherein the slot of the control bar has beneath the stop shoulder a cam engaged with the horizontally projecting finger to shift the control bar outwardly sufficiently to carry the coin-engaging stop and coin-arresting finger out of the chute to release the coin.

12. An embodiment of the subject-matter of claim 10, wherein the slot of the control bar has beneath the stop shoulder, a cam engaged with the horizontally projecting finger to swing the control bar outwardly sufficiently to carry the coin-engaging stop and coin-arresting finger out of the chute to release the coin, and beneath said cam a narrowed lower end portion serving, when engaged with the horizontally projecting finger, to hold the control bar in coin release position.

13. An embodiment of the subject matter of claim 10, wherein the slot of the control bar has beneath the stop shoulder a cam engaged with the horizontally projecting finger to swing the control bar outwardly sufficiently to carry the coin engaging stop and coin-arresting finger out of the chute to release the coin, beneath said cam a narrowed lower end portion serving, when engaged with the horizontally projecting finger, to hold the control bar in coin release position, above the stop shoulder a cam cooperating with the horizontally projecting finger on the rising movement of the latter to swing the control bar outwardly to normal coin-receiving position, and, above said last named cam a narrowed upper end portion serving, when engaged with the horizontally projecting finger, to hold the control bar in said normal coin receiving position.

14. An embodiment of the subject-matter of claim 3, wherein the cooperating plate lifting and lifted members comprise a lift lug on the first named slidable plate and a cooperating trip lever on the second slidable plate, and the cooperating link lowering and lowered members comprise a fixed lug on said link and a cooperating trip lever on said second slidable plate.

15. An embodiment of the subject matter of claim 3, wherein the means for guiding the movements of the slidable plates and link includes means for shifting the first named slidable plate away from the second slidable plate during the final part of the rising movement of the first named slidable plate to separate the plate lifting and lifted members, and means for shifting the link away from the second slidable plate during the final part of the down movement of the link to separate the link lowering and lowered members.

16. An embodiment of the subject-matter defined in claim 10, wherein the slot of the control bar has, above the stop shoulder and on the other edge of the slot, a steep cam serving, under a quick violent blow of the horizontally projecting finger thereon, to swing the control bar inwardly to a position in which the stop shoulder blocks further descent of the horizontally projecting finger.

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