Oct. 3, 1944. L. STEINER 2,359,397

DEVICE FOR DISPENSING ARTICLES FROM CHUTES

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Fig. 1.

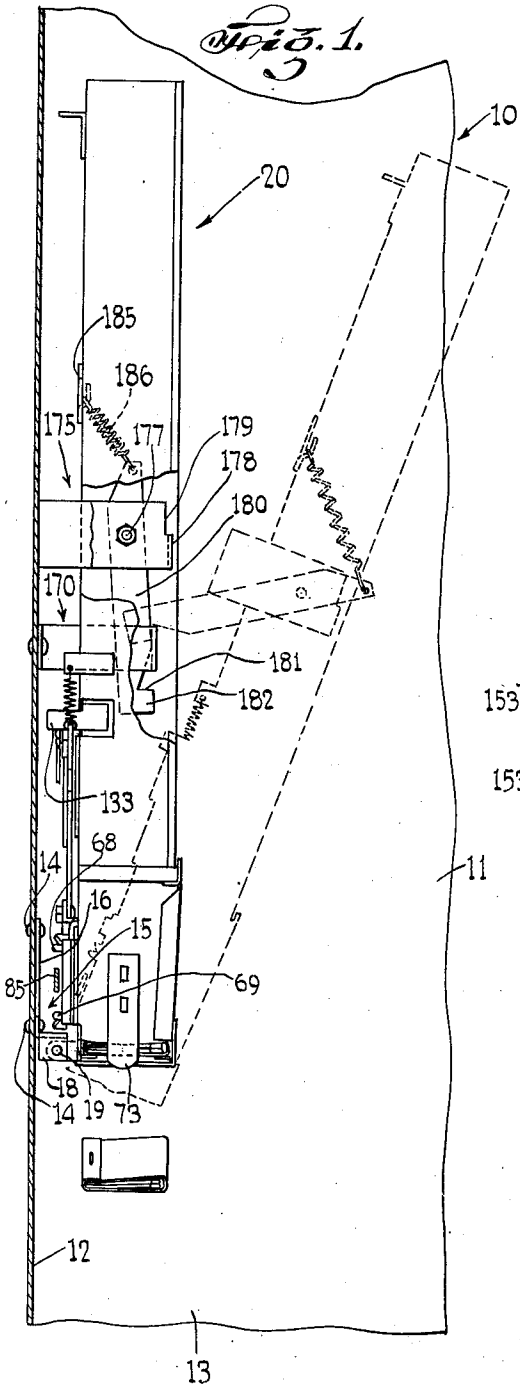
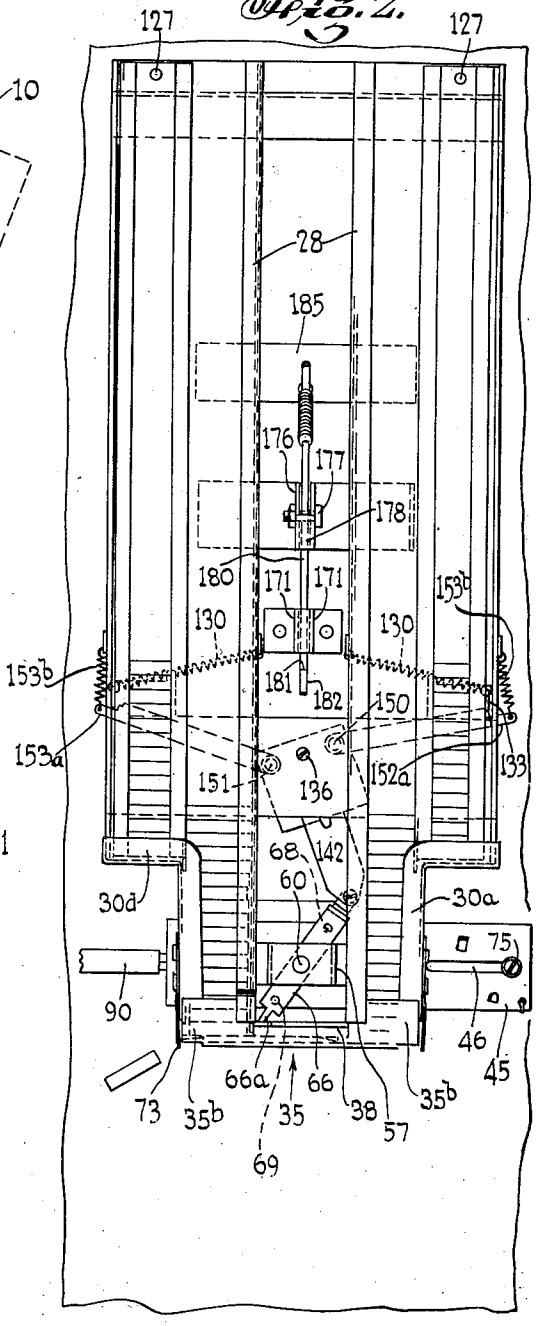


Fig. 2.



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DEVICE FOR DISPENSING ARTICLES FROM CHUTES

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Fig. 3.

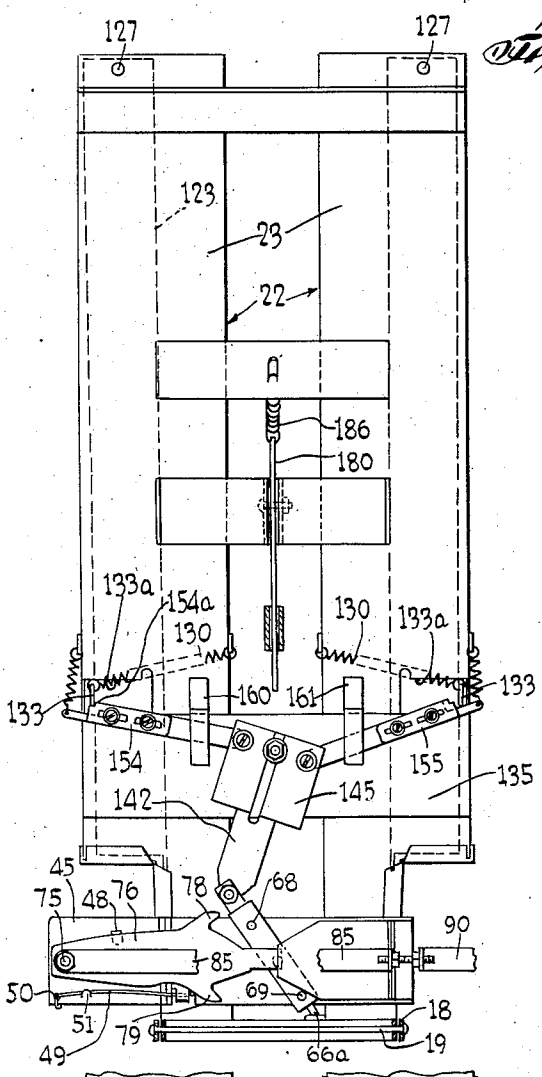


Fig. 6.

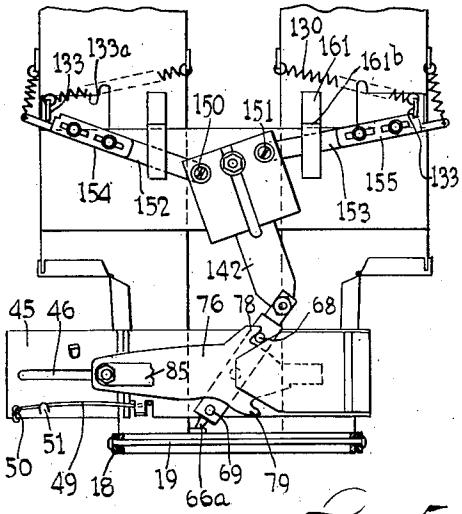


Fig. 5.

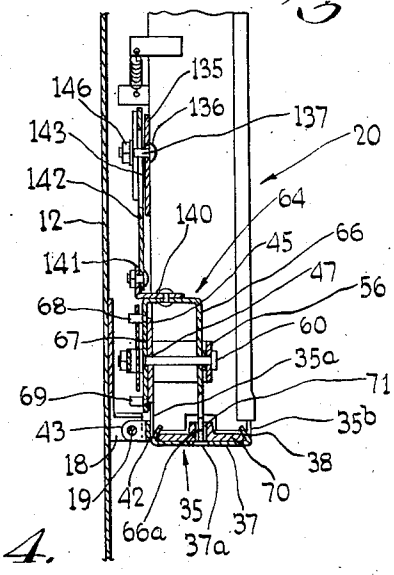


Fig. 4.

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DEVICE FOR DISPENSING ARTICLES FROM CHUTES

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Fig. 7.

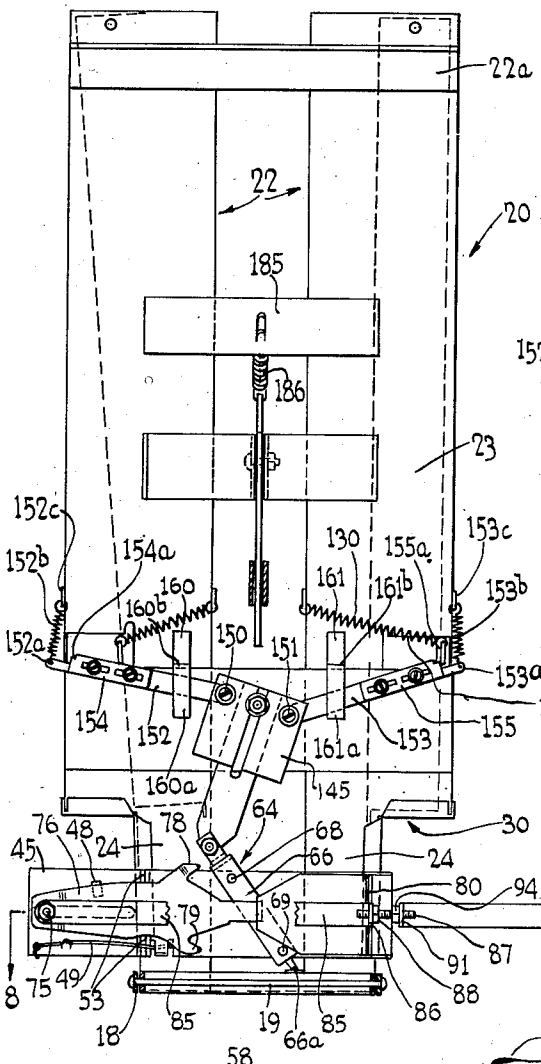
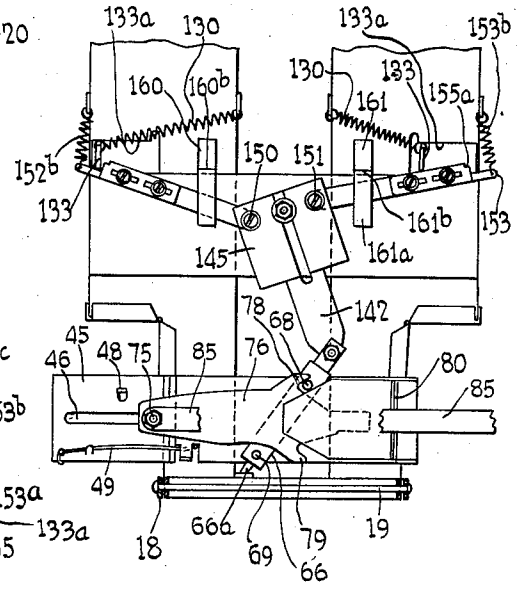


Fig. 9.



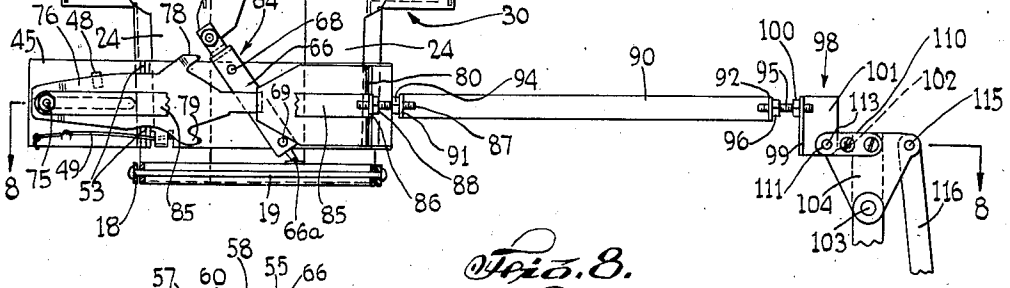
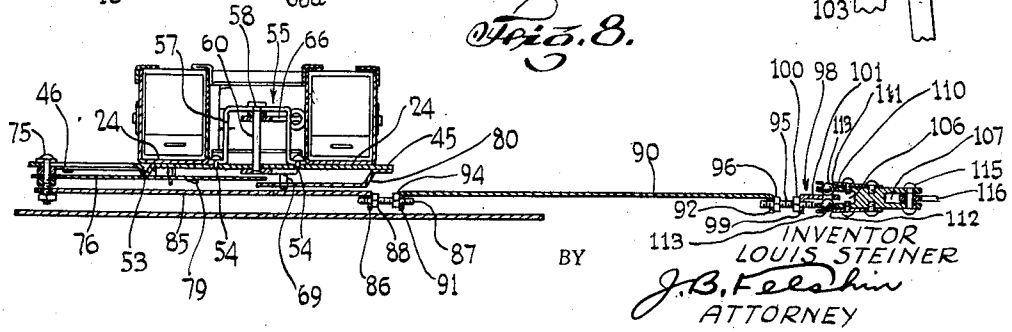


Fig. 8.



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DEVICE FOR DISPENSING ARTICLES FROM CHUTES

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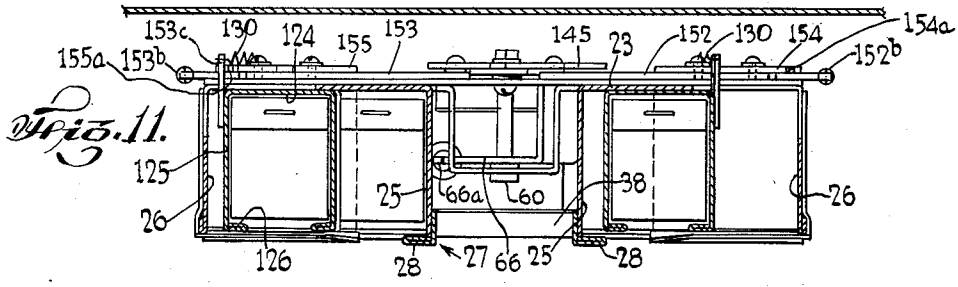


Fig. 11.

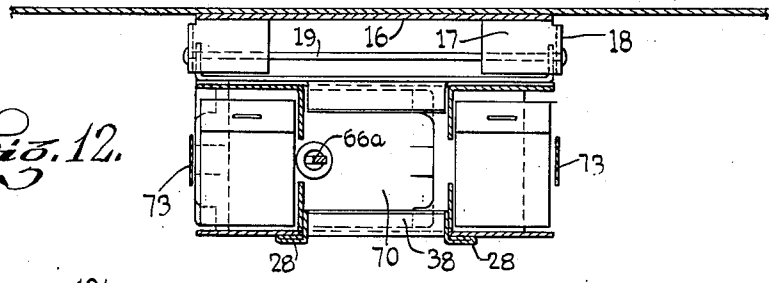


Fig. 12.

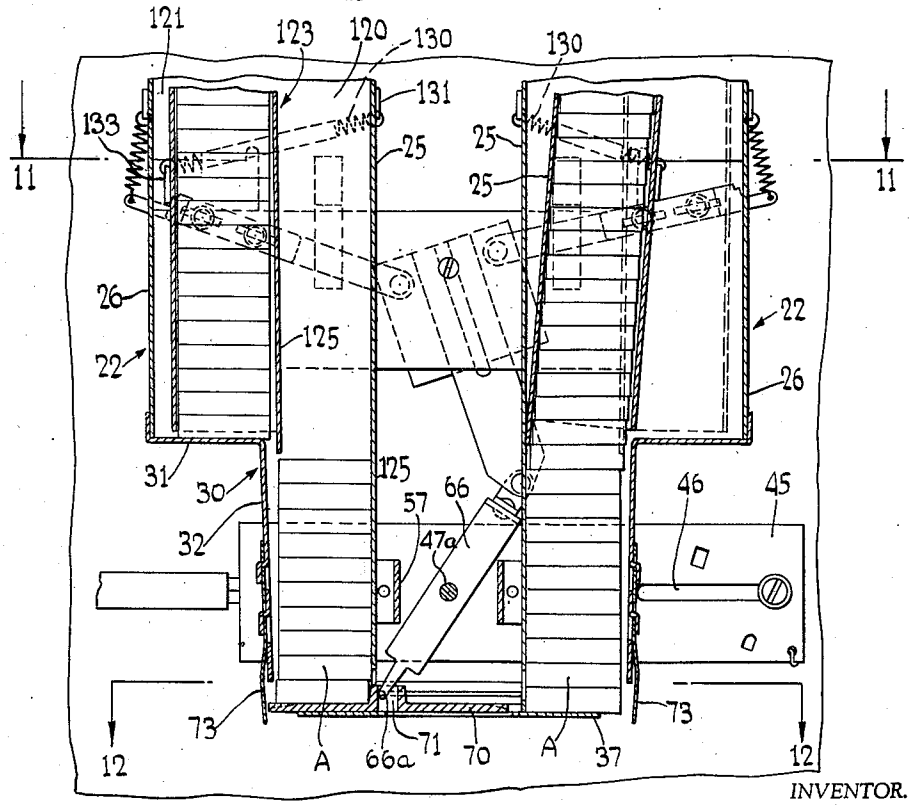


Fig. 10.

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Patented Oct. 3, 1944

2,359,397

UNITED STATES PATENT OFFICE

2,359,397

DEVICE FOR DISPENSING ARTICLES FROM CHUTES

Louis Steiner, New York, N. Y.

Application June 12, 1941, Serial No. 397,722

13 Claims. (Cl. 312—67)

This invention relates to devices for dispensing articles from chutes.

Vending machines have been known which comprise a primary chute and a secondary chute, both adapted to contain articles to be dispensed, and means operative when the articles in the primary chute have run down to a predetermined height, to swing said secondary chute into such position that the articles therein will pass to the primary chute to be dispensed therefrom.

It is an object of the present invention to provide a highly improved means for controlling the secondary chute, including releasable means to normally lock the primary chute in substantially vertical position, spring means to normally urge the secondary chute to swing into the primary chute, and means controlled by the dispensing means to momentarily release the locking means each time an article is dispensed from the primary chute, to permit the spring means to swing the secondary chute into the primary chute, if articles in the primary chute have run down below a predetermined point, and to again lock the secondary chute in vertical position if the articles in the primary chute prevent the secondary chute from swinging into the primary chute.

A further object of this invention is to provide in a dispensing device of the character described, a pair of primary chutes and a pair of secondary chutes cooperating therewith, respectively, and a single dispensing mechanism which reciprocates beneath the primary two chutes, to alternately eject articles therefrom, and means controlled by the ejecting mechanism to normally lock the secondary chutes and to momentarily release the same each time an article is ejected from any of the primary chutes to permit the secondary chutes to swing inwardly into the primary chutes, if articles in the primary chutes are below a predetermined height, and to again lock the secondary chute if articles in the primary chute prevent said secondary chutes from swinging into the primary chutes.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists in the features of construction, combinations of elements, and arrangement of parts which will be exemplified in the construction hereinafter described, and of which the scope of application will be indicated in the following claims.

In the accompanying drawings, in which is shown one of the various possible illustrative embodiments of this invention,

Fig. 1 is a side elevational view of dispensing mechanism embodying the invention;

Fig. 2 is a front elevational view thereof;

Fig. 3 is a rear elevational view;

Fig. 4 is a view similar to the lower end of Fig. 3; but showing the ejecting mechanism half way through an ejecting stage;

Fig. 5 is a cross-sectional view taken on line 5—5 of Fig. 4;

Fig. 6 is a view similar to Fig. 3, but showing the mechanism after an article has been ejected from one of the primary chutes;

Fig. 7 is a view similar to Fig. 3, but showing the positions of one of the secondary chutes in dot, dash lines, after it has swung into its associated primary chute;

Fig. 8 is a cross-sectional view taken on line 8—8 of Fig. 7;

Fig. 9 is a view similar to Fig. 6, but showing the position of one of the secondary chutes, when it has swung into its primary chute;

Fig. 10 is an elevational, cross-sectional view of the improved vending device;

Fig. 11 is a cross-sectional view taken on line 11—11 of Fig. 10; and

Fig. 12 is a cross-sectional view taken on line 12—12 of Fig. 10.

Referring now in detail to the drawings, 10 designates a dispensing machine embodying the invention. The same comprises a casing or housing 11 having a back wall 12 and side walls 13. Riveted to the inner surface of the rear wall 12, as by rivets 14, is a bracket 15 having a back wall 16 contacting the back wall 12, and forwardly extending, spaced, aligned horizontal walls 17, formed at their outer ends with depending apertured ears 18 carrying a transverse pivot pin 19.

The chute structure 20, which will be described in detail hereinafter, is pivoted at its lower end about the pivot pin 19, so that it may be swung forwardly to facilitate restocking articles therein. Said chute structure 20 comprises a pair of similar, symmetrically disposed, double chutes 22 having back walls 23, the lower outer corners of which are cut-away to form downwardly extending narrow portions 24 at their lower ends. Extending forwardly from the inner sides of back walls 23 are walls 25; and extending forwardly from the outer edges of back walls 23 above the depending portions 24 thereof, are side walls 26. Attached to the forward edges of wall 25 are vertical corner pieces 27 having front outwardly extending flanges 28. The chutes 22 are thus of a width to receive one stack of articles A at their

lower ends, and of a width to receive two stacks of such articles above said lower narrow ends.

The upper ends of chutes 22 are interconnected by a reinforcing bar 22a fixed to rear walls 23. Fixed to the cut-out lower end portions of chutes 22 are angle shaped members 30, each having a top horizontal wall 31 and a vertical wall 32 extending downwardly therefrom. The walls 31 serve as a bottom wall for the widened portions of the chutes 22, whereas the walls 32 are parallel to the walls 25 and serve as side walls for the lower ends of the chutes.

Each member 30 may be formed with flanges 30a, 30b, 30c and 30d at the outer ends of walls 31, and at the front and rear of walls 31 and 32, to engage the side walls 26, the rear walls 23, 24, and to cover the front lower ends of the chutes 22, respectively.

Fixed to the lower ends of the chutes 22 is a transverse member 35 having a bottom wall 37, and upwardly extending rear flanges 35a contacting the lower ends of rear wall portions 24 and welded or otherwise secured thereto. Extending upwardly from the front ends of the bottom wall 37, are flanges 35b contacting the lower ends of flanges 30a and 30d, and welded or otherwise secured thereto. Extending upwardly from the bottom wall 37, and between the chutes are upwardly and inwardly inclined guides 38, for the purpose hereinafter appearing. Said bottom wall 37 is formed with a longitudinal slot 37a, for the purpose hereinafter appearing.

Welded to the flanges 35a is a bracket 42 having apertured ears 43 to pivotally receive the pivot pin 19, and to thus hinge the chute structure 20 to the back wall 12 of the casing. There is also welded or otherwise secured to the rear wall portions 24, and above the flanges 35a, a plate 45 extending to one side of one of the chutes and formed with a longitudinal horizontal slot 46, and with an opening 47a located centrally between the chutes. Plate 45 is furthermore formed in its lower edge with a pair of spaced notches 47, for the purpose hereinafter appearing. The plate is further formed with a rearwardly struck out stop lug 48, disposed above the slot.

Mounted on plate 45, for the purpose hereinafter appearing, is a wire spring 49 anchored at one end, and having a free end passing through the notches 47. The plate 45 may be formed with an opening 50 to receive one end of the spring, and with a struck out clip 51 to grip adjacent spring 50 to clamp the spring to the plate.

The plate 45 is furthermore formed with a rearwardly punched projection 53 adjacent the inner end of slot 46.

Fixed to the front face of plate 45, as by rivets 54, and disposed between the chutes, is a U-shaped strap 55 having a front wall 56 and side walls 57. Front wall 56 is formed with a through opening 58 aligned with opening 47a in plate 45. Extending through the aligned openings 47a, 58, is a bolt 60. Pivotally mounted on the bolt, is a U-shaped member 64 having a top wall and a pair of parallel downwardly extending arms 66 and 67. The arms 66 and 67 have openings to receive the bolt 60. Arm 66 is located in a parallel plane passing through the slot 37a. At the lower end of said arm 66 is a pin portion 66a, which may project into slot 37a. Fixed to arm 67 are a pair of rearwardly extending pins 68 and 69 located above and below the bolt 60. Slidably mounted on the bottom wall 37, and guided by the guides 38 is a slider 70 formed with a central opening 71 to receive the pin 66a.

It will now be understood that oscillation of the U-shaped member 64 about the bolt 60 will cause reciprocation of the slider 70. As the slider reciprocates beneath the chutes, it will alternatingly eject articles A from the chutes sideways. Fixed to the walls 32 are light springs 73 to cause the ejected articles to drop downwardly.

Means is provided to oscillate member 64. To this end, there extends through slot 46, a bolt 75 to which there is pivoted a plate 76 parallel to plate 45 contacting the projection 53. The spring 49 contacts the lower edge of plate 76 to keep the same from dropping down. The lug 48 serves as a stop to limit upward movement of the plate 76 under action of spring 49. Said plate 76 is formed with top and bottom hooks 78 and 79 spaced apart a distance less than the distance between the pins 68 and 69.

Fixed to the rear of plate 45 is a guide plate 80 overlapping plate 76 to keep said plate from swinging outwardly away from plate 45.

It will now be understood that as the plate bolt 75 is reciprocated, member 64 will be oscillated.

Beginning with the parts as shown in Fig. 3 of the drawings. Movement of the bolt 75 and plate 76 to the right, will cause hook 78 to engage pin 68, swinging member 64 first to vertical position, as shown in Fig. 4; and as the movement of plate 76 is continued to the position shown in Fig. 6 of the drawings, to cause the ejection of an article from the lower chute.

It will be noted that as the hook 78 engages the pin 68, the plate 76 will be raised to the position shown in Fig. 4, so that the lower hook 79 will pass over the lower pin 69. When plate 76 moves to the left from the position shown in Fig. 6, member 64 will remain in the position to which it has been moved. Upon the next movement of plate 76 to the right, the lower hook 79 will drop as it passes spring 49 and engage the lower pin 69 to oscillate member 64 in an opposite direction, and eject an article from the opposite chutes.

Means is provided for oscillating member 76. To this end, there is provided a connecting bar 85 formed with an opening at one end to receive a bolt 75 and formed with an offset finger 86 at its other end. Finger 86 is formed with a screw threaded opening, to which there is screwed a screw 87 which may be fixed to finger 86 by a lock nut 88. There is further provided another connecting bar 90 formed with offset screw threaded fingers 91 and 92 at its opposite ends. The finger 91 receives the screw 87 and is fixed to said screw by a lock nut. Screwed to finger 92 is a screw 95 fixed to said finger by a lock nut 96.

Screwed to the screw 95 is an angle shaped member 98 having a foot 99 formed with a screw threaded opening to receive said screw, said foot being fixed to the screw by a lock nut 100. Extending from the foot 99 is an arm 101 formed with a through opening 102. Pivoted to a fixed pivot 103 on the casing 11 is a triangular plate 104, a pair of corners whereof are formed with slots 106 and 107, respectively. Attached to opposite sides of the plate are strip springs 110, each formed with an opening 111. The walls or opposite sides of slot 106 are formed with openings 112 to receive balls 113. The balls 113 are pressed inwardly by the springs 110, said balls partially projecting into the openings 111 in said springs.

Arm 101 projects into the slot 106 and the balls 113 project into the opening 102 thereof, to thus connect member 98 to plate 104. The connection between member 98 and plate 104 permits pivotal movement between member 98 and plate 104 and also permits tilting of member 98 about a horizontal axis in the plane of slot 106, for the purpose hereinafter appearing.

The walls on opposite sides of said slot 107 carry a transverse pivot pin 115, to which there is pivoted a link 116. The link 116 may be reciprocated by any suitable means to cause oscillation of plate 104 which in turn, causes reciprocation of members 90 and 85, and hence of plate 76. If the chute structure 20 is tilted forwardly to permit refilling, in a manner hereinafter to be explained, members 85, 90 and 98 tilt therewith about the ball connection 113.

Each of the chutes 22 is of such width as to contain two stacks of articles, and the chamber within said chute is thus divided into a portion 120 which may be termed a primary chute, and extends from the top of the chute down to the bottom wall 37, and a second portion 121 in which is housed a secondary chute 123. Each chute 123 has a back wall 124, side walls 125, and inwardly extending flanges 126, the chute thus being open at the front. The back walls 124 are pivotally connected by pins 127 to the back walls 23 of the chutes 122. The chutes 123 may thus swing inwardly to bring the lower ends thereof into the chambers 120, so that articles within the secondary chutes may pass into the primary chutes. It will be noted that the inner side walls 25 form, together with the inner walls 125, side walls for the primary chutes or chambers 120.

When articles A in the primary chutes are above the lower ends of the inner side walls 125, the secondary chutes cannot swing inwardly. However, when the articles in the primary chutes are dispensed to bring articles in the primary chutes below the lower ends of the secondary chutes, said secondary chutes will be swung inwardly by means of coil tension springs 130. One end of each spring 130 is fixed to a bar 131 fixed to each wall 25. The other end of each spring 130 is fixed to a bar 133 fixed to the outer side of wall 125 of each secondary chute 123. The bars 133 project rearwardly through openings or cut-outs 133*a* in the back walls. The bars 133 move within said cut-outs, as the chutes 123 swing inwardly.

Means is provided to normally lock the secondary chutes in vertical position against inward swinging movement and to momentarily release said chutes each time an article is dispensed from any of the primary chutes to permit the springs 130 to swing the secondary chutes inwardly should the articles in the primary chutes be below the lower ends of the secondary chutes, said locking means being adapted to again lock the secondary chutes against inward swinging movement if the secondary chutes are held against inward swinging movement when released, by articles in the primary chute. To this end, there is fixed to the back walls 23, above the lower ends of the chambers 121, a transverse plate 135 located just below the cut-outs 133*a*.

Plate 135 is formed with an opening 136 located vertically above the opening 47 in plate 45. Extending through the opening 136 is a bolt 137. Fixed to the top wall 65 of member 64, is an angle shaped member 140 having an upstanding finger 141. Pivotally connected to the finger 141 is a bar 142 formed with a longitudinal slot 143, through which the bolt 137 passes. Welded to the bar 142, on opposite sides of slot 143, are plates 145 forming a slot therebetween, through which the bolt 137 likewise passes. Interposed between a nut 146 on the bolt 137 and plates 145, is a washer contacting said plates.

It will now be understood that as member 64 is oscillated, bar 142 together with plates 145 will oscillate oppositely.

Pivoted to the upper ends of plate 145, as at 150 and 151, are bars 152 and 153. Adjustably connected to the bars 151 and 152 are bars 154 and 155, respectively. Bars 154 and 155 are formed with pairs of slots to receive headed screws fixed to the bars 152 and 153, so that the bars 154 and 155 may be fixed to the bars 152, 153, respectively, in various longitudinally adjusted positions.

At the outer ends of bars 152 and 153 are portions 152*a* and 153*a* projecting beyond bars 154, 155, said projecting portions being connected by coil tension springs 152*b* and 153*b* to lugs 152*c* and 153*c*, respectively, fixed to the outer surfaces of the side walls 26 above the cut-outs 133*a*. The bars 154 and 155 are formed with angular cut-outs 154*a* and 155*a* in the upper outer corners thereof, for the purpose hereinafter appearing.

Fixed to the back walls 23 are brackets 160 and 161 having downwardly extending portions 160*a* and 161*a* serving as guides for the bars 152. At the upper ends of guide portions 160*a* and 161*a* are shoulders 160*b* and 161*b* for the purpose hereinafter appearing.

The operation of the control mechanism for the secondary chutes will now be described. Beginning with the parts as shown in Fig. 3 of the drawings, it will be noted that the bar 133 on one secondary chute 123 engages in the angular shoulder 154*a* of bar 154 to lock said secondary chute in substantially vertical position, so that it cannot swing inwardly. Spring 152*b* pulling up on bars 152, 154 retains the shoulder 154*a* in engagement with said bar 133. The other bar 133 may be engaged by the outer end of bar 155 to keep the other secondary chute in vertical position.

As plate 76 is moved to the right to eject an article from the lower end of one of the primary chutes, member 64 is oscillated in a clockwise direction, and bar 142 is oscillated in a counterclockwise direction. As plates 145 swing about and upwardly on the bolt 137, bar 153 will first swing about its outer end until it contacts shoulder 161*b* of bracket 161. Bar 153 will then swing in a clockwise direction about pivot 151 to release its associated bar 133. At the same time, bar 152 will also swing upwardly about its outer end until it contacts shoulder 160*b* of bracket 160, after which it will swing downwardly, or in a counterclockwise direction about its pivot 150 to disengage its associated bar 133. When the bars 133 are released, the springs 130 will urge the secondary chutes inwardly. However, if articles in the primary chutes are above the lower ends of the secondary chutes, the secondary chutes cannot swing inwardly.

The released positions of the secondary chutes is shown in Fig. 4 of the drawings, with articles in the primary chutes preventing the secondary chutes from being swung inwardly. As plate 76 continues movement to the right, the parts will move to the position shown in Fig. 6 of the drawings. As the parts move from the position shown in Fig. 4 to the position shown in Fig. 6, bars 152 and 153 will be retracted or pulled somewhat

inwardly to permit the springs 152b and 153b to pull said bars upwardly to again engage the bars 133 in secondary chutes for again locking said secondary chutes in vertical position.

When the plate 76 reciprocates, a subsequent time, member 64 will rotate in a counterclockwise direction from the position shown in Fig. 6 to the position shown in Fig. 7, and bar 142 will rotate in a clockwise direction from the position of Fig. 6 to the position of Fig. 7. During such action, the secondary chutes are again released and then relocked. However, should the articles in one of the primary chutes then be below the secondary chute associated with said primary chutes, said secondary chute will be swung inwardly to the position shown in Fig. 7, while the other secondary chute is again relocked. If the articles in the other primary chute are below the secondary chute associated therewith, then the other secondary chute will also swing inwardly automatically. Thus, when the articles in the primary chutes are dispensed to a predetermined degree, the articles in the secondary chutes will automatically be fed to the primary chutes.

Means is provided to retain the chute structure 20 in forwardly tilted position to facilitate restocking of the chutes. To this end, there is fixed to the back wall 12 a bracket 170 having parallel walls 171 extending forwardly between the chutes 22 and interconnected at their front end by a wall 173. There is also fixed to the back wall 12, above bracket 170, a second bracket 175, having forwardly extending parallel walls 176 carrying a transverse pivot pin or bolt 177, and interconnected at the front by a wall 178 cutaway at its upper end, as at 179. Pivoted to the bolt or pivot pin 177, is a lever 180 formed with a notch 181 at its lower end to form a hook 182. The upper end of the lever 180 is interconnected to a plate 185 fixed to the back walls 23, and disposed above the bracket 175 by a coil tension spring 186.

It will be noted that the lever 180 passes between the parallel walls 176 of bracket 175, and also between the parallel walls 171 on bracket 170. When the chute structure 20 is in vertical position, spring 186 presses the lever against front wall of bracket 170. As the chute structure is swung forwardly about pivot 19, the lever 180 is caused to rotate in a counterclockwise direction, looking at Fig. 1 of the drawings, thus, sliding against the front wall until the hook 182 engages said front wall to retain the chute structure against further movement, as shown in dotted lines in Fig. 1 of the drawings. In such position, the spring 186 cannot exert any tension to pull the chute structure back to vertical position because the spring is then substantially at right angles to the lever 180. In such position, pressure of the lever on bracket 170 is substantially in a downward direction, so that there is substantially no horizontal component force which would urge the chute structure back to vertical position. However, if the chute structure is pushed upwardly, the spring 186 gradually begins to exert the force to complete the upward swinging movement of the chute structure to vertical position because of a gradual increasing horizontal component force exerted by the lever on the front wall 173 of the bracket 170.

It will thus be seen that there is provided a device in which the several objects of this invention are achieved, and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various changes might be made in the embodiment above set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A dispensing device comprising a primary chute, a secondary chute hinged thereto, a spring interconnecting the secondary chute with the primary chute and adapted to swing the lower end of the secondary chute into the primary chute, a member slidably mounted on a fixed pivot, a second member connected to the first member and adapted to engage said secondary chute, to retain the same against swinging into the primary chute, spring means to retain the second member in locking engagement with said secondary chute, means to dispense articles from the primary chute, and means controlled by the dispensing means to oscillate said first member.

2. A dispensing device comprising a primary chute, a secondary chute hinged thereto, a spring interconnecting the secondary chute with the primary chute and adapted to swing the lower end of the secondary chute into the primary chute, a member slidably mounted on a fixed pivot, a second member connected to the first member and adapted to engage said secondary chute, to retain the same against swinging into the primary chute, spring means to retain the second member in locking engagement with said secondary chute, means to dispense articles from the primary chute, means controlled by the dispensing means to oscillate said first member, and fixed stop means adapted to engage an intermediate portion of said second member at an intermediate point in the oscillation of said first member.

3. A dispensing device comprising a pair of primary chutes, a pair of secondary chutes hinged at their upper ends to the primary chutes, said primary chutes extending below said secondary chutes, spring means to swing the lower ends of the secondary chutes into the primary chutes, means to alternately eject articles from the lower ends of said primary chutes, means to normally releasably lock the secondary chutes against inward swinging movement, and means controlled by the ejecting means to release said locking means to permit the secondary chutes to swing inwardly into the secondary chutes, if there are no articles in the primary chutes above the lower ends of the secondary chutes, and again relock the secondary chutes against inward swinging movement if said secondary chutes are held against inward swinging movement when they are released, by articles in the primary chutes above the lower ends of the secondary chutes.

4. A dispensing device comprising a pair of parallel primary chutes, secondary chutes pivoted at their upper ends to the primary chutes, spring means interconnecting the lower ends of the secondary chutes with the primary chutes and to swing the lower ends of the secondary chutes into the primary chutes, said primary chutes extending below said secondary chutes, a slider at the lower ends of said primary chutes adapted to be reciprocated to alternately eject articles from said primary chutes, a plate fixed to said primary chutes and formed with a horizontal slot, a member slidably mounted in said slot, a plate pivoted to said member and having

top and bottom hooks, a U-shaped member having downwardly extending arms interconnected at their upper ends, one arm having means to engage said slider, said arms being pivoted at intermediate portions thereof about a horizontal axis, said other arm having pins above and below the pivot for said U-shaped member, adapted to be alternately engaged by said hooks as said member is reciprocated in said slot, a fixed pivot, a member formed with a slot slidably receiving said last pivot and pivotally connected at its lower end to said U-shaped member, a pair of bars pivoted to the member which slidably receives the fixed pivot, and said pair of bars having means to engage said secondary chutes to retain said secondary chutes against being swung into the primary chutes by said spring means.

5. A dispensing device comprising a pair of parallel primary chutes, secondary chutes pivoted at their upper ends to the primary chutes, spring means interconnecting the lower ends of the secondary chutes with the primary chutes and to swing the lower ends of the secondary chutes into the primary chutes, said primary chutes extending below said secondary chutes, a slider at the lower ends of said primary chutes adapted to be reciprocated to alternately eject articles from said primary chutes, a plate fixed to said primary chutes and formed with a horizontal slot, a member slidably mounted in said slot, a plate pivoted to said member and having top and bottom hooks, a U-shaped member having downwardly extending arms interconnected at their upper ends, one arm having means to engage said slider, said arms being pivoted at intermediate portions thereof about a horizontal axis, said other arm having pins above and below the pivot for said U-shaped member adapted to be alternately engaged by said hooks as said member is reciprocated in said slot, a fixed pivot, a member formed with a slot slidably receiving said last pivot and pivotally connected at its lower end to said U-shaped member, a pair of bars pivoted to the member which slidably receives the fixed pivot, and said pair of bars having means to engage said secondary chutes to retain said secondary chutes against being swung into the primary chutes by said spring means, and spring means exerting upward pull on the outer ends of said pair of bars to retain the said pair of bars in engagement with said secondary chutes.

6. A dispensing device comprising a pair of parallel primary chutes, secondary chutes pivoted at their upper ends to the primary chutes, spring means interconnecting the lower ends of the secondary chutes with the primary chutes and to swing the lower ends of the secondary chutes into the primary chutes, said primary chutes extending below said secondary chutes, a slider at the lower ends of said primary chutes adapted to be reciprocated to alternately eject articles from said primary chutes, a plate fixed to said primary chutes and formed with a horizontal slot, a member slidably mounted in said slot, a plate pivoted to said member and having top and bottom hooks, a U-shaped member having downwardly extending arms interconnected at their upper ends, one arm having means to engage said slider, said arms being pivoted at intermediate portions thereof about a horizontal axis, said other arm having pins above and below the pivot for said U-shaped member, adapted to be alternately engaged by said hooks as said member is reciprocated in said slot, a fixed pivot, a member formed with a slot slidably receiving said last pivot and pivotally connected at its lower end to said U-shaped member, a pair of bars pivoted to the member which slidably receives the fixed pivot, said pair of bars having means to engage said secondary chutes to retain said secondary chutes against being swung into the primary chutes by said spring means, spring means exerting upward pull on the outer ends of said pair of bars to retain the said pair of bars in engagement with said secondary chutes, and a pair of brackets on said primary chutes adapted to engage intermediate portions of said bars.

7. A dispensing device comprising a primary chute, a secondary chute movable into said primary chute, a member pivotally and slidably mounted on a fixed pivot, a second member pivoted to the first member and adapted to engage said secondary chute to retain the same against movement into the primary chute, means to bias said second member to position for engaging said secondary chute, means to dispense articles from said primary chute, means controlled by said dispensing means to oscillate said first member, and means adapted to engage an intermediate portion of the second member as said first member is oscillated to cause said second member to disengage said secondary chute, and means to move said secondary chute into said primary chute upon said second member disengaging said secondary chute if articles in said primary chute have been dispensed below a predetermined point.

8. A dispensing device comprising a pair of primary chutes, a pair of secondary chutes movable into said pair of primary chutes, respectively, means to alternately eject articles from the primary chutes, a pair of members adapted to engage said pair of secondary chutes respectively to retain the same against movement into the primary chutes, and means to disengage and reengage said members with said secondary chutes, each time an article is ejected from either of said primary chutes, and means to move said secondary chutes into the primary chutes upon disengaging said members from said secondary chutes, if articles in said primary chutes have been dispensed below a predetermined point.

9. A dispensing device comprising a pair of primary chutes and a pair of secondary chutes disposed adjacent to and parallel with said primary chutes respectively, means to alternately dispense articles from said primary chutes, means to normally latch the secondary chutes against movement into the primary chutes, and means controlled by the dispensing means to release said latch means, means to move the secondary chutes into the primary chutes, upon release of said latch means if the articles in the primary chutes have been dispensed below a predetermined point, and said release means operable to relatch said latch means if articles in said primary chutes are above said predetermined point, so as to prevent movement of said secondary chutes into the primary chutes, when said latch means are released.

10. A dispensing device comprising a primary chute, a secondary chute disposed parallel with and adjacent to said primary chute, a member engaging said secondary chute to retain the same against movement into the primary chute, means to dispense articles from said primary chute, means to urge said retaining means into position for retaining engagement with the secondary chute, means controlled by said dispensing means to engage said retaining member against a stop to move the retaining member out of retaining

position and then automatically release said retaining member from the stop to permit said urging means to again move said retaining member back to position for retaining said secondary chute, and means to move the secondary chute into the primary chute upon release of said retaining means if articles in said primary chutes have been dispensed below a predetermined point.

11. A dispensing device comprising a pair of primary chutes, a pair of secondary chutes having upper and lower ends, said secondary chutes being hinged at their upper ends to the primary chutes, a slider at the lower ends of said primary chutes adapted to alternately eject articles from the primary chutes when said slider is reciprocated, a member having upper and lower ends, and being pivoted mediately the ends thereof, and connected at its lower end to said slider, a fixed pivot, a member slidably mounted on the fixed pivot and having an upper and a lower end, and being pivoted at its lower end to the upper end of the first pivoted member, a pair of members pivoted to the member which is slidably mounted on the fixed pivot, and adapted to releasably engage said secondary chutes, to retain the same against inward swinging movement, and spring means to swing the lower ends of the secondary chutes inwardly into the primary chutes, when said secondary chutes are released if articles in said primary chutes have been dispensed below a predetermined point.

12. A dispensing device comprising a pair of primary chutes, a pair of secondary chutes having upper and lower ends and being hinged at their upper ends to the primary chutes, a slider at the lower ends of said primary chutes adapted to alternately eject articles from the primary chutes when said slider is reciprocated, a member having upper and lower ends and being pivoted mediately the ends thereof, and connected at its lower end to said slider, a fixed pivot, a member slidably mounted on the fixed pivot and having upper and lower ends and being pivoted at its lower end to the upper end of the first pivoted member, a pair of members pivoted to the member which is slidably mounted on the fixed pivot, and adapted to releasably engage said secondary chutes, to retain the same against inward swinging movement, spring means to swing the lower ends of the secondary chutes inwardly into the primary chutes, when said secondary chutes are released, if articles in said primary chutes have been dispensed below a predetermined point, and spring means to urge said pair of members into engagement with said secondary chutes.

13. A dispensing device comprising a pair of primary chutes, a pair of secondary chutes hinged at their upper ends to the primary chutes, a slider at the lower ends of said primary chutes adapted to alternately eject articles from the primary chutes when said slider is reciprocated, a member having upper and lower ends and being pivoted mediately the ends thereof, and connected at its lower end to said slider, a fixed pivot, a member slidably mounted on the fixed pivot and having upper and lower ends and being pivoted at its lower end to the upper end of the first pivoted member, a pair of members pivoted to the member which is slidably mounted on the fixed pivot, and adapted to releasably engage said secondary chutes, to retain the same against inward swinging movement, and spring means to swing the lower ends of the secondary chutes inwardly into the primary chutes, when said secondary chutes are released, if articles in said primary chutes have been dispensed below a predetermined point, spring means to urge said pair of members into engagement with said secondary chutes, and stop means adapted to engage intermediate portions of said pair of members during an intermediate point in the oscillation of the member which is slidably mounted on the fixed pivot.

LOUIS STEINER.