PATENT SPECIFICATION

Application Date: March 14, 1934. No. 7995/34. **431,216**

Complete Specification Left: April 12, 1935.

Complete Specification Accepted: July 3, 1935.

PROVISIONAL SPECIFICATION

Improvements in Coin Operated Machines for Amusement

I, WILLIAM EDWARD BRYAN, of London Road, Kegworth, Derby, a British Subject, do hereby declare the nature of this invention to be as follows:—

This invention relates to the kind of machine wherein a number of balls are allowed to fall by gravity between a panel and a sheet of glass. The panel and glass being arranged in a vertical or nearly vertical position. The balls are lifted one by one to the top of the panel by levers and are allowed to fall through a series of pins or other like obstructions. Beneath these pins or obstructions is arranged a movable guide, whereby the balls are led into a column-like shute.

Holes or channels are arranged in this shute so that after a predetermined number of balls have been guided into the shute, further balls pass through these holes and operate mechanism arranged to pay out to the player coins, checks or goods.

After a ball has operated this pay-out mechanism it, the ball, is led into a second shute provided with holes or channels as in the first shute.

After a predetermined number of balls have collected in this second shute, further balls entering this second shute pass through these holes and operate a second mechanism to pay out prizes or goods.

The balls, say ten in number, can be released for play by any known coin operated means.

Dated this Ninth day of April, 1934.

W. E. BRYAN.

COMPLETE SPECIFICATION

Improvements in Coin Operated Machines for Amusement

I, WILLIAM EDWARD BRYAN, of Bryan's Automatic Works, London Road, Kegworth, Derby, a Subject of the King of Great Britain, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to coin or check operated amusement machines of the type comprising coin or check freed mechanism for delivering a plurality of balls to the player, means operable by the player to cause the balls to fall in sequence down the face of a substantially vertical panel, a catcher which can be moved over the surface of the panel under the control of the player in an endeavour to catch the falling balls, a pay-out mechanism, and a trap for preventing the balls caught by the catcher up to a predetermined number, from actuating the pay-out mechanism, the arrangement being such that each ball caught by the catcher in excess of said predetermined number is caused to operate the pay-out mechanism to deliver a prize to the player. In such machines the ball is generally caused to fall between pins or similar obstructions so as to increase the difficulty of catching the ball and render it necessary for the player to exercise real skill before he can obtain the reward delivered by the pay-out mechanism.

The present invention provides a machine of the type described above having a second trap for receiving the balls which have actuated the pay-out mechanism associated with the first trap and means are provided for actuating a second pay-out mechanism in the event of the balls reaching the second trap exceeding a predetermined number. Preferably each trap is constituted by an upright chute arranged to accumulate a number of balls one on top of another and having an aperture near its upper end for the passage to its associated pay-out mechanism of the balls caught in excess of the predetermined number, and the arrangement is such that in the event of all the balls being caught in the catcher the second

chute is filled with balls to a sufficient depth to enable the last ball to escape through an aperture to the second pay-out mechanism.

It will be appreciated therefore that the reward given by the machine will depend strictly on the player's skill. Thus in a concrete example, eight balls may be delivered to each player each time he places a coin in the machine, and the machine may be so arranged that no reward is given until at least four balls have been caught in the catcher. At this stage the first chute will be full, and any further balls caught will pass through the first pay-out mechanism to the second chute. The pay-out mechanism will therefore be operated once for each ball in excess of four caught by the catcher and is preferably arranged to give an equal reward each time it is operated. If all the balls are caught in the catcher, the last ball will overflow from the second chute and operate the second pay-out mechanism, which is preferably arranged to deliver to the player the contents of a so-called "Jack pot" or other reward substantially in excess of that delivered by the first pay-out mechanism.

According to a feature of the invention the catcher may be constituted by a pair of spaced fingers, which are arranged to be turned in unison about parallel horizontal pivots by a control operable by the player. Preferably the distance apart of the fingers is made adjustable for the purpose of varying the degree of skill necessary to catch the balls.

One form of coin operated amusement machine according to the present invention will now be described in detail, by way of example, with reference to the accompanying drawings, in which

Fig. 1 is a front elevation of the machine partly broken away;

Fig. 2 is a rear elevation of the front panel of the machine, showing the operating gear;

Fig. 3 is a rear elevation showing the details of the trip mechanism for releasing the balls;

Figs. 4 and 5 are sections respectively on the lines IV—IV and V—V in Fig. 3;

Fig. 6 is a rear elevation of the coin chute;

Figs. 7 and 8 are sections taken respectively along the lines VII—VII and VIII—VIII in Fig. 6;

Fig. 9 is a part rear elevation and part section showing the maze casting and first pay-out mechanism;

Figs. 10 and 11 are sections taken respectively along the line X—X and XI—XI in Fig. 9;

Fig. 12 is a view corresponding to that shown in Fig. 9 showing the parts in the position which they occupy later in the machine cycle; and

Fig. 13 is a detail rear view of the mechanism for actuating the catcher.

Like reference numerals indicate like parts throughout the drawings.

The machine comprises an upright box, the front panel 20 of which is inclined slightly rearwardly as indicated in Fig. 7. The front surface of this panel constitutes the playing surface of the machine and the rear surface carries the operating gear, shown in Fig. 2. The front panel is removable with all the mechanism that it carries from the box by unlocking a lock, not shown, at the front of the box. It will be understood that the box completely encloses this front panel and is provided with a cash-box at its base which is located beneath the lower end 21 of the coin chute 22. The side of the box is removable by unlocking a lock to enable authorised persons to empty the cash-box.

As will be seen from Fig. 1 the machine includes a tube 23 which is filled with balls, these balls being delivered in sequence to the player as hereinafter described and being ejected on to the playing surface of the panel 20 by means of a thrower 24 controlled by a spring 25. At the top of the panel 20 are provided cheeks 26 between which the ball bounces when it is ejected from the tube 23, and the ball then passes between a series of pins 27 as it rolls down the surface of the board. The object of the game is to catch each ball as it rolls between the pins 27 between pivoted fingers 28. These fingers are rotatable about their pivots 29 by turning a knob 30 on the front of the machine. A skilled player will be able to manipulate the knob 30 so that he can catch all the balls between the fingers 28. The balls caught between the fingers 28 pass into an upright chute 31 the lowest ball, indicated at A in Fig. 1, resting on a pin 32. After four balls have been caught in the chute 31 the fifth ball falls through a hole 33 at the top of the chute and, after actuating a pay-out mechanism in the manner hereinafter described, is delivered through a hole 34 to a lower chute 35 where it rests on the pin 36. Eight balls in all are delivered to the player for each coin insertion and in the event of all these eight balls being caught by the player between the fingers 28 it will be appreciated that four balls will be collected in the lower chute 35, in which case the last ball will be able to leave the chute through the hole 37 and actuate the Jack-pot pay-out mechanism as described below. The chutes 31, 35

are fitted with pivoted latches 331, 335, shown more clearly in Fig. 10, which are readily pushed aside by the balls entering the chute and which are weighted so as to return to their normal positions shown in Fig. 10 and thereby prevent a ball from accidentally jumping up and escaping from either of the chutes by the hole 33 or 37. The latches are formed with upstanding projections 431, 435, respectively, which prevent a ball escaping from either chute through its hole 33 or 37 respectively until, in the case of the first chute, four balls have dropped into the chute in which case the top ball will trip the latch 331 forward about its pivot and hold it in the tripped position with its projection 431 withdrawn from the hole 33 thus allowing the fifth and each succeeding ball to escape through the hole 33. Similarly, in the case of the lower chute, the projection 435 normally prevents any ball from escaping through the hole 37, but if three balls have collected in the lower chute the latch 335 is displaced by the uppermost ball into the position indicated in chain-dotted lines, so as to clear its projection 435 from the hole 37 and allow the eighth ball to escape through the hole. These latches therefore ensure that no balls shall pass to the second chute until after four balls have been collected in the first chute and similarly the Jack-pot pay-out mechanism shall not be actuated unless all the balls have been collected between the fingers.

The balls which elude the catcher fingers 28 pass into the spaces to the right- or left-hand of the lower chute 35 and rest on the pins 39, 40 respectively. One such ball which has not been caught is indicated at B in Fig. 1.

When a coin is inserted into the coin slot 41 at the top of the machine (see Fig. 2) it falls down a chute 89 and trips a lever 42 into the position shown in chain-dotted lines in Fig. 3, thereby releasing a detent 43 and permitting a spindle 44 to turn under the action of the spring 45 in a counter-clockwise direction as shown in Fig. 4. This spindle is journalled at either end in bearings 46, 47 and is rigidly connected at its upper end to the detent 43 and at its lower end to a stop-plate 48 which carries the pins 32, 36, 39, 40 which project through apertures in the face of the panel 20. Withdrawal of these pins causes the balls trapped in the chutes 31, 35 and in the spaces to right or left of the chute 35 to be delivered to the player, the balls falling on to a guide 49 which is pivoted at 50 for movement about a horizontal axis. In the event of all eight balls being caught by the player the eighth ball which actuates the Jack-pot pay-out mechanism is returned to the guide 49 through the hole 51 shown in Fig. 1, and can be replayed again and again until it is lost to the player by his failure to catch it between the fingers.

When therefore a coin is inserted into the slot 41 eight balls are released to the player, these balls lying in a row on the guide 49, as indicated at C in Fig. 1. The balls are projected in sequence on to the playing surface of the panel 20 by rotating the handle 52. In Fig. 1 this handle is shown in the position which it occupies just after a ball has been projected on to the surface of the board. The handle carries a cam 53 which cooperates with the guide 49 and when the handle is turned in clockwise direction it is apparent that the guide will turn in counter-clockwise direction about its pivot 50 thereby allowing the left-hand ball to engage the recess 54 in the ball prop 55 which is located at the bottom of the tube 23. After the rotation of the handle through nearly a whole revolution from its position shown in Fig. 1, the cam 53 will once more come into operative contact with the guide 49 and force it in an upward direction about its pivot 50. The result is that the ball prop 55 will be displaced about its pivot 56 against the action of the spring 57 and the left-hand ball will be forced into the tube 23. The result is that the uppermost ball D at the top of the tube will be ejected and will be directed by the curved thrower 24 on to the playing surface of the panel 20.

It has already been explained that the catcher fingers 28 are rotatable about their pivots 29 by turning the knob 30. This is effected by means of the links 58, 59, 60 (see Fig. 2). It may be desirable in certain cases to vary the distance apart of the fingers 28 so as to adjust the standard of skill necessary to catch the balls. To this end the adjusting mechanism, shown in Fig. 13, is employed. Behind the panel 20 are provided levers 228 which are rigidly connected with the fingers 28 and urged together by a spring 61. The pin 62 on the left-hand lever 228 is capable of engaging in one of a number of notches in a cross-bar 63 which lies between the upper ends of the levers 228 (see Fig. 13). By setting the pin 62 to different notches in the cross-bar 63 the distance apart of the fingers 28 may be regulated.

It will be appreciated that it is necessary to restore the pins 32, 36, 39, 40 to their operative position after the balls have been delivered to the player and before the first ball is delivered on to the playing surface of the panel 20 by rotation of the handle 52. This is effected by

mechanism indicated in Figs. 2 and 3. The handle 52 is rigidly secured to a ratchet 64 which cooperates with a pawl 65 so as to ensure that the handle can only be turned in clockwise direction. To the rear of the ratchet 64 is fixed a crank 66 which in turn is pivoted to a link 67 pivoted at its upper end to a second link 68 which is fixed to a pin 69. The pin 69 is rotatably mounted on the fixed upright member 115. To the link 68 is pivoted a lever 70 pivoted at 75 to a link 72 which is fixed to a pin 73. This pin 73, like the pin 69, is rotatably mounted on the member 115. When the handle 52 is turned from its initial position, indicated by the position of the parts in Figs. 1 and 2, the lever 70 is raised and the link 72 turned in a clockwise direction about its pivot. The result is that the rocker 74 is lifted. The rocker 74 is connected by means of the flexible connection 76 to a bracket 118 fixed to the upper end of the rod 44 and when the rocker 74 is lifted, the rod 44 is consequently rocked back against the action of its spring 45 into the position in which the stop-plate 48 is held with the pins 32, 36, 39, 40 projecting through their corresponding apertures in the panel 20. Immediately the stop-plate 48 returns to this position the trip lever 42 is released and swings back, owing to the influence of the counterweight 77, into the position in which its bent shank 78 comes into locking engagement with the edge below the slot 79 in the detent 43 (see Fig. 5), thereby locking the parts in the position shown in Fig. 2. The pins will therefore project through the front of the panel 20 until the lever 42 is tripped by the insertion of a further coin into the machine. As explained above, when the lever 42 is tripped the spring 45 is able to rock the shaft 44 so as to withdraw the pins rearwardly and return the trapped balls to the player.

The machine now being described is intended to be actuated by insertion of a penny into the coin slot 41. The entering penny passes a pivoted gate 80, the purpose of which is to reject unsuitable coins. In the event, say, of a sixpence being inserted by mistake into the coin slot, this coin will fall through the aperture 81 owing to the rearward inclination of the panel 20 into the chute 82, whence it will pass through a further chute 83 and be delivered to a coin receptacle 84 at the front of the machine. As may be seen from Fig. 8 the gate 80 is pivoted at 85 to the fixed portion of the machine and cooperates with a fixed member 86, so as to leave between the fixed and movable members a slot 87, the width of which is regulated by a regulating screw 88 (see Fig. 2). In the event of an abnormally thin coin being inserted into the coin slot, this will fall through the slot 87 and be returned to the player via the chute 82, as just described. A penny of proper thickness however will roll down the guide formed by the stepped lower portion 38 of the member 86 and thus pass into the coin chute 89 where it trips the lever 42 as described above. The gate 80 is linked by a flexible connection 90 to the link 72 and when the handle 52 is turned from its position shown in Fig. 1, the gate will be swung about its pivot 45 away from the fixed member 86. The result is that a stop 71 will move into position to prevent any coin introduced in the slot 41 from passing down into the chute 89. This ensures that release of the balls will only occur when the handle has been returned to the position shown in Fig. 1, from which practically a whole revolution of the handle is required in order to project the ball on to the playing surface of the machine. This ensures that the time interval between the commencement of turning the handle and projection of the ball on to the playing surface of the panel 20 will be the same for the first ball as for all the other balls.

The coins collected into the machine through the chute 89 first of all fill a hopper 91 (see Fig. 7). When the hopper 91 is full further coins falling through the chute 89 will fall into the casing 22 and will either be delivered through the opening 21 into the cash-box at the bottom of the machine, or, if they should strike the bent guide 92 at a suitable angle, will be deflected into the Jackpot container 93 which is visible from the front of the machine. The machine is so designed that for each ball in excess of four caught in the upper coin chute 31, two coins from the bottom of the stack collected in the hopper 91 will be delivered to the player, whilst in the event of all the balls being caught between the fingers 28 and therefore four balls falling into the lower coin chute 35, the last ball which escapes through the aperture 37 will deliver to the player the whole of the coins collected in the Jackpot container 93. This action will now be described with particular reference to Figs. 9 to 12 of the drawings.

As has already been described the fifth and each succeeding ball caught between the fingers 28 will pass through the aperture 33 owing to the coin chute 31 being full. Through this aperture they reach the interior of the maze casting 94. One such ball is indicated at E in Fig. 9. The ball E as is seen rests on top of a hollow

plunger 95 pivoted to a lever 96 which is rocked to and fro when the handle 52 is rotated, this lever being fixed to the pin 69 on the link 68 (see Fig. 2). The result is that the plunger 95 is reciprocated in the interior of the maze casting 94, this reciprocating movement being permitted owing to the plunger sliding over the coaxially arranged spindle 97. If however a ball has fallen into the position occupied by the ball E in Fig. 9, this ball will fall between the plunger 95 and the spindle 97 when the plunger is reciprocated towards the right from the position shown in Fig. 9 on the next rotation of the handle. The result is that when the plunger returns to its left-hand position it will no longer be able to slide over the spindle 97 but will force the latter to the left, as indicated in Fig. 12. The spindle 97 is rigidly connected to a coin ejecting plate 98 and movement of this plate to the left causes the two lowermost coins in the hopper 91 to be delivered to the player through the chute 99, as indicated in Fig. 12. This chute 99 communicates with the chute 83 through which the ejected coins are delivered to the coin receptacle 84, where they are available to the player. As a safeguard against the mechanism sticking owing to the coins taking up skew positions in the hopper 91, the form of the latter is constituted by a spring plate 100, which is normally held in contact with the bottom of the hopper 91 by the springs 101. Obviously, however, this plate can yield by movement against the springs 101 so as to give more space for the ejection of the coins in case any of the coins should assume skew positions. The ejecting plate 98 slides on a rod 102 linked to the lever 96 and on the return movement of the latter from the position shown in Fig. 12 to that shown in Fig. 9, the ejecting plate 98 is withdrawn into its normal position by the engagement therewith of the bent outer end 202 of the rod 102. The ball E, having actuated the pay-out mechanism falls through a tube 103 and aperture 34 to the lower chute 35.

It will therefore be seen that each ball in excess of four collected in the coin chute 31 actuates the first pay-out mechanism to deliver two coins to the player on the succeeding rotation of the handle 52.

The mechanism for actuating the Jack-pot pay-out mechanism in the event of all the balls being caught by the player is illustrated in section in Fig. 10. As explained above, if all eight balls are caught by the player the eighth ball after actuating the first pay-out mechanism, in the manner just described, will then reach the second lower chute 35 through the aperture 34. This chute will however be already full and the eighth ball will consequently fall through the rearwardly inclined passage terminating at the aperture 37, into the position shown at F in Fig. 10. This passage communicates with a vertical tubular passage 104, the lower end of which communicates with the aperture 51 for returning the eighth ball to the guide 49. At first however the ball F is prevented from falling into the passage 104 owing to the rod 105 and the catch 106 which is held in the position shown in Fig. 10 by the spring 107 (see Fig. 11). The rod 105 however is raised out of the passage 104 on the next rotation of the handle 52, since it is pivoted at its upper end to the link 72. The return movement of the rod 105 forces the ball F against the catch 106, thus displacing the latter against the action of its spring 107 and allowing the ball to pass the catch and fall to the bottom of the passage 104. The catch 106 carries a pin 108 against which abuts the end of a link 109 connected to the rear plate 110 of the Jack-pot mechanism 93. As soon as the catch 106 and pin 108 are withdrawn the plate 110 turns under its own weight and the weight of the coins resting on it, into the displaced position indicated in chain-dotted lines in Fig. 7, thereby delivering all the coins contained in the Jack-pot to the chute 83 and thence to the receptacle 84 where they may be collected by the player. The link 109 is connected by a flexible connection 111 to a rocker 112, which is pivoted at 113 to the fixed portion of the machine. The link 68 carries a rearwardly projecting pin 114 which on the next revolution of the handle 52 will engage the end of the tripped rocker and restore it to the normal position indicated in Fig. 2. The rocker through the flexible connection 111 will restore the link 109 and Jack-pot rear plate 110 into the position shown in Fig. 11, in which they are held by the catch 106 ready to be released next time a player catches all the balls between the fingers 28.

In order to guard against the possible jamming of the machine the link 67 is forked at its upper end and carries a cross-head 116 connected by springs 117 to the end of a crank 66. This arrangement permits of a certain amount of give in the connection between the handle 52 and link 68 in the event of some slight jamming occurring in the mechanism. This give will generally be sufficient to enable the player to overcome the jamming but if the jamming is more serious it will be necessary for an attendant to remove the panel 20 from the front of the machine

and re-adjust the mechanism at the rear surface of the panel.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A coin or check operated amusement machine of the type described, having a second trap for accumulating the balls which have actuated the pay-out mechanism, and a second pay-out mechanism arranged to be actuated in the event of the balls reaching the second trap exceeding a predetermined number.

2. A machine as claimed in Claim 1, which includes a hopper for receiving a certain limited number of the coins inserted in the machine, a "Jack-pot" which receives some of the inserted coins after the hopper is full, and a cash-box to receive the remainder of the coins, and in which the first pay-out mechanism is arranged to deliver a limited number of coins (e.g. two) from the hopper to the player each time it is operated, whilst actuation of the second pay-out mechanism is arranged to deliver the contents of the Jack-pot to the player.

3. A machine as claimed in Claim 1, in which each trap is constituted by an upright chute arranged to accumulate a number of balls on top of one another, and having an aperture near its upper end for the passage to its associated pay-out mechanism of the balls caught in excess of the predetermined number.

4. A machine as claimed in Claim 3, in which the chute is provided with a latch for preventing the balls from escaping through the aperture, which latch is arranged to be tripped when the last ball of the predetermined number is caught in the chute, thus opening the aperture for the next ball.

5. A machine as claimed in any of the preceding Claims, in which the catcher is constituted by a pair of spaced fingers, which are arranged to be turned in unison about parallel horizontal pivots by a control operable by the player.

6. A machine as claimed in Claim 2, in which the first pay-out mechanism comprises a cylinder, a plunger which is reciprocated in the cylinder at each actuation of the player's control for projecting a ball over the playing surface of the machine panel, and a coin release member which is normally unaffected by the reciprocation of the plunger, and in which each ball caught by the first trap in excess of the predetermined number is passed to the cylinder to form an operative connection between the plunger and the coin release member, so that the latter is actuated to deliver one or more coins or the like to the player on the next actuation of the player's control.

7. A machine as claimed in Claim 2, in which the second pay-out mechanism comprises a cylinder, containing a plunger which is reciprocated at each actuation of the player's control for projecting a ball on the playing surface of the machine, and a release member for the Jack-pot container, which is normally clear of the plunger, and in which a ball delivered from the second trap forms an operative connection between the plunger and the release member, which is accordingly operated, on the next actuation of the player's control, to deliver the contents of the Jack-pot to the player.

8. Coin or check operated amusement machines as described herein and as shown in the accompanying drawings.

Dated this 12th day of April, 1935.

BREWER & SON,
33, Chancery Lane, London,
Patent Agents for the Applicant.

Leamington Spa: Printed for His Majesty's Stationery Office, by the Courier Press.—1935.

Fig. 1

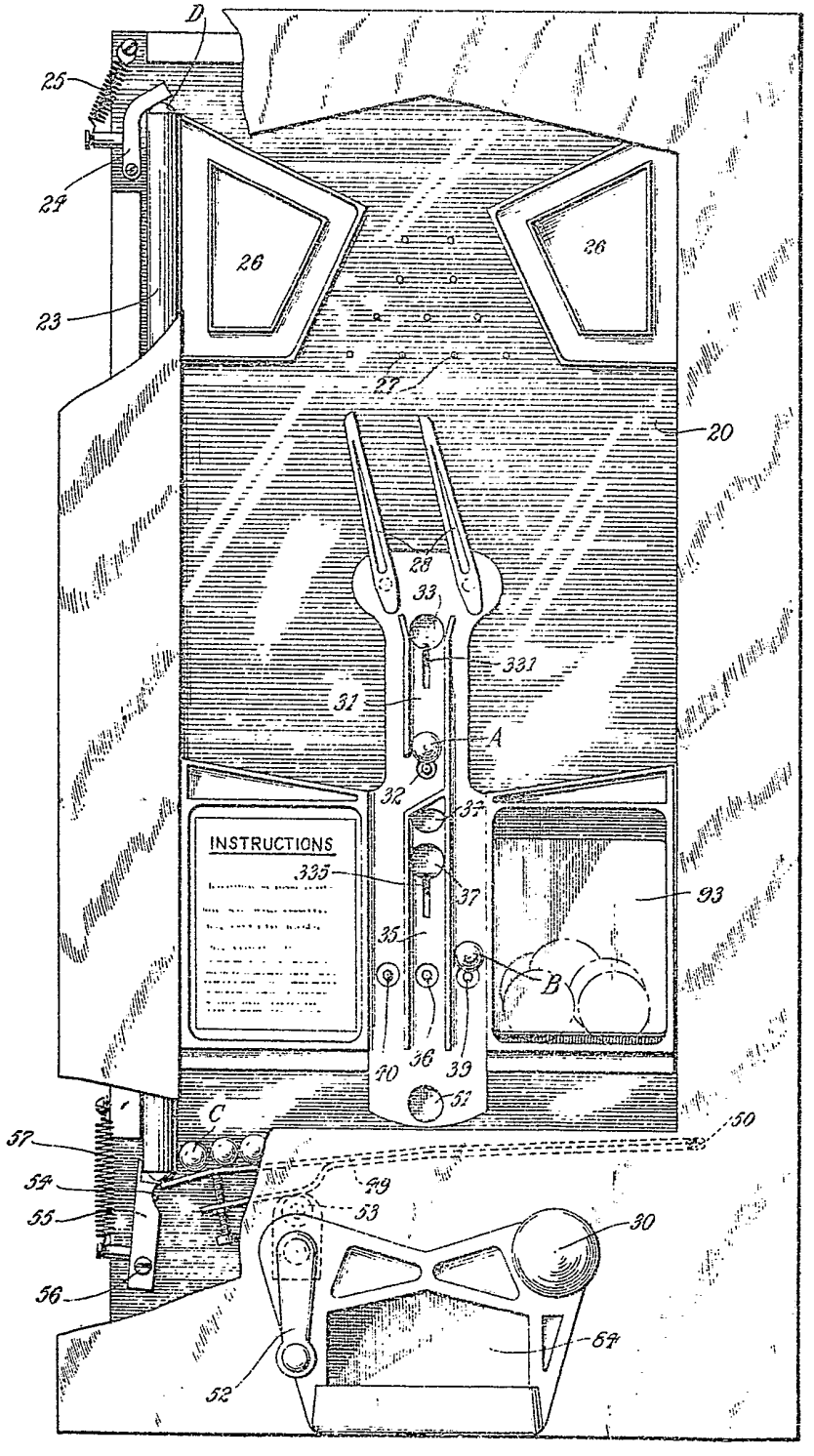

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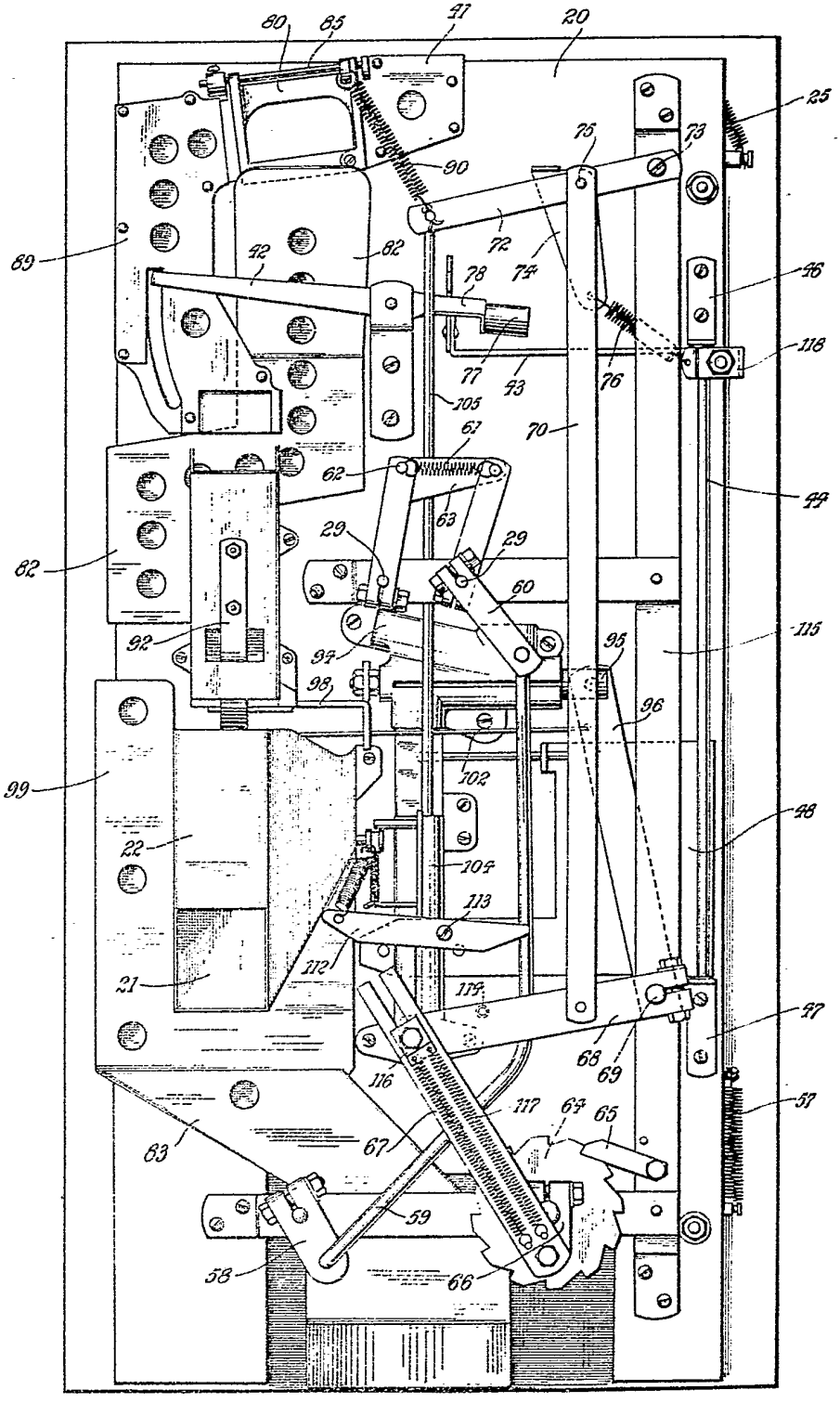
Fig. 2.



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431,216 COMPLETE SPECIFICATION

6 SHEETS

SHEET 1

SHEET 2

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Fig. 1

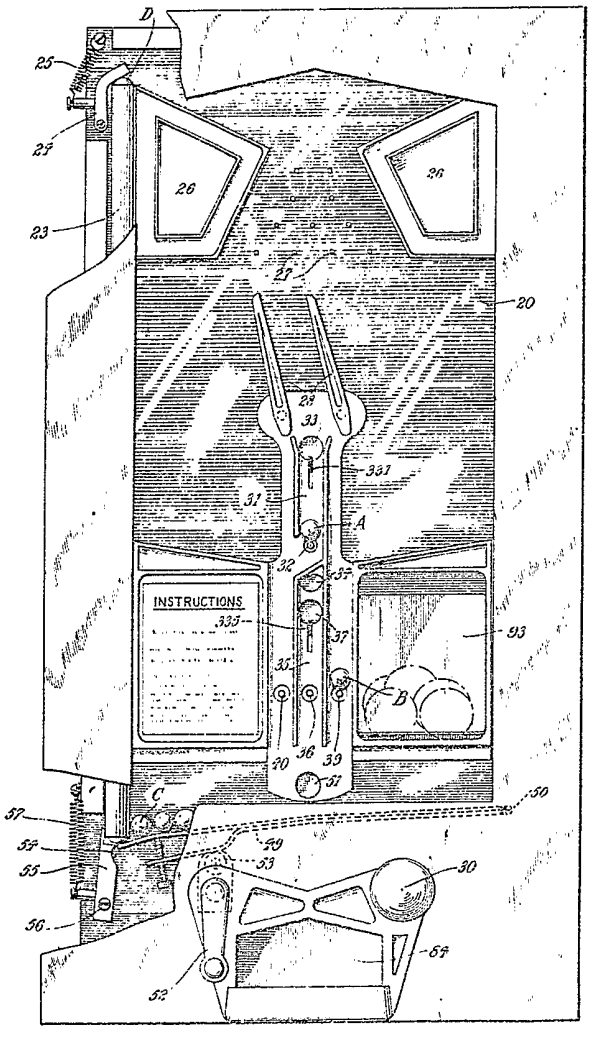

Fig. 2.

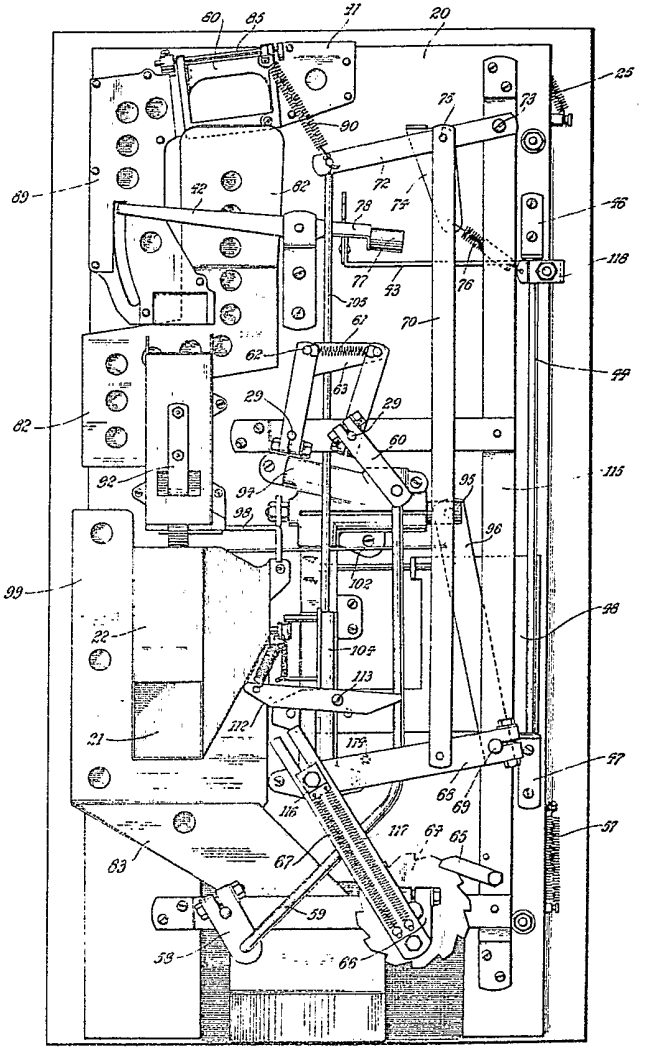

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Fig. 3.

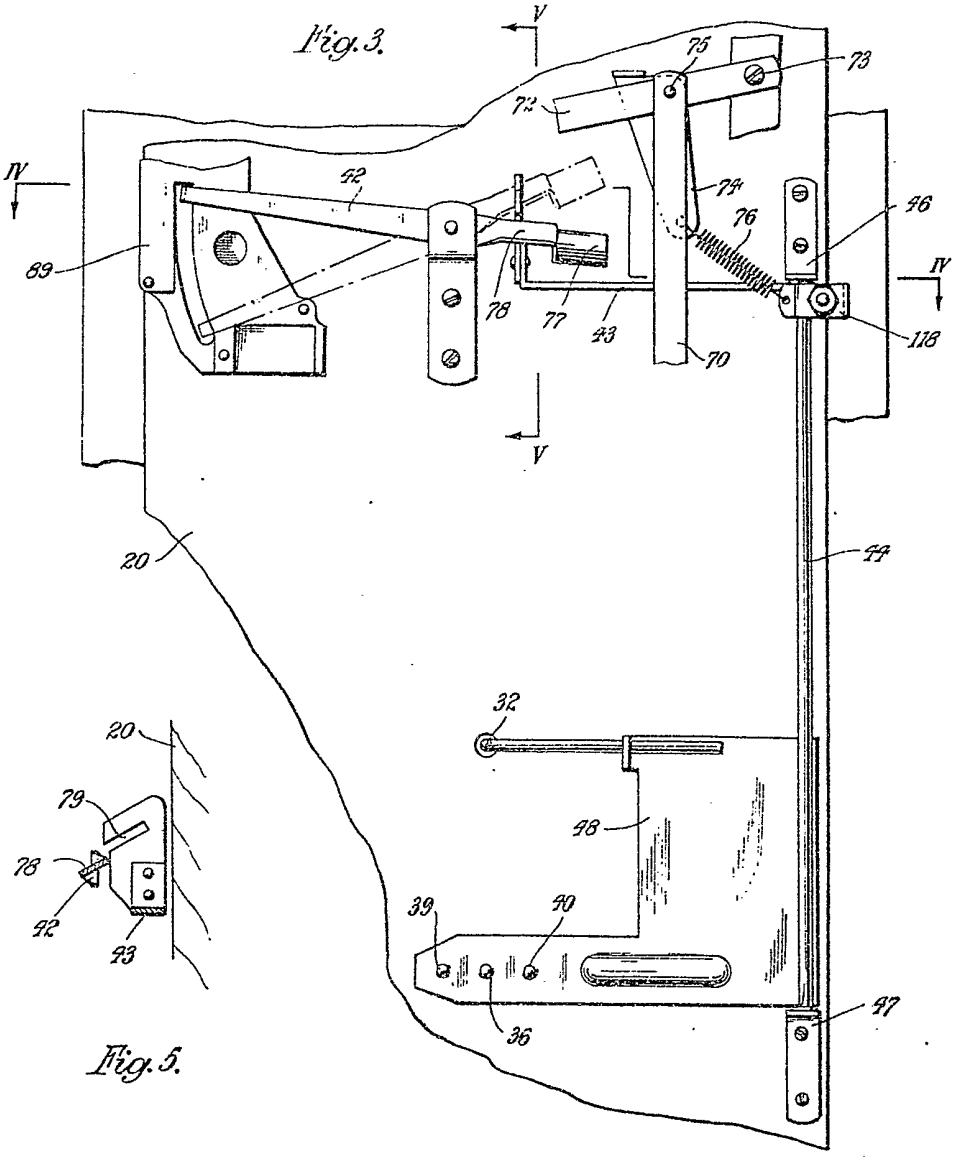

Fig. 5.

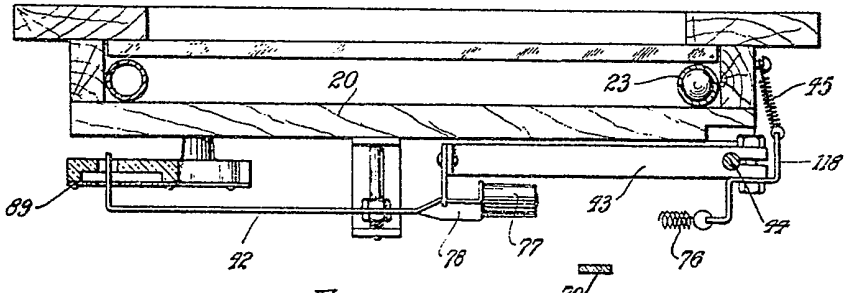

Fig. 4.

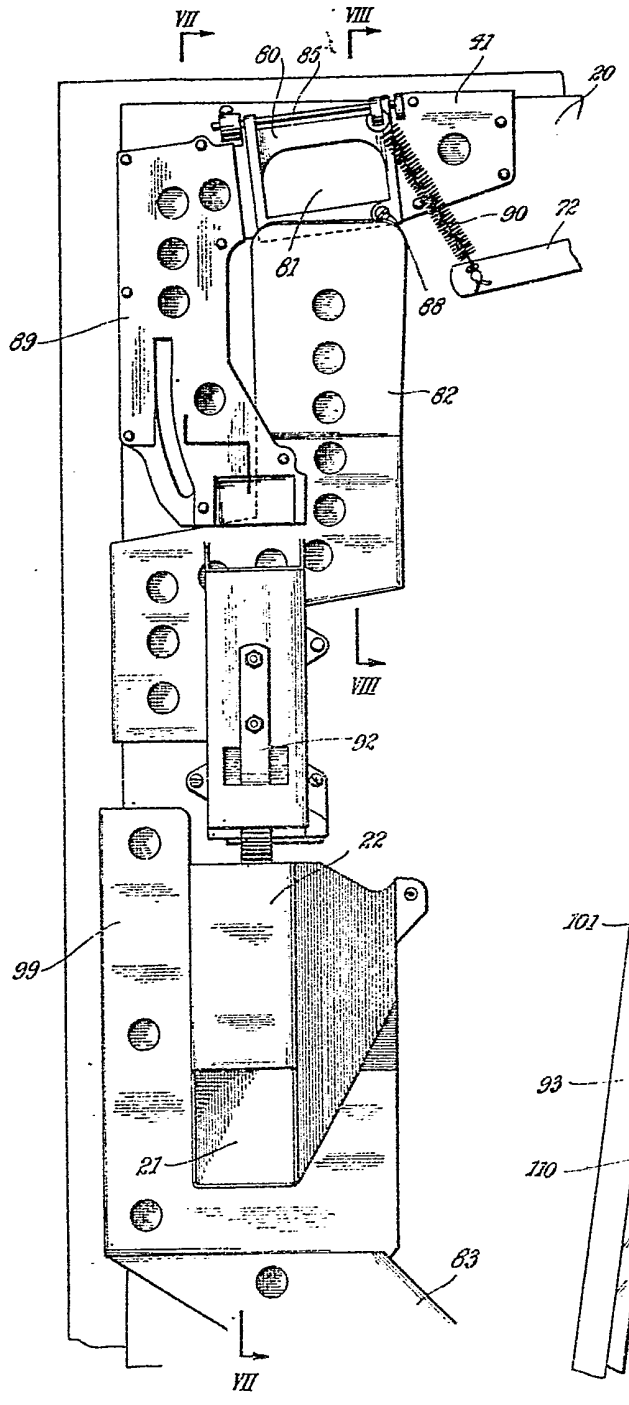

Fig. 6.

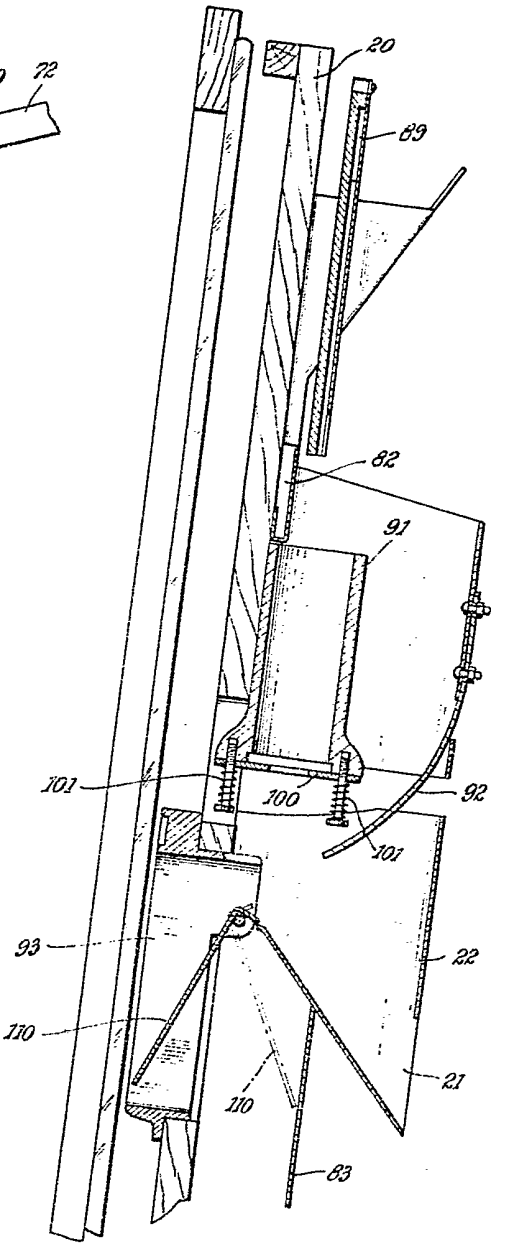

Fig. 7.

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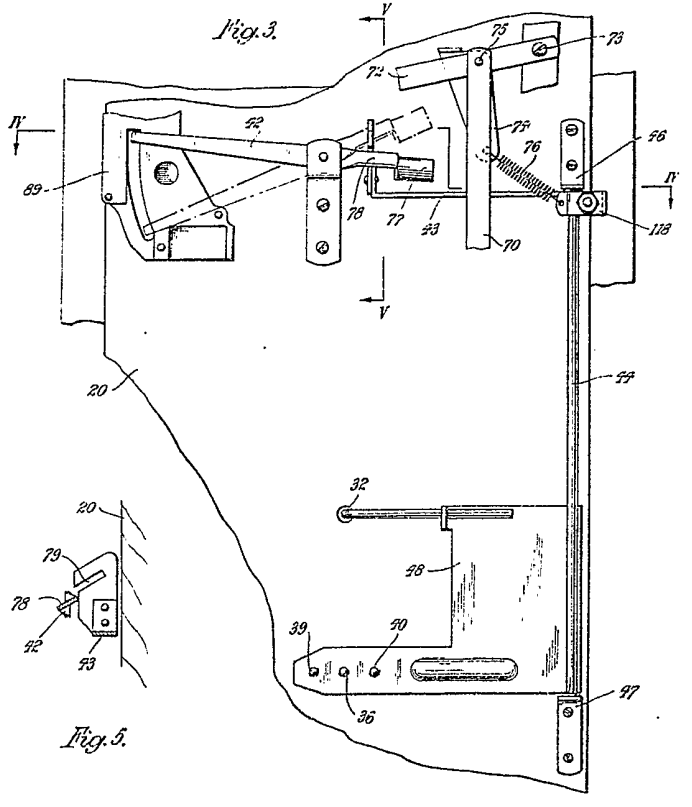

Fig. 3.

Fig. 5.

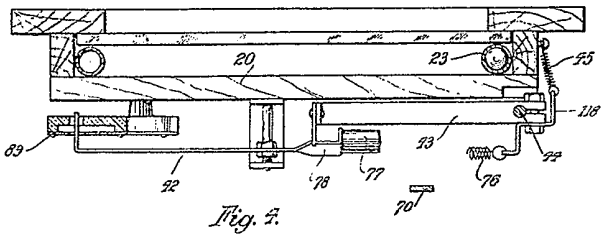

Fig. 4.

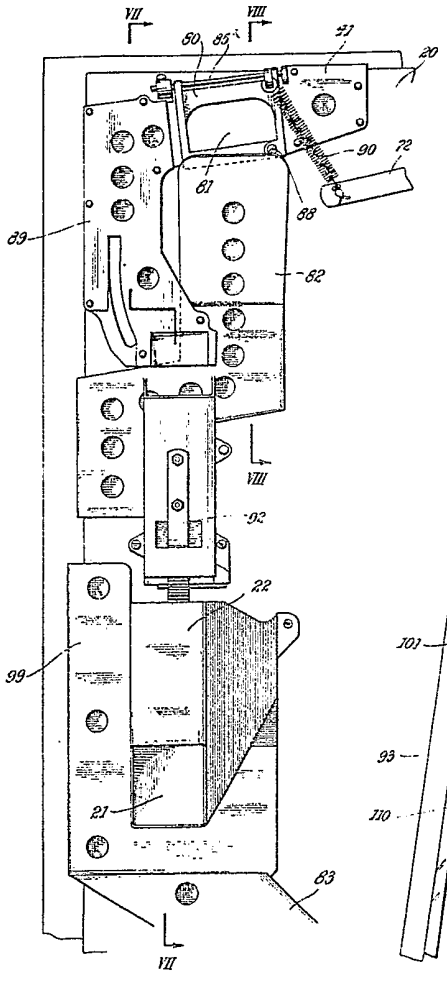

Fig. 6.

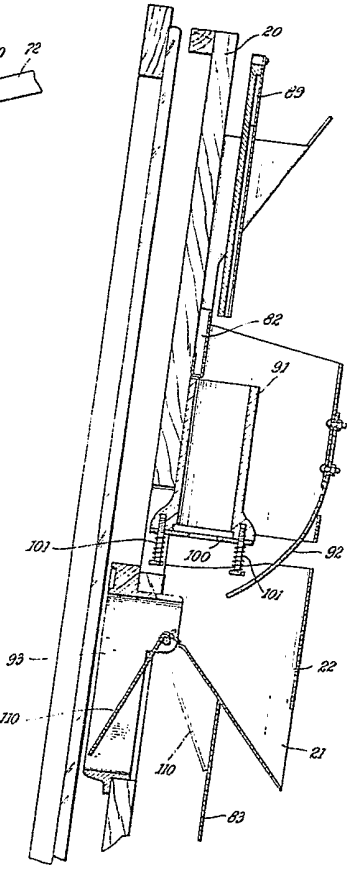

Fig. 7.

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Fig. 10.

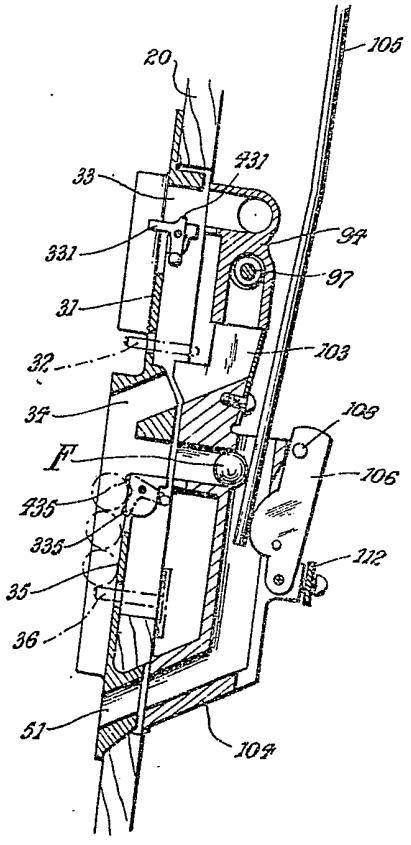
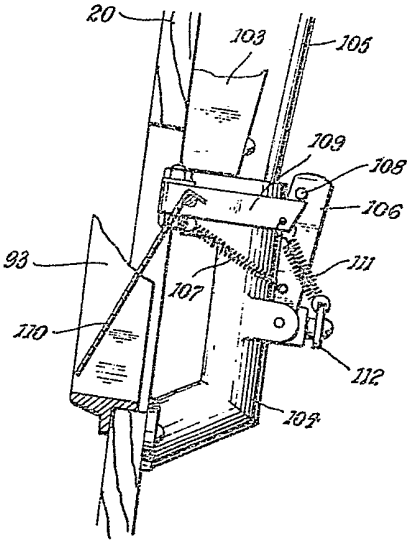


Fig. 11.



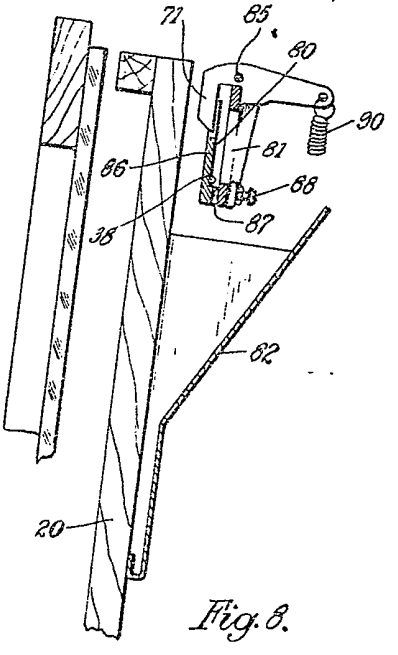


Fig. 8.

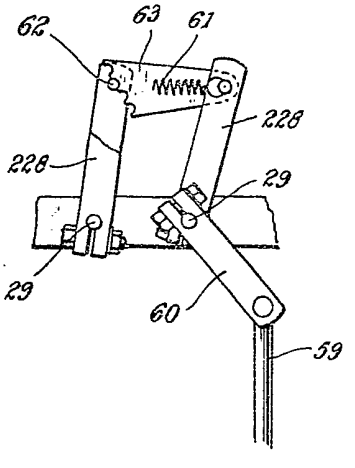


Fig. 13.

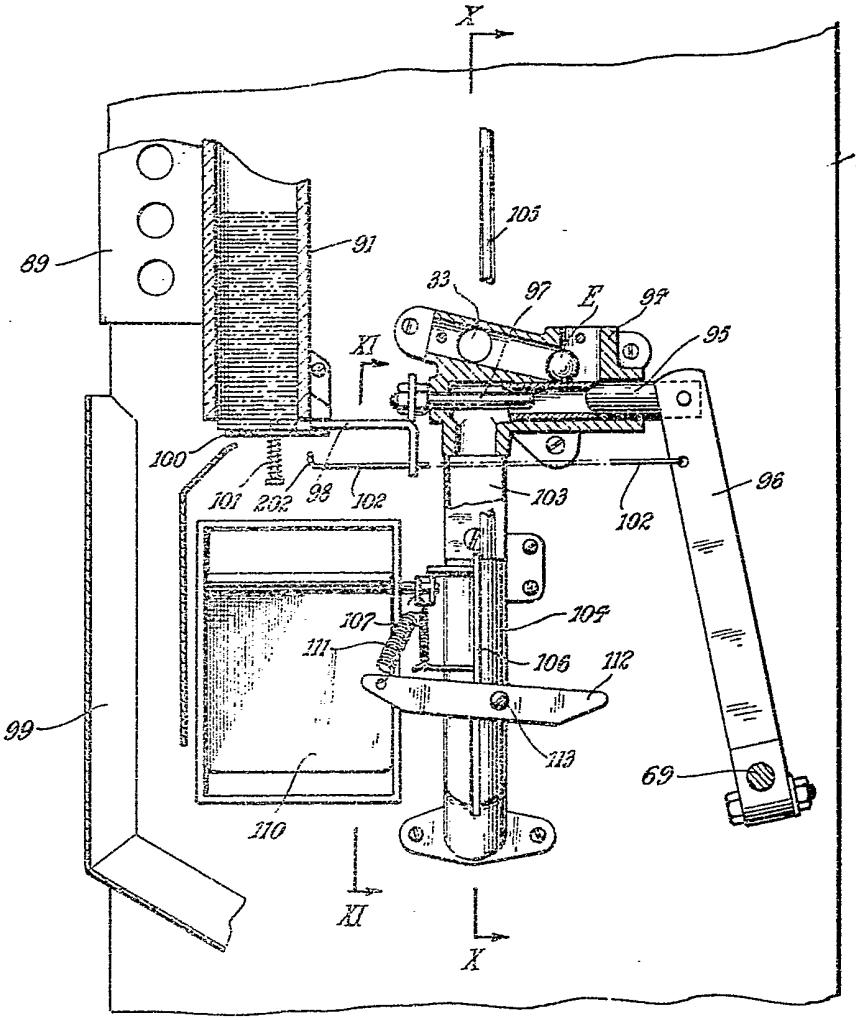


Fig. 9.

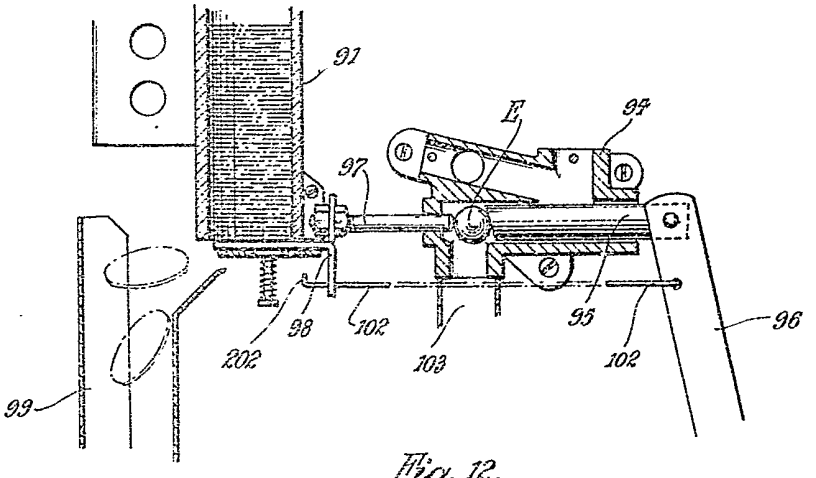


Fig. 12.

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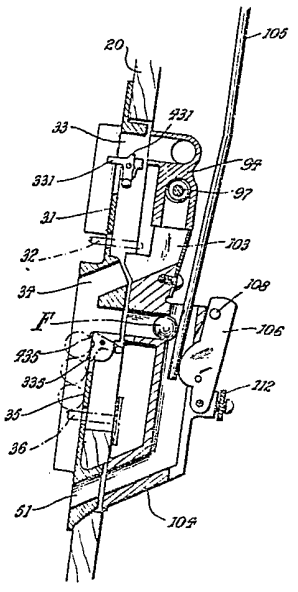
Fig. 10.



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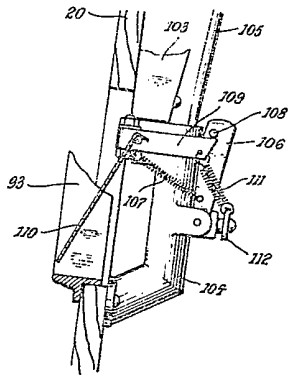

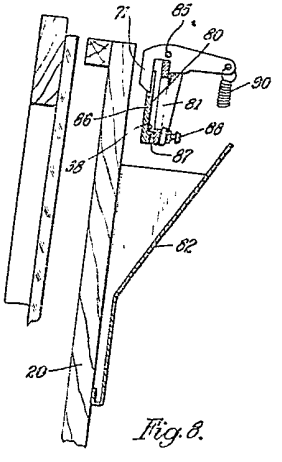

Fig. 8.

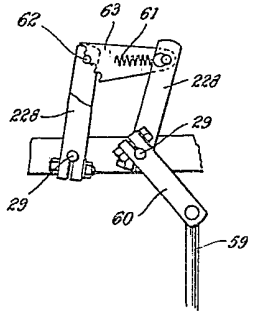

Fig. 13.

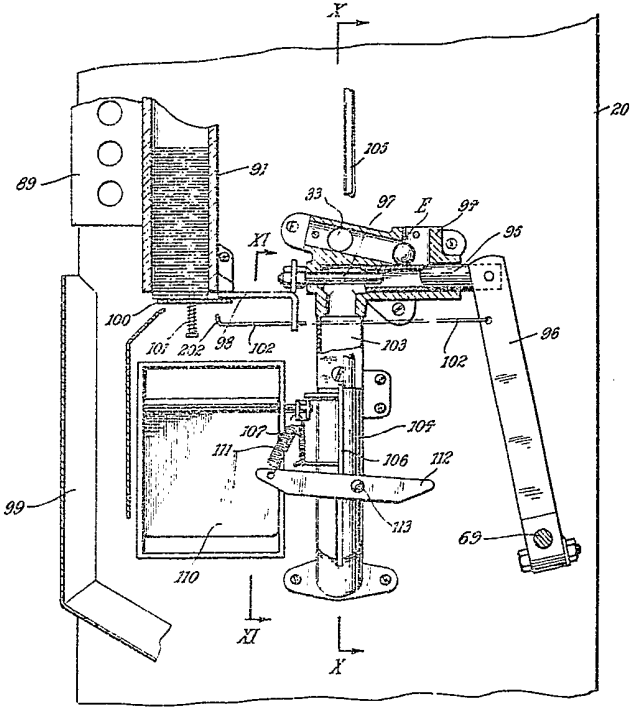

Fig. 9.

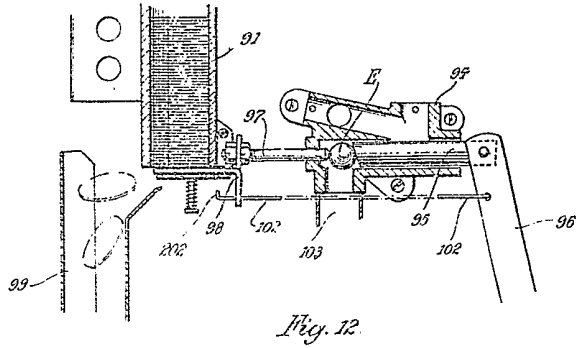

Fig. 12.

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