Aug. 27, 1935. D. O. THORSON 2,012,899

EXERCISE VENDING DEVICE

Filed Feb. 23, 1934 5 Sheets-Sheet 1

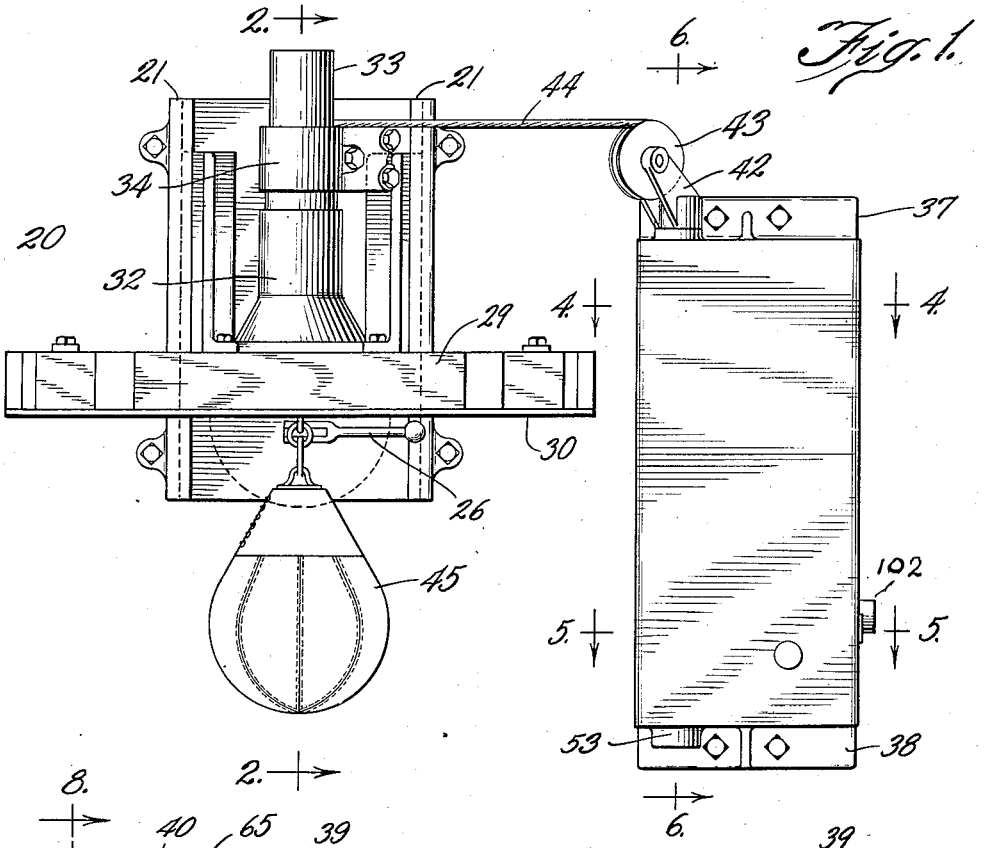

Fig. 1.

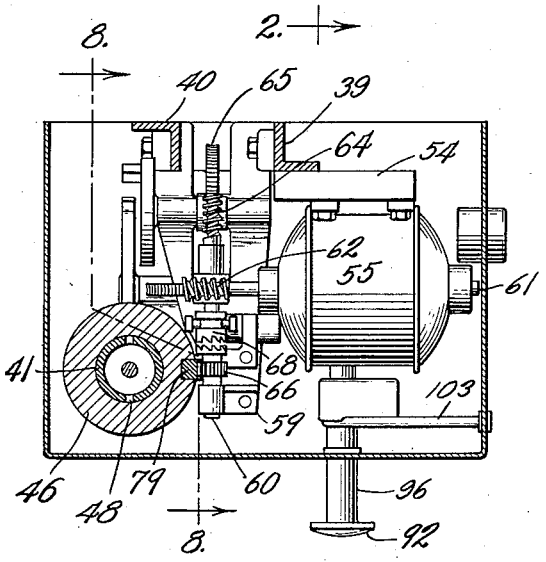

Fig. 4.

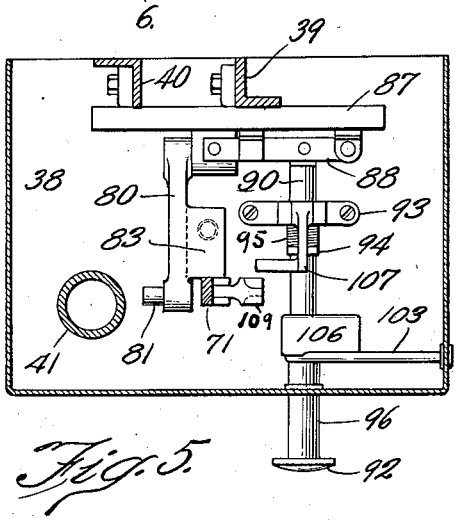

Fig. 5.

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Aug. 27, 1935. D. O. THORSON 2,012,899

EXERCISE VENDING DEVICE

Filed Feb. 23, 1934 5 Sheets-Sheet 2

Fig. 3.

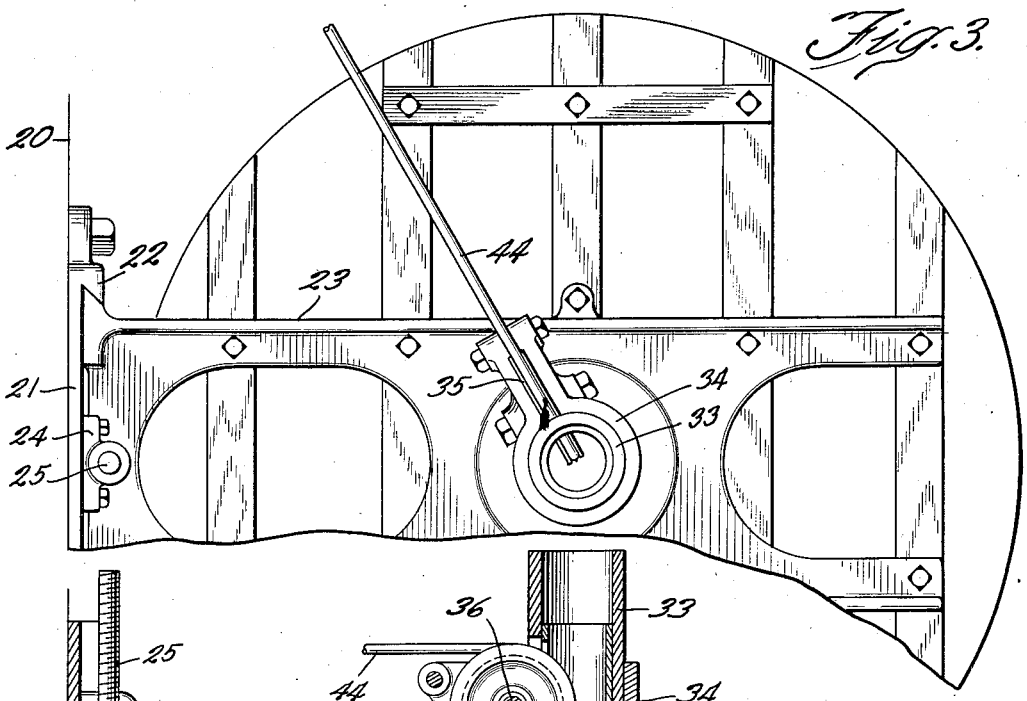
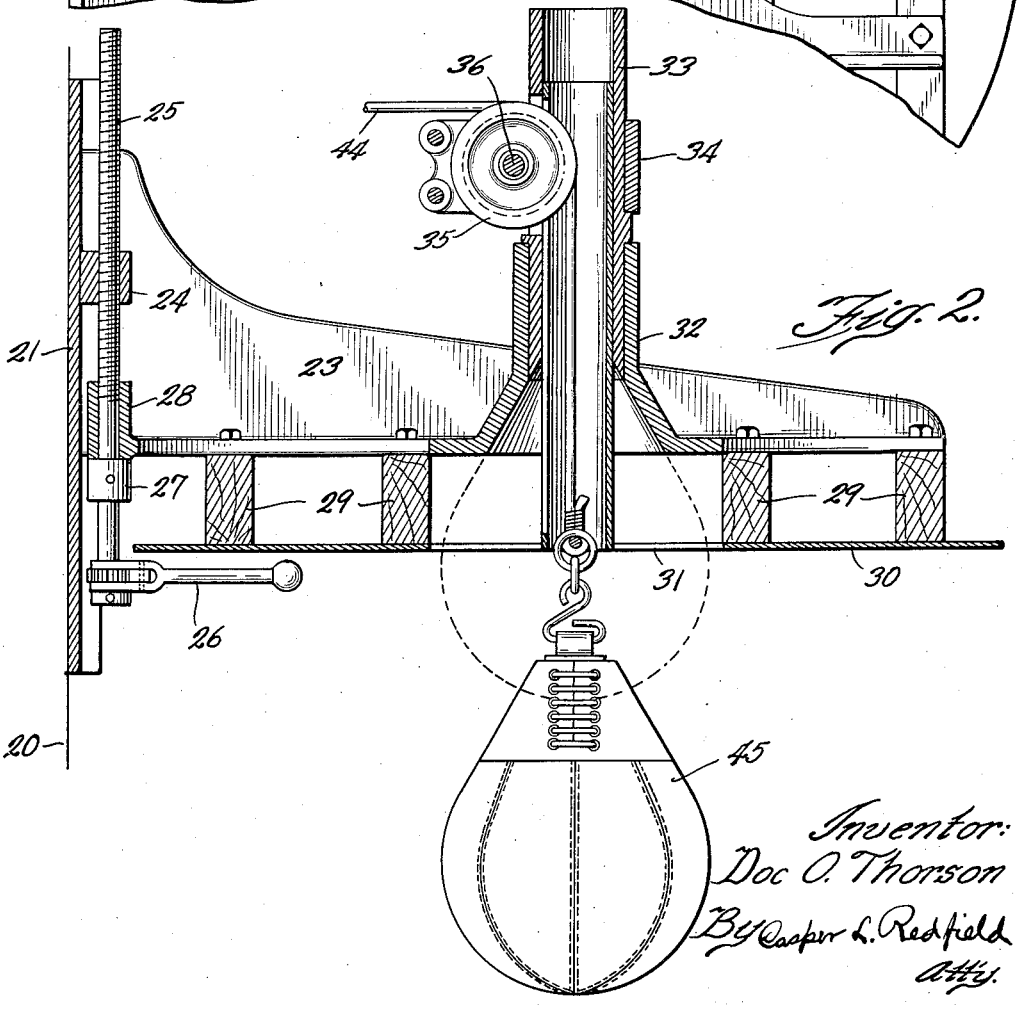


Fig. 2.



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EXERCISE VENDING DEVICE

Filed Feb. 23, 1934 5 Sheets-Sheet 3

Fig. 6.

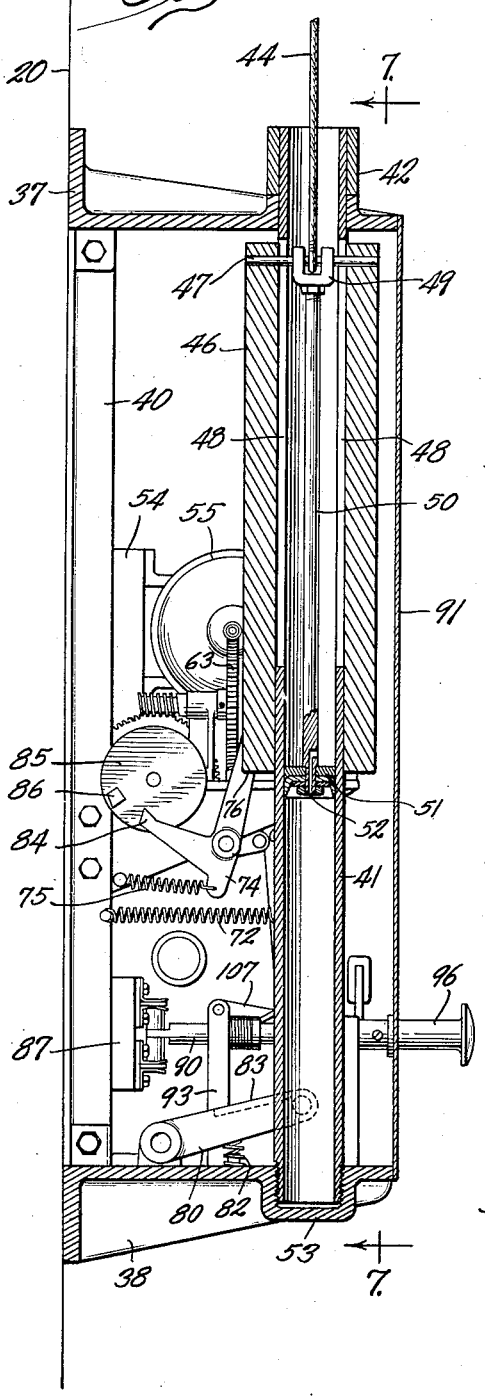
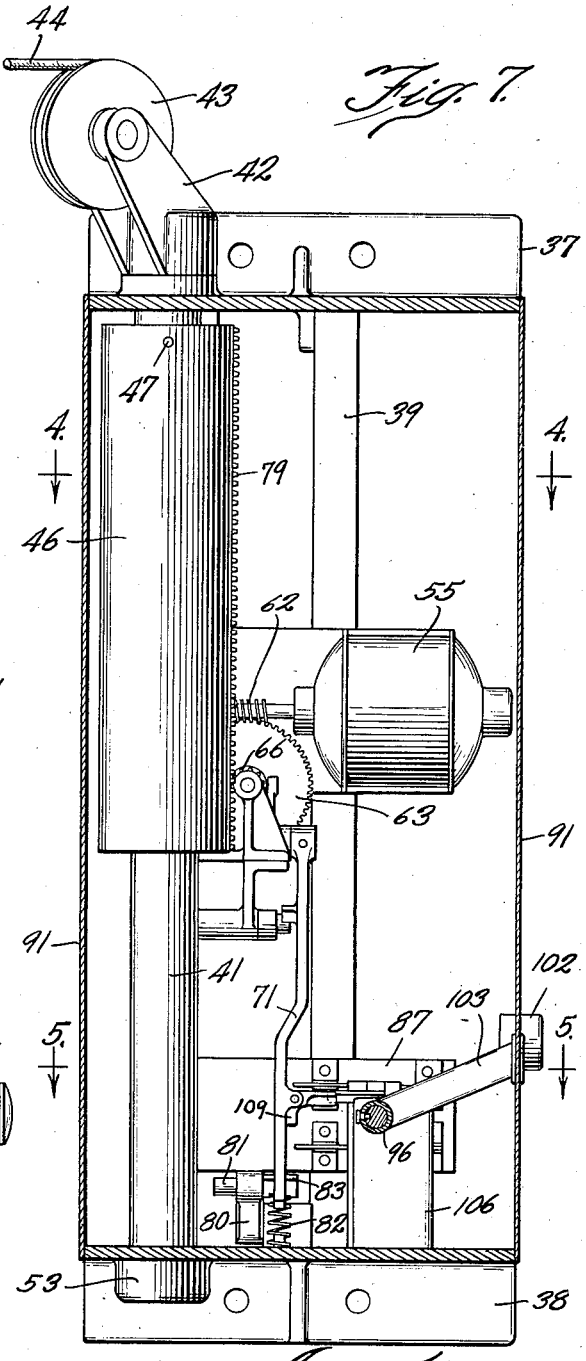


Fig. 7.



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Aug. 27, 1935. D. O. THORSON 2,012,899

EXERCISE VENDING DEVICE

Filed Feb. 23, 1934 5 Sheets-Sheet 4

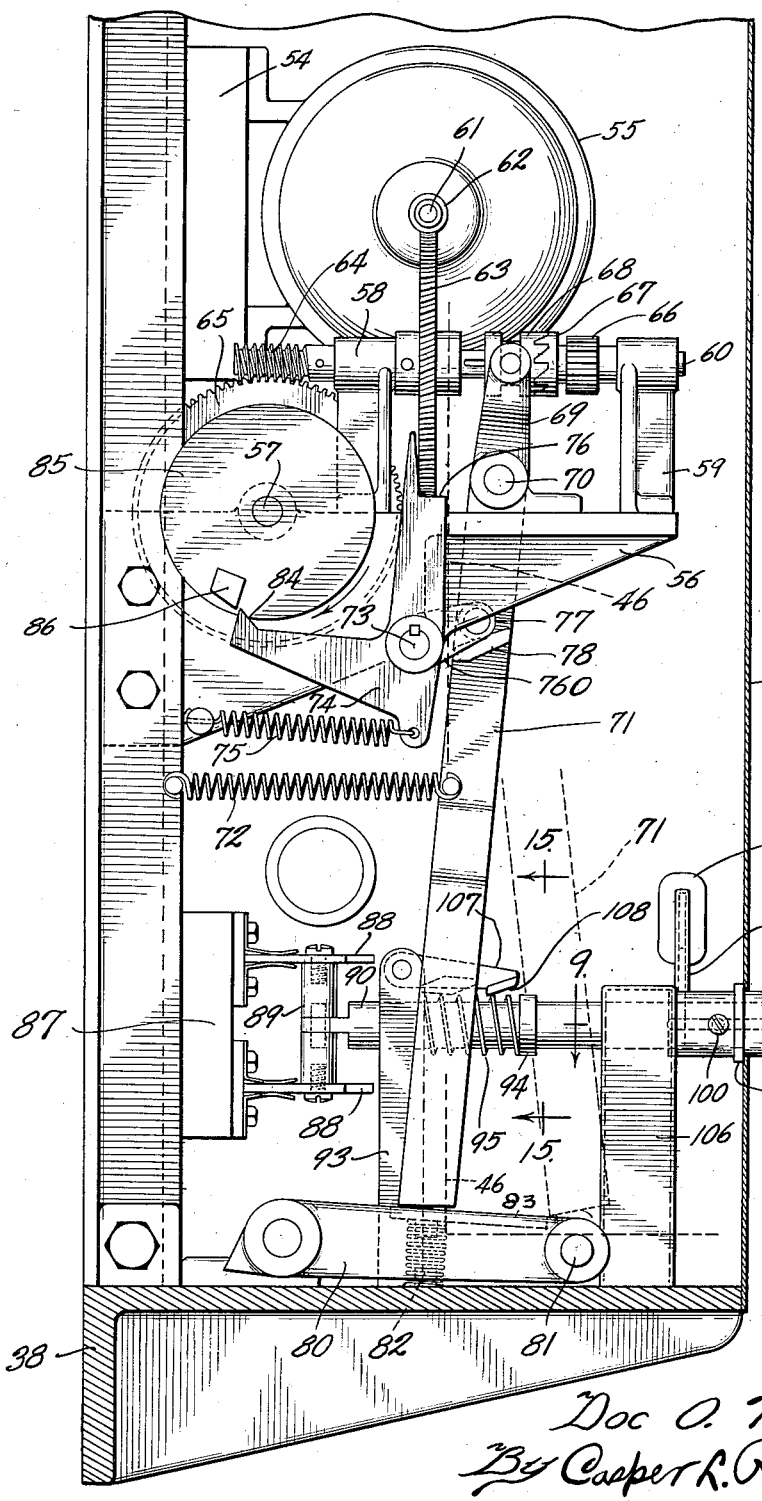

Fig. 8.

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EXERCISE VENDING DEVICE

Filed Feb. 23, 1934 5 Sheets-Sheet 5

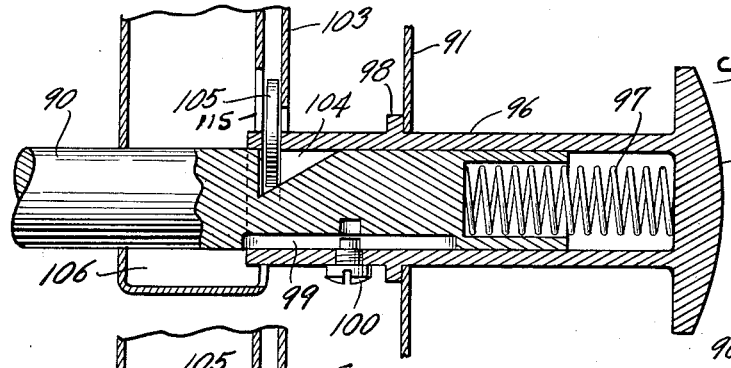


Fig. 9.

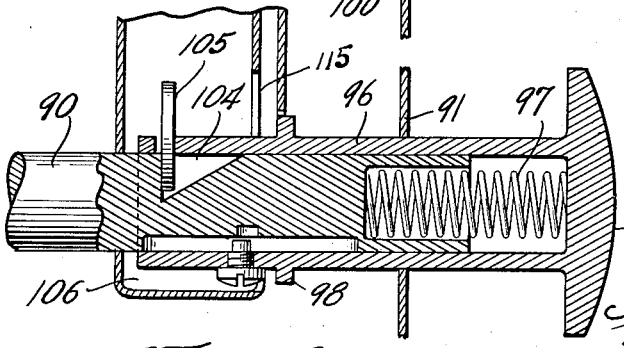


Fig. 10.

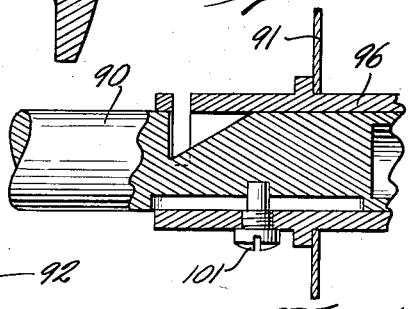


Fig. 11.

Fig. 13.

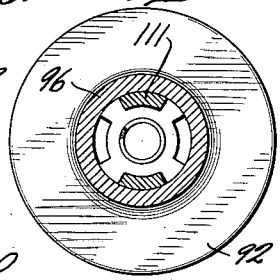
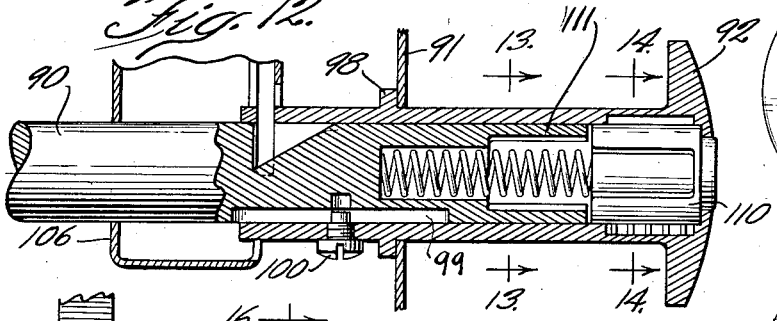


Fig. 12.



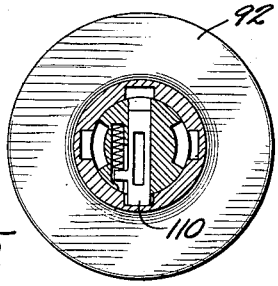


Fig. 14.

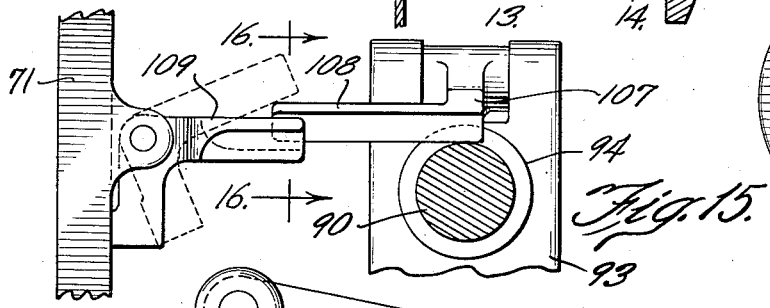


Fig. 15.

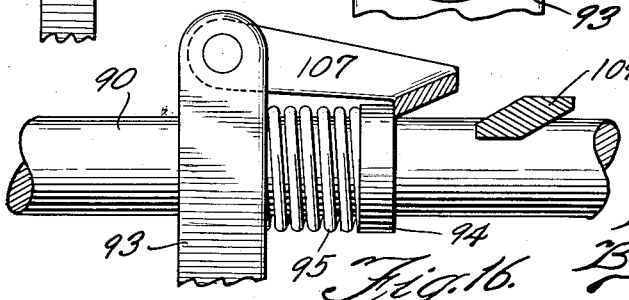


Fig. 16.

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UNITED STATES PATENT OFFICE

2,012,899

EXERCISE VENDING DEVICE

Doc O. Thorson, Lisbon, Ill.

Application February 23, 1934, Serial No. 712,525

5 Claims. (Cl. 161—17)

My invention is an exercise vending device, and has for its object the construction of a mechanism which, by the insertion of a coin, a person may have use of a punching bag or other object for exercising purposes. The invention might also be called an exercise measuring device because it permits exercise for a certain measured length of time, and this measuring may be entirely independent of the question of whether a coin is used or not. This has its importance because operating such a thing as a punching bag is rather violent exercise, and the person exercising has his attention concentrated on the exercise and not on the clock. This device enables the person who is exercising to have a record of his time at work without having to concentrate his attention on that time.

The accompanying drawings represent the invention as applied to a punching bag, and in said drawings

Fig. 1 is a front elevation of the device secured to a wall;

Fig. 2 is an enlarged section on line 2—2 of Fig. 1;

Fig. 3 is a partial plan of Fig. 2;

Figs. 4 and 5 are sections on lines 4—4 and 5—5 of Figs. 1 and 7;

Fig. 6 is an enlarged section on line 6—6 of Fig. 1;

Fig. 7 is a section on line 7—7 of Fig. 6;

Fig. 8 is a section on the irregular line 8—8 of Fig. 4;

Fig. 9 is an enlarged section on line 9—9 of Fig. 8;

Fig. 10 represents the parts of Fig. 9 moved to another position;

Fig. 11 is a modification of Fig. 9;

Fig. 12 is another modification of Fig. 9;

Figs. 13 and 14 are sections on lines 13—13 and 14—14 of Fig. 12;

Fig. 15 is a section on line 15—15 of Fig. 8; and

Fig. 16 is a section on line 16—16 of Fig. 15.

Secured to the wall 20 is a plate 21 having guides 22, and vertically adjustable in these guides is a bracket 23. Also secured to the plate 21 is a nut 24 in which a screw 25 is turned manually by means of a reversible ratchet and lever 26. Pinned to the screw 25 is a collar 27 which engages the under side of a boss 28 on bracket 23. It will be evident that by manipulating the lever 26, the bracket 23 and parts carried thereby may be raised or lowered as desired.

Secured to the under face of the bracket 23 are some timbers 29, and secured to these timbers is a circular plate 30 having a central opening 31 directly beneath a boss 32 on the backet 23. In this boss is a pivoting tube 33, and on this tube is clamped a collar 34 which supports a sheave 35 pivoted at 36.

At a convenient place on the wall are upper and lower brackets 37 and 38 connected together by angle irons 39 and 40. In these brackets is supported a stationary tube 41, and on the upper end of this tube is pivoted a bracket 42 which carries a sheave 43. Mounted on sheaves 36 and 43 is a rope 44 having a punching bag 45 secured to one end and a weight 46 secured to the other end. It will be evident that when the weight is raised, the bag will be lowered, and that when the weight is lowered, the bag will be raised.

The weight 46 is mounted upon and guided by the tube 41, and the pin 47 which connects the weight to the rope passes thru slots 48 in opposite sides of the stationary tube 41. This arrangement permits the weight to slide up and down on the tube, and at the same time prevents the weight from turning rotatively on the tube.

Inside of the tube 41, and secured to the pin 47 by means of a fork 49, is a rod 50 having a plunger head 51 at its lower end. The lower end of the rod 50 has an opening 52 which connects the spaces above and below the plunger head with each other. Fig. 6 shows the weight and plunger head at their upper position, the bag 45 (Figs. 1 and 2) being simultaneously at its lower position.

The lower end of the tube 41 is screwed into a boss 53 so as to make a liquid tight joint at that place. The lower part of the tube 41 is filled with a liquid up to or slightly above the plunger head 51 when at its upper position. The purpose of this is to furnish a dash pot to check the fall of the weight 46 when it is released in a manner which will be described when describing the manner in which the release occurs.

Secured to the angle iron 39 (Figs. 4, 6, and 8) is a block 54 on which is mounted a motor 55. On the angle irons 39 and 40 is another bracket 56 which carries a shaft 57, and secondary brackets 58 and 59 in which is a shaft 60. The shaft 61 of the motor has on it a worm 62 which engages a worm gear 63 on the shaft 60, and shaft 60 carries a worm 64 which engages a worm gear 65 on shaft 57. These connections give a very great reduction in speed from the motor to the shaft 57.

Loose on the shaft 60, but restrained from axial movement thereon, is a small gear or pinion 66 and a connected clutch member 67. The associated movable clutch member 68 is connected to the shaft by a feather in the usual manner.

A fork 69 for shifting clutch member 68 is pivoted on a pin 70 carried by a small bracket on bracket 56. The part of the fork 69 which extends below pivot 70 is in the form of a lever 71 which extends downward and terminates a short distance above the bracket 38. A spring 72 acts to normally close the clutch connection 67—68.

In the lower part of the bracket 56 is a rock shaft 73 to which is keyed a bell crank lever 74. The vertical arm of lever 74 is pressed toward the right (Figs. 6 and 8) by spring 75 and normally engages the side of the weight 46 as indicated by the dotted line 46 in Fig. 8. The upper end of the vertical arm of 74 has a notch 76 located at the point to which the lower end of the weight 46 arrives when said weight is at its highest position. As a consequence, when the weight is raised, the vertical arm of 74 rubs against the side of the weight until the lower end of the weight arrives at notch 76, when the spring 75 throws the notch under the weight to support it until released.

Fast on the rock shaft 73 is an arm 760 having a roller 77 adapted to engage a cam 78 on the side of the lever 71. When the weight is raised to a position which will permit the spring 75 to move the bell crank lever 74, the roller 77 acts upon the cam 78 to throw lever 71 from its full line to dotted line position as shown in Fig. 8, and this action disconnects the clutch members 67—68.

On the side of the weight 46 is a vertical rack 79 (Fig. 4) which is engaged at all times by the pinion 66. The clutch 67—68 serves to connect the pinion to or disconnect it from the motor.

Pivoted on the bracket 38 is a lever 80 which has a pin 81 on its free end, and a spring 82 acting to elevate it. When the weight 46 is at its lower position it engages the pin 81 to depress the lever 80 to the position shown in Fig. 8. When the weight is raised, the spring 82 acts to lift the lever, but such lifting is temporarily restrained by the lower end of lever 71 being over a shelf 83 on said lever. When the weight reaches its highest position and permits spring 75 to operate thru roller 77 to move lever 71 to the right as shown in Fig. 8 and thus open the clutch, the lower end of lever 71 passes from the shelf 83 and the spring 82 raises the lever 80 to bring the end of the shelf 83 behind the lever 71 and thus hold the clutch open.

The horizontal arm of the bell crank 74 has a bevel 84 on its end, and lies adjacent to a disk 85 fast on shaft 57. On this disk is a cam 86 arranged to engage the bevel 84 and move the bell crank against the action of the spring 75. The disk moves in the direction of the arrow of Fig. 8, and the engagement of the cam 86 serves to move the notch 76 from under the weight so that said weight may fall.

Secured to the angle irons 39 and 40 near their lower ends is a piece of insulation 87, on which its supported an electric switch for controlling an electric circuit for the motor 55. Between the blades 88 of this switch is a bar 89, and pivoted to the center of this bar is a link or push rod 90. Enclosing the space between the brackets 37 and 38 is a casing 91, and supported in this casing directly opposite the end of the push rod is a push button 92.

The push rod 90 is guided in a small bracket 93, and has on it a collar 94. Between the collar 94 and bracket 93 is a spring 95 which acts to open the switch 88. Beyond the collar 94 the rod 90 extends into the tubular stem 96 of the push button 92. The extreme end of the rod 90 is recessed, and in this recess is a spring 97 which is materially weaker than the spring 95. The spring 97 normally holds the collar 98 on stem 96 against the inner face of casing 91, but will permit the push button to move inward without moving the switch 88. The proportions are such that while the inner face of the push button may strike the end of the push rod to move it inward, the amount of such movement before the button strikes the casing is not sufficient to close the switch.

On one side of the push rod 90 is cut a slot or keyway 99, and in the stem 96 is a screw 100 having an end projecting into this keyway. This is a device for preventing the stem turning with respect to the push rod without interfering with the sliding of the stem on the rod. As shown in Figs. 9 and 12, there is a small recess in the rod opposite the end of the screw 100. This makes it possible to remove the screw 100 and substitute a screw 101 as shown in Fig. 11. When changed to this arrangement, an inward push on the button 92 will close the switch 88 without compressing the spring 97. The screw 100 is inside of the casing, and the change can only be made by removing the casing.

On the side of the casing 91 is an escutcheon 102 having a coin slot therein, and from this slot a coin channel 103 extends to the side of that part of the stem 96 which is within the casing. At the point where the coin would come when the button 92 is in normal position, a transverse slot is cut in the side of the stem to permit a coin rolling down channel 103 to project into a notch 104 cut in the side of the push rod 90. Fig. 9 illustrates a coin 105 in this position.

With the coin in this position, an inward push on the button 92 will cause the coin to act as a key to connect the stem 96 to the square shoulder of the notch 104, and such push will move rod 90 inward to close the electric switch. The opening 115 in the side of the coin channel permits the coin to pass from the channel to a point over the coin box 106.

Pivoted on the upper end of the bracket 93 is a hook 107 adapted to engage the collar 94 on rod 90 when said rod is pushed in far enough to close the switch. This hook serves to retain the switch closed when the button 92 is released. Upon such release, the spring 97 moves the stem from the position shown in Fig. 10 to that shown in Fig. 9. This movement pulls the coin upward on the incline of notch 104 and ejects it so that it falls into the coin box.

On the side of the hook 107 is an arm 108 having its lower face inclined as shown in Figs. 8 and 15. On the side of the lever 71 which faces away from the guide tube 41, is pivoted an arm 109 having an incline to match the incline on arm 108. The construction is such that when the lever 71 moves in the direction which opens the clutch 68, the pivoted arm 109 will ride over the arm 108, and when the lever 71 moves to close the clutch, the pivoted arm 109 will lift the hook 107 to release the push rod 90 and permit the spring to open the switch so as to stop the motor.

In Fig. 11 is shown a way of connecting rod 90 to stem 96 so that the device may be operated without the use of a coin. Figs. 12, 13, and 14 show another way of accomplishing the same result by using a key lock 110 inside of the button and stem 96, and setting the device for that

purpose by using a lock and key in the button 92. In this case, the extreme end of the push rod 90 would be in the form of fingers 111 which would either go between or butt against corresponding fingers on or controlled by the lock.

In normal position, the weight 46 is down, and the bag 45 is in the dotted line position shown in Fig. 2. To bring the bag down to a position where it can be used, a coin is inserted in the slot, and the button 92 is pushed in. The coin makes a connection between the stem 96 and the rod 90 so that the inward push closes the electric circuit for the motor 55. The hook 107 holds that position until released.

In normal position, the clutch is closed so that the motor, driving thru the worm gear 63 and pinion 66 raises the weight 46 from its lower to its upper position. As the weight and bag are on opposite ends of the rope, the raising of one lowers the other.

When the weight reaches the position shown in Fig. 6, the spring 75 acts on bell crank lever 74 to throw the notch 76 under the weight to prevent it from falling until released. The same movement of the bell crank lever causes the roller 77 to act on cam 78 so as to move lever 71 in a direction to open the clutch and thus disconnect the lifting while the motor continues to operate. This movement of lever 71 also releases lever 80 and permits that lever to rise and lock lever 71 in a position to prevent the closing of the clutch until other things have been done. Also, the lever 71 carries the arm 109 over the arm 108 to prepare for releasing the hook 107 so that spring 95 may open the electric switch which controls the motor.

The motor drives thru a worm to a worm gear on shaft 60, and a worm on shaft 60 drives thru a worm gear to turn shaft 57. As a consequence, shaft 57 moves very slowly as compared to the speed of the motor. At the time the motor starts, the cam 86 is at the position shown in Fig. 8 and moves in the direction of the adjacent arrow. By the time the operations just described of raising the weight and lowering the bag have been completed, the cam 86 has advanced from the position shown in Fig. 8 to about the position shown in Fig. 6. From that time and until the cam 86 has made a complete revolution, nothing occurs in the mechanism, and it is during this period that the exerciser punches the bag.

When the cam has completed its circuit, it moves bell crank lever 74 to release the weight, which moves downward slowly and raises the bag at the same time. As the weight approaches its lowest position it engages pin 81 to release lever 71 and permit spring 72 to move that lever in the direction of closing the clutch. At the beginning of this movement, and before the clutch is closed, the arm 109 trips the hook 107, and this permits spring 95 to break the circuit for the motor. This brings the parts back to their normal position ready to be started over again by the insertion of a coin and the pushing of the button.

What I claim is:

1. In an exercise measuring device, a punching bag normally supported at an elevated position, a source of power, means for connecting the power to the bag to lower it and subsequently raise it to its normal position, and timing means operated by the power to cause a predetermined interval of time to elapse between the lowering and the raising of the bag.

2. In an exercise measuring device, a bag and a counterweight serving to raise the bag and support it at an elevated position, power means for raising the weight so that the bag may be lowered, holding means for retaining the weight in elevated position, and automatically operating means for releasing the holding means at the end of a predetermined length of time.

3. In a device of the class described, a bag and a counterweight arranged to normally support the bag at an elevated position, a motor provided with connections arranged to raise the weight so that the bag may descend to a lower position, locking means arranged to retain the bag and weight in their moved position, and means operated by the motor for releasing the locking means so that the bag and weight may return to normal position.

4. In a device of the class described, a bag and a counterweight arranged to normally support the bag at an elevated position, a motor provided with connections to a gear, a rack secured to the weight and engaged by the gear to raise said weight, means controlled by the movement of the weight to disconnect the gear from the motor, holding means for retaining the weight in elevated position, means operated by the continued operation of the motor to release the holding means, and means operated by the return of the weight and bag to normal position to reconnect the motor to the gear.

5. In a device of the class described, a bag and a counterweight therefor having a normal position, a normally idle motor, manually controlled means for starting the motor to move the bag and weight to a new position, means operated by the moving parts to disconnect the motor therefrom, holding means for retaining said moved parts in their moved position, and means operated by the continued operation of the motor for releasing the holding means and stopping the motor.

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