S. T. CASTLEMAN.

POWER MECHANISM FOR VENDING MACHINES.

APPLICATION FILED JAN. 9, 1911.

1,011,576.

Patented Dec. 12, 1911.

2 SHEETS—SHEET 1.

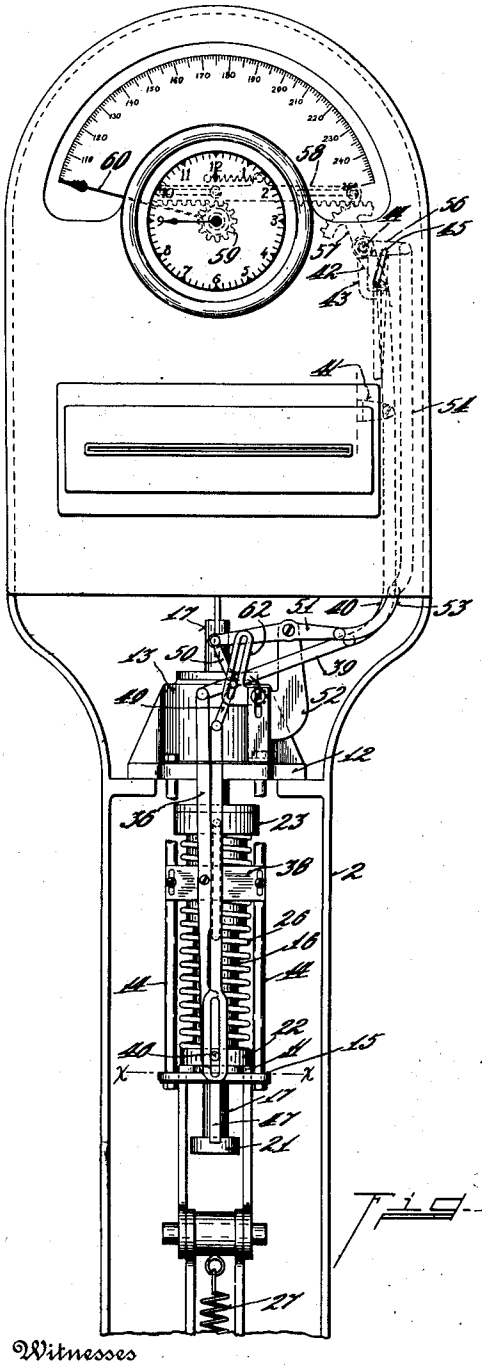

Fig. 1.

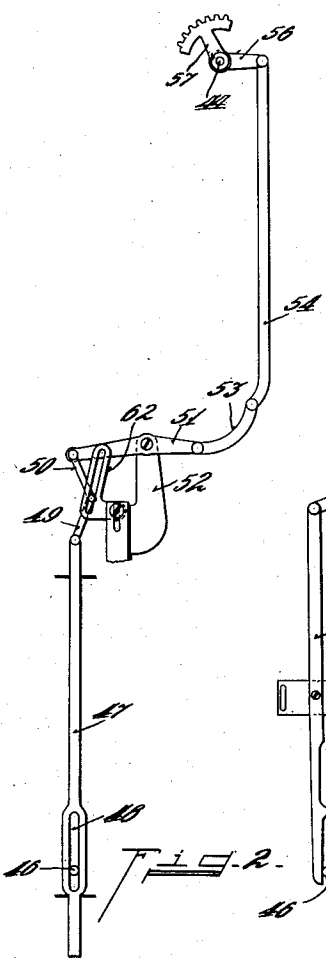

Fig. 2.

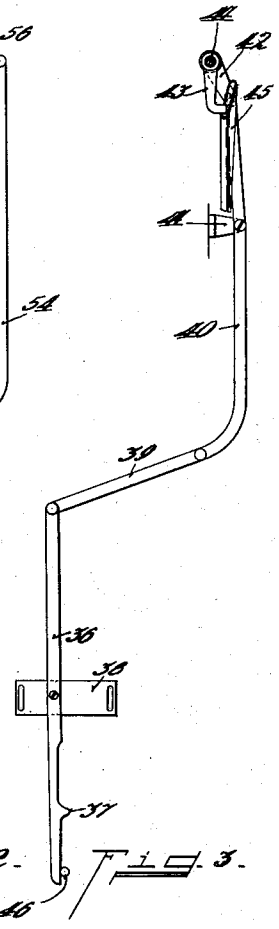

Fig. 3.

Witnesses

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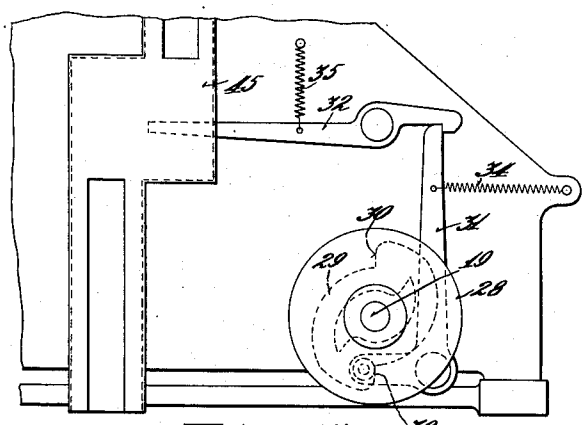


FIG. 5.

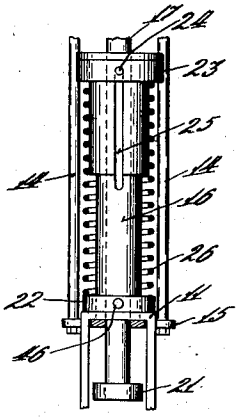


FIG. 6.

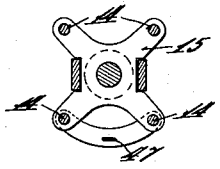
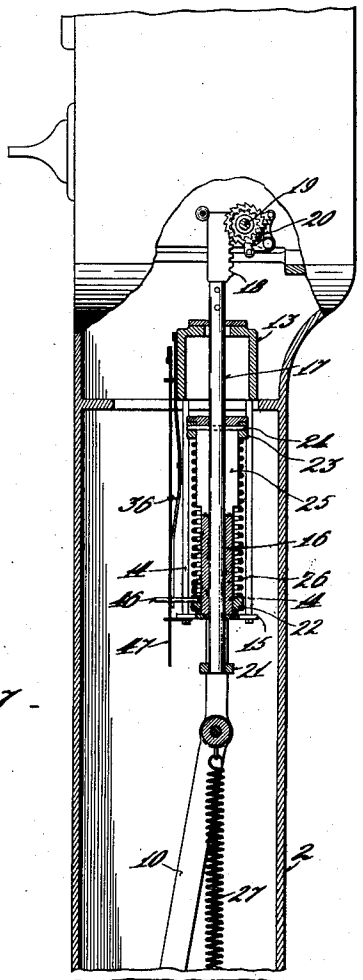


FIG. 7.



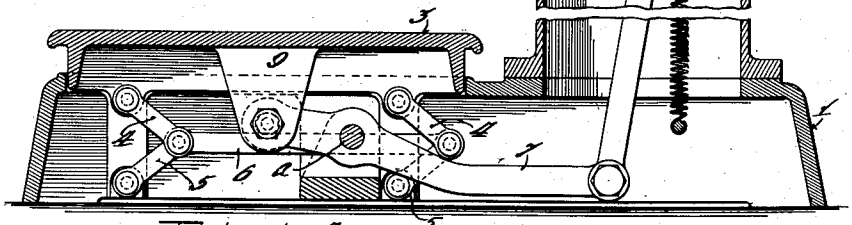


FIG. 4.

Witnesses

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UNITED STATES PATENT OFFICE.

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POWER MECHANISM FOR VENDING-MACHINES.

1,011,576. Specification of Letters Patent. Patented Dec. 12, 1911.

Application filed January 9, 1911. Serial No. 601,722.

To all whom it may concern:

Be it known that I, SAMUEL T. CASTLEMAN, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Power Mechanism for Vending-Machines, of which the following is a specification.

My invention relates to an improvement in mechanism for generating energy and primarily employed as the means for operating the mechanism of a vending machine with the essential characteristic of storing energy upon the application of an applied weight to the power mechanism, and preferably limiting such energy storage to a minimum and sufficient for a vending operation.

One of the objects of my invention is to provide mechanism for the storage of energy upon the application of an applied weight, in combination with means for effecting a release of the energy storage beyond a minimum storage.

Another object of my invention is to provide mechanism for storing energy for operating subsidiary mechanism upon the application of an applied weight, to said power mechanism, with means serving to counterbalance said applied weight to provide a minimum storage energy in the application of excess weight.

Another object of my invention is to provide scale counterbalancing means, and means for releasing the connection between counterbalance and applied weight at a predetermined limit, with the release of counterbalance storing energy to operate subsidiary mechanism, after which the counterbalance again becomes effective to operate weight-indicating mechanism.

Another object of my invention is to provide scale counterbalancing means in combination with weight-indicating means, and means for adjusting intermediate connections thereof to effect proper graduations between the weight applied to the counterbalancing means and weight indicating means.

Another object of my invention is to provide a weight counterbalancing spring, adapted to be released of its weight tension upon the application of a predetermined weight thereto and its release operating subsidiary mechanism whereby the power thus created is maintained constant for each action and independent of excess weight applied above the predetermined limit.

The various features of my invention will be more fully set forth in the description of the accompanying drawings, forming a part of this specification, in which:—

Figure 1 is a front elevation of my improved power and weight counterbalancing means as applied to an insurance vending machine, illustrating the same within the upper portion of the casing of such machine. Fig. 2 is a detailed view of the connections between the counterbalancing mechanism and weight indicator. Fig. 3 is a detailed view of the lever mechanism for controlling the coin deposit, providing limitations to effect a vending operation. Fig. 4 is a central vertical section through the mechanism shown in Fig. 1, and the platform and mechanism contained therein of a vending machine to which my improvement is applied. Fig. 5 is a detail view of the coin controlled mechanism for releasing the main power shaft of the vending mechanism. Fig. 6 is a detailed sectional view of the power and weight counterbalancing means illustrated in Fig. 1. Fig. 7 is a section on line x, x, Fig. 1.

In the drawings, I have illustrated only so much of the vending machine to which my improvement is preferably applied as is necessary to clearly understand the operation. This class of machine, as illustrated or herein set forth, is an accident insurance vending machine, wherein a policy and stub are validated upon the deposit of the coin and fed forward and discharged from the machine and primarily one issuance for each deposit of coin.

This machine applies a limitation in that the weight of the vendee must be above a certain amount before the mechanism will function. It is obvious, however, that while such limitation is advantageously employed herein, in that the parts are not operative until such condition is complied with, that the same can be dispensed with in that other

forms may be devised in which the weight of the vendee is not an essential characteristic of the operation of the mechanism.

1 represents the base of the machine supporting the vertical column 2.

3 represents a platform projecting through an opening in the base 1 and movably mounted in order that the weight of the vendee will depress the platform.

4, 5, represent toggle links pivotally connected to ears formed on the platform 3 and to the base 1.

6 represents a connecting link connecting said toggles intermediately. This connection between the base and platform providing equalizing means for the platform in its downward movement.

7 represents a lever pivoted at *a* to brackets within the base of the machine, one end of which is pivotally connected to a lug 9, projected from the platform 3, while the opposite end is pivotally connected to a rod or connecting link 10.

11 represents a plunger having a clevis connection with the link 10.

12 represents a cross-plate suitably supported within the column, provided with a cylindrical dome 13, said cross-plate being provided with a series of depending rods 14, supporting the plate 15, which in turn supports the power and weight-balancing mechanism. The limbs of the plunger 11, straddling the plate 15, serving as guides therefor in the vertical movement of the plunger. 16 represents a cylinder slidable upon the rack rod 17, which projects through said cylinder and through the dome 13, of the cross-plate 12, and also through the plate 15 and guided vertically thereby, the upper end of said rod 17 provided with the rack teeth 18, in mesh with a rack-pinion mounted on the shaft 19.

20 represents ratchet mechanism forming connection between the rack pinion and shaft 19, whereby the shaft is rotated upon the upward movement of the rack rod 17 and idle on the return stroke of said rod. The rod 17 is provided with a collar 21 to limit the upward movement thereof, the same adapted to engage with the cross-plate 15.

22 represents a collar loose upon the cylinder 16, and adjacent to the plunger 11.

23 represents a second collar loose upon the opposite end of the cylinder 16, but pinned to the rack rod 17, by a pin 24, see Fig. 4, projecting through slots 25, formed in the cylinder 16, thereby permitting independent movement between rod 17 and cylinder 16.

26 represents a spring interposed between the collars 22 and 23, forming the power and weight counterbalancing spring which initially, after it has been compressed slightly and the rack rod 17 released, exerts upward pressure on the rack rod 17, rotating the shaft 19 for a vending operation.

27 represents a spring, one end of which is secured to the connection between plunger and link 10, while its opposite end is connected to the frame of the machine, serving to automatically restore these parts to normal position.

As illustrated, the shaft 19 is tripped by coin-controlled means, the mechanism being preferably of the type as illustrated in Fig. 5. It is obvious, however, that the shaft 19 may be variously controlled and the same is merely illustrated herein to show a form for locking the shaft and power mechanism out of commission during the energy storage operation.

28 represents a cam wheel having the eccentric cam grooves 29, each terminating with the shoulders 30.

31 represents a bell crank lever, one arm of which is provided with a roller adapted to project and travel in the cam grooves 29 and engage against the shoulders 30 to arrest the movement of the shaft. The opposite end of the bell crank lever or arm is adapted to engage with the latch end of the lever 32, pivotally supported, said lever projecting into a coin-chute 45.

34 represents a spring for exerting tension on the bell crank lever 31, and 35 represents a spring connected to the lever 32. Thus, on depositing a coin in the coin-chute 45, it will engage the lever 32 and trip the same, releasing lever 31 and raising the roller from one of the shoulders in the cam wheel, permitting the shaft 19 to revolve until the roller on the bell crank lever 31 engages the second shoulder formed in the cam wheel. The eccentricity of the cam grooves in the rotation of the cam wheel moves the bell crank lever to the position shown in Fig. 5, permitting the same to engage with the latch lever 32 and also present the roller in line with the shoulder, to engage therewith, positioning the parts for a second operation.

As illustrated, means are provided to control the deposit of the coin by closing the coin chute until the energy storage is sufficient for a vending operation, and also forms the means controlling the limitation as to the amount of weight necessary to be applied. The mechanism for accomplishing the same is preferably of the type as illustrated in Figs. 1 and 3, in which 36 represents a lever having the cam end 37, and pivotally mounted upon a plate 38, which is adapted to be adjustably secured to the depending rods 14.

39 represents a link pivotally connected to the levers 36, 40, the latter being pivotally mounted upon a suitable bearing 41.

42 represents a lever arm fixed to the detent lever arm 43 and pivotally mounted

upon the shaft 44, the arm 42 being pivotally connected to the lever 40, and the arm 43 is adapted to project through a slot formed in the coin-chute 45, thereby blocking the passage of the coin-chute against insertion or descent of the coin within said chute.

46 represents a pin projected from the collar 22, adapted to engage with the cam end 37 of the lever 36 upon the upward movement of the plunger 11 and collar 22, shifting the lever 36 so as to move the arm 43 out of the coin chute path and thereby permit the coin to be deposited and a vending operation effected.

The weight indicating mechanism is preferably constructed as follows:—47 represents a slide rod supported in suitable guides and provided with a slot 48, through which the pin 46 projects so as to move the rod 47 vertically upon upward movement of the collar 22, the slot being such as to provide idle movement of the pin 46 prior to actuating the rod, whereby the predetermined limit of weight required to operate the machine is not registered, and thereby also forming means for non-registering weight until after a coin deposit. 49 and 50 represent links pivotally connected together and the link 49 pivotally connected to the rod 47, while the link 50 is pivotally connected to the lever 51, the latter being pivotally supported on a suitable bearing 52. 53, 54, represent intermediate pivoted link connections between the lever 51 and arm 56, see Fig. 2, the latter being connected or formed integral with the rack segment 57, pivotally mounted upon the rod 44, said rack segment engaging with a rack bar 58, see Fig. 1, slidably supported and also in engagement with the pinion 59, the said pinion being in connection with an indicator hand 60. The links 49 and 50 have a sliding engagement with the guide plate 62, said guide plate being adjustably mounted and provides gaging means between the scale graduations and platform, for properly setting the same relative to the counterbalancing spring and applied weight, to give an accurate weight indication. This guide plate provides differential movements between the slide bar 47 and lever 51.

The operation of the machine can be changed in principle without change of result or mechanism, in that the spring 16 in normal position can be compressed sufficiently to operate the vending mechanism upon the release of the main shaft, in which such energy may be said to be normally stored or the storage can be effected by the weight of the vendee, initially compressing the spring to store the power required for a vending operation. In the first instance, the spring 27 can be of such strength as to require a predetermined weight to be applied upon the platform 3, before its resistance will be overcome to permit the plunger 11 to move vertically and shift the lever 36 sufficiently to open the coin chute for a coin deposit. Depositing the coin in this instance would release the shaft 19 and allow spring 16 to expand, carrying with it collar 22 and rack rod 17. Any excess weight would continue to raise the plunger 11, bring the pin 46 into engagement with the rod 47 and move the weight-indicating mechanism to register the weight applied upon the platform. In the second instance, the spring 27 is of a sufficient strength to restore the parts to normal and the cam end of lever 36 in such position to allow the plunger 11 to compress the spring 16 sufficiently upon the application of a predetermined weight upon the platform to store up enough energy to operate the vending mechanism upon the release of shaft 19, but in which the coin would not be released or capable of insertion until such required storage had been effected. The collar 22, at its pin, in such instance, would not engage and trip the cam lever 36 until after a predetermined idle movement was had, after which, upon release of the shaft 19, the same operation would take place, as described in the first instance.

Various modifications can be devised coming under the scope of this invention, and I therefore do not wish to be limited to the specific structure unless the same is specifically set forth in the claims.

Having described my invention, I claim:—

1. In a machine of the class described, weighing mechanism, combined power storage and weight counterbalancing mechanism in connection with said weighing mechanism, power transmitting mechanism adapted to operate subsidiary mechanism, said power mechanism being capable of energy storage upon the application of a predetermined weight upon said weighing mechanism, means for releasing said storage energy, and means for imparting the same to said power transmitting mechanism.

2. In a device of the class described, combined power storage and weight counterbalancing mechanism operative upon the application of a weight, power transmitting mechanism in connection therewith, locked against operation until the required energy storage has been effected, its release operating subsidiary mechanism, said power storage and weight counterbalancing mechanism comprising a coil spring, adapted to be initially compressed a limited degree for storing energy, and after release thereof additionally compressed to counterbalance the weight in excess of the amount required for initial compression.

3. In a machine of the class described, weighing mechanism, a spring having con-

nection therewith compressed for energy storage by a predetermined weight applied upon said weighing mechanism, mechanism operating from said stored energy, and means for controlling the stored energy to provide for its release operating by weight applied upon said weighing mechanism in excess of the predetermined minimum for energy storage.

4. In a machine of the class described, weighing mechanism, power transmitting mechanism, a coil spring interposed between said weighing mechanism and power transmitting mechanism, means for locking said power transmitting mechanism against operation, adapted to be released upon the application of a predetermined weight upon said weighing mechanism, compressing said spring and storing energy sufficient to operate subsidiary mechanism in connection with said transmitting mechanism upon the release thereof.

5. In a machine of the class described, weighing mechanism, power transmitting mechanism in connection with said weighing mechanism, a spring interposed between said weighing mechanism and power transmitting mechanism, means for locking said transmitting mechanism against operation permitting the spring to be compressed upon the application of a weight upon said weighing mechanism, whereby its compressed power is conveyed to said transmitting mechanism upon the release thereof.

6. In a machine of the class described, weighing mechanism, power transmitting mechanism, means for locking said power transmitting mechanism against operation, a spring interposed between said weighing and power transmitting mechanism, adapted to store energy upon application of a weight to said weighing mechanism, said energy being imparted to said power mechanism upon release thereof, means for limiting the movement of said power transmitting mechanism after its release, whereby the spring will serve as counterbalancing means for the weighing mechanism.

7. In a machine of the class described, weighing mechanism, power transmitting mechanism, means for locking said power transmitting mechanism against operation, a spring interposed between said weighing and power transmitting mechanism, adapted to store energy upon application of a weight to said weighing mechanism, said energy being imparted to said power mechanism upon release thereof, and means governed by a predetermined weight for controlling said power releasing mechanism.

8. In a machine of the class described, weighing mechanism, power transmitting mechanism, means for locking said power transmitting mechanism against operation, a spring interposed between said weighing and power transmitting mechanism adapted to store energy upon application of a weight to said weighing mechanism, said energy being imparted to said power mechanism upon release thereof, means for limiting the movement of said power transmitting mechanism after its release, whereby the spring will serve as counterbalancing means for the weighing mechanism, and means for indicating the weight applied to said weighing mechanism.

9. In a machine of the class described, a weighing platform, an energy storing and weight determining spring connected therewith, mechanism operating from said stored energy, means actuated by the application of a weight to the platform for moving the spring a predetermined distance functional solely for storing energy, and means under the control of the operator enabling the movement of the spring beyond the energy storage point to determine weight upon the platform, where such applied weight is more than sufficient to effect the energy storage.

In testimony whereof, I have hereunto set my hand.

SAMUEL T. CASTLEMAN.

Witnesses:
OLIVER B. KAISER,
CLARENCE B. FOSTER.