April 27, 1965 J. P. WACHTLER 3,180,520

PACKAGE VENDING COLUMN

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FIG. 3

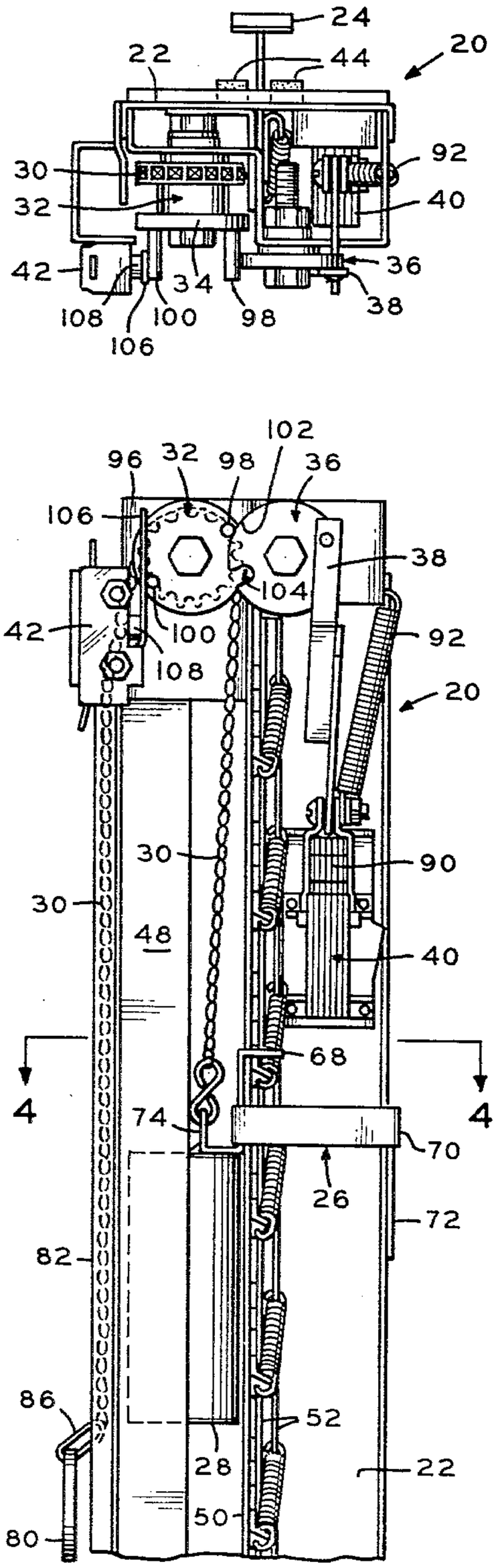

FIG. 2

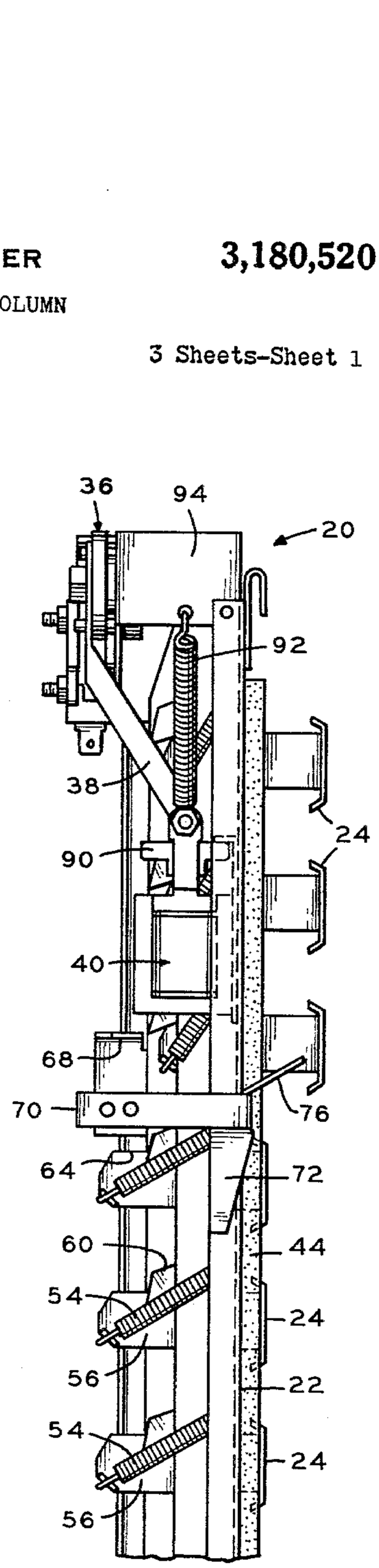

FIG. 1

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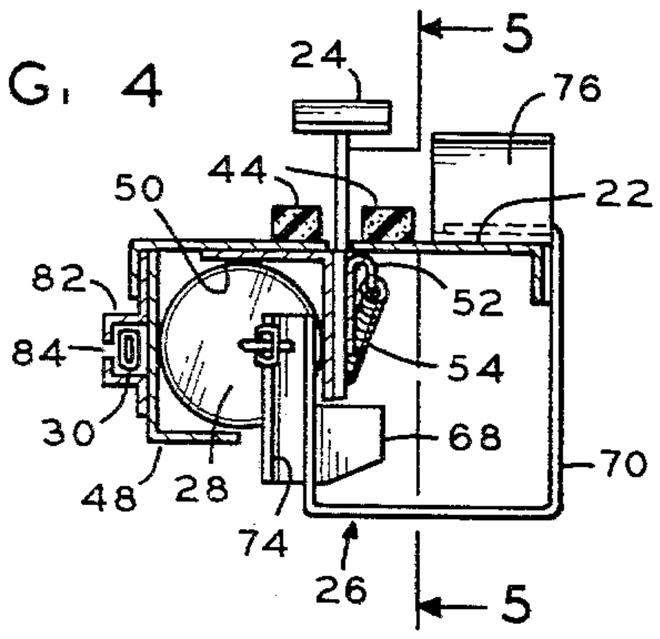
FIG. 4



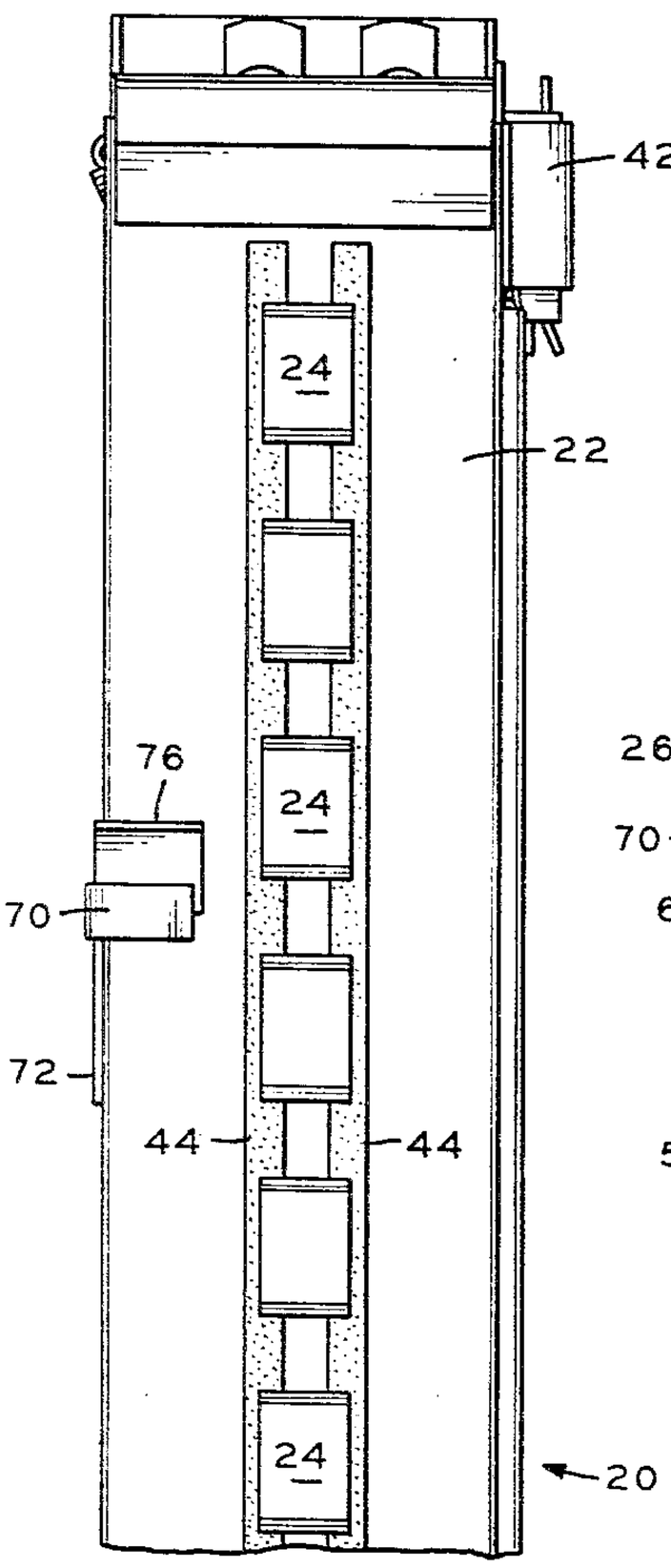


FIG. 7

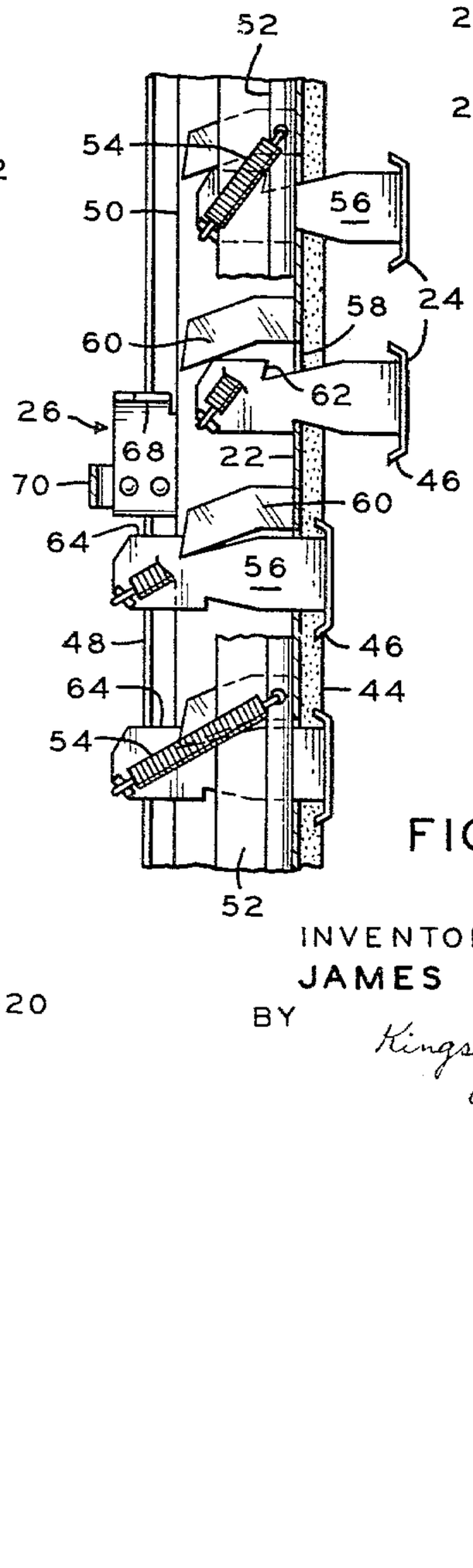


FIG. 5

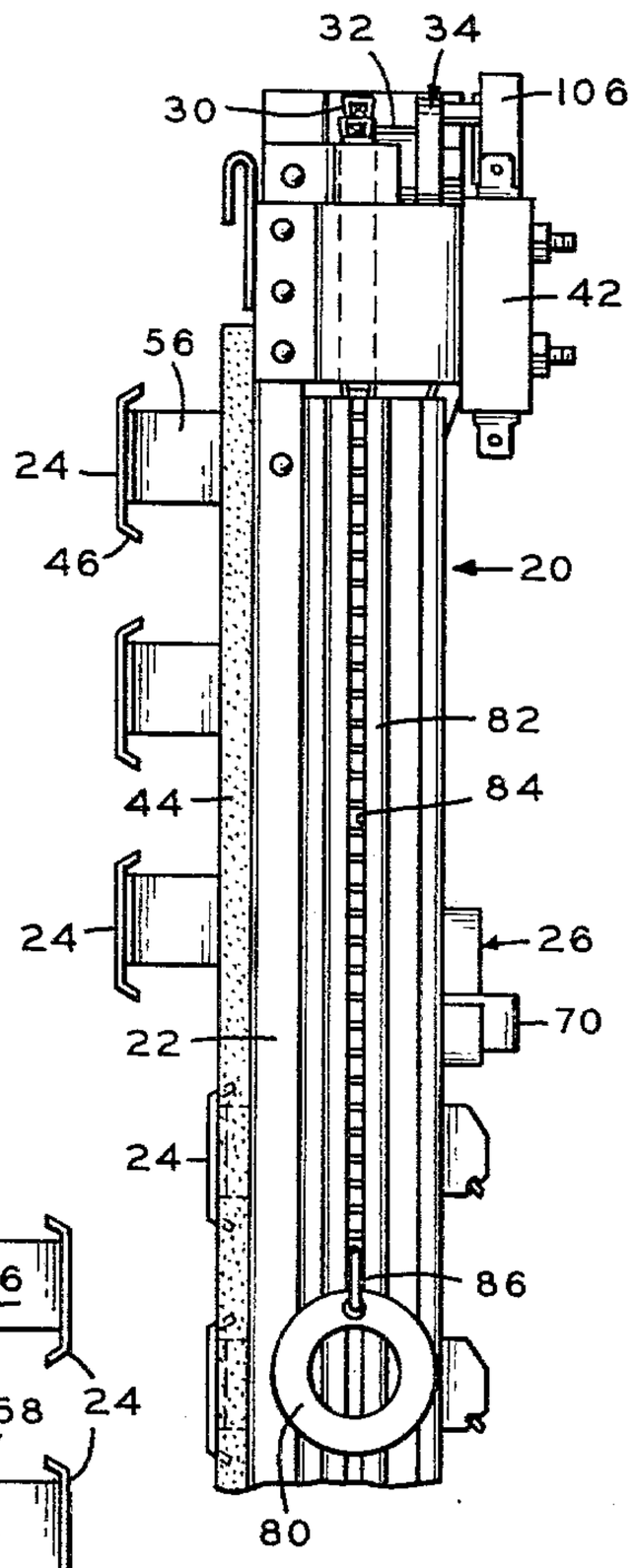


FIG. 6

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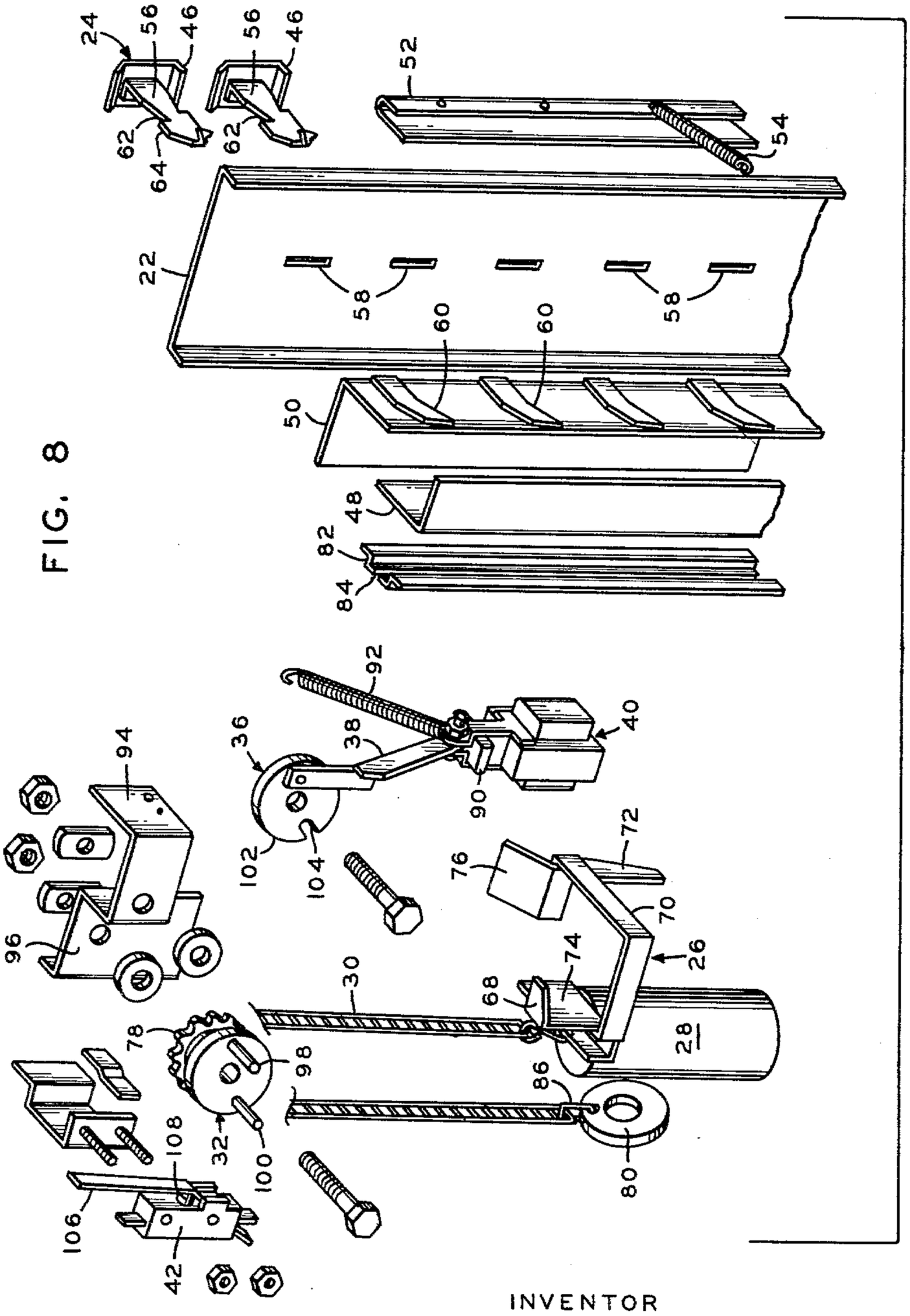
FIG. 8



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United States Patent Office

3,180,520

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PACKAGE VENDING COLUMN

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11 Claims. (Cl. 221—86)

This invention relates to improvements in package vending columns and in particular is concerned with such a column that operates with a trigger release occasioned by the dropping of a cocked weight.

By means of this invention there has been provided a simple package vending column which can be used in various types of vending machines. Then vending column is used with conventional vending circuits and requires only the employment of an actuating solenoid and a relay switch as the electrical components. It is a significant feature of the invention that a notched cam and a pin cam are used in cooperation with one another to provide a regulation of a weight which can be employed to release triggers. The so-called triggers are used to hold packages by a pinching action and the release of the triggers permits the vending of the packages by gravity.

The package vending column, through the employment of a weight, can be very simply set up by having the maintenance or service operator wind the mechanism much as in a counterweight clock so that the weight is fully raised within the column. Then, in any subsequent vending operation, the weight drops down one step to provide the necessary force to actuate the triggers. The employment of the control mechanism is only to regulate the movement of the weight by the proper control of the regulating cams.

The package vending column is very simple to set up and operate, and by the employment of rugged components is well built to withstand service requirements. Further, maintenance is simple to effect where required.

The above features are objects of this invention and further features and objects will appear in the detailed description which follows and will be otherwise apparent to those skilled in the art.

For the purpose of illustration of this invention there is shown in the accompanying drawings a preferred embodiment thereof. It is to be understood that these drawings are for the purpose of example only and that the invention is not limited thereto.

In the drawings:

FIGURE 1 is a view in side elevation of the top of the column with the top triggers disengaged and the bottom triggers cocked;

FIGURE 2 is a rear view in elevation of the top portion of the column;

FIGURE 3 is a top plan view of the column;

FIGURE 4 is a view in section on the line 4—4 of FIGURE 2 showing the construction of the chain guide and the trigger guides;

FIGURE 5 is a view in section taken on line 5—5 of FIGURE 4 showing further details of construction of the trigger guides and engaging elements;

FIGURE 6 is a further view in side elevation taken from the opposite side of FIGURE 1;

FIGURE 7 is a view in front elevation of the top of the top portion of the column; and

FIGURE 8 is an exploded view showing the various elements of the package vending column.

Referring now to the drawings, the package vending column is generally indicated by the reference numeral 20 in FIGURES 1 through 7. It includes as its major components a front face of the column 22, a plurality of triggers 24, a trigger release or hammer element 26 connected to a weight 28. The actuation of the weight is controlled by a sprocket chain 30 connected to a sprocket 32 that is integral with a pin cam 34. The pin cam 34

cooperates with a notched cam 36 that is controlled through a cam arm 38 by a solenoid 40. A switch 42 is engageable by the pin cam 34 to cut off the circuit at the completion of a vending operation.

The vending column 20 has its construction best shown in FIGURES 3, 4 and 5. As there shown, it is comprised of the front face 22 to which are connected two longitudinally extending strips of foam rubber 44, which are adapted to be engaged by a bottom lip 46 of the trigger to hold the top of a package therebetween against the force of gravity. When the trigger is released in the position shown in FIGURE 5, the package will drop downwardly in a vending operation, as will be well understood. The column, in addition to the front face 22, has a longitudinally extending angle iron 48 extending to the rear of the front face of the column to provide a guide for the weight as it descends from the top to the bottom of the column. In addition, another angle iron 50 is connected to the back of the front face of the column to provide with the longitudinally extending member 52 a guide for the triggers. The member 52 also serves to support one end of a coil spring 54 while the other end of the coil spring is connected to the rear of the trigger to bias the trigger forwardly away from the front face.

The trigger construction is best shown in FIGURES 4 and 5 and, as shown, the triggers 24 have a flat guide element 56 passing through a guide opening 58 in the front wall of the column. The members 50 and 52 serve to guide the triggers in their movement.

The triggers are engaged in their cocked position by means of a trigger slug or catch 60 which cooperates with a trigger notch 62 in the trigger itself. The triggers are further provided with a contacting surface 64 by means of which the trigger engaging element 26 carried by the weight moves the trigger downwardly from the position shown in FIGURE 5 away from the engagement with the trigger catch to permit the biasing action of the spring to move the trigger forwardly where it disengages the package caught between the trigger lip 46 and the strip of foam rubber. It will also be understood, however, that instead of this arrangement, where desired, the biasing action of the spring can be used such that the trigger can move an article carried in trays associated with each of the triggers so as to move the article forwardly to a dispensing position should this be desired.

The trigger engaging element 26 is best shown in FIGURES 2, 4, 5 and 8. As there shown, it is connected to the weight 28 and has a horizontally extending element above the weight which acts as a hammer when it hits the contacting surface 64 of the trigger to cause the trigger's release. A trigger release guide 70 is likewise provided which engages the front face 22 of the column and provides for guiding movement through guide element 72, which engages the flanged-over side portion of the front face. Guide element 74 connecting the trigger engaging element 68 with the top of the weight likewise adds a stabilizing and guiding influence as it guides against the vertical element 50 within the column. A tab element 76 at the front of the guide bracket 70 serves to push the package associated with trigger downwardly should it catch; and also serves as an indicating device to a viewer to determine the position of the weight in the column.

The weight chain 30, as best appears in FIGURES 2, 3 and 8, is threaded over a sprocket element 78 connected integrally to the pin cam, while the end of the chain opposite the connection to the weight is provided with a manually engageable disk or ring 80 by means of which an operator may pull the chain downwardly to raise the weight to the fully cocked position at the top of the column. The end portion of the chain connected to the element 80 fits within a chain guide 82 for its protection and a slot is provided in this guide at 84 to receive a con-

necting pin or ring 86 connecting the end of the chain with the disk 80.

The regulating or control mechanism for the weight comprises the actuating solenoid 40, which actuates the notched cam 36, the pin cam 34, and the switch 42. The actuating solenoid 40 is connected to a conventional coin mechanism circuit (not shown), such as that shown in Emmons Patent No. 3,055,552. The solenoid 40 is provided with a movable armature 90 connecting it by cam arm 38 to one side of the notched cam 36, as best shown in FIGURES 1, 2 and 8. The cam 36 is biased to the unoperated position shown in FIGURES 1 and 2 by means of a biasing spring 92 connected to the armature at one end and a mounting wall 94 at the top of the column which also supports the notched cam.

The pin cam 34 is likewise supported at the top of the column upon another mounting wall 96. The pin cam 34, as aforementioned, is integrally connected with the sprocket wheel 32 over which the weight chain 30 is connected so that the pin cam and the sprocket wheel move in unison. The pin cam is further provided with two contact pins 98 and 100. It will be understood that one or more than two pins may be employed in which event the distance the weight falls will be increased or reduced, respectively. The pin 98 normally rests in blocking engagement to prevent movement of the pin cam by a limiting movement against the notched cam at the point indicated by reference numeral 102 in FIGURES 2 and 8. As will more fully appear hereinbelow in the operation of the control mechanism, the pin 102 is adapted to be engaged in the notch 104 of the notched cam to provide a one-half revolution of the pin cam to control the movement of the weight.

The pin 100 of the pin cam rests against an operating arm 106 of the switch 42. In the movement of the pin cam in the clockwise direction, the switch arm 106 is moved to the left, as viewed in FIGURE 2, to operate a movable contact 108 of the switch and break the switch circuit, thereby releasing the solenoid 40, which completes the regulating action of the control mechanism.

Operation

The operation of the package vending column will be described in its simplest operation, that is for a single column. It will be understood that a number of such columns can be used, each provided with a different type of package, and that conventional selection switches, commonly used in the vending art, can be employed for such circumstances. It will likewise be understood that various types of vending cabinets may be employed as will be well understood in the art.

In the operation of the package vending column, the column is first fully set up by having the operator, which maintains the column, grasp the disk handle 80 and draw it downwardly so as to raise the weight 28 to its uppermost position. The packages, such as bags of potato chips, sandwiches, or the like, are then filled in the column by placing the usual tab portion of the package underneath the lip 46 of the individual trigger and then pushing the trigger inwardly until it is cocked by engagement of the trigger notch 62 with the trigger slug or catch 60. Each one of the triggers is cocked and loaded in this order.

The package vending column is now ready for operation and this is accomplished in the usual fashion by dropping a coin in the vending machine coin mechanism, which energizes the usual vending machine circuit and establishes current to the actuating solenoid 40. The actuation of the solenoid operates the armature and the cam arm 38 to move the cam 36 in the clockwise direction. As the cam 36 is so moved, the cam notch 104 is presented into engagement with the pin 98 of the pin cam 32. With this engagement the blocking action of the pin cam is removed and the pin cam in the neutral position is pulled downwardly by the weight 28. The weight 28, with its associated trigger release element, causes the operation of

the triggers. This action is effected by the trigger release element 68 striking the contacting surface 64 of the individual trigger, which moves the rear end of the trigger downwardly and out of engagement with the trigger slug or catch 60. The trigger is then released through the biasing action of its spring and moves out to the front of the vending column and releases its associated package for dispensing to the customer.

In the operation of the aforementioned mechanism, the weight 28 is limited to downward movement to one-half the circumference of the sprocket wheel 32 connected to the pin cam. This action is effected as aforementioned by the movement of the notch cam 36. The slight clockwise movement of the notch cam 36 engages the pin 98 as viewed in FIGURES 2 and 8, and in this engagement the pin cam moves a slight degree in the clockwise direction. This slight movement causes the movement of the other pin 100 against the switch arm 106, and the contact 108 to break the vending circuit.

As the vending circuit is broken, the actuating solenoid is released and its armature drops downwardly moving the notch cam back to the original position shown in FIGURE 2. This movement of the notch cam allows the pin 98 to move substantially one-half of its revolution to the next limiting position. Thus, the position of the pins 98 and 100 is reversed from the position shown in FIGURE 2, and in this free action the weight 28 drops freely to provide the necessary momentum to release the trigger by the hammering or striking action of the trigger release against the trigger contact surface.

The next vending operation is accomplished in the same identical fashion by the insertion of another coin and the ultimate release of the next lowermost trigger. This operation is repeated until all of the triggers and the associated packages connected between the trigger lip and the foam rubber cushion have been dispensed. The vending column is then set up for another operation just as previously described.

Various changes and modifications may be made within this invention as will be readily apparent to those skilled in the art. Such changes and modifications are within the scope and teaching of this invention as defined by the claims appended hereto.

What is claimed is:

1. An article vending column comprising a vertical column support, a plurality of article engaging triggers supported by said support, each of said triggers having biasing means operable upon a release of said trigger to move said trigger to dispense the article engaged by it, weighted trigger release means engageable with said triggers and regulating means controlling the movement of the weighted means into engagement with individual triggers in successive steps.

2. An article vending column comprising a vertical column support, a plurality of article engaging triggers supported by said support, each of said triggers having biasing means operable upon a release of said trigger to move said trigger to dispense the article engaged by it, means for cocking said triggers comprising trigger catching elements supported upon said column engageable with said trigger and means biasing the triggers in cocked engagement against said trigger catching elements, weighted trigger release means engageable with said triggers and regulating means controlling the movement of the weighted means into engagement with individual triggers in successive steps.

3. An article vending column comprising a vertical column support, a plurality of article engaging triggers supported by said support, each of said triggers having biasing means operable upon a release of said trigger to move said trigger to dispense the article engaged by it, means for cocking said triggers comprising trigger catching elements supported upon said column engageable with said trigger and means biasing the triggers in cocked engagement against said trigger catching elements, weighted

trigger release means engageable with said triggers, said trigger release means being engageable with said triggers to disengage them from the trigger catching element and release the trigger whereby said biasing means actuates the trigger to dispense an article associated with it, and regulating means controlling the movement of the weighted means into engagement with individual triggers in successive steps.

4. A vending column comprising a vertical column support, a plurality of article engaging triggers supported by said support, means biasing said triggers against a resilient facing upon said support to engage an article between a lip of the trigger and said resilient facing, means for cocking said triggers comprising trigger catching elements supported upon said column engageable with said trigger and means biasing the triggers in cocked engagement against said trigger catching elements, weighted trigger release means engageable with said triggers, said trigger release means being engageable with said triggers to disengage them from the trigger catching element and release the trigger whereby said biasing means actuates the trigger to dispense an article associated with it, and regulating means controlling the movement of the weighted means into engagement with individual triggers in successive steps.

5. A vending column comprising a vertical column support, a plurality of article engaging triggers supported by said support, means biasing said triggers against a resilient facing upon said support to engage an article between a lip of the trigger and said resilient facing, means for cocking said triggers comprising trigger catching elements supported upon said column engageable with said trigger and means biasing the triggers in cocked engagement against said trigger catching elements, weighted trigger release means engageable with said triggers, said trigger release means being engageable with said triggers to disengage them from the trigger catching element and release the trigger whereby said biasing means actuates the trigger to dispense an article associated wih it, said trigger release means including an article engaging element adapted to brush the article off the supporting column against any tendency to resist disengagement after the associated trigger has been released, and regulating means controlling the movement of the weighted means into engagement with individual triggers in successive steps.

6. An article vending column comprising a vertical column support, a plurality of article engaging triggers supported by said support, each of said triggers having biasing means operable upon a release of said trigger to move said trigger to dispense the article engaged by it, weighted trigger release means engageable with said triggers, said trigger release means comprising a weight connected to a chain engageable with regulating means controlling the movement of the weighted means into engagement wtih individual triggers in successive steps, said regulating means including a sprocket wheel engaged by said chain, said chain being further connected at an end opposed to the weighted means to a ring adapted to be manually engaged whereby said weighted means may be pulled upwardly to a fully loaded position.

7. An article vending column comprising a vertical column support, a plurality of article engaging triggers supported by said support, weighted trigger release means engageable with said triggers, said trigger release means comprising a weight connected to a chain engageable with regulating means controlling the movement of the weighted means into engagement with individual triggers in successive steps, said regulating means including a sprocket wheel engaged by said chain, said chain being further connected at an end opposed to the weighted means to a ring adapted to be manually engaged whereby said weighted means may be pulled upwardly to a fully loaded position, said regulating means further including a first cam operable by a solenoid and a second cam connected to the sprocket wheel and engageable with the first cam, said second cam being further engageable with a switch connected to the energizing circuit of said solenoid whereby upon operation of the solenoid the first cam cooperates with the second cam to control its movement and permit the weighted means to drop one step upon the next lowermost cocked trigger.

8. An article vending column comprising a vertical column support, a plurality of article engaging triggers supported by said support, weighted trigger release means engageable with said triggers, said trigger release means comprising a weight connected to a chain engageable with regulating means controlling the movement of the weighted means into engagement with individual triggers in successive steps, said regulating means including a sprocket wheel engaged by said chain, said chain being further connected at an end opposed to the weighted means to a ring adapted to be manually engaged whereby said weighted means may be pulled upwardly to a fully loaded position, said regulating means further including a first notched cam oscillatably operable by a solenoid and a second cam provided with a plurality of pins located on opposed sides of the center of the cam, said second cam being axially connected to the sprocket wheel, said opposed pins of the second cam being separately engageable with the notched cam and a switch connected to the energizing circuit of said solenoid whereby upon operation of the solenoid the first cam cooperates with the second cam to control its movement and permit the weighted means to drop one step upon the next lowermost cocked trigger.

9. An article vending column comprising a vertical column support, a plurality of article engaging triggers supported by said support, each of said triggers having biasing means operable upon a release of said trigger to move said trigger to dispense the article engaged by it, means for cocking said triggers comprising trigger catching elements supported upon said column engageable with said trigger and means biasing the triggers in cocked engagement against said trigger catching elements, weighted trigger release means engageable with said triggers, said trigger release means comprising a weight connected to a chain engageable with regulating means controlling the movement of the weighted means into engagement with individual triggers in successive steps, said regulating means including a sprocket wheel engaged by said chain, said chain being further connected at an end opposed to the weighted means to a ring adapted to be manually engaged whereby said weighted means may be pulled upwardly to a fully loaded position.

10. A vending column comprising a vertical column support, a plurality of article engaging triggers supported by said support, means biasing said triggers against a resilient facing upon said support to engage an article between a lip of the trigger and said resilient facing, means for cocking said triggers comprising trigger catching elements supported upon said column engageable with said trigger and means biasing the triggers in cocked engagement against said trigger catching elements, weighted trigger release means engageable with said triggers, said trigger release means being engageable with said triggers to disengage them from the trigger catching element and release the trigger whereby said biasing means actuates the trigger to dispense an article associated with it, said trigger release means including an article engaging element adapted to brush the article off the supporting column against any tendency to resist disengagement after the associated trigger has been released, said trigger release means comprising a weight connected to a chain engageable with regulating means controlling the movement of the weighted means into engagement with individual triggers in successive steps, said regulating means including a sprocket wheel engaged by said chain, said chain being further connected at an end opposed to the weighted means to a ring adapted to be manually engaged whereby said weighted means may be pulled upwardly to a fully loaded position.

11. A vending column comprising a vertical column support, a plurality of article engaging triggers supported by said support, means biasing said triggers against a resilient facing upon said support to engage an article between a lip of the trigger and said resilient facing, means for cocking said triggers comprising trigger catching elements supported upon said column engageable with said trigger and means biasing the triggers in cocked engagement against said trigger catching elements, weighted trigger release means engageable with said triggers, said trigger release means being engageable with said triggers to disengage them from the trigger catching element and release the trigger whereby said biasing means actuates the trigger to dispense an article associated with it, said trigger release means including an article engaging element adapted to brush the article off the supporting column against any tendency to resist disengagement after the associated trigger has been released, said trigger release means comprising a weight connected to a chain engageable with regulating means controlling the movement of the weighted means into engagement with individual triggers in successive steps, said regulating means including a sprocket wheel engaged by said chain, said chain being further connected at an end opposed to the weighted means to a ring adapted to be manually engaged

whereby said weighted means may be pulled upwardly to a fully loaded position, said regulating means further including a first notched cam oscillatably operable by a solenoid and a second cam provided with a plurality of pins located on opposed sides of the center of the cam, said second cam being axially connected to the sprocket wheel, said opposed pins of the second cam being separately engageable with the notched cam and a switch connected to the energizing circuit of said solenoid whereby upon operation of the solenoid the first cam cooperates with the second cam to control its movement and permit the weighted means to drop one step upon the next lowermost cocked trigger.

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