

Sept. 2, 1941.

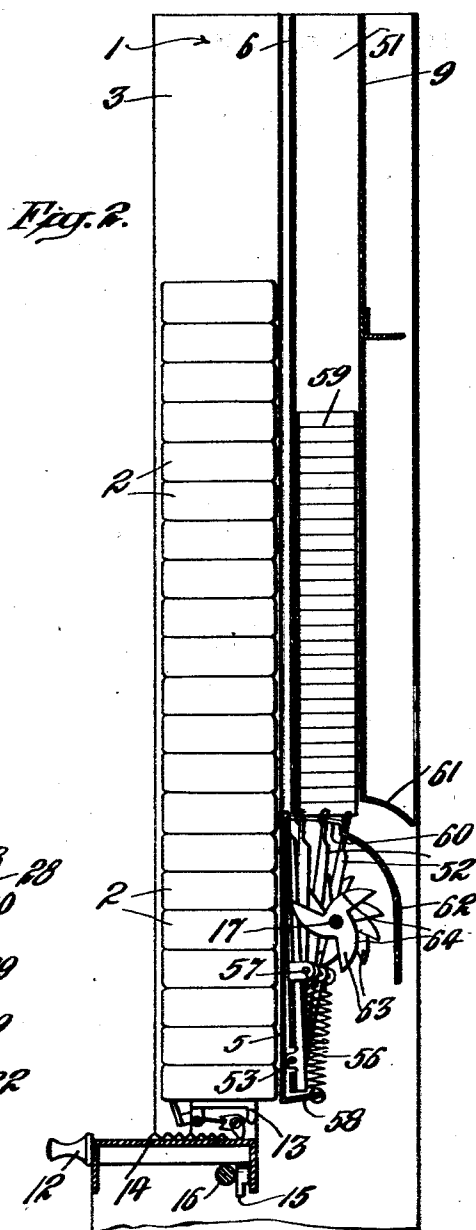
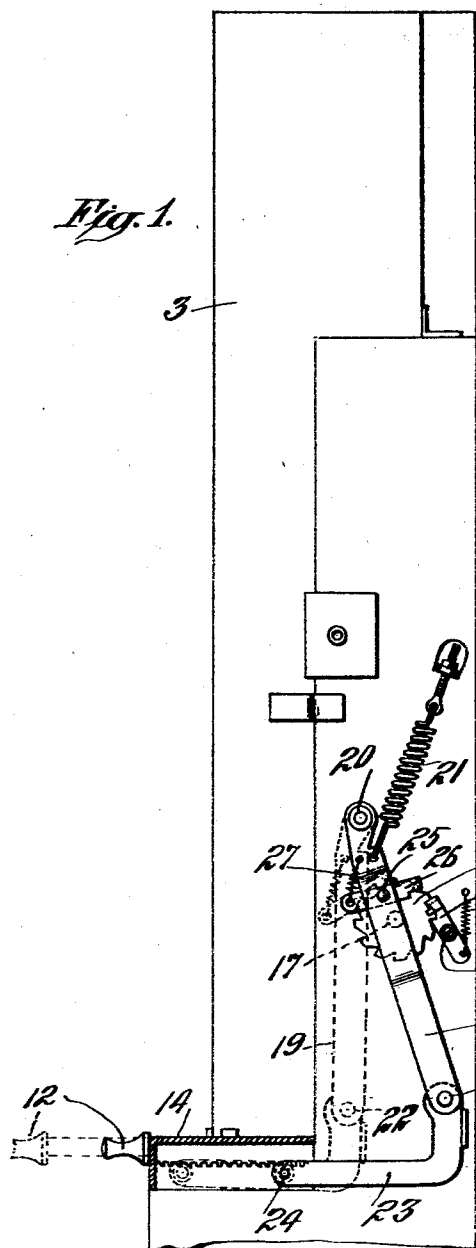
C. GABRIELSEN

2,254,841

VENDING MACHINE

Filed May 5, 1939

3 Sheets-Sheet 1



INVENTOR
Christian Gabrielsen
BY
Saunders, Hennings, Hansen & Hyslop
ATTORNEY

Sept. 2, 1941.

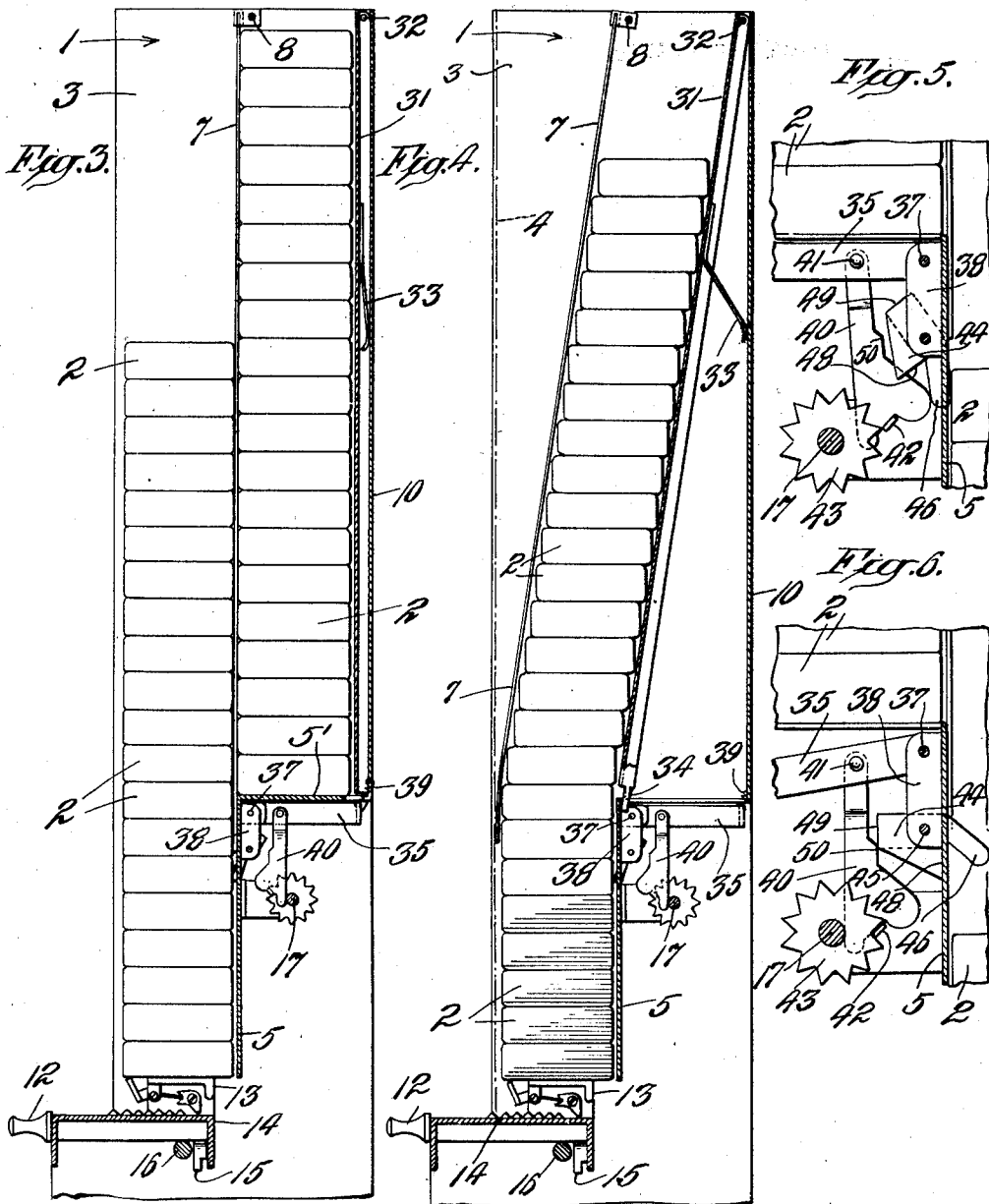
C. GABRIELSEN

2,254,841

VEND: MACHINE

Filed May 5, 1939

3 Sheets-Sheet 2



INVENTOR
Christian Gabrielsen
BY
Savage, Korman, Hunsman & Hayell
ATTORNEYS

UNITED STATES PATENT OFFICE

2,254,841

VENDING MACHINE

Christian Gabrielsen, Belleville, N. J., assignor to
Rowe Manufacturing Co., Inc., New York, N. Y.,
a corporation of New York

Application May 5, 1939, Serial No. 271,844

4 Claims. (Cl. 312-67)

This invention relates to improvements in vending machines and more particularly in the article storing and delivering mechanisms of such machines.

It is an object of the invention to provide in a machine of the class indicated, additional storage space for certain kinds of articles to be vended. It is a further object of the invention to provide in conjunction with such reserve storage space or spaces means for dispensing along with articles to be vended, additional articles (as, in a cigarette vending machine, to provide for the dispensing of matches along with the packages of cigarettes and to achieve this object while providing the maximum possible reserve storage space in a machine of conventional dimensions.

With these and other objects which will appear in the following full description in mind, the invention consists in the combinations and arrangements of parts and features of construction which will first be described in connection with the accompanying drawings and then pointed out more particularly in the appended claims.

In the drawings,

Fig. 1 is a side elevation of the article storage portion and part of the delivery means of a vending machine embodying the invention and designed for dispensing packages of cigarettes and book matches;

Fig. 2 is a view similar to Fig. 1 but with the side plate of the container unit removed so as to reveal certain internal features of construction and showing particularly the match dispensing mechanism;

Fig. 3 is a view similar to Fig. 2 but showing particularly the cigarette dispensing mechanism together with the mechanism for handling a reserve supply of cigarettes;

Fig. 4 is a view similar to Fig. 3 but showing the position of the parts when a reserve supply has been directed into a column for delivery therefrom;

Figs. 5 and 6 are enlarged views of the mechanism for handling the reserve supply showing this mechanism in positions just prior to directing this supply into a column to be replenished;

Fig. 7 is a rear elevation of the machine of Fig. 1 with parts removed;

Fig. 8 is a plan view of the machine of Fig. 1;

Fig. 9 is a view showing a portion of Fig. 3 on enlarged scale and revealing certain details of the control mechanism for the reserve supply container associated with one of the cigarette storage columns; and

Figs. 10 and 11 are horizontal sections taken on the lines 10-10 and 11-11 of Fig. 9 respectively.

Referring particularly to Figs. 1, 2, 3 and 8 the invention is shown as applied to a machine having eight main containers 1 for storing stacks of cigarette packages 2 and dispensing said packages successively from the bottom of the stacks. As will be understood, each of the containers 1 will be loaded with a stack of packages of a single kind or brand, and the supplies of the various different kinds or brands to be sold will be loaded in the various containers 1 to suit the convenience of the operator of the machine. These storage containers are formed by vertical partitions 3 which separate one column from another and are provided with front flanges 4 serving to retain the stacks of packages 2 against forward movement. The rear lower wall of all columns 1 is formed by a plate 5 extending across the machine. The upper portions of the columns of packages 2 are retained against rearward movement, in the case of those columns which are not provided with reserve supplies of articles, by angles 6 which also serve to provide part of the auxiliary storage spaces for matches which will be described later in more detail. The upper portions of those columns which are provided with reserve supplies of packages are retained against rearward movement by flexible strips 7 pivotally mounted on partition plates 3 as at 8 and serving also to retain the reserve supplies of articles for these stacks against forward movement. To the rear of the machine the upper portions of partitions 3 are joined, as by welding to a plate 9 in back of the match storage compartments and a plate 10 in back of the reserve supply compartments, the whole structure being solidly held together by the parts already described and by a front cross brace 11, as best shown in Fig. 8.

The delivery mechanism may be of any desired type and is illustrated diagrammatically in Figs. 1 to 4 as comprising a plunger 12 positioned below each of the compartments 1 and carrying a supporting table 13. This mechanism, as illustrated, is generally of the type shown in copending Rowe and Gabrielsen application Serial No. 26,734 (patented May 23, 1939, No. 2,159,603) and is operated by pulling a plunger to the dotted line position of Fig. 1, permitting the associated column of packages 2 to descend so that it rests upon a bed-plate 14 in position for ejection under plate 5 by the table 13 upon return of the plunger to the position shown in

full lines in Fig. 1. As in the Rowe and Gabrielsen application referred to, each of the plungers 12 is shown as provided with a depending abutment 15 in driving relation to a cross bar 16 which may be connected with coin control locking mechanism and which, through the connections shown in Fig. 1, serves to operate the match dispensing and reserve supply control mechanism in the present machine. This mechanism is controlled by an actuating shaft 17 journaled in the end walls of the unit and bearing a ratchet wheel 18 having, in the embodiment shown, twelve teeth, and arranged to be rotated one tooth interval, or 30°, at each operation of any of the plungers 12. This rotation is brought about by a lever 19 pivotally mounted on the end wall of the unit at 20 and biased rearwardly by a spring 21, the lower end of the lever 19 being connected at 22 to one end of a link 23 whose other end is connected to the bar 16 at 24. Lever 19 carries on pivot 25 a dog 26 biased toward ratchet wheel 18 by a spring 27. Pulling any of the plungers 12 to the dotted line position of Fig. 1 accordingly, through bar 16, link 23, lever 19 and dog 26, will advance the ratchet wheel 18 one tooth interval. Upon return of the plunger to the full line position of Fig. 1 the ratchet wheel will be stopped by a pawl 28 pivotally mounted at 29 on the end plate of the unit and biased by spring 30 toward the ratchet wheel.

The four reserve storage compartments, shown best in Figs. 3, 4 and 8, are defined by the partitions 3 and flexible strips 7 already referred to and by back plates 31 shown as of channel form and pivotally mounted at 32 upon the partitions 3. In the machine as illustrated, the front or main storage compartments are capacitated to hold some twenty-eight packages of cigarettes and the associated storage compartments are capacitated to hold some twenty packages of cigarettes, these reserve stacks resting upon an angle 5' formed with the back plate 5 previously referred to.

Each of the back plates 31 for the reserve compartments carries a spring 33 pressing against the rear wall 10 and biasing the back plate toward the front of the machine. Prior to the time when the associated column 1 is depleted to the predetermined level at which it is desired to introduce into it the reserve supply, the back plate 31 is held back in the position of Fig. 3 by a projection 34 at its lower end which engages a stop 35. When this stop is lowered out of the path of projection 34 spring 33 forces the back plate 31, the reserve supply of cigarettes in front of it, and the associated strip 7 forwardly of the machine into the position of Fig. 4, thus introducing the reserve supply into the adjacent main column 1. Plate 31 is stopped in the position of Fig. 4 by projection 34 at one side and a projection 36 at the other, these projections striking plate 5 in that position.

The mechanism for operating the stop 35 and so moving forward back plate 31 is the same as in the case of each of the reserve supply containers and consists of actuating mechanism operated by shaft 17 at each operation of any of the delivery plungers but connected to a given stop 35 only upon depletion of the associated front column 1 to a predetermined level. As shown best in Figs. 5, 6, 7 and 9 to 11, stop 35 is pivoted at 37 in a bracket 38 mounted on the wall 5 and biased upwardly by a spring 39 attached to wall 10. It carries a member 40

pivoted to it at 41 and normally free to swing, this member having a toe 42 by means of which stop 35 may be pulled down against spring 39 for releasing plate 31. Mounted on shaft 17 opposite each of the toes 42 is a twelve-toothed star wheel 43 for the purpose of depressing the associated stop 35. When the associated front column, however, has not been depleted to the predetermined level the various parts will occupy the full line position of Fig. 9 and star wheel 43 when rotated by the pulling of the plunger will merely pass from the full line position of Fig. 9 to the corresponding position 30° in advance, passing through the position of Fig. 5 and merely swinging member 40 to the right about its pivot 41 without effecting any lowering of stop 35.

The means for operably connecting star wheel 43 with stop 35 is similar in certain particulars to that disclosed in copending Greene and Gabrielsen application Serial No. 231,290, and the present invention in these respects is an improvement on the invention there disclosed. A member 44 pivotally mounted in brackets 38 at 45 and having a toe 46 adapted to extend into column 1 through an aperture 47 in plate 5 is provided, this member being biased toward such a position (dotted lines in Fig. 9) by its own weight but held in the full line position of Fig. 9 when the column of cigarettes is of sufficient height to extend above the toe 46. The other end of member 44 is formed with a stop 48 which will abut against plate 5 in the position of Fig. 6, and with a surface 49 in the path of member 40 when member 44 is in the said position. When, therefore, a column of cigarettes 1 has been depleted to the point where its top is below toe 46, member 44 will rotate by its own weight from the full line position of Fig. 9 to the dotted line position of that figure. The next operation of any of the plungers will advance the associated star wheel 43 through one tooth interval, depressing stop 35 through member 40 and toe 42 as shown best in Fig. 6 and releasing plate 31 so that the reverse stack is introduced into the adjacent front column 1 as shown in Fig. 4. The release of toe 42 from star wheel 43 is provided for by forming the surface 50 of member 40 which engages the member 44 so that it passes surfaces 49 thereon prior to the depression of stop 35 to its fullest extent, thus releasing member 40 from member 44 and permitting star wheel 43 to push member 40 forward so that toe 42 clears star wheel 43 and the parts return to the position of Fig. 9 (dotted lines).

As will be understood from Figs. 1 and 4, strips 7 are of such length as to terminate just above toes 46 and in consequence are free to move forwardly to the position of Fig. 4 when the reserve stack is introduced into the associated main container 1.

The auxiliary storage and delivery mechanism for each column is generally similar to that provided in application No. 26,734, previously referred to, and consists in separate supporting and delivery means for each column of matches, with which is associated, however, operating means associated with the shaft 17. Positioned below each of the match columns 51 is a lever 52, (Figs. 2 and 7), these levers being rotatably mounted on a shaft 53 carried in brackets 54 formed in plate 5 and biased rearwardly by springs 56 attached to bell crank arms 57 on the levers and a rearwardly projecting angle 58 at the bottom of plate 5. The upper ends of lever 52 serve to support a stack of books of matches 59 in each of

the columns 51 when in any of the three right-hand positions shown in Fig. 2 and permit the stack of matches to descend and rest upon support 60 when in the extreme left-hand position indicated in Fig. 2. Motion of any of the levers 52 from the right-hand or rearward position of Fig. 2 to the left-hand or frontward position indicated in that figure and return to the rearward or right-hand position will accordingly permit the stack of matches 59 to descend until it rests upon support 60 and will then eject the lowermost pack of the stack. As shown best in Figs. 2 and 7, plate 9 is formed at its bottom with an upper guide member 61 and the supports 60 are formed in a plate 62 curved to provide a similar lower guide member and slotted between the match supporting portions 60 formed therein to accommodate the operative upper ends of levers 52, these ends being U-shaped as shown best in Fig. 7. Fixed to shaft 17 for rotation therewith opposite each of the levers 52 is a cam wheel 63 having three cam surfaces 64 adapted to push the lever 52 from the extreme rearward position to extreme frontward position as shown in Fig. 2 by rotation through an arc of 120°. Opposite cam wheel 63 the lever 52 is formed with an opening 65 so that when the lever 52 is pressed forward as far as it will go the tip of the cam 64 is released, passing into the opening 65 and permitting lever 52 to snap back to the rearward position again, thus delivering the package of matches as previously described. As the shaft 17 is rotated, in the machine illustrated, through 30° upon each operation of a delivery plunger 12, four such operations are required to rotate the shaft through the 120° necessary to advance one of the cam surfaces 64 from its rearward to its frontward position, carrying the associated lever 52 through its operative cycle and bringing the next cam surface 64 into position for operation by the next four movements of plunger 12. As best shown in Fig. 2, the cam wheels 63 are fixed to shaft 17 in four angular positions separated from each other by an angle of 30°. In consequence, the four levers 52 will be operated in succession or cyclic order, each ejecting a package of matches at every fourth operation of the cigarette delivery mechanism.

As is apparent, the star and cam wheel arrangement of the invention for operating the reserve cigarette supply containers and the match delivery containers may readily be adapted to machines having various different numbers of such containers. Each of the match containers requires one cam wheel provided with any convenient number of cam surfaces spaced at suitable angular intervals around the shaft and ratchet mechanism on the shaft for advancing it in angular steps equal to the angle between cam surfaces on each cam wheel, divided by the total number of cam wheels. It is desirable that the reserve supply of cigarettes be introduced into the front column associated therewith upon the next operation of any of the cigarette delivery columns and this object is achieved by providing the star wheels associated with the reserve supply containers with teeth spaced at an angle equal to this angle interval. The machine will ordinarily be advantageously designed to hold a number of books of matches equal to its cigarette package holding capacity, the required number of columns of book matches depending upon the space provided below them for the operating mechanism described, upon the height of the cigarette columns, and upon the number of such

columns. In the machine illustrated the cigarette package capacity is about 300 and equal match capacity is provided by four match holding columns as shown.

As will be observed, the match delivery and reserve supply containers are provided without any increase in the vertical dimensions of the machine as the reserve supply match containers and associated mechanism are positioned in back of the cigarette columns 1, adjacent their upper portions. The depth or thickness of the machine is not increased as these mechanisms occupy a space in the machine required for the ejection of the cigarettes for delivery to the customer. In consequence, a machine of materially larger capacity and flexibility in operation has been provided without in any way increasing its dimensions or complicating its operation.

I claim:

1. In a machine of the class described, and in combination, an alined series of main containers for stacks of articles, selectively operable delivery means for dispensing articles successively from the bottoms of stacks in said containers, an alined series of reserve containers, each adjacent the upper portion of one of said main containers, a movable partition between each of said reserve containers and the adjacent main container, a shifting mechanism for each reserve container for introducing a stack of articles therefrom into the adjacent main container, common actuating means for said shifting mechanisms, located below said series of reserve containers and operable by said delivery means at each operation thereof, means associated with each reserve container for connecting its shifting mechanism with said actuating means, comprising a control member adapted to extend into the adjacent main compartment at a level below the end of said partition and withheld by an article present in said main compartment at its level.

2. In a machine of the class described, and in combination, an alined series of main containers for stacks of articles, selectively operable delivery means for dispensing articles successively from the bottoms of stacks in said containers, an alined series of reserve containers, each adjacent the upper portion of one of said main containers, a shifting mechanism for each reserve container for introducing a stack of articles therefrom into the adjacent main container, a cross shaft below said reserve containers carrying a star wheel for each reserve container, means operable by said delivery means for rotating said shaft through one tooth interval at each operation of said delivery means, a pivotally mounted connecting member for each said shifting mechanism having a toe extending into the tooth spaces of the associated star wheel and means for holding said connecting member against said star wheel and thereby causing an operative translational movement thereof, comprising a movable control member having an abutment and an arm, urged toward a position where said abutment prevents pivoting movement of said connecting member, and said arm extending into the associated main container, whereby rotation of said pivoted member to bring said abutment into position to prevent rotation of said connecting member is prevented by an article at the level of said arm in said main container.

3. In a machine of the class described, and in

combination, a plurality of containers for articles of different kinds, means for selectively dispensing articles therefrom, a plurality of auxiliary containers for additional articles and means for delivering an article from one of said auxiliary containers in a predetermined cyclic order at each operation of any of said dispensing means.

4. In a machine of the class described, and in combination, a plurality of containers for articles of different kinds, means for selectively dispensing articles therefrom, a plurality of auxiliary containers for additional articles and means for delivering an article from one of said auxiliary

containers in a predetermined cyclic order at each operation of said dispensing means, comprising a delivery means associated with each said auxiliary container and actuating means therefor comprising a cam wheel, the said cam wheels being fixed on a rotatable shaft in different angular positions spaced apart by a predetermined angle, and means connecting said dispensing means to said shaft for rotating the same through said predetermined angle at each operation of any of said dispensing means.

CHRISTIAN GABRIELSEN.

CERTIFICATE OF CORRECTION.

Patent No. 2,254,841.

September 2, 1941.

CHRISTIAN GABRIELSEN.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 1, first column, line 14, after "cigarettes" insert a parenthesis; page 2, first column, line 65, strike out "as"; same page, second column, line 43-44, for "re-reverse" read --reserve--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 7th day of October, A. D. 1941.

(Seal)

Henry Van Arsdale,
Acting Commissioner of Patents.