May 18, 1965 J. T. WILLOUGHBY ETAL 3,184,105

RECORD VENDING MACHINE

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FIG. 1

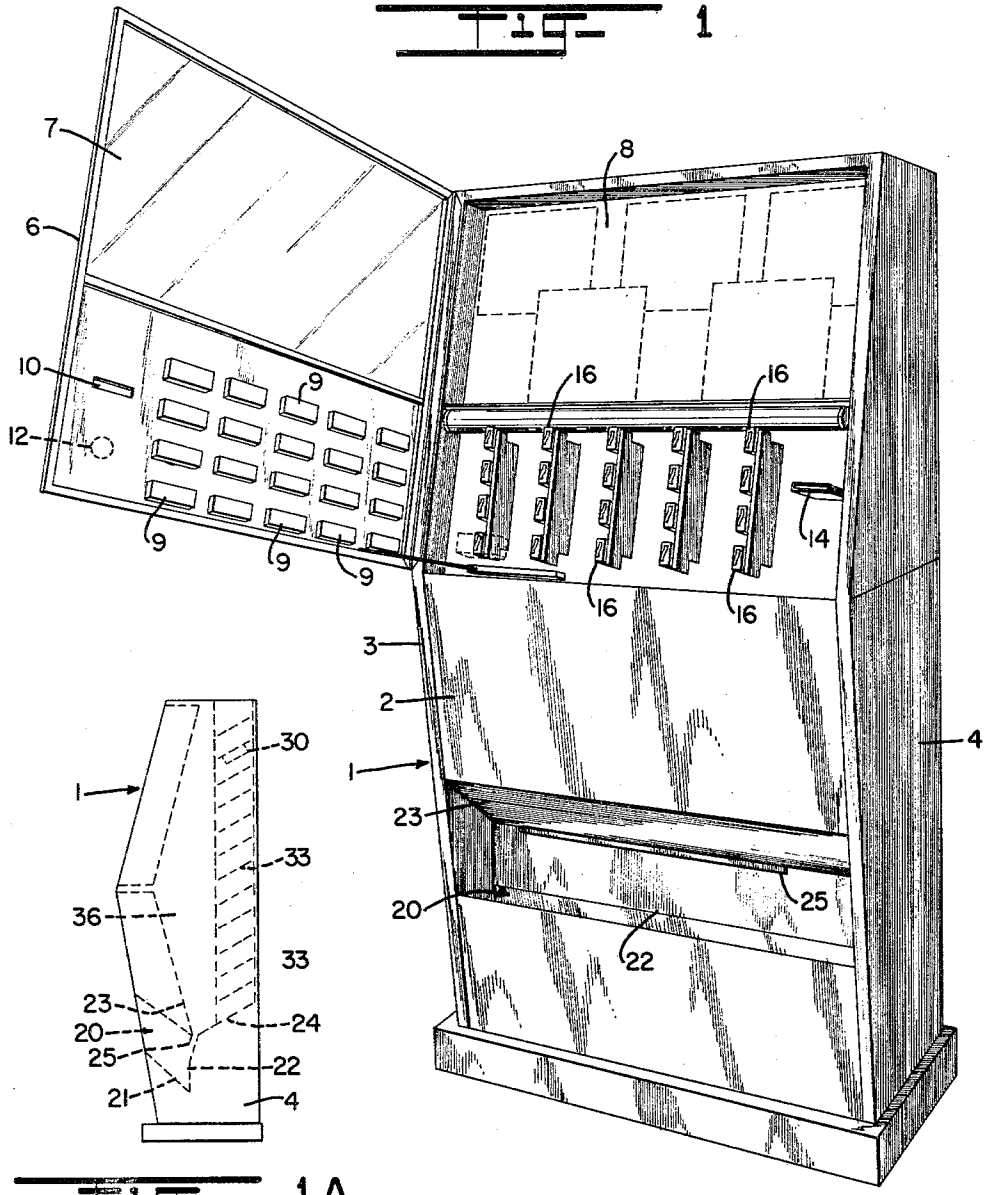


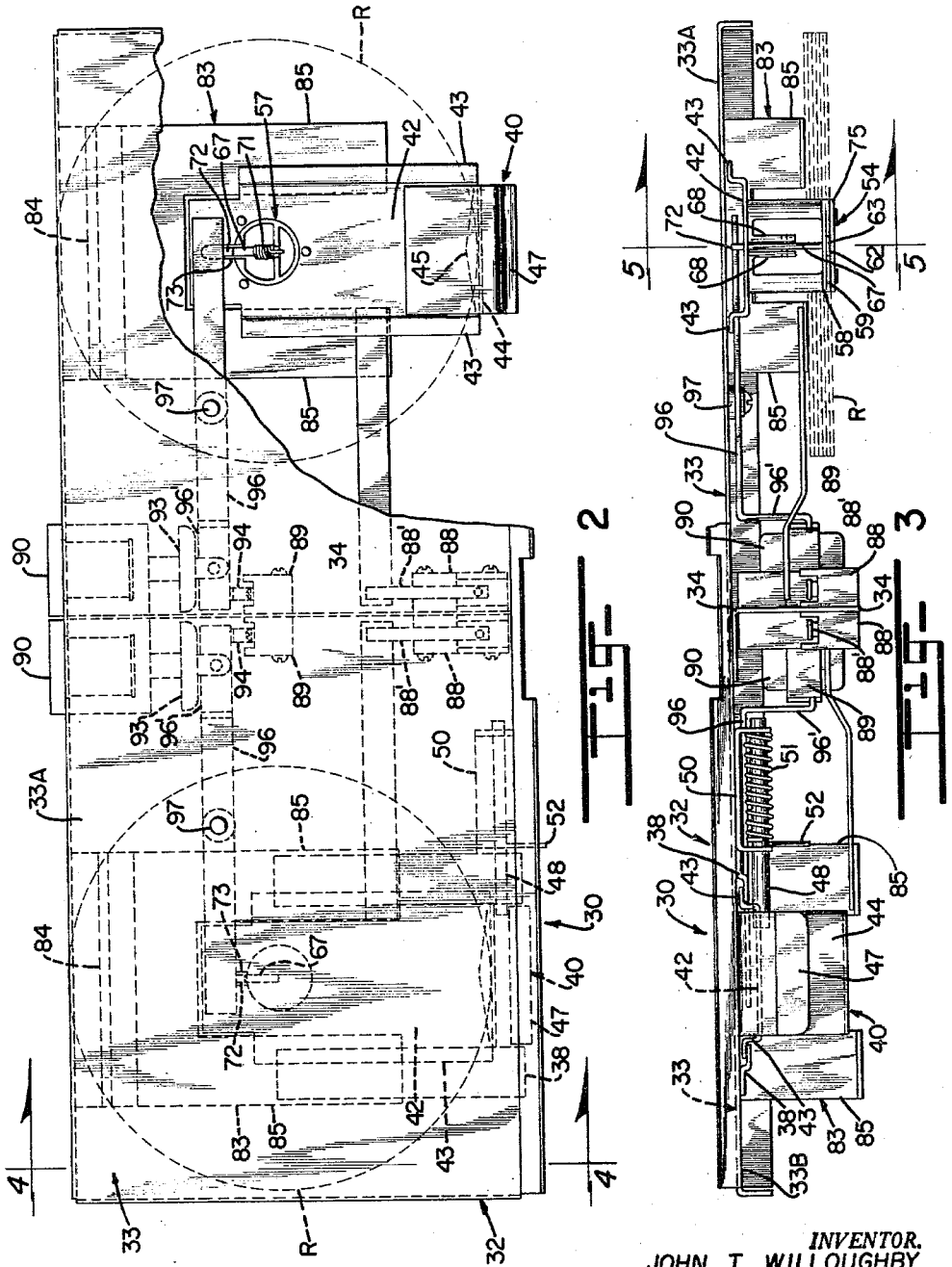
FIG. 1A

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RECORD VENDING MACHINE

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FIG 4

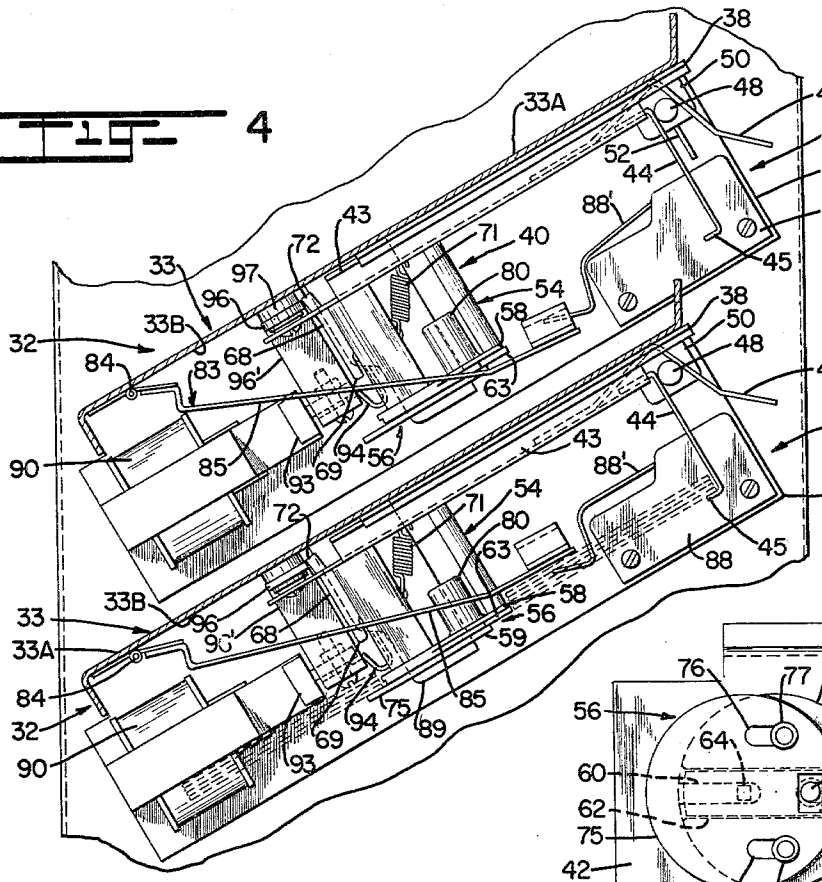


FIG 6

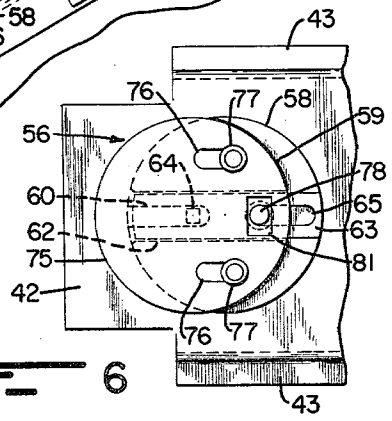
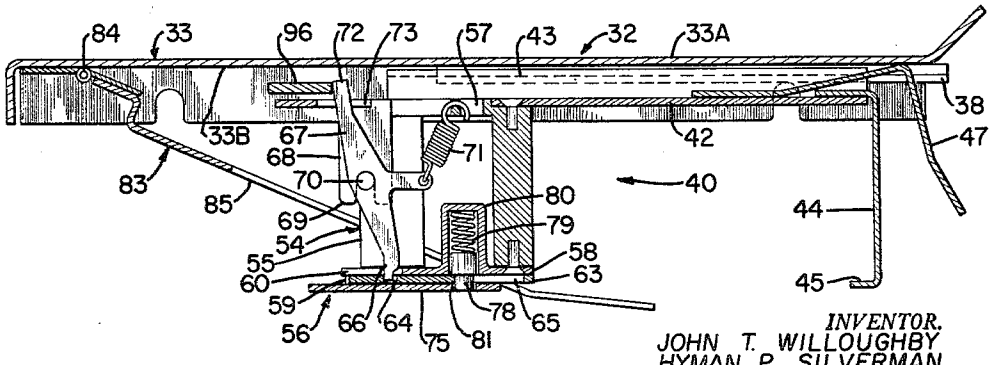


FIG 5



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RECORD VENDING MACHINE

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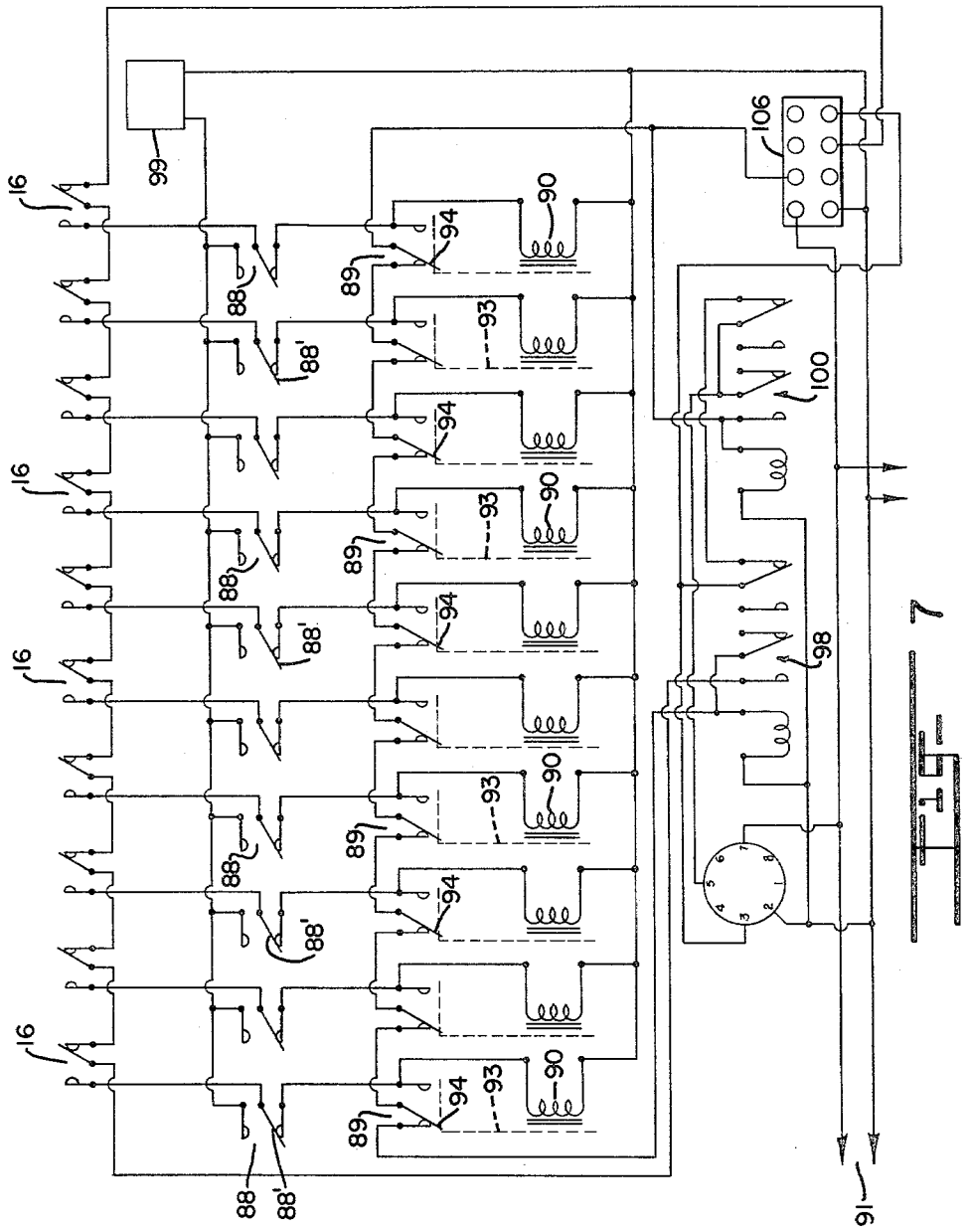


FIG. 7

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RECORD VENDING MACHINE

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5 Claims. (Cl. 221—129)

This invention relates to new and useful means for dispensing records, and additionally relates to a novel and improved way of packaging records for dispensing in a simple and dependable manner.

Vending machines are customarily employed for automatically dispensing a number of types of articles of merchandise, including phonograph records. However, certain problems are inherent in the handling and automatic dispensing of phonograph records due to their configuration and characteristics and the necessity of vending such articles in their factory wrapped envelopes; and, it has been particularly difficult to devise a mechanism for automatically handling and ejecting records in a foolproof manner, notwithstanding any warpage or slight differences in shape or size of individual records in a stack. It is therefore proposed to overcome the above problems and at the same time to greatly simplify the entire dispensing operation and mechanism. In addition, it is proposed to enable off location loading of record selections at a central station in groups in a single container which can be easily and rapidly inserted into the machine on location within compartments provided for each selection, thus avoiding individual handling or any possibility of breakage or misalignment in placing the records in the machine. Furthermore, once inserted in preloaded condition, the records can be individually and automatically released for ejection in a simplified efficient manner for example, by coin operation.

Accordingly, it is a principal and foremost object of the present invention to make provision for a way of placing phonograph records in a vending machine for subsequent release and ejection therefrom which eliminates the necessity of individual handling of records, misalignment, breakage and in general protects the records from the point of local distribution to the time of dispensing to the customer at the vending machine.

It is another object to provide a dispensing mechanism for release and ejection of phonograph records which is positive and reliable in operation; furthermore, a mechanism which, once the record is ejected, prevents accidental reinsertion of the record in the machine.

It is a further object to make provision in a phonograph record dispensing unit for retention and release means which are dependable and reliable in operation notwithstanding warpage or slight variations in record sizes, or sizes of the center openings of the records; and moreover to provide for a simplified gravity feed delivery means cooperating with said dispensing unit to advance each record through the housing which is greatly simplified, dependable and reliable in operation.

It is an additional object of the present invention to provide for a quick-acting, compact mechanism which may be easily loaded with records in groups rather than individually to enable distribution center packaging and protection thereby to eliminate extra handling, and which is further dependable and easy to operate with low power requirements so as to make the entire handling and distribution of records much more economical and efficient.

Still further it is an object to provide such a machine that will readily handle records in their factory wrapped envelopes.

The above and other objects and advantages of the present invention will be made more readily apparent

from the following detailed description taken together with the accompanying drawings, in which:

FIGURE 1 is a perspective view generally illustrating the exterior construction and arrangement of the preferred form of record vending machine;

FIGURE 1A is a somewhat schematic view showing a preferred form of gravity feed arrangement, in accordance with the present invention;

FIGURES 2 and 3 are detailed plan and front views, respectively, of a pair of phonograph record compartments with parts broken away to illustrate in detail a preferred form of dispensing unit utilized for retention and selective release of records;

FIGURE 4 is an end view taken on line 4—4 of FIGURE 2 showing a pair of compartments and dispensing units in vertical spaced relation;

FIGURE 5 is a section view of the record dispensing unit taken on line 5—5 of FIGURE 3;

FIGURE 6 is a detailed end view of the center support mechanism shown in FIGURE 5; and

FIGURE 7 is a schematic circuit diagram of typical circuitry employed in selecting and releasing records in conjunction with the preferred form of vending machine.

Referring in more detail to the drawings, there is shown by way of illustrative example in FIGURE 1 the exterior configuration and arrangement of a record vending machine 1 which serves as a housing for the various parts and elements comprising the present invention. The general size and configuration of the vending machine may be varied as required to house the desired number of record selections and for example in the preferred form it will be seen that the housing is generally elongated and rectangular in form having a front panel 2, side walls 3 and 4 and a back cover panel, not shown. An upper hinged, front cover plate 6 is shown in the open position and which provides a top window portion 7 for a display area 8 on the front panel and vertical rows of selection buttons 9. Each selection button has a name plate to indicate a particular phonograph record selection and to permit the customer to select his record. To the right of the selection buttons 9 are a coin slot 10 and coin release button 12; and, when the hinged cover plate is in closed relation against the front panel the coin slot will be aligned with a chute 14 to permit the coins to pass into the coin circuit. Briefly, by depositing coins of the proper denomination through the slot 10 and depressing the desired selection button 9, a corresponding selection switch 16 behind each button will be closed to energize the selection and release circuit in a manner to be described.

Toward the lower end of the panel an open, generally V-shaped record delivery area 20 communicates between the interior and exterior of the housing to permit the customer to recover the record selected. The delivery area can also serve as a coin drop to recover coins either when the machine is empty or an improper amount of money has been inserted into the machine, and this is in accordance with conventional vending units. The relative disposition and arrangement of the delivery area 20 is better seen from FIGURE 1A and includes inclined front and rear panels 21 and 22, respectively, the latter inclining rearwardly at a relatively steep angle and terminating in spaced relation beneath a rearwardly and downwardly inclined panel portion 23. As will become apparent, due to configurations, the records will fall forward for ease in removal. An additional panel 24 inclines forwardly and downwardly from the back of the unit to terminate adjacent the panel 23 and to form therewith a limited slot or drop area 25. The drop area receives records released from dispensing units 30, the latter being positioned vertically above the delivery area.

As one important feature of the present invention, each dispensing unit 30 is positioned in inclined relation for

gravity feeding the phonograph records to the delivery area in a safe, dependable manner. Thus, the entire operation is greatly simplified and eliminates a number of parts otherwise necessary for positively ejecting records as they are released from each dispensing unit. Accordingly, for the most compact arrangement, the units are preferably arranged in side-by-side or juxtaposed relation and in vertical rows extending upwardly above the delivery area. For example in the preferred form, the units are shown as being arranged in pairs on a common horizontal level, each pair being mounted within a compartment 32 defined by common top and bottom, forwardly inclining plates 33, as shown in FIGURES 2–4, secured to the side walls 3 and 4 of the housing. A common vertical divider 34 separates the unit pairs into individual compartments, the divider being secured to the center portion of each top plate 33. In FIGURE 4, two dispensing units are shown mounted in vertical inclined relation to the delivery area. Top surface 33*a* of the bottom plate serves as an inclined delivery platform extending downwardly at an approximate 45° angle into an open vertical space 36 leading into the delivery area 33. The undersurface 33*b* of each plate has spaced guide tracks 38 connected thereto to provide grooves for slidable insertion and disposition of a record container unit 40 within each compartment.

Each container unit 40 is designed so that it can be preloaded with a stack of records; then, it is merely necessary to insert the entire container into the record compartment and when positioned within the compartment will cooperate with the coin unit and selection circuit for selective release of records. For this purpose, each container unit consists of a top mounting bracket 42 having raised horizontally projecting flanges or clips 43 which are slidable along the guide tracks 38 to support the entire container unit in inverted downwardly facing relation within the record compartment. In connected relation each bracket 42 extends rearwardly from the approximate center of the compartment and has a downwardly extending record support bracket 44 at its rearward end with an inturned flange 45 at its lower extremity and this relation is best seen from FIGURES 4 and 5. Also projecting angularly and rearwardly from each top support bracket and in rearward spaced relation thereto is a spring clip 47 which serves as a limit stop for a bolt or latch mechanism 48 located on the underside 33*b* of the top plate 33 adjacent its rearward end. The bolt is slidably disposed in a carrier 50; also, a spring 51 is mounted on the bolt between downwardly extending arm 52 and one end of the carrier 50 to normally urge the bolt horizontally into locking relation between the clip 47 and support bracket 44 so as to hold the container unit securely in place. Retraction of the bolt away from engagement with the container unit will of course permit removal of the container unit for replacement.

In order to hold the records securely in place within the container unit, the principal support for the records is defined by a center supporting and release spindle 54 which is generally in the form of a hollow cylindrical post 55 connected to the forward end of the top support bracket 42 and extending downwardly therefrom. The post includes a lower closed circular end portion 56 and a top annular end portion 57 extending through an opening in the top support bracket. The lower closed end 56 is actually defined by two superimposed integrated discs 58 and 59, the upper disc 58 having an open radial slot 60 facing the forward end of the compartment, and the lower disc 59 having a grooved portion 62 extending throughout its length aligned with the slot and being adapted to receive a flat elongated, slidable slide member 63 therein. An opening 64 is provided in the slide 63 in alignment with the rear end of the slot 60 to receive the lower extremity 66 of a pivotal dog 67 which extends vertically through the center post. The dog is pivoted about a pair of closely spaced vertical brackets 68 extending downwardly from the top support bracket and having lower bifurcated end portions 69 to receive a pin 70 on the dog. A spring element 71 urges the pin upwardly into the space formed by the bifurcated end portions with the lower extremity 66 resting within the vertical opening 64 for the slide. The dog has an upward continuation in the form of a finger or release portion 72 which projects through an opening 73 in the top support bracket for a purpose to be described.

In order to hold a series of phonograph records R in stacked parallel relation on the center post, a circular slidable disc or offset portion 75 is secured to the lower closed end portion 56. The disc 75 includes slotted portions 76 for connecting screws 77 which interconnect the sliding disc and closed end 56. Also, the lower closed end is provided with a spring-biased abutment member 78 including a spring 79 positioned within a cylindrical casing 80 mounted on the closed end. The sliding disc has a slot 81, aligned with a longitudinal slot 65 in slide 63, and which is formed to receive the abutment member so as to hold the disc in laterally offset relation, to the closed end 56, as best seen from FIGURE 5. It will be observed that merely by depressing the abutment member 78 the disc may be forced rearwardly into alignment with the center post to permit loading of records on the post. Thus, by dimensioning the center post to be of a size generally corresponding to the center opening of a phonograph record, such as a 45 r.p.m. record, when the disc or laterally offset portion is aligned with the center post the records may be easily slipped onto the post in groups, then retained thereon by sliding the disc forwardly until the abutment member moves into the slot 81. In this way, the offset portion will retain the records in place against accidental release, the lowermost record resting on the top surface thereof with its center edge in alignment with the slide member 63. To release each lowermost record in succession, rearward movement of the finger 72 will cause opposite forward movement of the lower extremity 64 of the dog through the slot, in turn causing forward movement of the slide 63 into engagement with the center edge to move the record over into alignment with the disc 75 while clearing the edge 45 of the record support bracket. The record will then be free to drop onto the platform surface 33*a* of the next lower plate 33 for advance into the delivery area. Also, in order to aid in this movement, an upwardly biased weight bar 83, is pivotally secured by a spring-pressed hinge as at 84 to the top plate and includes a pair of spaced arm members 85 inclining downwardly and rearwardly along opposite sides of the center post to rest on top of the record stack, as shown in FIGURE 4.

From the foregoing, it will be noted that the retention and release mechanism for the records, at least insofar as mechanical movement of the record into release position is concerned, all forms a part of the container unit. Of course, to actuate this release mechanism, it is necessary to provide some actuating means to engage the finger 72 and such actuating means must form a physical part of the selection circuit so that only the release mechanism corresponding to the record selected will be actuated. Reference is made to FIGURE 7 in conjunction with FIGURE 1 in which each normally open selection switch 16 is a single pole, double throw biased switch, wherein the normally closed and center contacts are all in series, and each normally open contact is connected through a normally open empty switch 88 to holding switch 89, the latter being actuated by a solenoid 90. A conventional coin circuit, not shown, is connected into the selection and release circuit; when energized, this will in turn close the selection circuit through a suitable power source 91. Then, closing a particular selection switch by manually depressing the corresponding selection button will energize the holding switch 89 through its solenoid 90, causing movement of plunger 93 of the solenoid and holding switch arm 94 to the closed position. The solenoid

coil 90 and plunger 93 for each dispensing unit are also shown in FIGURES 2–4 as being connected to the central divider 34; and, secured to the free end of the plunger is a pivotal arm or lever 96 extending across the underside of the top plate 33 for horizontal movement into engagement with the finger 72. The lever 96 includes an extension 96' which normally engages the holding switch contact arm 94 to hold it in the open position. However, upon energizing the solenoid the plunger and lever will be retracted to clear the contact arm 94 and permit it to move to its normally closed position at the same time breaking a series circuit to relay 88; the circuit will remain closed as the plunger arm continues its movement to urge the outer end of the lever 96 in an opposite direction, by pivoting about pivot point 97, against the finger 72. The empty switch 88 is similarly mounted on the side of the central divider 34 at its rearward end and includes a contact arm 88' which normally remains in the closed position. However, when all records have been released from a particular dispensing unit the weight bar will come to rest against the contact arm 88' urging it to an open position so that when the selection switch for that unit is depressed the empty switch, being in the open position, will instead close the circuit into the "empty" lamp 99 mounted on the front panel.

Starting with a momentary impulse from the coin mechanism, to be described, and which energizes relay 100, a typical vend cycle will be described. Power to relay 98 is supplied by a series circuit through switches 94 and in closing relay 98 there is formed a series circuit through the selection switches 16. When a selection is made by depressing a selection switch 16, a circuit is completed through the normally closed contacts 88' of empty switch 88 energized solenoid 90. When solenoid 90 is energized it energizes holding switch 94 which at the same time breaks a series circuit to relay 98. The opening of relay 98 completes a circuit through the still energized relay 100 to a time delay relay and also breaks the circuit to the selection switches 16 thus making it impossible to make another selection. The time delay relay being energized will at the end of a couple of seconds break a closed circuit to relay 100, thus, completing the vend cycle.

The coin control circuit is largely conventional and, for example, may be connected through a multiple connection plug 106 into the selection circuit to control its operation. Typical coin control circuits are illustrated in the literature and prior art which would be completely workable in association with the selection circuit illustrated in FIGURE 7 and for example reference is made to the copending application of Harry A. Mead for "Record Vending Machines" Serial No. 18,118, filed March 28, 1960, now abandoned, for a more complete description and explanation of a suitable coin control circuit. Briefly, however, the coin control circuit is of a type that can be set to close the circuit through the selection switches when the proper denomination and amount of money has been dropped through the coin chute 14. A special coin return switch should also be included in the circuit to make provision for return of coins, for example, into the delivery area in the event the machine is sold out or improper coinage is used. In addition, the selection circuit as described is representative only to show one preferred means of actuating the dispensing units individually, the more important features of the present invention residing in the particular construction of the record container units and their disposition and arrangement within the vending machine for releasing and delivering records to the delivery area. In this relation, the container unit would have application as well in delivery mechanisms other than the particular one shown and described and for example where positive ejection of the records from the delivery platform to the delivery area is desired or for example where each compartment is provided with a separate delivery chute or slot communicating with the compartment. It is emphasized in this connection that the particular manner in which the records can be preloaded in the container, then inserted in place within a compartment and positioned for automatic release by the coin control and selection circuit, forming a permanent part of the vending machine, is thought to be particularly significant.

It is therefore to be understood that various modifications and changes may be made in the construction and arrangement of parts comprising the vending machine as hereinbefore described without departing from the scope of the present invention as defined by the appended claims.

What is claimed is:

1. A phonograph record vending machine comprising a housing, a delivery area communicating between the interior and exterior of the housing, at least one record compartment arranged vertically above the delivery area, said compartment having a platform inclined downwardly toward the delivery area and a record dispensing unit for mounting records in stacked relation substantially parallel to and above said inclined platform, said unit having a center support member extending downwardly toward said platform for mounting records in stacked relation substantially parallel to said platform, a laterally offset retention member at the lower end of said center support member, slide means normally aligned within said center support member above said retention member being slidable into engagement with the lowest record for record movement into alignment with said retention member whereby to release each record in succession, slide actuating means including a spring-biased pivotal member extending downwardly through said center support member for engagement with said spring-biased pivotal member whereby to cause movement of said slide actuating means and release of a record for delivery to said delivery area.

2. A phonograph record vending machine comprising: a housing including a delivery area communicating between the interior and exterior of said housing, a series of vertically spaced delivery platforms within said housing inclining downwardly toward said delivery area, a record container unit for each delivery platform being removably secured above the platform to the underside of the next higher platform, each unit having a center support spindle extending downwardly toward the delivery platform for mounting records in stacked relation substantially parallel to the platform, a laterally offset retention member at the lower end of said spindle, slide means normally aligned within said spindle above said retention member being slidable into engagement with the center edge of the lowest record for record movement into alignment with said retention member whereby to release each record in succession, slide actuating means including a spring-biased pivotal dog extending upwardly through said spindle from engagement with said slide and an actuating arm secured to the next higher platform and being movable into engagement with said dog whereby to cause movement of said slide actuating means and release of a record for delivery to said delivery area.

3. A phonograph record vending machine according to claim 2, each record container unit having a top mounting bracket for slidable insertion in grooves on the underside of the next higher platform, and said center support spindle depending downwardly from said mounting bracket.

4. A phonograph record vending machine according to claim 3, each unit further including a record support bracket extending downwardly from one end of said top mounting bracket on the side of said spindle opposite said laterally offset portion.

5. A phonograph record vending machine comprising a housing including an open delivery area communicating between the interior and exterior of said housing, a series of vertically spaced delivery platforms within said housing inclining downwardly toward said delivery area, a record container unit for each delivery platform being removably

secured above the platform to the underside of the next higher platform, each unit having a center support spindle extending downwardly toward the delivery platform for mounting records in stacked relation substantially parallel to the platform, a laterally offset retention member at the lower end of said spindle, slide means normally aligned within said spindle above said retention member being slidable into engagement with the center edge of the lowest record for record movement into alignment with said retention member whereby to release each record in succession, a slide actuating means including a spring-biased pivotal dog extending upwardly through said spindle from engagement with said slide and an actuating arm being pivotally secured to the underside of the next higher platform for swinging movement movable into engagement with said dog, record selection means including manual record selection elements accessible from the exterior of said housing and corresponding to each record unit and energizing means operably connected to each actuating

arm being energized in response to manipulation of its selection element to cause movement of said slide actuating means and release of a record for delivery to said delivery area.

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