March 9, 1965 P. S. RUPERT 3,172,713

VENDING MACHINE APPARATUS

Filed Oct. 30, 1961 6 Sheets-Sheet 1

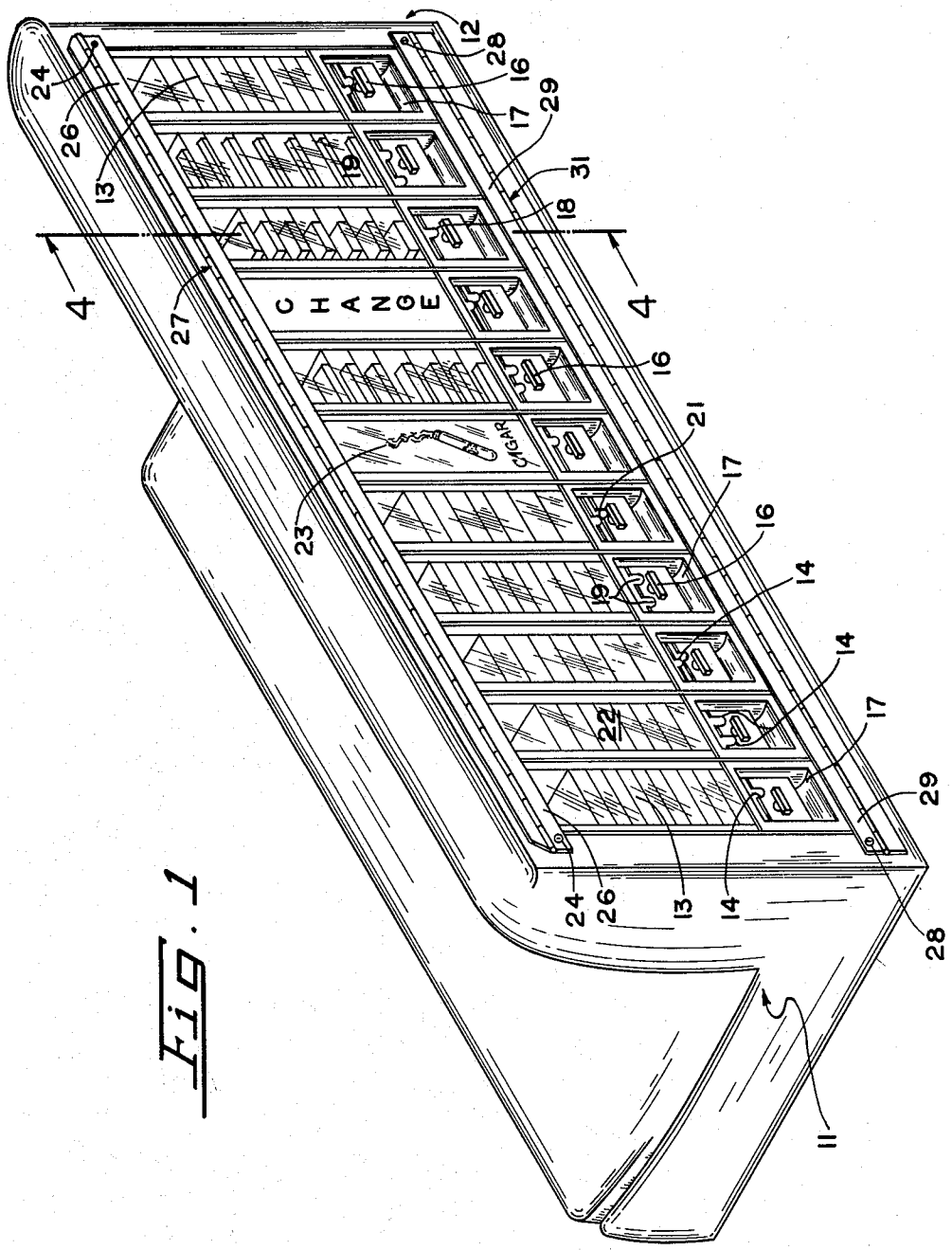


Fig. 1

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VENDING MACHINE APPARATUS

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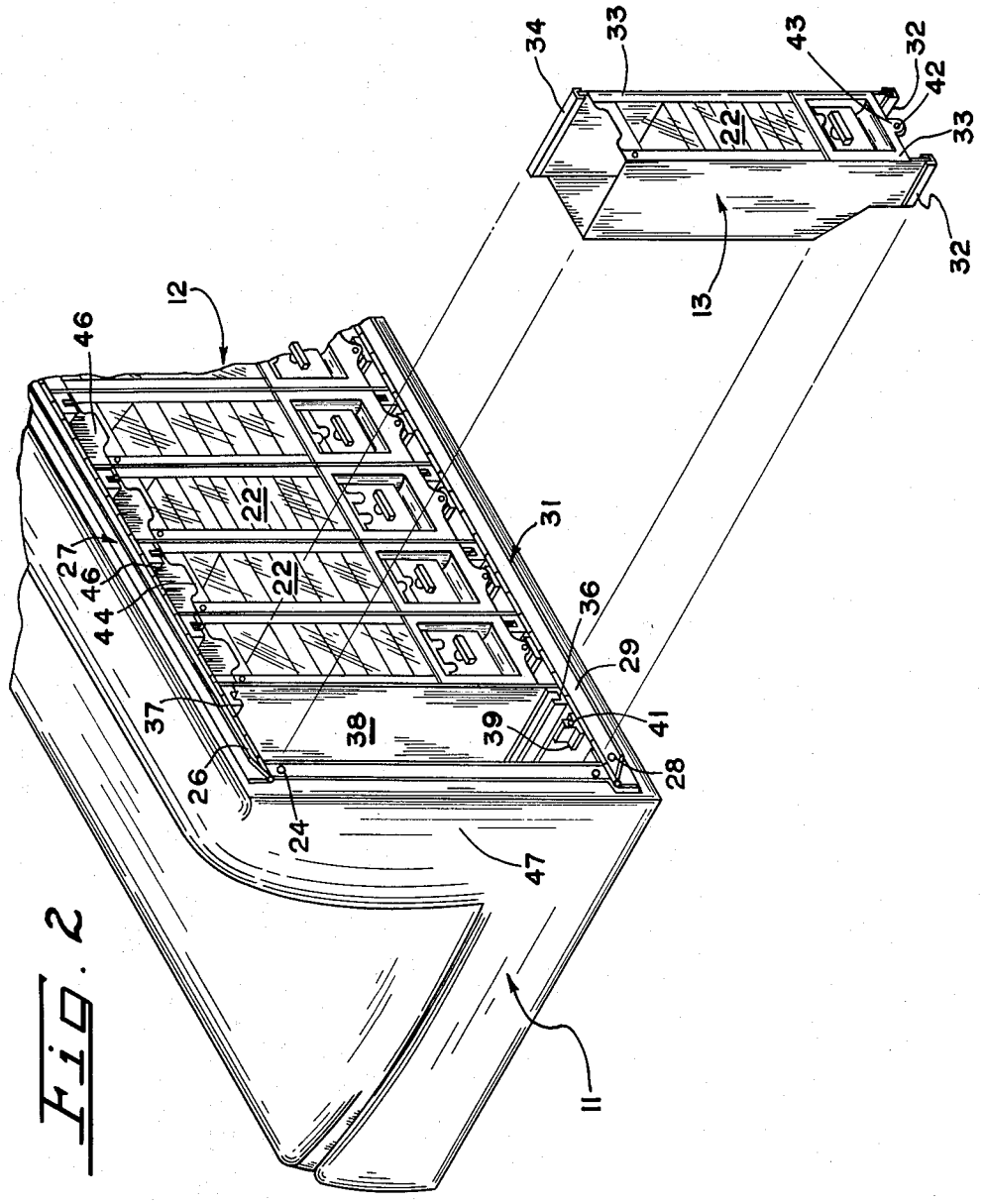


FIG. 2

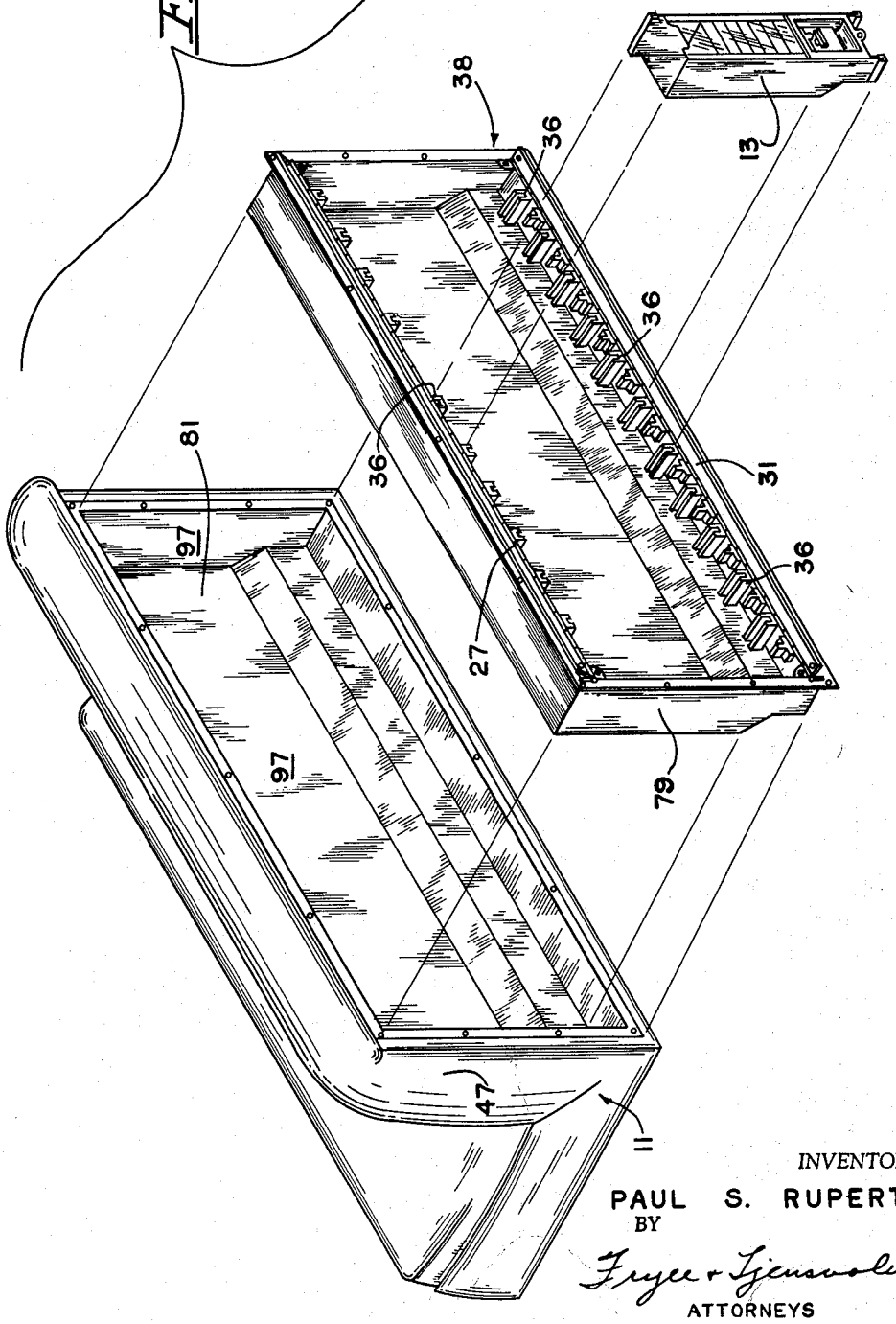
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VENDING MACHINE APPARATUS

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Fig. 3



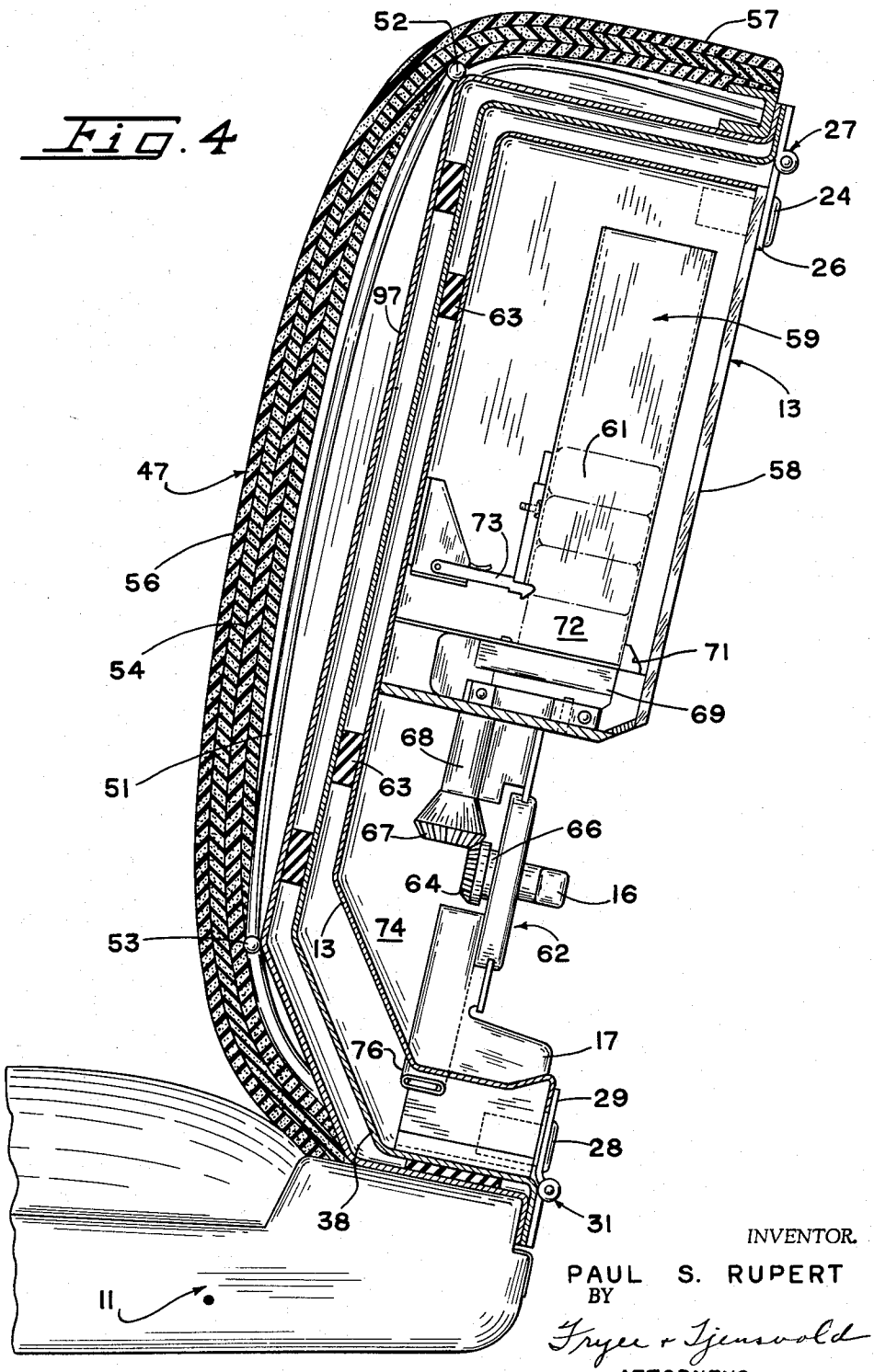
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VENDING MACHINE APPARATUS

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Fig. 4



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VENDING MACHINE APPARATUS

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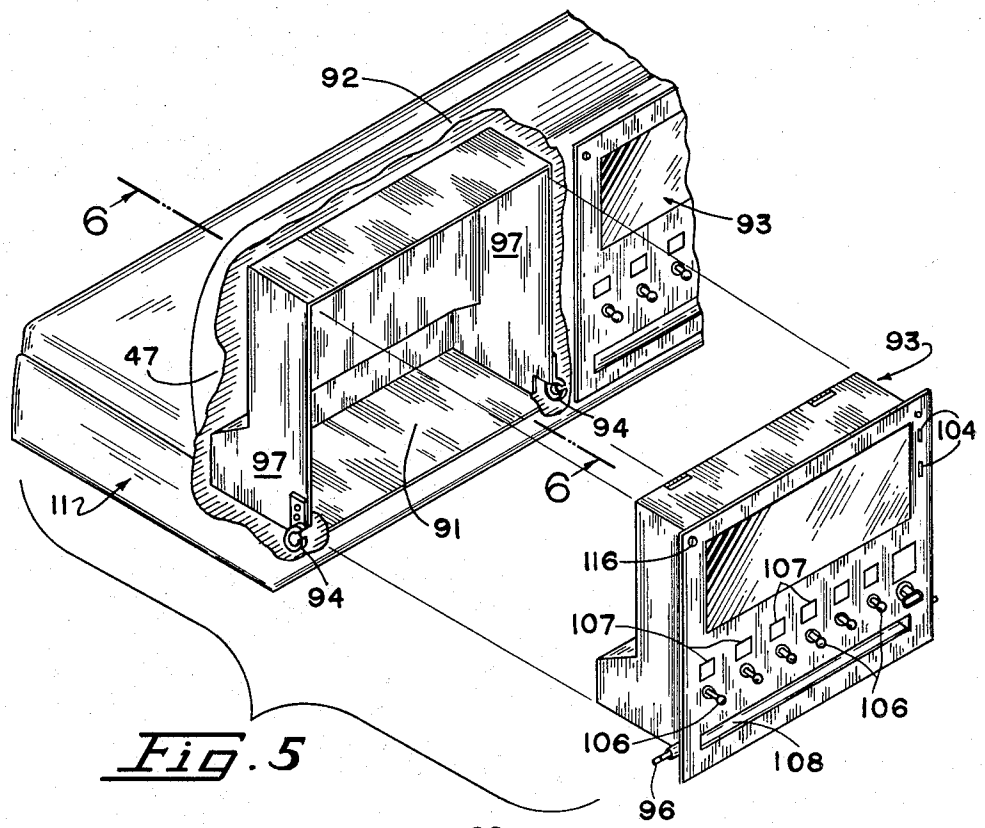


Fig. 5

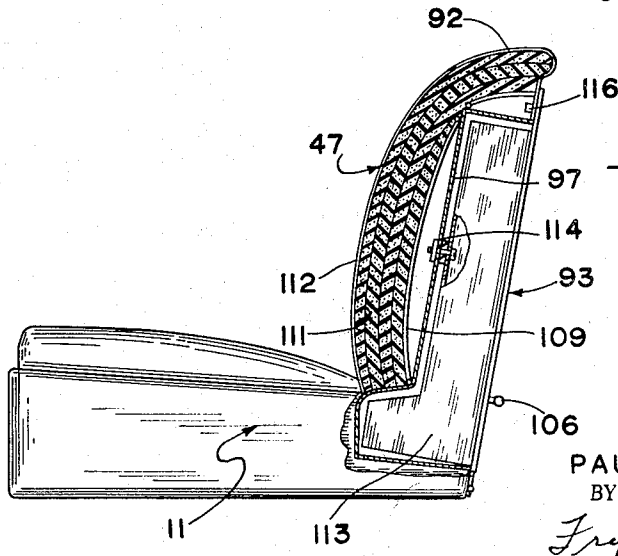


Fig. 6

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VENDING MACHINE APPARATUS

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Fig. 8

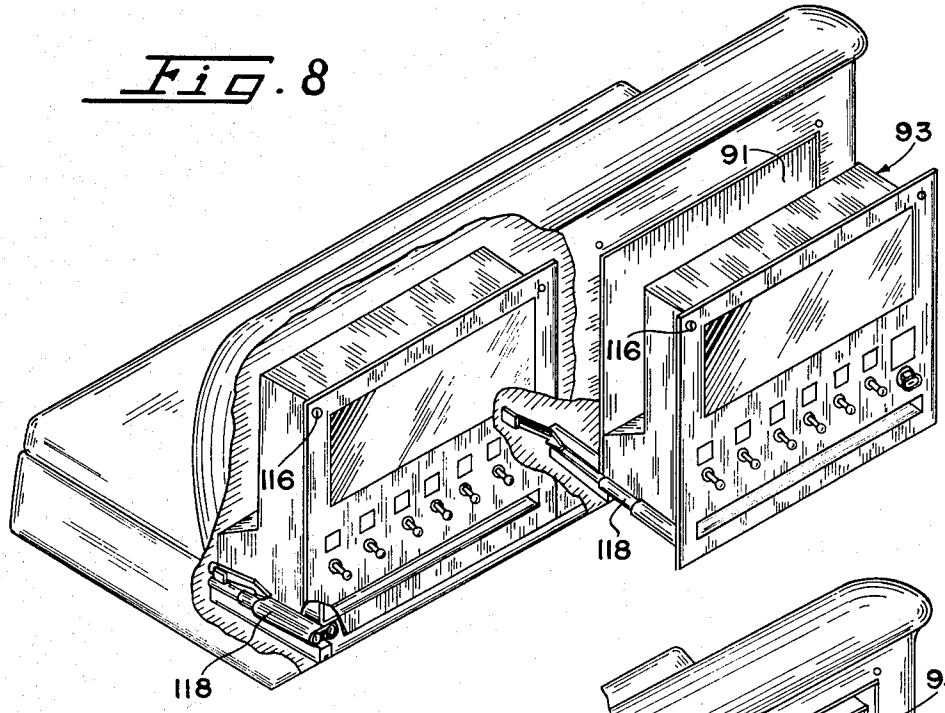
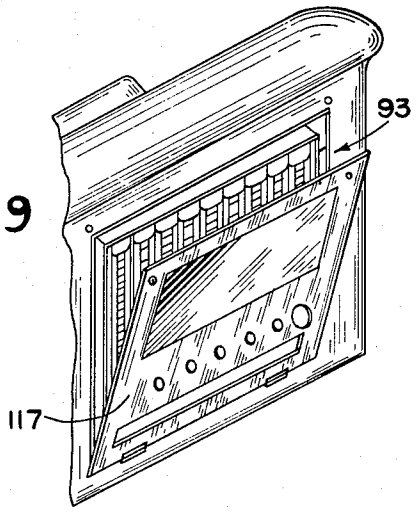


Fig. 9



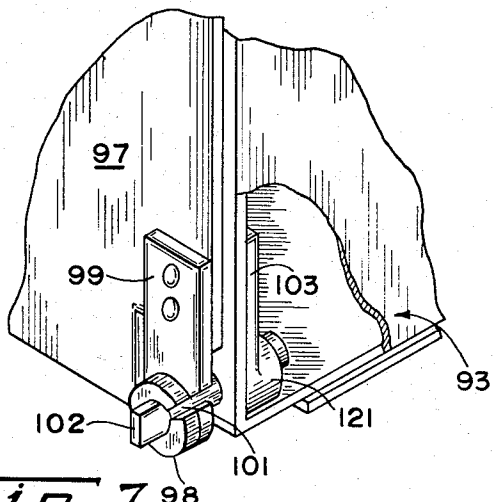


Fig. 7

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3,172,713

VENDING MACHINE APPARATUS

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1 Claim. (Cl. 312—235)

The present invention relates to vending machine apparatus and more particularly to vending machines in conjunction with vehicle seat structure.

The vending machine has, in recent years, become an important means for retailing merchandise of all kinds. Cigarettes, candy, combs and hand lotion, to name but a few, are items familiarly found in, and often purchased from, vending machines. Now that the buying public has accepted this means of purchasing goods, new and more effective ways of making goods in vending machines conveniently available are being sought. From a buyer's standpoint, it is desirable to have certain goods available at certain times without having to go out of the way for them. Thus, combs for example are a product popularly vended by a machine in rest rooms. The public appreciates the service made possible by these conveniently located machines.

From a seller's standpoint, it is desirable to place a product before the consumer at the exact place and the exact time that he is either in need of such a product or desires such a product. With a machine so placed, goods enjoy fast turnover, which means maximum return per machine for the seller and fresh products for the buyer.

The present invention provides a means for providing products to a consumer in a place where products are often desired or needed, and where they have heretofore not been made available. More particularly the present invention provides a vending machine in conjunction with a vehicle seat so as to make products available to passengers thereof. The invention is, of course, most advantageously placed in vehicles used for public transportation which includes, among others, buses, trains, planes and taxi cabs. It is this last mentioned transportation vehicle which the present invention is particularly aimed at, though it will be appreciated that the teachings herein are equally applicable to any transporting means wherein seat structure is available.

A taxi cab provides an ideal location for a vending machine since there the machine has a captive audience of many people each day, and at the same time, provides a service it alone is capable of rendering. The distance of the average taxi fare is long enough to allow the passenger to decide what he wants, locate it in the vending machine and purchase it, without having to go out of his way. At the same time, the average taxi cab trip is generally short enough to allow numerous people to use the cab's services in a day and thereby expose the vending machine to numerous potential purchasers. Thus, both the seller and the consumer find it beneficial to have products, such as cigarettes, candy, cosmetics, etc., vended in a taxi cab.

Because of the limited space available in automobiles which are generally used for taxi cabs, the proper placement and design of a vending machine to be so located is imperative. The problems involved are best appreciated when reference is made to the various requirements and limitations which exist when one desires to provide a taxi cab with a vending machine. To name a few, it is required or desired: that there be as much space in the cab with the vending machine in place as without it; that the vending machine presents no dangers or inconvenience to passengers entering or leaving the cab not present without the machine; that the machine be located to be easily seen and operated by the passenger; that the machine be

designed to provide as many products as possible; that the entire machine be adapted for easy removal for replacement or repairs; that the machine allow refilling operations to be conducted in the limited quarters of a taxi cab; that the machine be adapted to allow new products to be vended without requiring that the entire machine be removed for modification; and that the machine be relatively easy to transfer from one vehicle to another since a vending machine generally has a mechanical life longer than that of a single cab.

To meet the above requirements and thereby overcome problems which have heretofore made it impractical, if not undesirable, to locate a vending machine in a taxi cab, the present invention provides a vending machine constructed in combination with the back of the front seat of the vehicle in which it is placed. The back of the front seat is designed to give its normal service to the driver and at the same time provide a space within its original limits into which a vending machine is placed The present invention also provides vending apparatus of novel design which includes a vending machine compartment which fits into the back of a vehicle seat. Into the compartment independent and separate vending capsules are inserted and locked in place by a common locking means. The novel design of the vending machine allows the capsules to be filled while in the compartment or by complete removal of the capsule and replacement with another, whichever is mose desirable under the circumstances.

Accordingly, it is an object of this invention to provide a vending machine in passenger vehicles.

It is another object of this invention to provide a vending machine incorporated in the back of a vehicle seat.

Another object of this invention is to provide a vending machine in the back of a vehicle seat wherein the vending machine resides in a chamber within the structural boundaries of the vehicle seat and thereby enables a vehicle to be equipped with a vending machine with no loss of vehicle load space.

Still another object of this invention is to provide a vending machine for use in a vehicle wherein the machine resides in the vehicle seat back and allows the machine to be easily filled with merchandise.

Yet another object of this invention is to provide a vending machine in the back of a vehicle seat wherein the machine has a plurality of independently removable vending capsules.

Another object of the present invention is to provide a vending machine incorporated in an automobile seat wherein the machine is easily serviceable and merchandise easily changed or replaced.

Still another object of this invention is to provide a vending machine within a vehicle seat wherein the machine can be removed for service without having to remove the vehicle seat.

Further and more specific objects and advantages of the invention are made apparent in the following specification wherein a preferred form of the invention is described by reference to the accompanying drawings.

In the drawings:

FIG. 1 is an isometric view of a vending machine in conjunction with a vehicle seat in accordance with the present invention;

FIG. 2 is an isometric view of a portion of FIG. 1 wherein a vending capsule of the invention is exploded from the vending compartment;

FIG. 3 is an isometric view of FIG. 1 with the components exploded to show the vending machine compartment cavity in the vehicle seat, the vending machine compartment, and a vending capsule;

FIG. 4 is a sectional view of the vehicle seat and vend-

ing machine of the invention taken along the line 4—4 of FIG. 1;

FIG. 5 is an isometric view of an alternate embodiment of the vending machine of the present invention wherein a vending machine is shown exploded from its housing;

FIG. 6 is a sectional view taken along the line 6—6 of FIG. 5;

FIG. 7 is an enlarged isometric view showing in greater detail the manner in which a vending compartment of the embodiment as shown in FIG. 5 is supported within the seat housing;

FIG. 8 illustrates an alternate means for mounting the vehicle compartment of FIG. 5; and

FIG. 9 is a partial isometric view of the embodiment shown in FIG. 5 wherein the manner of loading the machine with merchandise is illustrated.

Referring now to FIG. 1, a vehicle seat **11** houses a vending machine **12** which offers a variety of merchandise to passengers located rearward of seat **11**, as in a taxi cab. While seat **11** exemplifies seats in buses, trains, planes, automobiles and the like, the following description will be made with reference to a taxi cab seat with the understanding that the invention applies equally to all other types of passenger vehicles. A passenger desiring to purchase a product displayed in one of the plurality of vending capsules **13**, inserts the required coin or coins in the vending slots **14** directly below the merchandise of his choice and rotates the corresponding actuating handle **16**. The selected product is released from within the capsule **13** and falls into a delivery slot **17** directly below the actuated haandle **16**. From slot **17** the passenger removes the product. By providing vending capsules **13** with various coin mechanisms, merchandise costing varying amounts of money can be bought and sold. FIG. 1 shows single coin mechanisms **18**, side-by-side double coin mechanisms **19** and stacked double coin mechanisms **21** to illustrate the various mechanisms available. One of the capsules **13**, rather than vending merchandise could advantageously vend change to allow operation of a particular vending capsule when the customer was not possessed of the exact coins required.

The easiest manner of illustrating to the passenger what products are available is to provide the capsule **13** with transparent windows **22** through which the merchandise vended by a particular capsule can be seen. This also has the advantage of making it easily apparent to a customer as well as to the seller when the capsule is empty. If, however, the merchandise is of the nature not best presented by visualization of the product itself, a drawing **23** or the like illustrating the product can be placed between the merchandise and the customer rather than a window.

One of the outstanding features of the present invention is the individuality of capsules **13**. When a product is not selling well, or a new product is to be sold or a capsule is empty and needs to be refilled, any of capsules **13** can be removed without having to remove any of the other capsules. FIG. 2 illustrates a capsule **13** removed for one of the various possible reasons mentioned above. To remove capsule **13** (as illustrated in FIG. 2) locks **24** securing the bottom flap **26** of upper locking hinge **27** are conditioned to an unlocked position, as by a key, along with locks **28** securing upper flap **29** of lower locking hinge **31**. When locks **24** and **28** have been unlocked, lower flap **26** is raised up and upper flap **29** is lowered to the positions shown in FIG. 2. With flaps **26** and **29** in their raised and lowered positions respectively, they no longer overlap the structure of capsules **13** as they do when in their locked positions, and thereby allow a selected capsule to be removed. Thus, the simple operation of unlocking two pairs of locks (one lock on each hinge would actually be satisfactory) and positioning two hinge flaps, provides access to any and all of the plurality of vending capsules **13**.

The independent capsule design of vending machine **12** is the first vending machine in the art adapted to meet the stringent demands made by the space limitations of automobiles of the compact variety which are popularly used by many taxi cab companies. In such a vehicle, space is at a complete minimum and access to the machine for repairs, refilling or changing products is nearly impossible if the entire machine must be removed to perform these functions. Even in the smallest cabs, however, there is ample room to remove a capsule **13** of the present invention.

Referring to FIG. 2, capsules **13** have a pair of lower runners **32** which extend below the body portion **33** of the capsule. Extending above the body portion **33** is a runner **34**. Each of runners **32**, **34** has a mating U-shaped track **36**, **37**, respectively, affixed to the vending machine compartment **38**. The tracks and runners are of such relative size and such materials as to allow the runners to smoothly and effortlessly slide into the compartment **38** while engaged in the tracks. A rigidly secured fastening member **39** affixed to compartment **38** is provided approximately midway between the edges of the capsule opening and has a threaded hole **41** which aligns with a hole **42** in a downwardly extending member **43** secured to the capsule body **33**. If it is desired to more securely retain the capsule **13** in the compartment **38** than is provided by locking hinges **27**, **31**, then a bolt securing member **43** to member **39** is supplied. Although two runners **32** are shown on capsule **13** a single lower track **36** is all that is absolutely necessary in compartment **38**, since it is the primary purpose of the tracks to provide means for inserting and removing capsule **13** into compartment **38** without binding or sticking, and this purpose has been found to be achieved with a single track at the top and bottom rather than the two track type shown in FIG. 3. Of course, the other runner **32** (the one not sliding in a track) is important to provide a second support member for the capsule body **33**.

Capsules **13** are designed with front plates **22** (either of the transparent type or the drawing type) which enable merchandise to be put into the capsules **13** without removing the capsule from the compartment **38**, if this is desired. As best seen in FIG. 2, when flap **26** is in its upward position the top portion of the capsules are exposed. By providing front plates **22** which do not extend to the very top of the capsules but rather have lower mid portions **44**, merchandise can be easily introduced into the capsules without removing them. Thus, a filling operation is possible by simply unlocking upper hinge **27** and lifting flap **26** to expose entrances **46** to the storage compartments of the vending capsules. Thus the vending capsules as combined with locking hinges **27**, **31** provide a vending means which is convenient and practical for use in the limited quarters of automobiles and the like. Flap **26** being relatively narrow presents no problem in being raised to its upward position as would be presented if the entire face of the vending machine had to be raised, as is the practice in some machines known in the art.

Capsules **13** are of such configuration as to fit within the original structural limits of the back **47** of seat **11** without materially affecting the function of the seat back as a support member for a passenger or driver. As seen in FIG. 4 seat back **47** is constructed to give comfort and support by providing a steel spring member **51** stressed about an upper transverse member **52** and a lower transverse member **53** (or equivalent structural support means). Several layers of cushioning material **54** are applied over spring **51** and covered by a decorative exterior fabric **56**. The layers of cushioning material **54** and fabric **56** extend over the top of the seat back and thereby provide a padded surface **57** against which accidental contact or the like will be safe. To maintain the safe features of the automobile the vending capsules **13** are designed to fit within back **47** of seat **11** without

requiring that the upper padded surface 57 be removed or replaced by a less safe structure. Another design feature important to the present invention is the maintenance of a particular width of capsules 13. Display surface 58 of capsules 13 does not extend further rearward of seat spring 51 than the original seat structure did. Thus, the vending machine is provided and effectively displayed, without the loss of any load space. To maintain this feature actuating handles 16 are recessed so as not to protrude. This also eliminates the handles from presenting dangerous obstacles to persons entering or leaving a cab.

To fit within the space available in the seat back 47 and maintain the features mentioned above, capsule 13 has a generally rectangular upper portion 59, where merchandise 61 is stored, and a narrower lower portion 62 containing the machine operating mechanism. It is necessary to make lower portion 62 narrower if it is to reside within the original structural limits of the seat because of the inclination of seat spring 51 as it reaches the lower portion of seat back 47. Capsules 13 reside within compartment 38 and are separated therefrom by resilient cushioning pads 63.

Although vending capsules 13 are of particular shape and exterior design the interior vending mechanisms of capsules 13 are generally known in the art. Rotation of handle 16 after the proper coins have been fed into the machine, results in rotation of bevel gear 64 connected thereto by a shaft 66. Bevel gear 64 meshes with gear 67 which rotates shaft 68 which, in turn, activates the dispensing mechanism 69. Dog 71 is induced to move leftward and carry with it a package of merchandise 72. Spring loaded lever arm 73 prevents more than a single package of merchandise from being carried leftward. When dog 71 has traveled its full leftward excursion, package 72 carried along falls into shoot 74 which terminates at delivery slot 17. The coins drop through slot 76 into a change retainer (not shown).

Referring now to FIGS. 3 and 4, the overall construction and relative placement of components of the present invention can best be described. The mechanisms which vend the products to the customer are a plurality of vending capsules 13. These individual capsules are housed in a compartment 38 which provides rails 36 for each capsule and which secures the individual capsules together to form a single vending unit. Compartment 38 when filled with vending capsules 13 is a complete vending machine unit and can be removed as such from seat 11. Compartment 38 fits into cavity 81 of seat back 47 and is secured thereto as by bolts or the like. Although it is generally true that the removal of compartment 38 from seat back 47 will be difficult in the space of an automobile, providing cartridge 38 independent of seat back 47 enables the valuable and important structure of compartment 38 to be removed to another vehicle on the various occasions when this would be advantageous. If compartment 38 were built as part of seat back 47 and integral therewith, an auto wreck or worn out car could result in loss of this valuable equipment.

Thus, the preferred embodiment of this invention provides merchandise vending mechanism which is operable even in the limited space available in an automobile. By providing a compartment which secures into a seat back in a semi-permanent manner, and individual small vending capsules which can be easily and independently removed from the compartment, the vending machine can be profitably operated in taxi cabs and the like. A simple operation, not even requiring capsule removal, enables the machine to be filled with merchandise. Replacement of one product for another is accomplished without major overhaul or even the necessity to perform mechanical adjustments; one capsule is merely replaced by another. No load space is taken from the vehicle, and driver comfort is not diminished.

Whereas the vending capsule embodiment of the present

invention, as described above, provides a vending machine for a taxi cab or other vehicle with limited space, the present invention is drawn generally to vending machines in conjunction with vehicle seat structure and thus provides for the more favorable circumstance where space is not such a critical problem. This occurs in some automobiles of standard size (as opposed to compact cars), buses, planes, trains, etc. For these situations it may be more desirable to employ the conventional type of vending machine with several channels which are integrally connected.

Such embodiments of the present invention are shown in FIGS. 5, 6, 7, 8 and 9 to which the following description primarily pertains. With particular reference to FIG. 5, a seat 11 is provided with vending machine receiving cavities 91 which are similar to cavity 81 of FIG. 3. The cavity is within the original structural limits of the seat back 47 and does not materially affect the characteristics of the seat in supporting a person. The cavities 91 are below the upper portion 92 of seat back 47 (see also FIG. 6) to maintain the safety feature provided by the padding of this structure which passengers periodically contact by accident or design.

Standard vending units 93 fit into cavities 91 where they are supported on mounts 94 which receive vending machine studs 96. FIG. 7 is an enlarged view of the mounting mechanism with the vending machine 93 in the cavity 91. Cavity wall structure 97 has stud receiving fixtures 98 affixed thereto as by support members 99. Receiving fixtures 98 are generally toroidal in shape with a radial cut 101, to allow entrance of the vending machine studs 102. Studs 102 are generally rectangular in cross-section and have a cross-sectional length which is approximately equal to the inside radius of fixture 98. Studs 102 are mounted on machines 93 as by support members 103 in a manner which allows them to be rotated as by a wrench or similar tool. Thus, when a vending machine 93 is to be disposed and maintained within a cavity 91, studs 102 are rotated to a position which enables them to pass through cuts 101 into fixtures 102. An appropriate tool is then employed to rotate stud 102 within fixture 98 to a position of misalignment with cut 101 and thereby lock the machine securely in place.

When vending machine 93 is in place (FIG. 5), it is operated in the normal manner by inserting coins into slots 104 and pulling a handle 106 directly below the merchandise of choice as indicated by placards 107. The merchandise falls into slot 108 where it is removed by the customer. As shown in FIG. 5, a pair of machines can be placed in a single seat since the most popular machines known in the art are of a width which allows them to be placed side by side in an auto vehicle seat. As seen in FIG. 6, the machines are maintained within the original structural limits of the seat back 47 except possibly for handles 106. Thus, no serious encroachment on the load space is made. As before, the machine is maintained behind the resilient shell cushion member 109 which is covered with padding 111 and fabric 112. This enables the seat back to furnish the same general support and comfort as when machines 93 are not provided.

When machines 93 are used, seat 11 must be slightly modified to accommodate the enlarged lower portion 113 of machines 93. The majority of vending machines known in the art require enlarged lower portions for the discharge mechanism and therefore require more space at that location.

Besides mounting members 94 a plurality of bolts 114 securing machines 93 to cavity wall structure 97 can be employed when added support is desired. A locking mechanism 116 (FIG. 5) secures the machines within the seat to assure that merchandise is paid for and the enclosed coins are not taken by unauthorized persons. When the machine is to be filled, or the receipts removed, a number of possible means of access exist. Where space allows, face 117 of a machine 93 can be removed, or swung

up or down about hinges, as shown in FIG. 9. Most machines allow for loading and coin removal once the face of the machine has been removed or displaced. There are machines, however, which are loaded from the rear and therefore require that access be made to the rear of the machine. FIG. 8 is an embodiment of the present invention wherein a machine requiring rear access is employed. Rather than employ support members **94**, the machines are mounted on telescoping runners **118**. When access to the rear of the machine is required, locking device **116** is unlocked by a key and machine **93** rolled out of cavity **91**. The machine is filled, money removed, and then replaced back into the cavity.

Although mounting means composed of fixtures **98** and studs **102**, and the telescoping runner type mounting means **118** have been described in conjunction with vending machines as known in the art, their application to compartment **38** is equally applicable where the circumstances so demand. Compartment **38** has been generally described as retained in its cavity **81** in a semi-permanent fashion, which will generally be the most desirable way. When, however, it is more desirable to withdraw compartment **38** with capsules **13** housed therein without completely removing it, mounting means described in connection with known vending machines **93** could be advantageously utilized. It is also important to point out that mounting means **94** can be easily adapted, as by providing rotating bearings **121** (FIG. 7), to rotate about that point to achieve partial access to the interior of the machine mounted thereon.

Thus by utilizing the space between the support structure and most rearward boundary of a vehicle seat in particular manner and equipping it with particular structure, vending machines can be advantageously placed in passenger vehicles. As shown in FIGS. 3, 4, 5 and 6, the vending machine cavity can be reinforced with wall structure **97** to form a strong, neat enclosure for the machines. These cavities are precisely shaped to the contour of the particular vending machine to be used, to make the most effective use of available space. When a vending machine, no matter of which variety, is secured within the cavity, a public service is performed and the sale of merchandise is promoted.

What is claimed is:

Merchandise vending apparatus for use in passenger vehicles comprising in combination:

vehicle seat structure including a cushioned seat back having a recessed cavity in the rear portion thereof;

a vending machine compartment generally conforming to the shape of said cavity residing therein;

a plurality of separate vending capsules slidable in said compartment;

an upper hinged flap secured to the upper edge of said compartment and extending the entire width thereof; and

a lower hinged flap secured to the lower edge of said compartment and extending the entire width thereof;

said upper and lower flaps overlapping upper and lower edges respectively of said capsules in said compartment when said flaps are in one position and not overlapping any portion of said capsules when in another position.

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GEORGE L. BREHM, *Examiner.*