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## SPECIFICATION

## TITLE OF THE INVENTION

Showcase



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\*G000002\*

## BACKGROUND OF THE INVENTION

## (i) Field of the Invention

The present invention relates to showcases for containing commodities.

## (ii) Description of the Related Art

As a prior art prior to the present invention, in Japanese Patent Application Laid-open No. 124041/1995 (A47FI/12), there is disclosed a commodity supply exhibition apparatus comprising a supply shelf having a commodity reception portion for containing commodities supplied by being pushed in from the front and arranged in line and being provided with a commodity drop opening at its rear end portion, a shelf, i.e., an exhibition shelf having a commodity exhibition portion provided to be inclined downward of said supply shelf and receiving a supply commodity dropped from said commodity drop opening and introducing to the front to exhibit and contain in line in the front and rear directions, and a main body portion capable of being attached in a commodity containing chamber which is made to comprise said supply shelf and exhibition shelf and whose front is opened.

Also, at the tip end of said exhibition shelf, a commodity engagement stop portion for engaging and stopping a

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commodity introduced to the tip end portion of the commodity exhibition portion.

In the prior art as described above, in case that the commodities are PET bottles or the like whose height is tall, if the commodity engagement stop portion positioned at the tip end portion of the exhibition shelf for engaging and stopping a commodity is low, there is the fear that the commodity is tumbled, and if the commodity engagement stop portion is high, there is the problem that the commodity is hard to be taken out.

Further, in case that a plurality of steps of shelves is provided and a shelf is further provided above the shelf on which tall commodities (such as PET bottles) are placed, the commodity is hard to be taken out unless there is provided a sufficient gap between the upper ends of the commodities and the shelf provided thereon. Accordingly, for making it easy to take out a commodity, there is the problem that the dead space of the storage chamber becomes large.

#### SUMMARY OF THE INVENTION

The present invention was made in view of the problem as described above and provides a showcase aiming to make it easy to take out a commodity and prevent the occurrence of the dead space of a storage chamber to the utmost.

As means for attaining the above object, the present invention provides a showcase comprising a heat-insulating

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box body having a storage chamber in the interior and a front surface opening, a door for closing this front surface opening freely in opening and closing, a shelf provided in said storage chamber and in a frontward inclination state, and a hanging device provided under this shelf for hanging a commodity.

In this manner, because the commodity is hung, there is no fear that the commodity is tumbled, further, because the shelf is inclined frontward and the hanging device is attached on the lower side of this to be inclined, the commodity is always positioned at the forefront.

Also, the present invention provides a showcase comprising an insertion portion provided at the front portion of the hanging device in addition to this and allowing the insertion of the commodity.

In this manner, the commodity is to be taken out from the insertion portion.

Also, the present invention provides a showcase comprising a stopper provided at the lower front portion of the hanging device in addition to this and for pressing the commodity.

In this manner, the commodity at the forefront position is pressed by the stopper.

Also, the present invention provides a showcase wherein the commodity positioned at the forefront among a plurality of commodities hung by the hanging device in addition to this is substantially vertically hung in relation

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to the main body.

Therefore, a customer can confirm the commodity with ease.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of a showcase of the present invention;

Fig. 2 is a vertical side sectional view of the showcase of the present invention;

Fig. 3 is a vertical side sectional view of the showcase of the present invention when commodities are contained;

Fig. 4 is a vertical side sectional view of the showcase of the present invention showing the takeout of the commodity;

Fig. 5 is an A-A sectional view of Fig. 3;

Fig. 6 is a perspective view showing the attachment of a hanging device to a shelf; and

Fig. 7 is an enlarged view of the main part of the front portion of the hanging device.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Hereinafter, an embodiment of the present invention will be described on the basis of the drawings.

1 in Figs. 1 to 4 denotes a showcase body comprising a heat-insulating box body having an opening in the front surface, a transparent door 3 closing the front surface

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opening of this heat-insulating box body 2 freely in opening and closing and made of a transparent glass, and a machine chamber formed under said heat-insulating box body 2 and comprising a condenser 4, a blower 5 for cooling the condenser, and a compressor 6.

Said transparent door 3 is that the transparent glass is fitted in a frame made of stainless steel and can be opened and closed by a hinge 8 provided in the heat-insulating box body 2. Further, a grip 9 is provided on one side of the transparent door 3.

Also, on the front surface of said machine chamber 7, a machine chamber panel 10 is provided, and in the front surface and upper surface of this machine chamber panel 10, openings 11 are formed. Among these openings 11, the openings 11 in the front surface are suction ports for sucking the outside air and the openings 11 in the upper surface are for preventing dew condensation by exchanging heat in the machine chamber 7 and blowing the exhaust heat having become high temperature to said transparent door 3.

Also, on the rear surface of said heat-insulating box body 2, a rear surface plate 12 called inter-rear is provided. This rear surface plate 12 is for dividing a rear surface cool passage 13 and a storage chamber 14 for containing commodities. Further, a top surface cool passage 16 is formed by a top surface plate 15 provided with the presence of a predetermined interval from the top surface of said heat-insulating box body 2.

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Besides, this top surface cool passage 16 and said rear surface cool passage 13 communicate. In the lower portion of said rear surface plate 12, a discharge port 12A is provided for discharging cool into the storage chamber 14. The rear surface cool passage 13 and storage chamber 14 communicate through this discharge port 12A. Further, for making said top surface cool passage 16 and the storage chamber 14 communicate, a suction port 15A is formed in the front end portion of the top surface plate 15.

Also, in said rear surface cool passage 13, a cooler 18 constituting a refrigeration cycle together with said condenser 4 and compressor 6, and a blower 19 for circulation in chamber for discharging cool of this cooler 18 into said storage chamber 14.

Further, on the top surface in the vicinity of the opening portion in said heat-insulating box body 2, a fluorescent lamp 17 for illuminating the storage chamber 14 is provided.

Besides, 20 denotes a drain trap for discharging dew condensation water in the storage chamber 14 and defrosted water of said cooler 18, 21 denotes stand legs with rollers for movably supporting the showcase main body 1, 40 denotes short commodities, e.g., commodities such as can drinks containing 350 ml, and 41 denotes a crown-cap container box provided with a cap opener in the interior.

At both ends of the right and left in the vicinity of the opening portion in said heat-insulating box body, a

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plurality of steps of shelf receivers 22 is formed. Further, also in said rear surface plate 12, a plurality of steps of shelf support holes 23 is formed.

Further, in the storage chamber 14, a plurality of steps (two steps in this embodiment) of exhibition shelves 24 and 25 is formed vertically. Among these exhibition shelves 24 and 25, the lower exhibition shelf 25 is disposed substantially in parallel with the bottom surface of the storage chamber 14, and the upper exhibition shelf 24 is disposed to be inclined downward (inclination angle of about 10 degrees in this embodiment) in the direction of the opening of the heat-insulating box body 2.

And, on these upper and lower exhibition shelves 24 and 25, said short commodities 40 are exhibited.

On these exhibition shelves 24 and 25, protruding portions 26 are formed on both sides of the front portions, and extending-out portions 27 extending rearward on the rear portions. Said protruding portions 26 are supported by said shelf receivers 22, and the extending-out portions 27 are inserted in said shelf support holes 23 to be supported.

Also, as shown in Figs. 5 to 7, on the lower surface of the upper exhibition shelf 24, a hanging device 28 like a rail is provided. Accordingly, this hanging device 28 is also inclined frontward with an inclination angle of about 10 degrees. And, this hanging device 28 is for hanging commodities 30 that are tall and have flanges 29 in the upper portions, such as PET bottles (PET bottles containing 500 ml

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in this embodiment).

Further, this hanging device 28 is fixed to a fixture plate 31 provided between line materials 24A constituting the upper exhibition shelf 24 by fixture members 32 such as screws.

Besides, in general, the PET bottles use polyester resin such as PET (polyethylene terephthalate) or PEN (polyethylene naphthalate) and the quality of the material of said hanging device 28 uses a precoated steel plate but they may be extrusion-molded articles of vinyl chloride and an extrusion-molded article of aluminum.

And, as shown in Fig. 5, said hanging device 28 has a U-shaped section open downward, and, at the opening ends, support pieces 33 respectively bent inward are provided. Said flange 29 is caught by these support pieces 33 to support the commodity 30.

But, not the flange 29 is caught by the support pieces 33 but a cap closing the mouth of the commodity 30 may be caught by the support pieces 33 to be supported.

Also, a plurality of hanging devices 28 is disposed corresponding to the lateral width of the exhibition shelf 24, and four hanging devices 28 are disposed in this embodiment.

Further, in the front end portion of the hanging device 28, an opening as an insertion portion 35 allowing the flange upper portion 34 including the flange 29 of the commodity 30 to be inserted. Further, below this insertion portion 35, a regulation portion for regulating the insertion

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of the flange upper portion 34 of the commodity 30 is formed. This regulation portion consists of a pair of stoppers 38 and 38 protruding inward so as to oppose from the right and left of the front end portion of the hanging device 28 in the concrete. And, as shown in Fig. 7, these stoppers 38 and 38 are formed by fan-shaped, i.e., smooth curved surfaces and make it easy to attach and detach the flange upper portion 34 of said commodity 30.

But, the regulation portion is not limited to a pair of stoppers 38 and 38 but may be formed by a stopper protruded from one side of the front end portion of the hanging device 28. Further, it is not fan-shaped but may be formed into various shapes such as a rectangular shape.

By constructing as described above, as shown in Figs. 3 and 4, when commodities 30 are exhibited and contained, a plurality of commodities 30 is contained in one hanging device 28 in the manner that the flange upper portion 34 of the commodity 30 is inserted from the insertion portion 35 of said hanging device 28 and the next commodity 30 is inserted (besides, in this embodiment, six commodities 30 can be contained in one hanging device 28).

In the state that all commodities 30 are contained, because the forefront commodity 30 is pushed by the rear commodity and pushed further frontward more than the vertical direction to the hanging device 28, it becomes in the state of being substantially vertically hung to the showcase main body 1. Accordingly, the customer can easily recognize what

is the hung commodity 30.

And, when the customer buys the commodity 30, i.e., the commodity 30 is taken out, said transparent door 3 is opened, and the forefront commodity 30 is raised to the position that the regulation of the flange upper portion 34 by the stopper 38 is relieved, and pulled out through the insertion portion 35.

At this time, the operation of the customer may be only that he or she has the flange lower portion 36 below the flange 29 of the commodity 30 by his or her hand, and pulls out the commodity 30 in the manner of twisting it upward. That is, the flange lower portion 36 of the commodity 30 may be raised in the upper front direction with using the flange 29 as a fulcrum.

As described above in detail, according to the invention of claim 1, a showcase comprising a heat-insulating box body having a storage chamber in the interior and a front surface opening, a door for closing this front surface opening freely in opening and closing, a shelf provided in said storage chamber and in a frontward inclination state, and a hanging device provided under this shelf for hanging a commodity, is provided.

In this manner, because the commodity is hung, there is no fear that the commodity is tumbled, further, because the shelf is inclined frontward and the hanging device is attached on the lower side of this to be inclined, the commodity is always positioned at the forefront. Accordingly,

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when the customer buys the commodity, it is easy to take out. Further, because there is no necessity that a sufficient gap between the hung commodity and the commodity contained thereon is set, the occurrence of the dead space of a storage chamber can be prevented to the utmost.

Also, according to the present invention, because of comprising an insertion portion provided at the front portion of the hanging device and allowing the insertion of the commodity, the commodity may only be taken out from the insertion portion, and it becomes possible to take out the commodity with ease.

Also, according to the present invention, because of comprising a stopper provided at the lower front portion of the hanging device and for pressing the commodity, since the commodity at the forefront position is pressed by the stopper, the drop of the commodity or the like can be prevented.

Also, according to the present invention, since the commodity positioned at the forefront among a plurality of commodities hung by the hanging device is substantially vertically hung in relation to the main body, the customer can confirm the commodity with ease, and the effect of the sales promotion can be taken.

## WHAT IS CLAIMED IS:

1. A showcase comprising a heat-insulating box body having a storage chamber in the interior and a front surface opening, a door for closing this front surface opening freely in opening and closing, a shelf provided in said storage chamber and in a frontward inclination state, and a hanging device provided under this shelf for hanging a commodity.

2. A showcase according to claim 1, comprising an insertion portion provided at the front portion of the hanging device and allowing the insertion of the commodity.

3. A showcase according to claim 1 or 2, comprising a stopper provided at the lower front portion of the hanging device and for pressing the commodity.

4. A showcase according to claim 1, 2 or 3, wherein the commodity positioned at the forefront among a plurality of commodities hung by the hanging device is substantially vertically hung in relation to the main body.