

The present invention relates to a container for containing a plurality of electric condensers.

After being produced a lot of electric condensers are put randomly in bags, and these bags are transported.

5 The bagging of electric condensers, however, is liable to cause undesired bending of the aluminium terminal leads of electric condensers, and such electric condensers cannot be mounted on circuit boards because their bent terminal leads cannot be inserted in selected apertures in circuit
10 boards without unbending the bent terminal leads of electric condensers.

Also, disadvantageously the bagging of electric condensers will provide bulky size, accordingly requiring an increased space for warehousing such bulky bags.
15 Therefore, there has been an ever increasing demand for containers which are capable of containing electric condensers in the state of being arranged in good order.

A condenser container according to the present invention comprises a square or rectangular tray of plastic
20 sheet which tray has: a plurality of partitions extending in a longitudinal direction and arranged at regular intervals each partition having a trapezoid shape in section; a pair of opposed side walls extending in the longitudinal direction; a plurality of concave recesses
25 which each extend in a lateral direction substantially transverse to the longitudinal direction and are arranged parallel at regular intervals along the length of each of the spaces delimited by said longitudinal partitions and side walls, each concave recess having a raised concave
30 section at one end, the lateral length of said raised concave section being longer than a pair of terminal leads of a cylindrical condenser to be fitted in the concave recess; and an extra lateral flat section laid between the final concave recess of the concave recess arrangement in
35 each longitudinal space and one side of said square or rectangular tray, the width of said extra lateral flat

section being equal to one half of the pitch at which said concave recesses are arranged longitudinally.

The present invention provides a condenser container which is capable of containing a plurality of electric

condensers in the state of being arranged in good order without fear of causing the bending of their terminal leads, and of permitting the saving of warehousing space of containers containing electric condensers.

5 Electric condensers are laid in the concave recesses with their terminal leads laid on the raised concave sections of the concave recesses. The lateral length of each raised concave section is longer than the terminal leads of the cylindrical condenser, and therefore, there is
10 no fear for bending the terminal leads of the cylindrical condenser.

The wavy bottom of the condenser container permits the stacking of a plurality of condenser-loaded containers without leaving no substantial gaps between upper and lower
15 condenser-loaded containers. This is because the cylindrical condensers which are parallel-arranged at regular intervals provide a series of semicircular contours to permit the complementary fitting of the lower condenser-loaded container to the wavy bottom of the upper condenser-
20 loaded container. Thus, a possible minimum warehousing space is required.

The lateral arrangement of extra flat sections along one side of the square or rectangular tray permits the stacking of a plurality of condenser-loaded containers with
25 their sides aligned straight if the condenser-loaded containers are stacked on each other with their extra flat sections arranged alternately.

One preferred embodiment of the present invention will now be described with reference to the drawings, in which:-

30 Figure 1 is a perspective view of a condenser container according to one embodiment of the present invention;

Figure 2 is a cross section of the condenser container taken along the line A-A of Figure 1;

35 Figure 3 is a longitudinal section of the condenser container taken along the line B-B of Figure 1;

Figure 5 shows, in section, how condenser containers are stacked.

5 Referring to Figure 1, a condenser container 1 comprises a square or rectangular tray of plastic sheet 14. It has a plurality of longitudinal partitions 5 arranged at regular intervals. Each partition has a trapezoid shape in section,

as best seen from Fig.2. A plurality of concave recesses 2 are arranged longitudinally parallel at regular intervals in each of the longitudinal spaces delimited by the longitudinal partitions 5.

As seen from Fig.2, each concave recess 2 is delimited by two partitions 5, and it has a semi-cylindrical shape in conformity with the cylindrical shape of the electric condenser 12. Also, each concave recess 2 has a raised concave section 4 close to the partition 5. The lateral length of the raised concave section 4 is longer than a pair of terminal leads 13 of the cylindrical condenser 12 which is to be fitted in the concave recess. The length from the rise 4a of the raised concave section 4 to the opposite partition is equal to the axial length of the cylindrical body 11 of the electric condenser 12.

Each partition has a trapezoid shape in section, which trapezoid shape is given by inclined surfaces 7 and 8 jointed at their top edges and diverging toward their bottom edges, thus defining a corresponding converging space 9.

As seen from Fig.3, consecutive concave recesses 2 provide a wavy bottom. An extra lateral flat section 6 is laid between the final concave recess of the concave recess arrangement in each longitudinal space delimited by two partitions 5 and one (left) side of the square or rectangular tray 14. The width D of the extra lateral flat section 6 is equal to one half of the pitch C at which the concave recesses 2 are arranged longitudinally.

The tray 14 may be made of a synthetic resin such as polypropylene. A sheet of resin is heated on a metal mold, and a negative pressure is applied to the heated resin sheet according to the vacuum molding method. Thus, the bottom 10 of the tray 1 is formed by convex projections so that the bottom surface is wavy in shape as seen in Fig.1.

In use, condenser containers 1 are brought by a conveyer 21 to be put one after another just below the outlet 20 of a condenser producing apparatus 23 as shown in Fig.4. When a

condenser container 1 is brought to the outlet 20 of the condenser producing apparatus 23, its gate 22 opens, thereby allowing electric condensers 12 to roll and fall down to selected concave recesses 2 of the condenser container until all concave recesses 2 are filled with electric condensers.

Every electric condenser 12 is held in the concave recess 2 with its body 11 laid between the rise 4a of the raised concave section 4 and the opposite partition 5, thereby preventing displacement of the electric condenser 12 in the concave recess, as seen from Fig.2. Because of this and because the raised concave section 4 is longer than the terminal leads 13 of the electric condenser 12, there is no fear for bending the terminal leads 13 of the electric condenser 12 even if the condenser container 1 is rocked during transportation.

As shown in Fig.5, condenser-loaded containers 1 are stacked on each other with their extra lateral flat sections 6 put alternately on one or the other side of the stack. As seen from the drawing, the semi-cylindrical projections of the tray bottom fit in the converging valleys between adjacent electric condensers 12, leaving only minimum spaces between upper and lower condenser-loaded containers. Thus, the warehousing space can be substantially saved.

Also, advantageously no covers are required to close condenser-loaded containers when stacked.

As described above, condenser-loaded containers are stacked with their extra lateral flat sections 6 put alternately on one or the other side of the stack. Thus, the opposite lateral edges 13 of the condenser-loaded containers thus stacked are aligned straight. This straight edge alignment in the stack permits an automatic carrying-and-transferring system to handle condenser-loaded containers irrespective of which direction condenser-loaded containers are directed. Assume that a stack of condenser-loaded containers is put in a large container (not shown) for

transportation. The stack has no extra projections from its sides, and therefore the stack is closely enclosed by the four sides of the transportation container. Thus, even if the transportation container is rocked during transportation, there is no fear for disordering arrangement of electric condensers in each condenser container. Such disordering would be caused if a stack had projections from its sides, and then such edge projections may be caught by the inner surface of the transportation container, causing some condenser-loaded containers whose edges project from the stack to rise and descend while being transported.

The longitudinal partitions 5 of the tray function as reinforcements, and therefore, a condenser-loaded container 1 cannot be deformed by its weight even if the condenser-loaded container 1 is raised by holding the opposite lateral edges of the tray with hands. Also, advantageously empty condenser containers can be closely fitted in each other to form a stack, thereby saving the warehousing space.

As may be understood from the above, the concave recess permits the body of an electric condenser to fit therein with its terminal leads extending on the raised concave section of the concave recess, thus permitting transportation of condenser-loaded containers without fear of bending their terminal leads, and permitting the attaching of electric condensers to circuit boards by inserting their terminal leads in selected apertures without the necessity of unbending their terminal leads.

Concave-embossed plastic sheet trays permit the stacking of such trays loaded with electric condensers, leaving only minimum spaces between upper and lower condenser-loaded trays, accordingly saving the warehousing space.

Condenser-loaded containers are stacked with their extra lateral flat sections put alternately on one or the other side of the stack. Thus, the opposite lateral edges of the condenser-loaded containers thus stacked are aligned straight. This straight edge alignment in the stack permits

an automatic carrying-and-transferring system to handle condenser-loaded containers irrespective of which direction condenser-loaded containers are directed. In case that a stuck of condenser-loaded containers is put in a large container for transportation, the stuck has no projections from its sides to be caught by the inner surfaces of the transportation container, and therefore even if the transportation container is rocked during transportation, there is no fear for disordering arrangement of electric condensers in each condenser container.

CLAIMS

1. A condenser container comprising a square or rectangular tray of plastic sheet which tray has: a plurality of partitions extending in a longitudinal direction and arranged at regular intervals each partition having a trapezoid shape in section; a pair of opposed side walls extending in the longitudinal direction; a plurality of concave recesses which each extend in a lateral direction substantially transverse to the longitudinal direction and are arranged parallel at regular intervals along the length of each of the spaces delimited by said longitudinal partitions and side walls, each concave recess having a raised concave section at one end, the lateral length of said raised concave section being longer than a pair of terminal leads of a cylindrical condenser to be fitted in the concave recess; and an extra lateral flat section laid between the final concave recess of the concave recess arrangement in each longitudinal space and one side of said square or rectangular tray, the width of said extra lateral flat section being equal to one half of the pitch at which said concave recesses are arranged longitudinally.
2. A condenser container substantially as hereinbefore described with reference to the accompanying drawings.

