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SHIPPING CASE FOR MOBILE X-RAY UNIT

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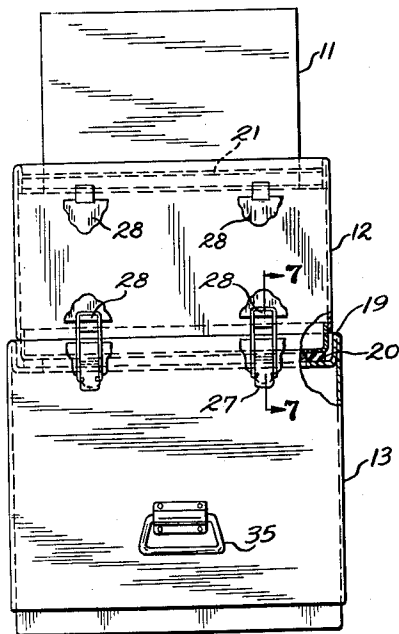


Fig. 1

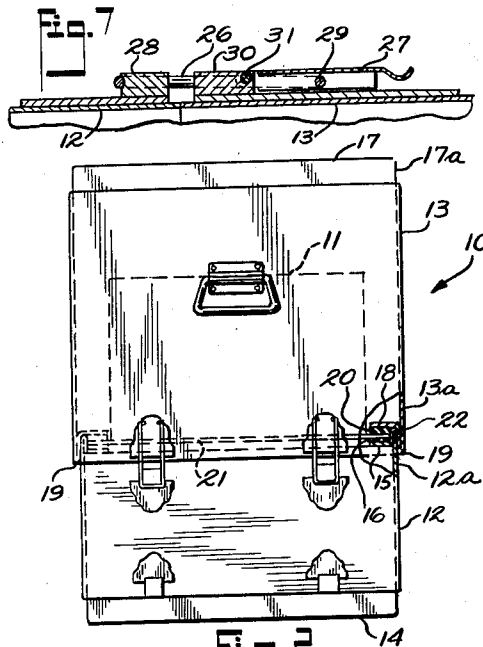


Fig. 2

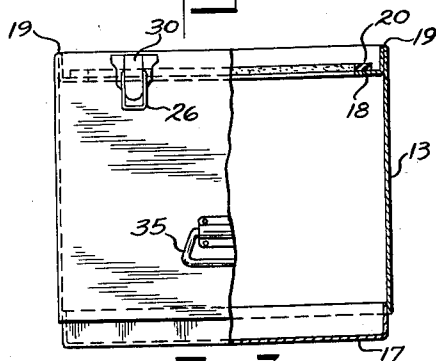


Fig. 3

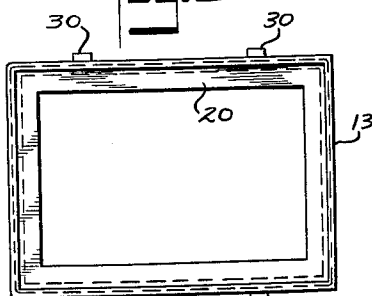


Fig. 4

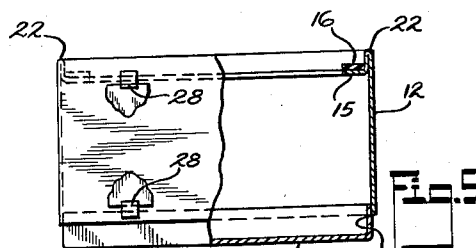


Fig. 5

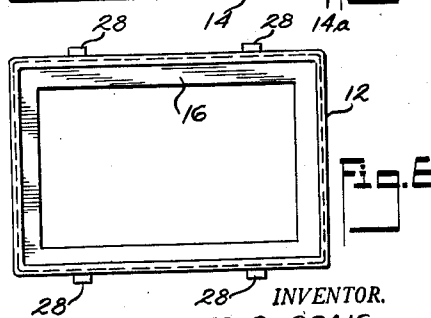


Fig. 6

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SHIPPING CASE FOR MOBILE X-RAY UNIT

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3 Claims. (Cl. 206—1)

This invention relates to shipping cases and more particularly to shipping cases for mobile X-ray units.

An object of the present invention is to provide an enclosed casing which may be used for the purpose of shipping a control box for mobile X-ray units and then may be quickly and easily converted to provide a stand for supporting said control box in use.

Another object of the present invention is to provide a shipping case for a control box for mobile X-ray units which is weather-proof, and which has ample strength and rigidity to withstand hard usage.

Still another object of the present invention is to provide a shipping case for a control box which incorporates appropriate resilient liners for the purpose of supporting said box against shock and other damaging effects.

Another object of the present invention is to provide a novel shipping case for a control box for mobile X-ray units characterized by its structural simplicity, the ease of assembly of its parts, its strong and sturdy nature and its low manufacturing cost. Other features of this invention reside in the arrangement and design of the parts for carrying out their appropriate functions.

Other objects and advantages of this invention will be apparent from the accompanying drawings and description and the essential features will be set forth in the appended claims.

In the drawings,

Fig. 1 is a front elevational view of the shipping case in a reassembled condition wherein its component parts provide a support for the X-ray control box and having parts broken away to more clearly show the details of construction.

Fig. 2 is a front elevational view of a shipping case in a position of assembly wherein the mobile X-ray control box is contained therein ready for shipping and having parts broken away to more clearly show the details of construction.

Fig. 3 is a front elevational view of the lower casing member, as seen in Fig. 1, having parts broken away to more clearly show its construction.

Fig. 4 is a top plan view of the lower casing member, as seen in Fig. 3.

Fig. 5 is a front elevational view of the upper casing member, as seen in Fig. 1, and having parts broken away to more clearly show its construction.

Fig. 6 is a top plan view of the upper casing member of Fig. 5.

Fig. 7 is a vertical sectional view enlarged, taken along the plane of line 7—7 of Fig. 1 and showing details of the latching mechanism.

Before describing in detail the herein disclosed embodiment of the invention, it is to be understood that the present invention is not limited to the structural details or the particular arrangement of parts herein shown, as devices embodying the present invention may take other forms. It also is to be understood that the phraseology and terminology herein used are for purposes of description and not of limitation, as the scope of the present invention is denoted by the appended claims,

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Referring first to Fig. 2, I have shown the present shipping case 10 in an assembled condition ready for shipping and supporting within its confines an X-ray control box or unit illustrated by the dotted line 11. The shipping case includes a lower casing member 12 and an upper casing member 13. As seen in Fig. 2, the upper casing member 13 rests above the lower casing member 12. The lower casing member 12, as seen in Figs. 2, 5 and 6, comprises generally a rectangular housing having a bottom 14, four side walls 12a, and an open top. The upper edge of each of the side walls is bent back upon itself at substantially 180° and then inwardly of the casing at right angles to the side walls for a short distance providing a horizontally extending flange 15 which extends around the inner periphery of the upper edge of lower casing member 12, as best seen in Figs. 2 and 5. A gasket 16 of sponge rubber or suitable resilient material is suitably secured to the upper surface of the flange 15 and extends completely around the flange, as seen in Fig. 6. It will be noted that the flange 15 is positioned a small vertical distance below the uppermost edge of the lower casing member 12. The bottom 14 is provided with upstanding side walls 14a whose outer peripheral surfaces fit snugly against the inner peripheral surfaces of the lower casing side walls 12a, thereby permitting the bottom member to be inserted a short distance within the walls 12a to which walls 14a are permanently secured by suitable means such as welding or riveting.

The upper casing member 13 comprises a generally rectangular housing which, in the position of Fig. 2, has a closed top 17 and four side walls 13a. With reference to Fig. 3, it will be noted that the upper casing 13 has been inverted or turned upside down so that the closed top portion 17 of Fig. 2 is now at the bottom thereof. The top 17 of the upper casing member 13 is provided with depending side walls 17a which are adapted to be inserted within the confines of the side walls 13a of the casing 13 in a manner similar to that described in connection with the lower casing member 12. The walls 17a are secured to the inner surfaces of the side walls 13a of the upper casing 13 by any suitable means such as welding or riveting. As seen in Fig. 2, the lower edge of each of the side walls 13a is bent inwardly upon itself through substantially 180° and then bent toward the interior of the casing at substantially right angles to the plane of the side walls for a short distance so as to form an inwardly extending flange 18 which extends around the inner peripheral wall of the open side of the upper casing member 13, as seen in Figs. 2, 3 and 4. It will be noted that the interior peripheral dimensions of the upper casing member 13 are somewhat greater than the outer peripheral dimensions of the lower casing member 12. It will be further noted that the inner surface of the folded portion 19 is so constructed as to lie closely adjacent the outer surface of the side walls 12a of the lower casing member 12 with a snug fit, as seen in Fig. 2. The lower surface of the flange 18, as seen in Fig. 2, is provided with a sponge rubber or other suitable resilient gasket 20 which extends completely around the flange, as seen in Fig. 4.

The X-ray control unit 11 is provided with a rigidly connected base plate 21 whose outer dimensions are such as to permit the base plate to be snugly received within the confines of the folded portion 22 of the side walls of the lower casing member 12 wherein marginal edge portions of its lower surface may rest upon the upper surface of the sponge rubber gasket 16 surrounding the flange portion 15 in the lower casing member 12.

The method of assembling the various components of the present invention for shipping is as follows: The lower casing member 12 is placed in a position, as seen in Figs.

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2 and 5 with its open end at the top. The X-ray control unit 11 is then positioned with its base plate 21 upon the upper surface of the gasket 16, in a manner as heretofore described, with the main portion of the control unit extending above the top of the lower casing member 12. The upper casing member 13 is then placed over the control unit 11 with the inner surface of the folded portion 19 closely engaging the outer surface of the upper marginal edges of the side walls 12a of the lower casing member, as seen in Fig. 2, so that the lower surface of the rubber gasket 20 is compressed upon the upper surface of the base plate 21 of the X-ray control unit 11. It will be noted that the base plate 21 of the control unit is somewhat larger than the control unit 11 so as to permit the rubber gaskets 16 and 20 to engage both the upper and lower surface of the marginal edges of the base plate completely around its entire periphery.

Suitable toggle catches 25 are provided between the upper and lower casing members 12 and 13, on both the front and back of the assembly, as seen in Figs. 1, 2, 3, 5 and 7. When latched they provide a tightly closed casing for the X-ray control unit 11. The toggle catches are so constructed and have their relative parts so positioned with respect to the unit that they are always under tension when in a latched position so as to force the gasket members 20 and 16 toward one another thereby closely embracing and compressing the base plate between them. In this manner, the X-ray control unit 11 is snugly supported between resilient mountings and is shielded within a totally enclosed strongly constructed shipping case so that it may be protected against damage. As seen in Figs. 3 and 7, the main body portion of the toggle catch includes a link 26 and an associated lever 27 secured to the outer surface of the casing member 13. Hook portions 28 are secured adjacent both the upper and lower edges of the casing member 12, as seen in Figs. 1 and 5, so as to permit latch engagement when the upper and lower casing members are in shipping position, as in Fig. 2, or are reversed with respect to each other, as in Fig. 1. The link 26 is pivotally secured to the lever 27 at 29 while the lever 27 is pivotally secured to a bracket 30 at 31. Bracket 30 is rigid with casing member 13. The link is placed over the hook 28 and then locked in place by movement of the lever 27 around pivot 31 in the usual manner into the position as seen in Fig. 7.

The shipping case of Fig. 2 may be converted from its assembled position, as seen in Fig. 2, into an X-ray control unit supporting stand, as seen in Fig. 1. Referring now to Fig. 1, it will be seen that the upper casing member 13 has been inverted from the position of Fig. 2 in such a manner that its closed top portion 17 now rests upon the ground. The relative positions of the lower casing member 12 and the control unit 11 and its associated base plate 21, as seen in Fig. 2, remain unchanged and are merely picked up as a unit and placed upon the open end of the inverted casing member 13. It will be noted that the bottom 14 of the casing member 12 is constructed so as to rest upon the rubber gasket 20 and within the vertically extending flange 19 of casing member 13. It will be noted that even in the operating position, as seen in Fig. 1, the X-ray control unit 11 is supported against accidental displacement from the casing member 12 since the base plate 21 resides inwardly of the upper edge of the casing member 12. Through the provision of this novel shipping case, a support is provided as seen in Fig. 1, wherein the X-ray control unit is positioned at a height for easy access during use. Reversible handle 35 are secured to opposite side walls of the casing 13 to facilitate carrying the device.

It will thus be seen that I have provided a novel shipping case for a portable X-ray control unit which is for all practical purposes weather-proof and has the ability to withstand severe punishment without injury to the unit contained therein. It will be further seen that substan-

tially all of the joining edges of the novel container are weather-proof. The bottom 14 of the lower casing member 12 and the top 17 of the upper casing member 13 (which forms the bottom of the support stand as seen in Fig. 1) are each provided with upstanding side wall portions which are to be disposed interiorly of the side walls of their respective casing members, so as to make it impossible for water to seep therein when used, as seen in Figs. 1 and 2. For water to penetrate the joints between the side walls of the casings and the bottoms, it would first have to travel under the lower edge of the side walls upwardly between the surfaces of the side walls and the upstanding walls of the respective bottom portions and finally flow over the upper edge of the bottom portions, which is extremely unlikely. The seal formed by the overlapping outer side walls of the upper and lower casing members respectively, coupled with the tightly engaging rubber gaskets 16 and 20 form substantially double weather-proofing seals around the adjoining portions of the housing.

In addition to the weather-proofing features and resilient mounting of the control unit, the present casing is designed for quick and easy assembly and disassembly. The toggle catch permits the members to be quickly unlatched from one another and changed to their respective positions whether they be used for the support shown in Fig. 1 or the closed shipping case, as seen in Fig. 2.

In view of the foregoing description, taken in conjunction with the accompanying drawings, it is believed that a clear understanding of the construction, operation and advantages of the device will be quite apparent to those skilled in this art.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent is:

1. The combination of an X-ray control device having a rigidly connected base plate extending horizontally therefrom, said device extending vertically above said base plate, and a combined shipping case and support stand therefor, said case comprising a hollow device-supporting member and another hollow member, said device-supporting member having a bottom and rigidly attached upstanding side walls and vertically extending flange parts at its upper device-supporting edge opposite its bottom and horizontally extending flange parts extending inwardly from said side walls and spaced slightly below said upper edge, said base plate fitting snugly within said vertically extending flange parts when resting upon said horizontally extending flange parts, resilient cushioning material between said base plate and said horizontally extending flange parts, said other hollow member having normally a top and rigidly connected downwardly extending side walls and vertically extending flange parts at its normally lower edge of dimensions to snugly embrace said first mentioned vertically extending flange parts while housing said device and having horizontally extending flange parts extending inwardly from its side walls and spaced slightly above its vertically extending flange parts, resilient cushioning means secured to the normally lower face of said last named horizontally extending flange parts in position to engage said base plate when the latter is resting upon said first named horizontally extending flange parts and said second named vertically extending flange parts are embracing said first named vertically extending flange parts, and means for securing said two hollow members together in one position as a shipping case with said other member normal top upward and above said device-supporting member, and in a second position as a support stand for said device with said other member normal top downward and below said device-supporting member with said bottom of said device-supporting member having dimensions adapted to fit within and be embraced by said second named vertically extending flange parts while resting on said second mentioned resilient cushioning means.

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2. A combination, as set forth in claim 1, with said last mentioned means including coacting toggle catch parts carried by said members adjacent said flanges to secure said members detachably together in said one position, each of said flange parts being integrally formed as a portion of the side wall of its associated member bent upon itself to form said vertically extending flange parts and then bent outwardly at a right angle to form said horizontally extending flange parts.

3. A shipping case and support stand for a mobile X-ray unit control device comprising a lower casing member, said lower casing member having a closed bottom and an open top, an upper casing member, said upper casing member having a closed top and an open bottom, a flange extending around the inner periphery of the open top of said lower casing member, a resilient gasket on the upper surface of said flange of said lower casing member, a flange extending around the inner periphery of the open bottom of said upper casing member, a resilient gasket on the lower surface of said flange of said upper casing member, said bottom portion of said upper casing being of such dimension as to fit snugly over at

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least the upper portion of said lower casing member with said resilient gaskets in registration, a base plate for supporting said X-ray unit device, said base plate of dimensions fitting between said resilient gaskets on said flanges of said upper and lower casing members, said shipping case being convertible into an X-ray unit device support stand upon turning said upper casing member upside down and placing it beneath said lower casing member, said lower casing member bottom having outer dimensions fitting within the confines of said open bottom inverted of said upper casing member and supported on said resilient gasket on said flange of said upper casing member when said upper casing member is in its inverted position.

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