Oct. 24, 1961 R. C. WHITE 3,005,567

TRANSIT CASE

Filed July 7, 1960 2 Sheets-Sheet 1

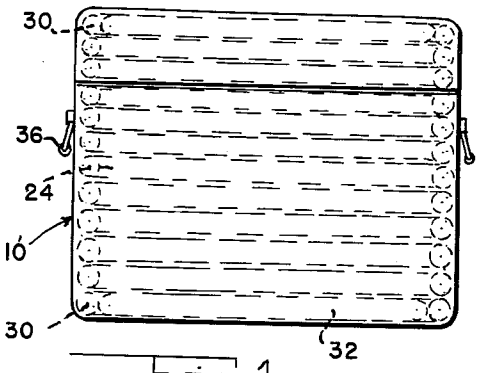


Fig-1

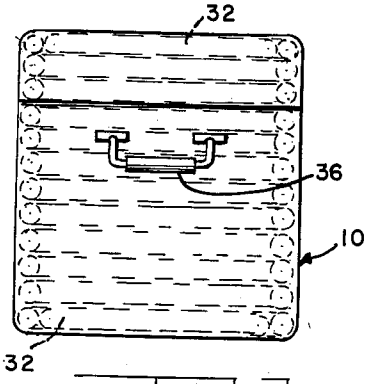


Fig-2

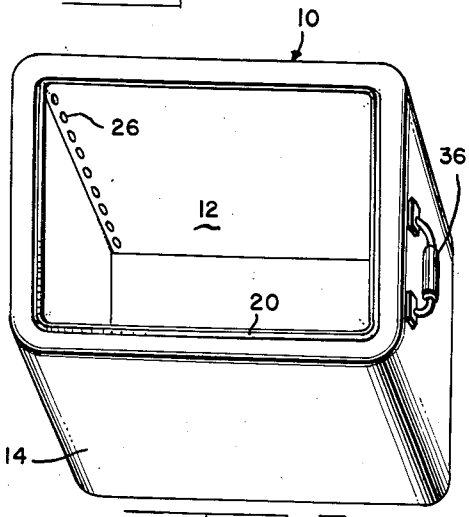


Fig-3

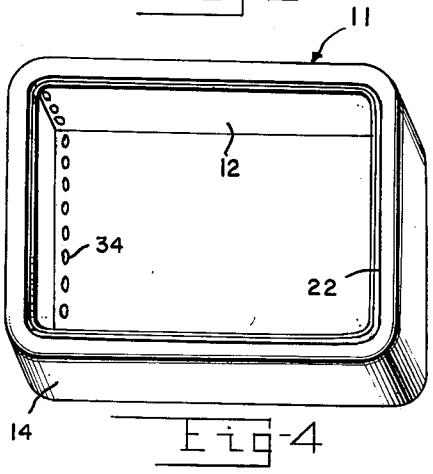


Fig-4

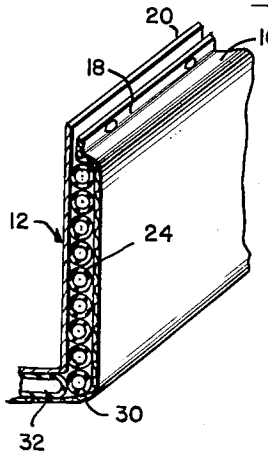


Fig-5

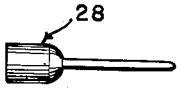


Fig-7

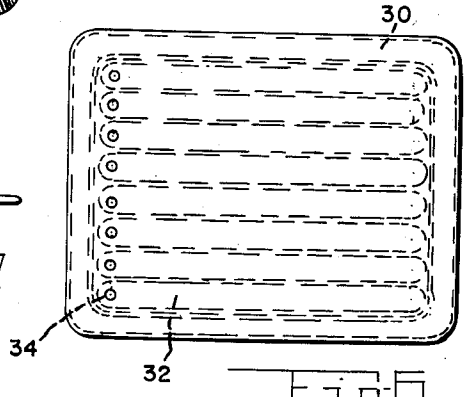


Fig-6

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TRANSIT CASE

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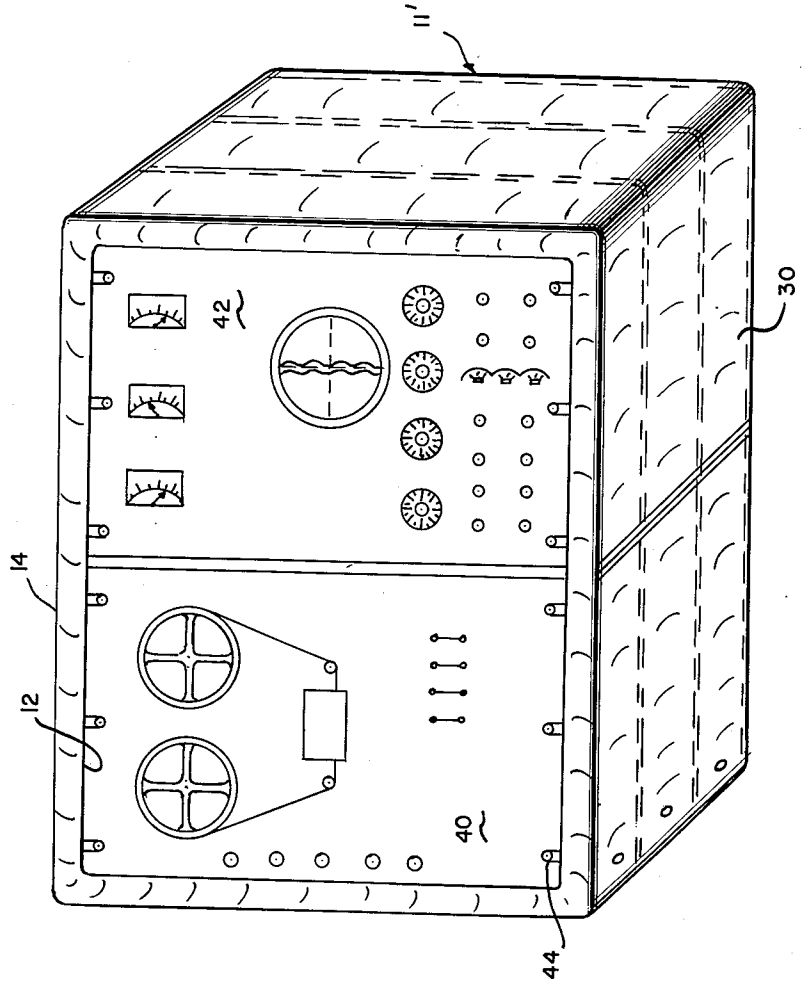


Fig. 1

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3,005,567

TRANSIT CASE

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Filed July 7, 1960, Ser. No. 41,451
5 Claims. (Cl. 220—9)
(Granted under Title 35, U.S. Code (1952), sec. 266)

The invention described herein may be manufactured and used by or for the United States Government for governmental purposes without payment to me of any royalty thereon.

This invention relates to a transit case of the console type and, more particularly, to a new concept incorporating energy absorption techniques in a protective air inflated structure for transporting sensitive equipment where protection from shock and vibration during handling and protection from G load stress during air flight are essential, and where minimum weight is of great importance. The shock absorbing quality is effected by double walls, the inner one rigid and the outer one tough and pliable, the space between being occupied by a plurality of inflated elements arranged in a unique manner.

In the drawing,

FIG. 1 is a side elevational view of the transit case showing the arrangement of the inflated tubes in phantom.

FIG. 2 is an end view similar to FIG. 1.

FIG. 3 is a top perspective view of the case with the cover removed.

FIG. 4 is a perspective inside view of the cover.

FIG. 5 is a perspective fragmentary cross-sectional view of a side wall.

FIG. 6 is a view which represents both top plan view of the cover, and a bottom view of the bottom of the case, with the arrangement of the inflated tubes shown in phantom.

FIG. 7 is a needle valve for inflation of the tubes.

FIG. 8 is a top perspective view of a modified form of the invention, with the cover removed.

Referring more in detail to the drawing, the transit case body and its cover are indicated generally by the numerals **10** and **11** respectively. The walls of the case and cover comprise spaced inner and outer walls **12** and **14** respectively. The walls of the cover and body of the transit case are made up as follows: The inner or liner wall **12** is made of lightweight material and is rigid. Aluminum and reinforced fiberglass have both been used successfully, but the invention is not limited to this material. The outer wall is a tough, semirigid or semipliable skin. Materials successfully used are nylon, hypalon coated Dacron, or a neoprene impregnated.

A shoulder **16** and flange **18** on the outer semirigid skin of the body serve for spacing and attaching the inner and outer walls. An upstanding flange **20** is received in a slot **22** in the cover **11**.

A plurality of inflated elements are inserted between the inner and outer walls in a unique manner. Inflated endless tubes or air cells **24** are laid or sandwiched in the space between the inner and outer walls in adjacent horizontal and parallel relationship. An air valve **26** is provided for each endless tube, and inflation and re-inflation is accomplished by means of a needle valve such as is used for inflating a football. Such a needle type valve is shown at **28** in FIG. 7.

The inflated tubes or air cells **24** are self-sealing tubular sections, which may be made of rubber or any other suitable plastic material which is self-sealing, airtight and has a degree of pliability, and shock absorbing quality.

The vertical walls of both the body **10** and the cover **11** are fabricated as described above. The bottom of the body **10** and the top portion of the cover portion **11** are

fabricated in an identical manner. This is illustrated in FIG. 6 which is a representation of either the bottom of the body portion of the case **10**, or the top of the cover **11**. The lowermost endless tube, or air cell of the transit case body, and uppermost in the cover, forms the periphery of the bottom of the case and the top of the cover respectively. The remaining portion of the space of the bottom of the case is covered by ended straight tubes or air cells **32** which are of a length to correspond with the width of the transit case, and are laid parallel and adjacent so as to fill the area outlined by the endless tube **30**. A valve **34** is provided in each tube **32** to provide for inflation and re-inflation.

The upper area of the cover **11** is fabricated in an identical manner.

A handle **36** or any other expedient means for handling the case may be provided as desired. It will be seen even when actual damage to one portion of the case causes rupture to some of the tubes, the shock resisting quality is retained in the remaining undamaged portions of the case.

In FIG. 8 a modification of the invention is shown. The invention is shown here as adaptable for delicate electronic instrumentation such as the tape recorder and the oscilloscope **42**. These instruments may be used with or without removal from the case. As shown in FIG. 8, they are attached to the inner wall of the case by means of the straps **44**.

The inner and outer wall construction of this modification of the device may be as described in connection with FIG. 1 to 7, or both walls may be of aluminum or fiberglass. The endless tubes **30'** are sandwiched between the inner and outer walls **12** and **14**. These rubber or plastic tubes are flattened endless sections whose cross-sectional axis dimensions bear a relation to each other of approximately one and one-half to ten. Predetermined air pressures in these endless tube sections will determine the shock G load, or impact shock the case will withstand.

While the invention is shown and described in connection with one form for illustrative, rather than restrictive purposes, it is obvious that changes and modifications may be made by those skilled in the art without departing from the scope and spirit of the invention as defined in the accompanying claims.

I claim:

1. In a transit case, inner and outer spaced walls, providing four enclosing wall segments and a bottom segment, a cover for said transit case having vertical segments and a horizontal segment, inner and outer spaced walls on said cover forming four enclosing vertical walls and a horizontal top wall, endless self-sealing inflatable tubes positioned in the space between said walls and lying in horizontal and parallel relationship, inflatable linear tubes lying in parallel relationship between the inner and outer walls of the bottom section of the body of said case, and the top portion of the cover of said case.

2. In a transit case, four enclosing vertical walls and a bottom segment, a cover for said case having four vertical segments and a top horizontal segment, all of said walls and segments being formed of an inner rigid liner and an outer tough and semirigid skin, said inner rigid liner and said outer semirigid skin being positioned in spaced relationship, endless self-sealing inflated air cells positioned in the space between said inner liner and said outer semirigid skin in horizontal and parallel relationship, providing cushioning for the vertical walls of said case, linear inflated air cells positioned horizontally and in parallel adjacent relationship between the walls comprising the upper portion of the cover of said case, linear inflated air cells positioned horizontally and in parallel adjacent relationship between the walls comprising the lower bottom portion of said case.

3. A transit case comprising four enclosing walls, a bottom portion and a cover, said enclosing walls, said bottom and said cover portion being formed of inner and outer spaced elements, said inner element being rigid, said outer elements being of pliable and tough material, inflated tubes, lying in adjacent and parallel relationship and occupying the space between said inner rigid elements and said outer pliable elements.

4. A transit case comprising inner and outer spaced elements providing walls and cover for said case, said inner elements being of rigid material and said outer walls being of tough and pliable material, a plurality of individually inflated elements lying between said inner and outer spaced elements.

5. A transit case comprising inner and outer spaced elements providing walls and cover for said case, said inner elements being of rigid material and said outer walls being of tough and pliable material, a plurality of individually inflated elements lying between said inner and outer spaced elements, said inflated elements being endless tubes and of substantially flattened oval shape in cross section.

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