July 20, 1965 T. D. GLASS 3,196,229

CORE BOX

Filed March 28, 1963

3 Sheets-Sheet 1

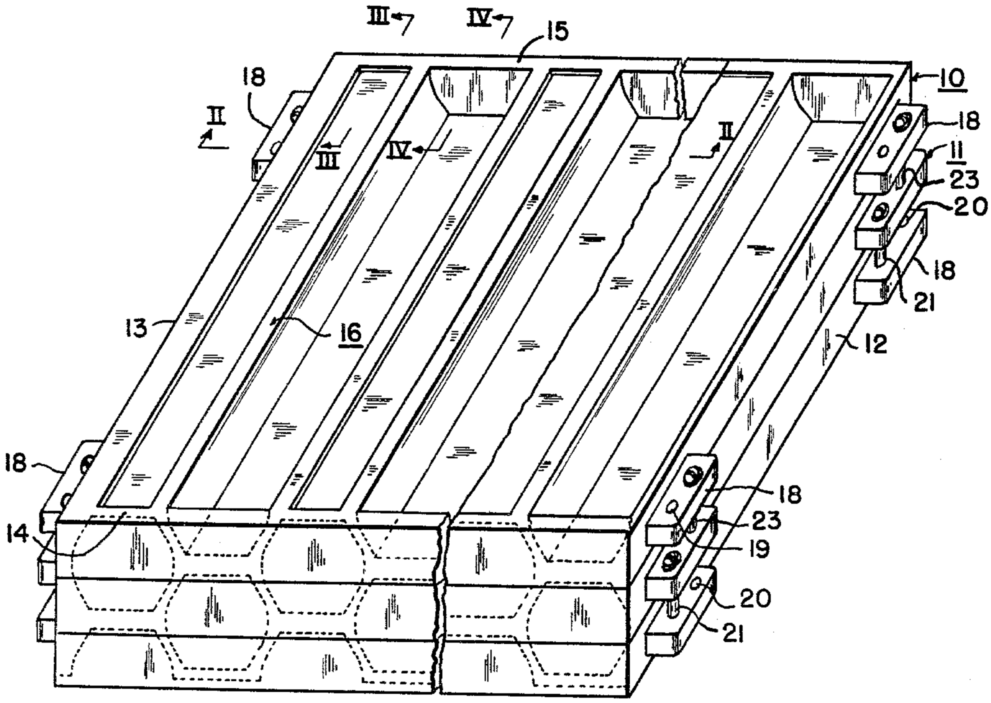

Fig. 1

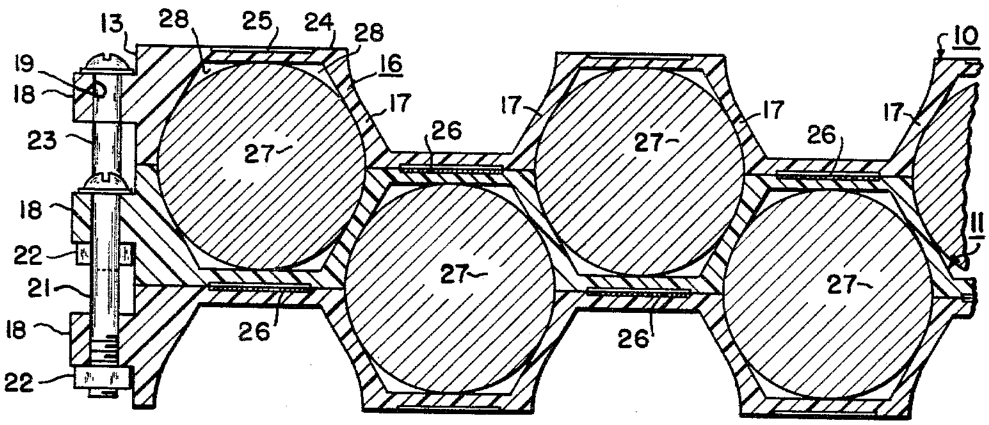

Fig. 2

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July 20, 1965 T. D. GLASS 3,196,229

CORE BOX

Filed March 28, 1963 3 Sheets-Sheet 2

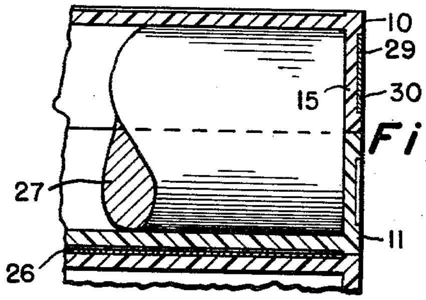

Fig. 3

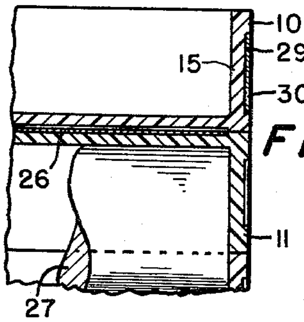

Fig. 4

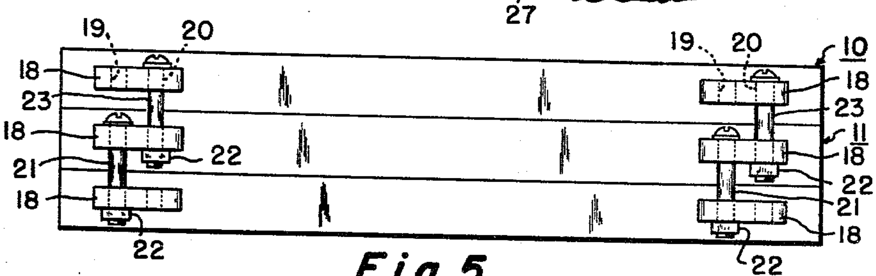

Fig. 5

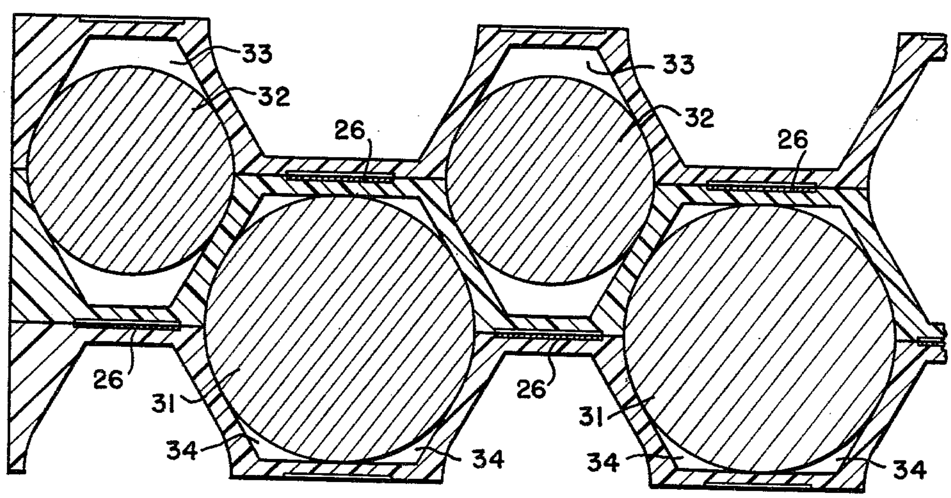

Fig. 6

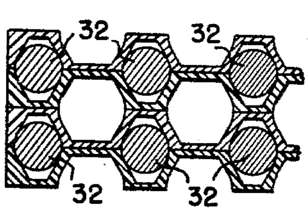

Fig. 7

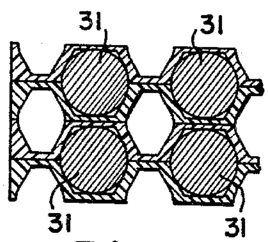

Fig. 8

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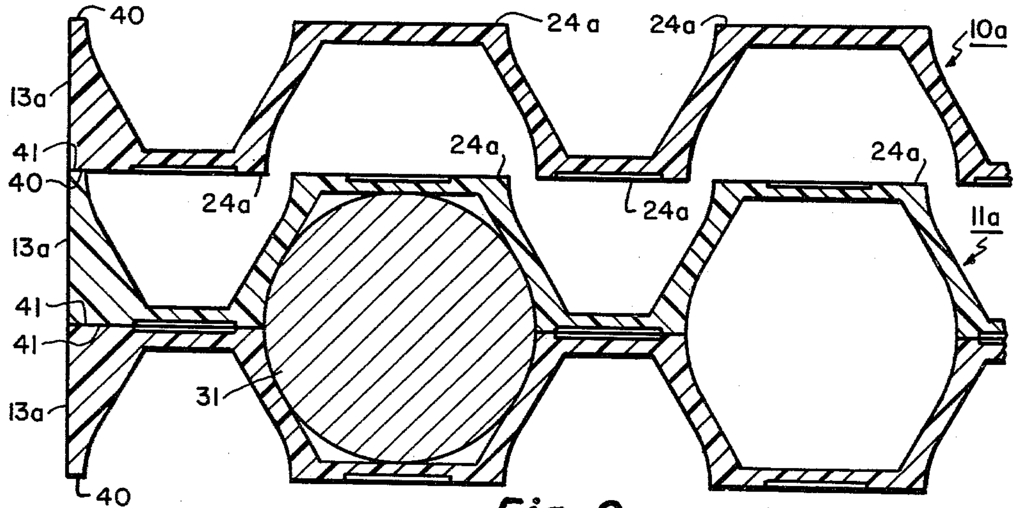

Fig. 9

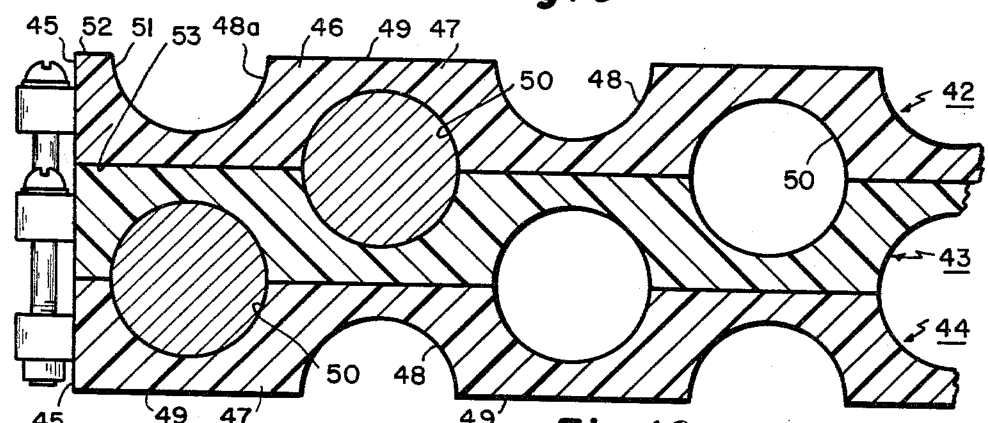

Fig. 10

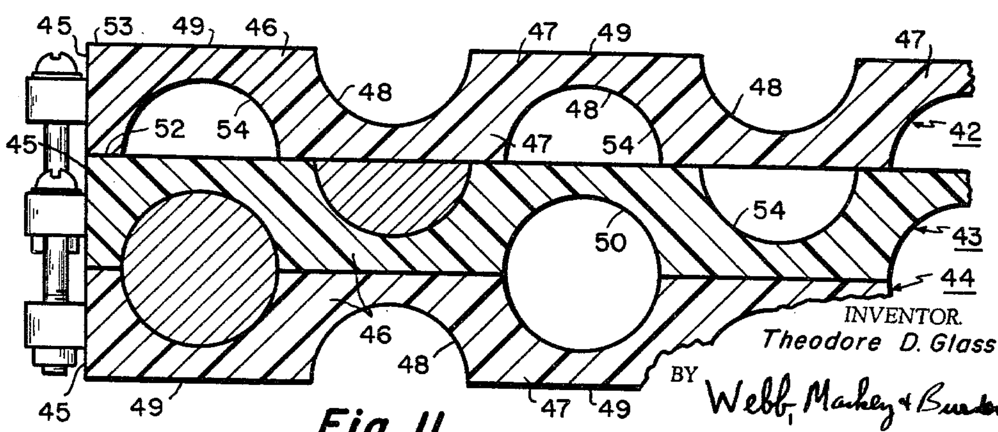

Fig. 11

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3,196,229
Patented July 20, 1965

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3,196,229

CORE BOX

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Filed Mar. 28, 1963, Ser. No. 269,842
5 Claims. (Cl. 206—65)

This application is a continuation-in-part of my application Serial No. 112,042, filed May 23, 1961, now abandoned and relating to a core box.

This invention relates to boxes, and more particularly to core boxes for storing and maintaining therein core produced by test drilling and expoloration of deposits of ores, minerals and the like.

In test boring for ores, minerals and the like, it is frequently necessary to bore into the earth for many hundreds of feet. These test borings are made with well-known equipment and it is necessary that the test boring, known as the "core," be saved for subsequent analysis. The "core" is a continuous cylinder composed of the transverse strata of the earth. It is necessary that the core be withdrawn from the test hole and maintained in storage in the sequence in which it is withdrawn so that the depth will be known from which a particular part of the core was cut. Conventional wood core boxes are presently widely used for storing the core removed from the test hole. These boxes consist of a conventional multisided box into which the core is placed in proper sequence with wooden dividers inserted randomly transversely of the core and marked with the footage depths from which the core was cut. These known wooden core boxes are expensive, bulky, lack the desired durability for their intended use, and have only a limited life.

My invention overcomes the deficiencies and shortcomings of the conventional wooden core boxes and provides a durable, rigid, weather resistant, compact core box which requires a minimum of storage space while greatly increasing core storage capacity for the space required by the box. Specifically, my invention is a box comprising a first divider which has integral end and side walls forming a polygon. A continuous, rigid separator within the polygon is affixed to the walls thereof and is corrugated with ridges and valleys on the top and undersides thereof. The valleys hold the core and one of the end and side walls closes the ends of each valley for the depth thereof. The ridges separate the valleys from one another and the top surface of each ridge for the length thereof is disposed in the same plane as the top and underside surfaces of that one of the end and side walls which closes the ends of the valleys. A second divider identical to the first one is positioned over the first divider with the walls of the dividers in alignment and with the valleys on the underside of the second divider positioned over the valleys on the top side of the first divider. Thus, the ridges and the top and bottom surfaces of the dividers meet in an abutting engagement to form a plurality of closed chambers for containing the core. The first and second dividers form the box.

In one embodiment of the box, the top surface of each ridge for the length thereof is substantially flat.

Preferably, the dividers are held together as a unit by a locking means.

By adding a third divider identical to the first two, and positioning it over the second divider with the walls of the dividers in alignment, I double the capacity of the box formed by two dividers. Disposition of the third divider over the second one is such that the valleys on the underside of the third divider are over the valleys on the top side of the second divider and the ridges of the second and third dividers meet to form a second row of a plurality of closed chambers. The first, second and third dividers then form the core box.

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In the drawings, I have shown present preferred embodiments of my invention, in which:

FIGURE 1 is an isometric view of one embodiment of my invention;

FIGURE 2 is a sectional view taken on line II—II of FIGURE 1;

FIGURE 3 is a sectional view taken on line III—III of FIGURE 1;

FIGURE 4 is a sectional view taken on line IV—IV of FIGURE 1;

FIGURE 5 is a side elevation view of my core box;

FIGURE 6 is a cross-sectional view similar to FIGURE 2 showing a second embodiment of my core box adapted to store various sizes of core;

FIGURE 7 is a cross-sectional view similar to FIGURE 6;

FIGURE 8 is a cross-sectional view similar to FIGURE 6;

FIGURE 9 is a section view similar to FIGURE 6 but with the upper divider reversed and turned 180° about its horizontal axis disposed perpendicularly to the ridges and valleys thereof;

FIGURE 10 is a fragmentary vertical section view of a third embodiment of my invention; and

FIGURE 11 is a view similar to FIGURE 10 but with the top divider reversed and turned 180° about its horizontal axis disposed perpendicularly to the ridges and valleys thereof.

Referring to FIGURES 1–5, inclusive, my core box comprises a first divider **10** which is assembled with a second identical divider **11** to form the box. Additional dividers such as the third identical divider shown assembled with dividers **10** and **11** can be combined to increase storage capacity. The addition of the third divider doubles the storage capacity of the box formed by dividers **10** and **11** while increasing storage requirements for the box of the three dividers by 50%.

Each divider includes side walls **12** and **13**, and end walls **14** and **15**. A corrugated separator **16** is positioned within and molded integral with the walls. Thus each side of the dividers presents ridges and valleys which run for the extent thereof.

The core to be stored in the core box is in three basic sizes: 1¼ inch diameter which is known as "AX" core, 1⅝ inch diameter which is known as "BX" core, and 2⅛ inch diameter core which is known as "NX" core.

The BX core is the most popular and accounts for approximately 80% of the boring. Thus, my box is primarily constructed to store the BX core.

For a box for storing 1⅝ inch diameter BX core, the box is approximately 15¼ inches wide (the front face of FIGURE 1) and 30 inches long (the right side face of FIGURE 1). The walls of the separator **16** at the point **17** separating the various core samples are about ⅛ inch thick when fabricated from a durable plastic. The dimensions of the box vary with the size core being stored and the rigidity desired in the box. I have found the dimensions stated herein to be desirable and accomplish the purpose for which the box is intended.

A pair of outwardly extending tongues **18** are affixed to each side wall **12** and **13**. Each tongue contains a pair of spaced openings **19** and **20**. As shown in FIGURES 2 and 5, a bolt **23** is positioned in one of the holes in a tongue of divider **10** and an aligned hole in divider **11**. A square or wing nut **22** is threaded on the bottom of the bolt and maintains the dividers in locked relationship to each other. A single bolt is inserted through the aligned holes in each of the four tongues spaced around the divider periphery. When an additional divider is assembled with the two assembled dividers **10** and **11**, another bolt **21** is positioned in aligned holes in the tongues **18** but in the hole which was not utilized by the bolt **23**. Again, a conventional wing or square nut **22** is threaded on the bottom of bolt **21** to lock the dividers rigidly relative to each other. As additional dividers are added to the box, this staggered arrangement of the bolts is continued. This arrangement of the bolts permits removal of only one of the dividers at a time while maintaining other dividers in locked relationship to each other. The spaced holes **19** and **20** also provide at least one extra hole at each corner in the event that one of the holes becomes unusable.

My invention also is usable by inserting a long bolt through three or more aligned holes at each corner and threading a nut on the bottom of the bolt.

The nuts **22** are located sufficiently near the walls **12** and **13** so that one side of the nut engages the wall to prevent turning of the nut while the bolt is being tightened or loosened.

The divider **16** is basically a corrugated sheet but has flat areas **24** at the top of the ridges and bottom of the valleys as shown in FIGURE 2, and these flat areas extend across the divider for the length of the ridges and valleys. Each flat area has a wide groove **25** extending along the ridge of the corrugated sheet. A tape **26** is glued in each groove and appropriate markings recorded on the tape **26** to indicate the depth from which the adjoining core was taken.

I have shown the core **27** completely enclosed in FIGURE 2 between corrugated sheets **16** of three separate dividers. The core **27** shown in FIGURE 2 is of any desired diameter such as the AX, BX or NX core described above. I have shown small spaces **28** above and below the cores and, although these spaces are desirable, they are not absolutely necessary in my box. Therefore, the spaces **28** may be rounded to conform to the shape of the core **27**.

The flat areas **24** are in abutting relationship as shown in FIGURE 2 when the dividers are assembled. Likewise, the end walls of the dividers meet in abutting relationship thereby maintaining the core **27** within a closed chamber within the divider. The end walls **14** and **15** close the ends of the chamber for the depth of the valleys (FIGURE 1) so that the core is maintained dry and undisturbed by the completely enclosed chamber.

I also provide a wide groove **29** in one or more of the outside walls of the dividers. A tape **30** is positioned in the recess and data relating to the cores within the divider is recorded on the tape. This data may include hole number, feet of core, etc. The tape **30** is protected from the weather by being recessed into the wall.

With a 30-inch long box, each pairs of dividers will hold 12½ feet of core or three dividers, as shown in FIGURE 2, will hold 25 feet of core. This is substantially more core per unit volume of core box than could be stored in the wooden core boxes.

In FIGURE 6, I have shown a second embodiment of my core box which is basically the same configuration as described in FIGURE 2 with the exception that the corrugated dividers are constructed to hold two sizes of core **31** and **32**. The dividers have large valleys on one side and small valleys on the other side. As shown in FIGURE 6, the large valleys are aligned to form chambers for big diameter core, and the small valleys are aligned to form chambers for small diameter core. This configuration accomplishes maximum core storage in minimum core box volume. The boxes shown in FIGURES 6, 7 and 8 are fastened together in the same manner as described with respect to the box of FIGURES 1 and 2. I have shown the core **32** with a substantial space **33** on each side of it; however, this space is not necessary and the space can be reduced in size or completely eliminated by proper molding of the divider to conform to the shape

of the core. The elimination of spaces **34** around core **31** is also possible as explained above.

The advantage of the core box shown in FIGURE 6 is that it provides for storage of various sizes of cores. The upper smaller chambers shown in FIGURE 6 are specifically adapted to receive a 1⅝ inch diameter core (BX) but will also hold a 1¼ inch diameter core (AX). The lower larger chambers are adapted to receive a 2⅛ inch diameter core (NX).

The tops of the ridges of the embodiment of FIGURES 6–9 have flat areas *24a* the same as the tops of the ridges of the embodiment of FIGURES 1–5 and these flat areas *24a* extend across the divider for the length of the ridges. As shown in FIGURES 6–9, these flat areas *24a* are in abutting relationship when the dividers are assembled and these areas are located in the same plane as the top and underside surfaces (FIGURE 9) of the side and end walls of the dividers **10***a* and **11***a* with side wall **13***a* and its top surface **40** and underside surface **41** being shown. The flat areas **24** of the embodiment of FIGURES 1–5 have the same disposition relative to the top and underside surfaces of the side and end walls **12**, **13**, **14** and **15** of the dividers **10** and **11** and of the third divider.

Disposition of the top surfaces of the ridges in the same plane as the top and underside surfaces of the end and side walls of each divider permits the divider to be reversed and turned 180° about that horizontal axis thereof disposed transversely of the ridges and valleys thereof or about that horizontal axis disposed parallel to the ridges and valleys. This is shown by FIGURE 9 wherein divider **10***a* has been reversed so that the divider **10***a* receives support in its reversed position from cooperation between the top and underside surfaces of the end and side walls for maintaining it in the reversed position. Such a disposition also imparts to the core box ability for two dividers to form the box without use of a frame, any additional supports or other members.

FIGURE 7 illustrates the second embodiment of my core box which is used to store only the smaller cores **32**. The empty chambers are not used at all; however, the box shown in FIGURE 7 is not as economical to use as the boxes shown in FIGURES 2 and 6.

FIGURE 8 illustrates the box of FIGURE 6 used for storing only the larger core **31**. Likewise, this box is not as economical to use as that shown in FIGURES 2 and 6.

FIGURES 10 and 11 show a third embodiment of my invention comprising dividers **42** and **43** and **44**, each of which is identical to one another and includes side walls and end walls (only side wall **45** being shown) for forming a polygon. Also, each divider has a corrugated separator **46** which defines ridges **47** and valleys **48** on both the top and undersides thereof. The top surface of each ridge has a flat area **49** which extends across the divider for the length of the ridges. Like the embodiment of FIGURES 1–5, the end walls and the flat areas of this embodiment abut when the dividers are assembled with the walls in alignment to form closed chambers **50** within the box composed of the dividers. The end walls also close the ends of the chambers for the depth of the valleys as is the case with the embodiment of FIGURES 1–5 to completely enclose the chambers **50**.

For those valleys such as valley **48***a* of divider **42** positioned adjacent the side wall **45** of the divider, such side wall **45** forms an outer wall **51** of the valley **48***a*.

As shown in FIGURES 10 and 11, in the plane of the top surface of each ridge the width of each ridge throughout its length is greater than the width of the opening of each valley into the plane of the top surface of each ridge. In fact, the top surface of each ridge is wider than any width of each valley for the depth thereof. Additionally, and like the other two embodiments of FIGURES 1–5 and 6–9, the top surface of each ridge on the top and undersides of each separator **46** is in the same plane as the top and underside surfaces of the side and end walls of each divider, top surface 52 and underside surface 53 of side wall 45 being shown. Such an arrangement not only imparts reversibility to each divider, but also, when a divider is reversed, it provides a closed chamber 54 of substantially one-half the volume of the chambers 50 formed by the combination of two dividers. Thus one-half the core can be used for chemical analysis and the remainder stored in closed chambers 54 of the divider 43 and formed by the combination of the dividers 42 and 43 with the divider 42 reversed and turned 180° about its horizontal axis disposed transversely of the ridges and valleys thereof from the position of FIGURE 10 to the position of FIGURE 11.

I prefer to fabricate my box from a natural or synthetic plastic material of either the thermoplastic or thermosetting type. The primary requirement of the material is that it form a rigid box which is strong and weather resistant. I prefer to use a clear transparent plastic material which provides a good view of the inside core materials. A specific example of the material which I can use is polyethylene or hard rubber. Any of the plastic materials which I use can be reinforced with glass fiber or a similar reinforcement. The many synthetic plastics which I can use are well-known and are set forth on page 665 of "Hackh's Chemical Dictionary" Julius Grant, published by the Blakiston Company in 1950, which is incorporated by reference herein. Since the time of publication of this book, there has been developed many new new plastic materials which are equally suitable for my box. My box can also be made from metal, wood, glass fibers bonded together by a suitable resin, etc.

My invention has important advantages which include formation of a core box by a combination of two or more dividers positioned over one another with their walls in alignment. Two such dividers require no other piece, frame or member to form the core box, and three such dividers comprise a core box with the same capacity as two conventional core boxes, but at substantially less cost and with a requirement for about 50% less storage space. Furthermore, the structure of my core box is stronger, more durable and more rugged and enjoys a greater service life than that of the known core boxes.

Also, some of the embodiments of my invention have a reversible feature wherein one divider is turned 180° about one horizontal axis disposed perpendicularly to the ridges and valleys thereof or about a second horizontal axis disposed parallel to the ridges and valleys. After such reversal, the core box has twice as many chambers and, in some cases, twice as many completely enclosed chambers and two such dividers form a complete box.

Additionally, the core box lends itself to low cost manufacture, namely, production of a single divider which is usable in one of two reversible positions with one or more additional identical dividers to form a core box composed of the two or more dividers and without requirement for an additional frame, member, part, etc.

While I have described the present preferred embodiments of my invention, it may be otherwise embodied within the scope of the following claims.

I claim:

1. A storage box comprising at least three dividers, each divider having end and side walls forming a polygon, a continuous rigid separator within the polygon and connected to said walls, said separator being corrugated with ridges and valleys on the top and undersides thereof each of said ridges and said valleys running for substantially the extent of said separator, said valleys being adapted to hold articles to be stored, each end of each of said valleys being closed for the depth thereof by said walls, said ridges being adapted to separate articles in said valleys, the top surface of each ridge for the length thereof being disposed in the same plane as the top and underside surfaces of said walls which close the ends of said valleys, said dividers being diposed over one another with the walls thereof substantially in alignment, the valleys in the underside of one divider being positioned over the valleys in the top side of another divider and the ridges and the top and bottom surfaces of said dividers meeting in abutting engagement to form a plurality of completely closed chambers, said first, second and third dividers forming said box.

2. A box according to claim 1 including locking means to hold the dividers together as a unit.

3. A box according to claim 1 wherein the chambers between the first and second dividers are a different size than the chambers between the second and third dividers,

4. The storage box of claim 1 characterized by the top surface of each ridge for the length thereof being substantially flat.

5. The storage box of claim 1 characterized by in the plane of the top surfaces of each ridge, the width of each of said ridges throughout its length being greater than the width of the opening of each valley into said plane of the top surface of each ridge.

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