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(54) **METHOD FOR TREATING SEPTIC TANK EFFLUENT**

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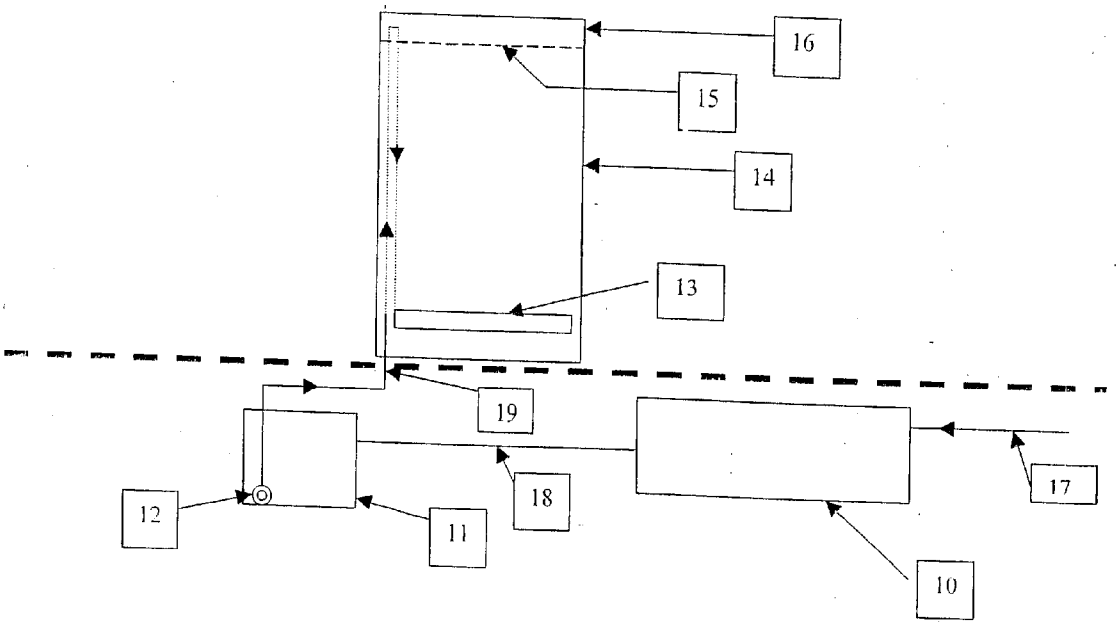
(57) **ABSTRACT**

A method for treating the liquid effluent from a septic tank is disclosed, as is apparatus in which the method can be practiced. The method involves pumping the effluent to the bottom of a treatment vessel packed with pebbles, glass beads or the like to fill the vessel to a predetermined level, and then pumping additional effluent to the bottom to cause a non-turbulent, upward movement of the effluent in the vessel. Treated effluent is withdrawn from the upper portion of the vessel at substantially the rate at which the effluent is pumped to the bottom of the vessel, which is sufficiently low that the treated effluent withdrawn from the upper portion of the vessel is substantially devoid of organic material. The withdrawn effluent is pasteurized. A structure in which a desired joint pattern is achieved by using each of two different blocks in two different relative rotational positions is also disclosed.



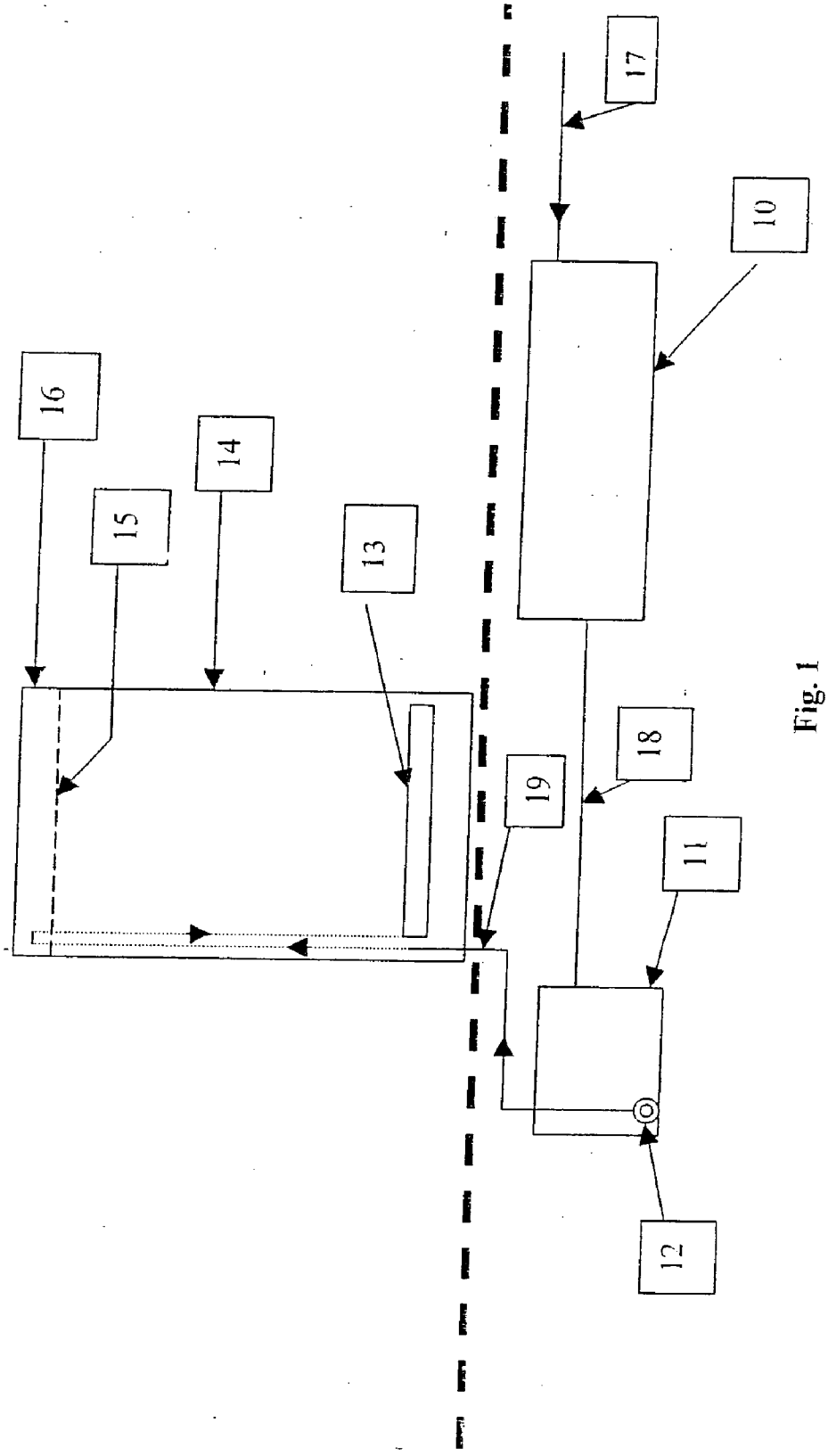


Fig. 1

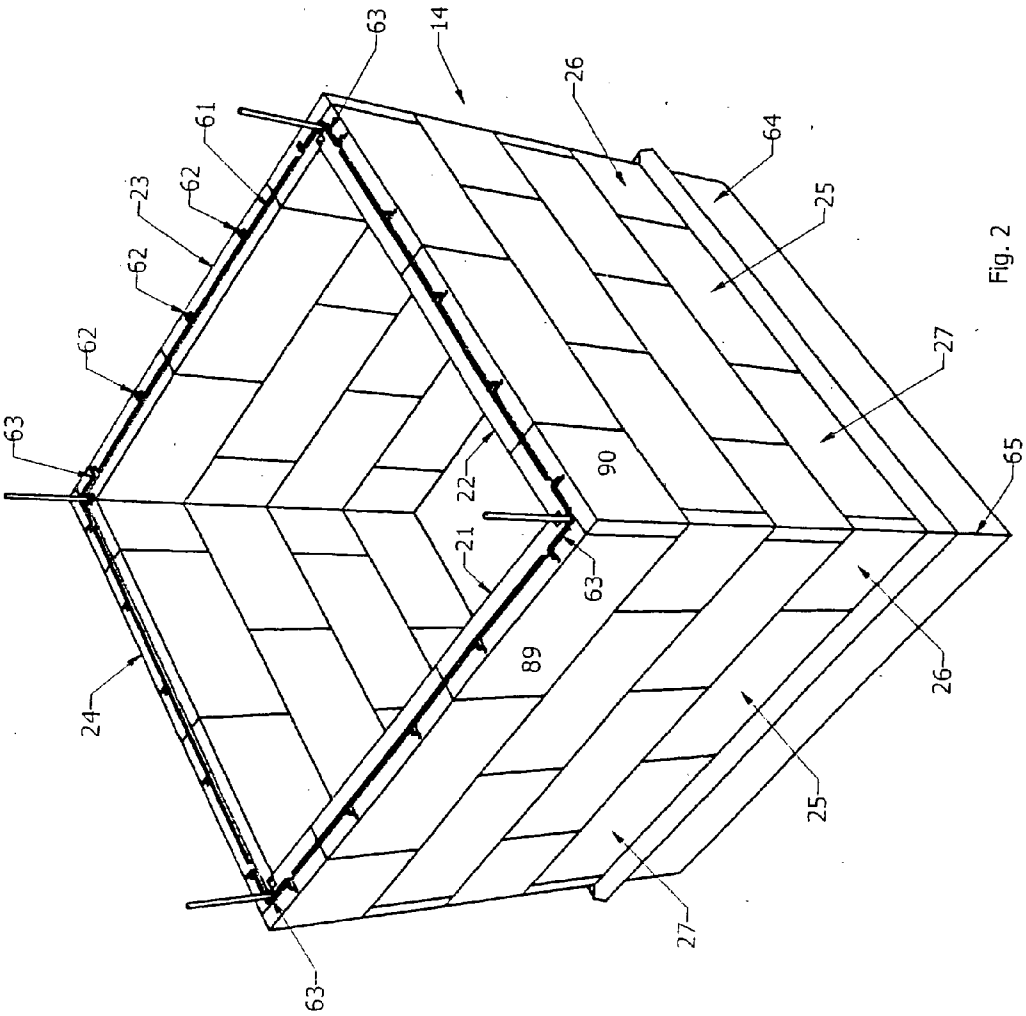
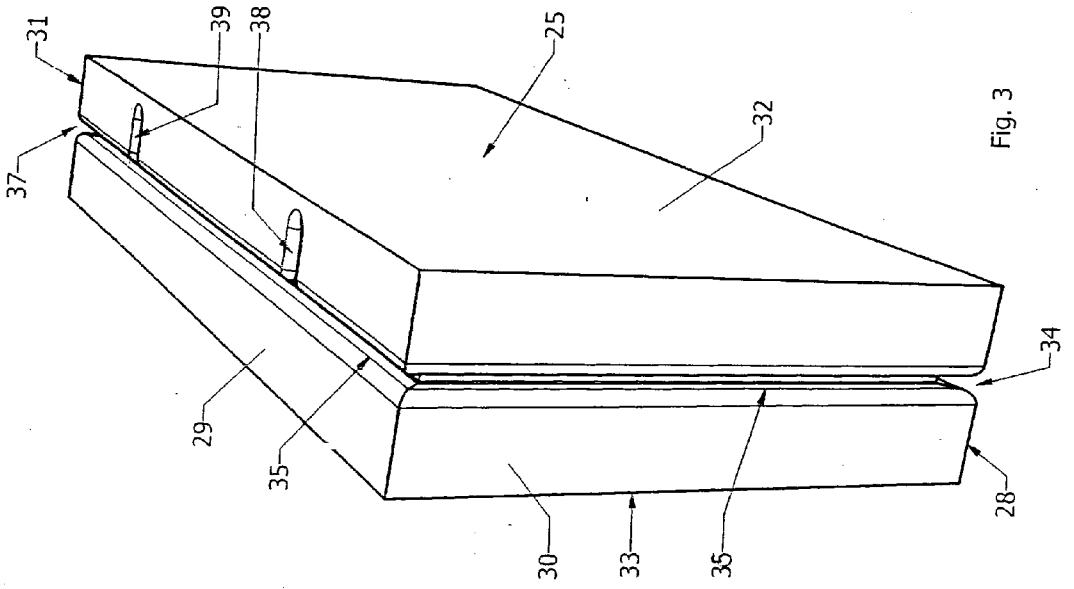


Fig. 2



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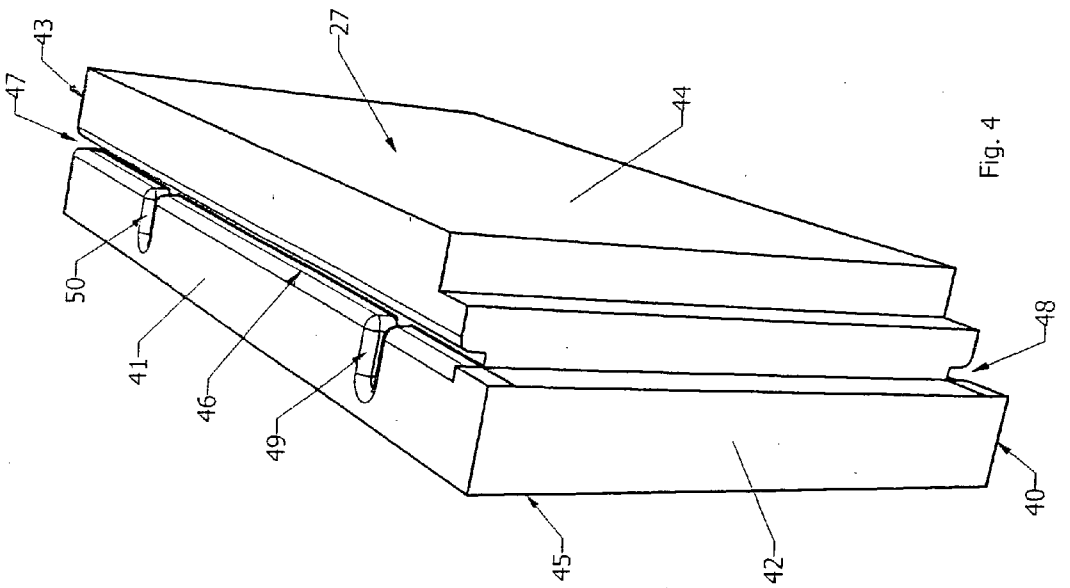

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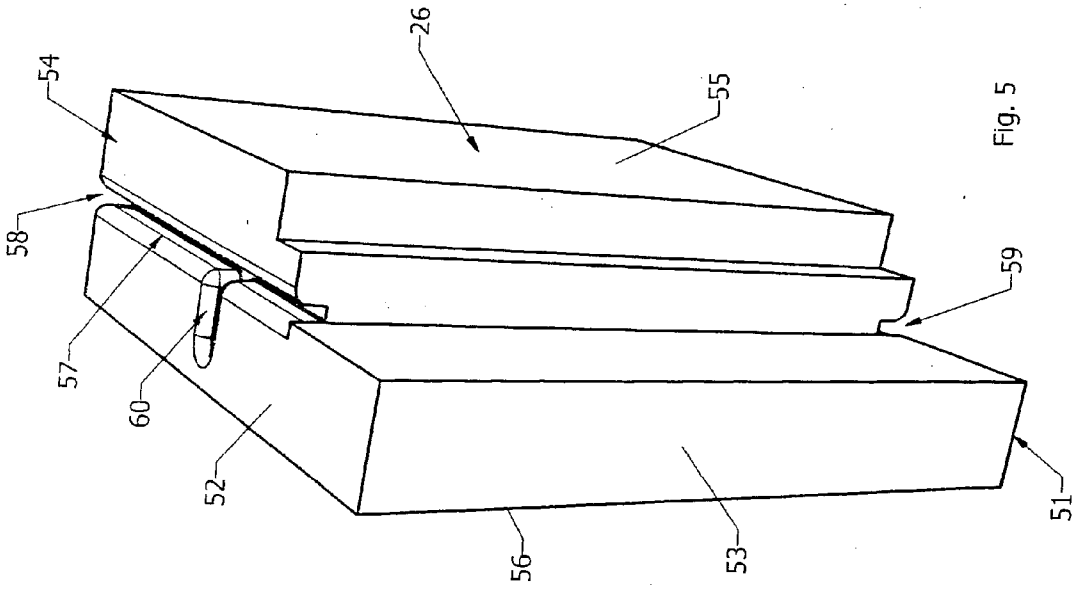

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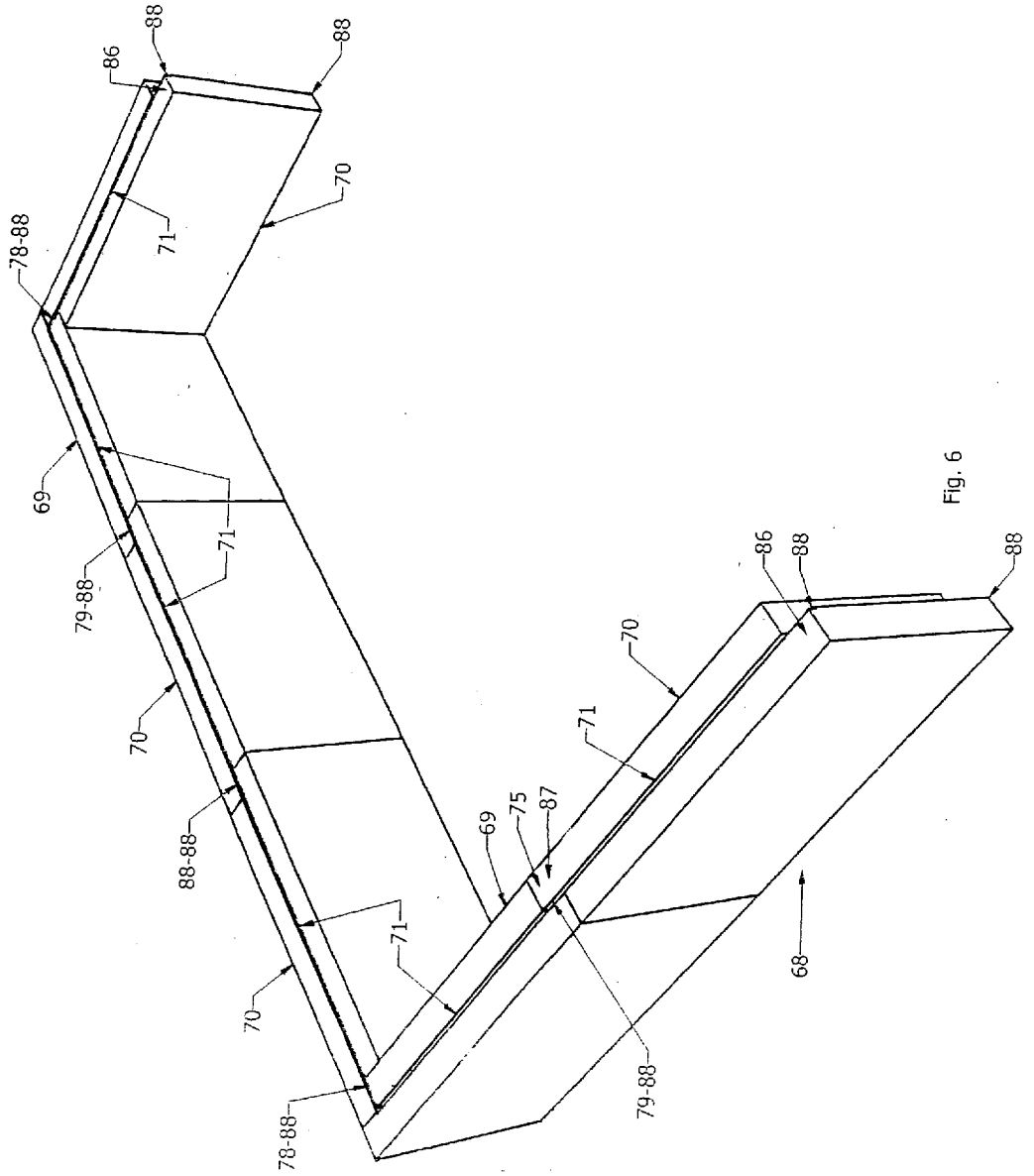
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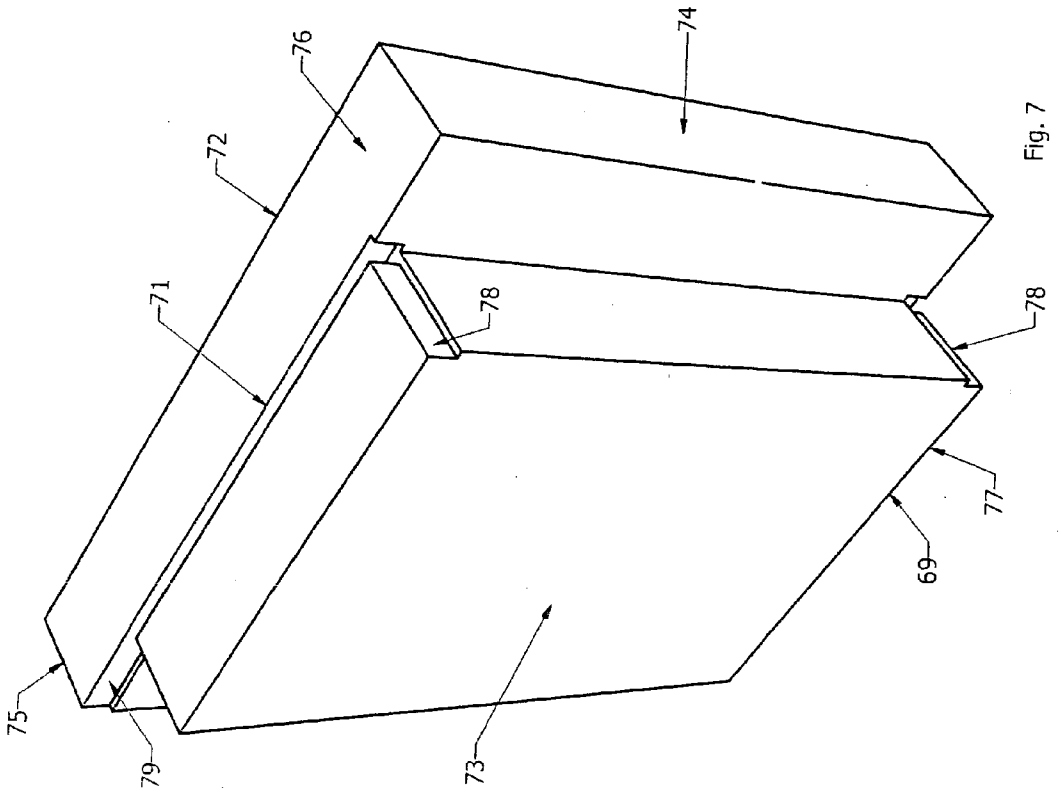
Fig. 6



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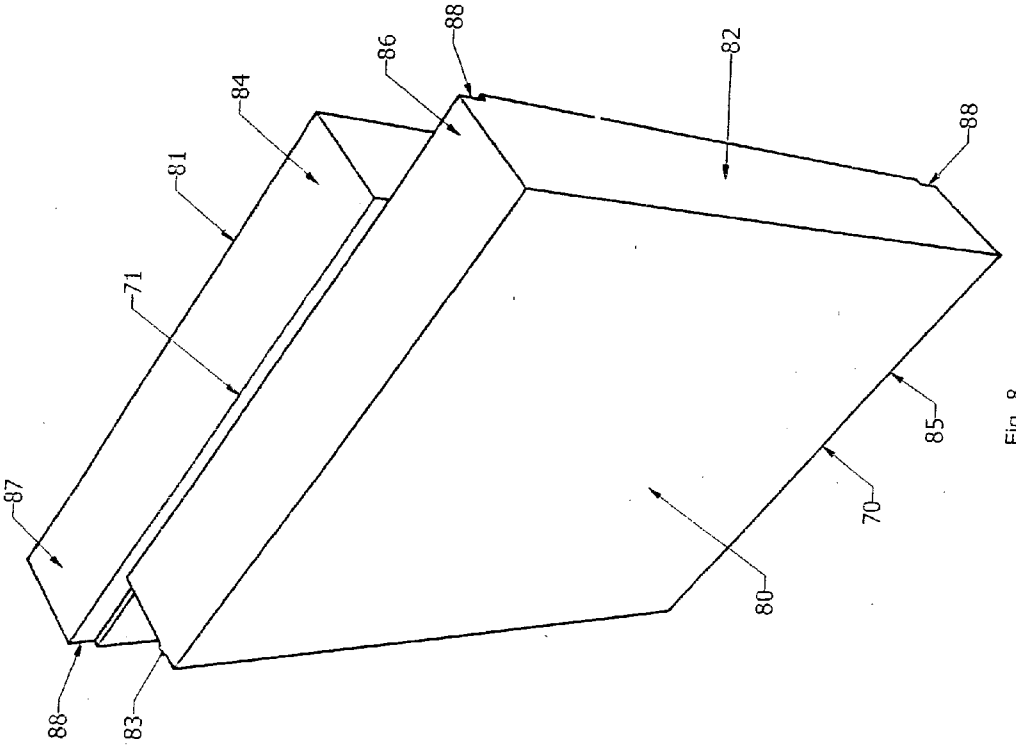

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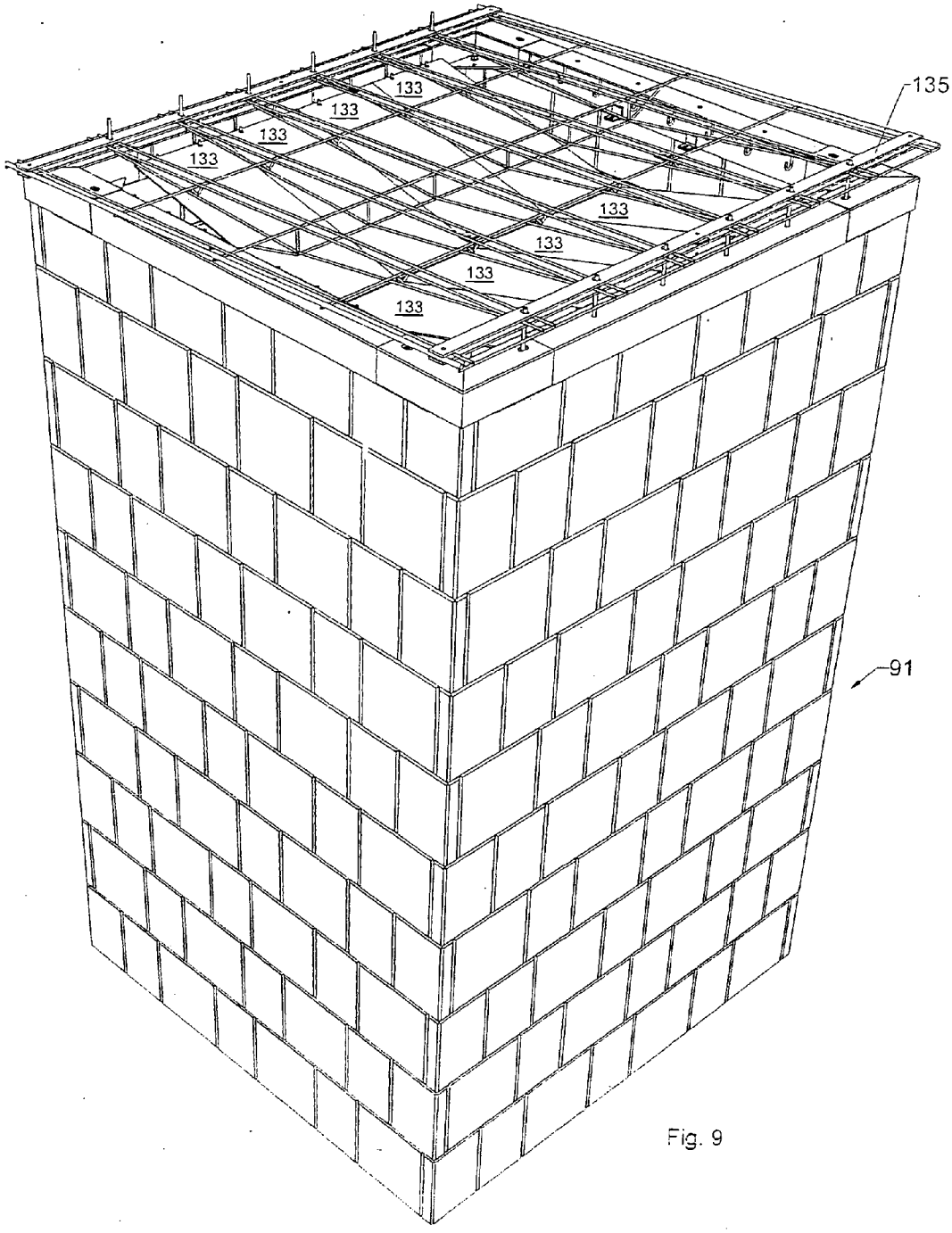

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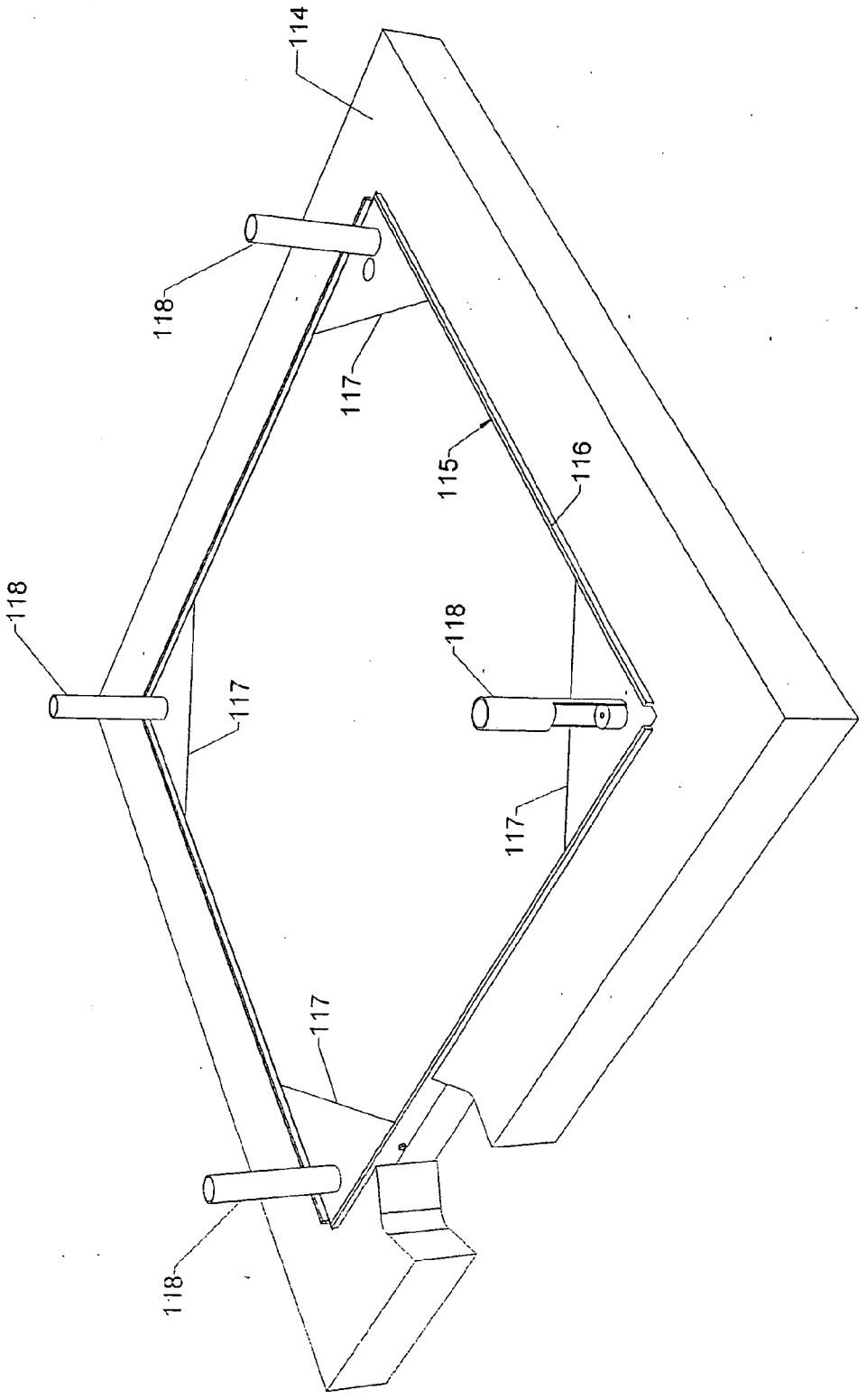

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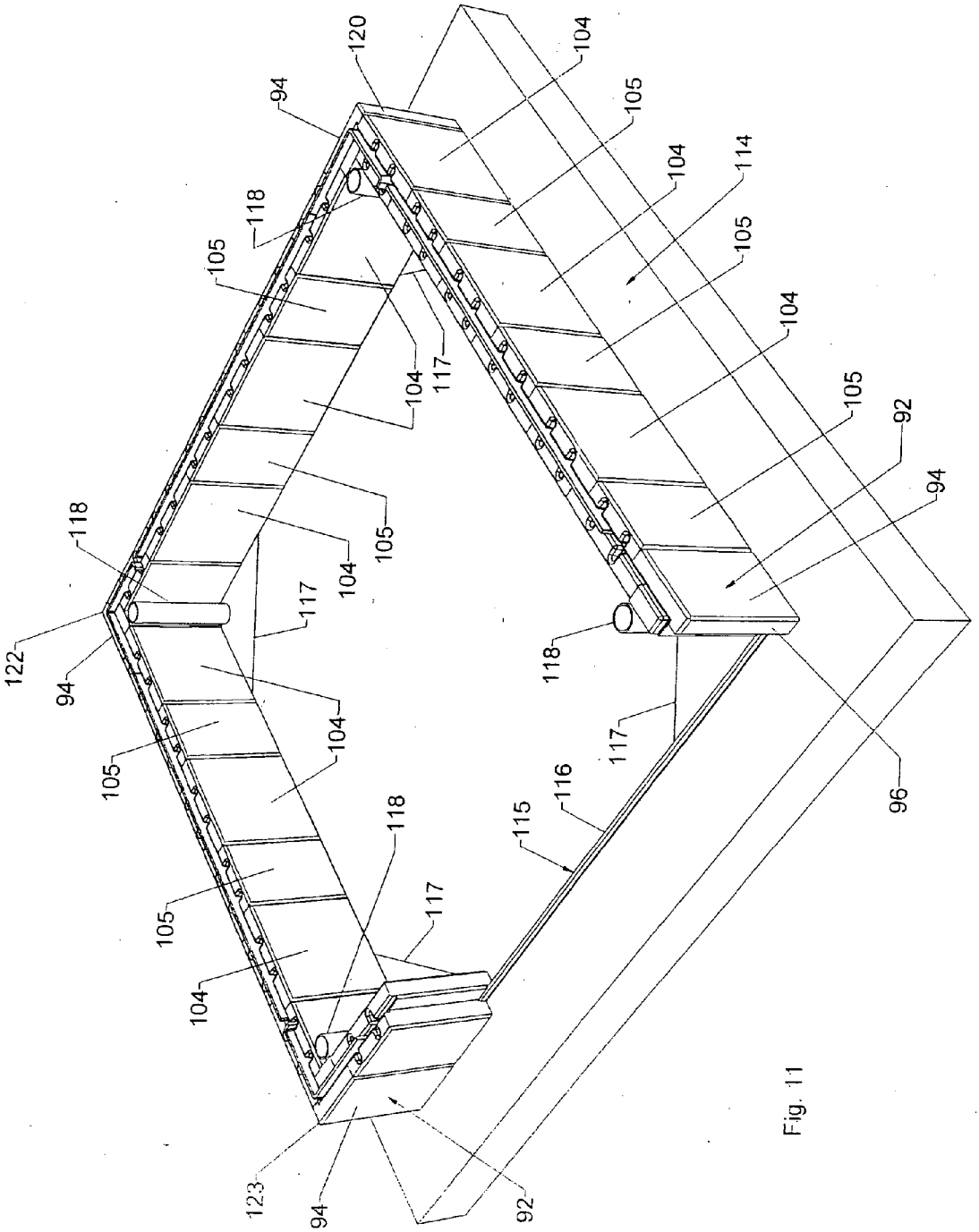
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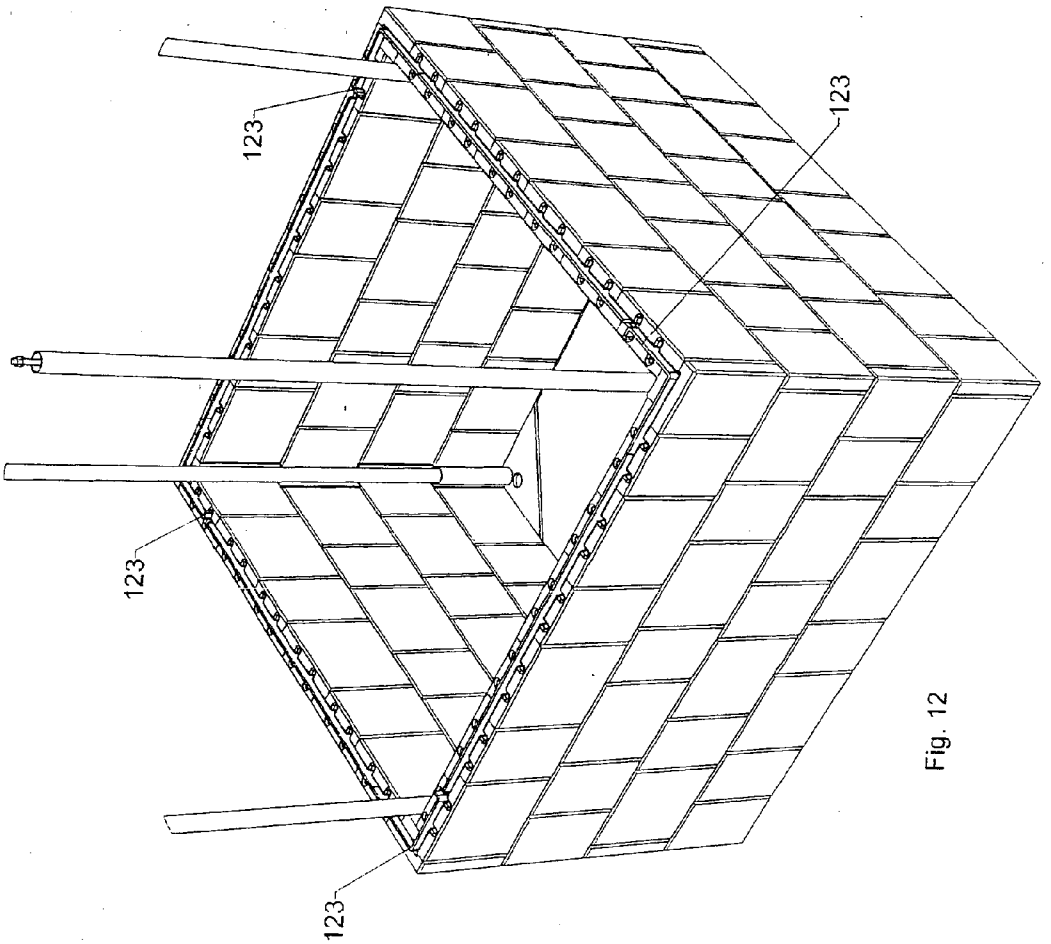
Fig. 11



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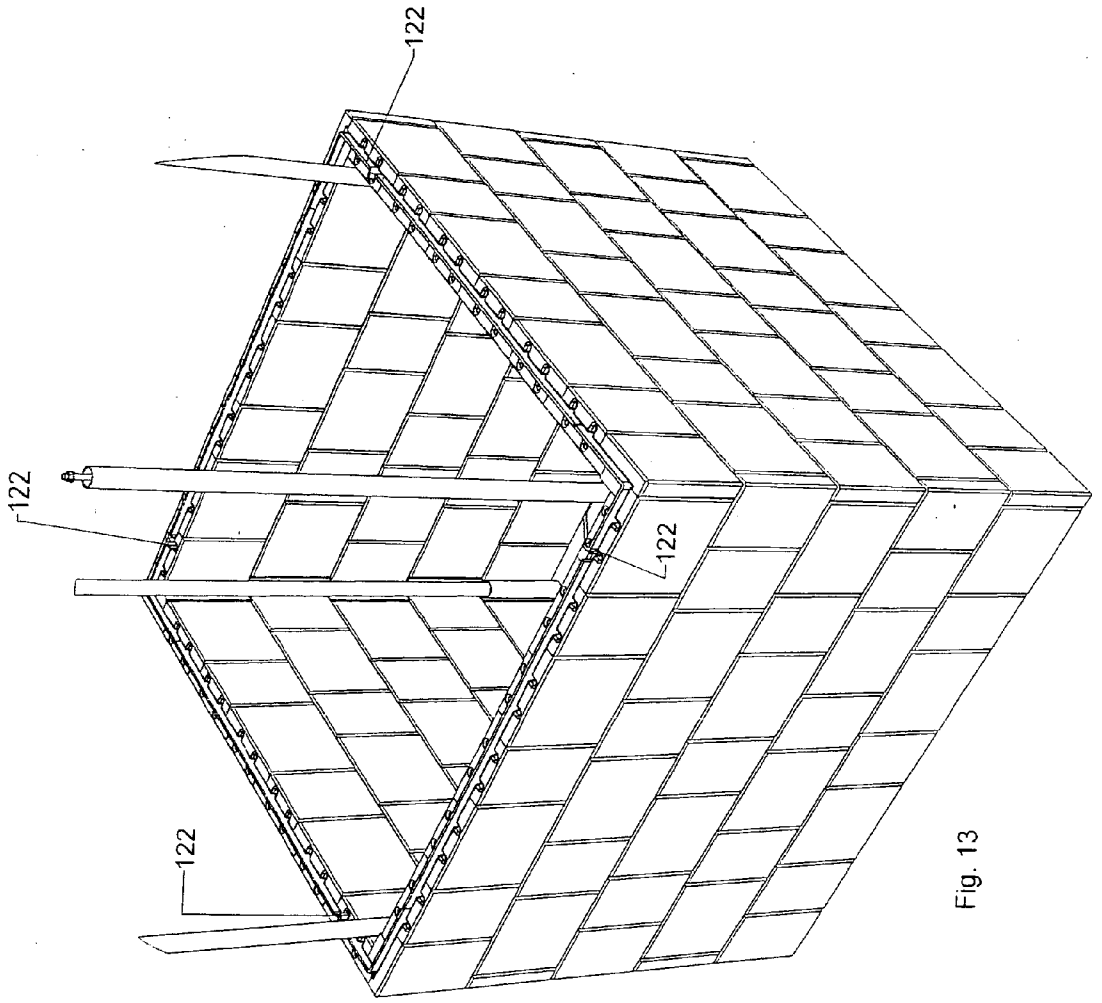

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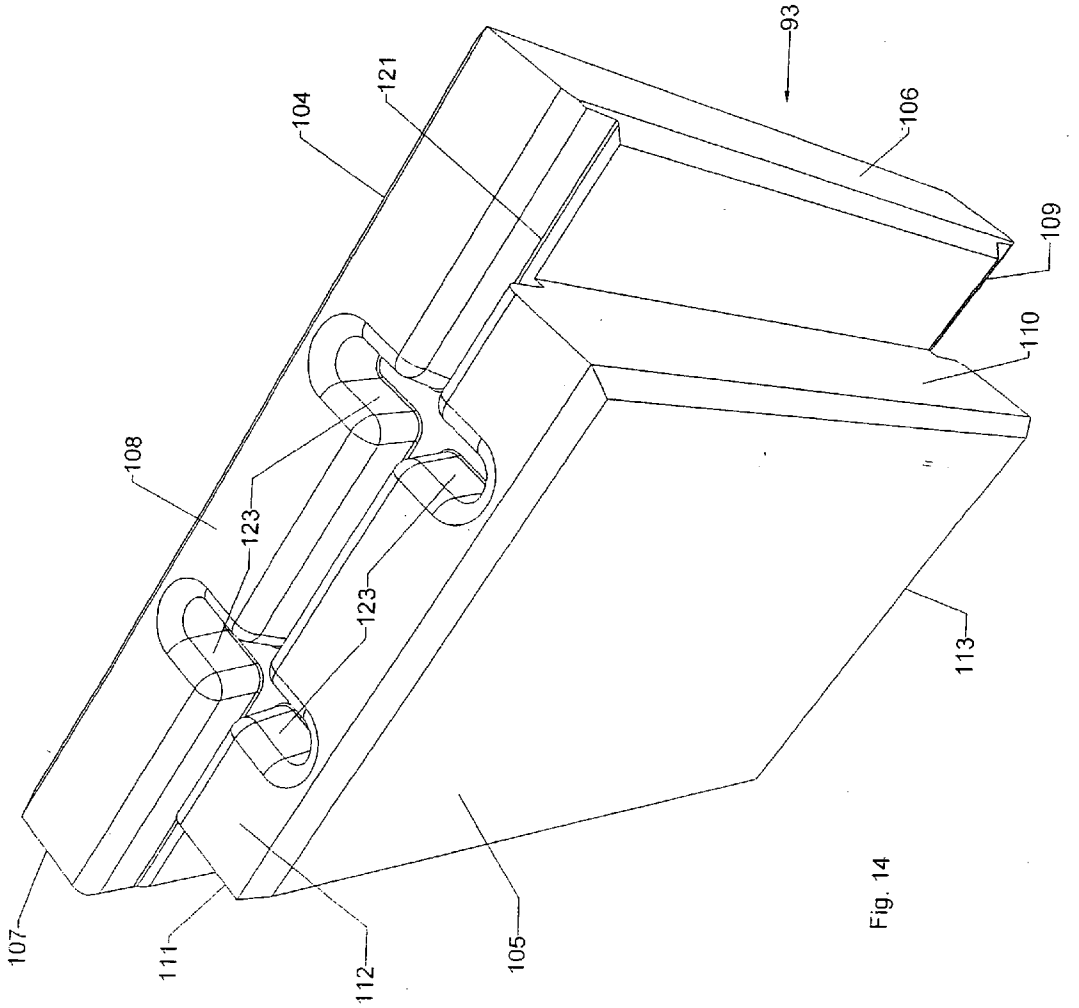
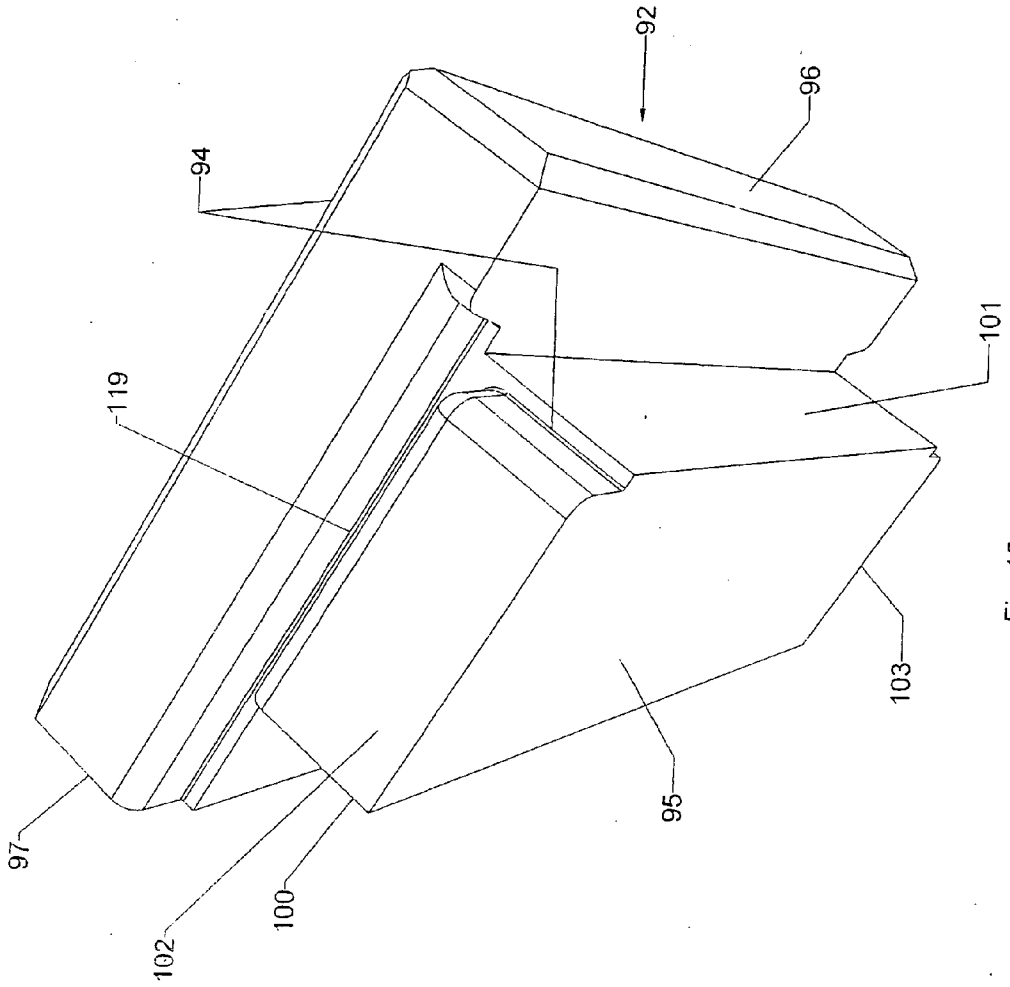


Fig. 14



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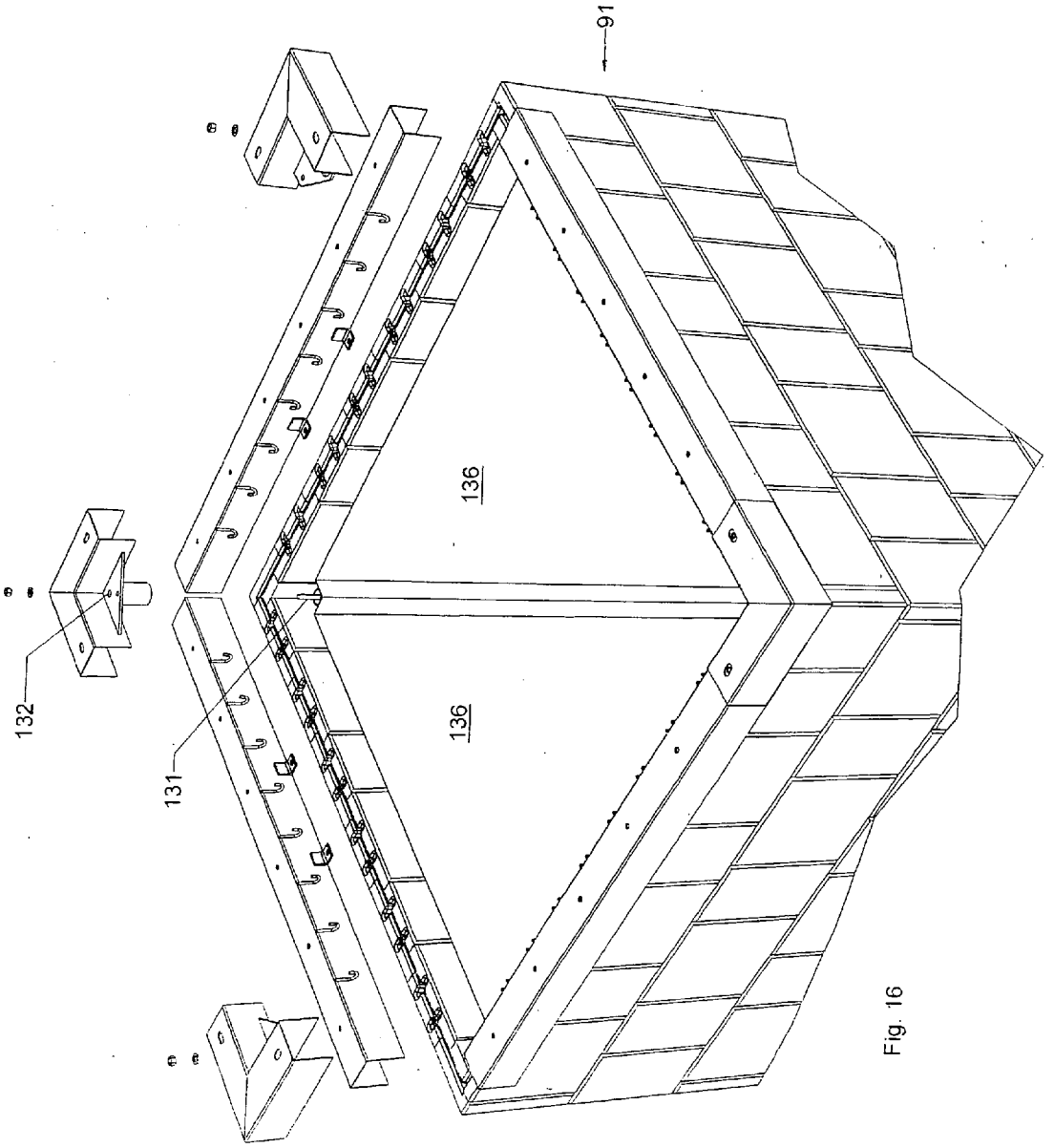

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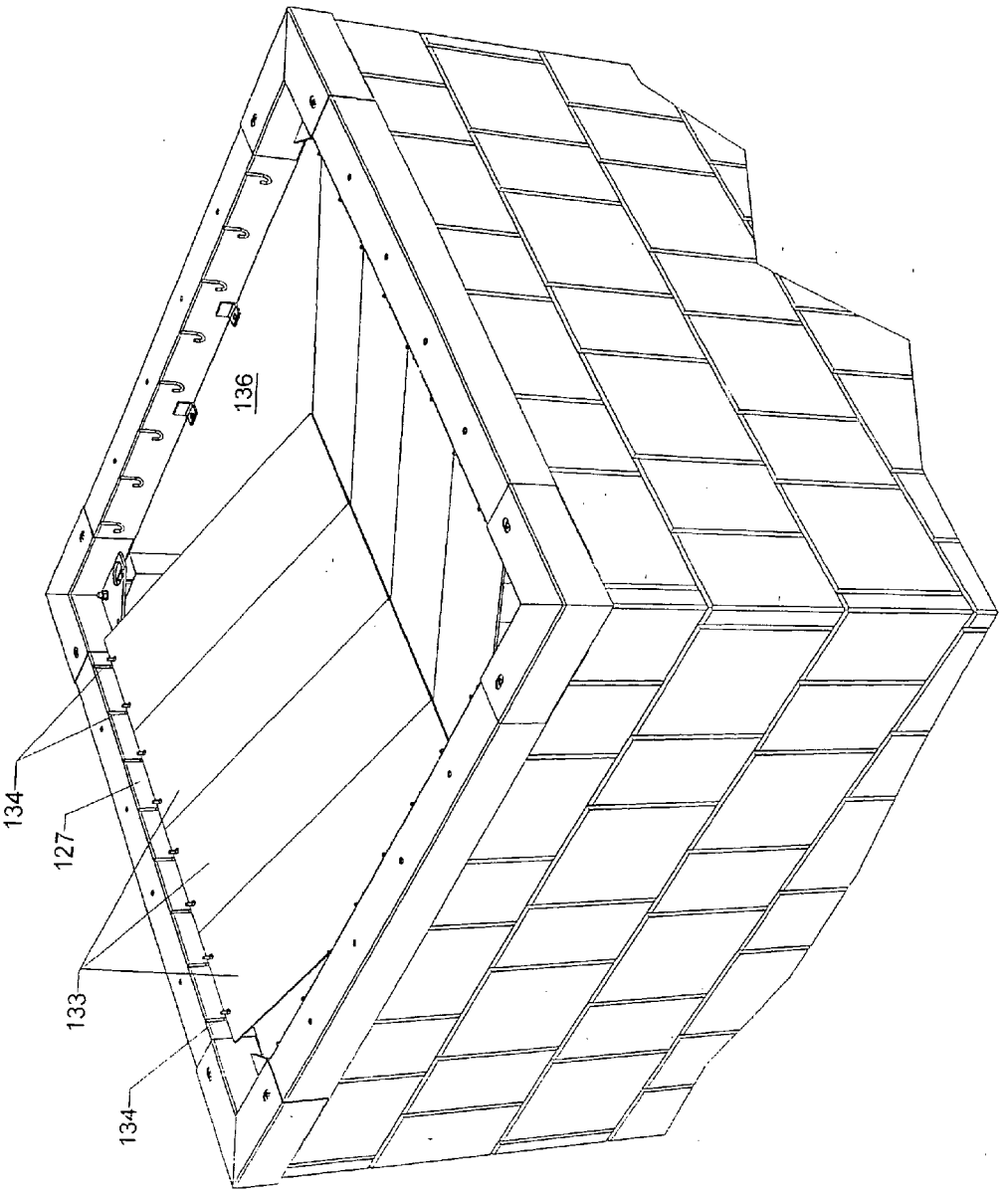

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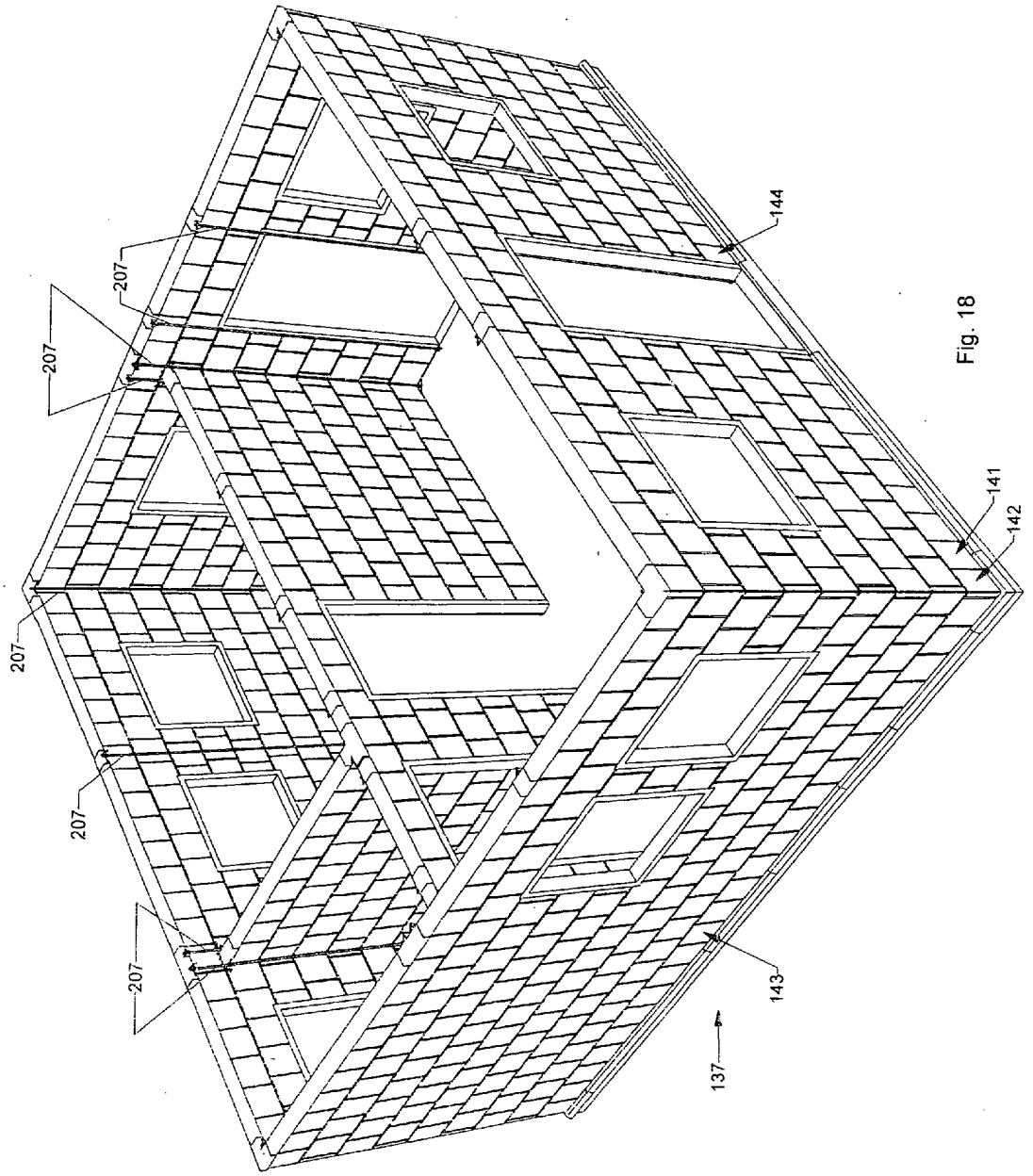

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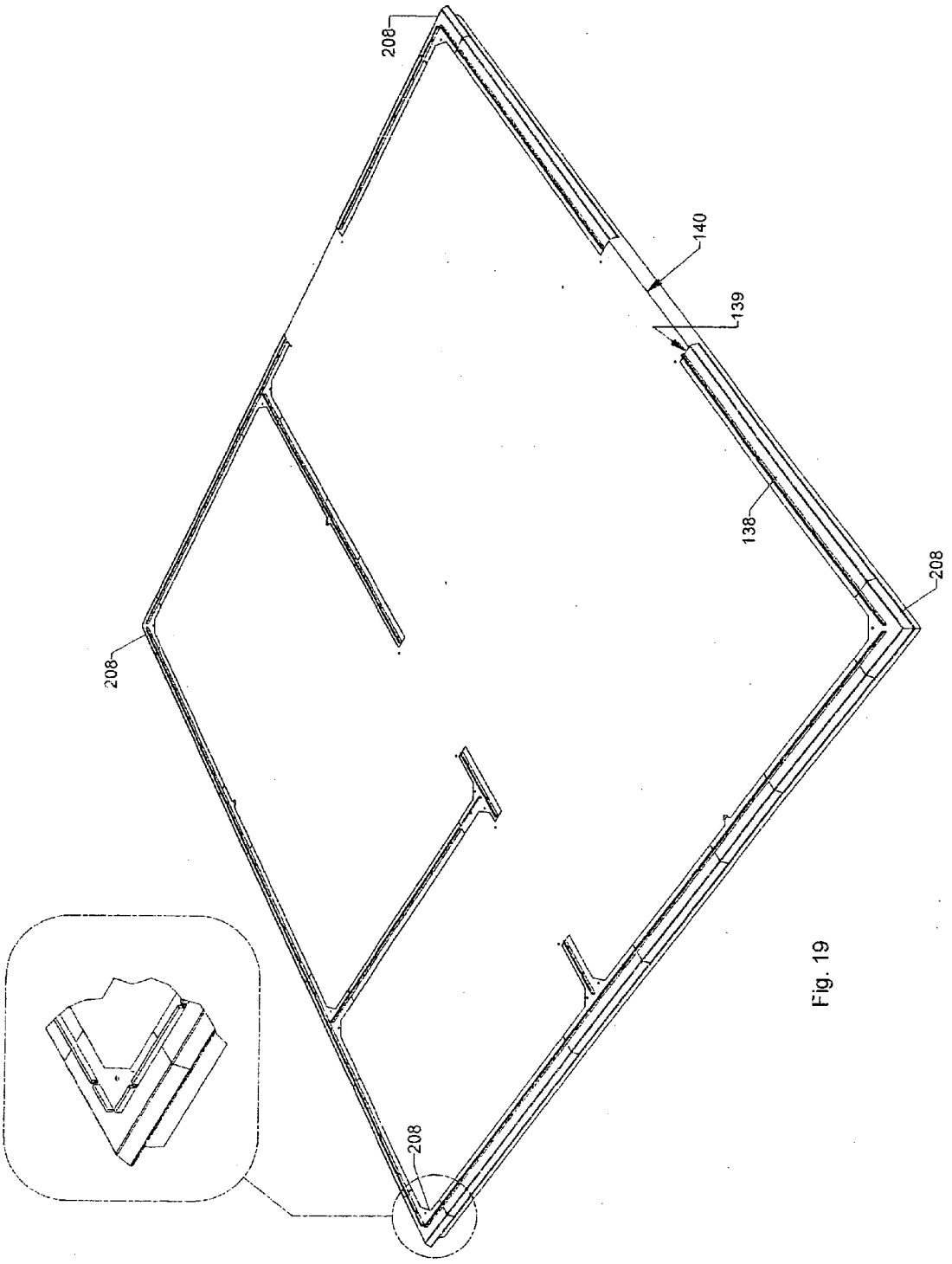

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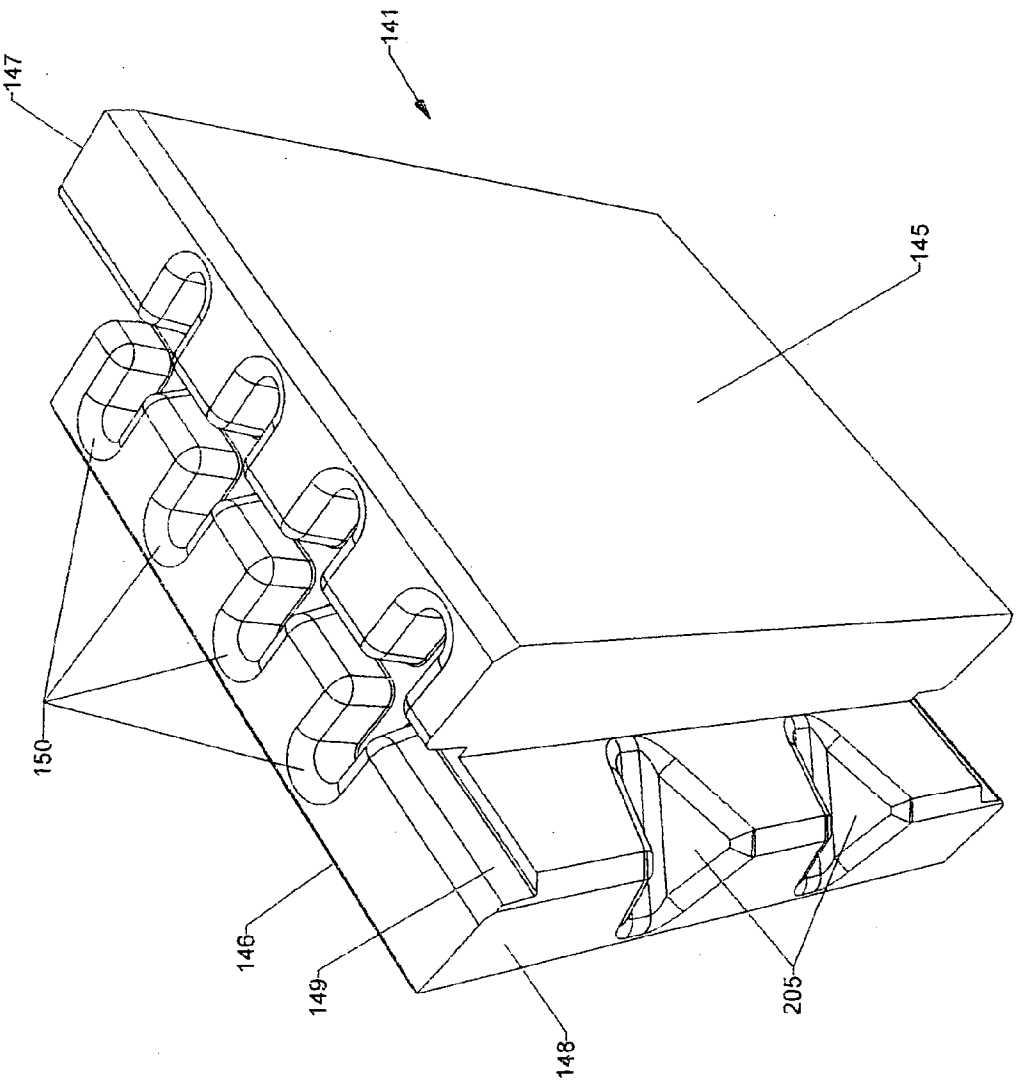

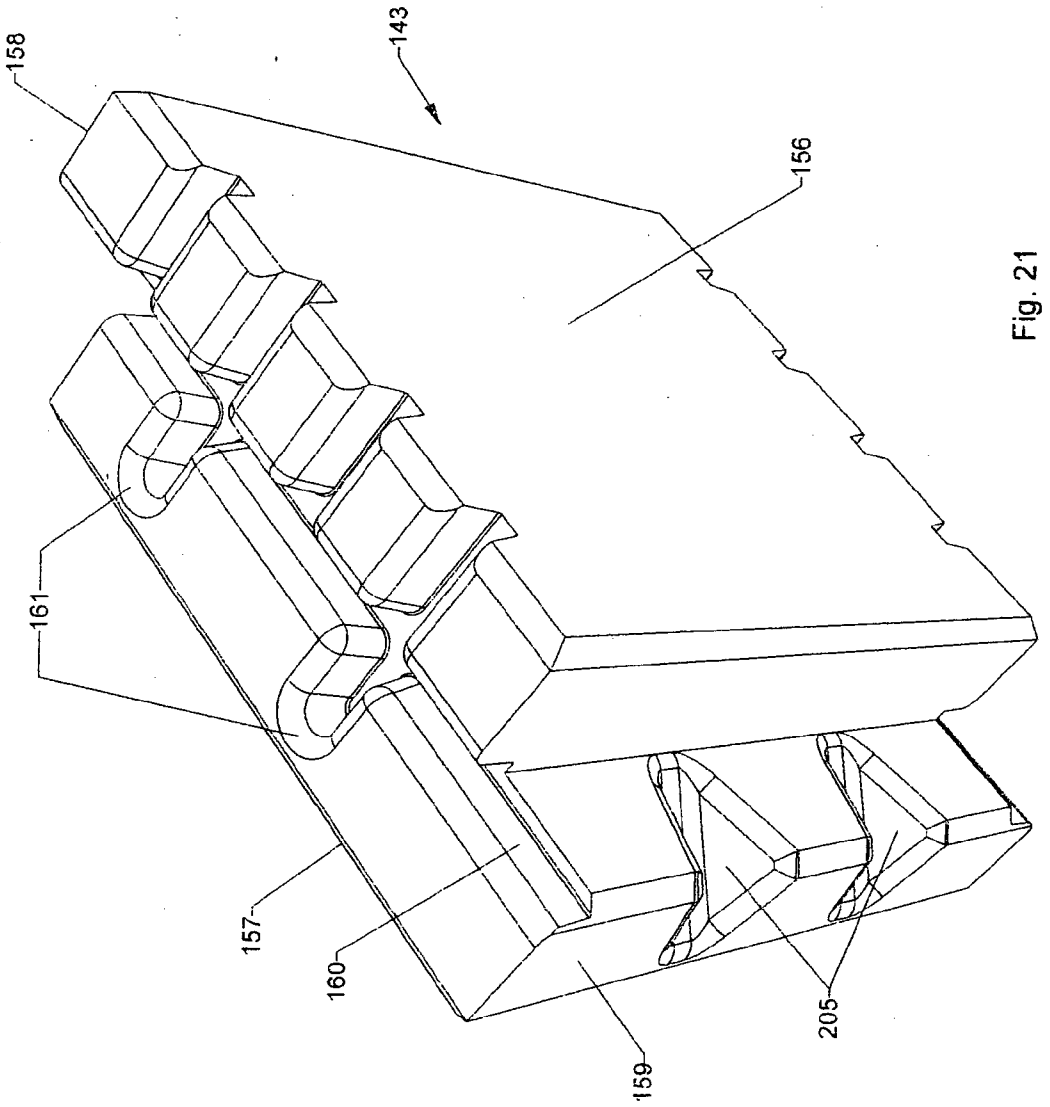

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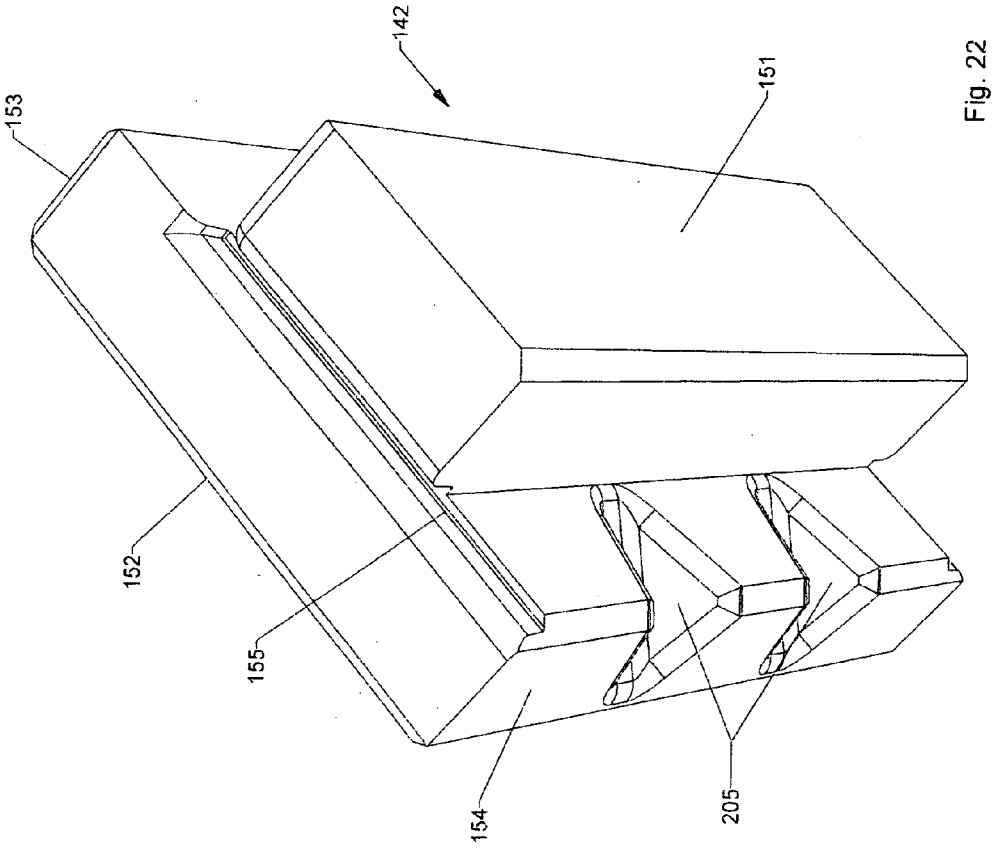

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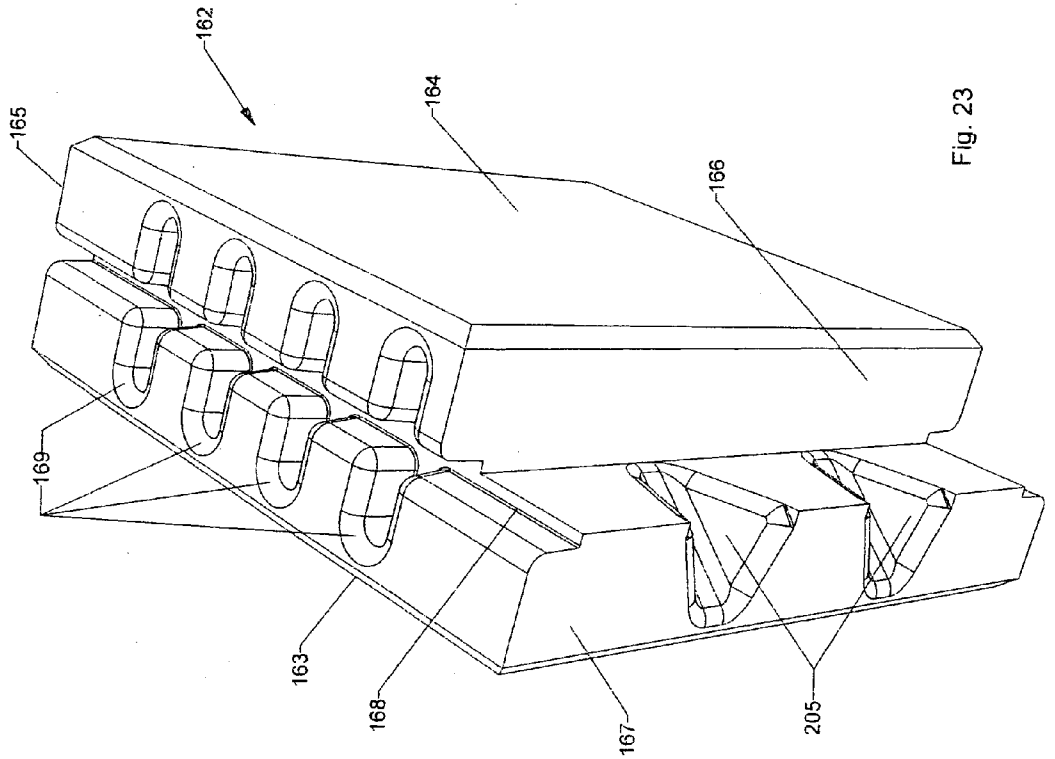

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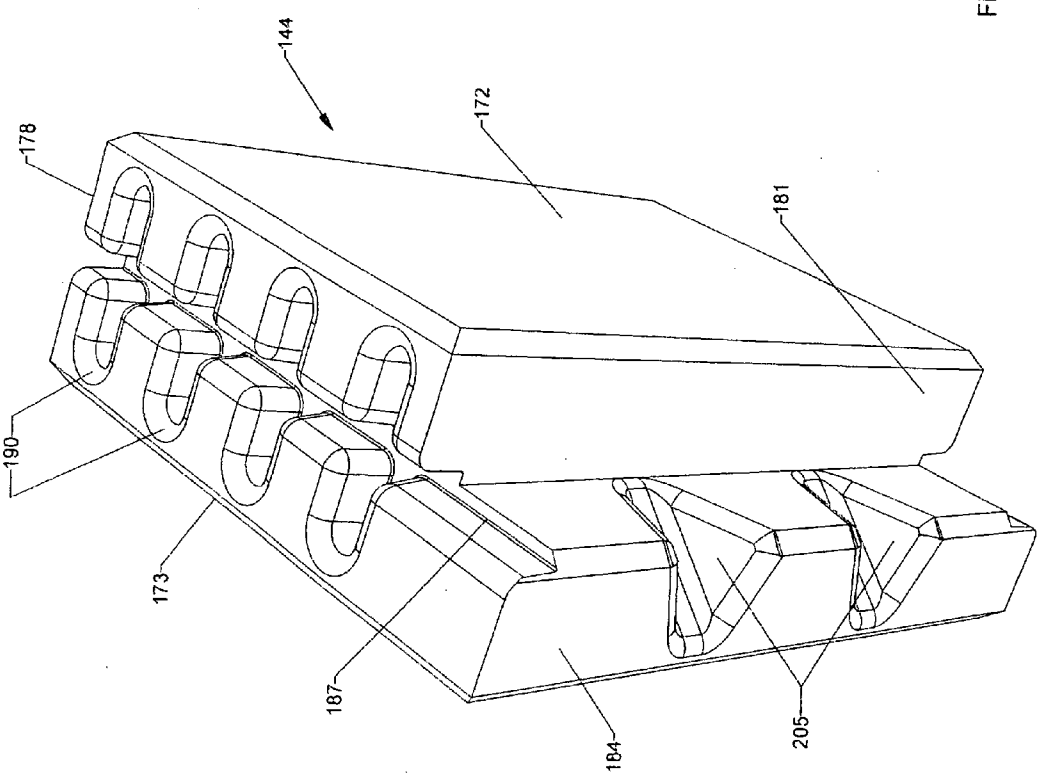

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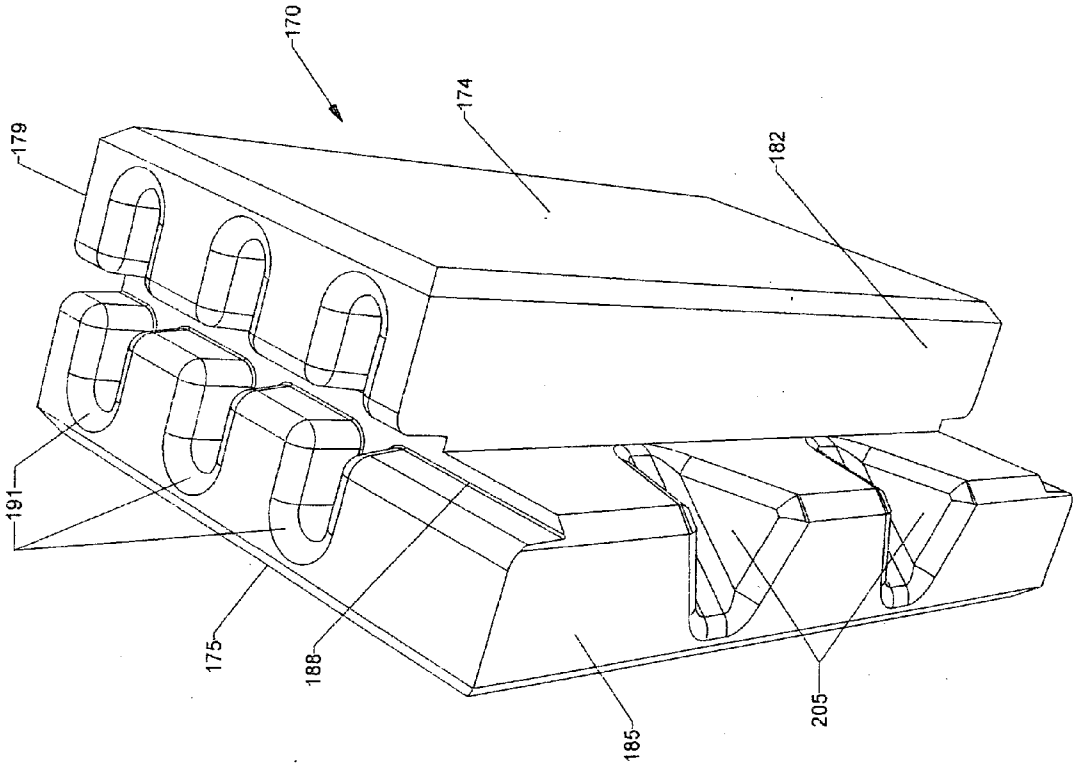

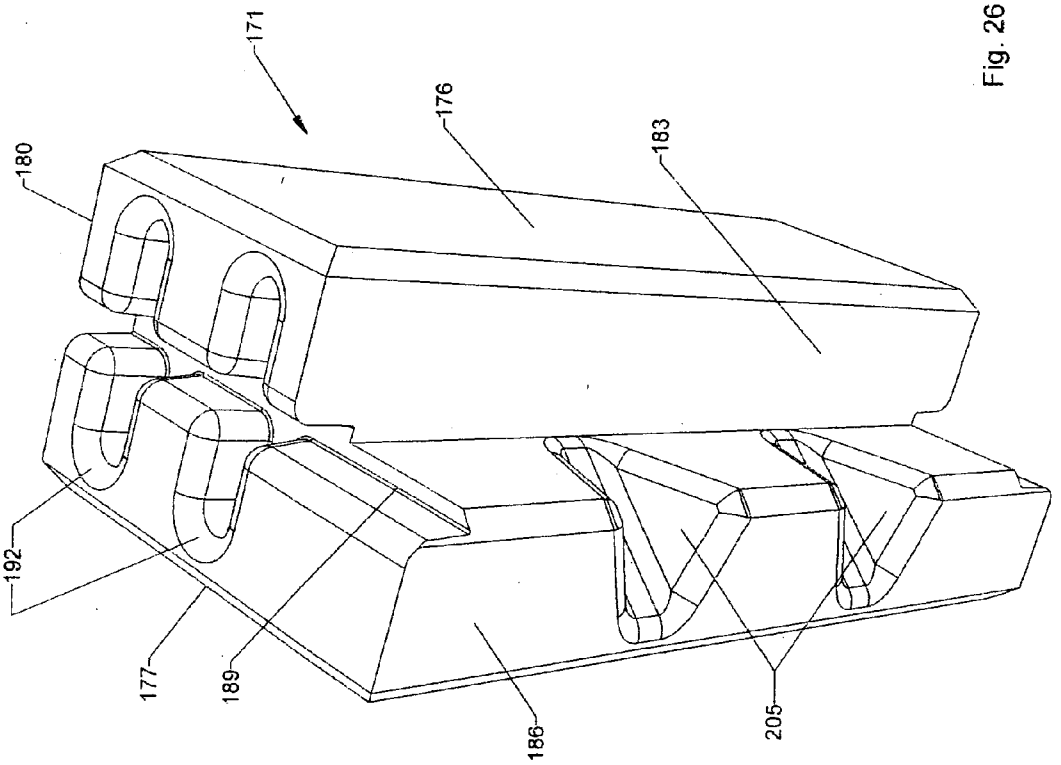

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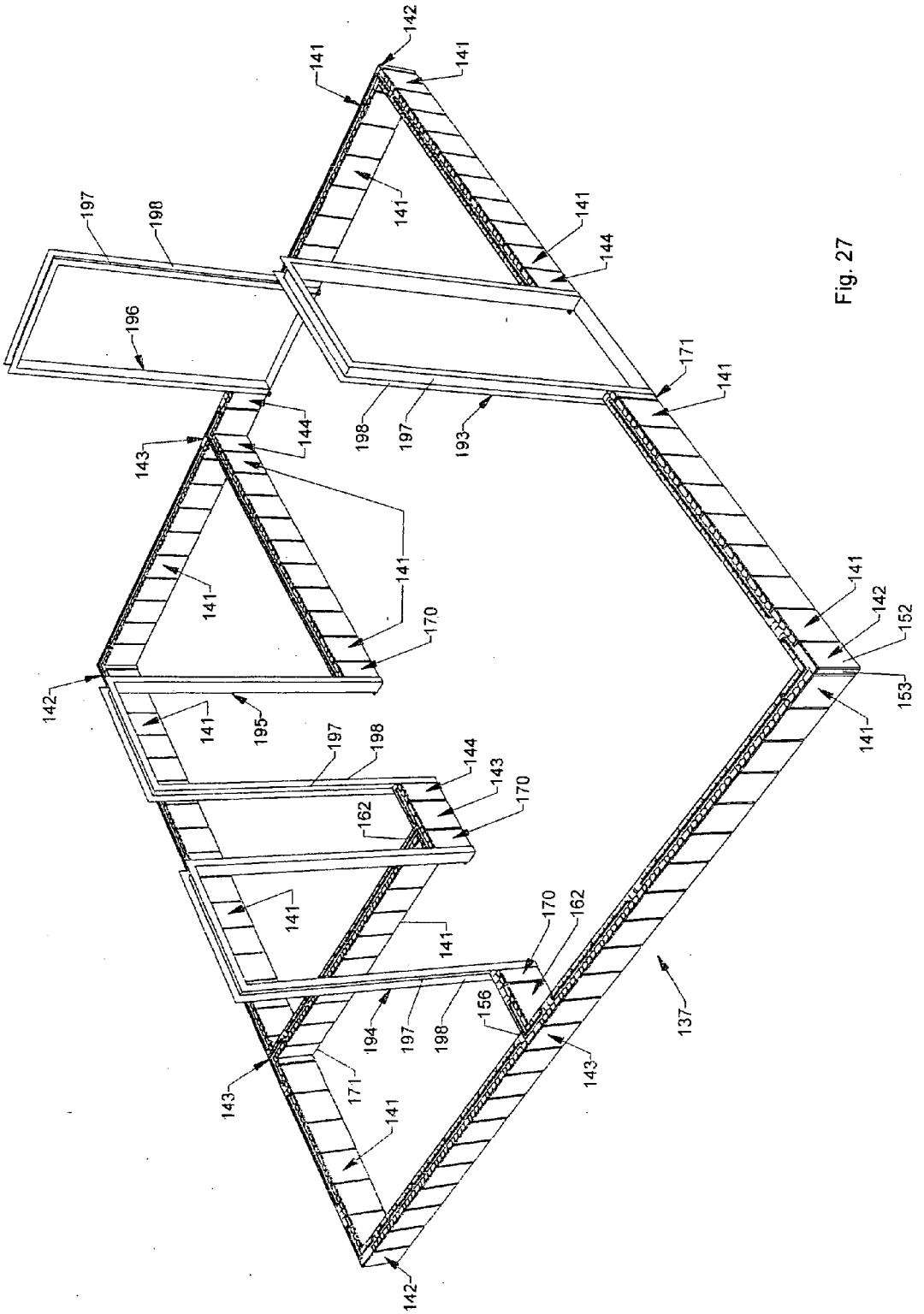
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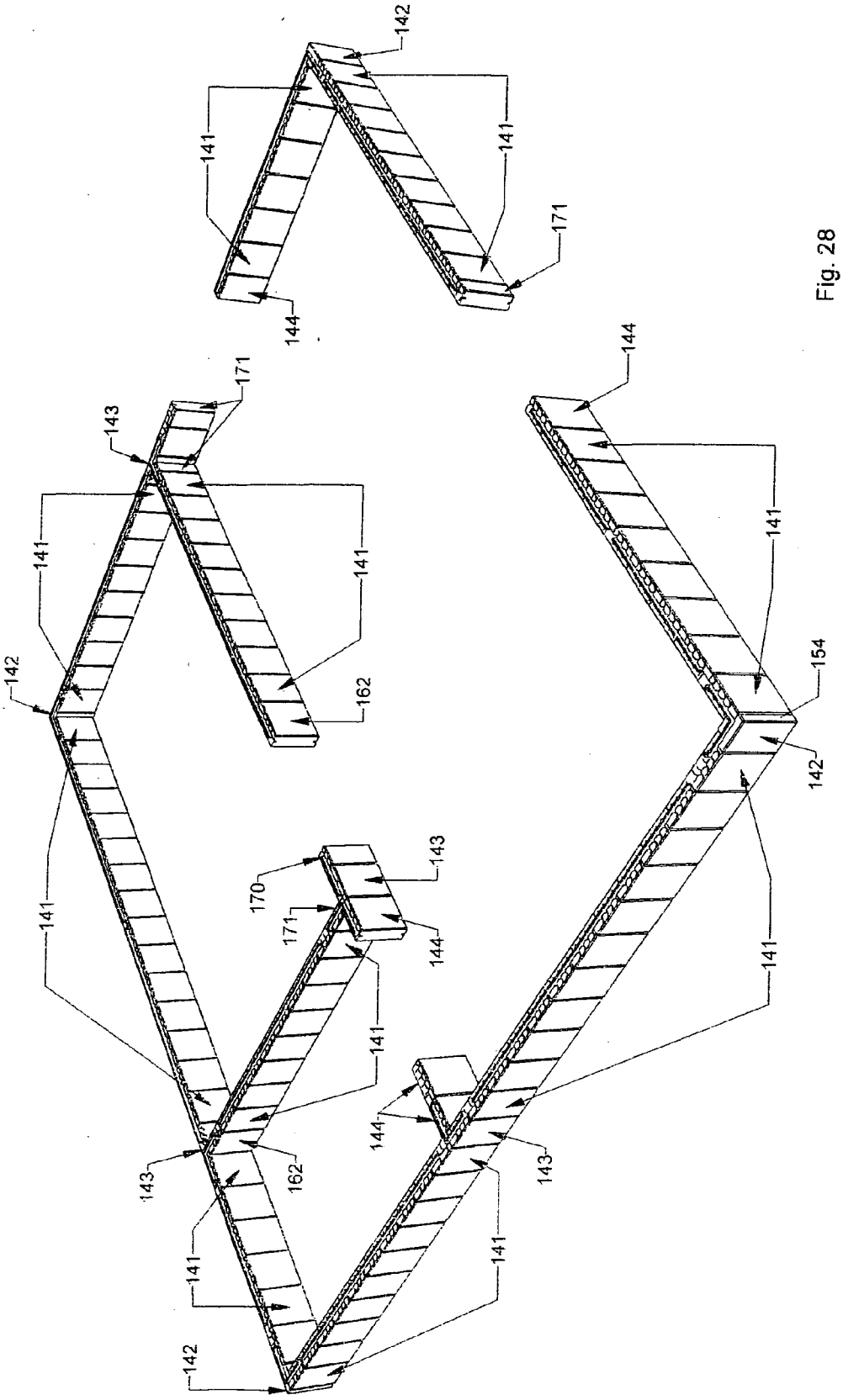
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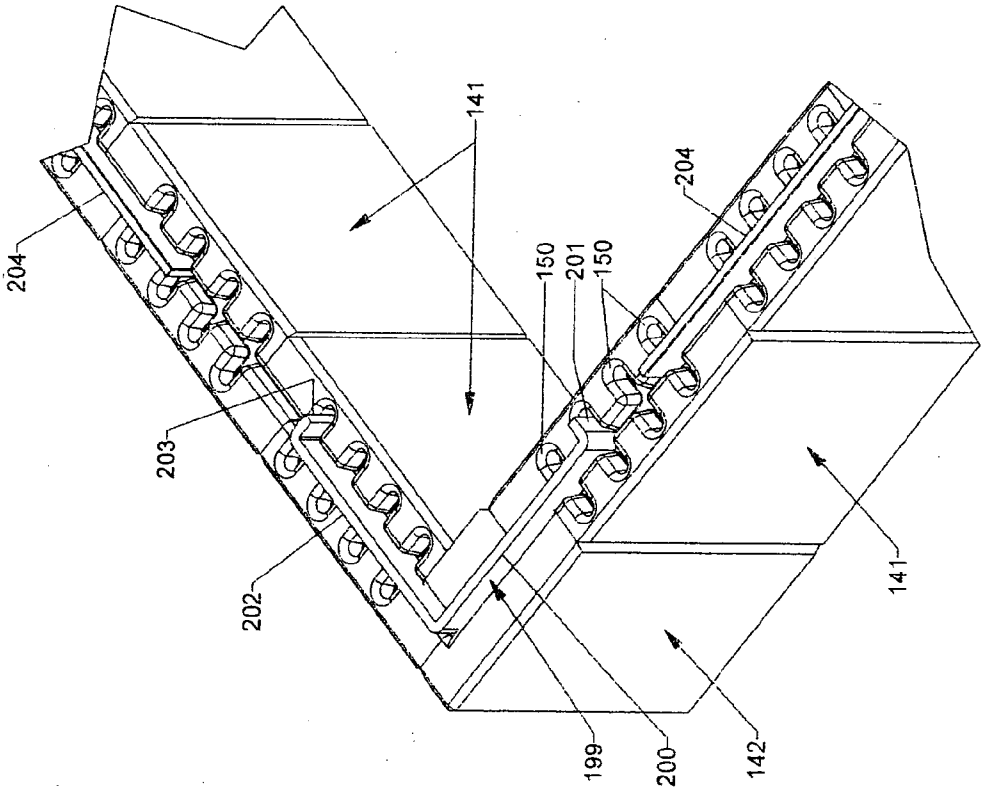
Fig. 28



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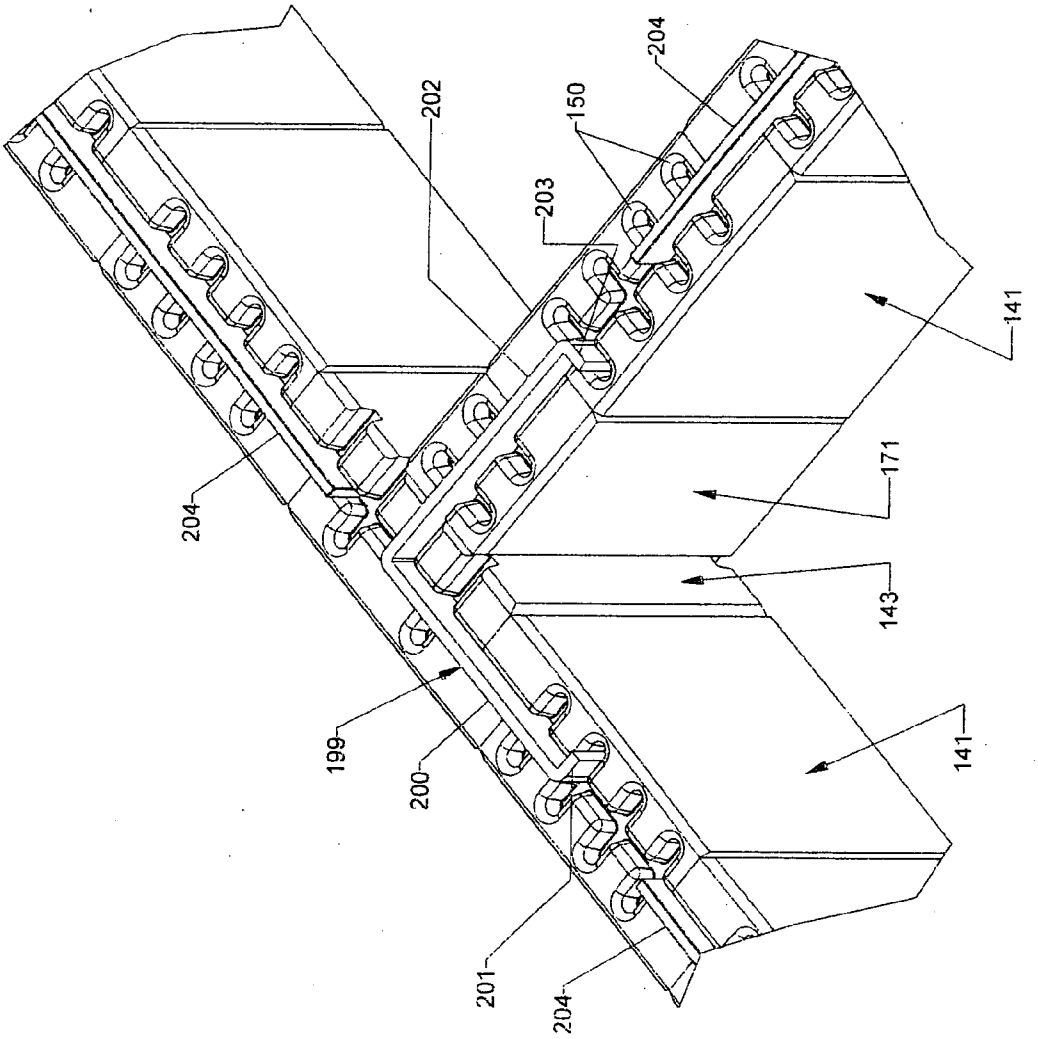

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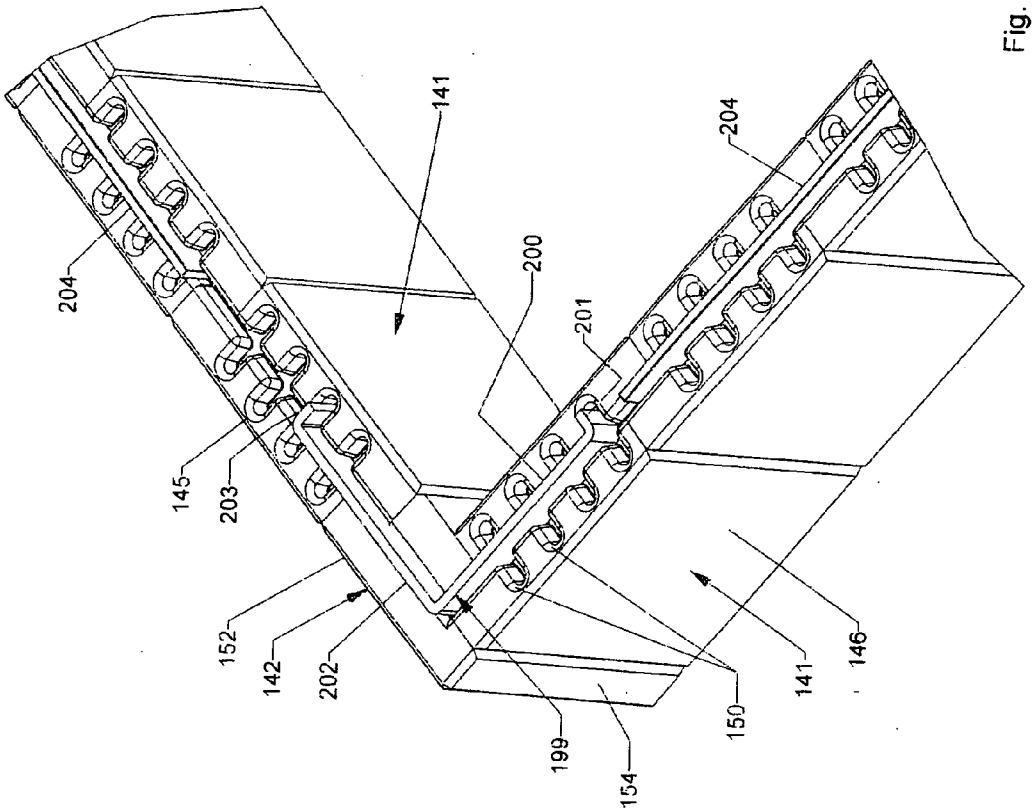

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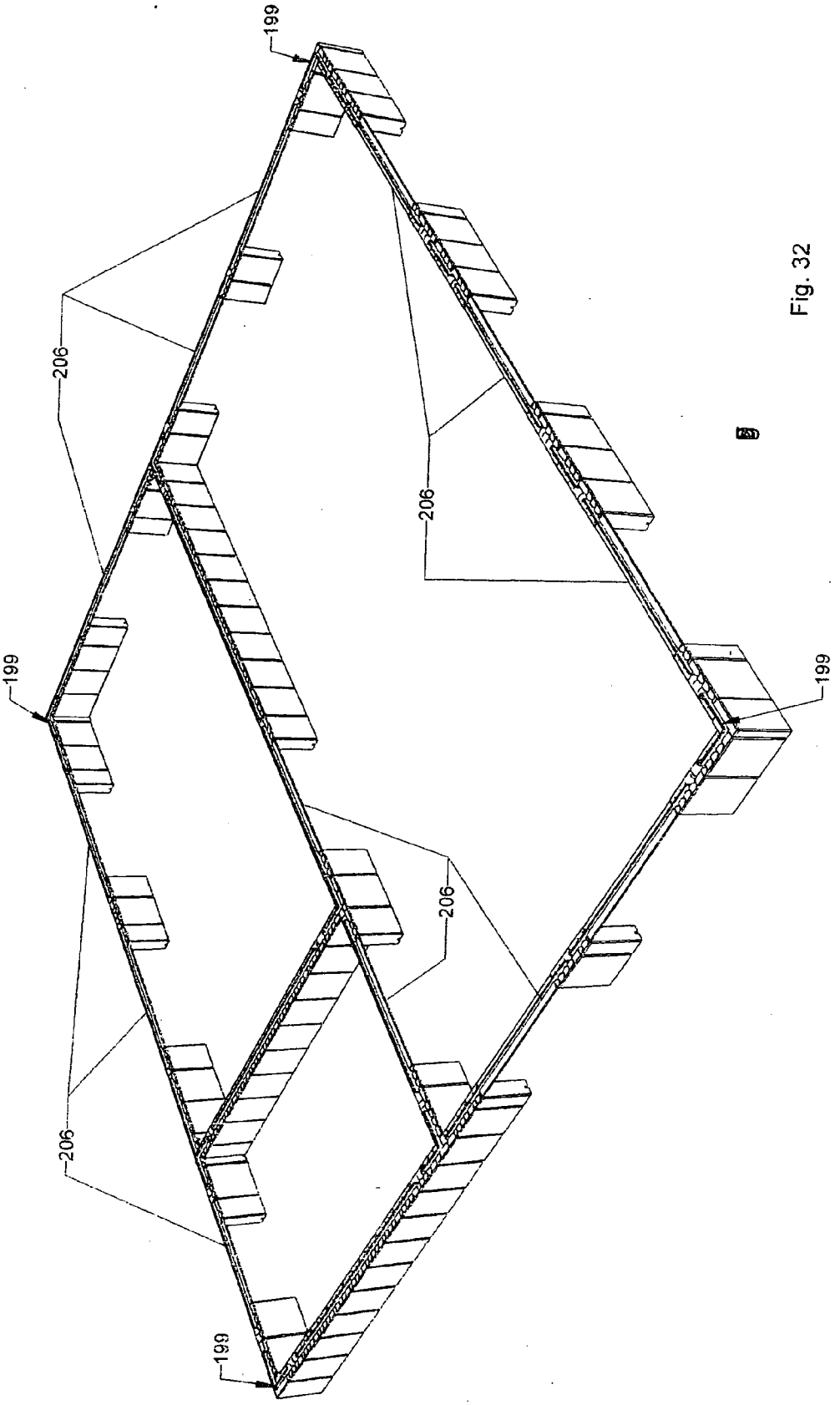

Fig. 32

METHOD FOR TREATING SEPTIC TANK EFFLUENT

FIELD OF THE INVENTION

[0001] This invention is a method for treating septic tank effluent and, more particularly, is such a method in which the effluent is treated to eliminate organic materials and nutrients therefrom before it is discharged to the environment. Preferably, the treated effluent is pasteurized, and the pasteurized material is then discharged to the environment as either a liquid or a vapor which, in either case, is not a health hazard. The invention is also a structure in which the method described above can be practiced, and a house which can contain that structure

BACKGROUND OF THE INVENTION

[0002] On site sewage disposal systems are frequently used in rural and other areas where municipal plants are not available. Typically, waste processed in such a system enters a septic tank in which solids settle to the bottom and, grease and scum float to the top, while liquid effluent flows from a portion of the tank between the solids in the bottom and the scum at the top. The effluent from the tank, which is aqueous, and contains phosphorus compounds, nitrates, organic materials and nutrients, flows through a distribution box, several carefully leveled pipes with holes along their lengths, and through the holes and beds of gravel which surround the pipes to an absorption area where the organic materials and nutrients are consumed by aerobic bacteria and from which relatively pure water flows, mixing with ground water (see http://www.epa.gov/seahome/septics, an EPA website).

[0003] Such a sewage disposal system as that described above, if adequately designed and maintained, can effectively remove the organic material and nutrients from the septic tank effluent if the absorption area is sufficiently large. If not, groundwater pollution occurs, and can be a serious problem.

BRIEF DESCRIPTION OF THE INSTANT INVENTION

[0004] The instant invention is a method for treating the liquid effluent from a septic tank which does not require a large absorption area and, therefore, can be used in congested areas where a conventional septic system would cause pollution. The method comprises the steps of pumping the liquid septic tank effluent to the bottom of a treatment vessel in which the effluent is treated by contact with pebbles, glass fibers, sand or the like, and withdrawing treated effluent from the upper portion of the treatment vessel at substantially the rate at which the effluent is pumped to the bottom of the vessel. In a preferred embodiment, the method also includes the step of pasteurizing or the steps of pasteurizing and vaporizing the treated effluent withdrawn from the upper portion of the treatment vessel. In another preferred embodiment, the septic tank effluent is collected in a holding tank from which it is pumped, periodically, to the treatment vessel. Initially, at the beginning of operation, pumping the effluent to the bottom thereof fills the treatment vessel; thereafter pumping additional effluent into the vessel causes a non-turbulent, upward movement of the effluent in the vessel. Preferably, the treated effluent is pasteurized, or pasteurized and vaporized, either while it is still in the treatment vessel or in a separate vessel. The rate at which liquid effluent is pumped to the bottom of the treatment vessel is sufficiently low that the treated effluent which reaches the top of the treatment vessel is substantially devoid of organic materials and nutrients.

[0005] It is an object of the invention to provide a method for treating the liquid effluent from a septic tank.

[0006] It is another object to provide a method which removes organic materials and nutrients from the septic tank effluent, and purifies the effluent to such an extent that it can safely be discharged to the environment.

[0007] It is still another object to provide such a method which includes the additional step of pasteurizing the septic tank effluent from which organic materials and nutrients have been removed.

[0008] It is yet another object to provide such a method which includes the additional step of vaporizing the septic tank effluent from which organic materials and nutrients have been removed.

[0009] It is still another object to provide apparatus in which such a method can be practiced.

[0010] Other objects and advantages will be apparent from the following description of preferred embodiments of the invention, reference being made to the accompanying drawings, in which:

[0011] FIG. **1** is a flow diagram identifying the steps in a preferred method of the invention for treating the liquid effluent from a septic tank.

[0012] FIG. **2** is a perspective view showing a portion of a wall structure which is one embodiment of the instant invention.

[0013] FIG. **3** is a view in perspective showing an end, the top and one side of a block which is a component of the wall structure of FIG. **2**.

[0014] FIG. **4** is a view in perspective showing an end, the top and one side of another block which is a component of the wall structure of FIG. **2**.

[0015] FIG. **5** is a perspective view showing an end, the top and one side of still another block which is a component of the wall structure of FIG. **2**.

[0016] FIG. **6** is a view in perspective of a fragment of another wall structure which is another embodiment of the instant invention.

[0017] FIG. **7** is a perspective view showing a block which is a component of the fragment of a wall structure shown in FIG. **6**.

[0018] FIG. **8** is a view in perspective showing a block which is a second component of the fragment of a wall structure shown in FIG. **6**.

[0019] FIG. **9** is a perspective view showing a free-standing structure in which septic tank effluent can be treated according to the invention to eliminate organic materials and nutrients therefrom.

[0020] FIG. **10** is a view in perspective showing the foundation of the structure of FIG. **9** and a spline which is

attached to the foundation to receive a first course of blocks from which the structure is produced.

[0021] FIG. **11** is a perspective view showing the foundation and spline of FIG. **10** and a first course of blocks on the foundation.

[0022] FIG. **12** is a view in perspective showing the first four courses of blocks of the structure of FIG. **9**.

[0023] FIG. **13** is a perspective view similar to FIG. **12**, but showing the first five courses of blocks of the structure of FIG. **9**.

[0024] FIG. **14** is a view in perspective of one of two blocks which are used in producing the free standing structure of FIG. **9**.

[0025] FIG. **15** is a perspective view of the second of two blocks which are used in producing the free standing structure of FIG. **9**.

[0026] FIG. **16** is a view in perspective similar to FIGS. **12** and **13**, but showing all 10 courses of blocks of the structure of FIG. **9** and a cap and illustrating the installation of the cap on the tenth course

[0027] FIG. **17** is a perspective view similar to FIG. **16**, but with solar receptor panels added.

[0028] FIG. **18** is a view in perspective showing nine courses of another building structure according to the invention.

[0029] FIG. **19** is a perspective view showing a spline which is attached to the foundation of the building structure of FIG. **18**.

[0030] FIGS. **20** and **21** are views in perspective showing blocks which are similar to that shown in FIG. **8**, constituting, in essence, variations of that block.

[0031] FIG. **22**, is a perspective view of a block which is similar to that of FIG. **15**, constituting a variation of that block

[0032] FIGS. **23** through **26** are views in perspective showing blocks which are similar to the block of FIG. **4**, but are used for a different purpose.

[0033] FIG. **27** is a view in perspective showing the first of the nine courses of the building structure of FIG. **18** and four door frames of that building structure.

[0034] FIG. **28** is a perspective view similar to FIG. **27**, but showing the second of the nine courses of the building structure of FIG. **18**.

[0035] FIG. **29** is a view in perspective showing the left rear corner of the first course of the building structure of FIG. **18**.

[0036] FIG. **30** is a perspective view showing the juncture of an exterior wall and an interior partition of the building structure of FIG. **18**.

[0037] FIG. **31** is a view in perspective showing the left rear corner of the second course of the building structure of FIG. **18**.

[0038] FIG. **32** is a perspective view showing the seventh course of the building structure of FIG. **18**.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0039] The instant invention, in one aspect, is a method for treating the liquid effluent from a septic tank and apparatus which is useful for practicing the method. Referring to FIG. **1**, the liquid effluent from a septic tank, **10** is collected in a holding tank **11**, from which it is pumped from time to time by a pump **12** to a receiver **13** in the bottom of a treatment vessel **14** that is packed with pebbles, grass fibers and sand. The pump **12** mixes air with the effluent it pumps to the receiver **13**, which has a pervious top, so that air and effluent flow from the receiver **13** into the bottom of the vessel **14**, which the effluent eventually fills to a predetermined level while the effluent in the vessel is aereated by the air. Thereafter, additional effluent causes a non-turbulent, upward movement thereof in the vessel **14** while air delivered with the effluent continues the aeration. Effluent delivered by the pump **12**, when it reaches the top of the vessel **14**, contacts and is heated by a heater **15**, which is a combined solar collector and resistance heater. The effluent is heated by the heater **15** to effect pasteurization thereof (e.g., to 140° F. for twenty minutes), and may be heated to vaporize all or a portion thereof. Any effluent that is not vaporized by the heater **15** flows through an overflow drain **16** and is discharged to the environment for example onto the roof of a home (not illustrated) served by the septic tank **10**.

[0040] In operation, sewage from a house (not illustrated) flows through a line **17** into the septic tank **10**, where it separates into a lower layer of solids, a clear liquid layer above the solids, and an upper layer of scum. A part of the clear liquid layer flows from the septic tank through a line **18** to the holding tank **11**. The EPA specifies that, for a three bedroom house with six occupants, the absorption area of a septic system shall be capable of accommodating a flow of 250 gallons per day of sewage, so that the flow of effluent through the line **18** to the tank **11**, and from time to time, for example, every morning, through a line **19** to the receiver **13** amounts to 250 gallons or less per day. The flow therethrough from the tank **11** of effluent raises the level in the vessel **14** so that any pasteurized effluent that is not vaporized by the heater **15** is discharged, flowing through the drain **16**. Pasteurization kills bacteria in the effluent, so that it is safe to discharge the pasteurized effluent from the tank **16** for mixture with ground water in the area, but does not remove nitrates and phosphorus compounds, so that some damage to the ecology is possible if it is discharged. Accordingly, evaporation of the effluent is preferred. The apparatus can also include an aerator (not illustrated) which pumps air through the line **19** to facilitate the action of aerobic bacteria in the vessel **14**. Indeed, the pump **12** can be a combined pump and aerator which operates as a pump, as an aerator, or as both a pump and an aerator. A treatment vessel ten feet by three feet by eight feet is deemed adequate to treat 250 gallons per day of effluent. If desired, since treatment in the vessel **14** depends upon aerobic microorganisms, aeration of the contents of the vessel can be used to increase the extent of purification achieved in an available vessel at a given flow rate.

[0041] Referring to FIG. **2**, the treatment vessel **14**, which is composed of walls **21**, **22**, **23** and **24**, is shown as free standing, although it can be a part of a house, usually the

house which generates the sewage that is treated. The walls **21**, **22**, **23** and **24** are assembled from especially fabricated blocks **25**, **26** and **27**.

[**0042**] The block **25** (see FIG. **3**) has a bottom **28**, a top **29**, ends **30** and **31** and sides **32** and **33**. There are longitudinally extending slots **34**, **353**, **6** and **37** in the bottom **28**, the top **29**, the end **30** and the end **31** of the block **25**. There are also laterally extending slots **38** and **39** in the top **29**. There are laterally extending slots (not illustrated) in the bottom **28** of the block **25** which are vertically aligned with the slots **38** and **39**.

[**0043**] The block **27** (see FIG. **4**) has a bottom **40**, a top **41**, ends **42** and **43** and sides **44** and **45**. Slots **46**, **47**, and **48** extend longitudinally of the top **41**, the end **43** and the bottom **40** of the block **27**. There are also laterally extending slots **49** and **50** in the top **41** of the block **27** and laterally extending slots (not illustrated) in the bottom **40** which are vertically aligned with the slots **49** and **50**.

[**0044**] The block **26** (see FIG. **5**) has a bottom **51**, a top **52**, ends **53** and **54** and sides **55** and **56**. Slots **57**, **58**, and **59** extend longitudinally of the top **52**, the end **54** and the bottom **51** of the block **26**. There is also a laterally extending slot **60** in the top **52** of the block **26** and a laterally extending slot (not illustrated) in the bottom **51** which is vertically aligned with the slot **60**.

[**0045**] The blocks **25**, **26** and **27** are similar to the block shown in FIGS. 34 and 35 of U.S. Pat. No. 6,769,220, Aug. 3, 2004. The blocks **25**, **26** and **27** are made of concrete, and can be produced in appropriately shaped molds similar to the mold 133 of FIGS. 30-32 of said U.S. Pat. No. 6,769,220, by casting a cement thereinto and vibrating the mold so that the cement is homogeneous and is in intimate contact with all parts of the mold. The mold (not illustrated) in which the block **25** is produced has a flat bottom and a four sided ring which rests on the flat plate and has a first side shaped to form the end **30**, and second, third and fourth sides shaped to form the top **29**, the end **31** and the bottom **24** of the block, and can be closed by a cover which forms the side **33**. Care should be taken to prevent adhesion between the cement and the surfaces of the mold which it contacts. Adhesion can be prevented by providing a polyethylene or equivalent surface on the mold surfaces, for example by using mold parts that have been produced from polyethylene by injection molding, or by using mold liners that have been produced from polyethylene by injection molding. The blocks **26** and **27** are also made of concrete, and can be produced in a similar way. The blocks **25**, **26** and **27** can also be made partially with concrete and partially with a thermoset, cellular urethane as also disclosed in said U.S. Pat. No. 6,769,220.

[**0046**] Referring, again, to FIG. **2**, longitudinal splines **61** lateral splines **62** and corner splines **63** are received, respectively, in slots in the blocks **95**, **26** and **97** of the treatment vessel **14**, which is erected on a foundation **64**, to which the splines (not illustrated) are attached in the pattern shown on the top course of the portion of the vessel **14** that appears in the drawing, i.e., there is a corner spline **63** accurately positioned at each of the four corners of the vessel and there are splines **61** and **62** accurately positioned as shown to receive slots in the blocks **95**, **26** and **27** of the first course. It will be noted that the slots in the bottom of the block **27** in the position shown in FIG. **4** do not match the pattern of the splines to the right of a cornier **65** (FIG. **2**); instead, the block **27** in that location must be rotated 180° about its longitudinal axis from the position shown in FIG. **4** for installation. The adjacent block **25** can be installed in the rotational position shown in FIG. **3**, but the next block **26**, for installation, must be rotated 180° around its vertical axis from the position shown in FIG. **5**. After the first course is installed on the splines attached to the foundation **63**, a second course of splines is installed in the same pattern on blocks of the first course, and a second course of blocks is installed on those splines. In this course, one of the blocks **26** (FIG. **5**), rotated 180° around its longitudinal axis, is the first block to the right of the corner **65**; one of the blocks **25** is the second; and one of the blocks **27** rotated 180° around its vertical axis is the third. Additional splines and blocks are installed until the vessel **14** reaches the desired height.

[**0047**] It is desirable for there to be a steel cover (not illustrated) over the blocks in the top course of the vessel **14**. The cover can rest on the tops of the blocks of the top course, and can have a cross section which is the shape of an inverted "U". It is also desirable for the completed structure to be anchored at a plurality of points against vertical movement relative to the foundation. An excellent arrangement is a rectangular steel member which rests on, and is urged downwardly against, the blocks of the top course by a plurality of rods which are anchored to the foundation.

[**0048**] A fragment of another treatment vessel according to the invention is indicated generally at **68** in FIG. **6**. The vessel **68** is assembled from blocks **69** (FIG. **7**) and blocks **70** (FIG. **8**).

[**0049**] A first course of the blocks **69** and **70** of the vessel **68** is erected on splines which are attached to a foundation and received in slots (not illustrated) in the bottoms of the blocks of the first course in the manner shown in FIG. **2**. A second course is erected on splines which are received in slots **71** in the tops of the blocks **69** and **70** of the first course, and higher courses are erected on splines which are received in slots in the tops of the blocks of the course below (not illustrated) as also shown in FIG. **9**. Desirably, there is a steel cover (not illustrated) over the blocks in the top course. The cover can rest on the tops of the blocks of the top course, and can have a cross section which is the shape of an inverted "U". It is also desirable for the completed structure to be anchored at a plurality of points against vertical movement relative to the foundation. An excellent arrangement is a rectangular steel member which rests on, and is urged downwardly against, the blocks of the top course by a plurality of rods which are anchored to the foundation.

[**0050**] Referring to FIG. **7**, the block **69** has opposed major surfaces **72** and **73**, stepped ends **74** and **75**, a top **76**, and a bottom **77**. The block **69** is symmetric about its horizontal axis and, except for lateral slots **78** in a stepped portion of the end **74** and longitudinal slots **79** in the end **75**, is symmetric about its vertical axis. The block **70**, as shown in FIG. **8**, has opposed major surfaces **80** and **81**, stepped ends **82** and **83**, a top **84** and a bottom **85**. A portion, designated **86**, of the block **70** extends to the right in FIG. **8** beyond the rest of the block, and a portion, designated **87**, extends to the left in FIG. **8** the same distance beyond the rest of the block. There are slots **88** in the portions **86** and **87** of the block **70**. In the portion of a wall structure shown in FIG. **6**, the slot **88** in the portion **87** of one of the blocks **70** is sometimes adjacent the slot **79** in one of the blocks **69**,

in which case the resulting portion of the slot **71** is designated **79-88**. In other cases, the slot **88** in the portion **87** of one of the blocks **70** is adjacent the slot **78** in one of the blocks **69**, and the resulting portion of the slot **71** is designated **78-88**. In still another case, the slot **88** in the portion **87** of one of the blocks **70** is adjacent the slot **88** in another of the blocks **70**, and the resulting portion of the slot **71** is designated **88-88**.

[**0051**] Liquid effluent from a septic tank can be treated in treatment vessels having the wall structures of FIGS. **2** and **6** which have been packed with pebbles, glass beads or the like by a method which comprises the steps of pumping the liquid effluent to the bottom of the treatment vessel so that, after the vessel is filled to a predetermined level, pumping additional effluent to the bottom thereof causes a non-turbulent, upward movement of the effluent in the vessel, withdrawing treated effluent from the upper portion of the vessel at substantially the rate at which the effluent is pumped to the bottom of the treatment vessel, and pasteurizing the treated effluent withdrawn from the upper portion of the vessel, the rate at which liquid effluent is pumped to the bottom of the treatment vessel being sufficiently low that the treated effluent withdrawn from the upper portion of the vessel is substantially devoid of organic material.

[**0052**] Referring, again, to FIG. **6**, it will be noted that the slots **71**, **78-88**, **79-88**, and **88-88** in the tops of the blocks **69** and **70** are aligned so that they form a continuous slot which is rectangular in plan view, and extends around the top of the first course of blocks of the treatment vessel **68**. A single spline which has the same rectangular shape in plan view is received in these slots, and locks the blocks **69** and **70** of the first course against outward movement. There are also aligned slots (not illustrated) in the bottoms of the blocks **69** and **70** which are vertically aligned with the slots **71**, **78-88**, **79-88** and **88-88**; these slots receive a single spline which has the same rectangular shape, and is suitably attached to a foundation (not illustrated) for the processor **68**. Similarly, slots in the bottoms of the blocks of a second course receive the spline in the tops of the blocks of the first course, and are locked by that spline against movement relative to the blocks of the first course, and against outward movement. In like manner, the blocks of each of the other courses of the vessel **68** are locked against outward movement and against movement relative to the blocks of the course therebelow or therebelow and thereabove, as the case may be. In another embodiment of the instant invention, the splines on top of each course of blocks are generally "U" shaped in plan view, and there are two such splines on top of each course of the vessel. Each of these splines prevents outward movement of only two opposed ones of the four walls, but splines in other courses are rotated 90° in plan so that they prevent outward movement of the other two of the opposed ones of the four walls.

[**0053**] Another treating vessel according to the invention is indicated generally at **91** in FIG. **9**. The walls of the vessel **91** are composed of corner blocks **92** and wall blocks **93**. The corner blocks **92**, as shown in FIG. **15**, have opposed major surfaces **94** and **95**, each of which is sometimes on the outside and sometimes on the inside of a structure in which one of the blocks is installed. The blocks also have edges **96** and **97**, tops **98** and bottoms **99**, all of which are adjacent the major surface **94** and edges **100** and **101**, tops **102** and bottoms **103**, all of which are adjacent the major surface **95**. The wall blocks **93**, as shown in FIG. **14**, have opposed major surfaces **104** and **105**, each of which is sometimes on the outside and sometimes on the inside of a structure in which the blocks are installed. The blocks also have edges **106** and **107**, tops **108** and bottoms **109**, all of which are adjacent the major surface **104** and edges **110** and **111**, tops **112** and bottoms **113**, all of which are adjacent the major surface **105**.

[**0054**] The first step in producing the treating vessel **91** is to pour a concrete foundation **114** (FIG. **10**) with a metal spline assembly **115** embedded therein. The upper surface of the foundation must be level, and a spline **116** which is a part of the spline assembly **115** must be level and dimensionally accurate. The spline assembly has a plate **117** in each corner, and a socket **118** welded or otherwise attached to each plate. After the concrete of the foundation **114** has cured adequately, a first course of blocks is assembled on the spline **1116**, as shown in FIG. **11**. Referring, also, to FIG. **15**, the first step of assembling the first course of blocks involves fitting a slot **119** of a block **92** over the spline **116** with the edge **96** on the near end and the major surface **94** on the right. The bottom of the block **92** is the mirror image of the top, which is seen in FIG. **15**. The rest of the blocks in the first course between the block **92** and a corner **120** of the structure are all blocks **96** (FIG. **14**). A slot **121** of one of the blocks **96** is fitted over the spline **116** with the edge **107** adjacent the previously installed block **92** and the major surface **105** on the right. The bottom of the block **92** is the mirror image of the top, which is seen in FIG. **14**. The other three walls of the first course have one block **92** with its major surface **94** facing the outside of the structure, and six blocks **93** with their major surfaces facing as indicated by reference numerals in FIG. **11**. They are assembled in the manner just described. Indeed, each wall of each course is composed of a block **92** at one end and six adjacent blocks **93**. The major surface **94** of each block **92** faces the outside of the structure; the major surface of each block **93** which is adjacent a block **92** faces the inside of the structure; and the major surface **105** of each of the other blocks **93** in each row faces either the outside or the inside, the opposite of the adjacent blocks in that row. The block **93** on an end of each row adjoins a block **92** in the same row, but on a different side of the structure **91**.

[**0055**] There are splines on the tops of all except the tenth row of blocks in the treating vessel **91** of FIG. **9**. The spline arrangement on top of row **1** is the same as the spline arrangement on top of rows **3**, **5**, **7** and **9**. The spline arrangement on top of row **5**, as shown in FIG. **13**, has angled tips **122** which lock the blocks in the fifth course against lateral movement away from adjacent blocks. Similarly, the spline arrangement on top of row **4** is the same as the spline arrangement on top of rows **2**, **6**, and **8**. The spline arrangement on top of row **4**, as shown in FIG. **12**, has angled tips **123** which lock the blocks in the sixth course against lateral movement away from adjacent blocks. The locking action of the tips **122** and **123** is a consequence of their being received in lateral slots **123** in the blocks **93**, FIG. **14**.

[**0056**] U-channels **124** and U shaped corner members **125** (See FIG. **16**) cover the top course of blocks in the vessel **91**. The channels **124**, which have webs **126** and sidewalls **127**, fit snuggly over the blocks of the tenth course, while the corner members **125**, which have webs **128** and sidewalls

129, fit snuggly over the corners of that course. Triangular plates 130 are welded or otherwise attached to the interior sidewalls 129 of the corner members 125. Threaded ends of rods 131, which are locked against longitudinal movement inside sockets 118 (FIG. 10) extend through holes 132 in the plates 130 so that nuts can be turned onto the threaded ends to apply a compressive force to the entire treating vessel 91.

[0057] Referring to FIG. 17, the treating vessel 91 has absorbing panels 133 for solar energy. These panels are suspended from hooks 134 which are attached to the sidewalls 127 of two of the U-channels. A transparent cover, which is clamped by a metal strap 135 to the top of the treating vessel 91, protects the contents against rain, but does not prevent treated effluent which is vaporized from being vented to the atmosphere. A supplemental heater can be used with the vessel 91, or a drain can be provided through which purified liquid which reaches the top of the vessel can be discharged from the system.

[0058] A waterproof liner 136 (FIGS. 16 and 17) contains the liquid contents of the treating vessel 91. i.e., the septic tank effluent charged, and the products of its treatment, preventing leakage before the liquid reaches the top of the vessel 91 and is vaporized or otherwise discharged from the vessel. The liner 136 can be made from plastic-coated fabric by cutting and sewing and then waterproofing the seams, for example, with the plastic of the plastic-coated fabric. The "plastic" of the plastic-coated fabric can be, without limitation, a polyolefin, a polyester, a polyamide, a polyurethane, a polycarbonate, a thermoplastic elastomer, a high temperature polymer, or a blend of such materials.

[0059] A structure indicated generally at 137 in FIG. 18 constitutes the first nine courses of a house constructed from blocks which have longitudinally extending slots in their upper and lower surfaces to receive splines. The blocks of the first course of the structure 137 are installed on splines 138 (FIG. 19), which are parts of base strips 139. The base strips 139 are attached to a concrete foundation 140 in a precisely controlled pattern and are carefully leveled so that the blocks of the first course are properly positioned when, as subsequently explained, they are installed thereon. Referring, again to FIG. 18, the walls of the structure 137 are composed of blocks 141 (see, also, FIGS. 20 and 27), 142 (see, also, FIGS. 22 and 27), 143 (see, also, FIGS. 21 and 27) and 144 (see, also, FIGS. 94 and 27), or, as subsequently discussed in more detail, similarly shaped blocks of different sizes.

[0060] The block 141 (FIG. 20) has opposed, parallel major surfaces 145 and 146 which are offset longitudinally of the block from one another, so that a portion 147 of the block adjacent the surface 145 extends longitudinally of the block in a first direction beyond the surface 146 and a portion 148 of the block adjacent the surface 146 extends longitudinally of the block in the opposite direction beyond the surface 145. There is a longitudinally extending recess 149 in the top of the block to receive a spline and there are spaced lateral recesses 150 to receive lateral portions of a spline or of splines. There are also longitudinally extending and lateral recesses in the bottom of the block 141 which are vertically aligned with the recesses 149 and 150 in the top.

[0061] The block 142 (FIG. 22) has opposed, parallel major surfaces 151 and 152 which are offset longitudinally of the block from one another, so that a portion 153 of the block adjacent the surface 152 extends longitudinally of the block in a first direction beyond the surface 151 and a portion 154 of the block which is also adjacent the surface 152 extends longitudinally of the block in the opposite direction beyond the surface 151. There is a longitudinally extending recess 155 in the top of the block to receive a spline. There is also a longitudinally extending recess in the bottom of the block 142 which is vertically aligned with the recess 155 in the top.

[0062] The block 143 (FIG. 21) has opposed, parallel major surfaces 156 and 157 which are offset longitudinally of the block from one another, so that a portion 158 of the block adjacent the surface 156 extends longitudinally of the block in a first direction beyond the surface 157 and a portion 159 of the block adjacent the surface 157 extends longitudinally of the block in the opposite direction beyond the surface 156. There is a longitudinally extending recess 160 in the top of the block to receive a spline and there are spaced lateral recesses 161 to receive lateral portions of a spline or of splines. There are also longitudinally extending and lateral recesses in the bottom of the block 143 which are vertically aligned with the recesses 160 and 161 in the top.

[0063] A block 144 (FIG. 24) has opposed, parallel major surfaces 172 and 173 and an end 178 which is perpendicular to the surfaces 172 and 173. A portion of the block adjacent the surface 172 extends a given distance, longitudinally of the block, to an end 181 which is perpendicular to the surface 172 and parallel to the end 178, while a second portion of the block adjacent the surface 173 extends a greater distance, longitudinally of the block, to an end 184 which is perpendicular to the surface 173 and parallel to the end 178. There is a longitudinally extending recess 187 in the top of the block to receive a spline and there are four spaced lateral recesses 190 to receive lateral portions of a spline or of splines. There are also longitudinally extending and lateral recesses in the bottom of the block 144 which are vertically aligned with the recesses 187 and 190 in the top.

[0064] The blocks 162 (FIG. 23), 170 (FIG. 25) and 171 (FIG. 26) are similar to the blocks 144 of FIG. 24. The former blocks have opposed, parallel major surfaces 163 and 164, 174 and 175, and 176 and 177, and ends 165, 179 and 180 which are perpendicular to the respective major surfaces. A portion of each block adjacent the major surface 164, 174 or 176 extends a given distance, longitudinally of the block, to an end 165, 182 or 183 which is perpendicular to the surface 164, 173 or 175 and parallel to the end 165, 179 or 180, while a second portion of the block adjacent the surface 163, 175 or 177 extends a greater distance, longitudinally of the block, to an end 167, 185 or 186 which is perpendicular to the surface 164, 175 or 177 and parallel to the end 165, 179 or 180. There are longitudinally extending recesses 168, 188 and 189 in the tops of the blocks to receive splines and there are spaced lateral recesses 169, 191 and 192 to receive lateral portions of splines. There are also longitudinally extending and lateral recesses in the bottoms of the blocks 162170 and 171 which are vertically aligned with the recesses in the tops.

[0065] The first step in producing the structure 137 of FIG. 18 is to pour and accurately level the foundation 140 (FIG. 19), and the next step is to attach the base strips 139 to the foundation so that the blocks of the first course, when the splines 138 are received in the slots in their bottoms, are accurately positioned, as required.

[0066] The next step in producing the structure **137** is to position door frames **193**, **194**, **195** and **196** and the blocks of the first course so that the splines **138** which have been installed are received in the slots in the bottoms of the blocks. The door frames, which are chapels opening outwardly of the frames, having webs **197** and side-walls **198**, are accurately positioned and attached by threaded members (not illustrated) to the base strip **139** (FIG. **19**).

[0067] The next steps are to position the blocks in the proper positions on the spline **138** and on previously positioned blocks. In doing this, it is necessary to take the rotational position of each block into consideration. For example, the blocks **171**, **170**, **144** and **162** all have stepped ends so that the blocks are longer on their left sides in the positions shown in FIGS. **26**, **25**, **24** and **23**. However, these blocks, when they are rotated 180° about a longitudinal axis, are longer on their right sides than on their left.

[0068] FIG. **27** shows the blocks in the first course of the building **137**. The following blocks are in the first course, and each is shown by the drawing identified parenthetically after its reference numeral: block **141** (FIG. **20**), block **142** (FIG. **22**), block **143** (FIG. **21**), block **144** (FIG. **24**), block **162** (FIG. **23**), block **170** (FIG. **25**) and block **171** (FIG. **26**). Blocks **141** make up most of the walls of the first course. In addition, there is a block **142** at each corner, and there are blocks **143** in three of the sidewalls. As is subsequently explained in more detail, splines attach the ends of interior partitions to the blocks **143**. There are also blocks **144** and **171** in the first course, adjacent the door frames **193** and **196**

[0069] The first courses of interior partitions of the building **137** are also shown in FIG. **7**. These partitions are composed of blocks **141**, **143**, **144**, **162**, **170**, and **171**.

[0070] As stated above, there is a block **142** in the first course at each of the four corners of the building **137**. As shown in more detail in FIG. **29**, there is a block **141** adjacent the block **142** in each of the walls which meet at the left corner. These blocks are in the rotational positions (about their longitudinal axes) shown in FIG. **20** so that one of their portions **147** and **148** abuts the block **142**. Blocks **141** (see, also, FIG. **27**) and one of the blocks **143** extend from the left corner shown in FIG. **29** to the rear corner, which has the same configuration as the left corner, but is rotated 90°, clockwise. Blocks **141**, one of the blocks **143**, and one of the blocks **144** extend from the rear corner to the door frame **196** and a block **171** and blocks **141** extend from the door frame **196** to the right corner of the building, which has the same configuration as the rear corner, but is rotated 90°, clockwise. Blocks **141**, and one of the blocks **144** extend from the right corner to the door frame **193** and a block **171** and blocks **141** extend from the door frame **193** to the near corner of the building, which also has the same configuration as the right corner, but is rotated 90°, clockwise. Blocks **141** and one block **143** extend from the near corner to the left corner. Finally, there are blocks **141**, **143**, **144**, **162** and **170** in the first courses of the interior partitions. In the first course, all of the blocks mentioned in this paragraph are in the rotational positions (about their longitudinal axes) in which they are shown in FIGS. **20**, **21**, **22**, **23**, **24**, **25** and **26**.

[0071] FIG. **28** shows the blocks in the second course of the building **137**, including the interior partitions. Blocks **141** also make up most of the walls of the second course.

[0072] There is a block **142** in the second course at each of the four corners of the building **137**. As shown in more detail in FIG. **31**, the block **142** in the left corner is positioned so that its major surface **152** is exposed in the rear wall of the building, and there is a block **141** adjacent the block **142** in each of the walls which meet at that corner. The blocks **141** have been rotated 180° (about their longitudinal axes) from the rotational position shown in FIG. **20** so that one of their portions **147** and **148** abuts the block **142** and the major surface **146** is on the outside of the wall from the near corner to the left corner, and the major surface **145** is on the outside of the wall from the left corner to the rear corner. Blocks **141** (see, also, FIG. **28**) and one of the blocks **143** (all rotated 180°) extend from the left corner shown in FIG. **28** to the rear corner which has the same configuration as the left corner, but is rotated 90°, clockwise. Blocks **141**, one of the blocks **143**, and one of the blocks **171**, all rotated 180°, extend from the rear corner to the opening for the door frame **196** and a block **144** and blocks **141** (all rotated 180°) extend from the opening for the door frame **196** to the right corner of the building, which has the same configuration as the rear corner, but is rotated 90°, clockwise. Finally. Blocks **141**, and one of the blocks **171** (rotated 180°) extend from the right corner to the opening for the door frame **193** and a block **144** and blocks **141** (rotated 180°) extend from the opening for the door frame **193** to the near corner of the building, which also has the same configuration as the right corner, but is rotated 90°, clockwise. Finally, there are blocks **141**, **143**, **144**, **162** and **170** in the second courses of the interior partitions.

[0073] The corners of the third, fifth, seventh and ninth courses of the building **137** have the same configuration as those of the first course, and the corners of the fourth, sixth and eighth courses have the same configuration as those of the second course. The rest of the blocks in each course are shaped, oriented, sized and positioned so that the several courses constitute the structure **137**.

[0074] The blocks of the first course have recesses in their bottoms which, as assembled, receive the spline **138** (FIG. **19**), and recesses in their tops which receive splines as subsequently described in more detail. The blocks of the second and higher courses have recesses in their bottoms which receive the splines which are installed in recesses of the course below, and recesses in their tops which receive splines that are also received in the course above.

[0075] In the erection of the building, after the blocks of the first course have been positioned as described above on the splines **138** (FIG. **19**), splines of different designs are installed in the slots in the tops of the blocks of the first course. One of these splines, which is indicated generally at **199** in FIG. **29** is received in the longitudinally extending recess in the top of the block **142** (FIG. **27**) in the left corner of the first course, and in the top of the adjacent block **141** on each side of the block **142**. The spline **199** has a leg **200** which extends to the right of the block **149** and into the recess **149** (see, also FIG. **20**) in the top of the adjacent block **141**, and has a tip **201** which is received in one of the lateral recesses **150** of the adjacent block **141**. The spline **199** also has a leg **202** which extends at a right angle to the leg **200** beyond the block **142** and into the recess **149** in the top of the adjacent block **141** in the back wall of the building. The leg **202** of the spline **199** has a tip **203** which is received in

one of the lateral recesses **150** of the adjacent block **141** in the back wall of the building.

[**0076**] As also shown in FIG. **29**, there are longitudinally extending splines **204** in the slots in the tops of the first course blocks in the wall between the near corner and the left corner and in the back wall of the building. One of the splines **204** extends through about half of the slot in the top of the second block **141** in the back wall, through the slots in the tops of the next three blocks **141** and into the slot in the top of the sixth one of the blocks **141**, where it terminates (see FIG. **30**). The leg **200** of another spline **199** is also received in the slot **149** in the top of the sixth block **141**, while the leg **209** of that spline is received in the slots of adjacent blocks **171** and **141** in the interior partition. The leg **202** of the spline **199** extends longitudinally of the block **171** and into the recess **149** in the top of the adjacent block **141** in the partition, where its tip **203** is received in one of the lateral recesses **150** of the adjacent block **141**.

[**0077**] There are splines **199** at each of the corners of each course. The structures at the other corers of the first course are the same as that shown and described at the left corner, but rotated clockwise 90° at the far corner, rotated 180° clockwise at the right corner, and 270° clockwise at the near corner. There is a spline **199** associated as described with each block **142** of each corner.

[**0078**] There are also splines **199** at each intersection of two walls, and longitudinal splines **204** between the splines **199**. The spline arrangements are similar to that shown in FIG. **30**, and described above with reference thereto, differing from one another mainly with respect to the position, longitudinally of the block **143** of the intersection of the two legs **200** and **202** of the spline **199**.

[**0079**] The corners of the second course of the structure **137**, as discussed above, are different from the corners of the first course. In the second course, at the left corner of the building, as shown in FIG. **31**, a block **142** is positioned so that its major surface **152** faces the real of the building, its end **154** is at the end of the wall from the near corner to the left corner, and two of the blocks **141** are adjacent that block **142**. One of the adjacent blocks **141** is positioned in the wall from the near corner to the left corner so that its major surface **146** faces the exterior of the structure, and the other is positioned in the wall from the left corner to the rear corner so that its major surface **145** faces the exterior. These blocks are rotated 180° about their longitudinal axes from their positions in the first course, as shown in FIG. **27**. The structures at the other corners of the second course are the same as that shown and described at the left corner, but rotated clockwise 90° at the far corner, rotated 180° clockwise at the right corner, and 270° clockwise at the near corner. There is a spline **199** associated as described with each block **142** of each corner.

[**0080**] The corners of the third, fifth, seventh and ninth courses of the building **137** are the same as those of the first course, and the corners of the fourth, sixth and eighth courses are the same as those of the second course.

[**0081**] When two of the blocks **141**, **143**, **144**, **162**, **170** and **171** are required to abut, their rotational positions about their longitudinal axes must be matched so that the two nest as shown in the within drawings.

[**0082**] The other courses of the structure **137** are composed of the blocks **141**, **142**, **143** and, where required to control the lengths of the walls and partitions, one or more of the blocks **144**, **162**, **170** and **171**.

[**0083**] Blocks **162** (FIG. **23**), **144** (FIG. **24**) **170** (FIG. **25**) and **171** (FIG. **26**) are used as required to accommodate the windows in the fifth, sixth and seventh courses of the building.

[**0084**] There are recesses **205** in surfaces of the blocks **141** (FIG. **20**), **143** (FIG. **21**), **142** (FIG. **22**), **162** (FIG. **23**), **144** (FIG. **24**), **170** (FIG. **25**), and **171** (FIG. **26**) which are inside a wall when the blocks are assembled as described above. There are also similar recesses at the opposite ends of the blocks **141** (FIG. **20**), **143** (FIG. **21**), and **142** (FIG. **22**). These recesses are formed by corresponding raised portions of light weight molds in which the blocks are cast. The raised portions are useful because they strengthen the molds, but the recesses in the blocks serve no useful purpose.

[**0085**] Referring to FIG. **27**, the walls to the right of the near corner, to the right of the left corner, and to the left of the door frame **194** can be lengthened by a few blocks, a new partition can be installed from the partition to the left of the door frame **194** to the wall from the left corner to the back corner, and apparatus for treating septic tank effluent, as previously described, can be installed in the windowless closed space which results.

[**0086**] As shown in FIG. **32**, splines **206** which span window and door openings are advantageously used in the seventh course of the building. The splines **206** are received in the slots in the tops of the blocks of the seventh course on opposed sides of the openings and in the slots in the bottoms of the blocks (not show on FIG. **32**) of the eighth course.

[**0087**] Tensioned rods can be installed between the foundation and the tops of the walls to place the building structure **137** under compression, and thereby increase its strength. Such rods, designated **207**, are shown in FIG. **18** in the rear corner of the building **137**, adjacent the door frame **196**, at the intersections of interior partitions and exterior walls and between windows in the wall from the left corner of the building to the rear corer. Such rods are also advantageous in the other corners of the building, on both sides of the door frame **193**, and between the windows in the wall from the near corner to the left corner of the building. Fittings **208** to receive the rods **207** are shown in FIG. **19** at each of the corners of the spline **138**. Grooves which extend around the blocks **141** and **143**, in their tops, bottoms and ends, can also be provided, and stepped rods received in some of those grooves can be used as described in U.S. Pat. No. 6,769,220 to anchor the blocks of the building structure **137** against upward movement.

[**0088**] In its essential details, the invention, in one aspect, is a method for treating the liquid effluent from a septic tank. The method involves the steps of pumping the liquid effluent to the bottom of a treatment vessel that is packed with pebbles, glass beads or the like. First, the vessel is filled to a predetermined level. Thereafter, pumping additional effluent to the bottom thereof causes a non-turbulent, upward movement of the effluent in the vessel. Treated effluent is withdrawn from the upper portion of the vessel at substantially the rate at which the effluent is pumped to the bottom of the treatment vessel, and the withdrawn treated effluent is pasteurized. The rate at which liquid effluent is pumped to the bottom of the treatment vessel is sufficiently low that the

treated effluent withdrawn from the upper portion of the vessel is substantially devoid of organic material, and can be discharged without harm to the environment.

[0089] In another aspect, the invention is an improvement to a rectangular or square building structure. The building comprises a foundation which has a substantially planar and horizontal upper surface, and a plurality of courses of blocks which form the walls of the building. The blocks have longitudinally extending slots in their bottoms and tops in which metal strips are received. The metal strips in the slots in the bottoms of the blocks in the first course are attached to and extend upwardly from the upper surface of the foundation. The metal strips are effective to lock the blocks of the first course against lateral movement relative thereto. There are also second and subsequent metal strips which are received in the slots in the tops of the blocks of the first and higher courses and in the bottoms of the second and higher courses. The second and subsequent metal strips are effective to lock the blocks in whose slots they are received against lateral movement relative to the strips. The improvement of the invention, in one specific instance, comprises a metal strip which is received in and locked against lateral movement relative to the slots of adjacent blocks of two different walls of the building, and means for preventing longitudinal movement of the strip relative to at least one of the slots in which it is received, thereby resisting movement of the corner of each of the walls away from the adjacent wall. For example, as shown in FIG. **2**, blocks **89** and **90** meet at the corner **65** of the vessel **14**, where one of the splines **63** locks the block **90** against movement to the right, away from the block **89**, and also locks the block **89** against similar movement away from the block **90**. There is a spline **63** at each of the corners of each of the courses of the vessel **14** so that outward movement of each of the walls is effectively prevented.

[0090] In a preferred embodiment, the invention is a block having a body part which is right rectangular parallelepipedal in shape, has a top, a bottom and first and second body part sidewalls, has parallel, longitudinally extending spline-receiving grooves in its top and bottom, and has an integral extension with a top, a bottom, and a first extension sidewall which are extensions of the top, the bottom and the first of said body part sidewalls, a second extension sidewall which is parallel to said first extension sidewall, and spaced therefrom by half the distance between the first and second body part sidewalls, and an end which is perpendicular to the longitudinal axis of said body part, wherein said body part has an end adjacent said integral extension which is perpendicular to the longitudinal axis of said body part and an opposed end which is either perpendicular to the longitudinal axis of said body part or is a second integral extension of said body part with a top, a bottom, and a third extension sidewall which are extensions of the top, the bottom and the first or the second of said body part sidewalls, a fourth extension sidewall which is parallel to said third extension sidewall, and spaced therefrom by half the distance between the first and second body part sidewalls, and an end which is perpendicular to the longitudinal axis of said body part, and said body part has an end adjacent said integral extension which is perpendicular to the longitudinal axis of said body part.

[0091] In another preferred embodiment, the improvement of the invention is a metal strip which is received in and locked against lateral movement relative to the slots of adjacent blocks of two different walls of the building, and means for preventing longitudinal movement of the strip relative to both of the slots in which it is received.

[0092] A block having rectangular front and back major surfaces which are parallel to one another, and have opposed parallel edges, two of which are vertically aligned, and two of which are separated by a distance of D and are vertically misaligned so that the horizontal projection of the vertical distance from each of the misaligned edges to the edge relative to which it is misaligned is one half of D, said block having a planar top and a planar bottom, each of which connects two of said vertically aligned parallel edges, and matching stepped ends so that the ends of two of said blocks can be fit together so that the two blocks constitute a part of a wall.

[0093] It will be appreciated that various changes and modifications can be made to the apparatus and method specifically disclosed herein without departing from the spirit and scope of the invention.

I claim:

1. A method for treating the liquid effluent from a septic tank, said method comprising the steps of pumping the liquid effluent to the bottom of a treatment vessel that is packed with pebbles, glass beads or the like so that, after the vessel is filled to a predetermined level, pumping additional effluent to the bottom thereof causes a non-turbulent, upward movement of the effluent in the vessel, withdrawing treated effluent from the upper portion of the vessel at substantially the rate at which the effluent is pumped to the bottom of the treatment vessel, and pasteurizing the treated effluent withdrawn from the upper portion of the vessel, the rate at which liquid effluent is pumped to the bottom of the treatment vessel being sufficiently low that the treated effluent withdrawn from the upper portion of the vessel is substantially devoid of organic material.

2. In a rectangular or square building structure comprising a foundation having a substantially planar and horizontal upper surface, a plurality of courses of blocks forming the walls of the building, the blocks having longitudinally extending slots in their bottoms and tops metal strips received in the slots in the bottoms of the blocks in the first course, and attached to and extending upwardly from the upper surface of the foundation, the metal strips being effective to lock the blocks of the first course against lateral movement relative thereto, second and subsequent metal strips received in the slots in the tops of the blocks of the first and higher courses and in the bottoms of the second and higher courses, the second and subsequent metal strips being effective to lock the blocks in whose slots they are received against lateral movement relative the strips the improvement of means operatively associated with each of the walls of the building, and operable to resist movement of the corner of each of the walls away from the adjacent wall.

3. In a rectangular or square building structure, the improvement claimed in claim 2 wherein said means operable to resist movement of the cornet of each of the walls away from the adjacent wall comprises a metal strip which is received in and locked against lateral movement relative to the slots of adjacent blocks of two different walls of the building, and means for preventing longitudinal movement of said strip relative to at least one of the slots in which it is received.

4. In a rectangular or square building structure, the improvement claimed in claim 2 wherein said means operable to resist movement of the corner of each of the walls away from the adjacent wall comprises a metal strip which is received in and locked against lateral movement relative to the slots of adjacent blocks of two different walls of the building, and means for preventing longitudinal movement of said strip relative to both of the slots in which it is received.

5. A block having rectangular front and back major surfaces which are parallel to one another, and have opposed parallel edges, two of which are vertically aligned, and two of which are separated by a distance of D and are vertically misaligned so that the horizontal projection of the vertical distance from each of the misaligned edges to the edge relative to which it is misaligned is one half of D, said block having a planar top and a planar bottom, each of which connects two of said vertically aligned parallel edges, and matching stepped ends so that the ends of two of said blocks can be fit together so that the two blocks constitute a pair of a wall.

6. In a rectangular or square building structure comprising a foundation having a substantially planar and horizontal upper surface, a plurality of courses of blocks forming the walls of the building, the blocks having longitudinally extending slots in their bottoms and tops, metal strips received in the slots in the bottoms of the blocks in the first course, and attached to and extending upwardly from the upper surface of the foundation, the metal strips being effective to lock the blocks of the first course against lateral movement relative thereto, second and subsequent metal strips received in the slots in the tops of the blocks of the first and higher courses and in the bottoms of the second and higher courses, the second and subsequent metal strips being effective to lock the blocks in whose slots they are received against lateral movement relative the strips, the improvement of means operatively associated with each of the walls of the building, and operable to resist movement of the corner of each of the walls away from the adjacent wall.

7. A block having a body part which is right rectangular parallelepipedal in shape, has a top, a bottom and first and second body part sidewalls, has parallel, longitudinally extending, spline-receiving grooves in its top and bottom, and has an integral extension with a top, a bottom, and a first extension sidewall which are extensions of the top, the bottom and the first of said body part sidewalls, a second extension sidewall which is parallel to said first extension sidewall, and spaced therefrom by half the distance between the first and second body part sidewalls, and an end which is perpendicular to the longitudinal axis of said body part, wherein said body part has an end adjacent said integral extension which is perpendicular to the longitudinal axis of said body part and an opposed end which is either perpendicular to the longitudinal axis of said body part or is a second integral extension of said body part with a top, a bottom, and a third extension sidewall which are extensions of the top, the bottom and the first or the second of said body part sidewalls, a fourth extension sidewall which is parallel to said third extension sidewall, and spaced therefrom by half the distance between the first and second body part sidewalls, and an end which is perpendicular to the longitudinal axis of said body part, and said body part has an end adjacent said integral extension which is perpendicular to the longitudinal axis of said body part.

8. A building structure comprising a corner block and two wall blocks, said corner block having opposed sidewalls and stepped ends, and being composed of first and second essentially right rectangular parallelepipedal portions which are integral with one another, and each of which has a given width and a given thickness, the first of said portions having a given length and the length of the second of said portions being the given length plus two times the given thickness, wherein one of the major surfaces of said first right rectangular parallelepipedal portion is the first sidewall of said block, one of the major surfaces of said second right rectangular parallelepipedal portion is the opposed sidewall of said block, and said second essentially right rectangular parallelepipedal portion extends the given thickness beyond each of the ends of said first essentially right rectangular parallelepipedal portion and each of said wall blocks having opposed sidewalls and stepped ends, and being composed of first and second essentially right rectangular parallelepipedal portions which are integral with one another, and each of which has a given length, the same given width, and the same given thickness as the essentially right rectangular parapiepedal portions of said corner blocks, wherein one of the major surfaces of said first right rectangular parallelepipedal portion is the first sidewall of said wall block, one of the major surfaces of said second right rectangular parallelepipedal portion is the opposed sidewall of said wall block, and said first and second essentially right rectangular parallelepipedal portions of said wall block are offset from each other so that, at both ends of said wall block, one of the two extends beyond the other by an amount which equals the given thickness, one of the stepped ends of a first one of said wall blocks and one of the stepped ends of said corner block nesting so that the first one of said wall blocks and said corner block form a part of a wall which extends in a given direction, and one of the stepped ends of a second one of said wall blocks and the other of the stepped ends of said corner block nesting so that the second one of said wall blocks and said corner block form a part of a wall which extends at 90° to the given direction

9. A building structure as claimed in claim 8 wherein said corner block extends at 90° to the given direction, and which additionally comprises a corner block and two wall blocks constituting a part of an adjacent course of the building structure which is vertically aligned with the structure claimed in claim 8 wherein said additional corner block extends in the given direction.

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