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(54) **BALLISTIC BARRIER SYSTEM AND METHOD**

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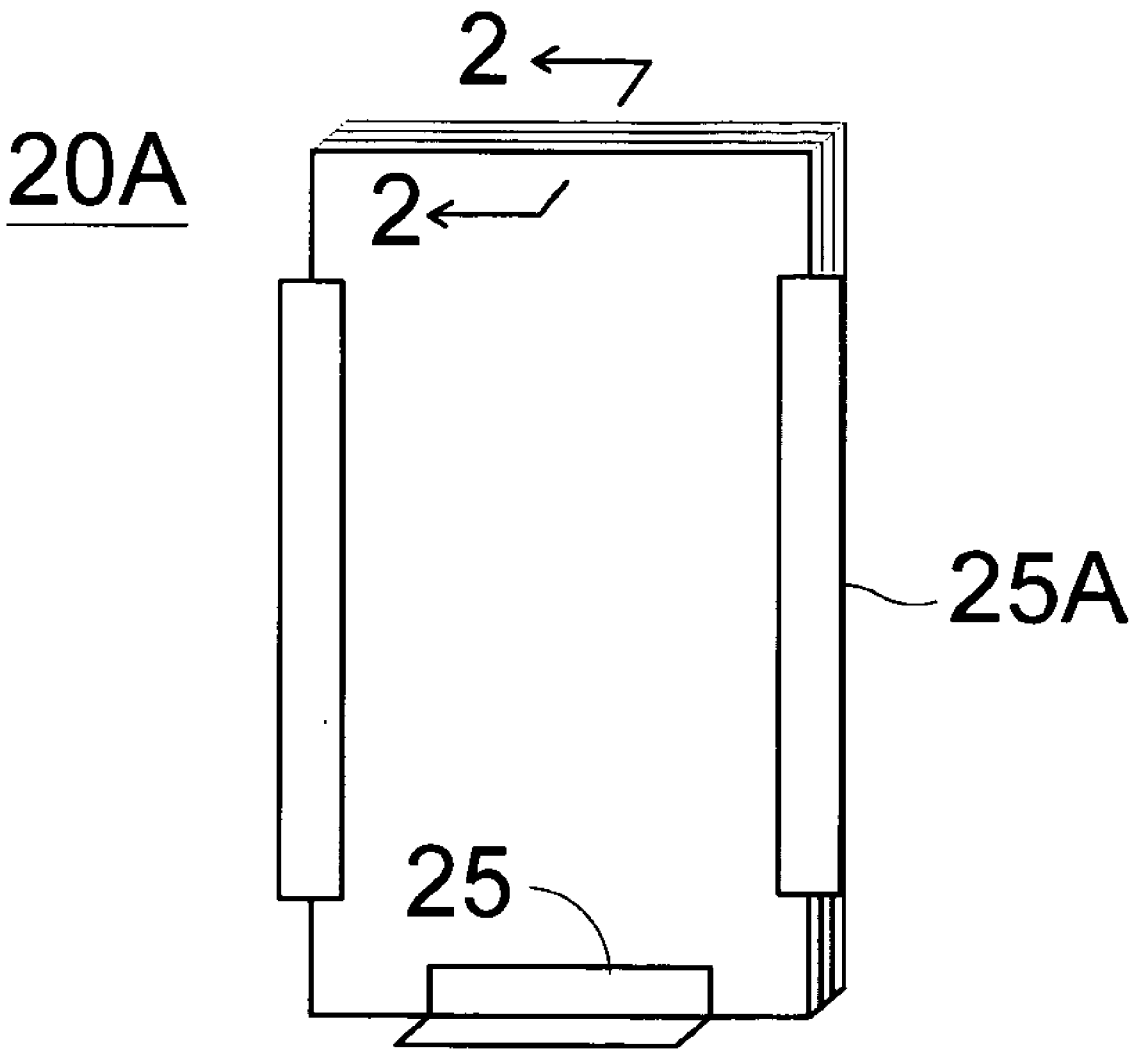
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(57) **ABSTRACT**

A ballistic barrier wall is constructed of a pair of spaced vertical surfaces connected by 2×4 s, 2×8 s or other boards and filled with sand. The outside is spray-coated on both vertical sides with an elastomeric polymer mixture. Panels or walls are connected to other panels and to floor or wall surfaces by straight brackets and angle brackets. The multiple vertical layers of the panel trap bullets, armor piercing shells, bomb shrapnel or other ballistic elements in the wall.



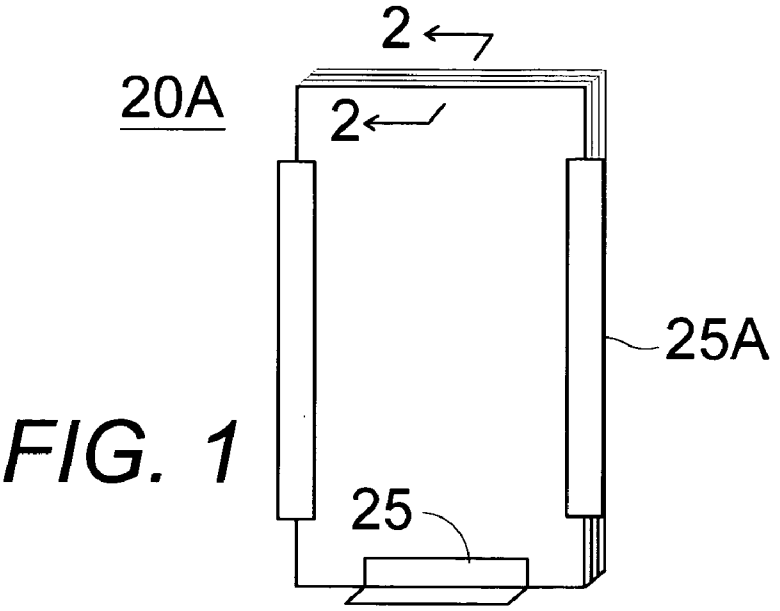


FIG. 1

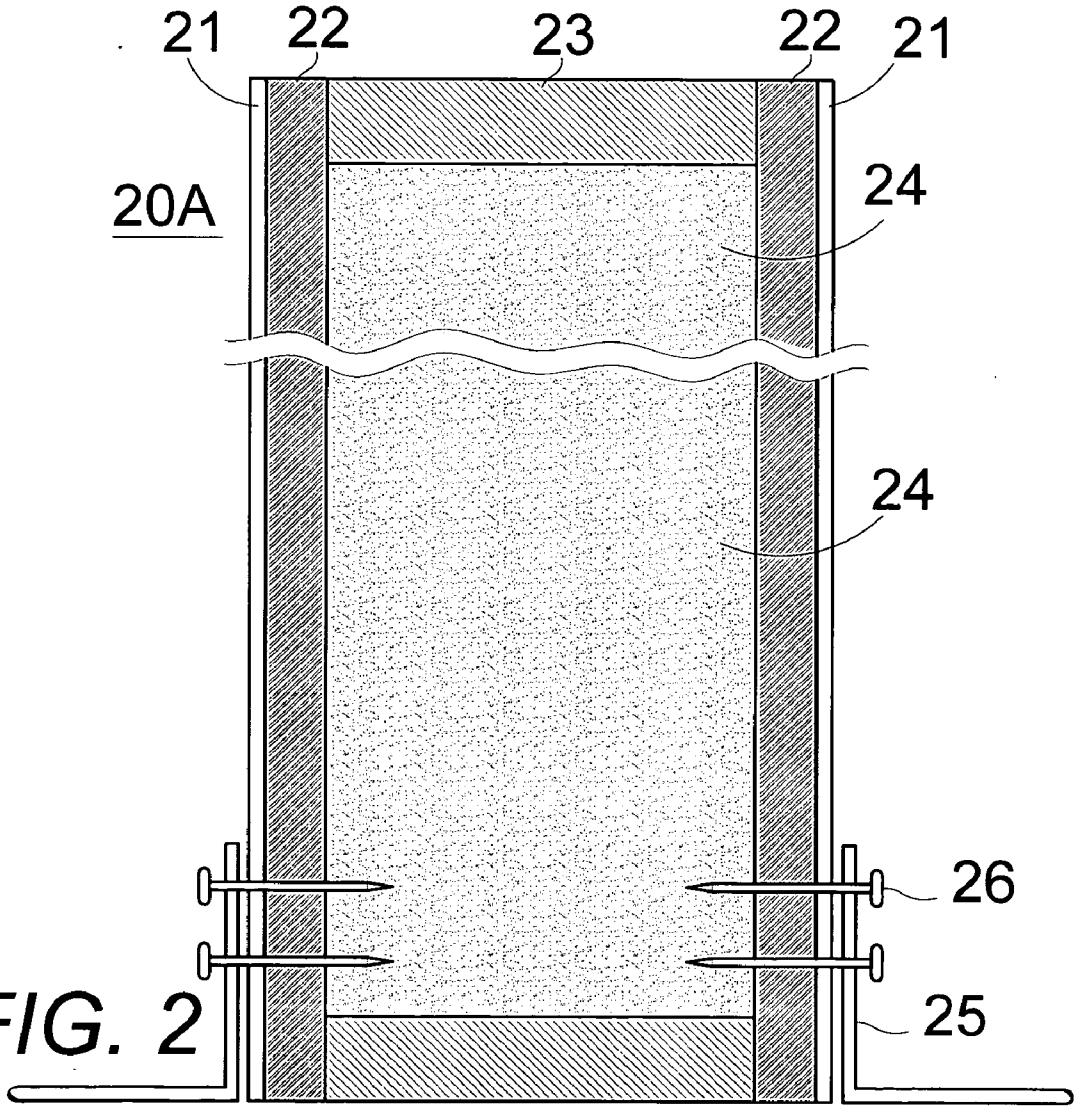


FIG. 2

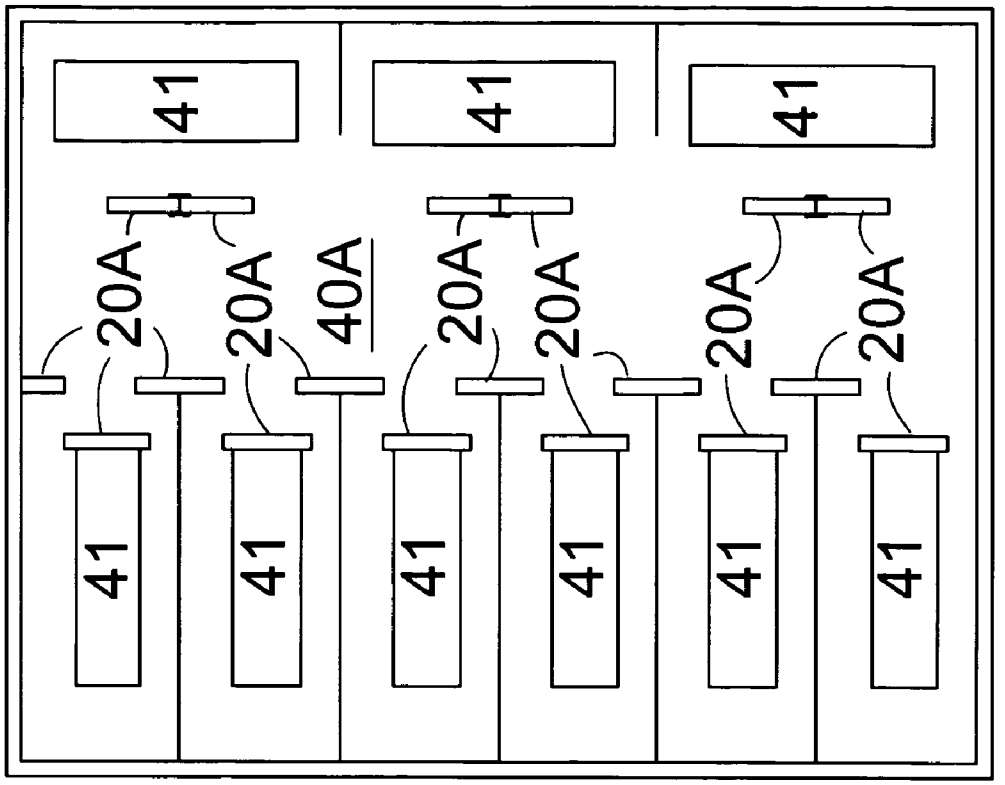

41
41
41
20A
20A
40A
20A
20A
20A
20A
41
41
41
41
41
41

FIG. 3

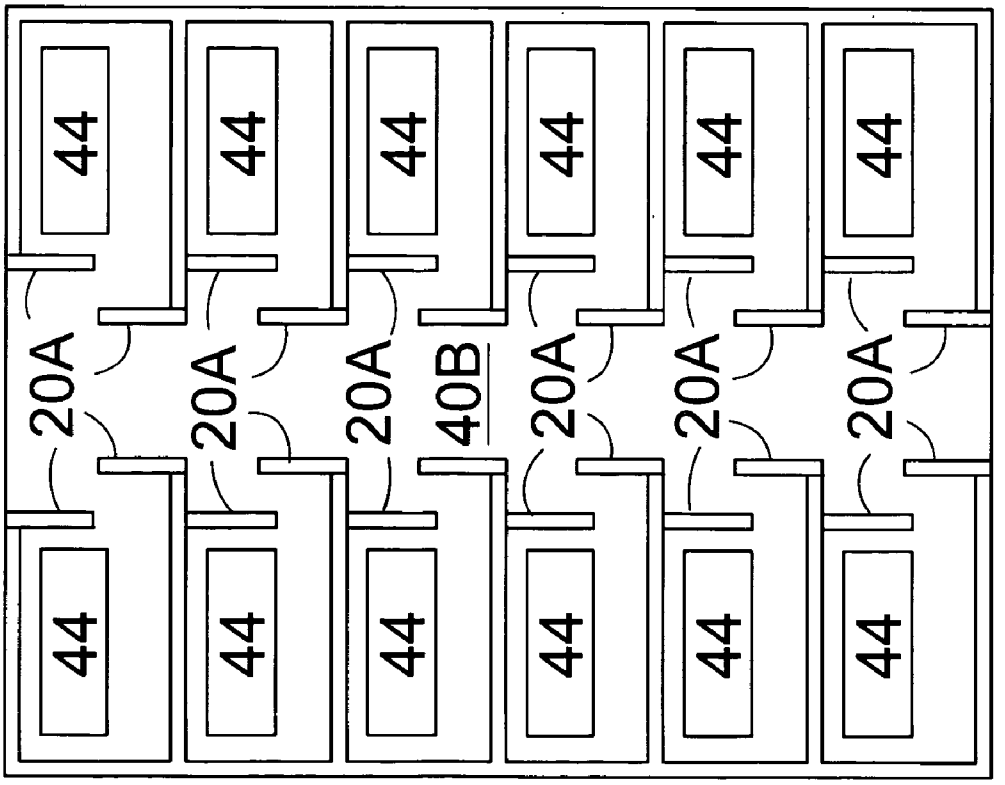

44
44
44
44
44
44
20A
20A
20A
40B
20A
20A
20A
44
44
44
44
44
44

FIG. 4

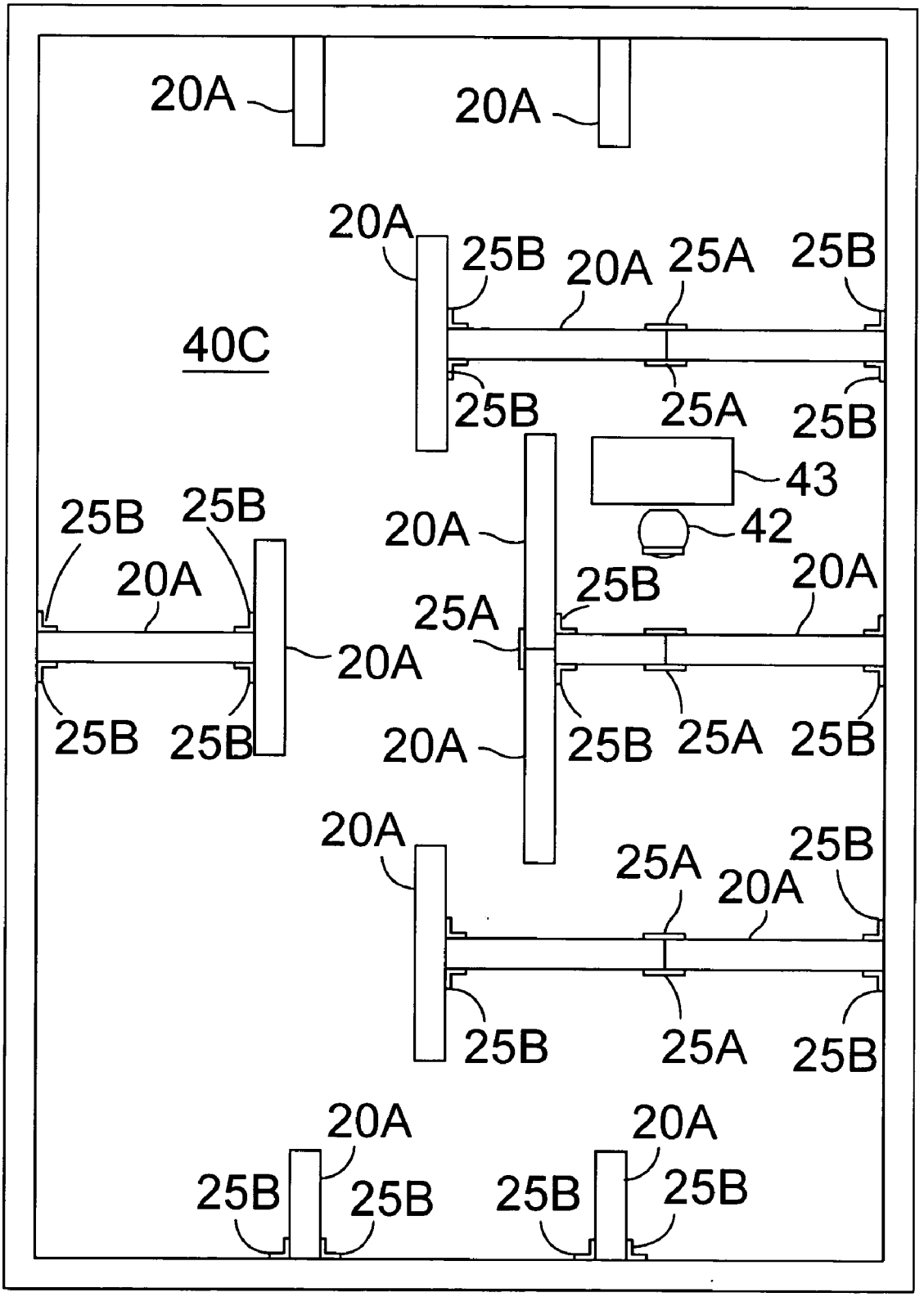

20A
20A
20A
25B
20A
25A
25B
40C
25B
25A
25B
43
42
25B
25B
20A
20A
25B
20A
25A
20A
25B
25B
25B
25A
25B
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25B
25A
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25B
25B

FIG. 5

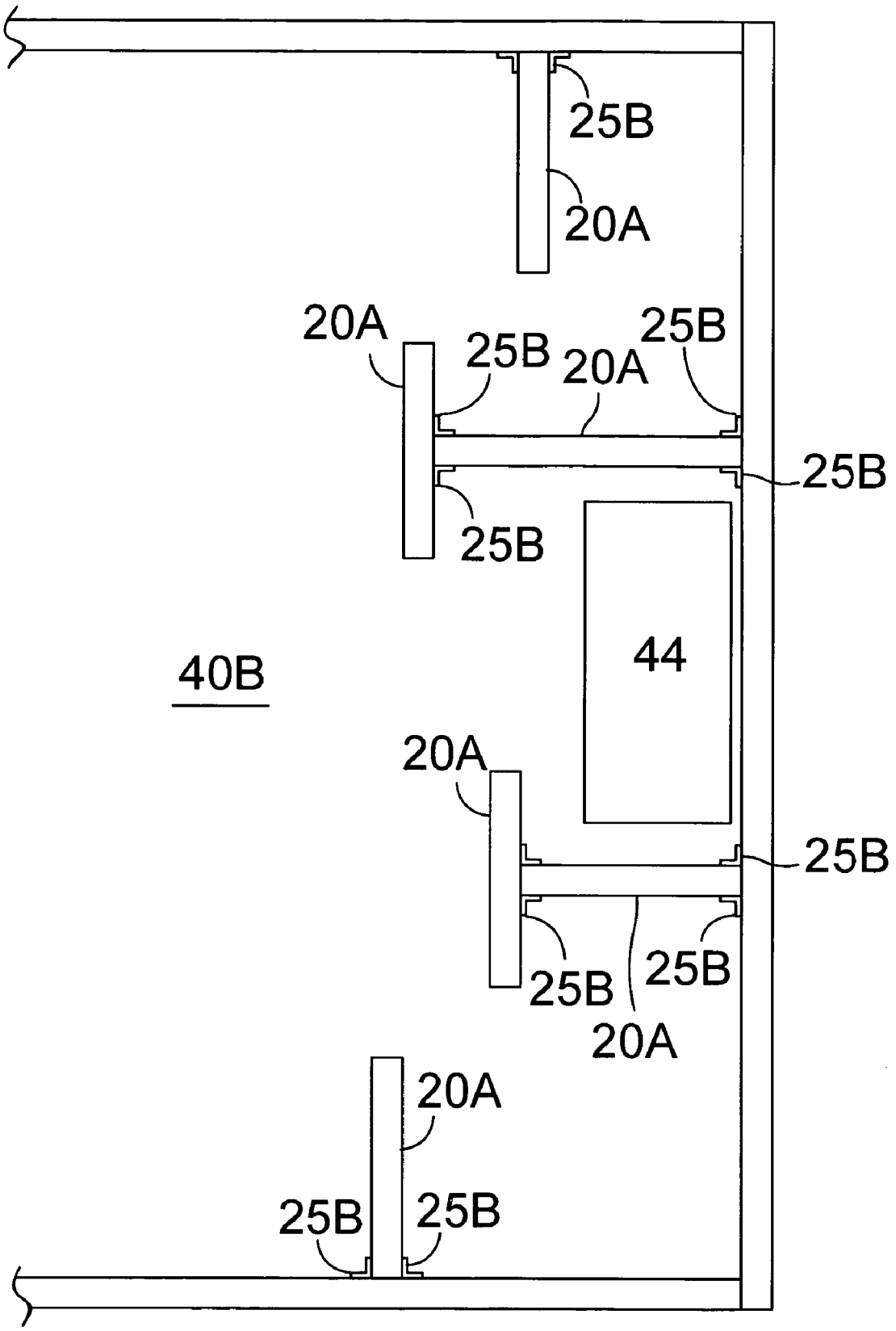

25B
20A
20A
25B
25B
20A
25B
25B
25B
44
40B
20A
25B
25B
25B
20A
20A
25B
25B

FIG. 6

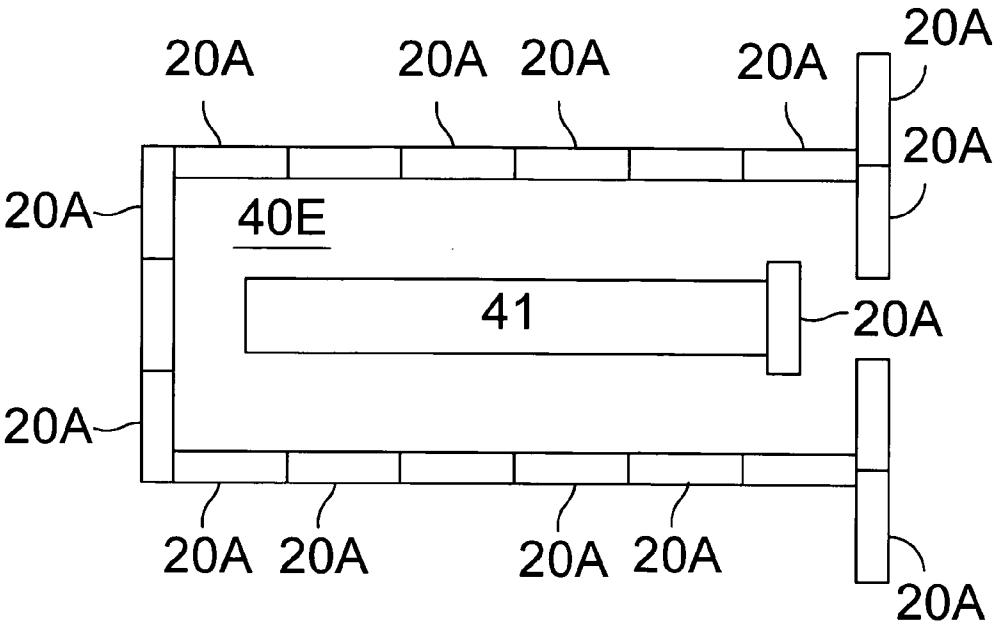

20A
20A
20A
20A
20A
20A
20A
40E
41
20A
20A
20A
20A
20A
20A
20A
20A

FIG. 7

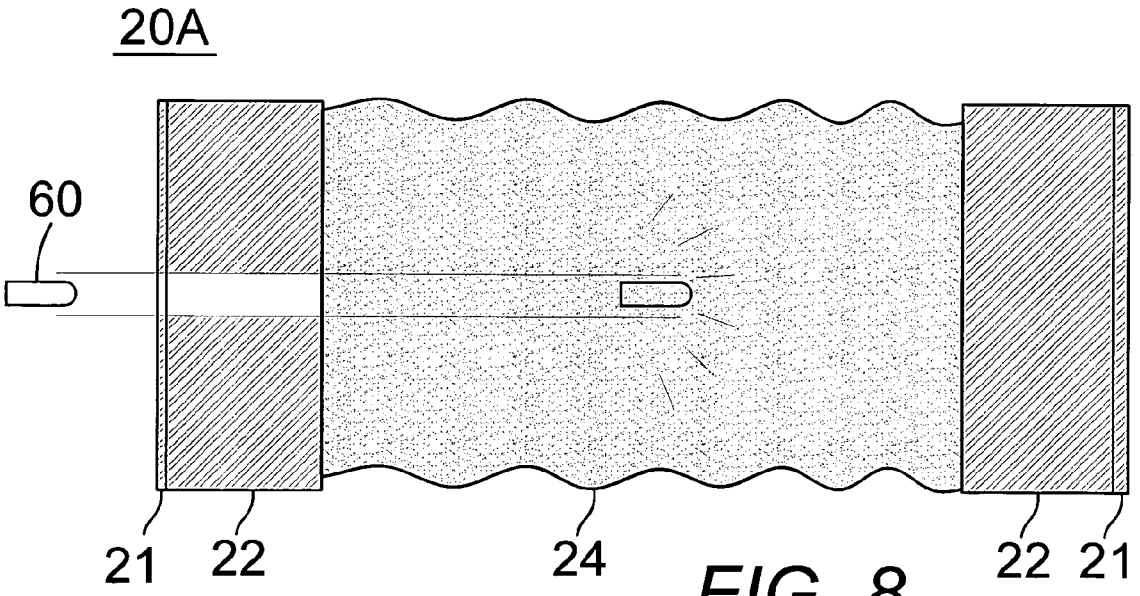

20A
60
21
22
24
22
21

FIG. 8

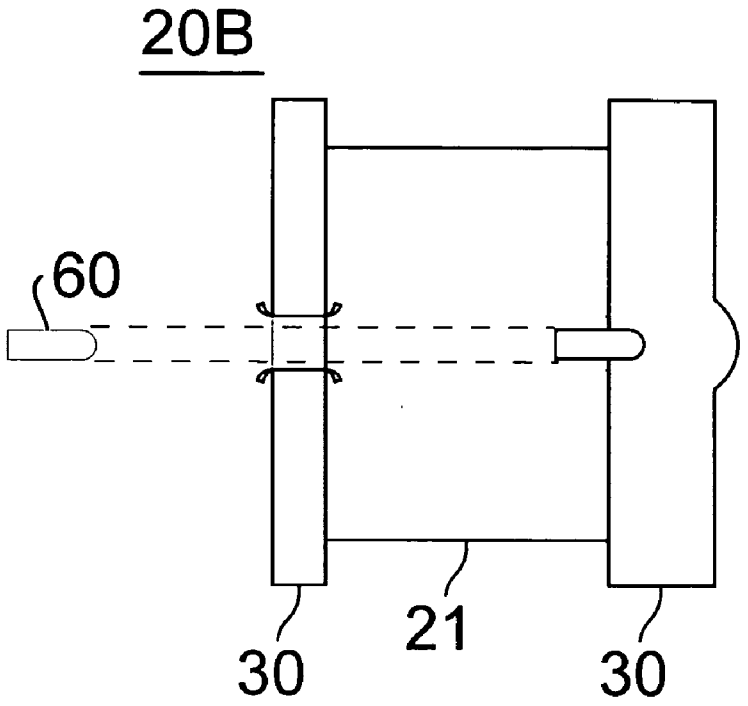


FIG. 9

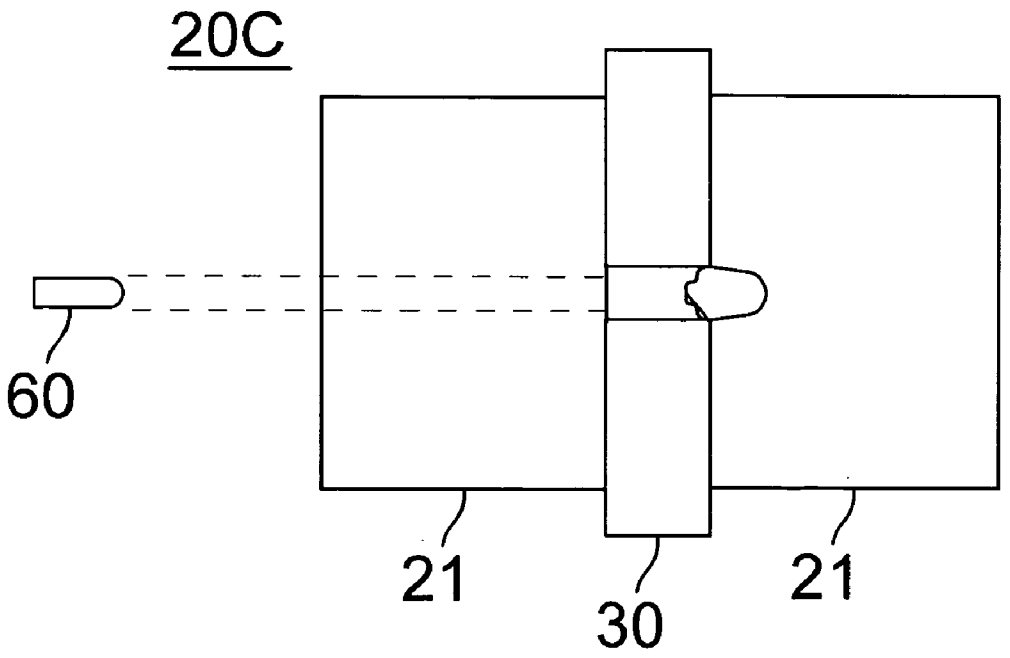


FIG. 10

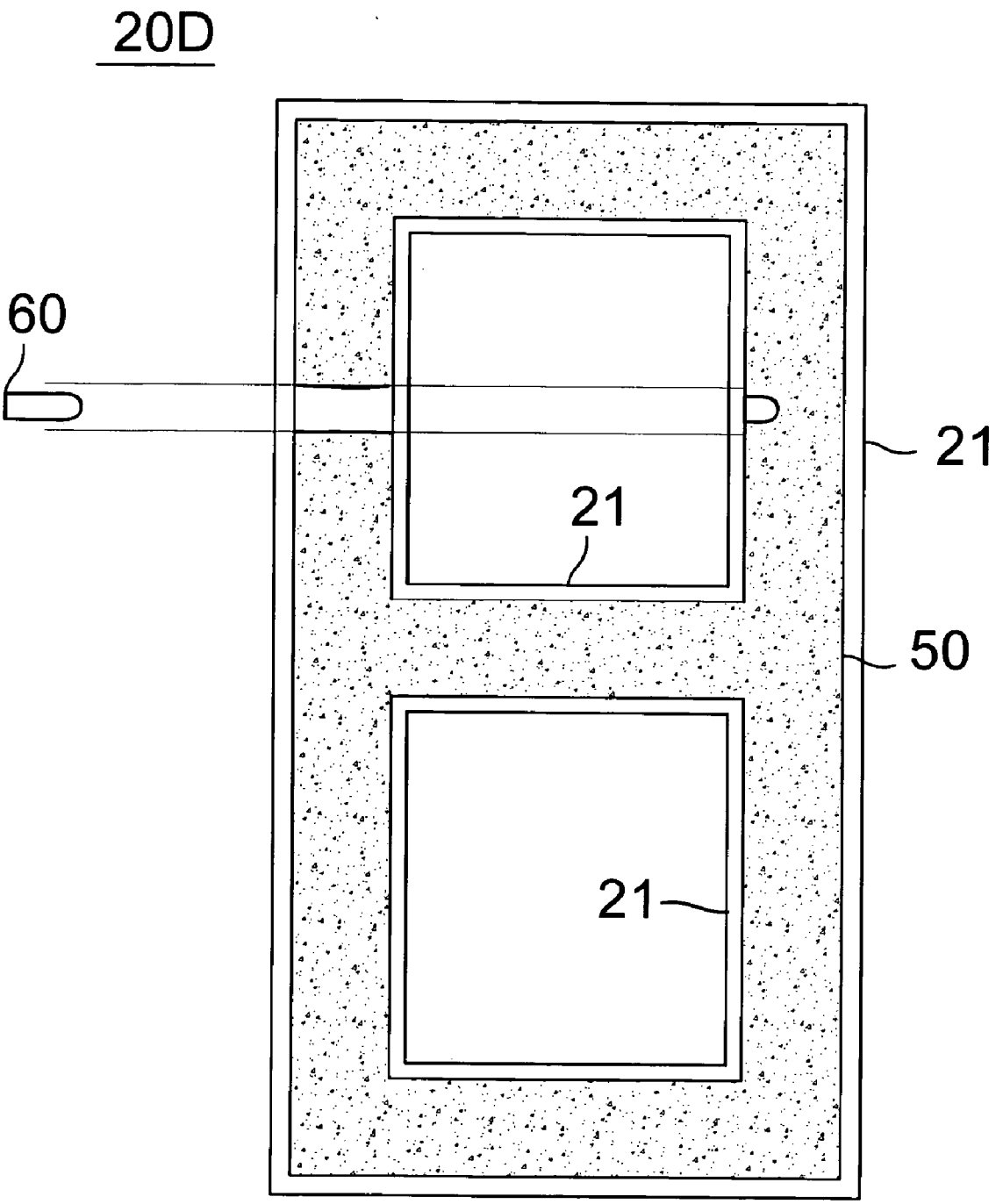


FIG. 11

BALLISTIC BARRIER SYSTEM AND METHOD

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to bulletproof structural panels or walls, and particularly to a system of inexpensive and relatively light weight ballistic barrier walls and panels which could be rapidly erected and used as interior or exterior walls or panels for a building, tent, or on vehicles or anywhere it is desirable to protect against ballistic weapons and explosives, the system comprising panels formed of two spaced parallel sheets made of wood, pressboard, pressed fiberboard, composite, or metal with sand poured into the void between after the sheets are erected, the outside surfaces of both sheets coated with a sprayable mixture of an elastomeric polymer such as polyurethane and polyurea, similar to the product VORTEX® used in covering pickup truck beds.

[0003] 2. Description of the Prior Art

[0004] Military and other personnel subject to attacks are especially vulnerable in structures not built to resist ballistic assaults, especially temporary structures. Inside any building or vehicle personnel are vulnerable to interior attacks by an assaulter with a ballistic weapon or bomb.

[0005] It is desirable to quickly fabricate interior ballistic barrier structures to protect personnel from attackers who have entered a building, such as military offices, barracks, dining halls and other spaces.

[0006] Most of the prior art provides complex factory fabricated wall systems which are often expensive and heavy to transport and work with in erecting a protective structure. Most prior art wall systems do not provide inexpensive rapidly constructed ballistic shielding structures which can be assembled in the field and which prevent escape of ballistic or wall particles.

[0007] U.S. Patent Application #20040123541, published Jul. 1, 2004 by Jewett, is for a reinforced wall structure for protecting underlying wall substrates against natural and unnatural blast effects. The reinforced wall system may be made by combining several layers of materials in various configurations. In a preferred embodiment, the reinforced wall system includes an underlying wall substrate, and a reinforcing wall covering. The reinforcing wall covering includes three layers of elastomeric material, one layer of a reinforcement grid, and a layer of a release agent. The first layer of elastomeric material is applied to the underlying wall substrate. A reinforcement grid of strands is then applied to the first elastomeric layer. Preferably, the grid includes horizontally and vertically extending strands having elastic cores wrapped by helically woven aramid fibers. A second elastomeric layer is applied to the reinforcement grid for additional blast protection. Preferably, the reinforcing wall covering includes a third elastomeric layer. However, the third elastomeric layer is separated from the second layer by a release agent. The release agent is applied between the second and third elastomeric layers to reduce the adherence between the two. If the reinforced wall system experiences an explosive blast, the third elastomeric layer shears at the release agent from the underlying second elastomeric layer providing independent deformation and protection from each layer. Textures may be incorporated into the elastomeric polymer to provide the appearance of a conventional wall and promote the adhesion of additional coatings. Alternatively, modified spackle incorporating polymer adhesives may be used to cover the most exterior polymer layer. Fungicides, bactericides, viruscides and fire retardants may be incorporated into the reinforcing wall system to provide protection against the spread of biological agents and fire.

[0008] U.S. Patent Application #20040020349, published Feb. 5, 2004 by Walker, provides a perforating gun loading bay and method for protecting adjacent areas from an accidental explosion during gun loading. The bay can be an insert-type arrangement or a stand-alone structure. The bay includes metal plate walls, a floor and a roof The walls include a shock absorbing inner lining material, for example of wood, fiberglass or polymerics. Since it is generally of greatest importance to limit lateral distribution of explosion energy and debris, walls further include a void formed between lining material and plate. The void is filled with energy absorbing/penetration limiting material, such as cement, sand, gravel or polymerics. To stabilize the void for supporting the filling materials, an inner liner of metal, such as steel or wood panels, is supported in spaced relation from plate by braces.

[0009] U.S. Pat. No. 2,348,130, issued/to Hardy, Jr., shows armor plating having spaced metal plates between which a layer of rubber is positioned with pockets in the rubber filled with abrasive material, such as sand.

[0010] U.S. Pat. No. 4,455,801, issued Jun. 26, 1984 to Merritt, describes a light weight composite panel for use in vaults or strong rooms, having a foamed plastic core, metal mesh embedded in the major faces of the core, a layer of wood on each face of the plastic core, and a sheet metal skin covering the layers of wood. An inner one of the sheet metal skins is preferably a heat conductive metal, such as aluminum.

[0011] U.S. Pat. No. 4,683,688, issued Aug. 4, 1987 to Wojcinski, discloses a firing range assembly that includes a transportable container which encloses a firing range. Each wall of the container is provided with a lining which functions to: (i) resist penetration by projectiles; and (ii) inhibit rebounding of projectiles. At least one of said walls comprises a panel having corrugations, and a material designed to attenuate noise and to resist penetration by projectiles in said corrugations.

[0012] U.S. Pat. No. 4,856,791, issued Aug. 15, 1989 to McQuade, indicates a protective ballistic mat assembly and installation method therefore, which employ a sheet of elastomeric material and a cellular foam substrate which are mounted to a rigid panel. The panel is mounted to an armor steel plate by driving fasteners through the elastomeric material and the substrate to secure the panel to the metal plate. Projectiles which strike the assembly impact against the plate and projectile fragmentation is contained within the assembly.

[0013] U.S. Pat. No. 4,822,657, issued Apr. 18, 1989 to Simpson, puts forth a bullet resistant panel defined by an assembly including plural layers of impact resistant fabric and a layer of insulating foam, the assembly being secured within a peripheral frame and laminated between intermediate substrates of cellulosic material and exterior layers of

metal. The panel may be used in constructing protective walls or barriers subjected to possible impact by bullets or other high impact force projectiles.

[0014] U.S. Pat. No. 4,198,454, issued Apr. 15, 1980 to Norton, concerns a lightweight composite panel for use in constructing a portable or mobile enclosure capable of resisting penetration by small arms projectiles, explosive forces and heat having a multi-layered sandwiched construction. The layers include spaced apart metal panels with a honeycomb structure filled with a subliming material, a panel of projectile resisting material, and at least one panel of yieldable thermal insulation material disposed therebetween.

[0015] U.S. Pat. No. 5,390,466, issued Feb. 21, 1995 to Johnson, illustrates buildings and building components. Bridge girt assemblies and modular building panels are provided for use in fabricating walls and roofs of buildings. The panels have novel structures adapted to protect the interior of the building from intrusion of heat and cold, and/or from fire, and/or from small arms gunfire. Some embodiments also provide mechanical reinforcing connections between the building structural members and the outside of the building. The modular panels can be made entirely with noncombustible materials.

[0016] U.S. Pat. No. 5,640,824, issued Jun. 24, 1997 to Johnson, is for buildings and building components. Bridge girt assemblies and modular building panels are provided for use in fabricating walls, floors and roofs of buildings. The panels have novel structures adapted to protect the interior of the building from intrusion of heat and cold, and/or from fire, and/or from small arms gunfire. Some embodiments also provide mechanical reinforcing connections between the building structural members and the outside of the building. The modular panels can be made entirely with noncombustible materials.

[0017] U.S. Pat. No. 4,186,648, issued Feb. 5, 1980 to Clausen, provides an armor wall structure comprising a plurality of woven ballistic fabric laminates of polyester resin fibers arranged and supported in and by a supportive resinous matrix with a filler of particulate metal abrading material, said matrix, filler of particulate metal abrading material, and woven fabric laminates cooperating with each other to establish a structurally stable unitary armor wall structure.

[0018] U.S. Pat. No. 6,533,189, issued Mar. 18, 2003 to Kott, is for a method and portable apparatus for spraying viscous materials to form a truck bed liner. Tanks of coating materials that include an activator and resin are contained in a heated, portable cart which also houses a motor driving two pumps to pump the coating materials through air lines to a spray gun at a rate that can be varied by an operator. A high volume, low pressure air compressor is also mounted on the cart and in fluid communication with the air gun. The coating materials are forced through a mixing tube and out of a nozzle tip where it is atomized by the high volume air for spraying to coat the truck bed liner. A pressurized flush tank is activated immediately after spraying in order to clear the coating materials from the spray gun. A modified, dual component caulking gun containing a pre-selected, second colored resin and activator can be attached to the nozzle tip for decorative coloring or texturing.

[0019] What is needed is a lightweight, inexpensive, easy to transport and easy to erect system of protective barriers against ballistic attacks so that such structures can be rapidly fabricated in the field by available personnel to provide immediate inexpensive and effective protection against attacks, a ballistic barrier system which instantly self-seals to entrap the ballistic projectiles within the barrier wall and to prevent pieces of the projectiles or the barrier itself leaving the barrier.

SUMMARY OF THE INVENTION

[0020] An object of the present invention is to provide a lightweight, inexpensive, easy to transport and easy to erect system of protective barriers against ballistic attacks so that such structures can be rapidly fabricated in the field by available personnel to provide immediate inexpensive and effective protection against attacks, a ballistic barrier system which instantly self-seals to entrap the ballistic projectiles within the barrier wall and to prevent pieces of the projectiles or the barrier itself leaving the barrier.

[0021] A related object of the present invention is to provide a projectile barrier wall system which is fabricated from readily available materials, preferably wood, pressboard such as ADVANTEC®, pressed fiberboard, composite, or metal sheets, sandwiching sand or other readily available material poured between pairs of parallel spaced panels and spray coated on both sides using standard sprayers with an elastomeric polymer, preferably comprised of polyurethane and polyurea, such as VORTEX®, a commercially available truck bed liner.

[0022] In brief, a system of inexpensive and relatively light weight ballistic barrier walls and panels is constructed of two spaced parallel sheets made of wood, pressboard, composite, or metal with sand poured into the void between after the panels are erected, the outside surfaces of both sheets coated with a sprayable elastomeric polymer mixture such as polyurethane and polyurea, similar to the product VORTEX® used in covering pickup truck beds. The panels are fabricated in place by available personnel and used as interior or exterior walls or panels in a building, tent, or on vehicles or anywhere it is desirable to protect against ballistic weapons and explosives.

[0023] The ballistic barrier panels actually capture a bullet and capture shrapnel from a bomb or other explosives. The bullets, armor piercing shells, bomb shrapnel or other ballistic elements are captured in the wall and instantly sealed in, including any particles from the walls that would normally splinter off upon entry of a bullet or piece of shrapnel. The ballistic or explosive projectile or projectiles go through the outer layer of the elastomeric polymer mixture and as they pass through, the outer layer instantly liquefies to admit the projectiles and instantly closes up again, so that even as the projectiles are going through it the outer layer is squeezing the projectiles and slowing them down. Since the outer layer closes around and behind the projectiles passing through, the outer layer seals in projectile particles breaking off and wall particles breaking off so that nothing gets out of the outer layer. Normally when a projectile hits a material, the material shatters and flies back from the entering hole and forward from the exit hole, as well as portions of the projectile, such as outer shell casings, break off and fly away from the material. None of that happens with the outer layers of the present invention.

[0024] The projectile or explosive shrapnel and any normal shattering pieces stay inside between the outer layers.

Because the first outer layer slows down the projectile substantially as the projectile is squeezed by the outer layer, the thickness of the wall or panel can be much less than would otherwise be the case without the elastomeric polymer outer layer.

[0025] Five or six foot high partitions in rooms, such as dining halls and barracks, will substantially limit the number of casualties in case of a bomb or attack with firearms or other weapons.

[0026] An advantage of the present invention is that it provides a ballistic barrier system which instantly self-seals to entrap the ballistic projectiles within the barrier wall and to prevent pieces of the projectiles or the barrier itself leaving the barrier.

[0027] Another advantage of the present invention is that it provides immediate inexpensive and effective protection against attacks inside a structure.

[0028] An additional advantage of the present invention is that it provides a projectile barrier wall system which is fabricated from readily available materials.

[0029] One more advantage of the present invention is that it provides a lightweight, inexpensive, easy to transport and easy to erect system of protective barriers against ballistic attacks.

BRIEF DESCRIPTION OF THE DRAWINGS

[0030] These and other details of my invention will be described in connection with the accompanying drawings, which are furnished only by way of illustration and not in limitation of the invention, and in which drawings:

[0031] **FIG. 1** is a side elevational view of one of the ballistic barrier walls of the present invention with a bottom angle bracket and side brackets;

[0032] **FIG. 2** is a partial cross-sectional view taken through section **2-2** of **FIG. 1** showing the layers of the ballistic barrier wall of the present invention;

[0033] **FIG. 3** is a plan view of a dining hall with ballistic barrier walls strategically placed to shield tables;

[0034] **FIG. 4** is a plan view of a barracks with ballistic barrier walls strategically placed to shield beds;

[0035] **FIG. 5** is a plan view of an office space with ballistic barrier walls strategically placed to shield desks;

[0036] **FIG. 6** is a plan view of a barracks with ballistic barrier walls strategically placed to shield beds;

[0037] **FIG. 7** is a plan view of a dining area or meeting room with ballistic barrier walls strategically placed to shield tables;

[0038] **FIG. 8** is a cross-sectional view taken through the ballistic barrier wall of the present invention having pressboard walls holding sand and coated with elastomeric polymer and showing how a bullet is stopped within the wall;

[0039] **FIG. 9** is a cross-sectional view taken through an alternate ballistic barrier wall of the present invention having steel sheet walls sandwiching elastomeric polymer and showing how a bullet is stopped within the wall;

[0040] **FIG. 10** is a cross-sectional view taken through an alternate ballistic barrier wall of the present invention having elastomeric polymer an inch thick on two sides of a steel sheet and showing how a bullet is stopped within the wall;

[0041] **FIG. 11** is a cross-sectional view taken through an alternate ballistic barrier wall of the present invention having a cinder block coated all over with elastomeric polymer and showing how a bullet is stopped within the wall.

BEST MODE FOR CARRYING OUT THE INVENTION

[0042] In **FIGS. 1 through 11**, a ballistic barrier system for rapid on-site fabrication to protect personnel from ballistic projectiles comprises a series of ballistic barrier panels or walls **20**A-**20**D that are erected within a structure in strategic locations for shielding personnel within the structure from ballistic projectiles.

[0043] Each of the ballistic barrier panels or walls **20**A-**20**D comprises a series of vertical layers including at least one layer of sprayed elastomeric polymer **21**, preferably a mixture of polyurethane and polyurea, such as VORTEX® used to line truck beds.

[0044] In **FIGS. 1-8**, the preferred embodiment of the ballistic barrier walls and panels **20**A allow fast, lightweight, onsite construction by existing personnel. In **FIGS. 2 and 8**, the walls or panels have outer layers **21** of elastomeric polymer thick enough to slow an entering ballistic projectile sufficiently so that the vertical layers of each of the ballistic barrier walls stops the ballistic projectile within the ballistic barrier wall and the outer layers seal in all flying material produced by the ballistic projectile piercing the ballistic barrier wall **20**A. Each of the ballistic barrier panels is secured by at least one angle bracket **25** to a floor surface and at least one straight bracket **25**A or angle bracket to an adjacent ballistic barrier wall or external vertical surface.

[0045] Inside the outer layer **21** of elastomeric polymer are at least one pair of parallel rigid vertical surfaces **22** constructed of a sheet of material such as pressboard, preferably Advantec®, plywood, composite, wood, or metal. The vertical surfaces **22** are preferably sprayed with the outer layer prior to shipment of the wall components. The rigid vertical surfaces are interconnected along the bottom and sides by an elongated element **23**, preferably constructed of wooden 2×4 s for bullets, 2×8 s for armor piercing shells and explosives or other width boards as needed for the desired width of the interior sand-filled portion of the wall, running a length of the bottom and sides. The vertical surfaces **22** are spaced apart a sufficient distance, preferably at least 3½" (for a 2×4), to house a quantity of earth material **24**, preferably sand or other comparable readily available material in the environment, thick enough to stop a moving ballistic projectile therein, in cooperation with the slowing of the ballistic projectile by the outer layer **21** and the vertical surface **22**.

[0046] A quantity of earth material **24**, such as sand, is poured in-between the vertical surfaces **22** to fill the space between the vertical surfaces. The top is covered with a wooden 2×4 or other elongated element **23** and an outer layer **21** of elastomeric polymer, which may be a mixture of polyurethane and polyurea such as VORTEX®, is sprayed onto the outside of the vertical surfaces. The outer layer **21**

of elastomeric polymer is sufficiently thick (¼"-⅜") to slow down a ballistic projectile traveling through the outer layer by sealing around the ballistic projectile as it passes through the outer layer.

[0047] In an alternate embodiment, as shown in **FIG. 9**, one of the rigid vertical surfaces **30** may be made of ⅜" steel and the other rigid vertical surface **30** made of 3/16" steel. A one-inch layer **21** of elastomeric polymer is sandwiched between the rigid vertical layers.

[0048] In an alternate embodiment, as shown in **FIG. 10**, one rigid vertical surface **30** made of ⅜" steel is sandwiched between two one-inch layers **21** of elastomeric polymer.

[0049] Each of the embodiments in **FIGS. 9 and 10** eliminate the need for an inner layer of sand in the ballistic barrier panel.

[0050] In **FIGS. 1 and 2**, the angle bracket **25** consists of an elongated metal angle bracket that extends along a substantial portion of the ballistic barrier panel **20**A where the panel contacts a floor surface. The angle bracket **25** has a horizontal portion extending away from the ballistic barrier panel or wall in contact with a floor surface to maintain the panel or wall in a vertical orientation. The angle bracket **25** also has a vertical portion contacting the ballistic barrier panel or wall. The vertical portion has a series of holes for securing the angle bracket to the ballistic barrier panel or wall by a series of connectors **26**, such as nails, screws, or bolts. The horizontal portion may also have holes for using connectors to secure the horizontal portion to the floor.

[0051] The straight bracket **25**A is constructed of an elongated metal sheet that extends along a substantial portion of the height of the ballistic barrier panel or wall and straddles adjacent ballistic barrier panels or walls. A series of vertical openings along the length of the elongated metal sheet adjacent to both sides of the metal sheet interconnect two adjacent ballistic barrier walls by a series of connectors such as nails, screws, or bolts. When two ballistic barrier walls or panels **20**A connect together or to another wall at right angles, angle brackets **25**B attach to each intersecting wall, is in **FIGS. 5 and 6**.

[0052] Ballistic barrier walls can be constructed of a series of panels **20**A erected within a structure in strategic patterns to protect personnel. The series of panels **20**A is sufficiently tall (five or six feet tall) to prevent ballistic projectiles shot or exploded from a point on one side of the series of panels to another point-where personnel are shielded from the ballistic projectiles. The ballistic barriers may be walls to the ceiling, but the shorter panels are highly effective and quick and easy to construct and serve as equal protection to that of fall walls in such circumstances.

[0053] In **FIG. 3**, a dining hall **40**A has ballistic barrier walls **20**A strategically placed to shield tables **41**.

[0054] In **FIGS. 4 and 6**, a barracks **40**B has ballistic barrier walls **20**A strategically placed to shield beds **44**.

[0055] In **FIG. 5**, an office space **40**C has ballistic barrier walls **20**A strategically placed to shield chairs **42** and desks **43**.

[0056] In **FIG. 7**, a dining area or meeting room **40**E with ballistic barrier walls **20**A strategically placed to shield tables **41**.

[0057] In an alternate embodiment, as shown in **FIG. 11**, the ballistic barrier panels may be constructed of cinder-block **50** coated on all surfaces with a layer **21** of sprayable elastomeric polymer mixture.

[0058] In use, a ballistic barrier method for rapidly fabricating on-site ballistic barrier systems to protect personnel from ballistic projectiles is constructed using a pair of parallel vertical sheets **22** of wood, pressboard, composite, or metal, connected by elongated elements **23**, preferably by wooden 2×4 s or 2×8 s or other size boards, along the bottom and two ends creating a hollow fillable space between the sheets. Sand **24** or other freely available earth material is poured into the hollow space, the top is covered, preferably with another elongated element **23**, such as a wooden 2×4, and a layer **21** is formed on the outside surfaces by coating them with a sprayable elastomeric polymer mixture such as polyurethane and polyurea. The outer layer **21** preferably sprayed on the outside of the vertical sheets prior to shipping the wall components. The panels are then interconnected with other panels or with other vertical surfaces by metal straight brackets **25**A that connect to each panel by nails, screws, or bolts. The panels are connected to the floor by metal angle brackets **25** that connect to the floor or other horizontal surface and a wall or other vertical surface by a series of nails, screws, or bolts **26**.

[0059] When fired at either vertical surface of the panels, as shown in **FIGS. 8 through 11**, bullets **60**, armor piercing shells, bomb shrapnel or other ballistic elements are captured in the wall and instantly sealed in, including any particles from the walls that would normally splinter off. Ballistic barrier wall thickness can be varied to meet the necessary ballistic threat present.

[0060] The ballistic or explosive projectile or projectiles **60** go through the outer layer of the elastomeric polymer mixture **21** and as they pass through, the outer layer instantly liquefies to admit the projectiles and instantly closes up again, so that even as the projectiles are going through it the outer layer is squeezing the projectiles and slowing them down. Since the outer layer closes around and behind the projectiles passing through, the outer layer seals in projectile particles breaking off and wall particles breaking off so that nothing gets out of the outer layer. The layer of sand **24** further slows or stops the ballistic projectile. The panels stand preferably five feet tall, but may be constructed floor-to-ceiling to create entire walls and may be constructed in a building, tent, or on vehicles, or anywhere it is desirable to protect against ballistic weapons and explosives.

[0061] It is understood that the preceding description is given merely by way of illustration and not in limitation of the invention and that various modifications may be made thereto without departing from the spirit of the invention as claimed.

What is claimed is:

1. A ballistic barrier system for rapid on-site fabrication to protect personnel from ballistic projectiles, the system comprising:

a series of ballistic barrier walls erected within a structure in strategic locations for shielding personnel within the structure from ballistic projectiles, each of the ballistic barrier walls comprising a series of vertical layers having outer layers of elastomeric polymer sufficiently

thick to slow an entering ballistic projectile sufficiently so that the vertical layers of each of the ballistic barrier walls stops the ballistic projectile within the ballistic barrier wall and the outer layers seal in all flying material produced by the ballistic projectile piercing the ballistic barrier wall, each of the ballistic barrier walls secured by at least one angle bracket to a floor surface and at least one straight bracket to an adjacent ballistic barrier wall or external vertical surface.

2. The ballistic barrier system of claim 1 wherein each of the ballistic barrier walls comprises at least one pair of parallel rigid vertical surfaces interconnected along a bottom and sides by an elongated element running a length of the bottom and sides, the vertical surfaces spaced apart a sufficient distance to house a quantity of earth material sufficiently thick to stop a moving ballistic projectile therein in cooperation with the slowing of the ballistic projectile by the outer layer, a quantity of earth material poured in-between the vertical surfaces to fill a space between the ballistic barrier walls with the top covered over, and an outer layer of elastomeric polymer sprayed onto an outside of the vertical surfaces, the outer layer sufficiently thick to slow down a ballistic projectile traveling through the outer layer by sealing around the ballistic projectile as the ballistic projectile passes through the outer layer.

3. The ballistic barrier system of claim 1 wherein the earth material comprises sand poured into a space between the rigid vertical surfaces.

4. The ballistic barrier system of claim 1 wherein the elastomeric polymer comprises a mixture of polyurethane and polyurea.

5. The ballistic barrier system of claim 1 wherein each of the rigid vertical surfaces comprises a sheet of material taken from a list of materials including pressboard, plywood, composite, wood, and metal.

6. The ballistic barrier system of claim 1 wherein the angle bracket comprises an elongated metal angle bracket extending along a substantial portion of the ballistic barrier wall where the ballistic barrier wall contacts a floor surface, the elongated angle bracket comprising a horizontal portion extending away from the ballistic barrier wall in contact with a floor surface to maintain the ballistic barrier wall in a vertical orientation, the elongated metal angle bracket further comprising a vertical portion contacting the ballistic barrier wall, the vertical portion having a series of holes for securing the angle bracket to the ballistic barrier wall by a series of connectors taken from the list of connectors including nails, screws and bolts.

7. The ballistic barrier system of claim 1 wherein the straight bracket comprises an elongated metal sheet extending along a substantial portion of a height of the ballistic barrier wall straddling between adjacent ballistic barrier walls, the elongated metal sheet further comprising a series of vertical openings along a length of the elongated sheet adjacent to each of two sides thereof for interconnecting the two adjacent ballistic barrier walls by a series of connectors taken from the list of connectors including nails, screws and bolts.

8. The ballistic barrier system of claim 1 wherein the ballistic barrier walls comprise a series of panels erected within a structure for personnel use, the series of panels sufficiently tall to prevent ballistic projectiles shot or exploded from one point on one side of the series of panels to another point where personnel are shielded from the ballistic projectiles.

9. A ballistic barrier method for fabricating rapid on-site ballistic barrier systems to protect personnel from ballistic projectiles, the system comprising:

a step of erecting a series of ballistic barrier walls within a structure in strategic locations for shielding personnel within the structure from ballistic projectiles, each of the ballistic barrier walls comprising a series of vertical layers, the step further comprising pre-spraying the vertical layers with outer layers of elastomeric polymer sufficiently thick to slow an entering ballistic projectile sufficiently so that the vertical layers of each of the ballistic barrier walls stops the ballistic projectile within the ballistic barrier wall and the outer layers seal in all flying material produced by the ballistic projectile piercing the ballistic barrier wall, each of the ballistic barrier walls secured by at least one angle bracket to a floor surface and at least one straight bracket to an adjacent ballistic barrier wall or external vertical surface.

10. The ballistic barrier method of claim 9 wherein the step of prespraying an elastomeric polymer comprises spraying a mixture of polyurethane and polyurea.

11. The ballistic barrier method of claim 9 wherein the step of erecting a series of ballistic barrier walls comprises interconnecting at least one pair of parallel rigid vertical surfaces along a bottom and sides by an elongated element running a length of the bottom and sides, the vertical surfaces spaced apart a sufficient distance to house a quantity of earth material sufficiently thick to stop a moving ballistic projectile therein in cooperation with the slowing of the ballistic projectile by the outer layer, pouring a quantity of earth material in-between the vertical surfaces to fill a space between the ballistic barrier walls and covering over a top of the ballistic barrier wall.

12. The ballistic barrier method of claim 11 wherein the step of pouring an earth material comprises pouring sand into a space between the rigid vertical surfaces.

13. The ballistic barrier method of claim 11 wherein the step of erecting each of the rigid vertical surfaces comprises erecting a sheet of material taken from a list of materials including pressboard, plywood, composite, wood, and metal.

14. The ballistic barrier method of claim 11 wherein the angle bracket comprises an elongated metal angle bracket extending along a substantial portion of the ballistic barrier wall where the ballistic barrier wall contacts a floor surface, the elongated angle bracket comprising a horizontal portion extending away from the ballistic barrier wall in contact with a floor surface to maintain the ballistic barrier wall in a vertical orientation, the elongated metal angle bracket further comprising a vertical portion contacting the ballistic barrier wall; the vertical portion having a series of holes for securing the angle bracket to the ballistic barrier wall by a series of connectors taken from the list of connectors including nails, screws and bolts.

15. The ballistic barrier method of claim 14 wherein the straight bracket comprises an elongated metal sheet extending along a substantial portion of a height of the ballistic barrier wall straddling between adjacent ballistic barrier walls, the elongated metal sheet further comprising a series

of vertical openings along a length of the elongated sheet adjacent to each of two sides thereof for interconnecting the two adjacent ballistic barrier walls by a series of connectors taken from the list of connectors including nails, screws and bolts.

16. The ballistic barrier method of claim 1 wherein the ballistic barrier walls comprise a series of panels erected within a structure for personnel use, the series of panels sufficiently tall to prevent ballistic projectiles shot or exploded from one point on one side of the series of panels to another point where personnel are shielded from the ballistic projectiles.

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