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(54) **TACTICAL WALL PANEL, ASSEMBLY AND METHODS OF DEPLOYMENT AND USE**

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(57) **ABSTRACT**

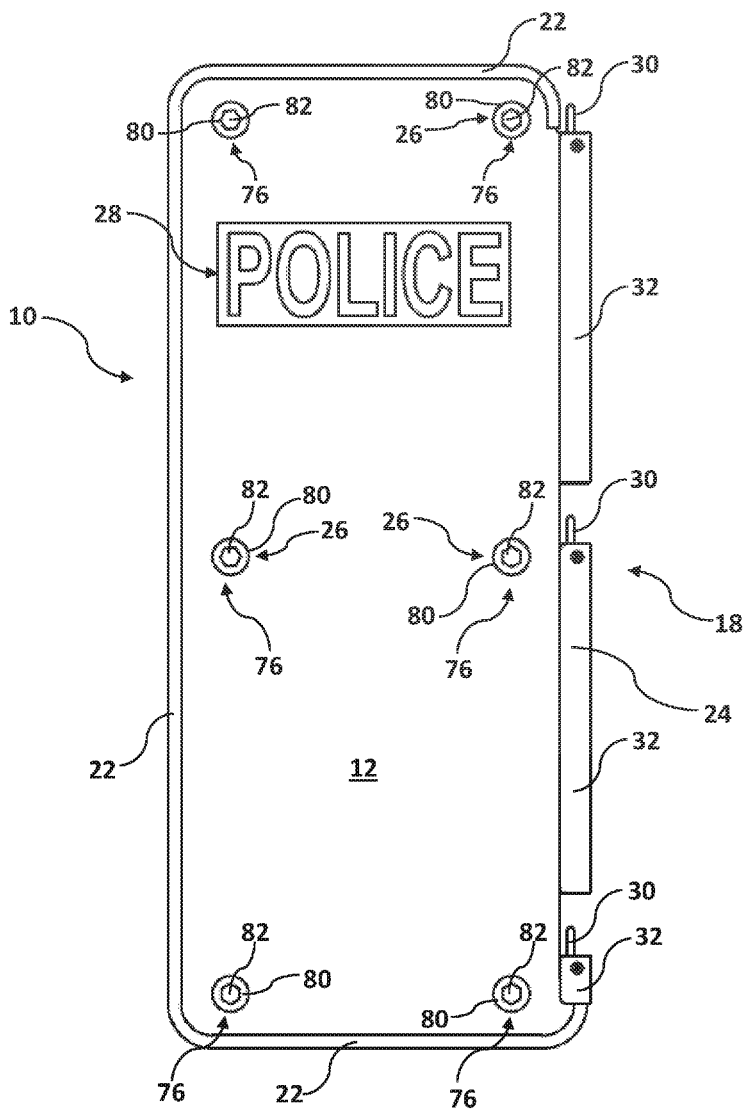
(21) Appl. No.: **16/189,924**

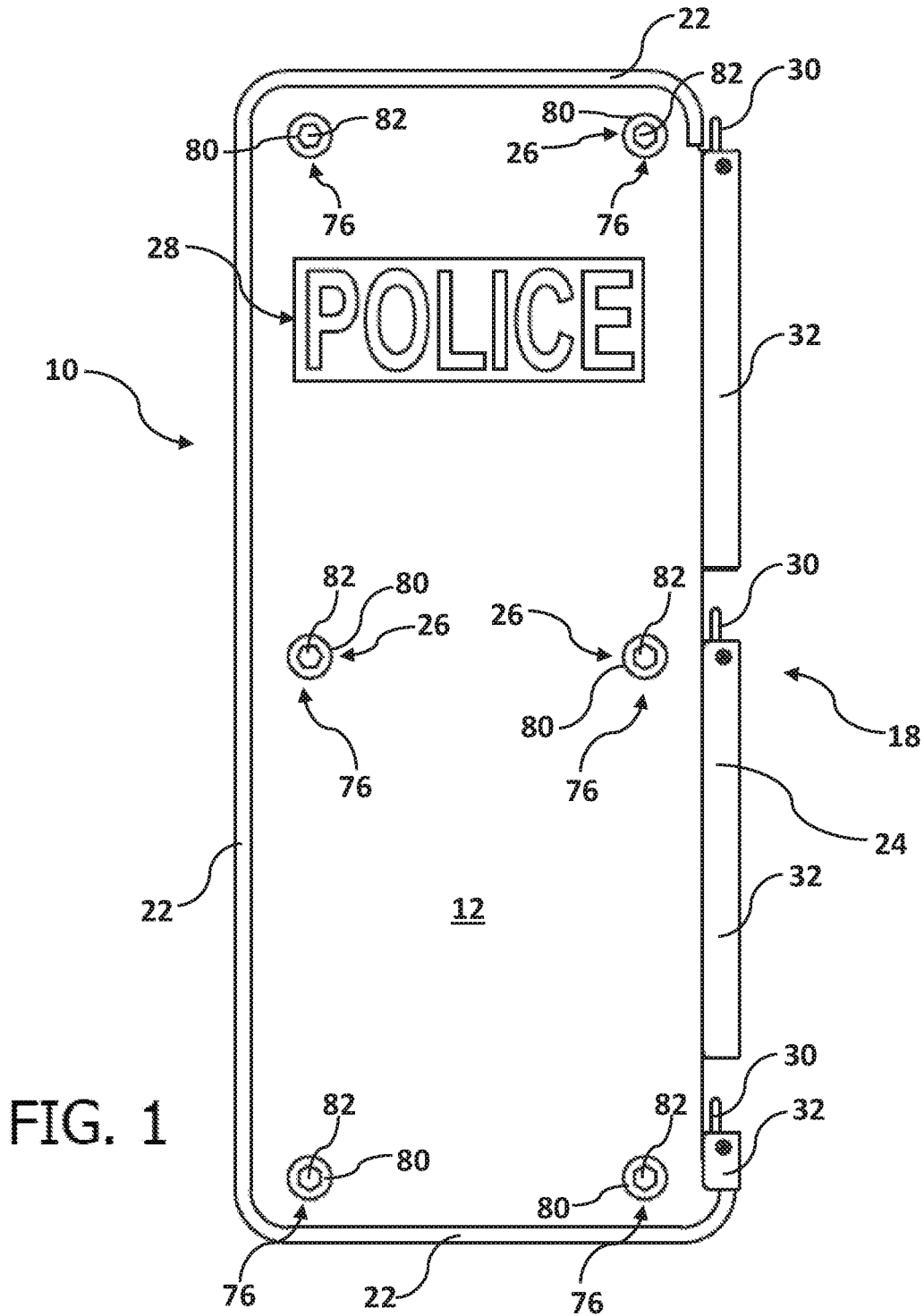
A ballistic, tactical panel and tactical wall assembly of tactical panels is provided. A series of modular ballistic panels may be used singularly or as multiple panels connected to form a tactical wall assembly. Each tactical panel has a shield body with a threat side, a non-threat side, a peripheral edge, and a connecting edge. At least a portion of the shield body is made of a ballistic material. A lift off connection system facilitates the connection of one tactical panel to another tactical panel. A shield carry system connects to the shield body for facilitating the lifting and carrying of the tactical panel.

(22) Filed: **Nov. 13, 2018**

**Related U.S. Application Data**

(60) Provisional application No. 62/585,690, filed on Nov. 14, 2017.





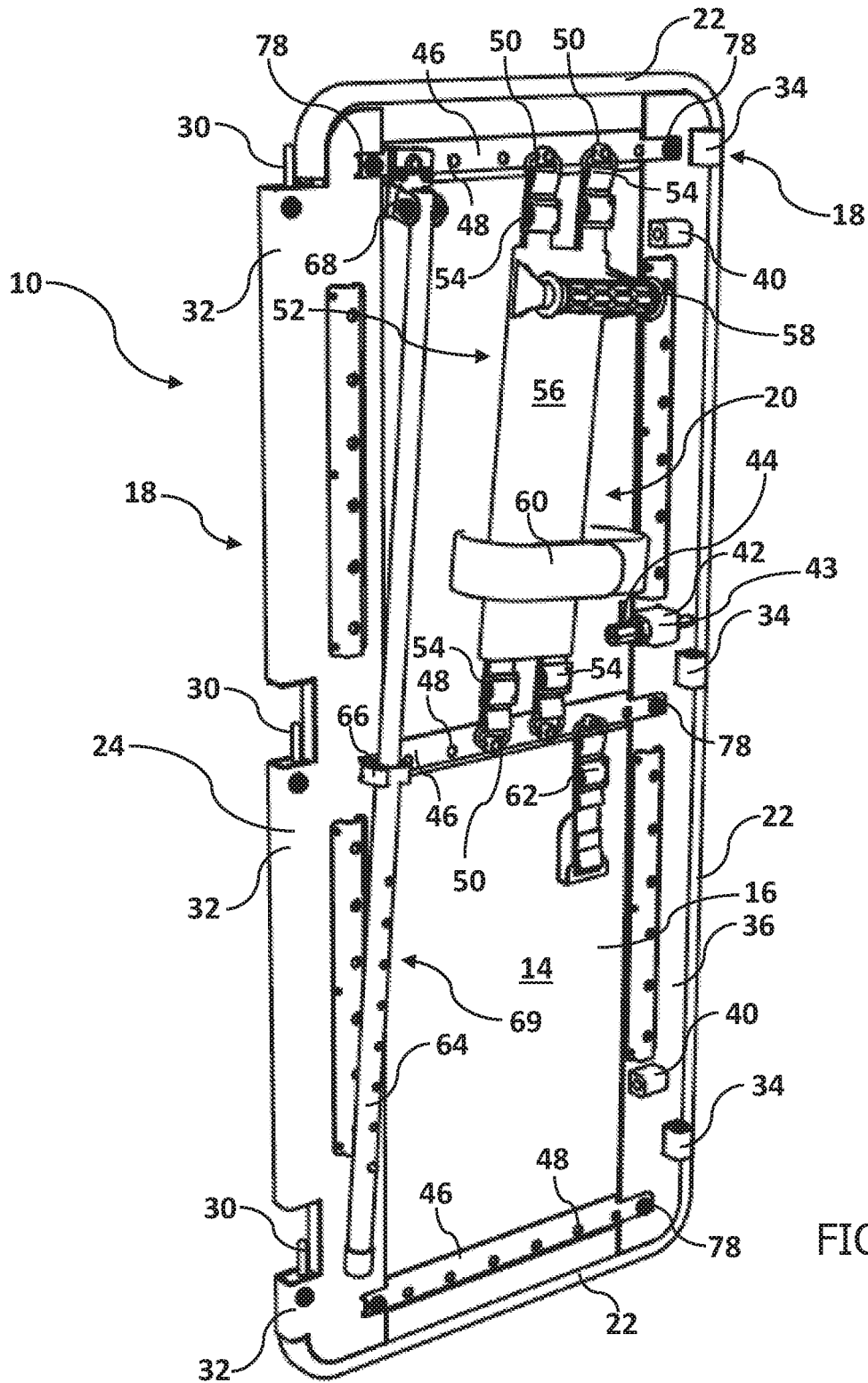
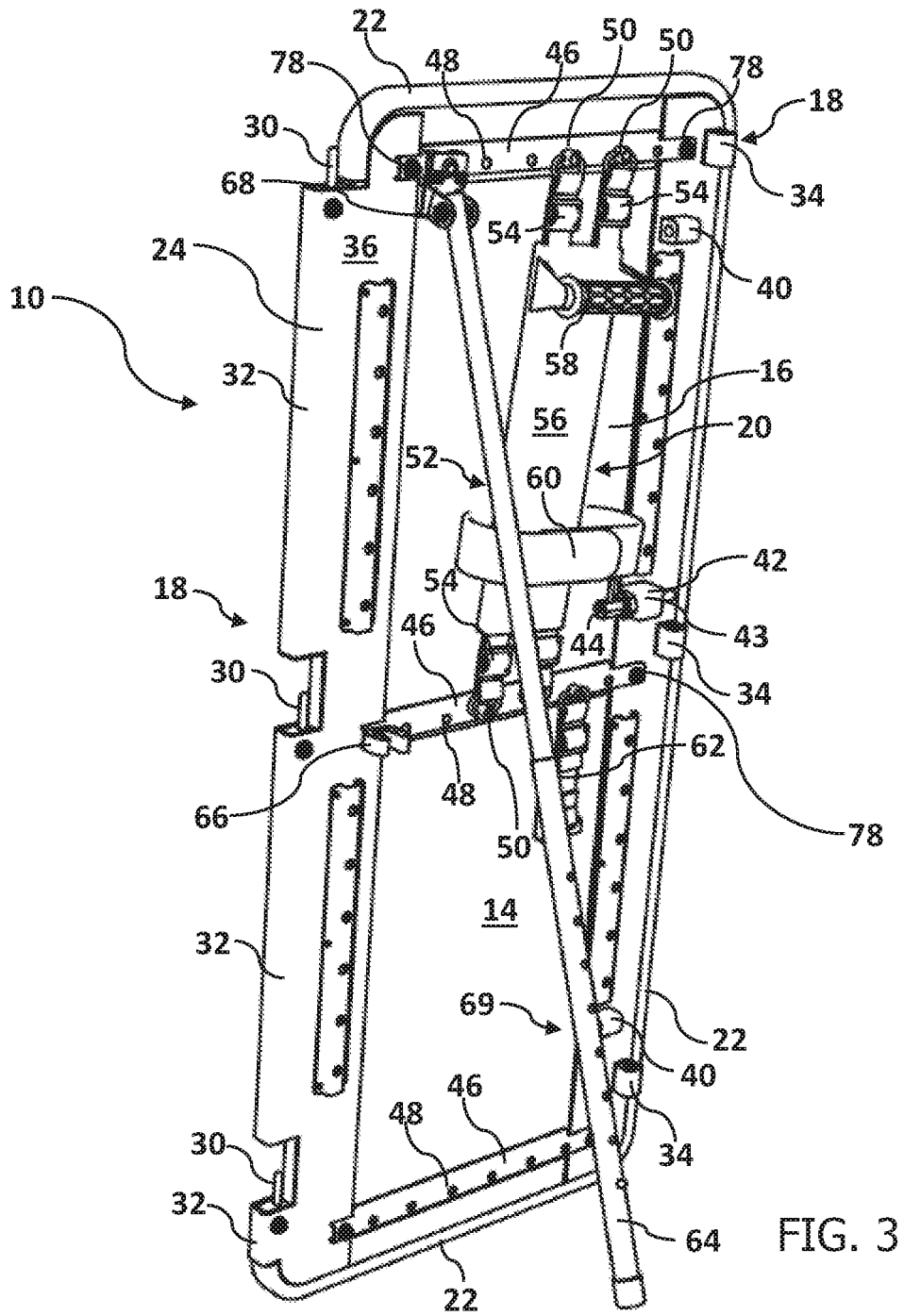
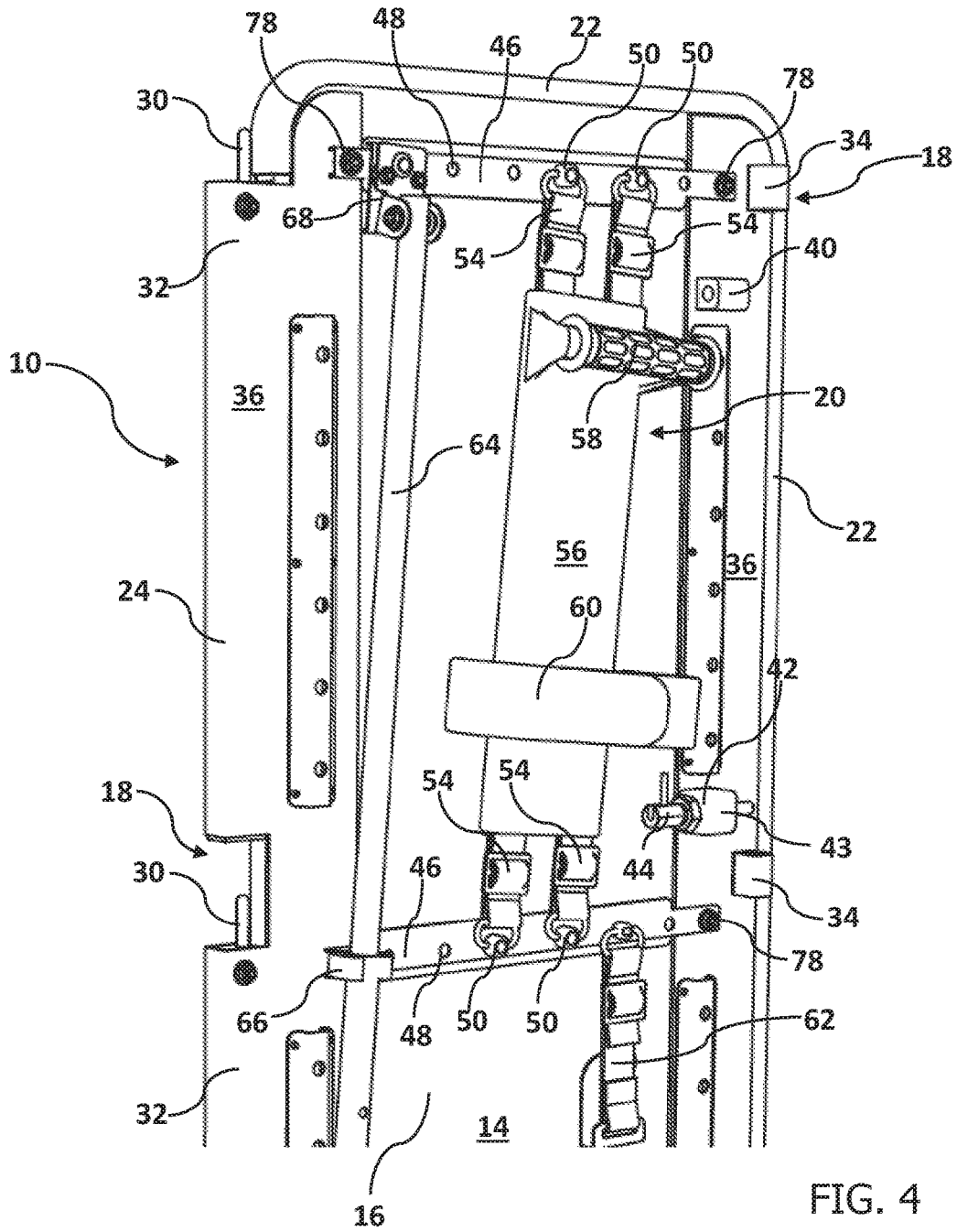


FIG. 2





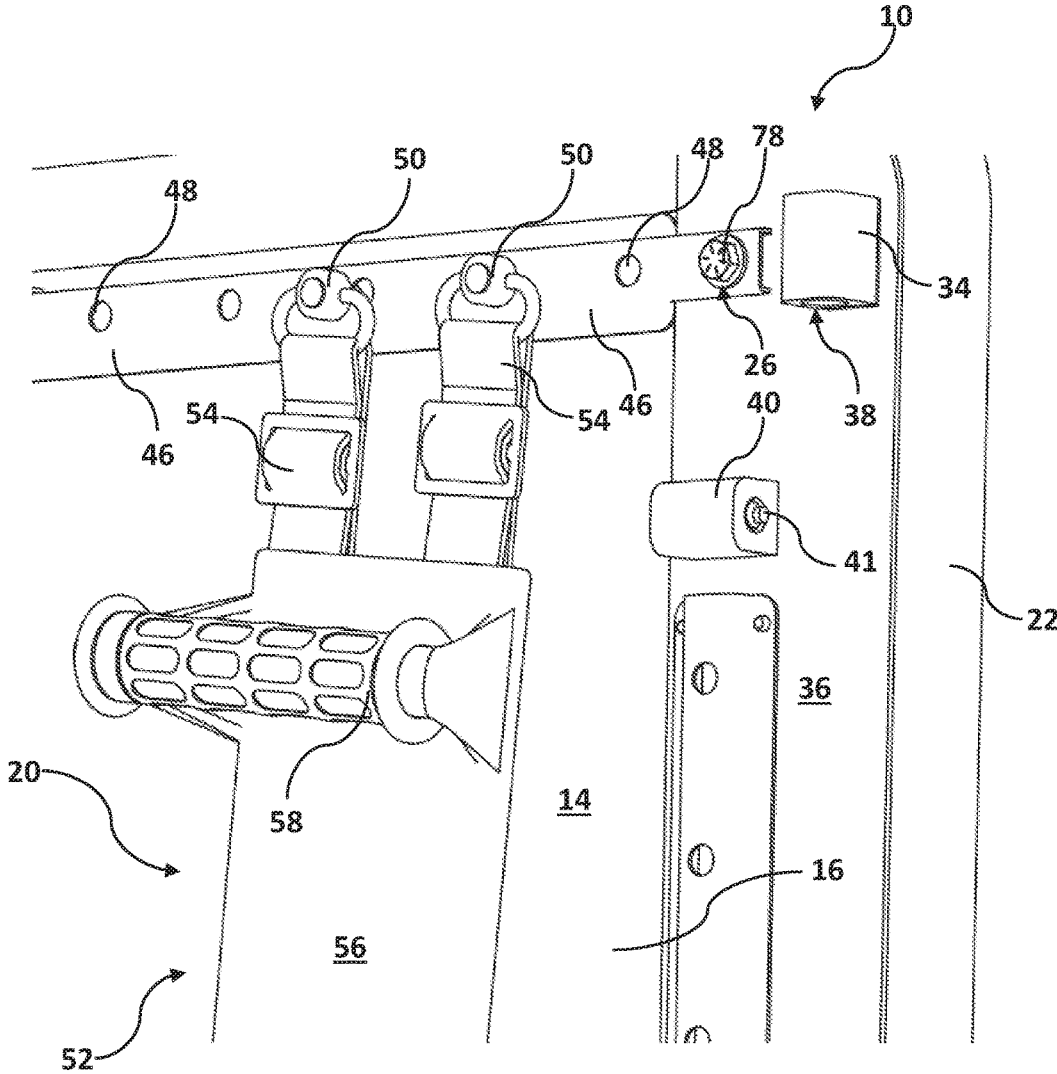


FIG. 5

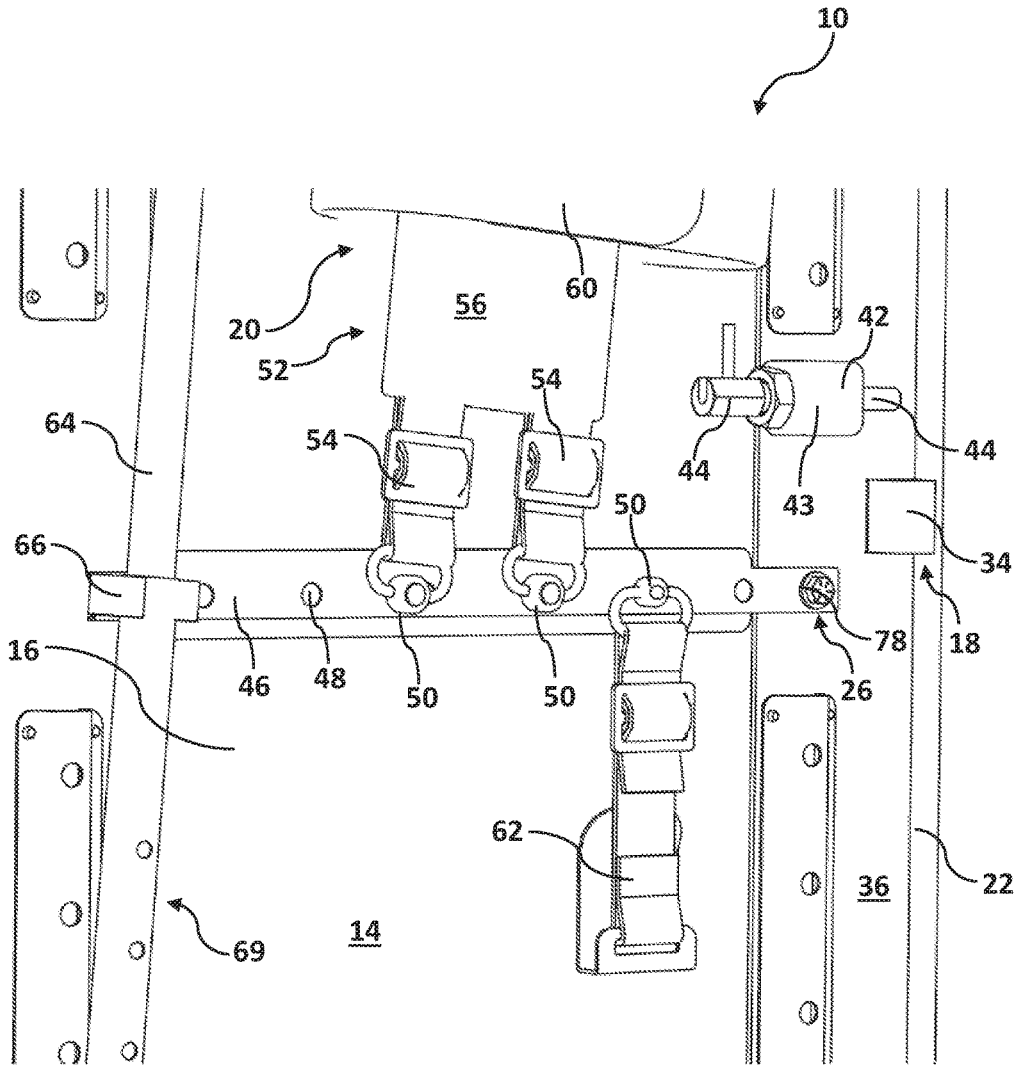


FIG. 6

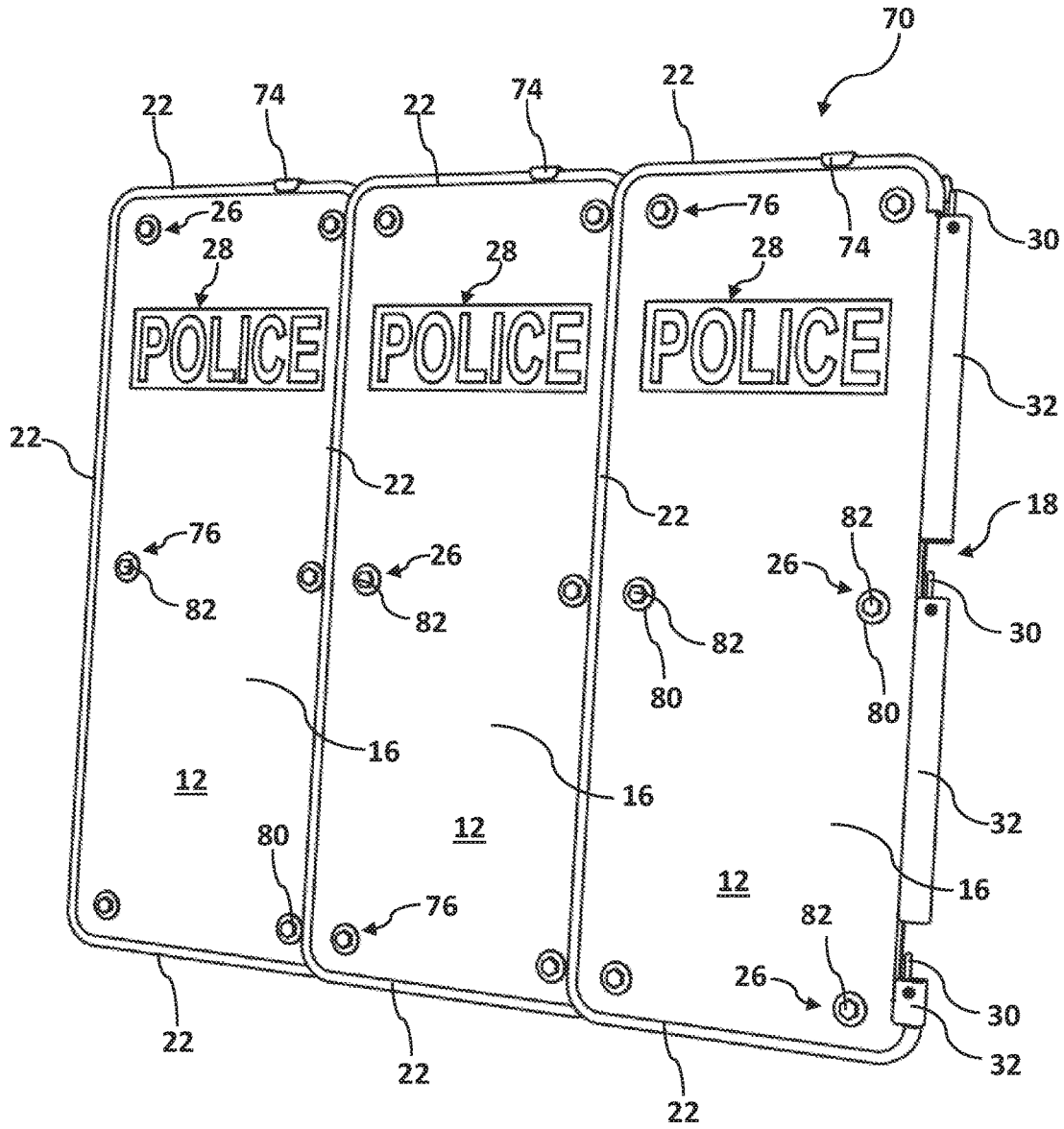


FIG. 7



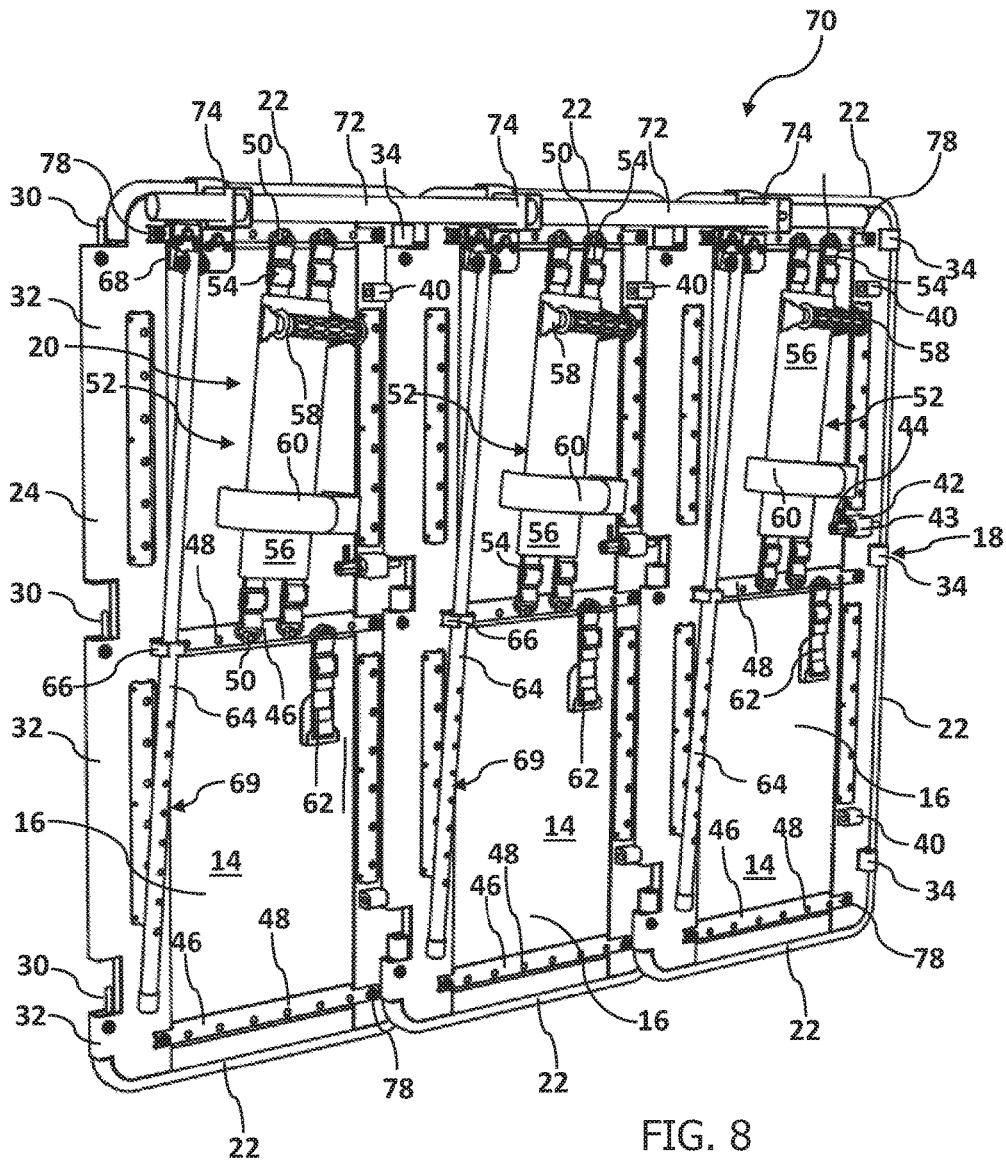


FIG. 8

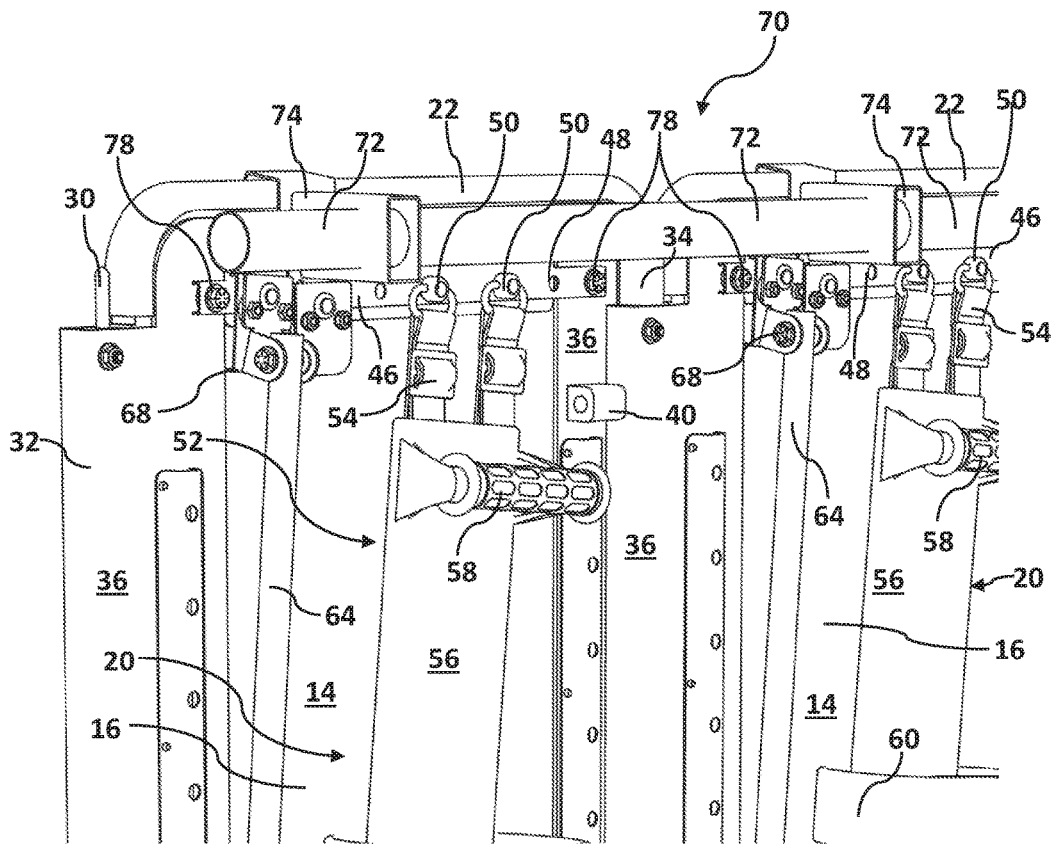


FIG. 9

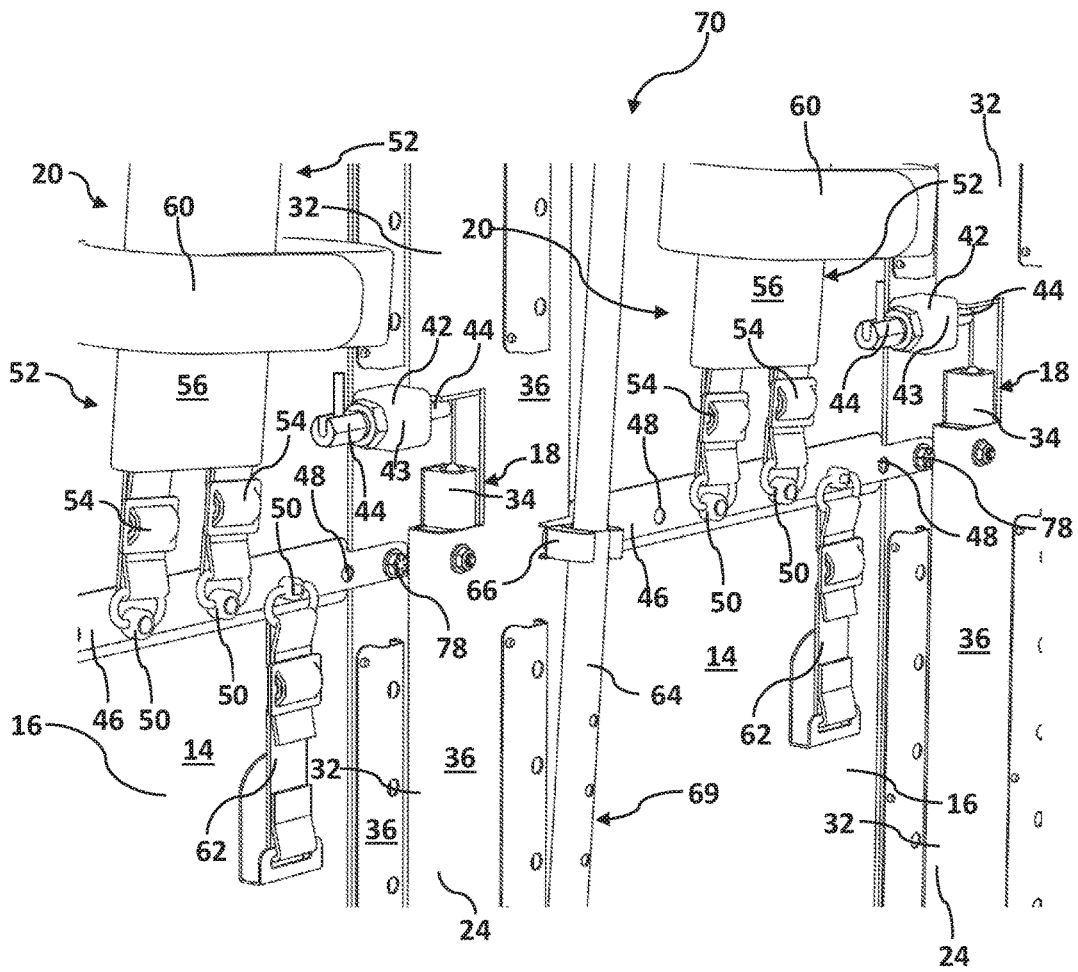


FIG. 10

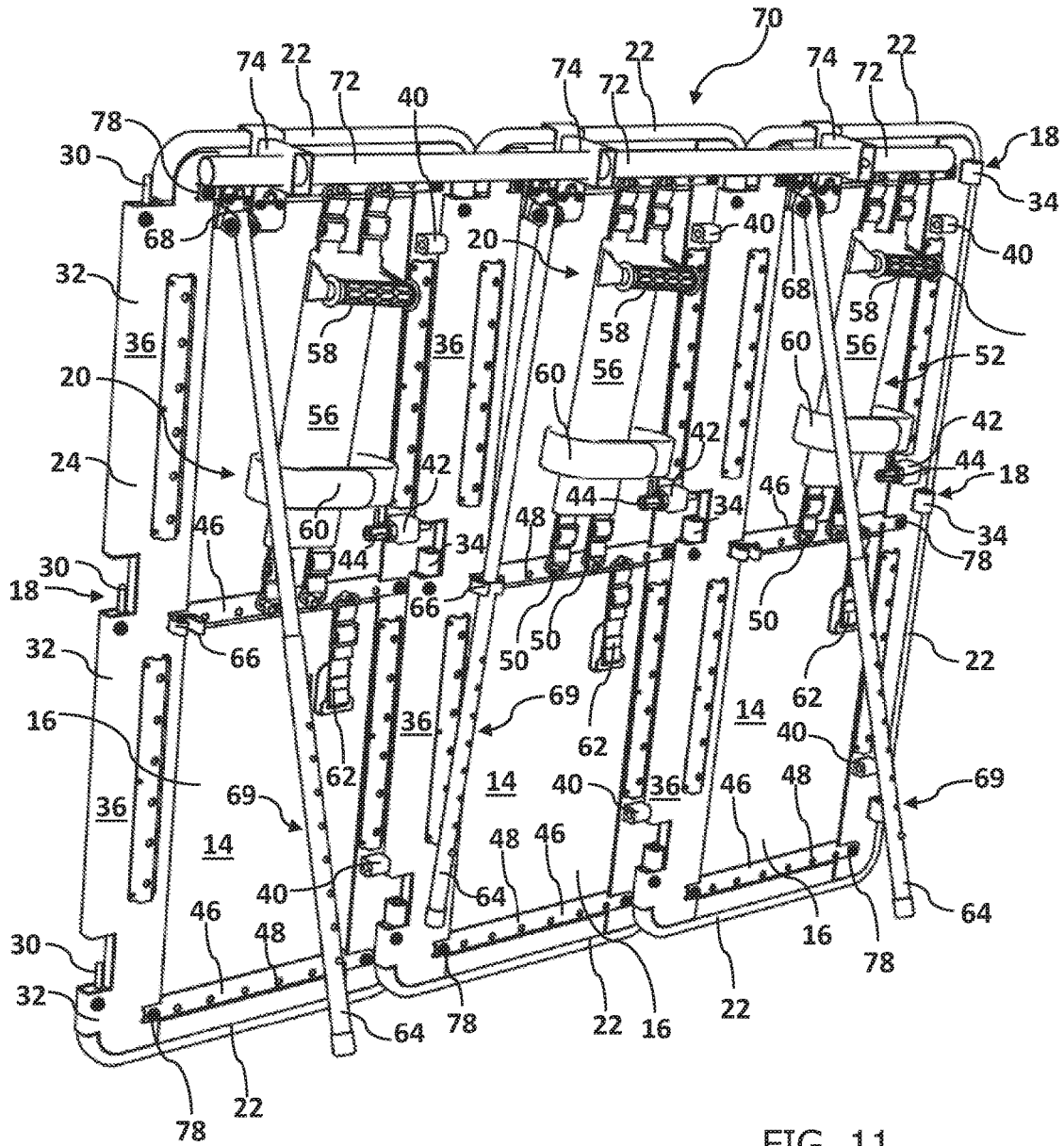


FIG. 11

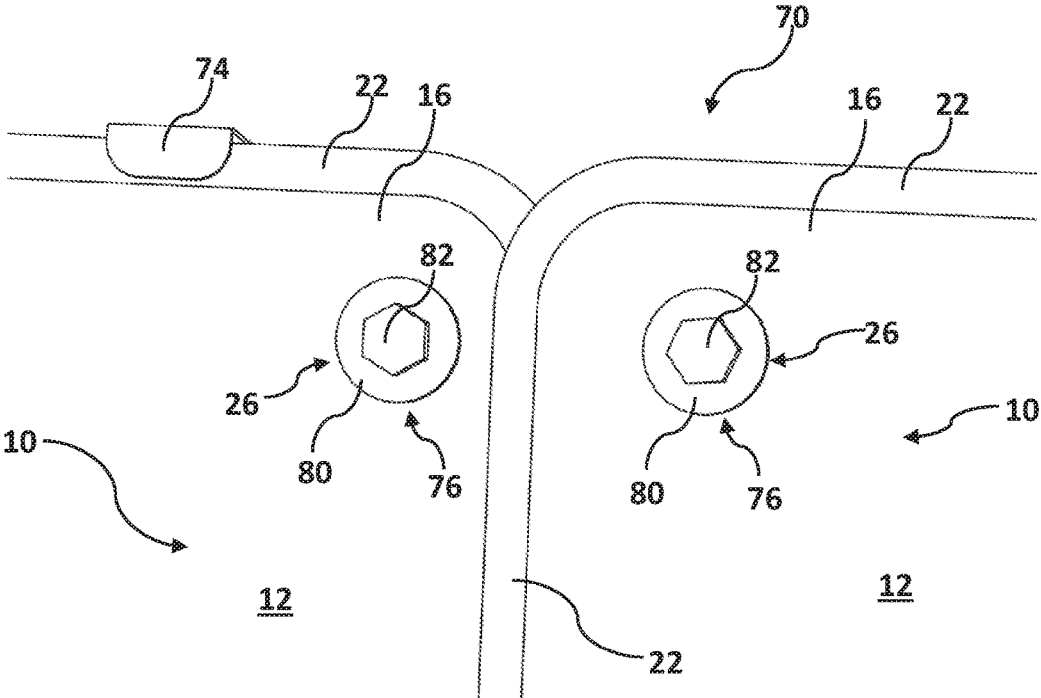


FIG. 12

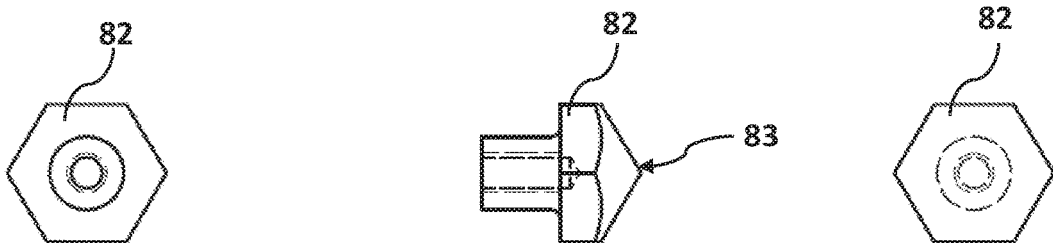


FIG. 12A

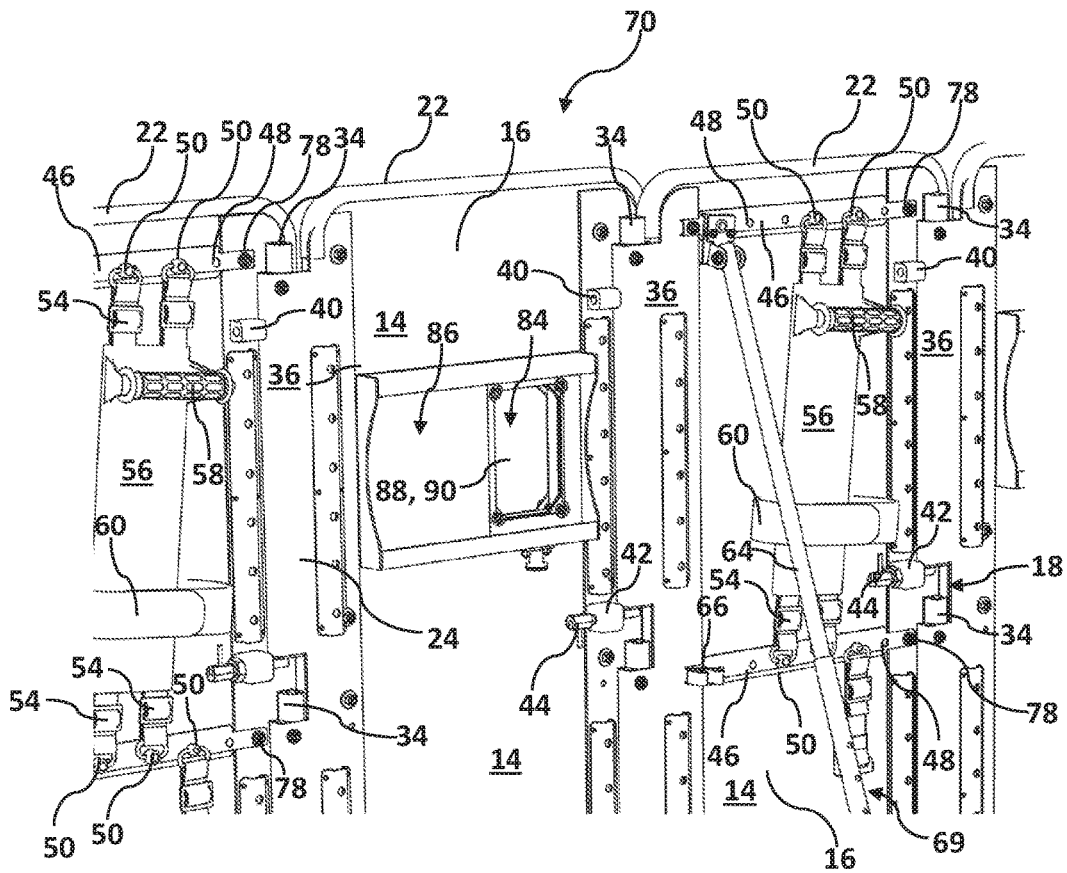


FIG. 13

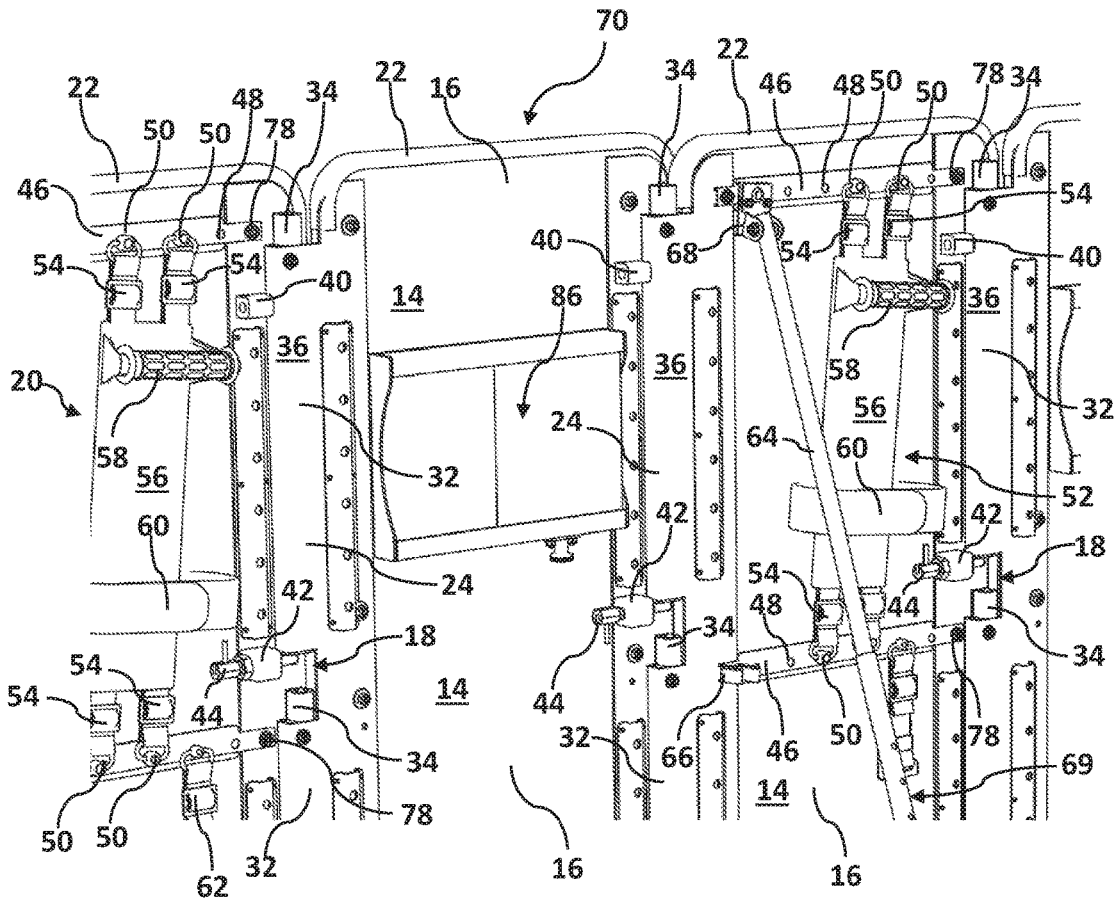


FIG. 14

## TACTICAL WALL PANEL, ASSEMBLY AND METHODS OF DEPLOYMENT AND USE

### RELATED APPLICATION

[0001] This patent application claims the benefit of U.S. Provisional Patent Application, Ser. No. 62/585,690 filed on Nov. 14, 2017, for an invention titled Tactical Wall Panel, Assembly and Methods of Deployment and Use, which is hereby incorporated in its entirety by this reference.

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

[0002] The present invention relates to a ballistic, tactical wall assembly for protecting against ballistic threats. More specifically, the present invention relates to a modular ballistic, tactical panel that may be used singularly as a shield for an enforcement officer or modularly in a tactical wall assembly of multiple panels that protects law enforcement personnel against ballistic threats.

[0003] Various exemplary embodiments of the present invention are described below. Use of the term “exemplary” means illustrative or by way of example only, and any reference herein to “the invention” is not intended to restrict or limit the invention to exact features or steps of any, one or more of the exemplary embodiments disclosed in the present specification. References to “exemplary embodiment,” “one embodiment,” “an embodiment,” “some embodiments,” “various embodiments,” and the like, may indicate that the embodiment(s) of the invention so described may include a particular feature, structure, or characteristic, but not every embodiment necessarily includes the particular feature, structure, or characteristic. Further, repeated use of the phrase “in one embodiment,” or “in an exemplary embodiment,” do not necessarily refer to the same embodiment, although they may.

#### 2. The Relevant Technology

[0004] Law enforcement agencies, particularly SWAT teams, are often called upon to confront armed and dangerous individuals. It is not uncommon for these agencies to be facing 44 magnum or 9 mm handgun rounds, shotgun blasts or even high-powered rifles.

[0005] Although it is standard practice for law enforcement to wear body armor, body armor can be very heavy and therefore is only large enough to cover the vital parts of the body. Typically, when advancing toward an assailant or when setting an armed perimeter, a portable, rolling bunker or individual shields may be used. Most portable, rolling bunkers are quite heavy and have limited mobility. While individual shields are lighter and more versatile, their size and weight is limited by the amount of weight the officer can effectively wield.

[0006] Additionally, it is standard practice for a barricaded assailant or assailants to be approached by a “stack” of officers. A “stack” is usually four to five officers in a line or abreast. The first (front) person in a line stack wields a ballistic shield, while a non-connected shield wall may be employed by advancing officers lined up abreast by holding individual shields side-by-side. Each of these formations have drawbacks that leave officers vulnerable. There is always a tradeoff between speed and protection. Furthermore, it should be understood that, particularly in hostage

situations, officers are more concerned with the preservation of life than they are about their own safety.

[0007] In the confusion of hostage situations where multiple agencies may be responding, including but not limited to police, SWAT, and plainclothes policemen, it is paramount that the police officers are easily identified.

[0008] It has been determined that in hostage situations, if the responding police can draw the attention of the active shooter away from the victims toward themselves, this action saves lives.

[0009] Accordingly, a need exists for a versatile ballistic, tactical wall panel/assembly that provides ballistic protection against a broad range of ballistic threats. Such a modular ballistic, tactical panel/wall assembly is disclosed herein.

### BRIEF SUMMARY OF THE INVENTION

[0010] The present disclosure describes developments responsive to the present state of the art, and in particular, in response to problems and needs in the art that have not yet been fully solved by currently available ballistic shields and/or bunkers. The ballistic, tactical panel and wall assembly of the present disclosure is versatile because a series of modular ballistic panels may be used singularly or as multiple panels connected to form a ballistic wall. The individual tactical panels may be used by a single operator or for a four-man stack enabling teams to safely, move into position and then, if necessary or advisable, combine the individual panels together to form a connected ballistic, tactical wall. It is expected that the tactical wall may be used as one (1), two (2), three (3) or four (4) panel configurations, however, there is no limit to the number of panels that may be combined.

[0011] Smaller agencies may not have the budget for specific tools for every scenario. Consequently, versatile solutions enable smaller agencies to increase their capabilities on a modest budget, and larger agencies to save funds for other pressing needs. Exemplary embodiments of the tactical wall assembly of the present disclosure have versatility as a single shield, a connectable shield wall, and a perimeter shield, where a perimeter shield is a static shield used to guard the perimeter of a barricaded house, building, or structure. It is not moved from its strategic location, but acts as a temporary look-out on the perimeter of a barricade incident.

[0012] Exemplary ballistic, tactical wall assemblies are designed primarily to provide protection against deadly projectiles. Such exemplary tactical wall assemblies may use hardened steel, ceramic, Dyneema (high density polypropylene), etc., wherein each panel for the wall is light enough to hold as a shield as the team advances or sets a perimeter. No loose hardware is used to connect the panels together. Also, once combined, a horizontal bar may be connected to the panels enabling a team of operators to carry the assembled tactical wall, as a team.

[0013] Other features enhance the versatility of the tactical wall assembly. For example, a harness system permits the tactical wall to be hung from the side of a vehicle to provide ballistic protection for “soft skin vehicle rescues”. An integral diagonal brace permits each panel to be free standing once in position, or multiple diagonal braces permit a connected tactical wall of panels to be free standing.



Optional gun ports and/or ballistic windows may be added to create fortified gun positions and/or safe viewing of the vicinity of the threat site.

**[0014]** Currently there are two rating systems for ballistic protection: 1) Underwriters' laboratory, (UL) and 2) The National Institute of Justice, (NIJ). The rating systems are not consistent between the two entities. The level of protection required for each confrontation can vary widely. However, the vast majority of active shooter situations, for example, are perpetrated using handguns, high powered rifles, and/or shotguns because these weapons can be easily concealed and carried into schools, colleges, churches, public areas, etc. Presently, the exemplary individual tactical panels and tactical walls may be rated for N.I.J. Level IIIA, III, III+ or IV, but it should be understood that as technologies evolve and materials become lighter weight, the ballistic rating of this tactical wall and its modular panels could increase.

**[0015]** These and other features of the exemplary tactical wall panels/assembly of the present invention will become more fully apparent from the following description, or may be learned by the practice of the invention as set forth hereinafter.

#### BRIEF DESCRIPTION OF THE DRAWINGS

**[0016]** The present invention is described more fully hereinafter with reference to the accompanying drawings, in which one or more exemplary embodiments of the invention are shown. Like numbers used herein refer to like elements throughout. This invention may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein; rather, these embodiments are provided so that this disclosure will be operative, enabling, and complete. Accordingly, the particular arrangements disclosed are meant to be illustrative only and not limiting the scope of the invention, which is to be given the full breadth of the appended claims and any and all equivalents thereof. Moreover, many embodiments, such as adaptations, variations, modifications, and equivalent arrangements, will be implicitly disclosed by the embodiments described herein and fall within the scope of the present invention.

**[0017]** Although specific terms are employed herein, they are used in a generic and descriptive sense only and not for purposes of limitation. Unless otherwise expressly defined herein, such terms are intended to be given their broad ordinary and customary meaning not inconsistent with that applicable in the relevant industry and without restriction to any specific embodiment hereinafter described. As used herein, the article "a" is intended to include one or more items. Where only one item is intended, the term "one", "single", or similar language is used. When used herein to join a list of items, the term "or" denotes at least one of the items, but does not exclude a plurality of items of the list. Additionally, the terms "operator", "user", "officer", "soldier", and "individual" may be used interchangeably herein unless otherwise made clear from the context of the description.

**[0018]** Understanding that these drawings depict only typical exemplary embodiments of the invention and are not therefore to be considered to be limiting of its scope, the invention will be described and explained with additional specificity and detail through the use of the accompanying drawings in which:

**[0019]** FIG. 1 is a frontal view of an exemplary embodiment of a tactical wall panel showing the threat side of the panel;

**[0020]** FIG. 2 is a rear perspective view of the exemplary embodiment of the tactical wall panel of FIG. 1;

**[0021]** FIG. 3 is a rear perspective view of the exemplary embodiment of the self-supported tactical wall panel of FIG. 1 showing a diagonal brace as deployed;

**[0022]** FIG. 4 is an enlarged rear perspective view of the upper portion of the exemplary embodiment of the tactical wall panel of FIG. 1;

**[0023]** FIG. 5 is another rear perspective view of an enlarged portion of the exemplary embodiment of the tactical wall panel of FIG. 1, showing an adjustable stop and a receiving block;

**[0024]** FIG. 6 is yet another rear perspective view of an enlarged portion of the exemplary embodiment of the tactical wall panel of FIG. 1, showing a QD rail with a utility belt support harness;

**[0025]** FIG. 7 is frontal perspective view of an exemplary embodiment of a tactical wall assembly comprising multiple tactical wall panels connected together;

**[0026]** FIG. 8 is a rear perspective view of the exemplary embodiment of a tactical wall assembly of FIG. 7;

**[0027]** FIG. 9 is an enlarged rear perspective view of an upper portion of the exemplary embodiment of the tactical wall assembly of FIG. 8;

**[0028]** FIG. 10 is an enlarged rear perspective view of a middle portion of the exemplary embodiment of the tactical wall assembly of FIG. 8; and

**[0029]** FIG. 11 is a rear perspective view of the exemplary embodiment of the self-supported tactical wall assembly of FIG. 7, showing multiple diagonal braces as deployed.

**[0030]** FIG. 12 is a frontal perspective view of an enlarged upper portion of the exemplary embodiment of the tactical wall assembly of FIG. 7;

**[0031]** FIG. 12A comprises three views of a ballistic head nut, a rear non-threat side view, a side view, and a frontal threat side view;

**[0032]** FIG. 13 is a rear perspective view of an upper portion of an alternative exemplary embodiment of the tactical wall assembly, showing an opening in the tactical panel that may serve as a gun port or ballistic window; and

**[0033]** FIG. 14 is a rear perspective view of the upper portion of the alternative exemplary embodiment of the tactical wall assembly of FIG. 13, showing the opening in the tactical panel closed by a sliding door.

**[0034]**

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#### REFERENCE NUMERALS

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tactical panel 10	threat side 12
non-threat side 14	shield body 16
lift off connection system 18	shield carry system 20
peripheral edge 22	connecting edge 24
ballistic assembly system 26	identifying indicia 28
male post 30	seam block 32
female receiving block 34	frame 36
bore 38	stop 40
set screw 41	locking assembly 42
threaded block 43	retractable spring plunger 44
QD rails 46	receiving socket 48
QD sling swivels 50	lifting-assist assembly 52
connecting straps 54	forearm pad 56
handle 58	adjustable arm strap 60
utility belt support harness 62	diagonal brace 64

-continued

REFERENCE NUMERALS	
retaining clasp 66	clevis 68
length-adjustable feature 69	tactical wall 70
horizontal bar 72	bar mount 74
ballistic bolt/nut head assembly 76	bolt 78
heavy-duty washer 80	ballistic head nut 82
conical head 83	opening 84
sliding door assembly 86	gun port 88
ballistic window 90	ballistic glass 92

#### DETAILED DESCRIPTION OF THE INVENTION

**[0035]** The exemplary embodiments of the present disclosure will be best understood by reference to the drawings, wherein like parts are designated by like numerals throughout. It will be readily understood that the components of the exemplary embodiments of the present invention, as generally described and illustrated in the figures herein, could be arranged and designed in a wide variety of different configurations. Thus, the following more detailed description of the exemplary embodiments, as represented in the Figures, is not intended to limit the scope of the invention, as claimed, but is merely representative of exemplary embodiments of the disclosure.

**[0036]** In this application, the phrases “connected to”, “coupled to”, and “in communication with” refer to any form of interaction between two or more entities, including mechanical, capillary, electrical, magnetic, electromagnetic, pneumatic, hydraulic, fluidic, and thermal interactions.

**[0037]** The phrases “attached to”, “secured to”, and “mounted to” refer to a form of mechanical coupling that restricts relative translation or rotation between the attached, secured, or mounted objects, respectively. The phrase “slidably attached to” refer to a form of mechanical coupling that permits relative translation, respectively, while restricting other relative motions. The phrase “attached directly to” refers to a form of securement in which the secured items are in direct contact and retained in that state of securement.

**[0038]** The term “abut” and its formatives including “abutting” refers to items that are in direct physical contact with each other, although the items may not be attached together. The term “grip” refers to items that are in direct physical contact with one of the items firmly holding the other. The term “integrally formed” refers to a body that is manufactured as a single piece, without requiring the assembly of constituent elements. Multiple elements may be integrally formed with each other, when attached directly to each other from a single work piece. Thus, elements that are “coupled to” each other may be formed together as a single piece.

**[0039]** FIGS. 1-6 depict an exemplary embodiment of a single, but modular, ballistic tactical panel 10. The tactical panel 10 has a threat side 12 and a non-threat side 14 and comprises a shield body 16, a lift off connection system 18, and a shield carry system 20. As shown in FIG. 1, the shield body 16 comprises a ballistic material (e.g., hardened steel, a ballistic composite, etc.) and a peripheral edge 22, a connecting edge 24, a ballistic assembly system 26 (described more fully in regard to FIGS. 12 and 12A below), and may have identifying indicia 28. The peripheral edge 22 also may comprise a ballistic material and is configured to protect otherwise exposed edges of the shield body 16.

**[0040]** The lift off connection system 18, depicted in FIGS. 1-6, comprises male posts 30 mounted in seam blocks 32, and female receiving blocks 34 (best seen in FIGS. 2-6). The assembly of the male posts 30 and seam blocks 32 are secured to a frame 36 secured to the non-threat side 14 of the shield body 16. The female receiving blocks 34 are also secured to the non-threat side 14 of the shield body 16. To connect one tactical panel 10 to another tactical panel 10, the female receiving blocks 32 of one tactical panel 10 are positioned above and a bore 38 (see FIG. 5) in each female receiving block 32 is aligned with the male posts 30 of another tactical panel 10 so that the two tactical panels are disposed adjacent one another. Lowering the female receiving blocks 32 causes the bores 38 to seat on the male posts 30, thereby connecting the two tactical panels together. The relative location of the male post 30 and female receiving block 32 position adjacent tactical panels 10 to create an overlap at the joint between tactical panels 10 protecting against a bullet penetration at any of the joints.

**[0041]** To adjustably fit adjacent tactical panels 10 and secure the connection of the tactical panels 10 together, the lift off connection system 18 may also comprise stops 40 (best seen in FIG. 5) and a locking assembly 42 (best seen in FIGS. 4 and 6), each mounted on the frame 36. The stops 40 (two are shown on each panel) may be adjustable so that abutting the outer edge of seam blocks 32 against the stops 40 may be adjusted to the desired fit of the male posts 30 into the bores 38. A set screw 41 (with or without a nylon tip) may be threaded through the stop 40 to provide the adjustability of the seam blocks 32 against the stops 40.

**[0042]** To lock the adjacent tactical panels 10, the locking assembly 42 may comprise any type of fastener that secures the tactical panels 10 from dislodging their connection. In an exemplary embodiment, the locking assembly 42 comprises a threaded block 43 and a retractable spring plunger 44 that enables an operator to rapidly deploy the plunger portion to lock the panels together. However, it should be understood that any suitable locking mechanism may be used such as a latch, clasp, pin and bracket, and the like.

**[0043]** The shield carry system 20 may comprise various lifting mechanisms for lifting, carrying, and wielding the tactical panel 10 as a shield. In an exemplary embodiment, the shield carry system comprises a handle grip that is adjustable for fit and comfort and may be oriented to accommodate right-handed or left-handed use. Such shield carry system 20 may comprise one or more QD rails 46 having a plurality of receiving sockets 48 (only representative receiving sockets 48 are identified by reference number so not to obstruct structure or other reference numbers) for receiving QD sling swivels 50, and a lifting-assist assembly 52. The lifting-assist assembly 52 may comprise connecting straps 54, a forearm pad 56, a handle 58, and an adjustable arm strap 60.

**[0044]** In an exemplary embodiment best shown in FIG. 4, the shield carry system 20 has two spaced apart QD rails 46 to which the lifting-assist assembly 52 is attached. The connecting straps 54 are threaded through and secured to QD sling swivels 50 and the QD sling swivels 50 are connected to the receiving sockets 48 in the QD rails 46 as designed to accommodate right-handed or left-handed use. The forearm pad 56 comfortably cushions and protects the officer's forearm when grasping the handle 58 to lift the tactical panel 10 as a shield. Additionally, since officers differ in size and height, the adjustable arm strap 60 may

have a hook and pile connectability (such as for example, Velcro®) to the backside of the forearm pad 56 and the ends of the strap 60 so that the height along the forearm pad 56 and the cinching circumference of the strap 60 facilitates the positioning of the shield carry system to comfortably accommodate the size of the officer and assist in the stability of the lifting motion.

[0045] For situations that may require an officer to maintain the tactical panel 10 lifted for longer periods of time, the weight of the panel 10 may be distributed to avoid arm fatigue by a utility belt support harness 62 that shifts some of the weight load to the officer's hip. Again, this utility belt support harness 62 (best shown in FIG. 6) may be attached to the QD rail 46 using a QD sling swivel 50 to comfortably accommodate the size of the officer and assist in the stability of panel in the lifted position.

[0046] The ballistic assembly system 26 is used to make the threat sided 12 of the tactical panel 10 secure against ballistic penetration and comprises the body shield 16 and the ballistic bolt/nut head assembly 76 that secures attachments such as the shield carry system 20 to the shield body 16 via bolts 78 entered from the non-threat side 14 of the shield body 16. The particulars of the ballistic assembly system 26 are more fully described below.

[0047] FIG. 3 depicts an exemplary embodiment of a free-standing, self-supported tactical panel 10 as supported by a pivoting diagonal brace 64 that is movable from a stored mode with the diagonal brace 64 removably secured by a retaining clasp 66 to a deployed mode by pivoting the diagonal brace 64 about a clevis 68 to a deployed mode. The clevis 68 may be detachably secured to the QD rail 46 or it may also be secured to the frame 36 or any other suitable connection that permits storage and deployment. Additionally, the diagonal brace 64 may have a length-adjustable feature 69 such as telescoping pole segments with a spring-detent and hole configuration that allows the length of the diagonal brace 64 to be adjusted, thereby also adjusting the angle at which the free-standing tactical panel 10 may be deployed. The diagonal brace clevis 68 can also rotate so the tactical panel 10 may be positioned horizontally and the telescoping diagonal brace 64 can support the tactical panel 10 for an operator in the prone position.

[0048] Turning now to FIGS. 7-12, an exemplary embodiment of a tactical wall 70 having three tactical panels 10 connected to form the tactical wall 70. Each of the tactical panels 10 is an embodiment of at least one of the tactical panels 10 described above. Consequently, for brevity, the component parts of each tactical panel 10 will not be repeated. However, where there are differences or situations not discussed above, such differences and situation will be addressed.

[0049] FIGS. 7 and 8 show three tactical panels 10 securely connected together in an overlapping fashion so that no seams between adjacently disposed panels 10 are exposed to ballistic threat. In FIGS. 8-11, only representative elements are identified by reference number so not to obscure structure or other elements. In the tactical wall 70 depicted, each of the tactical panels has the same components and features. It should be understood that, although the tactical wall 70 depicted has three tactical panels, the number of panels 10 used is not limited to any specific number. Rather, a tactical wall 70 may comprise any number of tactical panels 10, limited only by the ability to stage or carry the tactical wall, as desired. Also, so long as the tactical

panels 10 interconnect adequately to maintain ballistic integrity, the individual tactical panels 10 need not necessarily be the same or have the same components or features. For example, one tactical panel 10 may have a gun port while others do not or may have some other feature such as a ballistic window.

[0050] In FIG. 8, the tactical wall 70 has tactical panels 10 that differ from the embodiments of a single tactical panel 10 described above only in that has a wall lifting system comprising a horizontal bar 72 that spans the width of the non-threat side 14 of the upper portion of the tactical wall 70. This horizontal bar 72 may be grasped by multiple officers to lift and move the tactical wall in unison as a team without strapping their arms into the lifting-assist assembly 52. Using the horizontal bar 72 to move the tactical wall 70 as a unit, in some situations, may be faster, more comfortable, and/or safer than having multiple officers strap into the lifting-assist assembly 52.

[0051] FIG. 9 shows the horizontal bar 72 enlarged and engaging bar mounts 74 that connect to the QD rail 46 securely. Though not shown specifically, a push-button spring pin may be added to sections of the horizontal bar 72 (similar to what are used for an aluminum tent poles). The push button may inter connect horizontal bar 72 sections and/or engage the horizontal bar 72 to bar mounts 74 so the horizontal bar 72 does not slide back and forth.

[0052] FIG. 10 depicts the middle portion of the non-threat side 14 of the tactical wall 70 how the locking assembly 42 secures and inhibits the lift off connection system 18 from dislodging inadvertently. Once the male posts 30 engage bores 38, the weight of the lifted tactical panel 10 will cause female receiving block 34 to seat against the seam block 32 in abutting engagement and the adjacent tactical panels 10 will overlap sealing the seam between the tactical panels 10.

[0053] FIG. 11 depicts an exemplary embodiment of a free-standing, self-supported tactical wall 70 as supported by multiple pivoting diagonal braces 64 that are movable from a stored mode with each diagonal brace 64 removably secured by a retaining clasp 66 to a deployed mode by pivoting the diagonal brace 64 about a clevis 68 to a deployed mode. The clevis 68 may be detachably secured to the QD rail 46 or it may also be secured to the frame 36 or any other suitable connection that permits storage and deployment. Additionally, each diagonal brace 64 may have a length-adjustable feature 69 such as telescoping pole segments with a spring-detent and hole configuration that allows the length of the diagonal brace 64 to be adjusted, thereby adjusting the angle at which the free-standing tactical wall 70 may be deployed. Also, in some instances, all of the diagonal braces 64 need not be deployed to maintain the tactical wall 70 free-standing.

[0054] Turning to FIG. 12, an enlarged upper portion of the exemplary embodiment of the tactical wall. 70 assembly is depicted, showing the overlap of the adjacent tactical panels 10 and a close-up view of the ballistic assembly system 26 on the threat side 12 comprising ballistic bolt/nut head assemblies 76. The ballistic bolt/nut head assembly 76 comprises a bolt 78, a heavy-duty washer 80, and a ballistic head nut 82. A ballistic bolt/nut head assembly 76 is used for each instance where a bolt 78 must pass through the shield body 16. The bolt 78 passes through a bore in the shield body 16 from the non-threat side 14 towards the threat side 12 and then through the heavy-duty washer 80. The bolt 78

is secured into position by threadably tightening the ballistic head nut **82** over the bolt **78**. As secured, the ballistic head nut **82** inhibits the possibility that the ballistic bolt/nut head assembly **76** (as well as the ballistic assembly system **26**) will be compromised by a projectile striking the ballistic head nut **82**.

**[0055]** The ballistic head nut **82** has a configuration that inhibits bolt **78** failure when a projectile strikes the ballistic head nut **82** by deflecting the projectile. The ballistic head nut **82** has a conical head **83** that has a pitch for deflecting projectiles if the projectile strike hitting the ballistic head nut **82** is anything other than a direct, flush hit on the point of the conical head **83**. A direct, flush hit is where the path of the projectile before the strike is along the longitudinal axis of the bolt **78**. The thickness and steel hardness (e.g., 4140 steel heat treated to full hard finish) of the ballistic head nut **82** has been developed to defeat even direct, flush hit on the point of the conical head **83**. The size and dimensions of an exemplary ballistic head nut **82** are selected such that the ballistic head nut **82** can withstand a direct, flush hit on the point of the conical head **83**. However, if the general configuration is the same, sizes, dimensions, and angles other than as depicted may work to withstand a direct, flush hit on the point of the conical head **83**, depending on the type of projectile threat.

**[0056]** FIGS. 13 and 14 depict an upper portion of an alternative exemplary embodiment of the tactical wall **70** assembly, showing an opening **84** in each tactical panel **10** and a sliding door assembly **86** that ballistically opens and closes the opening **84**. The opening **84** may serve as a gun port **88** when the opening **84** passes through the shield body **16**. The opening **84** may serve as a ballistic window **90** when the opening **84** is covered by ballistic glass **92**. For purposes of this disclosure one of the tactical panels **10** has a gun port **88** and the other tactical panel **10** has a ballistic window **90**. It should be understood that any tactical panel **10** may have a gun port **88**, a ballistic window **90**, both, or neither.

**[0057]** For exemplary methods or processes of the invention, the sequence and/or arrangement of steps described herein are illustrative and not restrictive. Accordingly, it should be understood that, although steps of various processes or methods may be shown and described as being in a sequence or temporal arrangement, the steps of any such processes or methods are not limited to being carried out in any particular sequence or arrangement, absent an indication otherwise. Indeed, the steps in such processes or methods generally may be carried out various different sequences and arrangements while still falling within the scope of the present invention.

**[0058]** Additionally, any references to advantages, benefits, unexpected results, or operability of the present invention are not intended as an affirmation that the invention has been previously reduced to practice or that any testing has been performed. Likewise, unless stated otherwise, use of verbs in the past tense (present perfect or preterit) is not intended to indicate or imply that the invention has been previously reduced to practice or that any testing has been performed.

**[0059]** Exemplary embodiments of the present invention are described above. No element, act, or instruction used in this description should be construed as important, necessary, critical, or essential to the invention unless explicitly described as such. Although only a few of the exemplary embodiments have been described in detail herein, those

skilled in the art will readily appreciate that many modifications are possible in these exemplary embodiments without materially departing from the novel teachings and advantages of this invention. Accordingly, all such modifications are intended to be included within the scope of this invention as defined in the appended claims.

**[0060]** In the claims, any means-plus-function clauses are intended to cover the structures described herein as performing the recited function and not only structural equivalents, but also equivalent structures. Thus, although a nail and a screw may not be structural equivalents in that a nail employs a cylindrical surface to secure wooden parts together, whereas a screw employs a helical surface, in the environment of fastening wooden parts, a nail and a screw may be equivalent structures. Unless the exact language “means for” (performing a particular function or step) is recited in the claims, a construction under Section 112, 6th paragraph is not intended. Additionally, it is not intended that the scope of patent protection afforded the present invention be defined by reading into any claim a limitation found herein that does not explicitly appear in the claim itself.

**[0061]** While specific embodiments and applications of the present invention have been illustrated and described, it is to be understood that the invention is not limited to the precise configuration and components disclosed herein. Various modifications, changes, and variations which will be apparent to those skilled in the art may be made in the arrangement, operation, and details of the methods and systems of the present invention disclosed herein without departing from the spirit and scope of the invention.

**[0062]** Those skilled in the art will appreciate that the present embodiments may be embodied in other specific forms without departing from its structures, methods, or other essential characteristics as broadly described herein and claimed hereinafter. The described embodiments are to be considered in all respects only as illustrative, and not restrictive. The scope of the invention is, therefore, indicated by the appended claims, rather than by the foregoing description. All changes that come within the meaning and range of equivalency of the claims are to be embraced within their scope.

1. A ballistic tactical panel for providing shielding protection to an operator against projectiles, the tactical panel comprising:

- a shield body having a threat side, a non-threat side, a peripheral edge, and a connecting edge, at least a portion of the shield body being made of a ballistic material;
- a lift off connection system connected to the shield body for facilitating the connection of the tactical panel to another tactical panel, the lift off connection system comprising at least one male post and at least one female receiving block; and
- a shield carry system connected to the shield body for facilitating the lifting and carrying of the tactical panel.

2. The ballistic tactical panel of claim 1 wherein the shield carry system comprises at least one of a handle, an adjustable arm strap, and a forearm pad.

3. The ballistic tactical panel of claim 2 wherein the shield carry system further comprises at least one QD rail mounted on the non-threat side of the shield body and at least one QD sling swivel attached to the QD rail.

4. The ballistic tactical panel of claim 3 wherein the shield carry system further comprises at least one adjustable connecting strap, the adjustment of the adjustable connecting strap facilitates the positioning of the shield carry system to the desired lifting height of the operator.

5. The ballistic tactical panel of claim 1 wherein the shield carry system is height adjustable to facilitate the positioning of the shield carry system to the desired lifting height of the operator.

6. The ballistic tactical panel of claim 1 further comprising a belt support harness.

7. The ballistic tactical panel of claim 1 further comprising a pivotable diagonal brace for supporting the free-standing angled deployment of the ballistic tactical panel.

8. The ballistic tactical panel of claim 7 wherein the diagonal brace is length-adjustable such that angle of the free-standing angled deployment of the ballistic tactical panel is adjustable.

9. The ballistic tactical panel of claim 1 further comprising at least one bolt/nut head assembly secured to the shield body, each bolt/nut head assembly comprises a bolt penetrating the shield body from the non-threat side of the shield body and a ballistic head nut secured to the bolt to seat against the threat side of the shield body, the ballistic head nut having a conical head.

10. A ballistic tactical wall assembly for providing shielding protection to one or more operators against projectiles, the tactical wall assembly comprises:

a plurality of the tactical panels connected together adjacently to form the tactical wall assembly, each tactical panel comprising:

a shield body having a threat side, a non-threat side, a peripheral edge, and a connecting edge, at least a portion of the shield body being made of a ballistic material; and

a lift off connection system connected to the shield body for facilitating the connection of the tactical panel to another tactical panel, the lift off connection system comprising at least one male post and at least one female receiving block.

11. The ballistic tactical wall assembly of claim 10 wherein the peripheral edge of the shield body of a first tactical panel ballistically overlaps the connecting edge of the shield body of an adjacently connected second tactical panel.

12. The ballistic tactical wall assembly of claim 10 wherein at least one of the tactical panels further comprises a shield carry system connected to the shield body for facilitating the lifting and carrying of the tactical panel.

13. The ballistic tactical wall assembly of claim 10 further comprising a wall lifting system.

14. The ballistic tactical wall assembly of claim 13 wherein the wall lifting system comprises:

at least one bar mount mounted to the tactical panel; and a horizontal bar supported by at least one bar mount, the horizontal bar being graspable by the one or more operators to facilitate the lifting movement of the ballistic tactical wall as a unit.

15. The ballistic tactical wall assembly of claim 10 wherein at least one of the tactical panels further comprises an opening in the shield body.

16. The ballistic tactical wall assembly of claim 15 wherein the at least one tactical panel further comprises a sliding door assembly mounted on the non-threat side of the shield body, the sliding door assembly comprising a sliding door that ballistically and slidably closes the opening.

17. The ballistic tactical wall assembly of claim 15 wherein the opening comprises a gun port

18. The ballistic tactical wall assembly of claim 1 wherein the opening comprises a ballistic window.

19. The ballistic tactical wall assembly of claim 11 further comprising a locking assembly that inhibits the disengagement of the lift off connection system connecting the shield body of the first tactical panel from the adjacently connected second tactical panel.

20. The ballistic tactical wall assembly of claim 19 wherein the locking assembly comprises a retractable spring plunger.

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