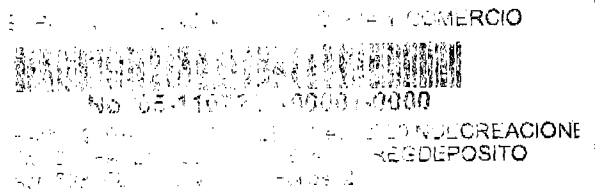


Señores
SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIVISIN DE NUEVAS CREACIONES
E. S. D.



Ref.: Patente de Invención

Expediente No. **05 - 110.723**

Solicitante: CARLA DE AZEVEDO CHAGAS y DARIO RAUL CHIVILO

Asunto: Solicitud de Patente para "**SISTEMA DE PROTECCIÓN
CONTRA DISPAROS RESULTANTES DE ARMAS DE
FUEGO APLICADO EN PUERTAS Y VENTANAS DE
VEHÍCULOS Y/O VIVIENDAS EN GENERAL**"

Obrando en mi condición de apoderada del solicitante de la Patente de la referencia, por medio del presente escrito solicito a ese Despacho proceder a practicar el examen de patentabilidad de la invención de conformidad con lo dispuesto en el Artículo 44 de la Decisión 486 de Comisión de la Comunidad Andina.

Para tal fin adjunto a la presente el recibo correspondiente al pago de la tasa que causa la presente petición, por la suma de 404.000.00.

Atentamente,

Luiz Helena Villamil
LUZ HELENA VILLAMIL JIMENEZ
C.C. No. 41.750.053 de Bogotá
T.P. 29.882 del Consejo Superior de la Judicatura

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



No. 05-110723-00001-0000

Fecha: 2007-10-26 16:13:23 Dep. 2020 NUECREACIONE
Tra. 2 PATENTES Lve. 1 REGDEPOSITO
Act. 538 PETICION Folios 2

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

NIT : 800176089-2

RECIBO OFICIAL DE CAJA : 07 - 88,356
FECHA : OCTUBRE 26 DE 2007

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PAGO	Vr. PAGO
LUZ HELENA VILLAMIL JIMEN	CONSIGNACION	BANCO POPULAR	050-00110-6	71019872	26/10/2007	404,000.00

***** CONCEPTO *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-01	SOLICITUDES	
		EXAMEN DE PATENTABILIDAD DE INVEN	404,000.00
		TOTAL :	\$ 404,000.00

: CUATROCIENTOS CUATRO MIL PESOS

RESPONSABLE : _____

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

DIVISIÓN DE NUEVAS CREACIONES

RADICACIÓN EXPEDIENTE No. 05-110723

EL EXTRACTO DE LA PRESENTE SOLICITUD DE PATENTE DE INVENCION

FUE PUBLICADO EN LA GACETA DE PROPIEDAD INDUSTRIAL No 575 DE

FECHA 30 DE ABRIL DE 2007 EL TÉRMINO HÁBIL SEÑALADO POR LA LEY

EXPIRA EL 31 DE JULIO DE 2007

NOTA: Dentro del plazo de los seis (6) meses siguientes a partir de la fecha de publicación en la gaceta de Propiedad Industrial, deberá solicitar y cancelar el examen de patentabilidad so pena de que la solicitud caiga en abandono, de acuerdo con lo establecido en el Artículo 44 de la Decisión 486/2000.

SE PRESENTARON OPOSICIONES POR PARTE DE TERCEROS.

SI _____

NO X

45

**SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIVISIÓN DE NUEVAS CREACIONES**

2020
Bogotá, D.C.,

Abogada
Luz Helena Villamil J.
(Apoderada)

ASUNTO

Radicación 05-110 723
Trámite 002
Evento 001
Actuación 430 - 4951
Oficio
Folios 022

Patente de Invención

☒

Patente de Modelo de Utilidad

☐

Vía Nacional

☐

Vía PCT (fase nacional)

☐

Cap. I

☐

Cap. II

☐

Solicitud Internacional n.º

Fecha de Presentación Intnl.

Como resultado del examen de fondo, realizado con fundamento en el artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le comunica:

1. Documentos estudiados

Descripción:

Folios 26 a 33 como se radicó inicialmente

Reivindicaciones:

Folios 34 y 35 como se radicó inicialmente

Dibujos:

Folios 37 a 44 como se radicó inicialmente

Prioridad:

Folios 5 a 25, 2004-11-02, AR, P20040104033

2. Objeto de la invención

- Título de la solicitud: *Sistema de protección contra disparos resultantes de armas de fuego aplicado en puertas y ventanas de vehículos o viviendas en general*, folio 1.

- El objeto de la presente solicitud de patente de invención consiste en suministrar un sistema de protección antibalístico, que se despliega cuando se piensa utilizar y el resto del tiempo permanece plegado sin que se manifieste su existencia. Este sistema se puede aplicar a vehículos o a viviendas.

Reivindicaciones 1 a 3: Un sistema de protección antibalas, aplicado en puertas y ventanas de vehículos o viviendas **caracterizado** porque tiene: un blindaje móvil (A) y un blindaje fijo (B), compuesto por telas cosidas de material antibalas, opacas, compuestas por fibras sintéticas de alta tenacidad y resistencia, flexibles y flotantes en sus medios de soporte; donde el blindaje (A) se vincula a un marco o bastidor que contiene a dichas telas cosidas entre sí, formando un paquete con la forma de la ventana, adecuándola a cada vehículo, dicho marco o bastidor es elevado o descendido mediante dos resortes impulsores helicoidales, templados, que son conducidos por tubos guías fijos de diámetro ligeramente menor a éstos; los extremos de una base del marco o bastidor poseen dos soportes soldados tipo tubo cilíndrico, con topes de arandela de diámetro levemente mayor al de los tubos guías y menor al de los resortes impulsores; y dos cables de acero anclados a la base del marco o bastidor, por un lado, y a un motor electromecánico por el otro, por medio de dos poleas ubicadas a ambos lados de éste y movidas por dos ejes de transmisión que hacen volver al conjunto a su posición original de trabado; comprimiendo otra vez los resortes y activando de esta forma nuevamente el sistema que está listo para volverse a destrabar o liberar, previa pulsación del interruptor que, en su posición inicial, están comprimidos y retenidos por una traba integrada a dicho motor, el cual, mediante el uso de un cable de conducción eléctrica se controla desde un interruptor ubicado en la columna de dirección, a un lado de los controles de las luces, o bien, paralelo a los pedales y de esta manera es operado estratégicamente a voluntad del usuario, cuantas veces lo desee, sin ser delatado.

- El problema planteado en esta solicitud es satisfacer la necesidad de obtener una protección adicional de un recinto cuando las condiciones externas lo requieran.
- Para solucionar este problema técnico la solicitud en estudio proporciona un sistema que despliega una cortina de blindaje, hecha con telas opacas, antibala.
- Clasificación Internacional de Patentes (IPC): F41H 5/007

3. De la solicitud de Patente

Descripción (artículo 28 D. 486)

Durante el análisis del texto de la descripción y de las ilustraciones anexadas, se observaron los siguientes defectos:

- 1) En el título o nombre de la invención, folio 1, así como en la descripción y las reivindicaciones aparece la expresión y/o. Al respecto, el *Diccionario panhispánico de dudas* de la Real Academia Española y de la Asociación de Academias de la Lengua Española, primera edición, octubre de 2005, página 681, dice:

y/o: Hoy es frecuente el empleo conjunto de las conjunciones copulativa y disyuntiva separadas por una barra oblicua, calco del inglés «and/or», con la intención de hacer explícita la posibilidad de elegir entre la suma o la alternativa de dos opciones: «Se necesitan traductores de inglés y/o

francés». Se olvida que la conjunción 'o' puede expresar en español ambos valores conjuntamente.

El examinador ha subrayado la última frase porque es particularmente aplicable a esta solicitud.

2) En la página 2, folio 27, aparece la expresión *sistemas//Dispositivos//mecanismos* en la cual no está justificado el uso de la doble barra. Consúltase al respecto el artículo BARRA, apartado *Barra doble*, en el *Diccionario panhispánico de dudas*, página 88.

3) En la misma página 2 aparece por primera vez una expresión numérica (4,352,609) en la cual no se emplea la coma decimal, de uso obligatorio en Colombia.

4) En la misma página 2 aparece por primera vez una expresión (*de mi invención*) que sugiere un sólo inventor, pero en el folio 1 se mencionan dos.

5) En la página 3, folio 28, aparece por primera vez el término *performance*. Consúltase el *Diccionario panhispánico de dudas*, página 496, para buscar expresiones equivalentes en español.

6) En la página 4, folio 29, aparece la expresión *volley-ball*. Consúltense el *Diccionario panhispánico de dudas*, página 671, las voces voleibol o vóleibol.

7) En la página 6, folio 31, aparece la expresión *las telas van ancladas al marco o bastidor en sus ocho extremos* que debe ser corregida porque no se sabe cuáles son los ocho extremos de las telas.

8) En la misma página 6 aparece por primera vez una expresión en la cual se hace alusión al verbo *comandar* el cual, según el Diccionario de la Real Academia Española, significa: **1. tr. Mil. Mandar un ejército, una plaza, un destacamento, una flota, etc.** lo que no tiene relación con el contexto.

9) En la página 7, folio 32, aparece la expresión *un cable conductor (24)*. Al respecto, se observa que si bien este número de referencia aparece en las figuras 3, 5 y 8, folios 39, 41 y 44, respectivamente, no está claro qué es lo que señala dicho número de referencia (24). Incidentalmente, el solicitante debe presentar una copia más nítida de los dibujos porque, como en este caso, se pierden algunos detalles.

10) En la misma página 7 aparece la expresión *dos poleas (25) (...) con aberturas longitudinales (25)* lo cual es contradictorio, porque los números de referencia deben tener una relación uno a uno con los detalles señalados en las figuras.

- La descripción no cumple con los requisitos de claridad y divulgación completa, lo que dificulta o impide su comprensión y ejecución de acuerdo al Art. 28 de la Decisión 486

Reivindicaciones (artículo 30 D 486)

Durante el análisis del texto de las reivindicaciones se observaron los siguientes defectos:

- 1) En la reivindicación 1, folio 34, aparece por primera vez dentro del capítulo reivindicatorio la expresión *y/o* que fue objetada arriba, con relación al título.
- 2) En la misma reivindicación 1 aparece la expresión *blindaje móvil (A) de efecto dinámico* que es redundante y por tanto afecta negativamente la concisión. Lo mismo se puede decir de la expresión *blindaje fijo de efecto estático (B)*.
- 3) En la misma reivindicación 1 aparecen expresiones relacionadas con el verbo *comandar* cuyo significado no está acorde con el contexto.
- 4) En la misma reivindicación 1 aparece la expresión *pudiendo ser* que es ambigua, no contribuye a definir los alcances de la protección que desea el solicitante, porque así como puede ser, puede no ser.

5) En la reivindicación 3, folio 35, aparece la expresión *enrollar/retraíble* que carece de significado.

- Debe entenderse que las reivindicaciones 2 y 3, dependientes de la reivindicación 1 objetada son, asimismo, objetadas, por razones análogas.
- Las reivindicaciones no cumplen con los requisitos de definición, claridad, concisión o sustento por la descripción de acuerdo al Art. 30 de la Decisión 486.

Se deben presentar, entonces, nuevos capítulos descriptivo y reivindicatorio, ambos completos, junto con un nuevo juego de dibujos, donde se hayan corregido todas las objeciones que se han hecho arriba. Esto con el fin de evitar -cuando solo se presentan algunas páginas sueltas corregidas- que el lector tenga que desplazarse desde un sitio a otro de la solicitud y luego regresar a donde estaba antes sin perder la ilación de la lectura, porque esto produce confusión y afecta negativamente la claridad de dichos capítulos.

4. Determinación del Estado de la Técnica

- La fecha que se ha tenido en cuenta para determinar el Estado de la Técnica es la

Fecha de presentación de la solicitud prioritaria 2004-11-02.

- Se realizó la búsqueda en el estado de la técnica de documentos relacionados con la solicitud teniendo en cuenta la fecha indicada; y durante la búsqueda de anterioridades se encontraron los siguientes documentos, que forman parte del estado de la técnica más cercano al objeto de la solicitud:

n.º	Documento	Título	Fecha de publicación
D1	Patente US 4 856 436, cuyo inventor es Jonathan Campbell	«Automatically expanding protective cover»(Una cubierta de protección que se expande automáticamente)	1989-08-15
D2	Patente US 4 380 035, cuyo inventor es James R. Madden, Jr.	«Removable bulletproof apparatus for vehicles»(Un aparato removible, a prueba de balas, para vehículos)	1994-12-06
D3	Patente US 5 392 686, cuyo inventor es Wilfred A. Sankar	«Telescopic total body protective shield»(Un escudo protector telescópico para todo el cuerpo)	1995-02-28
D4	Patente US 6 470 784 B1, cuyos inventores son Patrick Bonavita y Claude Boutet, quien le cedió sus derechos a la Giat Industries (FR)	«Defense system for an anti-intrusion area»(Un sistema de defensa contra intrusiones en un área)	2002-10-29

Se anexa la copia de las páginas pertinentes de estos documentos

NOTAS: No se realizaron las evaluaciones de los demás requisitos de patentabilidad, porque se hicieron algunas objeciones respecto a la definición, la claridad, la concisión y el sustento por la descripción de las reivindicaciones.

A pesar de lo anterior, con base en las enseñanzas de los documentos encontrados hasta ahora, se prevén objeciones respecto al nivel inventivo del objeto de la solicitud, ya que la solución propuesta por el solicitante no implica ningún efecto sorprendente o inesperado como tampoco revela la superación de algún prejuicio de los expertos en la técnica.

79 49

Teniendo en cuenta lo anterior, se le sugiere al solicitante que, si considera que el objeto de la solicitud reúne los requisitos para ello -en especial los determinados por el artículo 81 de la Decisión 486-, cambie la modalidad de su solicitud a patente de modelo de utilidad. De aceptar esta sugerencia, deberá expresarlo así y deberá realizar los ajustes que considere necesarios en el capítulo reivindicatorio para que no se encuentre ninguna objeción previsible -en el momento en que la Oficina examine su solicitud para verificar el cumplimiento de los requisitos, bajo esta nueva modalidad-.

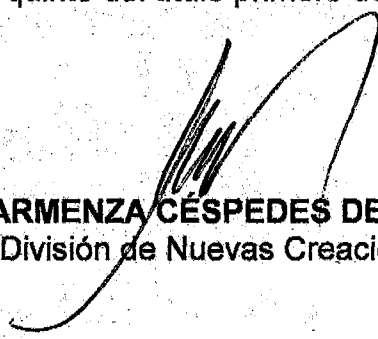
Esta sugerencia se hace en concordancia con lo dispuesto en el artículo 35 de la mencionada Decisión.

5. Conclusión:

Los requisitos de patentabilidad de la presente solicitud se encuentran afectados negativamente por la falta de claridad de la descripción y las reivindicaciones y por la falta de definición, de sustento y de concisión de estas últimas.

En cumplimiento del artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le indica que debe dar respuesta dentro del término de sesenta días contados a partir de la fecha de notificación de la presente comunicación. En caso de no dar respuesta al presente requerimiento, o si a pesar de la respuesta subsistieran los impedimentos para la concesión, se denegará la patente.

Notifíquese el presente oficio conforme a lo dispuesto en el número 5.2, letra e), del capítulo quinto del título primero de la Circular Única n.º 10 de 2001.



ALIX CARMENZA CÉSPEDES DE VERGEL
Jefe de División de Nuevas Creaciones

El anterior requerimiento fue notificado por fijación en lista, de fecha
07 MAYO 2009

CONCEPTO TÉCNICO n.º 1347

EXAMINADOR TÉCNICO
Código n.º 202009

Deutsches
Patent- und Markenamt



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Result list

Search query:

AR000000048285A1

Back to search

RESULT LIST: HITS: 2 (TOTAL HITS: 2) DOWNLOAD RESULT LIST					
No.	Publication number A	Publication date	Title	Display PDF	Patent family search
1	AR000000048285A1	19.04.2006	TEST SISTEMA DE PROTECCION CONTRA DISPAROS RESULTANTES DE ARMAS DE FUEGO ...		Search
2	BR000P10502788A	27.06.2006	[PT] sistema de protecao contra disparos resultantes de armas de fogo, ...		Search

|< < > >| Print Back to search



United States Patent [19]
Campbell

[11] Patent Number: 4,856,436
[45] Date of Patent: Aug. 15, 1989

[54] AUTOMATICALLY EXPANDING
PROTECTIVE COVER

[76] Inventor: Jonathan Campbell, 5721 Zelzah
Ave., Encino, Calif. 91316

[21] Appl. No.: 148,347

[22] Filed: Jan. 25, 1988

[51] Int. Cl.⁴ E06B 9/00

[52] U.S. Cl. 109/1 R; 109/49.5;
109/38; 150/165; 206/45.34; 160/299; 312/208;
312/229

[58] Field of Search 109/1 R, 1 S, 24, 38,
109/49.5, 52; 160/299; 150/52 R; 312/100-102,
229, 208; 206/1 R, 45.34

[56] References Cited

U.S. PATENT DOCUMENTS

1,410,529	3/1922	Harrold	72 X/
1,420,443	6/1922	Owen	160/72 X
1,534,664	4/1925	Saunders	160/72 X
1,849,255	3/1932	Starr	160/72
1,988,666	1/1935	Sandell	160/72
2,008,412	7/1935	Bovee et al.	150/52 R
2,276,550	3/1942	Skyum	160/72
2,326,713	8/1943	Wesseler	109/49.5 X
2,492,262	12/1949	Boyden et al.	150/52 R
3,022,808	2/1962	Silver	150/152 R
3,259,173	7/1966	Manning	150/52 R X
3,454,075	7/1969	Weinstein	150/52 R
3,645,594	2/1972	Cintz	312/100
3,863,694	2/1975	Fisher	150/52 R X
4,059,059	11/1977	Hughes	109/1 R

4,530,389 7/1985 Quinn et al. 160/299 X
4,632,329 12/1986 Burley 150/52 R

FOREIGN PATENT DOCUMENTS

328493 8/1935 Italy 150/52 R
8700950 2/1987 World Int. Prop. O. 109/38

Primary Examiner—Gary L. Smith

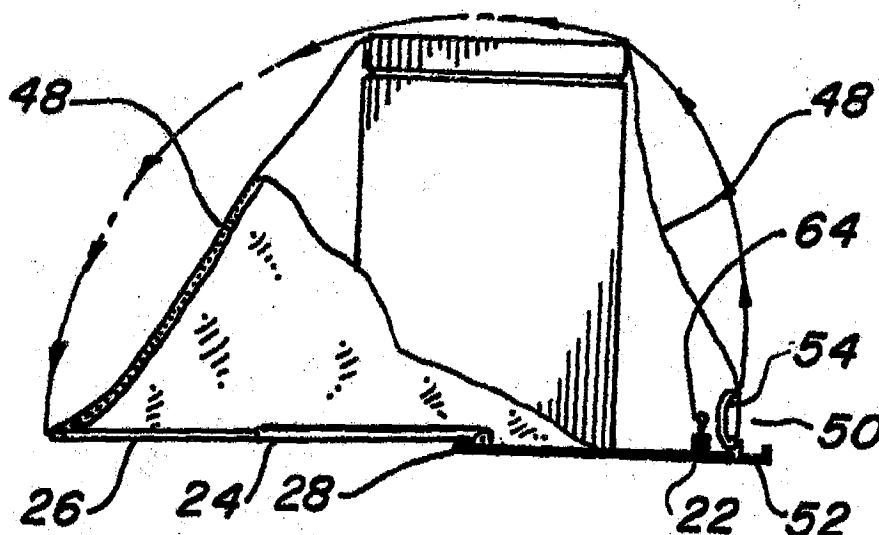
Assistant Examiner—Suzanne L. Dino

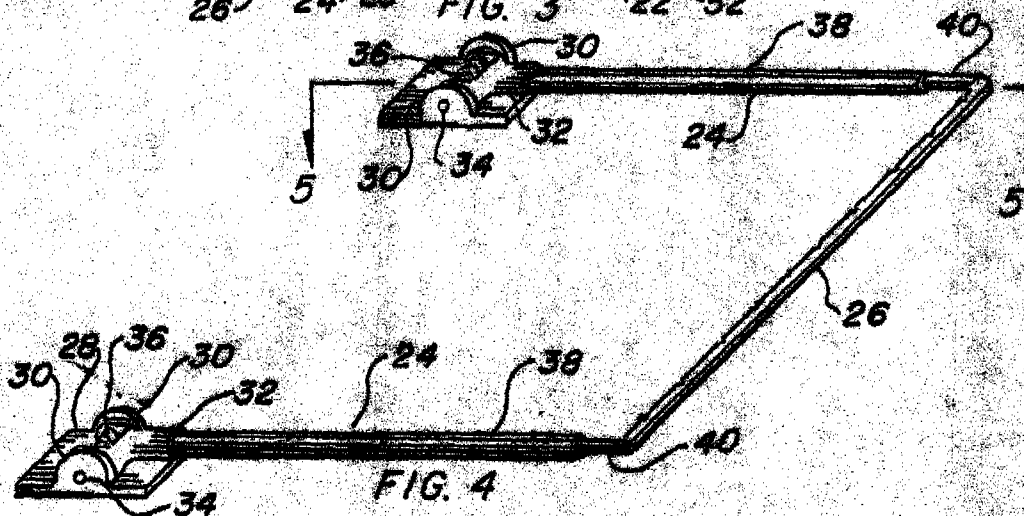
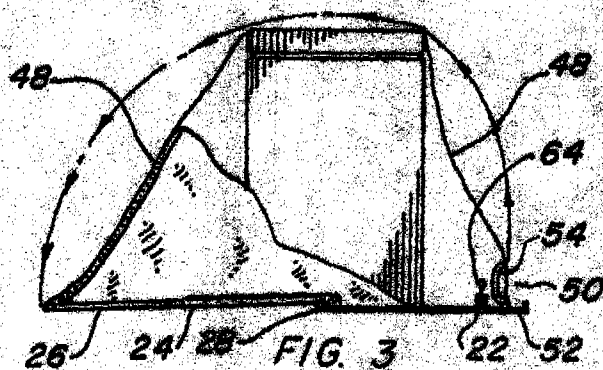
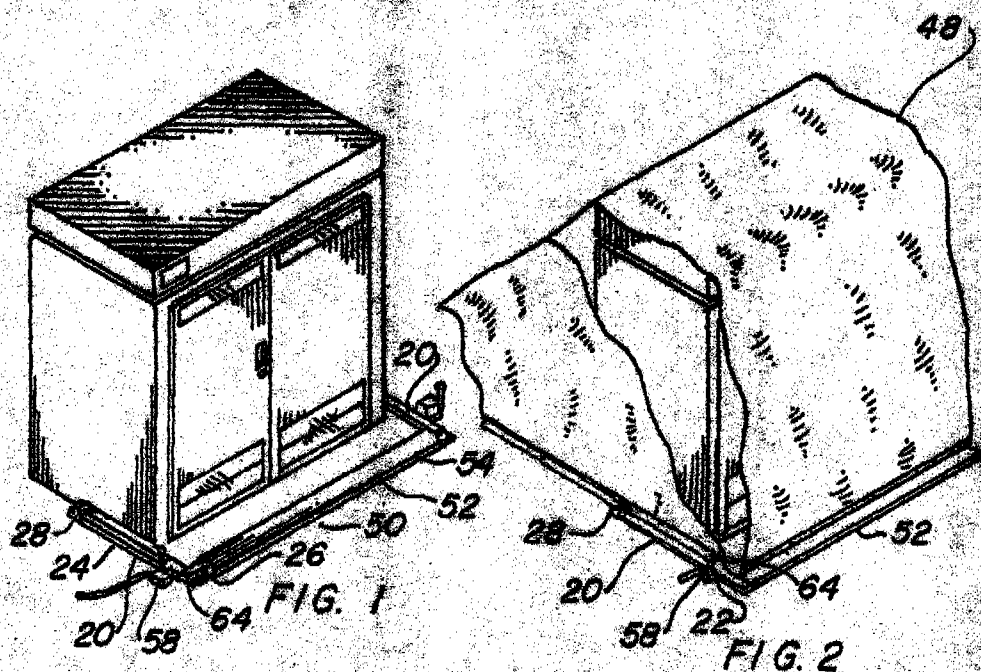
Attorney, Agent, or Firm—Albert O. Cota

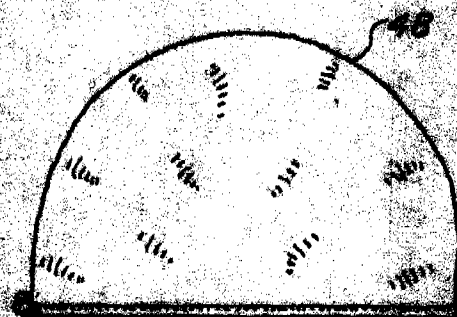
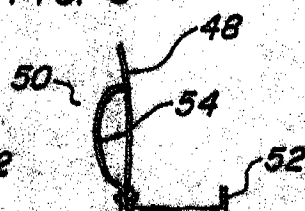
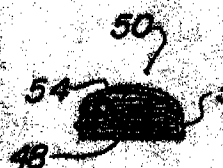
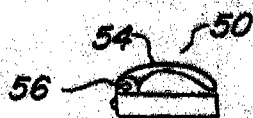
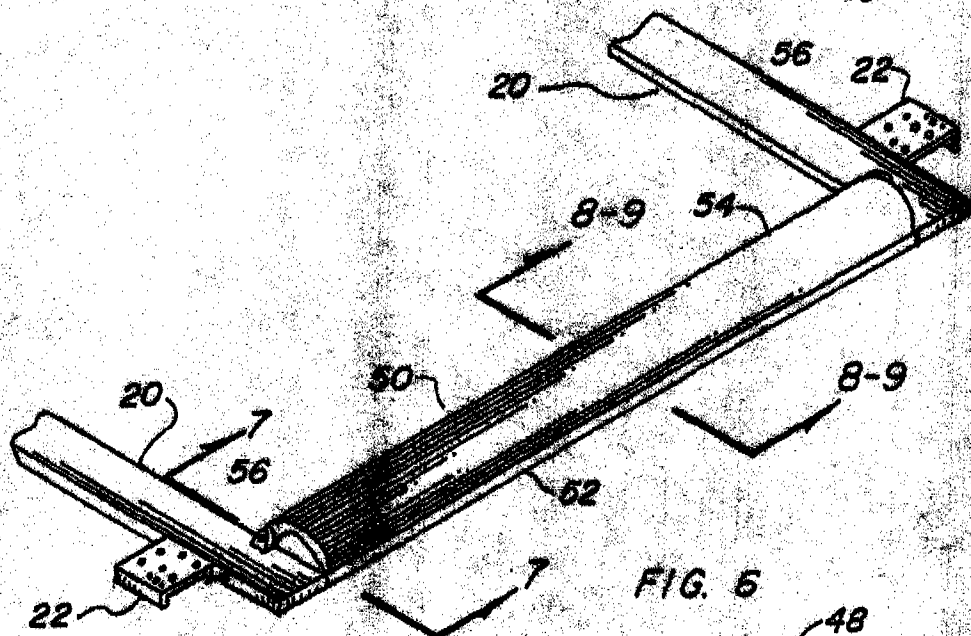
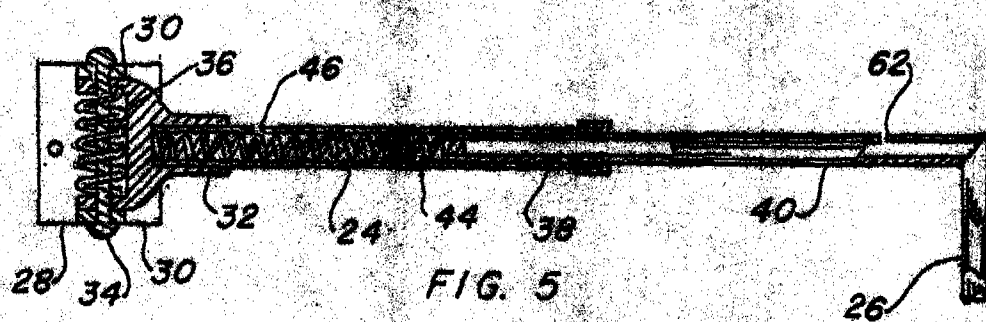
[57] ABSTRACT

A protective cover for electronic equipment automatically expanding by the spring action of a pair of telescoping arms (24) having a cover (48) of resilient material attached between. The arms (24) are positioned contiguous with a pair of bases (20) that are located parallel with each other on the floor on either side of the electronic equipment with a hinged cover enclosure (50) between the ends forming a "U" shape. The arms (24) are connected on the ends by a strut (26) holding the cover (48). Solenoids (58) retain the arms in a tensioned position and when electrically actuated release them. The spring action pivots the arms with its accompanying cover completely enveloping the equipment. A lever (64) arrangement overrides the solenoid action manually releasing the arms. The device is reset by manually rotating and compressing the arms while folding the cover (48) into the enclosure (50). The object is to protect expensive equipment from fire, smoke and water damage if a fire is in the vicinity.

8 Claims, 3 Drawing Sheets







AUTOMATICALLY EXPANDING PROTECTIVE COVER

TECHNICAL FIELD

The present invention relates to protective covers in general, more particularly to covers for electronic equipment that automatically expand from a folded position to a completely encompassing position by manual release or electrical energization.

BACKGROUND ART

Previously, many types of covers have been used in endeavoring to provide an effective means of protecting a wide variety of equipment by using some type of enclosure. In known instances the covers are manually hinged, rolled, or folded over the articles, however, nowhere was found an automatic system that included the ability to quickly enclose the article by self-contained electrical and mechanical means.

A search of the prior art did not disclose any patents that read directly on the claims of the instant invention, however, the following U. S. patents were considered related:

Patent No.	Inventor	Issue Date
3,645,594	Cintz	Feb. 29, 1972
3,454,075	Weinstein	Jul. 8, 1966
3,259,173	Manning	Jul. 5, 1966
746,675	Childress	Dec. 15, 1903

Cintz teaches a box-like transparent rigid, plastic enclosure for a printer on an outdoor cash stand at a service station. The enclosure has a removable end wall, or is pivotally attached. The size of the enclosure allows operation of the equipment inside without removing it from the stand.

Weinstein discloses a cover for office machines, such as typewriters, that includes a rigid bracket frame extending at the back and under the equipment. A cover is rolled, in window blind fashion, around a shaft extending between uprights of the bracket. The cover is unrolled from the shaft which contains window blind type springs and has no sides, but shelters the top of the equipment when unrolled and is held in place by a weighted slat.

Manning also covers an office machine, such as a typewriter, etc. The function is much like the above, except the cover is enclosed in a retractable device directly behind the machine. The retractable device keeps the cover clean and free from eraser dust and is manually operated by pulling the rolled cover from a slot in the device. Again, no sides are incorporated into the protective cover.

Childress employs a folding structure that supports a flexible cover keeping it in a smooth and unwrinkled condition when extended and yet folds into a compact space for storage. The operation of this cover is completely manual and is placed over the typewriter, or similar device, after is expanded.

DISCLOSURE OF THE INVENTION

Since the advent and production of expensive electronic equipment, such as computers, in relatively large quantities, a potential problem has arisen in that if a fire were to break out within the room housing this equipment, water is used by the automatic sprinkler system or

firefighters creating a potentially hazardous situation for the equipment. Computer and peripheral components, such as mainframes, disk drives, tape drives, printers, card readers, and the like, are very sensitive to water damage, particularly a deluge of water caused by firefighting gear, and may be easily damaged or completely destroyed. Presently, there is no protection at all for these expensive devices if even a small fire were to be present, insufficient time is available to cover the equipment, preventing this type of loss.

It is, therefore, the primary object of the invention to automatically cover the electronic equipment at the same time the alarm is engaged. This is accomplished by having the cover folded and stored on the floor either in front or at the rear of the equipment, and when the alarm is actuated, an electrical circuit disengages a spring loaded structure, pulling the cover completely over the equipment. In the event the alarm system is inoperative and time is available, the electrical actuating device may be manually overridden by pulling a lever on either side, releasing the cover to expand by the tension of springs employed within the structure. Once the cover is in place, the water resistant characteristic of the material provides the needed protection eliminating completely the potential of water damage and also provides limited protection from fire and smoke damage.

An important object is the speed at which the cover may be expanded. Since energy must be stored within the springs in a purely mechanical manner, the release, expansion and unfolding is completely controlled and the time is sufficiently quick to accomplish this protection.

Another object of the invention is the compactness of the package when it is preset on the floor. The entire invention is folded into a small area just slightly longer than half of the width of the equipment and its full width. The height above the floor is minimal and it is protected such that it may be stepped on without damage.

Still another object of the invention is the ease at which it may be manually reset if a false alarm is given. The arms are simply rotated against the spring pressure and compressed into themselves when in the loaded position and the cover is folded into the receptacle and the solenoid armatures lock the arms into place by simply depressing them against spring pressure.

Yet another object of the invention is its simplicity and ease of operation. As such, no elaborate instructions are necessary, as the electrical energization is completely automatic and the manual operation is obvious by its basic appearance.

These and other objects and advantages of the present invention will become apparent from the subsequent detailed description of the preferred embodiment and the appended claims taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a partial isometric view of the preferred embodiment installed on the floor adjacent to the electronic equipment in the form of a computer mainframe.

FIG. 2 is a partial isometric view of the preferred embodiment as above, with the cover expanded in the energized position. The cover is partially cut-away to expose elements thereunder.

FIG. 3 is a side view of the preferred embodiment shown partially cut-away for clarity.

FIG. 4 is a partial isometric view of the arms completely removed from the invention for clarity.

FIG. 5 is a cross-sectional view taken along lines 5—5 of FIG. 4.

FIG. 6 is a partial isometric view of the floor bases, only without any other elements.

FIG. 7 is a cross-sectional view taken along lines 7—7 of FIG. 6.

FIG. 8 is a cross-sectional view taken along lines 8—8 of FIG. 6 in the retracted position.

FIG. 9 is a cross-sectional view taken along lines 9—9 of FIG. 6 in the open or energized position.

FIG. 10 is a front view of the cover, only in its expanded position.

FIG. 11 is a front view of the cover, only in its side position.

FIG. 12 is an exploded view of the invention with the cover folded and retracted.

FIG. 13 is a partial isometric view of the preferred embodiment in its actuated position taken from the side opposite FIG. 2.

BEST MODE FOR CARRYING OUT THE INVENTION

The best mode for carrying out the invention is presented in terms of a preferred embodiment. The preferred embodiment, as shown in FIGS. 1 through 13 is comprised of a pair of floor bases 20 that are positioned in close proximity to electronic equipment that the invention is protecting. The bases 20 are located on the floor parallel to the sides of the equipment starting at the center and extending just beyond the front or rear surface. Each base 20 is rectangular in shape and either solid or in the form of an inverted channel, as shown in FIG. 12. On a side opposite the equipment and at the extending end, a mounting bracket 22 is attached. This bracket 22 forms mounting means for the operating mechanism and manual escapement elements. The bracket 22 is preferably formed in channel shape, illustrated in FIG. 6, and is much like the base 20, also being parallel thereunto. On the opposite end of the base 20 are attachment means for other components making up the invention.

A pair of pivotal spring loaded extending arms 24 with a connecting strut 26 in "U" shape are mounted contiguously with the bases 20 forming an extension 28 thereof on each end. The pivoting end of the arm 24 is butted such that the base is extended and a pair of up-standing legs 30 protrude from opposite edges. Between the legs 30 is a yoke 32 that pivots on a pin 34, best depicted in cross-sectional view FIG. 5. A torsional spring 36 is disposed over the pin 34 and is attached on one end to the arm extension 28 and to the yoke 32 on the other. This spring 36 creates a rotational force moving the arm 24 axially into an expanded position away from the base 20 and creating rotational thrust when pivoted contiguously with the base 20. The arm 24, depicted best in FIGS. 4 and 5, consists of a pair of first hollow tubular members 38 attached to each yoke 32 on one end and a pair of second tubular members 40 attached to the strut 26 forming the "U" shape of the arm 24. Each second tubular member 40 is contained within the first tubular member 38 and a compression spring 44 is positioned therebetween. The arms 24 and connecting strut 26 rotate in unison from one side of the equipment to the other by the influence of the torsional spring 36. The second tubular members 40 along with the strut 26 extend, when released, by the urging of the compression

spring 44 increasing in length to clear the height of the equipment in which the invention protects. The arm 24 and strut 26, in the open position, are held firmly against the floor and extended fully from the first and second tubular member 38 and 40. In the closed position the arms 24 are rotated 180 degrees to the opposite side, therefore, resisting the spring tension. Also, the tubular members 34 and 40 are retracted into each other and resist compression of the spring 44. The speed at which the tubular members 38 and 40 expand when released is governed by either the closeness of the fit between the members or an orifice 46, shown in FIG. 5, may be added in the first member 38 through which air may pass when the spring 44 urges the members 38 and 40 apart.

A cover 48 of resilient material is attached to the connecting strut 26 on one side and is in a rectangular box shape with one side open. The open side is downward against the floor and the shape is such that it covers the electronic equipment when the connecting strut 26 is in the rotated position at the rear of the equipment. The cover 48 has the ability to be folded into a series of pleats when the arms 24 are in the loaded position and the strut 26 is contiguous with the bases 20. The cover 48 may be of a thermoplastic substance having flame retarding characteristics and water resistance or may be a woven cloth material stitched together with thread with one or both of the protective abilities.

A hinged cover enclosure 50 is positioned between the arms 24 and floor bases 20 and is parallel to and of the same approximate length as the strut 26. The enclosure 50 consists of a bottom tray 52 and a pivoted spring loaded lid 54 connected on each side to the tray. The enclosure 50 is of a size to accept and store the folded cover 48 and is pivoted in such a manner as to open the lid 54 when the cover 48 is automatically expanded. The enclosure 50 is shown pictorially in FIG. 6 with FIGS. 7 and 8 in cross-section with FIG. 9 illustrating the open position. A spring 56 is located at the pivot point on each intersection of the tray 52 and operates in the same manner as the torsion spring 36. The tray 52 and lid 54 may be fabricated of any substance suitable for the application, however, steel or aluminum are preferred.

Electrically actuated containment and escapement means to control the operation of the invention consist of a pair of electromagnetic solenoids 58 having a spring loaded double extending armature 60. Each solenoid 58 is attached to one of the floor bases 20 on the mounting bracket 22 providing a location adjacent to the arms 24. The spring loading of the armature 60 extends one end horizontally to interface with a hole 62 in each arm 24. When the arm 24 is rotated contiguously with the base 20 the armature 60 extends into the hole 62 locking the arm in the preloaded pivoted position. Upon electrical energization of the solenoid 58, the armature 60 is retracted pulling the end of the armature 60 from contact with the arm 24 allowing the arm 24, along with its attached cover 48 to pivot over the top of the electronic equipment, thus covering the entire surface in an automatic and expandable manner.

Manual containment and escapement means integral with the above electrical actuated means allow mechanical override of the system. This is accomplished with a pair of levers 64, one mechanically linked onto each extending arm 24 through the solenoid armature 60. This arrangement allows either lever to be manually pulled releasing the arm 24 from its contained position



US005370035A

United States Patent [19]

Madden, Jr.

[11] Patent Number: 5,370,035

[45] Date of Patent: * Dec. 6, 1994

[54] REMOVABLE BULLETPROOF APPARATUS FOR VEHICLES

[76] Inventor: James R. Madden, Jr., 4410 W. Acoma Dr., Glendale, Ariz. 85306

[*] Notice: The portion of the term of this patent subsequent to Dec. 21, 2010 has been disclaimed.

[21] Appl. No.: 139,313

[22] Filed: Oct. 19, 1993

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 792,645, Nov. 15, 1991, Pat. No. 5,271,311.

[51] Int. Cl.⁵ F41H 5/06

[52] U.S. Cl. 89/36.08; 89/36.02; 109/49.5

[58] Field of Search 89/36.08, 36.02, 36.09, 89/36.01, 36.07; 109/49.5; 296/152

[56] References Cited

U.S. PATENT DOCUMENTS

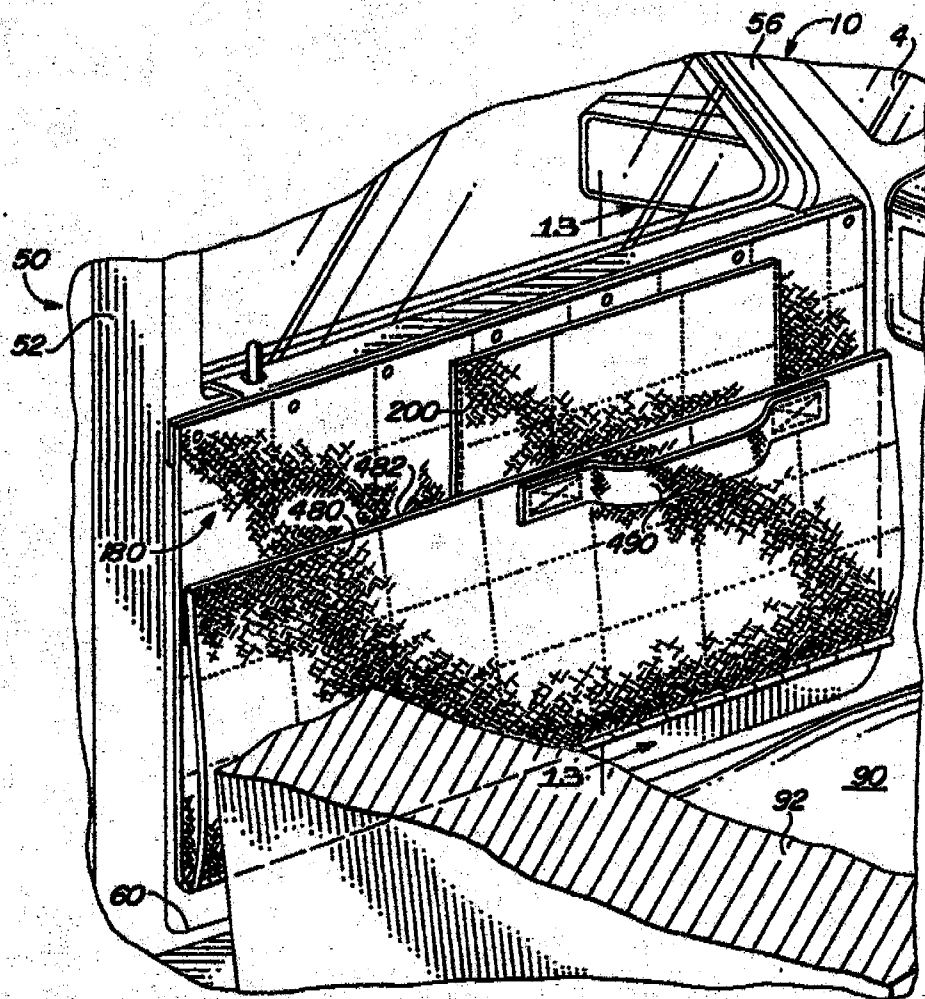
5,180,880 1/1993 Zufle 89/36.02

Primary Examiner—Stephen M. Johnson
Attorney, Agent, or Firm—H. Gordon Shields

[57] ABSTRACT

Removable bulletproof apparatus for the back of the front seat of a vehicle includes a transparent panel which is secured to or disposed adjacent to the front seat of the vehicle and a flexible curtain is secured to the bottom portion of the transparent panel. Both the transparent panel and the curtain are bulletproof. The curtain may be easily installed and easily removed from the transparent panel. The curtain is made of layers of fibrous material, such as woven cloth, preferably of an aramid fiber, such as a "Kevlar" cloth, or "SPECTRA SHIELD" material. Wing portions may be secured to the curtain and extended to door posts to provide additional protection for the occupants of the front seat from bullets fired from the rear of the vehicle or from rearwardly of the front door.

5 Claims, 5 Drawing Sheets



REMOVABLE BULLETPROOF APPARATUS FOR VEHICLES

CROSS REFERENCE TO RELATED APPLICATION

This application is a continuation in part application of Ser. No. 07/792,645, filed Nov. 15, 1991 now U.S. Pat. No. 5,271,311.

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to vehicles and, more particularly, to apparatus for providing bulletproof or bullet resistant protection for occupants of a vehicle and which apparatus is easily installed in a vehicle and is easily removed from the vehicle.

2. Description of the Prior Art U.S. Pat. No. 1,443,708 (Fenton) discloses a armor system for a vehicle. The armor includes a plurality of holes, with glass elements covering some of the holes. The holes covered by glass elements comprise viewing apertures. Armor plate cover some of the holes from the interior. Some of the interior armor plate may be removed so that firearms may be used from the inside of the vehicle shooting through the holes.

U.S. Pat. No. 1,913,554 (Luker) discloses a bulletproof covering for portions of a vehicle, including the radiator and tire. The bulletproof covering or armor is designed to protect the front end of a vehicle.

U.S. Pat. No. 2,363,573 (Costa) discloses what is referred to as an armor shell for a motor vehicle. Virtually the entire vehicle is covered with an armor shell. There are gun ports in the shell and viewing slits for observing outside the vehicle.

U.S. Pat. No. 3,855,898 (McDonald) discloses sheeting material applied to the interior of a vehicle. The sheeting includes transparent covering for the windows and panels which extend over the doors. The door panels are preformed in a particular configuration and are permanently secured in place.

U.S. Pat. No. 4,316,404 (Medlin) discloses a lightweight armored vehicle and a method of making the lightweight armored vehicle. The disclosed method comprises stripping a vehicle interior, and using different types of bullet proof material for the interior of the vehicle and also for the gasoline tank of the vehicle.

U.S. Pat. No. 4,352,316 (Medlin) comprises a continuation-in-part patent of the '404 patent. It accordingly contains virtually the same method and apparatus, but with different materials involved, namely woven polyester glass sheeting.

The patents discussed in the preceding paragraphs all utilize a permanent installation of bullet proof material in a vehicle. Accordingly, substantial changes are made in the vehicles to bulletproof them. The substantial changes include substantial costs involvement, as may be understood and expected. The apparatus of the present invention comprises a relatively inexpensive, yet provides substantial protection from bullets fired from outside the vehicle. The protection is afforded to the driver and other passengers in the vehicle by employing a combination of transparent bulletproof material and flexible ballistic fabric or cloth material, such as made of aramid fibers, typically of the "KEVLAR" trademark type of woven material, or polyethylene fibers, such as "SPECTRA SHIELD" type nonwoven material or "DYNEEMA" material, or other flexible bulletproof

material which may be easily installed and easily removed from a vehicle.

SUMMARY OF THE INVENTION

5 Invention described and claimed herein comprises bulletproof panels of transparent material and flexible, cloth material which may be easily secured to and removed from a vehicle. The transparent material is placed adjacent to the side door windows and may be placed over the back seat in place of, or in addition to, the screens that are typically placed behind the front seat in law enforcement vehicles to separate persons in the back seat from the officers in the front seat of the vehicle. A curtain or panel of flexible, cloth material is placed beneath the transparent material both on the doors beneath the windows and on the panel behind the front seat.

10 In law enforcement vehicles, the curtain or panel of flexible cloth material on a door may include an extra flap of the flexible cloth material that is pivotally secured to the lower portion of the curtain or panel on the door so the extra flap may be lowered to act as a shield when the door is open. The extra flap may extend from the bottom of the door downwardly to the ground to provide substantially complete protection for an officer disposed behind the door.

Among the objects of the present invention are the following:

30 To provide new and useful removable bulletproof apparatus for vehicles;

To provide new and useful removable bulletproof apparatus including transparent panels and panels of flexible, fibrous material secured to and extending downwardly from the transparent panels;

35 To provide new and useful bulletproof apparatus for an vehicle door which includes a door panel of flexible, fibrous cloth disposed against the door and a bottom panel of the flexible, fibrous cloth material pivotally secured to the door panel so that the bottom may be deployed downwardly from the door when the door is opened;

40 To provide new and useful removable bulletproof apparatus for a vehicle which may be relatively easily secured to and removed from a vehicle;

45 To provide new and useful bulletproof material for a law enforcement vehicle having a transparent panel disposed behind the front seat and layers of flexible, fibrous material extending downwardly from the transparent panel; and

50 To provide new and useful apparatus for a vehicle which includes a bulletproof transparent panel and a bulletproof flexible panel secured to and extending downwardly from the transparent panel.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view of a vehicle door with the apparatus of the present invention secured thereto.

FIG. 2 is a view in partial section taken generally along line 2—2 of FIG. 1. FIG. 3 is a view in partial section taken generally along line 3—3 of FIG. 1.

FIG. 4 is a view in partial section taken generally along line 4—4 of FIG. 1.

FIG. 5 is an exploded perspective view of the apparatus of FIG. 1.

FIG. 6 is an enlarged perspective view of a portion of the apparatus of the present invention.

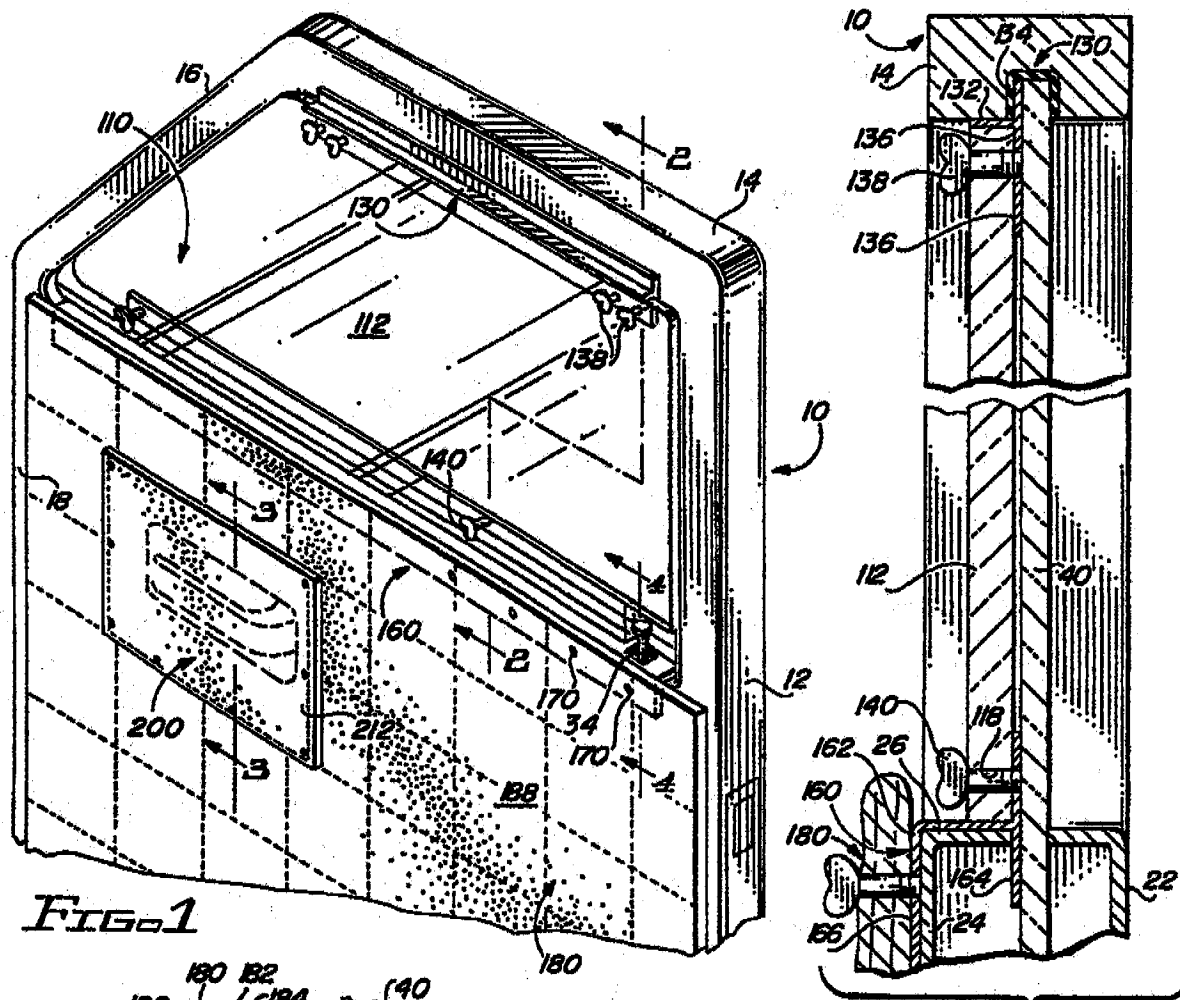


FIG. 1

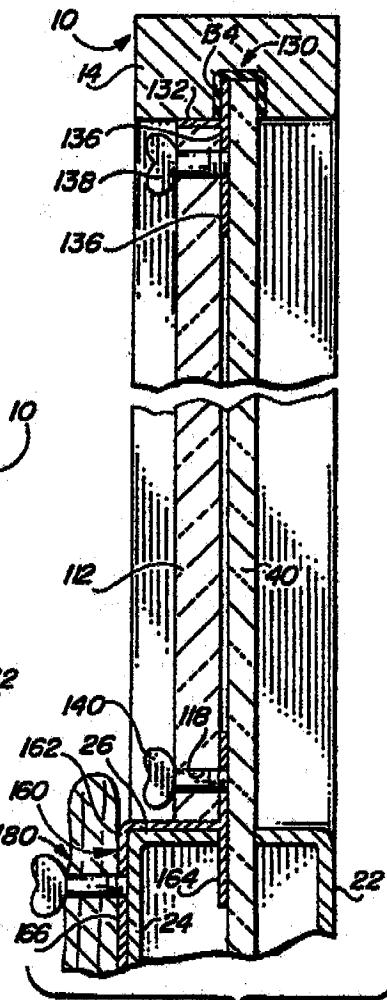


FIG. 2

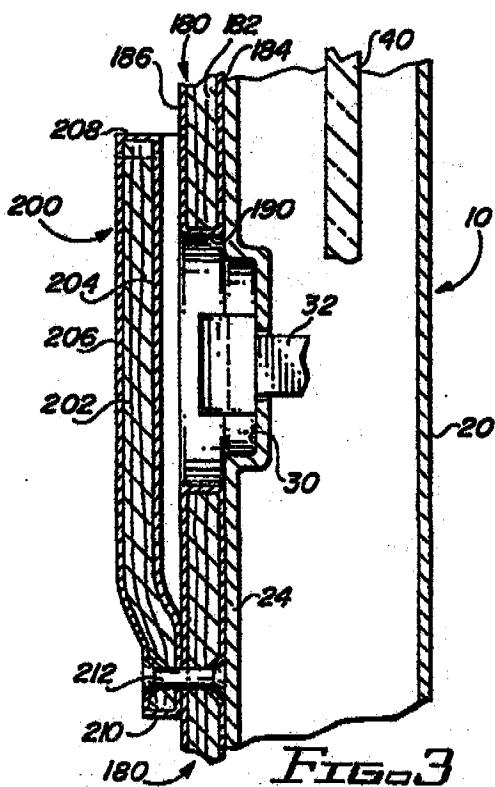


FIG. 3

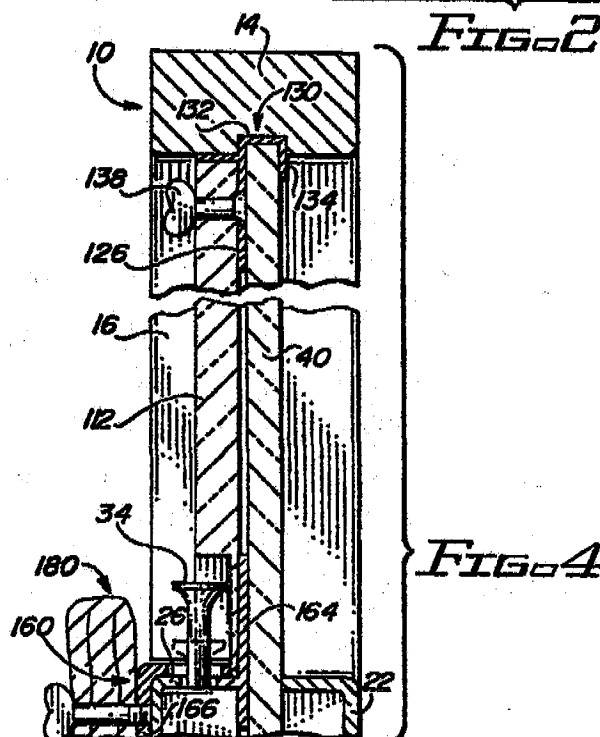


FIG. 4

FIG. 7 is a view in partial section of an alternate embodiment of the apparatus shown in FIG. 4.

FIG. 8 is an enlarged perspective view of an alternate embodiment of the apparatus of FIG. 7.

FIG. 9 is a perspective view of an alternate embodiment of the apparatus of FIG. 7.

FIG. 10 is a perspective view of a portion of the apparatus of the present invention.

FIG. 11 is a view in partial section taken generally along line 11—11 of FIG. 10.

FIG. 12 is a perspective view of an alternate embodiment of a portion of the apparatus of the present invention.

FIG. 13 is a view in partial section taken generally along line 13—13 of FIG. 12.

FIG. 14A is an enlarged view in partial section taken generally from circle 14A of FIG. 13.

FIG. 14B is a view in partial section sequentially illustrating the operation of the apparatus of FIG. 14A.

FIG. 15 is a view in partial section illustrating a use environment for the apparatus of FIG. 12.

FIG. 16 is a fragmentary perspective view of another alternate embodiment of the present invention.

FIG. 17 is a view in partial section taken generally along line 17—17 of FIG. 16.

FIG. 18 is an exploded perspective view in partial section of a portion of the apparatus of FIGS. 16 and 17.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In FIG. 1, a portion of a door 10, which comprises a right front door, of a vehicle is shown. FIG. 1 comprises a perspective view of a portion of the right front door 10 with apparatus 110 of the present invention secured thereto. The door as illustrated in FIG. 1 includes an end frame member or panel 12, a top frame member or panel 14, a top front sloping frame member or panel 16, and a lower front end frame member or panel 18. Not shown are hinge details, etc., since they are not pertinent to the explanation of the present invention and since they are well known and understood in the art.

Details of a vehicle 2, of which the door 10 is a portion, or to which the door 10 belongs, are illustrated in FIGS. 10, 12, and 15. The vehicle 2 includes windshield 4, shown in FIGS. 10, 12, and 15, and a left front door 50 is shown in FIG. 12 and in FIG. 15.

The left front door 50 includes an end frame member or panel 52, a top frame member or panel 54, a top sloping front frame member or panel 56, a lower generally vertical front frame member or panel 58, and a bottom frame member or portion 60. Additional details of the door 50 are shown in FIG. 13.

FIG. 13 comprises an end view of the door 50, showing the end panel 52, the bottom member 60, an outer panel 62, an inner panel 64, and an inner sill 66.

FIG. 11 comprises a perspective view of a portion of the vehicle 2 in which a front seat 90 and a front seat back 92 is shown. FIG. 12 is also a perspective view of a portion of the vehicle 2, showing the left front door 50, with portions of the front seat 90 and the seat back 92 also shown.

FIG. 15 is a perspective view of a portion of the vehicle 2, showing the left front door 50 open. Again, a portion of the front seat 90 is shown, and a left door post 82 is shown. A right door post 80 is shown in FIG. 11.

A structural detail of the vehicle are illustrated and are discussed only in conjunction with the apparatus of

the present invention insofar as the structural details of the vehicle directly relate to the apparatus of the present invention. Generally, the discussion will be limited to the apparatus of the present invention, and its various portions or embodiments.

Returning again to FIG. 1, the apparatus 110 of the present invention is shown secured to the right front door 10. The apparatus 110 includes a transparent panel 112 disposed against window glass 40 of the front door 10, and a flexible curtain 180 extending generally over the lower portion of the door below the transparent panel 112. Thus, the apparatus 110 essentially covers the door 10.

FIG. 2 is a view in partial section taken generally through the door 10 and the apparatus 110 generally along line 2—2 of FIG. 1. FIG. 3 is a view in partial section through a portion of the door 10 and through a portion of the curtain 180, taken generally along line 3—3 of FIG. 1. FIG. 4 is a view in partial section through a portion of the door 10 and the apparatus 110 taken generally along line 4—4 of FIG. 1.

FIG. 5 is an exploded perspective view of the apparatus 110, illustrating the transparent panel 112 separated from the curtain 180, and illustrating the fastener elements or brackets used to secure the transparent panel 110 to the window 40 and to secure the transparent panel 110 to the curtain 180, and to secure the curtain 180 to the door 10. For the following discussion, reference will primarily be made to FIGS. 1, 2, 3, 4, and 5.

In addition to the end frame member 12, top frame member 14, top front frame member 16, and lower front end frame member 18, the door 10 also includes an outer panel 22 and an inner panel 24. There is also an inner sill 26, shown in best in FIGS. 2 and 4. It will be noted that the door 10 is simplified for purposes of illustrating the apparatus of the present invention. The door 10 is a typical door of a vehicle, and accordingly the various elements may vary from vehicle model to vehicle model. However, generally, each of the vehicles to which the apparatus 110 will be secured will include a complete door with steel panels and frame members about the window. Obviously, hard top models, or convertible models, will not include the top door frame portions. Embodiments of the present invention for such vehicles will be discussed below.

As best shown in FIG. 3, the door 10 also includes a handle recess 30 and handle elements 32 in the inner panel 24. Again, details of the door handle and related elements are not illustrated. The importance of the handle recess 30 and handle elements 32 are important only in conjunction with a portion of the curtain 180, as will be discussed below.

In FIG. 4, a door lock 34 is illustrated. Once again, the door lock 34 is exemplary only as it pertains to the apparatus of the present invention, namely to the transparent panel 112. The door lock 34 is illustrated as extending vertically upwardly from the inner sill 26 of the door 10.

The transparent panel 112 is configured generally to fit within the window portion of the door frame, and specifically within the door frame below the top panel or frame member 12, between the sloping front frame member or panel 16 and the upper portion of the end frame member or panel 12, and above the sill 26. The transparent panel 112 includes a notch or recess 114 in which is disposed the lock member 34.

The transparent panel 112 may be of any well known construction and made of generally bulletproof materi-

als, such as a polycarbonate material of one or more layers, and which may be sandwiched with other materials, as desired. Such construction is well known and understood in the art. The thickness of the transparent material 112, and its specific structure, depends on the extent of the protection desired relative to the penetration of bullets. Accordingly, for relatively low powered bullets, one thickness may be used, and for stopping higher powered bullets, thicker material will be used. Regardless, such is well known and understood in the art.

The panel 112 is secured to the window 40, or to the window frame, namely the upper portion 14 of the door frame, as discussed above, by an upper window support bracket 130. The bracket 130 includes a horizontal plate 132 and a vertical flange having two portions, a top portion 134 and a bottom or lower portion 136. The horizontal plate 132 divides the vertical flange into the two portions.

The horizontal plate 132 is dimensioned to fit over the top of the panel 112. As best shown in FIG. 4 and 6, the vertical length or height of the flanges 134 and 136 are not equal. The lower vertical flange 136 is considerably longer than the upper vertical flange 134.

The transparent panel 112 is secured to the lower vertical flange 136 by a plurality of screw elements 138. The screw elements 138 include wing elements to facilitate the securing of the fastening elements or screws 138 through the panel 112 to the bracket 130. The panel 112 includes appropriate apertures or holes through which the fastener elements 138 extend. The flange 136 includes appropriately tapped holes to receive the fastener elements 138.

Details of the bracket 130 are also shown in FIG. 6, which comprises a perspective view of a portion of the bracket 130 and the panel 112.

A pair of apertures or holes 116 are shown extending through the panel 120. The holes or apertures 110 are aligned with tapped holes in the lower flange 136 and receive the wing screws or fastening elements 138.

The upper flange 134 extends upwardly into the door frame 14, as best shown in FIG. 4. The upper flange 134 provides stability for the upper portion of the panel 112.

There is a curtain hanger bracket 160 disposed on the sill element 26 of the door 10. The curtain hanger bracket 160 includes a generally horizontal plate 162 which is disposed on the inner sill 26, a vertically extending "rear" plate or flange 164, and a vertically downwardly extending "front" plate or flange 166. An opening 172 extends through the horizontal plate 162 to provide access for the door lock 34. This is best shown in FIG. 5.

The upwardly extending flange 164 is disposed against the window, as shown in FIGS. 2 and 4. The bottom portion of the transparent panel 112 is disposed on the horizontal plate 162 and against the upper portion of the "rear" flange 164. The transparent panel 112 includes a plurality of holes 188 that are aligned with tapped holes or apertures in the upper portion of the flange 164. Fasteners 140, which are substantially identical to the fasteners 138, extend through the holes 188 and into the tapped holes or apertures in the flange 164 to secure the lower portion of the panel 112 to the bracket 160.

The lower portion of the flange 164 extends downwardly against the window 40 and below the sill 26 to help anchor or secure the bracket 160 in place on the sill 26.

The curtain 180 comprises a plurality of cloth layers, such as woven fibrous material typically made of aramid fibers, and generally known and sold under the "KEVLAR" trademark or brand name, or layers of fibrous material held together by flexible resins, such as marketed under the "SPECTRA SHIELD" trademark.

The cloth layers are disposed within a covering, of which an inside covering portion 184 and an outside covering portion 186 are illustrated. The cloth layers 182 are disposed between the coverings 184 and 186. Appropriate stitching 188 may be used. The stitching resembles quilted stitching in that the curtain 180 resembles a quilted element with generally square or rectangular stitching extending both vertically and horizontally.

An inherent advantage of the use of flexible fibrous layers is the ability of the flexible material to "give" as it absorbs the shock from a bullet projectile. The "give" in the flexible curtain may be contrasted with a relatively solid material and the inability of the relatively solid material to "give" and thus to depend only on the inherent strength or thickness of the solid material to absorb the energy and shock of a bullet projectile. Moreover, flexible material, and particularly the "SPECTRA SHIELD" type material, is quite effective in providing protection from angled shots.

The curtain 180 is appropriately secured to the outside vertical flange 166 of the bracket 160 by a plurality of fasteners 170. The fasteners or fastening elements preferably include wing handles to facilitate the securing of the panel and curtain to the bracket and the fasteners may be referred to sometimes herein as "wing nuts" or "wing screws."

The upper portion of the curtain 180 extends above the horizontal plate 162 and accordingly overlaps the lower or bottom portion of the transparent panel 112 to provide an extra degree of protection in the area of the bracket 160.

As best shown in FIG. 3, there is a handle cutout 190 in the curtain 180. The handle cutout 190 is covered by a pocket flap 200. The pocket flap 200 is substantially identical in construction to the curtain 180. It includes a plurality of fibrous layers 202 disposed within a cover. The cover includes an inside portion 204, an outside portion 206, a top portion 208 and a bottom portion 210. Appropriate stitching or fastener elements 212 are used to secure the pocket flap 200 to the curtain 180. The fasteners or stitching extends about the pocket flap or opening as appropriate for the construction of the vehicle. The top of the pocket flap 200 may be open to allow access to the door handle mechanism 32, or a side may be open, or whatever is appropriate. In FIG. 3, the top is shown open. Preferably, the flap will be stitched or secured on three sides to the curtain.

It will be noted that the pocket flap 200 is substantially larger than the handle cutout 190. This, of course, is for security reasons, or to insure that there are essentially no practical gaps or openings in the curtain 180 which a bullet or other projectile could come through.

It is noted that the thickness of the pocket flap 200 is substantially the same as that of the curtain 180. Moreover, the pocket flap 200, like the curtain 180, includes a covering for the fabric layers 202.

FIG. 7 is a view in partial section of an alternate embodiment of a portion of the apparatus of FIGS. 1-6, namely the transparent, bulletproof panel 112. In FIG. 7, a bulletproof transparent panel 250 is secured to the outside of the window 40. In FIG. 7, a portion of the

United States Patent [19]
Sankar

US005392686A
[11] Patent Number: 5,392,686
[45] Date of Patent: Feb. 28, 1995

[54] TELESCOPIC TOTAL BODY PROTECTIVE SHIELD

[76] Inventor: Wilfred A. Sankar, 111-12 Inwood St., Jamaica, N.Y. 11435

[21] Appl. No.: 172,906

[22] Filed: Dec. 27, 1993

[51] Int. Cl.⁵ F41H 5/08

[52] U.S. Cl. 89/36.05; 109/49.5

[58] Field of Search 2/2.5; 89/36.05, 36.07; 109/49.5, 58.5

[56] References Cited

U.S. PATENT DOCUMENTS

1,274,757 8/1918 Orenbuch et al. 89/36.07
2,921,317 1/1960 Tift 2/2.5
3,762,343 10/1973 Sgariglia 109/49.5
4,412,495 11/1983 Sankar 109/49.5

OTHER PUBLICATIONS

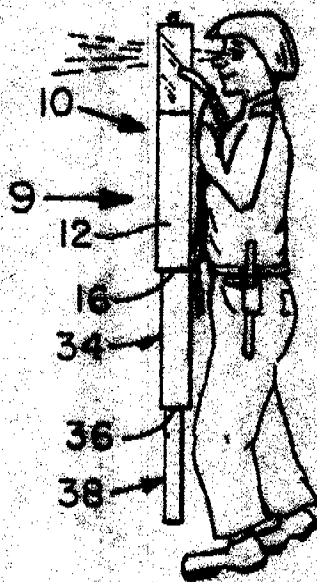
Law & Order, "Gentex Shield", Mar. 1968, p. 44.
Point Blank, "Ballistic Shields", Jan. 1992, pp. 42-43.

Primary Examiner—Stephen C. Bentley
Attorney, Agent, or Firm—Richard L. Miller

[57] ABSTRACT

A protective shield, comprising a frame. The frame having a frame top, a frame bottom, frame sides, and frame upper sides between the frame sides and frame top. The shield further having a front panel and a back panel, each made from a bullet-proof plastic fabric such as KEVLAR. The shield has a viewing window, made of a transparent bullet-proof material, such as LEXAN. A shield inner channel is mounted between the front panel and back panel. A first extension is mounted within the shield inner channel that slidably extends from the shield bottom for use, and retracts for storage.

9 Claims, 1 Drawing Sheet



72

72

D3

FIG. 1

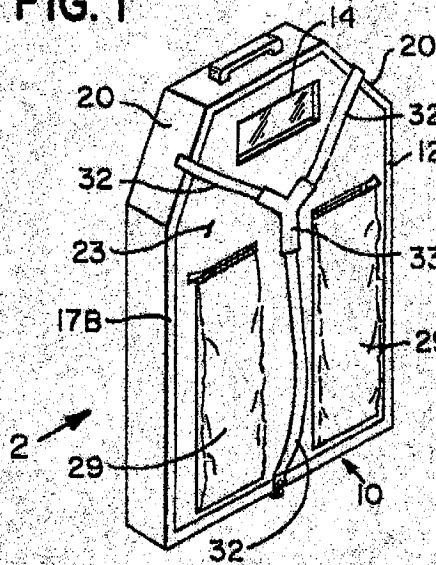


FIG. 2

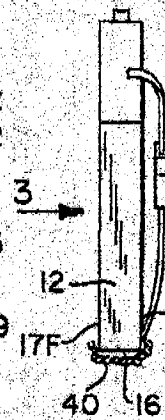


FIG. 3

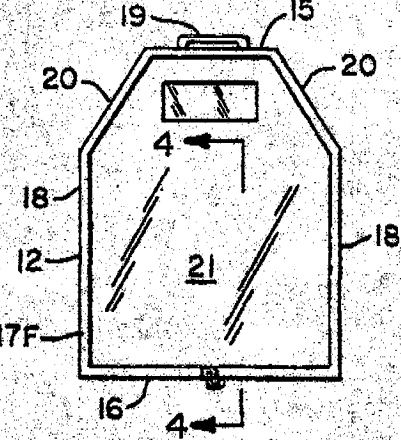


FIG. 5

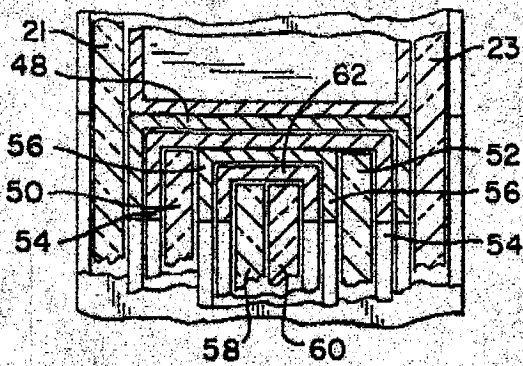


FIG. 8

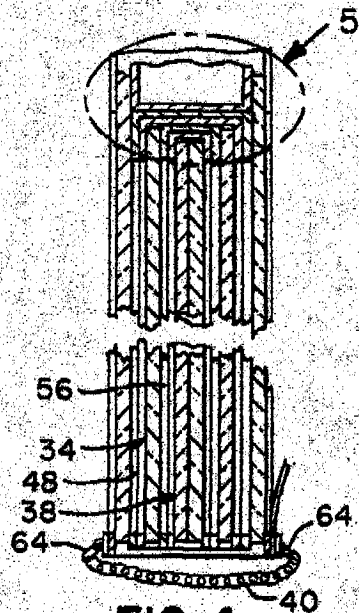
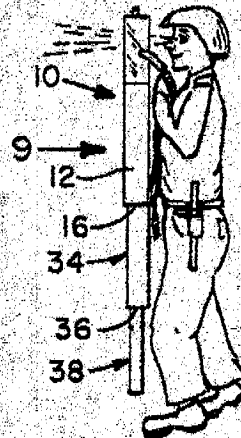


FIG. 4

FIG. 9

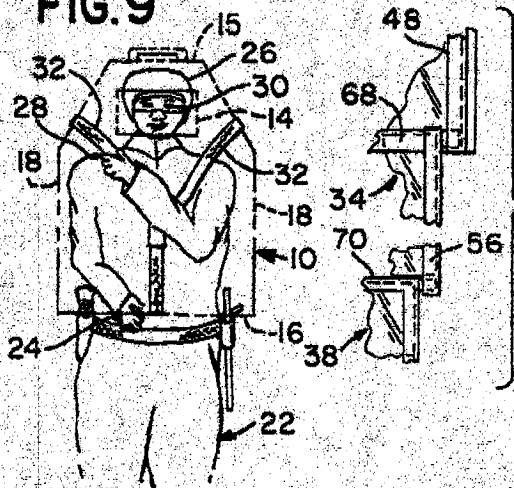


FIG. 6

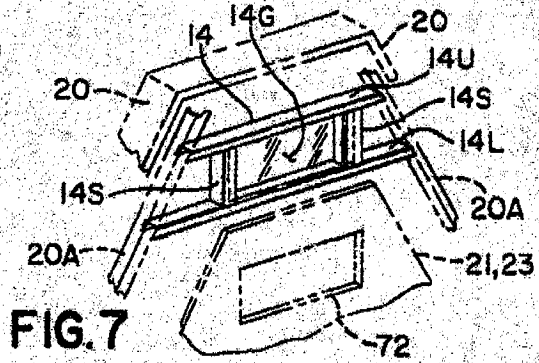


FIG. 7

TELESCOPIC TOTAL BODY PROTECTIVE SHIELD**BACKGROUND OF THE INVENTION**

The invention relates to a telescopic total body protective shield. More particularly, the invention relates to an expandable shield for protecting a person from bullets and other hazardous objects.

Inner-city rioting has occurred with increasing frequency in recent years. Riots can quickly escalate to gunfire, injuring police and innocent bystanders.

U.S. Pat. No. 4,412,495 to Sankar, discloses a total body protective shield comprising fabric panels made of bulletproof material, that can roll up or fold when not in use.

While this unit may be suitable for the particular purpose employed, or to general use, it would not be as suitable for the purposes of the present invention, as hereafter described.

SUMMARY OF THE INVENTION

It is an object of the invention to produce a protective shield capable of shielding the entire length of a person's body from bullets and other hazardous projectiles.

It is another object of the invention to produce a protective shield that is telescopically expandable, to adjust for use by persons of differing heights, and for storage convenience.

It is a further object of the invention to produce a protective shield that does not interfere with a person's vision through the shield, yet does not compromise the person's safety.

The invention is a protective shield, comprising a frame. The frame having a frame top, a frame bottom, frame sides, and frame upper sides between the frame sides and frame top. The shield further having a front panel and a back panel, each made from a bullet-proof plastic fabric such as KEVLAR a registered trademark of E. I. Dupont. The shield has a viewing window, made of a transparent bullet-proof material, such as LEXAN, a registered trade mark of General Electric Company. A shield inner channel is mounted between the front panel and back panel. A first extension is mounted within the shield inner channel that slidably extends from the shield bottom for use, and retracts for storage.

To the accomplishment of the above and related objects, the invention may be embodied in the form illustrated in the accompanying drawings. Attention is called to the fact, however, that the drawings are illustrative only. Variations are contemplated as being part of the present invention, limited only by the scope of the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings, like elements are depicted by like reference numerals throughout the several views. The drawings are briefly described below.

FIG. 1 is a diagrammatic perspective view of the instant invention pre se.

FIG. 2 is a side elevational view taken in the direction of arrow 3 in FIG. 1.

FIG. 3 is an elevational view taken in the direction of arrow 3 in FIG. 2.

FIG. 4 is a cross sectional view with parts broken away, taken on line 4-4 of FIG. 3.

FIG. 5 is an enlarged partially sectioned view of the area indicated by arrow 5 in FIG. 4.

FIG. 6 is a diagrammatic partially exploded view of the instant invention, illustrating how the panels interlock with each other.

FIG. 7 is a diagrammatic perspective view of the upper portion of the invention, partially in phantom, illustrating the viewing window construction.

FIG. 8 is a diagrammatic side elevation view, illustrating the instant invention in use.

FIG. 9 is a diagrammatic front elevational view, taken in the direction of arrow 9 in FIG. 8, with most of the instant invention shown in phantom, so as to illustrate how the user may hold the straps.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 1 diagrammatically illustrates a shield 10. The shield 10 is enclosed within a frame 12, and has a viewing window 14, for providing a user with forward vision through the shield 10. The frame 12 can be constructed from metal typical, aluminum, steel or stainless steel all are suitable materials.

Referring to FIG. 3, the frame 12 has a frame top 15, a frame bottom 16, a pair of frame sides 18, and a pair of frame upper sides 20 between the frame sides 18 and frame top 15. The frame top 15 is substantially parallel to the frame bottom 16, and the frame sides 18 are substantially parallel to each other. The frame top 15 is shorter in length than the frame bottom 16. Therefore, the frame upper sides 20 are sloped inward from the sides 18 to the frame top 15. The shield 10 has a handle 19 mounted on the frame top 15, for carrying the shield 10 when not in use.

The shield 10 has a front panel 21, preferably made of KEVLAR. The front panel provides virtually continuous coverage from the frame top 15 to the frame bottom 16, and between the frame sides 18.

Referring back to FIG. 1, the shield 10 has a back panel 23, that is substantially parallel to the front panel 21, and is of substantially the same size and shape. Three straps 32 are connected at one end to each of the frame upper sides 20 and to the frame bottom 16. The other end of the straps 32 are all connected together at a Y-connector 33.

The shield 10 also has a pair of pockets 29, attached to the back panel 23 for carrying accessories, optionally similar pockets, not illustrated, can also be provided on the front as a manner of design choice if desired.

Referring for a moment to both FIG. 3 and FIG. 1, the frame 12 has a front lip 17F than covers and secures edges of the front panel 21. The frame also has a back lip 17B that covers and secures edges of the back panel 23.

FIG. 9 illustrates an average person 22 holding the shield 10. The person 22 has a waist 24 and a head 26, shoulders 28, and eyes 30. The distance between the frame top 15 and frame bottom 16 is approximately the distance between the top of the person's head 26, and their waist 24. The distance between the frame sides 18 is slightly wider than the width of an average person at their shoulders 28 when gripping the shield 10. The viewing window 14, roughly corresponds to the height of the eyes 30 of a person holding the shield 10 with the frame bottom 16 corresponding to their waist 24 and the frame top 15 corresponding to the top of their head 26. The person 22 is holding the straps 32 with one hand, to support the shield 10.

FIG. 8 illustrates the shield 10 in use. The shield 10 has been expanded, so that a first extension 34 extends from the frame bottom 16. The first extension has a first extension bottom 36. A second extension 38 extends from the first extension bottom 36. When the shield 10 is expanded, the first extension 34, the second extension 38, and the frame are substantially parallel to one another.

FIG. 2 and 4 are side elevational views of the shield 10. Illustrated is a chain guard 40, extending across the frame bottom 16, for preventing the first extension 34 and second extension 38 from extending from the frame bottom 16 when the chain guard 40 is in place. The chain guard 40 extends between the front lip 17F and back lip 17B of the frame 12. The chain guard 40 is selectively removable with a snap fastener devices 64 to prepare the shield 10 for use.

FIG. 4 is a sectional view, illustrating some internal details as indicated by line 4—4 in FIG. 3. FIG. 5 is an enlargement of the area in FIG. 4 indicated by arrow 5. Referring to both FIG. 4 and FIG. 5, a shield inner channel 48 is mounted between the front panel 21 and back panel 23. The first extension 34 is mounted within the shield inner channel 48 for slidable movement therein. In its retracted position, the first extension rests within the shield inner channel 48, entirely between the frame top and frame bottom. The first extension 34 has a first extension front panel 50, a first extension back panel 52, a first extension frame 54, and a first extension inner channel 56, within which the second extension is mounted for slidable movement. The second extension 38 has a second extension front panel 58 a second extension back panel 60 and a second extension frame 62.

The first extension front panel 50, first extension back panel 52, second extension front panel 58, and second extension back panel 60 are all constructed of a bullet-proof plastic fabric, such as KEVLAR.

FIG. 6 illustrates the interconnection of the first extension 34 with the shield inner channel 48; and the second extension 38 with the first extension inner channel 56.

The first extension 34 has a first extension bar 68 which fits within the shield inner channel 48 within which the first extension bar 68 is mounted for slidable movement to extend and retract the first extension 34.

The second extension 38 has a second extension bar 70 which fits within the first extension inner channel 56 within which the second extension bar 70 is mounted for slidable movement to extend and retract the second extension 38.

FIG. 7 illustrates the construction of a portion of the shield, with parts broken away. The viewing window 14 has a piece of transparent bullet-proof material 14G. A suitable transparent bullet-proof material is manufactured by GENERAL ELECTRIC under the registered trademark LEXAN. The transparent bullet-proof material 14G is bordered by an upper window support 14U, a lower window support 14L, and two vertical supports 14S. The upper window support 14U and lower window support 14L both extend between a pair of upper

side inner supports 20A. The upper side inner supports 20A are attached to the interior of the frame upper sides 20. The front panel 21 and back panel 23 have a window opening 72 that matches the transparent bullet-proof material 14G in size and shape.

What is claimed is:

1. A protective shield, comprising:

- a) a frame, the frame having a front panel and a rear panel, the frame having a frame bottom having a frame bottom opening, a frame top, a pair of frame sides, and a pair of frame upper sides between the frame sides and the frame top, the frame sides substantially parallel to one another, the frame top substantially parallel to the frame bottom, the frame further having a viewing window for seeing through the front panel and rear panel; and
- b) a first frame extension panel, substantially parallel to the front panel and back panel, the first frame extension panel movable between a first position where it is between the front panel and back panel and is between the frame bottom and frame top, and a second position, where it extends from the frame bottom opening, the first frame extension panel having a first frame extension bottom.

2. The apparatus as recited in claim 1, further comprising a y-connector; and three straps, all connected at one end to the y-connector, and connected at the other end to each of: the frame upper sides and the frame bottom.

3. The apparatus as recited in claim 1, further comprising a second frame extension, extending from the first frame extension bottom.

4. The apparatus as recited in claim 1, where the front panel is made of a bullet-proof plastic fabric, and the viewing window further comprises a transparent bullet-proof material.

5. The apparatus as recited in claim 2, further comprising a pocket, mounted to the rear panel, for carrying accessories.

6. The apparatus as recited in claim 2, further comprising a chain guard, for selectively preventing the first frame extension from extending through the frame bottom opening.

7. The apparatus as recited in claim 1, further comprising a shield inner channel, between the front panel and back panel, within which the first extension is mounted for slidable movement.

8. The apparatus as recited in claim 7, wherein the first extension further has a first extension inner channel, and the apparatus further comprises a second extension, slidably mounted within the first extension inner channel.

9. The apparatus as recited in claim 4, where the viewing window further comprises an upper and a lower window support that border the transparent bullet-proof material, and two upper side inner supports that are attached to the interior of the frame upper sides, the upper and lower window supports both extend between to the two upper side inner supports.

* * * * *



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(12) **United States Patent**
Bonavita et al.

(10) **Patent No.: US 6,470,784 B1**
(45) **Date of Patent: Oct. 29, 2002**

D4

(54) **DEFENSE SYSTEM FOR AN ANTI-INTRUSION AREA**

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(73) Assignee: **Glat Industries (FR)**

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/559,097**

(22) Filed: **Apr. 27, 2000**

(30) **Foreign Application Priority Data**

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(51) Int. Cl.⁷ **F41H 5/007**

(52) U.S. Cl. **89/36.17**

(58) Field of Search **89/36.17**

(56) **References Cited**

U.S. PATENT DOCUMENTS

1,434,132 A 10/1922 McDonald

3,214,857 A 11/1965 Tyrone et al.
5,739,458 A * 4/1998 Girard 89/36.02
5,792,976 A 8/1998 Genovese 102/293
6,029,558 A * 2/2000 Stevens et al. 89/36.17
6,128,999 A * 10/2000 Sepp et al. 89/36.17

FOREIGN PATENT DOCUMENTS

DE 197 15 464 A1 10/1998
WO WO 97/23852 7/1997

* cited by examiner

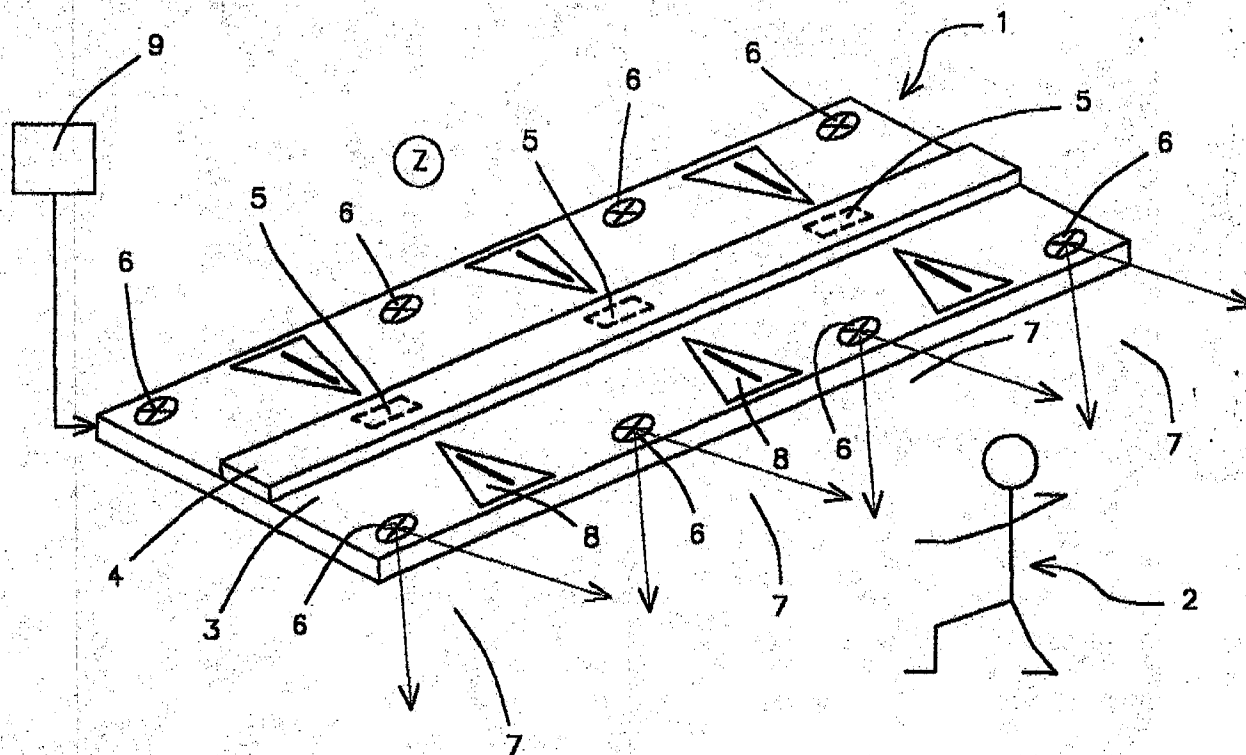
Primary Examiner—Stephen M. Johnson

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(57) **ABSTRACT**

A protection device against intrusion of a zone including at least one bag firmly affixed to at least one support, the bag having a flexible envelope inflatable by at least one gas or fluid generator triggered by control means. Upon inflation of the flexible envelope, the envelope spreads apart above the support to subtend a substantially cylindrical volume having an axis substantially parallel to the support and of dimensions adequate to constitute a barrier to hamper advance toward the zone protected by the device.

18 Claims, 6 Drawing Sheets



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made of an elastic material such as an elastomer. The envelope optionally can be reinforced, for instance, by stitching or by rubber strips bonded to the envelope and configured as a grid. Such a configuration makes the envelope more pressure and tear proof against external factors.

The envelope is firmly affixed to the support, for instance, by bonding or by means of clamps.

The engineering relating to the gas and inflatable bags are well known in automobile airbags. Illustratively, the European patent document 529,371 describes a material for making such a bag and the patents U.S. Pat No. 5,062,367; FR 2,691,706 and EP 509,655 describe gas generators for car air bags.

Also, the support 3 also is fitted with several intrusion detectors 6, for instance infrared or mm range detectors, each with a detection field 7 pointing outside the zone Z.

Preferably, the detectors 6 are configured in regularly distributed manner along at least one of the largest dimensions of the support 3.

Advantageously, and as shown in FIG. 1, the detectors 6 are arrayed along the two parallel lengths of the support 3. Such a configuration renders the device symmetrical and allows for detecting intruders on either side of the support 3. In this manner, the device operability is enhanced by making it possible to install it in two different positions along the zone Z.

Furthermore, the support 3 may be fitted at its visible upper surface with markings 8 acting as prohibiting signs against entering the protected zone. Illustratively, these might be strips of loud colors, written prohibitions, alarm signals.

The device also comprises electronic control means 9 linked to the detectors 6 and to the gas generators 5.

The control means include algorithms to compare the signals from the detector(s) 6 with those stored in the device's memory.

The device operates as follows:

Once the device has been installed along one of the borders of the protected zone Z, the detectors 6 situated on a single side of the support are activated. These detectors monitor the space near the zone Z. When an intruder 2 nears the device at a distance (about 2 to 5 m), which is adjustable by means of the controls as a function of the effect delivered on the intruder, the control means 9 cause the envelope 10 to inflate (FIG. 2).

The envelope spreads out above the support 3 so as to subtend a cylindrical volume having an axis 12 substantially parallel to the support 3. The envelope 10 provides a linear barrier with dimensions such that the intruder's progress through the device is impossible or at least hampered.

Illustratively, for a support 10x2 m in size, a cylindrical bag 2-3 m in diameter and about 10 m long can be inflated.

Advantageously, the control means 9 can be linked to an alarm emitting an acoustic and/or light signal and also notify a remote surveillance station.

Preferably, the detectors 6 are detachably affixed to the support 3 to ease maintenance and storage.

In a variation of the embodiment of the invention, the pyrotechnic gas generators can be replaced by one or more compressed-gas bottles linked to the inside volume of the envelope 10 by a valve which shall be opened by the control means 9.

Furthermore, the gas generator may be replaced by a polymerizing foam generator, for instance a polyurethane

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foam. This foam solidifies within the bag's envelope and rigidifies it, thus increasing the barrier effect and preventing piercing of the bag. Such a foam is described in WO8800882, an application to rapid float implementation.

Also, the bag 10 can be externally coated with an adhesive such as epoxy or acrylate glue. Such a design further slows any intruder's progress.

FIG. 4 shows a device of a second embodiment of the present invention. In this second embodiment, the support 3 is implemented in the form of a flexible mat, for instance made of rubber or foam and 15 to 25 mm thick. This mat bears the collapsed envelope 10 which is firmly joined to the mat, for instance by bonding or cast-molding.

The end 19 of the mat 3 is fitted with mechanical links 17, such as snap-in fasteners, whereby one support 3 can be firmly joined to another similar support. To allow such affixation, the other mat end is fitted with complementary link elements.

Near one end 19, the mat 3 is fitted with electric links 13 connected by conductors 15 to connectors 14 which are regularly distributed along the support 3 and connect the detectors 6. The other mat end is fitted with complementary connectors.

The electric connector means 13 also electrically connect the support to a similar support.

The flexible support 3 is substantially rectangular. It may be rolled up about a winding axis 16 which runs parallel to its width. The connectors 14 are thin, and therefore do not interfere with rolling up the support 3.

To facilitate rolling up the mat, the bag envelope 10, in this instance, can be inflated by an external gas generator (a pyrotechnic generator or a compressed air bottle) to which it is connected through a conduit 18.

Such an embodiment facilitates storage and actuation of the device: Several supports 3 are unrolled on the terrain to constitute a barrier of a given length. Next, the supports are affixed to each other by the links 17 and electrically interconnected by the electric links 13.

Thereupon, the various supports 3 are fitted with detectors 6 and gas generators, and the assembly so constituted is connected to the common control means 9.

FIG. 6 shows a device constituted by mutually affixing three supports 3a, 3b and 3c. These supports may be designed as flexible mats, such as the one shown in FIG. 4 or they may be rigid or semi-rigid supports such as the one shown in FIG. 1.

A single control means 9 is linked to the various supports. The electric connections 20 are implemented between the different supports 3, and a connector 21 links the set of supports to the control means 9.

Preferably, the links 20 and 21 are buses (data and power transmission cables). The detectors 6 and the gas generators of the various supports 3a, 3b and 3c are fitted with individual addresses recognized by the control means, thereby accurately determining near which of the supports 3a, 3b or 3c an intrusion has taken place. Thereupon the control means 9 cause the appropriate envelope to inflate.

If the intruder moves from a first support 3a toward an adjacent support 3b, the detectors 6 of the support 3b transmit a detection signal to the control means 9 which then cause the envelope of support 3b to inflate.

Furthermore, the control means 9 may be fitted with a receiver 22 receiving remote commands 23 emitted from a remote monitoring station 24.

FIG. 5 shows a third embodiment of the invention, wherein the support 3 is fitted with a launcher tube 25 having