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Vila

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(54) **BARRICADE SYSTEM WITH INTERLOCKING BARRICADE MEMBERS**

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E04H 17/20	(2006.01)
E04H 17/18	(2006.01)
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CPC ***E01F 13/022*** (2013.01); ***E01F 9/619*** (2016.02); ***E01F 13/024*** (2013.01); ***E04H 17/166*** (2013.01); ***E04H 17/18*** (2013.01); ***E04H 17/20*** (2013.01)

(58) **Field of Classification Search**
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USPC 256/13.1, 30, 31, 65.14; 248/519, 523, 248/534, 535, 539, 188, 431, 440.1, 248/188.1, 188.2, 188.3, 346.01, 346.11, 248/346.5
See application file for complete search history.

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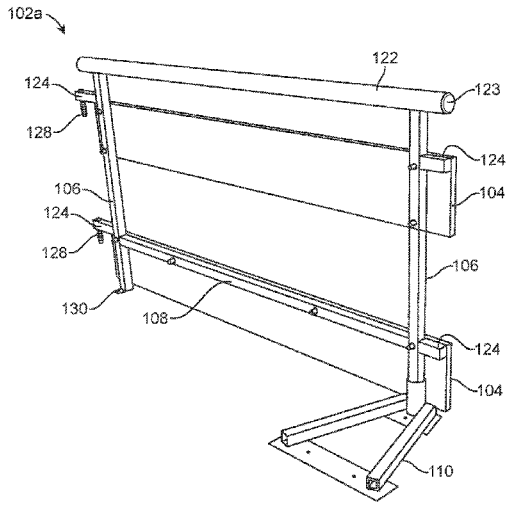
(57) **ABSTRACT**

A barricade with a plurality of interlocking barricade members hingedly coupled to each other. Each of the interlocking barricade members include two vertical posts between which horizontal barricade members are mounted. The interlocking barricade members includes a base assembly onto which the vertical post is supported, such that the base assembly is rotatable and removable with respect to the vertical post. The base assembly is entirely behind and extends away from the barricade's rear face, thereby keeping the barricade and all its components out of a given walkway to avoid becoming a hazard to pedestrian traffic.

17 Claims, 5 Drawing Sheets



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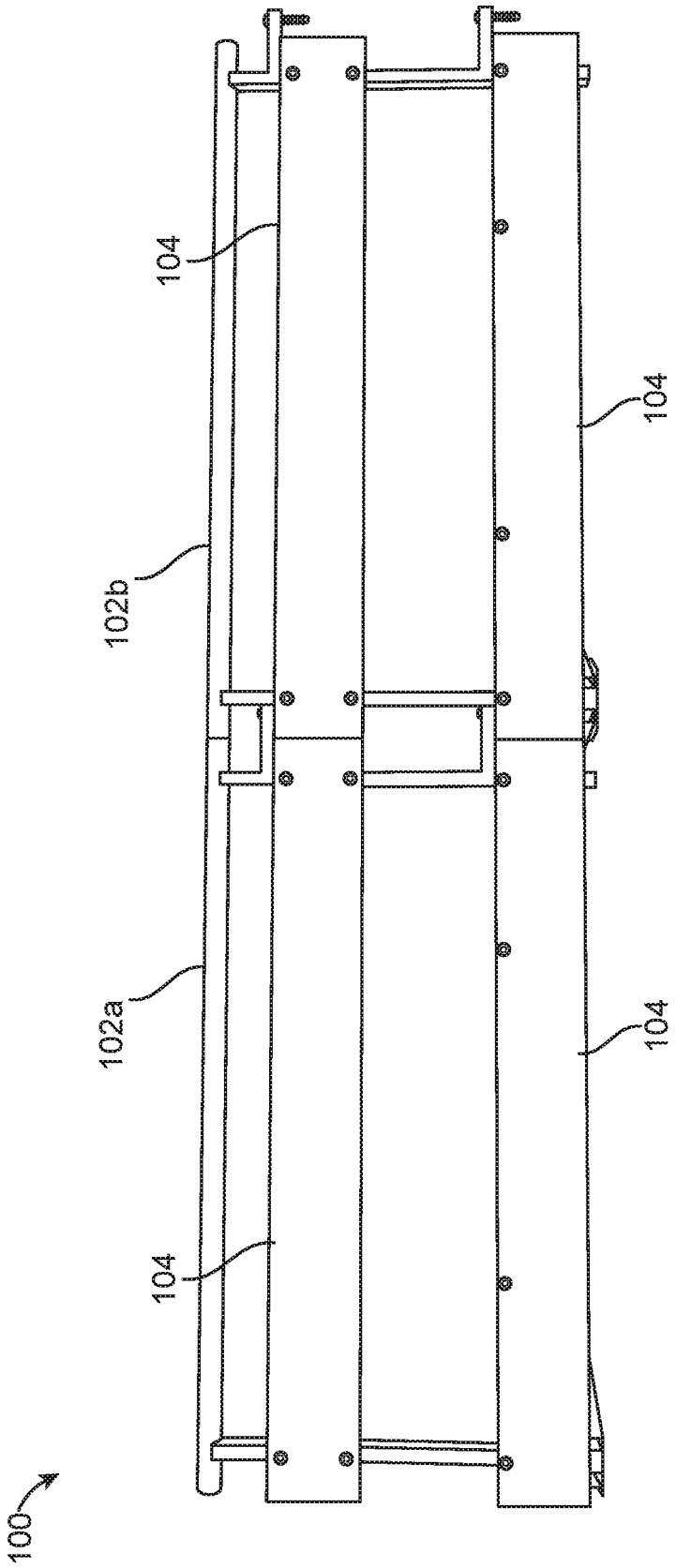


Figure 1

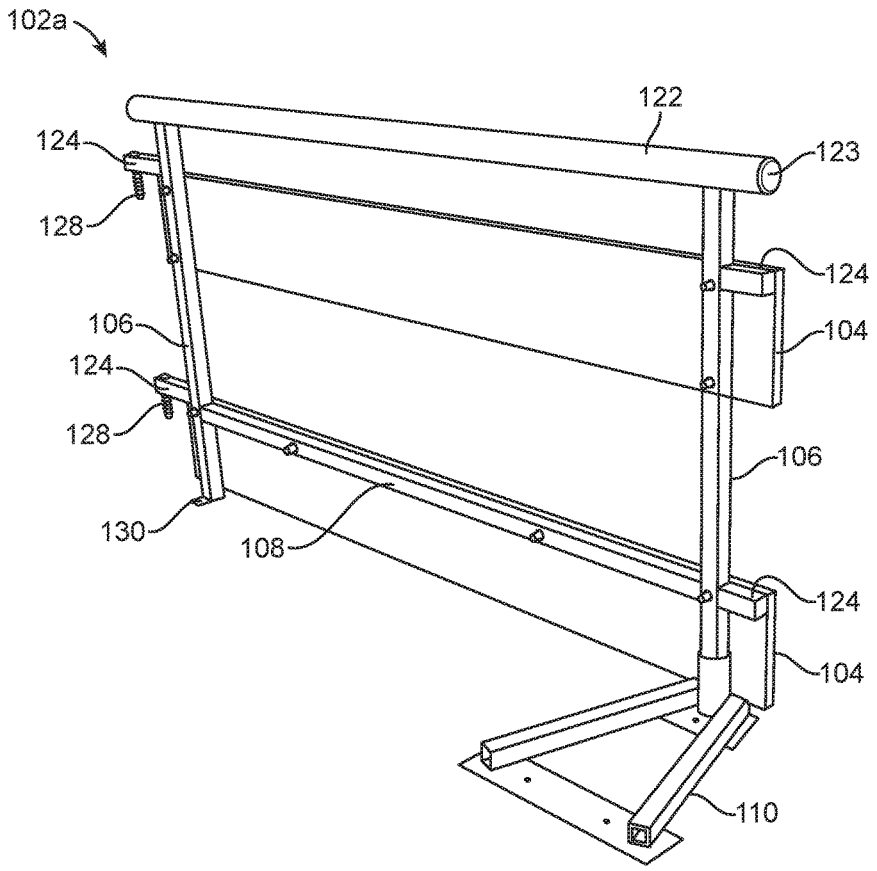


Figure 2

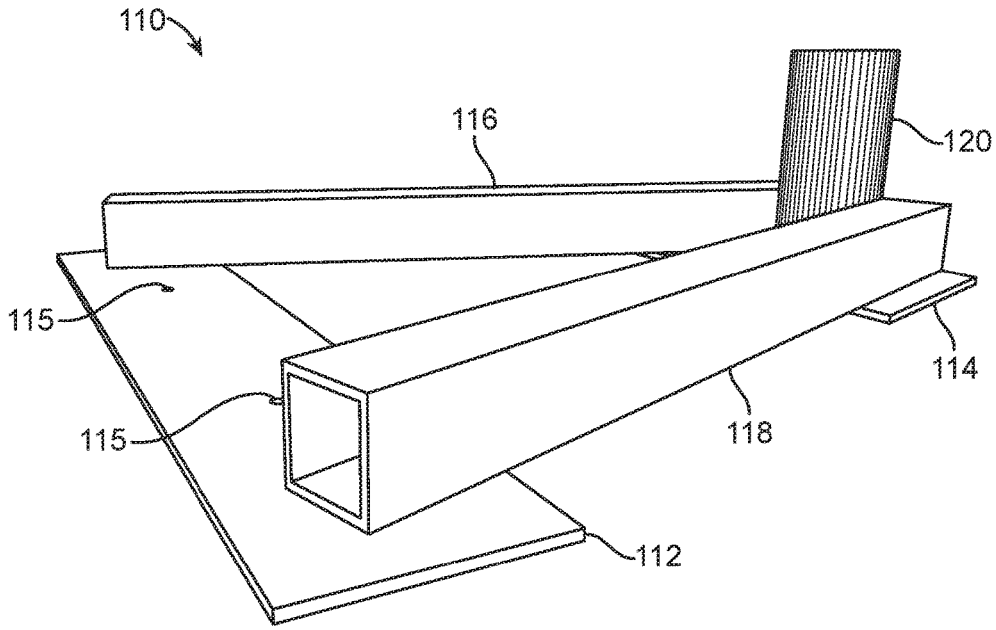
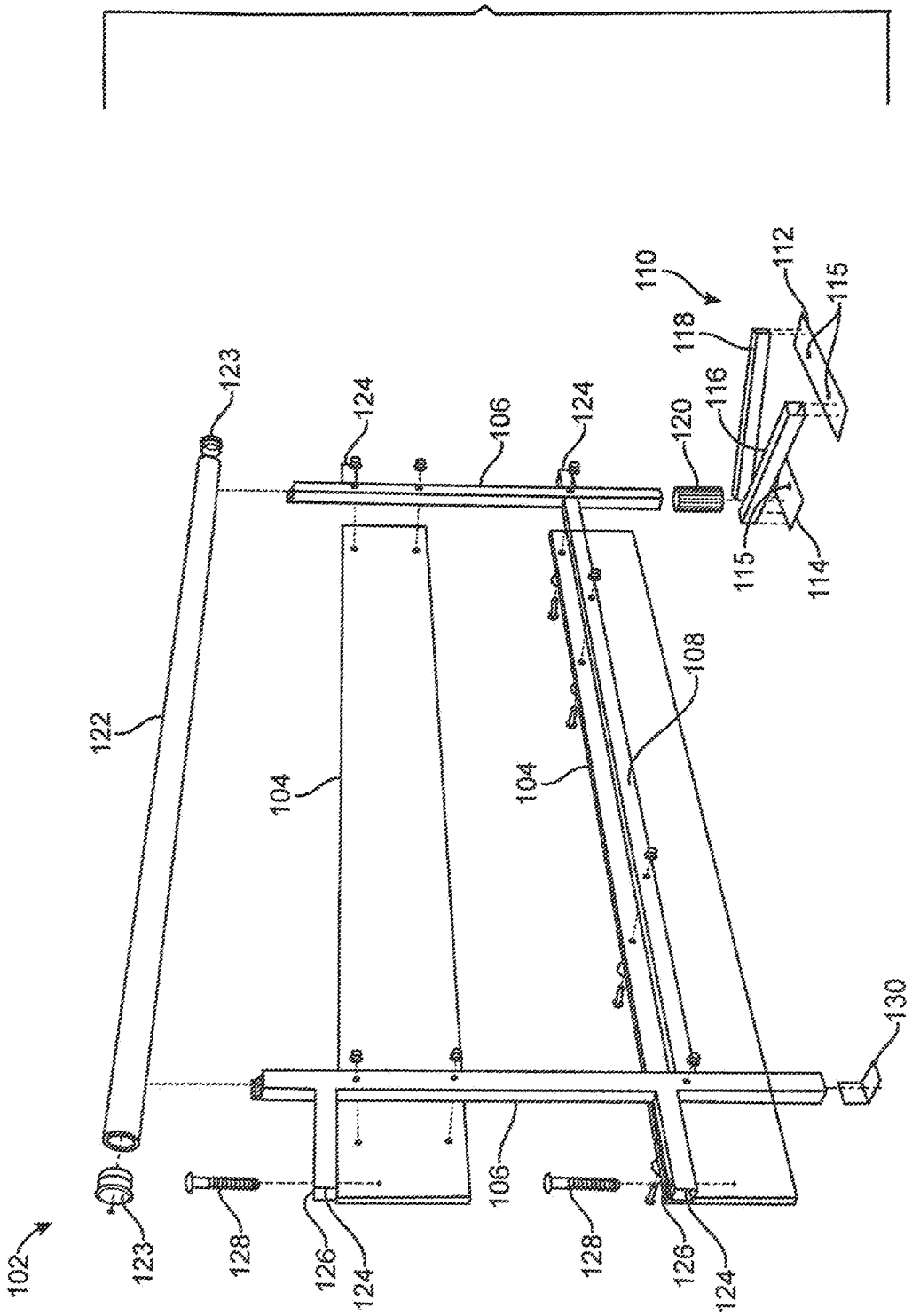


Figure 3


102
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122
104
106
108
110
112
114
115
116
118
120
123
124
126
128
130

Figure 4

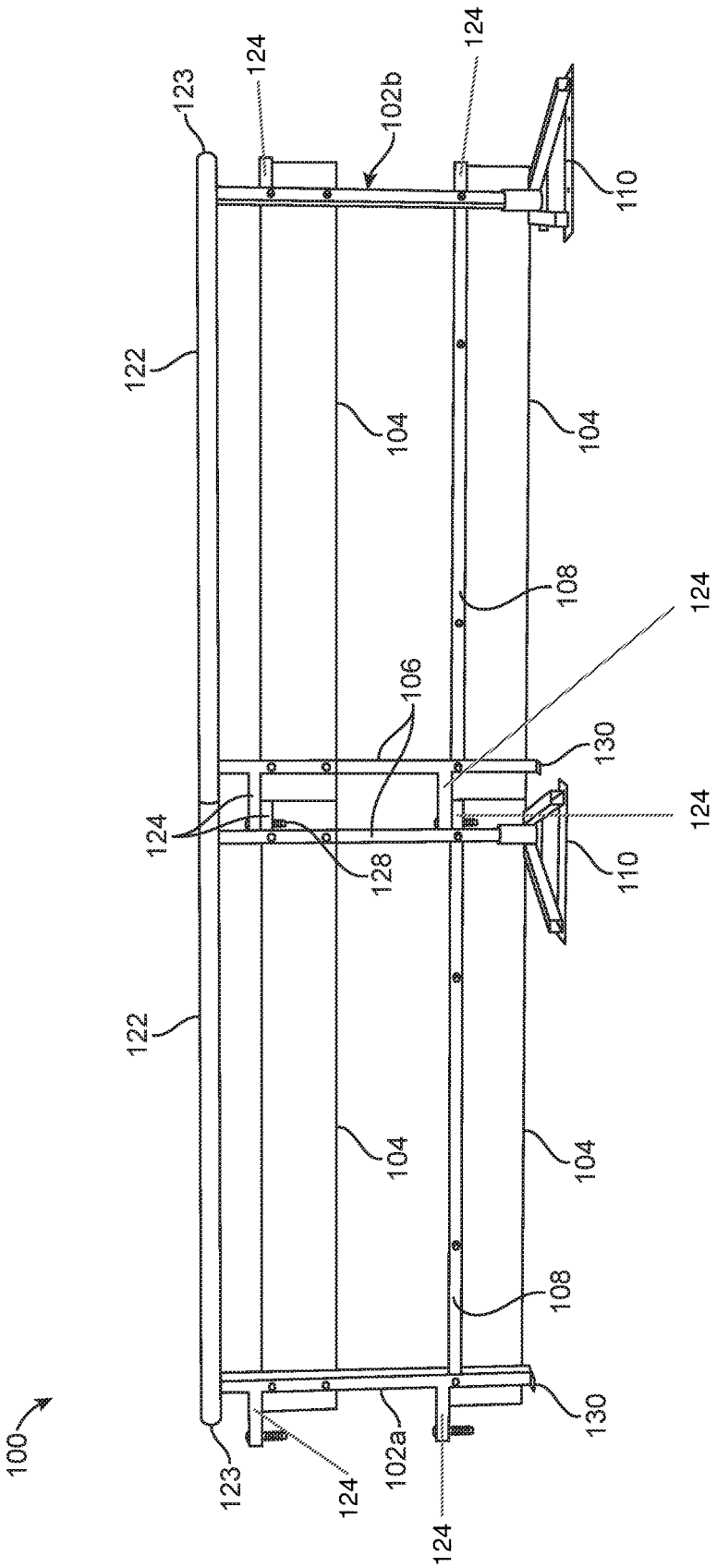
100
123
124
102b
124
110
122
104
104
108
124
106
130
124
124
128
110
122
104
104
108
130
123
124
102a
124

Figure 5

BARRICADE SYSTEM WITH INTERLOCKING BARRICADE MEMBERS

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present disclosure generally relates to a barricade system with interlocking barricade members; and more particularly to a barricade system having interlocking barricade members with a rotatable and removable base assembly.

2. Description of the Related Art

Many properties include walkways or sidewalks, which may require a considerable length of barricades obstructing their path. Furthermore, some circumstances require setting-up temporary barriers to enclose or define areas reserved for a particular purpose, such as, crowd control or to define access routes. Another example is for construction, maintenance and repair work, where barricades must be moved frequently from one position to another at a construction site. Concrete barriers, as previously used, are heavy, and require special equipment such as fork lifts or cranes for moving and installation, and are thus not suitable for these applications. Presently, metal fencing, or plastic barricades are often employed. One common technique for mounting metal fencing is to fix anchors to the ground and mount vertical posts onto such anchors by nuts and bolts, or the like. Thereafter, barricade horizontal panels and/or rails may be mounted between the two posts. In some cases, the base members are in the form of sockets fixed to the ground, and the vertical posts are inserted into such sockets for relatively quick assembly.

However, the known barricade systems employ base members which are fixedly connected to the barricade systems and are further fixedly mounted to the ground. Such base members may often interfere with the walkways, when the barricade system is erected along the sides of such walkways. Therefore, it is desired that the base members may be able to swivel with respect to the vertical post in order to be rotated to a side which is away from the regular path, say the pedestrian path, of the sidewalk. The same swiveling functionality of the base is desired with barricades made of other materials such as plastic or aluminum.

Applicant believes that a related reference corresponds to U.S. Pat. No. 6,190,084 (hereinafter referred to as '084 patent), issued to Pere Mares Ibañez; which discloses a modular separating barrier element. The modular separating barrier element of the '084 patent includes a frame of generally rectangular structure which is molded from synthetic material and which borders an inner panel having plain regions and regions having perforations and other regions having reinforcing ribs. Each of the shorter sides may include a pair of projections, those on one of the sides having respective vertical through-holes and those on the other side having respective pairs of coaxial rods which extend vertically and which can be fitted in the holes of the projections of an adjacent barrier element.

The rectangular body of the barrier element of the '084 patent has lower bracket-like portions for increasing strength in the vicinity of the feet and has swivel coupling of the support feet, thus enabling the feet to adopt to the most suitable position for supporting the barrier element. However, the said lower bracket-like portions of the '084 patent are shaped in a manner which may not be easily supported on and fixed to the ground, for example after being adjusted to the desired position; and thus could lead to tumbling of the whole barricade system, such as, in case of large force from a strong wind gust or crowd being controlled by such barricade system.

Other documents describing the closest subject matter provide for a number of more or less complicated features that fail to solve the problem in an efficient and economical way. None of these patents suggest the novel features of the present invention.

SUMMARY OF THE INVENTION

An objective of the present invention is to provide a barricade system which has interlocking barricade member for easy and quick assembly on site with minimum skill.

Another objective of the present invention is to provide a barricade system in which the interlocking barricade member has a removable and rotatable base assembly, such that the base assembly may be swiveled with respect to the vertical posts, thereby keeping any part of the barricade system out of the walk path.

Further objects of the invention will be brought out in the following part of the specification, wherein detailed description is for the purpose of fully disclosing the invention without placing limitations thereon.

BRIEF DESCRIPTION OF THE DRAWINGS

With the above and other related objects in view, the invention consists in the details of construction and combination of parts as will be more fully understood from the following description, when read in conjunction with the accompanying drawings in which:

FIG. **1** illustrates a front elevational view of a barricade system, in accordance with an embodiment of the present disclosure;

FIG. **2** illustrates a side isometric view of an interlocking barricade member of the barricade system;

FIG. **3** illustrates an isometric view of base assembly **110** of the interlocking barricade member;

FIG. **4** illustrates an exploded isometric view of the interlocking barricade member; and

FIG. **5** illustrates a rear elevational view of the barricade system.

V. DETAILED DESCRIPTION OF THE EMBODIMENTS OF THE INVENTION

Illustrative embodiments of the present invention are described below. The following explanation provides specific details for a thorough understanding of and enabling description for these embodiments. One skilled in the art will understand that the invention may be practiced without such details. In other instances, well-known structures and functions have not been shown or described in detail to avoid unnecessarily obscuring the description of the embodiments.

FIG. **1** illustrates a barricade system **100**, in accordance with an embodiment of the present invention. The barricade system **100** of the present invention may be adapted to be installed along sidewalks; however other possible applications of the barricade system **100** may be contemplated without any limitations. The barricade system **100** may include a plurality of interlocking barricade members **102***a*; **102***b* which are connected with each other in an end-to-end relationship. The number of interlocking barricade members

102*a*; 102*b*, in the barricade system **100**, may depend on the required length of the barricade system **100**. In the illustrated example of FIG. **1**, the barricade system **100** includes a first interlocking barricade member **102***a*, and a second interlocking barricade member **102***b* adjacently disposed to the first interlocking barricade member **102***a*. In some examples of the present invention, the interlocking barricade members **102***a*; **102***b* may be disposed in a manner such that the first interlocking barricade member **102***a* may be rotatable to an extent with respect to the adjacent second interlocking barricade member **102***b*, in the barricade system **100**.

Further, as illustrated in FIG. **1**, the barricade system **100** may include one or more horizontal barricade members **104** supported and mounted on each of the interlocking barricade members **102**. The horizontal barricade member **104** may be formed of any suitable material, such as plastic steel or easily moldable synthetic resin, having good weather-resistance characteristics. In some examples, the horizontal barricade members **104** may be formed by co-extrusion of recycled plastics material for the interior, and a finishing material, having desired material color and quality characteristics, for the exterior. Further, in some examples, the horizontal barricade members **104** may use bright color paints for the exterior coating to improve the visibility thereof.

Referring to FIG. **2**, it may be seen that the interlocking barricade members **102***a* includes two vertical posts **106** located substantially at two longitudinal opposing ends thereof and spaced apart by horizontal barricade members **104**. In a preferred example, the vertical posts **106** are hollow extruded rectangular members; however any other suitable shape for the vertical posts **106** may be employed, including, but not limited to, a hollow cylindrical shape, hollow triangular shape or the like. The hollow shapes of the vertical posts **106** help to limit the overall weight of the interlocking barricade member **102***a*. In one example, as illustrated, the horizontal barricade members **104** are mounted, in the interlocking barricade member **102**, between the two vertical posts **106**. The horizontal barricade member **104** may be mounted to the vertical post **106** by using any suitable fastening arrangement, such as, nuts and bolts, or the like. In some examples, the longitudinal length of the horizontal barricade member **104** may be slightly greater than the distance between the two vertical posts **106**.

In an embodiment of the present invention, the interlocking barricade member **102***a* includes a horizontal rib **108** extending between and fixed to the two vertical posts **106**. In one example, the horizontal rib **108** may be of hollow extruded rectangular shape, similar to the vertical posts **106**. In some examples, the horizontal rib **108** may be fixed to the two vertical posts **106** by welding means. In other examples, the horizontal rib **108** may be formed along with the two vertical posts **106** during molding of the interlocking barricade member **102***a*. The horizontal rib **108** provides reinforcement to the interlocking barricade member **102***a* by rigidly connecting the two vertical posts **106**. In some examples, the interlocking barricade member **102***a* may include more than one horizontal rib **108** connecting the vertical posts **106** therein, in order to provide extra strength to the structure; particularly for vertically high interlocking barricade members.

Further, the interlocking barricade member **102***a* includes a base assembly **110** for supporting the vertical post **106** thereof, above the ground. FIG. **3** illustrates a perspective view of the base assembly **110**, in accordance with an embodiment of the present invention. As illustrated, the base assembly **110** includes two supporting plates, a first supporting plate **112** and a second supporting plate **114**. In general, the two supporting plates **112**, **114** are of usually same width and thickness. In some examples, the first supporting plate **112** may be larger in longitudinal length compared to the second supporting plate **114**. The two supporting plates **112**, **114** may be made of same material, of high tensile strength for supporting the weight of other components of the interlocking barricade member **102***a* along with the plurality of horizontal barricade members **104**. In some examples, the supporting plates **112**, **114** may further include drilling holes **115**, which allow for some fastening member, such as screws, nails, etc. to pass through, in order to fix the supporting plates **112**, **114** to the ground. Specifically, in one example, the first supporting plate **112** may include two drilling holes **115** and the second supporting plate **114** may include one drilling hole **115** therein.

Further, as illustrated in FIG. **3**, the base assembly **110** may include two support members **116**, **118** spaced apart from each other at a predetermined distance. The two strengthening members **116**, **118** are of the same shape and design, and made of same material of high compressive and shear strength. In the illustrated example, the two support members **116**, **118** are shown as hollow extruded rectangular member; however any other suitable shape of the support members **116**, **118** may be employed. In some examples, the support members **116**, **118** may be solid members for increasing its strength. In one embodiment, the base assembly **110** may further include a socket member **120** supported on the second supporting plate **114**. As may be contemplated from FIG. **2**, the socket member **120** of the base assembly **110** may be adapted to receive a lower portion of the vertical post **106**, in the interlocking barricade member **102***a*. In some examples, the socket member **120** may be in the shape of hollow cylinder; and the lower portion of the vertical post **106** may have a complementary exterior cylindrical shape, such that the exterior cylindrical surface of the lower portion of the vertical post **106** mates with and engages into an interior cylindrical recess of the socket member **120**. In alternative examples, however, the socket member **120** may have some other shape including rectangular shape to conform to the shape of the lower portion of the vertical post **106**.

In one example, the two support members **116**, **118** may be fixedly connected to the two supporting plates **112**, **114** from their respective two ends. The support member **116** may be connected to the first supporting plate **112** at its first end and the second supporting plate **114** at its second end, and similarly the support member **118** may be connected to the first supporting plate **112** at its first end and the second supporting plate **114** at its second end, as shown in FIG. **3**. It may be seen that the support members **116**, **118** may be connected at the second supporting plate **114** such that their respective two ends are disposed along opposite sides of outer circumference of the socket member **120**. Further, it may be seen that the two support members **116**, **118** may be disposed with respect to each other in an angular manner, such that the distance between first ends of the two support members **116**, **118** at the first supporting plate **112** is slightly greater than the distance between second ends of the two support members **116**, **118** at the second supporting plate **114**. This triangular shape of the base assembly **110** provides a truss-like arrangement for overall strength of the structure.

In one example, the support members **116**, **118** and the socket member **120** may be connected to the supporting plates **112**, **114** and with each other, using fixing means, such as but not limited to, welding. In a preferred embodiment, support members **116**, **118** and the socket member **120** may

be connected to the supporting plates **112**, **114** using bolts. In yet other example, the entire base assembly **110** may be formed as a unitary structure, using molding techniques or the like. It may be understood that the base assembly **110** may be removable in relation to the vertical post **106**, in the interlocking barricade member **102***a* further, it may be contemplated that the base assembly **110** may be rotatable with respect to the vertical post **106**, particularly about the socket member **120**, by making socket member **120** of greater diameter than the bottom of the vertical post **106**.

Referring back to FIG. **2**, the interlocking barricade member **102** may include a hand rail **122**, generally, supported on the top portions of the two vertical posts **106**. As more clearly illustrated in FIG. **4**, the vertical post **106** may include a semi-circular or 'C'-shaped section at its top portion to support and conform to the external cylindrical shape of the hand rail **122**. In a preferred example, the hand rail **122** may have a hollow cylindrical shape; however other shapes including hollow rectangular shape may be used without any limitations. In one example, the interlocking barricade member **102***a* may further include two caps **123** which are adapted to be located inside the two circular ends of the hand rail **122**. For this purpose, the caps **123** may be made of some soft or resilient material and have a mushroom shape with a broad head portion and a narrow stein portion, with the narrow stein portion being received in the circular ends of the hand rail **122**. In one example, the length of the hand rail **122** is substantially equal to the length of the horizontal barricade member **104**; and these components, in turn, define the overall span of the interlocking barricade member **102***a*.

Further, in an embodiment, the interlocking barricade member **102***a* may include horizontal extension members **124**, which are used to connect adjacent interlocking barricade members **102***b*, as well as others, in the barricade system **100**. As illustrated in FIGS. **2**, **4**, and **5** the horizontal extension members **124** may be protruding from the vertical posts **106**; such that the horizontal connecting members **124** from one vertical post **106** may be extending in a first horizontal direction and the horizontal connecting members **124** from other vertical post **106** may be extending in a direction opposite to the first horizontal direction. In some examples, the interlocking barricade member **102***a* may include two or more horizontal connecting members **124** protruding from each of the two vertical posts **106**.

FIG. **5** illustrates the connection between the two adjacent interlocking barricade members **102***a*; **102***b* of the barricade system **100**. It may be contemplated that the heights of the two horizontal extension members **124** of the adjacent interlocking barricade members **102***b* may be off-set, such that the said two horizontal extension members **124** form a butt joint therebetween. It may be seen that the horizontal connecting members **124** from one vertical post **106**, with base assembly **110**, are shorter compared to corresponding horizontal extension members **124** from other vertical post **106** of the adjacent interlocking barricade members **102***b* for formation of butt joint therebetween. In some embodiments, as illustrated in FIGS. **4** and **5**, the interlocking barricade member **102***a* may also include a L-shaped bracket **130** disposed with and connected below the lower portion of one of the two vertical posts **106**. In particular, the L-shaped bracket **130** may be disposed with the vertical post **106** which is not supported on the base assembly **110**. The L-shaped bracket **130** may raise the height of the vertical post **106** in order to facilitate the formation of the said butt joint as the two interlocking barricade members **102***a*; **102***b* are positioned adjacent to each other.

Further, as may be understood from the combination of FIGS. **4** and **5**, the horizontal extension members **124** may include an anchoring channel **126** which is in the form of an extrusion in the vertical direction near its distal end. As the two interlocking barricade members **102** are placed adjacent to each other such that the butt joint is formed between the horizontal extension members **124** thereof, the anchoring channels **126** of these horizontal extension members **124** of different interlocking barricade members **102***a*; **102***b* are aligned with each other; and a locking bolt **128** may be driven through the anchoring channels **126** in order to hingedly couple the two interlocking barricade members **102***a*; **102***b*, in the barricade system **100**.

It may be understood that a number of interlocking barricade members **102***n* may be coupled in a similar manner to form the barricade system **100** of a required length. As mentioned above, the base assembly **110** may be fixed to the ground by driving the screws or the like through the drilling holes **115**; otherwise the base assemblies **110** may just be supported on the ground under the weight of the vertical posts **106**, and, in general, the overall weight of the interlocking barricade system **100**. It may be understood that, in some cases, the base assembly **110** may be swiveled with respect to the vertical post **106**, such that the base assembly **110** could be swiveled away to avoid interfering with the walkways. Furthermore, the hinged coupling between the interlocking barricade members **102***a*; **102***b* allow for the barricade system **100** to be erected on curved or zigzag pathways and/or both uphill and downhill slopes. It may be contemplated, in one example, the horizontal extension members **124** may extend outwardly from the vertical post **106** up to the end of the horizontal barricade member **104** and/or the hand rail **122**, such that these component are flushed with each other as the two interlocking barricade members **102***a*; **102***b* are coupled, so that there are no substantial gaps along the longitudinal length of the barricade system **100**.

The foregoing description conveys the best understanding of the objectives and advantages of the present invention. Different embodiments may be made of the inventive concept of this invention. It is to be understood that all matter disclosed herein is to be interpreted merely as illustrative, and not in a limiting sense.

What is claimed is:

1. A barricade comprising,

a front and rear side,

at least two vertical posts spaced apart with respect to each other,

said at least two vertical posts each having a top and bottom distal end,

a base assembly mounted to the bottom of at least one of said vertical posts,

said base assembly located entirely behind the rear side of said barricade,

said base assembly including a first and second member extending away from said rear side and positioned with respect to each other at no more than a 90 degree angle, thereby not impeding pedestrians walking adjacent to the front side of said barricade,

and at least two plates located below and mounted to said first and second member,

said at least two plates include a first and second plate; said first and second members mounted in a V-shaped configuration creating a proximal spacing between said first and second members and a distal spacing between said first and second members,

said first plate mounted underneath said first and second members at said proximal spacing,

said second plate mounted underneath said first and second members at said distal spacing.

2. The barricade of claim **1** wherein said barricade includes a handrail mounted longitudinally from the top distal end of one of said at least two vertical posts to the top distal end of one of said at least two vertical posts.

3. The barricade of claim **2** wherein said handrail includes at least one lateral distal end, said at least one lateral distal end of said handrail including a cap.

4. The barricade system of claim **1** wherein said barricade includes at least one horizontal barricade panel extending perpendicularly from one of said at least two vertical posts to one of said at least two vertical posts.

5. The barricade system of claim **4** wherein said at least one horizontal barricade panel includes a front and rear side, said front or rear side including reflective material.

6. The barricade of claim **1** wherein said first and second plate members include a plurality of openings adapted to receive fastening means to fasten said plate members to a surface, thereby securing said base assembly.

7. The barricade of claim **1** wherein said first plate includes one opening and second plate includes two openings.

8. The barricade of claim **1** wherein said base assembly includes a socket member that connects said base assembly to the bottom distal end of said at least one vertical post.

9. The barricade of claim **8** wherein said first and second members are rigidly mounted to said socket member.

10. The barricade of claim **9** wherein said first and second members extend in a V-shaped configuration away from said socket member.

11. The barricade of claim **10** wherein said socket member is mounted to said at least two plates.

12. The barricade of claim **1** wherein said base assembly is configured to be rotatable 360 degrees with respect to said at least one vertical post.

13. The barricade of claim **1** wherein one of said at least two vertical posts includes an L-shaped bracket mounted to said bottom distal end.

14. The barricade of claim **1** being interlocking including at least one horizontal extension member extending outwardly from each of said vertical post and each further including an anchoring channel adapted to receive fastening members, said at least one horizontal extension member cooperating with the at least one horizontal extension member of a complementing interlocking barricade member so that a fastening means can be inserted through the anchoring channel of the at least one horizontal extension member of the interlocking barricade and into the anchoring channel of the at least one horizontal extension member of the complementing interlocking barricade member, thereby interlocking both interlocking barricade members.

15. The barricade of claim **14** wherein said fastening members are bolts or screws or any combination thereof.

16. The barricade of claim **15** wherein said interlocking barricade can be rotated about said horizontal extension members to open or close the angle between said interlocking barricade and said complementing barricade.

17. The barricade of claim **1** wherein said angle is no more than 90 degrees.

* * * * *