A portable barrier apparatus having a pliable skin defining an inflatable panel having a plurality of channels divided by a seam portion, the seam portion having at least two wind vent openings; an elongated base portion in communication with at least a portion of the pliable skin; an air producing apparatus contained within the elongated base portion; wherein the elongated base portion and the air producing apparatus supports the inflatable panel in an upright position by providing an upward stream of air into the pliable skin to provide the inflatable panel in an upright position.
BALLOON WALL has INDIVIDUAL BALLOON SECTIONS that connect to corresponding ducts on CHASSIS.

BALLOON WALL has SLOTS to allow wind to pass through.
PORTABLE MODULAR INFLATABLE BARRIER

[0001] This application claims priority to provisional patent application No. 60/893,731 filed Mar. 8, 2007 entitled "Portable Modular Inflatable Barrier."

[0002] The invention relates to portable barriers for accident sites, construction sites, crime scene investigation sites and private gatherings to be hidden from public view. A common phenomenon, known as "rubber necking", occurs when car accidents and road work occur and drivers in cars passing by slow down to look. This causes additional accidents and slows traffic. For this situation and many others, it would be desirable to put up a temporary wall to obstruct the view of passerby's. However, temporary walls are cumbersome and not easy to carry to a location. Also, for large walls it requires too much labor to install when the walls are moved in the size they need to be at the location.

[0003] Accordingly, what is needed is an easily expandable, lightweight and easy to install portable modular barrier.

[0004] These and other features, aspects and advantages of the present invention will become better understood with reference to the following description and claims.

SUMMARY OF THE INVENTION

[0005] The present invention relates generally to apparatus for creating a portable, modular, inflatable barrier.

[0006] According to one embodiment of the present invention, a portable barrier apparatus, the apparatus comprising: at least two tubular barrier housings each tubular barrier housing having an outer surface, inner surface and an open end; at least one attachment means interposed between adjacent tubular barrier housing, wherein at least one attachment means at least partially couples at least two tubular barrier housings and has at least one wind vent between adjacent tubular barrier housings; an elongated base portion in communication with at least a portion of the tubular barrier housings; an air producing apparatus contained within elongated base portion wherein the elongated base portion and the air producing apparatus support at least two tubular barrier housings in an upright position by providing an upward stream of air into each open end of the at least two tubular barrier housings.

[0007] According to another embodiment of the present invention, a portable barrier apparatus is provided, the apparatus comprising: a pliable skin defining an inflatable panel having a plurality of channels divided by a seam portion, the seam portion having at least two wind vent openings and at least two seams; an elongated base portion in communication with at least a portion of the pliable skin; an air producing apparatus contained within the elongated base portion; wherein the elongated base portion and the air producing apparatus support the inflatable panel in an upright position by providing an upward stream of air into the pliable skin to provide the panel in an upright position.

[0008] These and other features, aspects and advantages of the present invention will become better understood with reference to the following description and claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. 1 depicts the present invention;
[0010] FIG. 2 depicts the present invention;
[0011] FIG. 3 depicts the present invention;
[0012] FIG. 4 depicts the present invention;
[0013] FIG. 5 depicts the present invention;
[0014] FIG. 6 depicts the present invention;
[0015] FIG. 7 depicts the present invention;
[0016] FIG. 8 depicts the present invention;
[0017] FIG. 9 depicts the present invention;
[0018] FIG. 10 depicts the present invention;
[0019] FIG. 11 depicts the present invention;
[0020] FIG. 12 depicts the present invention;
[0021] FIG. 13 depicts the present invention;
[0022] FIG. 14 depicts the present invention;
[0023] FIG. 15 depicts the present invention;
[0024] FIG. 16 depicts the present invention;
[0025] FIG. 17 depicts the present invention;
[0026] FIG. 18 depicts the present invention;
[0027] FIG. 19 depicts the present invention;
[0028] FIG. 20 depicts the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0029] The following detailed description is of the best currently contemplated modes of carrying out the invention. The description is not to be taken in a limiting sense, but is made merely for the purpose of illustrating the general principles of the invention, since the scope of the invention is best defined by the appended claims.

[0030] With reference to FIGS. 1-20, the present invention provides a portable barrier apparatus, the apparatus comprising: at least two tubular barrier housings (e.g., 10, 11) each tubular barrier housing having an outer surface (e.g., 13), inner surface (the inside of the tubular barrier housing opposite 13) and an open end (15); at least one attachment means (17) interposed between adjacent tubular barrier housings (e.g., attachment means 17 is between tubular housing 11 and tubular housing 19). Each attachment means at least partially couples two tubular barrier housings and has at least one wind vent (32) between adjacent tubular barrier housings. It should be understood there may be as many tubular barrier housings as needed to provide the width and stability required for the location. There is also an elongated base portion (12) in communication with at least a portion of the tubular barrier housings (e.g., 10, 11) and an air producing apparatus contained the elongated base portion (12). The elongated base portion (12) and air producing apparatus support the at least two tubular barrier housings (10, 11) in an upright position by providing an upward stream of air blown into each open end (15) of the at least two tubular barrier housings (e.g., 10, 11). The open end may be sealed to the elongated base portion, or simply positioned above the elongated base portion (12). The elongated base portion (12) may be may be rectangular, cylindrical, a six sided elongated shape or any other desired elongated shape and may be made of a lightweight material for easy handling. The material may be plastic, synthetic or metal alloy. It may be shaped of different shapes and configuration. It may be fitted with lights, reflective materials or other accessories for safety. There may also be handling slots (22) on the side of the elongated base portion (12) for lifting the apparatus. The air slots (24) allow air to enter the elongated base portion (12) to produce the upward stream of air by the air producing apparatus. The air slots are located high enough and slanted away from the ground and may have filters to prevent dust and debris from entering it. The slots may have provide protection from rain and snow. The air
producing apparatus may be a fan, blower, multiples fans, a compressor or any other air producing apparatus. 0031 The tubular barrier housings may be formed from a single formed piece of material with a seam defining the tubular barrier housings. The material may be nylon taffeta, also known as parachute material, latex, mylar, polyurethane, nylon, polyethylene, neoprene, hypalon, silicone, polvinyl chloride (PVC), flexible PVC, Polyethylene, polypropylene, polycarbonate, polystyrene, polyester, poly (methyl methacrylate). While the material may be stretchable, it may also be coated fabric with less stretch, such as a teflon or material coated with stretch-guard without department from the present invention. It is important that the material must be capable of being rolled and be capable of containing air.

0032 It is envisioned that there may be a second portable barrier apparatus and multiple portable barrier apparatus. The portable barrier is intended to be modular and expandable to whatever width the situation requires. FIG. 14 depicts a top view of four portable barrier apparatus and shows the modular and twistable nature envisioned. Also, the height may be easily changed by changing the tubular barrier housing to a longer length (which would result in greater height). As shown in FIGS. 13 and 14, a first portable barrier apparatus (100) is connected to a second portable barrier apparatus (102) and the second portable barrier apparatus (102) is connected to a third portable barrier apparatus (104). As can be seen in FIGS. 2-4, a connecting means for removable coupling a first portable barrier apparatus to a second portable barrier apparatus is provided. According to one embodiment, that connecting means is a circular opening (28) attached to a first end of a first portable barrier apparatus and an upside down L shaped hook (14) attached to a second end of second portable barrier. As can be seen in FIGS. 8-12, each portable barrier apparatus would have one side of the elongated base portion (20) having an upside down L shaped Hook (14) and a circular opening (28). Necessarily, though, one half of the connecting means (e.g. 14) would be on one portable barrier apparatus and the other half of the connecting means (e.g. 28) would be on a different portable barrier apparatus.

0033 A substantially upward airstream is required to inflate and maintain the wall panel made from the tubular barrier housings. A fan, or compressor or similar device may provide the airstream and may be powered by battery, wind power, solar power or any power means. 12 Volt power may be used to power smaller units especially in remote areas where 110 or 220 volt electricity is not available. Another feature that is novel and useful for the modularity of the invention is that the power means may act through the connecting means and transfer power from a first portable barrier apparatus to a second portable barrier apparatus. For example, one of the circular opening and the upside down L shaped Hook may be positively charged and one of the circular opening and the upside down L shaped Hook is negatively charged to provide power from said first portable barrier apparatus to said second portable barrier apparatus. In this manner, only one electrical plug or power source is required for multiple portable barriers. It may also be desirable to have an extension means (as shown in FIGS. 8 and 9) the circular opening (14) and the upside down L shaped hook (28) each can extend to provide even more adjustability and modularity.

0034 There may also be valves in communication with the air producing apparatus and at least partially contained in each tubular barrier housing to provide a directed upward stream of air into each open end of each tubular barrier housings. With reference to FIG. 18, the valve (62) directs air into the tubular barrier housing (64), valve (60) directs air into tubular barrier housing (66), valve (58) directs air into tubular barrier housing (68), valve (56) directs air into tubular barrier housing (70), valve (54) directs air into tubular barrier housing (72). The valve (62) may also just direct the air into the tubular barrier housings and not modulate the air stream. There may also be a compressor (52) in communication with the air producing apparatus and the valves. The valves may have an external air flow adjustment means to provide additional or reduced air flow to different tubular barrier housings. The valves may have an adjustment to let air out and even draw or suck air out as well. This allows for quick deflation. For example, a middle tubular barrier housing may require less airflow than an end tubular barrier housing. Accordingly, the valve may be opened more to provide greater airflow to the end tubular barrier housing’s and a valve for the middle tubular barrier housing may be reduced to provide less airflow to the middle tubular barrier housing. The tubular barrier housings may also be fluidly interconnected. For example, with reference to FIG. 5, the tubular barrier housings may be formed by seams (30) and have wind vents (32). But there may also be air flowing inside the tubular barrier housings between the seams (30) and the wind vents (32). The wind vents (32) are sealed along their edge to allow wind to flow through the tubular barrier housings but not to blow over the tubular barrier housing. Also the air inside the tubular barrier housing must not leak, otherwise the tubular barrier housing would not maintain its form. One way in which this may be accomplished is by providing two seams (30), as shown in FIG. 5 and the wind vents (32) between the two seams where the wind vents in an opening with a sealed edge (for example an opening thermoplastic tape sealing the edge, or a sewn edge that is covered with thermoplastic tape sealing the edge, or a sewn edge with glue sealing the edge). The ancillary support (16) is in communication with at least a portion of the said tubular barrier housing also prevents the tubular barrier housing from being blown over in the event of a wind gust. According to a preferred embodiment, as shown, there is a bottom section which may be in communication with the bottom of the elongated base portion and rotate. In storage mode it may be parallel and flush with the elongated base portion. In operational mode it may rotate out to be perpendicular with the elongated base to provide stability and an arm portion in communication with the bottom section would rotate upward and be in communication with the tubular housing or the inflatable skin defining an inflatable panel having a plurality of channels to provide support. There may also be a connecting means in communication with the ancillary support. One example of a connecting means is a guy line. A guy line is a piece of material that connects the balloon wall to the stand to prevent the balloon wall from being blown by the wind. The guy line may be attached permanently to the balloon wall. It may attach to the stand by many different ways, including clipping it to the stand. There may be one or more stands in a unit. These stands may be folding for storage or permanent. The terms tubular barrier housing and inflatable panel having a plurality of channels refer to the inflatable panel section of the present invention.

0035 A portable barrier apparatus is provided comprising a pliable skin defining an inflatable panel having a plurality of channels (13, 11, 19) divided by a seam portion (17), the seam portion (17) having at least two wind vent (32) openings; an
elongated base portion (20) in communication with at least a portion of the pliable skin; an air producing apparatus contained within said elongated base portion; wherein the elongated base portion and the air producing apparatus support said at inflatable panel in an upright position by providing an upward stream of air into said pliable skin to provide said inflatable panel in an upright position. The plurality of channels may be fluidly interconnected, which means air may flow not only in each channel, but may be allowed to flow between the plurality of channels. For example, in FIG. 5, air flows between seams and around the sealed win vent as depicted by air flow arrow 21). There connecting means for connecting a first portable barrier apparatus to a second portable barrier apparatus may also be hook and look, or Velcro® along the sides of the first and second portable barrier apparatus.

FIG. 15 depicts the operating process, according to step 1, after power is applied, the air producing apparatus sucks air through vents and forces air into the air tunnels shown. The air enters the air tunnel, at step 2, en route to the inflated wall. The air enters the pliable skin (or tubular barrier housing) at step 3 through a valve or opening. The valve may also modulate air flow to maintain balloon rigidity. The air, at step 4, moves up pliable skin until balloon wall pressure is reached and the inflated wall is rigid enough. The air pressure may be maintained by the valve, which may trigger to supply air until a set pressure is reached.

As shown in (19), the elongated base portion may also have a storage compartment and the pliable skin (or tubular barrier housing, if tubular) may roll up and be contained in the storage area provided by the door (90) and compartment below the door (90) in the elongated base portion. The pliable skin (or tubular barrier housing, if tubular) may be manually rolled up, of their may be a crank and a wheel to assist in rolling up the pliable skin (or tubular barrier housing, if tubular). There may also be lights shining into the open ends of the pliable skin (or tubular barrier housing, if tubular) to provide an illuminated panel wall.

To install the unit it may be unloaded and placed on the ground where the deflated balloon wall is unfurled and the ancillary support stand may be is positioned perpendicular to the chassis. Power is applied to the first unit and the fans start pumping air into the pliable skin (or tubular barrier housing, if tubular). As the wall of the pliable skin rises, operator can unload the next unit. As before, the deflated balloon wall is unfurled and the ancillary support stand positioned. The first unit may now pass on power unto the second unit through a power connecting means. The fans of the second unit now starts pumping air into the balloon wall of the second unit. More units can be added to cover a designated area. Once the pliable wall is vertical and rigid enough, the guy lines are secured to the rotating stand. When in place, the apparatus will provide a portable modular inflatable barrier to: a) prevent rubbernecking in the scene of accident by isolating the accident scene. As many units as are desired may be stored in a highway patrol vehicle and assembled onsite. Traffic will flow normally after this barrier is in place; b) prevent onlookers from bothering or viewing utility workers working. Several units of the apparatus may be stored in the utility trucks and assembled onsite. It provides a safe work environment for utility workers. The balloon wall area of the apparatus may carry a utility logo or slogan to indicate their presence; c) secure a crime scene investigation area by blocking the view and access of passers by. The balloon wall area of the apparatus may carry a warning that the area is off limits to unauthorized personnel; d) events that need to secure an area temporarily and quickly. The balloon wall area of the apparatus may contain advertisements, team or corporate logos. e) Other uses that require a temporary, portable barrier will need the present invention.

It should be understood that the foregoing relates to preferred embodiments of the invention and that modifications may be made without departing from the spirit and scope of the invention as set forth in the following claims.

1 claim:
1. A portable barrier apparatus, said apparatus comprising: at least two tubular barrier housings each said tubular barrier housing having an outer surface, inner surface and an open end; at least one attachment means interposed between adjacent tubular barrier housing, wherein said at least one attachment means at least partially couples at least two said tubular barrier housings and has at least one wind vent between adjacent tubular barrier housings; an elongated base portion in communication with said at least a portion of said tubular barrier housings, an air producing apparatus contained within said elongated base portion; wherein said elongated base portion and said air producing apparatus support said at least two tubular barrier housings in an upright position by providing an upward stream of air into each said open end of said at least two tubular barrier housings.

2. An apparatus as in claim 1, further comprising: a second portable barrier apparatus; and at least one connecting means for removably coupling a first portable barrier apparatus to a second portable barrier apparatus to expand the width of said portable barrier apparatus.

3. An apparatus as in claim 2, wherein said at least one connecting means is a circular opening attached to a first end of a first portable barrier apparatus and an upside down L shaped hook attached to a second end of second portable barrier

4. An apparatus as in claim 3, wherein one of said circular opening and said upside down L shaped Hook is positively charged and one of said circular opening and said upside down L shaped Hook is negatively charged to provide power from said first portable barrier apparatus to said second portable barrier apparatus.

5. An apparatus as in claim 3, said connecting means further comprising an extension means in communication with each said circular opening and said upside down L shaped hook.

6. An apparatus as in claim 1, further comprising: at least two valves in communication with said air producing apparatus and at least partially contained in each said at least two tubular barrier housing to provide a directed upward stream of air into each said open end of said at least two tubular barrier housings.

7. An apparatus as in claim 1, further comprising a compressor in communication with said air producing apparatus.

8. An apparatus as in claim 1, wherein said tubular barrier housings are fluidly interconnected.

9. An apparatus as in claim 1, further comprising an ancillary support in communication with at least a portion of one said tubular barrier housing.
10. An apparatus as in claim 1, a power transfer means between a first portable barrier apparatus and a second portable barrier apparatus.

11. A portable barrier apparatus, said apparatus comprising:
   a pliable skin defining an inflatable panel having a plurality of channels divided by a seam portion, said seam portion having at least two seams and at least two wind vent openings;
   an elongated base portion in communication with at least a portion of said pliable skin;
   an air producing apparatus contained within said elongated base portion;
   wherein said elongated base portion and said air producing apparatus support said inflatable panel in an upright position by providing an upward stream of air into said pliable skin to provide said inflatable panel in an upright position.

12. An apparatus as in claim 11, wherein said plurality of channels are fluidly interconnected.

13. An apparatus as in claim 11, further comprising:
   a second portable barrier apparatus; and
   at least one connecting means for removably coupling a first portable barrier apparatus to a second portable barrier apparatus to expand the width of said portable barrier apparatus.

14. An apparatus as in claim 11, further comprising:
   at least two valves in communication with said air producing apparatus and at least partially contained in each said at least two tubular barrier housing to provide a directed upward stream of air into each said open end of said at least two tubular barrier housings.

15. An apparatus as in claim 11, further comprising a compressor in communication with said air producing apparatus.

16. An apparatus as in claim 11, wherein said at least one connecting means is a circular opening attached to a first end of a first portable barrier apparatus and an upside down L shaped hook attached to a second end of second portable barrier.

17. An apparatus as in claim 16, wherein one of said circular opening and said upside down L shaped Hook is positively charged and one of said circular opening and said upside down L shaped Hook is negatively charged to provide power from said first portable barrier apparatus to said second portable barrier apparatus.

18. An apparatus as in claim 16, said connecting means further comprising an extension means in communication with each said circular opening and said upside down L shaped hook.

19. An apparatus as in claim 11, further comprising an ancillary support in communication with at least a portion of one said tubular barrier housing.

20. An apparatus as in claim 11, a power transfer means between a first portable barrier apparatus and a second portable barrier apparatus.