WEARABLE GARMENT WITH INTERCHANGEABLE WETNESS INDICATOR

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ABSTRACT

Embodiments include a wearable garment for recreational water shooting games. The wearable garment has a first surface, and a first target block removably coupled to the first surface. The first target block has a reticulated porous body and a coating. The coating can be opaque when the first target block is dry. The coating can become transparent to visible light when the first target block is exposed to water, and reveal an indicia underneath the coating. Embodiments also include a method of using the wearable garment for playing recreational water shooting team game between two teams.
WEARABLE GARMENT WITH INTERCHANGEABLE WETNESS INDICATOR

FIELD

[0001] This disclosure generally relates to wearable garments with wetness indicators and more specifically wetness indicators with a water distributing substrate positioned on a replaceable part of the garment.

BACKGROUND

[0002] Recreational target shooting games are generally well known in the art. These games typically involve a shooter aiming a laser-beam or a water gun at a target player. The target player typically wears a garment that changes color or includes other visual indicator when “shot” by the shooter. The garment and the target area may be made of known materials such as cotton, fleece, flannel, polyester, nylon and the like. An exemplary game may involve the target player wearing a garment with a fluorescent target area. When a laser-beam is incident upon the garment, the target area may glow to indicate a “hit.” Another example may include a recreational water games (e.g., with water squirt guns) to visually indicate if a player has been hit. In such examples, the target area of the target player’s garment may be coated with an indicator ink or paint (e.g., pH-sensitive indicators) which may turn transparent or change colors when wetted with water. One such paint is known as Hydro Chromic White paint, or one such ink is known as Hydro Chromic White ink, which remains opaque when dry and transparent when wet. If, for instance, a coating of such a paint or ink covers a colorful pattern on a dry surface, the pattern may not be visible due to the opaqueness of paint or ink when dry. Exposing the surface to water and/or moisture may reveal the colorful pattern underneath the coating. The colorful pattern can then be used to visually distinguish if a target player has been hit.

[0003] Known wearable garments with wetness indicators have many disadvantages. Garments made of cotton, flannel, fleece, polyester or nylon may allow water to evaporate quickly, typically on the order of 5-10 minutes. In such cases, the paint or ink coating may turn opaque again when the target area is dry, thus preventing the ability to indicate if a target player has been hit. Quick-drying fabrics are thus limited in use for extended game play, or when recreational target shooting is played as a team sport (e.g., with rules similar to soccer). Known garments with wetness indicators also include targets that are permanently attached to the garment, which can limit their ability to be used in a team sport of recreational target shooting. For instance, the target area may just be a part of the garment (e.g., sleeves of a vest). Thus, the target player must wait until the garment is dry and the paint or ink coating is opaque again before being allowed to join the game. Fabrics such as cotton, fleece, flannel, nylon and the like also deform when wet, thus unable to retain their shape, making such fabrics difficult to use and/or replace during the game, thus hindering consistent and uninterrupted game play.

[0004] Improved garments with wetness indicators are needed.

SUMMARY

[0005] Embodiments of the invention include a wearable garment for recreational water shooting games. The wearable garment may include a first surface, and a first target block removably coupled to the first surface. The first target block may include a back surface, a reticulated porous body supported by the back surface, and a front surface. The front surface includes a coating. The coating may remain opaque when the front surface is dry. The coating can become transparent to visible light when the front surface is exposed to water, in order to reveal an indicia underneath the coating.

[0006] Embodiments of the invention can also include a method of using a wearable garment for playing recreational water shooting team game between two teams. Each player in a team aims to shoot a player of an opposite team with a water squirt gun. The method may involve providing each player with a wearable garment such as those described herein. The water shooting team game can be commenced. The method may involve determining if the first target block has been exposed to water from the water squirt gun. The first target block exposed to water may be removed and replaced with a second target block. The second target block may have identical properties as the first target block and can be dry when replaced.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] The following drawings are illustrative of particular embodiments of the present invention and therefore do not limit the scope of the invention. The drawings are not necessarily to scale (unless so stated) and are intended for use in conjunction with the explanations in the following detailed description. Embodiments of the invention will hereinafter be described in conjunction with the appended drawings, wherein like numerals denote like elements.

[0008] FIG. 1 is a front view of a wearable garment according to an embodiment of the invention;

[0009] FIG. 2 is a front view of a wearable garment according to another embodiment of the invention;

[0010] FIG. 3A is a partial front view of the wearable garment of FIG. 1 with a first target block removed.

[0011] FIG. 3B is a partial back view of the wearable garment of FIG. 1;

[0012] FIG. 4 is a perspective view of a target block according to an embodiment of the invention;

[0013] FIG. 5 is an exploded perspective view of a schematic illustrated the target block of FIG. 4;

[0014] FIG. 6 is a front view of the target block of FIG. 4;

[0015] FIG. 7 is a side perspective view of the target block of FIG. 4; and

[0016] FIG. 8 is a front view of the target block of FIG. 4 when exposed to water.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0017] The following detailed description is exemplary in nature and is not intended to limit the scope, applicability, or configuration of the invention in any way. Rather, the following description provides some practical illustrations for implementing exemplary embodiments of the present invention. Examples of constructions, materials, dimensions, and manufacturing processes are provided for selected elements, and all other elements employ that which is known to those of ordinary skill in the field of the invention. Those skilled in the art will recognize that many of the noted examples have a variety of suitable alternatives.

[0018] Embodiments of the invention include a wearable garment with a wetness indicator for use in recreational water
shooting games. Such recreational games may involve a
player shooting a target player with a water squirt gun. The
water shooting game may be played as a two-player game, or
as a team sport between two or more teams. In such games,
the team with the least number of water hits may win a game.
Alternatively, or in addition, the team with the most number
of dry targets may be rewarded points. The wearable garment
may be a vest, a sports jersey, a shirt, a jacket, shorts, or similar
sportswear to be worn while playing recreational water shoot-
ing games.

[0019] FIG. 1 shows a wearable garment 100 according to
some embodiments of the invention.

[0020] The garment can be a vest as shown in the illustrated
embodiment, or any other garment that may be worn by a
player during sporting activities (e.g., shorts, socks etc.) The
garment 100 may be made of fabrics such as cotton, polyester,
sandwiched or synthetic fabrics. The garment 100 may
include a first surface 102 and a first target block 104 remov-
albly coupled to the first surface 102. In the illustrated embodi-
ment, the first surface 102 is a front surface of the garment
100. The first target block 104 acts as a wetness indicator
during game play in recreational water shooting games. FIG.2
shows a wearable garment 200 according to another
embodiment. In this embodiment, the target blocks are inte-
grally formed with the garment 200.

[0021] With continued reference to FIG. 1, the wearable
garment 100 may include a pair of sleeves 106 coupled to the
first surface 102. The sleeves 106 can be removably coupled
to a second target block 108 and a third target block 110. The
wearable garment 100 can include a second surface (not
shown) opposite the first surface 102. The second surface can
be coupled to the sleeves 106. In such embodiments, the
second surface (not shown) can be the back surface of the
garment. As seen in FIG. 3B, the second surface can include
a fourth target block 112. The first and second surfaces and
the sleeves 106 can be sewn together as is shown in FIG.1. In
some embodiments, the first, second, third and fourth target
blocks 104, 108, 110, 112 are removably coupled the wear-
able garment 100. As seen in FIG.3A, the wearable garment
100 can include a mesh pocket 114 coupled to the front or
back surfaces or sleeves to enclose the target blocks. In alter-
nate embodiments, the first target block 104 may include a
hook portion of a hook-and-loop fastener (not shown). The
hook portion (not shown) can be removably coupled to a loop
portion (not shown). The loop portion can be coupled to the
garment (e.g., the first or second surface, or sleeves). Such
embodiments allow for a player to remove the target block
104 when it is hit by water from a water squirt gun and replace
it with a dry target block without interrupting the game.

[0022] Referring now to FIGS. 4 and 5, the first target block
104 includes a back surface 116, a reticulated porous body
118 supported by the back surface 116, and a front surface
120. The back surface 116 can act as a support surface (e.g.,
a plastic plate) supporting the reticulated porous body 118. In
some embodiments, a first layer 122 can be provided on top of
the front surface 120. The first layer 122 may act as a second
support surface (e.g., a plastic plate) and support the reticu-
lated porous body 118. The back surface 116 and the first
layer 122 may be made of a polymer (e.g., PET plastics) and
transparent to visible light. In some embodiments, the reticu-
lated porous body 118 can be transparent to visible light.
The target block 104 can retain its shape when exposed to water.
For instance, the first target block 104 has an initial shape
(e.g., cylindrical, cubical). During game play, the first target
block 104 can be exposed to water. The properties of the first

[0023] With continued reference to FIGS. 4 and 5, the front
surface 120 of the target block 104 can include a coating 124
applied on the front surface. In some embodiments, the coat-
ing can be applied on the first layer 122. In other embodi-
ments, the coating 124 can be directly applied on the front
surface 120 of the target block 120. The coating 124 may
be applied over an indicia 126, best seen in FIGS. 7 and 8. As
shown in FIG. 8 an indicia 126 may be applied on the front
surface 120 of the reticulated porous body 118, and the coat-
ing 124 can be applied on top of the indicia 126. Alternatively,
the indicia 126 may be applied on the back surface 116 as
shown in FIG. 7. In the illustrated embodiment best seen in
FIGS. 7 and 8, the indicia 126 is a pattern (e.g., a plus sign or
the letter ‘X’) painted on the front surface 120. Alternatively,
the indicia 126 may be placed on the first layer 122. Other
indicia such as a colored region (e.g., a red square) or a word
or symbol (e.g., the word “HT”) can be used instead of or in
addition to the pattern to indicate that the target block 104 is
wet. The indicia 126 may be provided by any known methods.
For instance, the indicia 126 may be painted at the desired
location (e.g., front surface 120, back surface 116). Alterna-
tively, the indicia 126 may be applied on the first layer 122 or
the back surface 116 using an adhesive. The coating 124 can
be opaque when the front surface is dry, and become trans-
parent to visible light when the front surface is exposed to
water, in order to reveal the indicia 126 placed on the front
surface 120, or on the first layer 122, or on the back surface
116. Such embodiments may allow players to visualize if a
target player has been hit by water. The coating 124 may not
become completely transparent to visible light when exposed
to water. The coating 124 may become translucent enough to
allow a user to visibly see the indicia 126 on the front surface
120, first layer 122 or on the back surface 116.

[0024] As seen in FIG. 6, the coating 124 can include a
pigment with hydrochromic properties. For instance, the
coating 124 may include a water-based acrylic paint such as
Hydro Chronic White paint or ink. The coating 124 may
include a binder allowing the coating to adhere to a surface
when it is applied. The binder may allow the coating 124 to
adhere to polymer materials, such as polystyrene or polyure-
thane or a material of which the target block 104 is made.
When applied to the front surface of the target block 104, the
coating 124 may stay transparent for a duration of time during
which water is retained in the reticulated porous body 118.
Once water is removed from the reticulated porous body 118
(e.g., by applying a force on the target block or by evaporation
to ambient air) the coating 124 may turn opaque again and the
first layer 122 with the indicia 126 (best seen in FIG. 8) may
become invisible. In an exemplary embodiment, the coating
124 turns white when the reticulated porous body 118 is dry.

[0025] Referring now to FIGS. 6 and 7, the reticulated porous
body 118 of the first target block 104 can include a
plurality of open cellular pores 128. The reticulated porous
body 118 of the first target block 104 can retain water in the
plurality of open cellular pores 128 by capillary action. For
instance, the pores 128 may form capillary-shaped passages
wherein water could be drawn in due to surface tension of water and wetting properties of material of the reticulated porous body 118. The reticulated porous body 118 may be made of a polymer foam such as polyurethane foam or polyethylene foam. The material used in fabricating the reticulated porous body 118 does not limit the scope of the invention. In some embodiments, the reticulated porous body 118 may be of a thickness that allows indicia 126 placed on the back surface 116, to be visible when viewed via the front surface 120. Alternatively, the reticulated porous body 118 may turn transparent or translucent to allow the indicia 126 on the back surface 116 to be visible. In such embodiments, when the coating 124 is exposed to water and turns transparent (or translucent), any indicia 126 on the front surface 120 (or on the first layer 122), as well as any indicia 126 on the back surface 116 may become visible. The plurality of open cellular pores 128 may be interconnected with each other to form passageways (not shown) for water retained in the open cellular pores 128. The open cellular pores 128 may transport water held therein through the passageways by diffusion. The reticulated porous body 118 may turn transparent or translucent when exposed to water. For instance, when the open cellular pores 128 hold water, the reticulated porous body 118 may turn transparent or translucent. The reticulated porous body 118 of the first target block 104 retains water for a duration between about 15 minutes and about 50 minutes when exposed to standard atmospheric conditions, thereby allowing the indicia 126 of the first layer 122 to be visible behind the transparent coating 124. The reticulated porous body 118 can be configured to retain water for a longer duration (e.g., 1 hour, 2 hours, 3 hours, 5 hours etc.). The duration for which the target block 104 retains water may depend on the size and shape of the open cellular pores 128.

Embodiments of the wearable garment described herein can be used for playing recreational water shooting team games. Such recreational water shooting games may be played between two players or between two teams. While two player games are relatively well known, embodiments of the invention include a recreational water shooting game that can be played as a team sport. Each team may include multiple players. In such embodiments, each player may be provided with a wearable garment 100 with a wetness indicator such as those described herein. The game can then be commenced. Each player in a team aims to shoot a player of an opposite team with a water squirt gun. One or more non-participants of the game may be designated as a “referee” and/or a “scorer”, to determine if a player has been hit with water and to count the number of players that have been hit. Once the game ends, the team with the least number of hits may be designated as the winning team.

The referee may determine if a player has been hit based on the target block’s state. For instance, if the player has been hit, the target block retains water in its reticulated porous body, thereby having the coating turn transparent or translucent to reveal an indicia (e.g., a colored pattern, the word “HIT”, a cross sign etc.). In the embodiment shown in FIG. 8, the indicator is a colored ‘X’ symbol. The referee may then signal the player to remove the wet target block. The player may remove the wet target block and hand it over to the scorer who may replace the wet target block with a dry target block. The dry target block has identical properties as the wet target block, and is initially dry when replaced.

The player may then operatively connect the dry target block (e.g., place it in a mesh pocket, or connect using hook-and-loop fasteners) to the wearable garment and rejoins the water shooting team game. The scorer may deduct one or more points from the team’s score for each wet target (e.g., two points per wet target block). The scorer may also award one or more points for each target block that was not hit (e.g., two points per unexposed target block). The game is then allowed to end after a certain time. At the end of the game, the scorer counts the wet and unexposed target blocks to determine the total score for each team. At the end of the game, the team with the most number of points is declared the winning team.

Alternatively or in addition to the embodiments described above, the wearable garment may be provided with four target blocks. Thus, each player wears a garment with four target blocks. The game can then be played as described herein. The target blocks may also be color-coded or another similar distinct indicator to facilitate easier scoring. For instance, the wet target blocks of a first team may include a red visual indicator and the wet target blocks of a second team may include a blue visual indicator. Alternately, or in addition, each team may have a team logo, or a pattern or word that is distinct from the opponent team to help facilitate scorekeeping. The scorer may then look at the color, logo, pattern or word on the wet target block to determine if the target block belongs to the first team or the second team.

Weary garments with removable and replaceable target blocks such as those described herein can allow the water shooting team game to continue without interruption when a target block has been exposed to water. For instance, a wet target block is replaced by a dry target block without interrupting the water shooting team game. Such target blocks also have hydrochromic properties and water retention properties that allow the target blocks to provide a visual indicator until the water shooting team game is ended. For instance, the reticulated porous body of the target blocks may retain water between about 15 minutes and about 50 minutes, or a sufficiently longer interval of time (e.g., greater than 50 minutes, 1 hour, 2 hours, up to three hours, up to five hours, etc.) allowing a player to replace the wet target block with a dry target block, and allowing the scorer to determine points to deduct accurately.

Thus, embodiments of the invention are disclosed. Although the present invention has been described in considerable detail with reference to certain disclosed embodiments, the disclosed embodiments are presented for purposes of illustration and not limitation and other embodiments of the invention are possible. One skilled in the art will appreciate that various changes, adaptations, and modifications may be made without departing from the spirit of the invention.

What is claimed is:

1. A wearable garment for recreational water shooting games, comprising:
a. a first surface; anda first target block removably coupled to the first surface, wherein the first target block comprising:
b. a back surface, a reticulated porous body supported by the back surface, and a front surface comprising a coating, the coating being opaque when the front surface is dry, the coating adapted to become transparent to visible light when the front surface is exposed to water, in order to reveal an indicia underneath the coating.
2. The wearable garment of claim 1, further comprising a mesh pocket coupled to the first surface, wherein the mesh pocket is adapted to enclose the first target block such that the front surface of the first target block is adjacent a mesh layer of the mesh pocket.

3. The wearable garment of claim 1, wherein the back surface of the first target block includes a hook portion of a hook-and-loop fastener, the hook portion removably coupled to a loop portion, the loop portion coupled to the first surface.

4. The wearable garment of claim 1, wherein the reticulated porous body of the first target block comprises a plurality of open cellular pores adapted to retain water by capillary action.

5. The wearable garment of claim 1, wherein the reticulated porous body of the first target block is transparent to visible light to reveal an indicia positioned on the back surface when the coating becomes transparent to visible light.

6. The wearable garment of claim 5, wherein the plurality of open cellular pores are interconnected with each other such that the plurality of open cellular pores form passageways for water retained in the plurality of open cellular pores.

7. The wearable garment of claim 6, wherein the plurality of open cellular pores are adapted to transport water held therein through the passageways by diffusion.

8. The wearable garment of claim 6, wherein the reticulated porous body of the first target block is adapted to retain water for a duration between about 15 minutes and about 50 minutes when exposed to standard atmospheric conditions.

9. The wearable garment of claim 1, further comprising a pair of sleeves coupled to the first surface, the pair of sleeves removably coupled to a second target block and a third target block.

10. The wearable garment of claim 9, further comprising a second surface opposite the first surface, the second surface coupled to the pair of sleeves, the second surface including a fourth target block.

11. The wearable garment of claim 1, wherein the coating comprises a pigment with hydrochromic properties.

12. The wearable garment of claim 1, wherein the indicia may be applied on one of the front surface of the reticulated porous body, the back surface of the reticulated porous body, and a first layer placed on the front surface of the reticulated porous body and coated with the coating.

13. The wearable garment of claim 1, wherein the first target block has an initial shape, the first target block adapted to retain the initial shape when exposed to water.

14. A method of using a wearable garment for playing recreational water shooting team game between two teams, wherein each player in a team aims to shoot a player of an opposite team with a water squirt gun, the method comprising:

   providing each player with the wearable garment, the wearable garment comprising:
   a first surface,
   a first target block removably coupled to the first surface,
   the first target block comprising
   a back surface,
   a reticulated porous body supported by the back surface, and
   a front surface comprising a hydrochromic coating, the hydrochromic coating being opaque when the front surface is dry and transparent to visible light when the front surface is wet, the hydrochromic coating revealing an indicia when the front surface is wet;

   commencing the water shooting team game;
   determining if the first target block has been exposed to water from the water squirt gun;
   removing the first target block exposed to water and replacing the first target block exposed to water with a second target block, the second target block having identical properties as the first target block, the second target block being dry when replaced.

15. The method of claim 14 further comprising, providing the wearable garment with four target blocks.

16. The method of claim 14 further comprising, allowing the water shooting team game to continue without interruption when the first target block has been exposed to water.

17. The method of claim 16, wherein the first target block is replaced by the second target block without interrupting the water shooting team game.

18. The method of claim 14 further comprising, ending the water shooting team game, and determining a number of target blocks of each team exposed to water.

19. The method of claim 18, wherein each target block of the number of target blocks exposed to water show the visual indicator until the water shooting team game is ended.

20. The method of claim 18 further comprising, deducting points from a first team or a second team for each target block of the number of target blocks of the first team or the second team that has been exposed to water; and

   awarding points to the first team or the second team for one or more target blocks of the first team or the second team that has not been exposed to water.

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