An apparatus and system for inhibiting the spread of disease. The apparatus to inhibit the spread of disease includes a mucous collection chamber and a filter. The mucous collection chamber is configured to receive mucus expelled during one of a cough and a sneeze. The mucous collection chamber includes a support member having a coupling surface positioned opposite a filter receiving surface. A wall extends perpendicularly from the filter receiving surface of the support member in a direction opposite the coupling surface of the support member. The wall and the filter receiving surface define a filter receiving space. The filter is positionable in the filter receiving space. The filter is made of an antimicrobial material for collecting mucus.
APPARATUS AND SYSTEM FOR A COUGH AND SNEEZE GAUARD FOR INHIBITING THE SPREAD OF DISEASE

FIELD OF THE INVENTION

[0001] This subject matter relates to disease control and more particularly relates to cough and sneeze containment systems.

BACKGROUND

[0002] Communicable diseases are a major problem in today’s society. When an individual coughs or sneezes on their hands or in the air there is a potential that the individual will pass infectious germs to another individual. Currently a sick individual uses a tissue or their hands to cover their mouth or nose when the individual coughs or sneezes. Tissues are inherently unreliable as they are often made of flimsy paper. Thus, when an individual coughs or sneezes the tissue may be torn leaving mucous on the individuals hands.

SUMMARY

[0003] From the foregoing discussion, it should be apparent that a need exists for an apparatus and system that inhibits the spread of disease. Beneficially, such an apparatus and system would include be wearable and include a disposable, replaceable filter for catching mucous, viruses and bacteria.

[0004] The present subject matter has been developed in response to the present state of the art, and in particular, in response to the problems and needs in the art that have not yet been fully solved by currently available wearable filtration systems. Accordingly, the present subject matter has been developed to provide an apparatus and system for inhibiting the spread of disease that overcome many or all of the above-discussed shortcomings in the art.

[0005] The apparatus to inhibit the spread of disease, in one embodiment, includes a mucus collection chamber and a filter. The mucus collection chamber is configured to receive mucus expelled during one of a cough and a sneeze. The mucus collection chamber includes a support member having a coupling surface positioned opposite a filter receiving surface. A wall extends perpendicularly from the filter receiving surface of the support member in a direction opposite the coupling surface of the support member. The wall and the filter receiving surface define a filter receiving space. The filter is positionable in the filter receiving space. The filter is made of an antimicrobial material for collecting mucus.

[0006] The apparatus further includes, in one embodiment, at least one exhaust port positioned through the support member, the wall or both. The exhaust port(s) releases air from the filter receiving space in response to an increase in air pressure within the filter receiving space.

[0007] In a further embodiment, the support member is a substantially planar circular disk. In such an embodiment, the wall is substantially cylindrical and extends perpendicularly from an outer circumference of the support member. In one embodiment, the wall extends from a first end to a second end. The first end of the wall is coupled to the filter receiving surface of the support member. The second end of the wall extends away from the support member. In such an embodiment, the filter is positioned adjacent the second end of the wall and substantially covers the filter receiving space.

[0008] In one embodiment, the filter receiving surface of the support member, the filter, and the wall define an air gap. The air gap enhances airflow through the filter receiving space.

[0009] The apparatus, in a further embodiment, includes a spacing element positioned between the filter receiving surface of the support member and the filter. In such an embodiment the spacing element positions the filter a predefined distance from the filter receiving surface of the support member. In an exemplary embodiment the spacing element includes a ring and a plurality of spokes with each spoke supporting the filter.

[0010] The apparatus, in one embodiment, also includes a coupling element coupled to the mucus collection chamber. The coupling element is configured to couple the mucus collection chamber to a user. In another embodiment, the apparatus includes a fastening element. In such an embodiment the coupling element may include an elongated band coupled to the coupling surface of the support member. The band is positionable around a user’s wrist with the fastening element fastening the band around the user’s wrist. In another embodiment the coupling element is a fastener that is couplable to a garment.

[0011] An apparatus to inhibit the spread of disease is also presented that includes a mucus collection chamber, a filter, and a coupling element. The mucus collection chamber is configured to receive mucus expelled during either a cough or a sneeze or both. The mucus collection chamber includes a support member having a coupling surface positioned opposite a filter receiving surface. A wall extends perpendicularly from the filter receiving surface of the support member in a direction opposite the coupling surface of the support member. The wall defines a filter receiving space and a filter is positionable in the filter receiving space. The filter is made of a material for collecting mucus. The coupling element is coupled to the mucus collection chamber. The coupling element is configured to couple the mucus collection chamber to a user.

[0012] The apparatus, in certain embodiments, includes at least one exhaust port. The exhaust port(s) is disposed through either the support member, the wall, or both. The exhaust port(s) releases air from the filter receiving space in response to an increase in air pressure within the filter receiving space.

[0013] In an exemplary embodiment, the wall extends from a first end to a second end. The first end of the wall is coupled to the filter receiving surface of the support member. The second end of the wall extends away from the support member. The filter is positioned adjacent the second end of the wall and substantially covers the filter receiving space.

[0014] In one embodiment, the filter receiving surface of the support member, the filter, and the wall define an air gap. The air gap enhances airflow through the filter receiving space.

[0015] In another embodiment, the apparatus also includes a spacing element positioned between the filter receiving surface of the support member and the filter. The spacing element positions the filter a predefined distance from the filter receiving surface of the support member. In certain embodiments, the spacing element includes a ring and a plurality of spokes with each spoke supporting the filter.

[0016] The apparatus, in another embodiment, includes a fastening element. In such an embodiment the coupling element may include an elongated band coupled to the coupling
surface of the support member. The band is positionable around a user’s wrist with the fastening element fastening the band around the user’s wrist.

[0017] An apparatus to inhibit the spread of disease is also disclosed that includes a mucous collection chamber and a coupling element. The mucous collection chamber is configured to receive mucus expelled during either a cough, a sneeze or both. The coupling element is coupled to the mucous collection chamber. The coupling element is configured to couple the mucous collection chamber to a user.

[0018] In a further embodiment, the mucous collection chamber includes a support member having a coupling surface positioned opposite a filter receiving surface. A wall extends perpendicularly from the filter receiving surface of the support member in a direction opposite the coupling surface of the support member. The wall defines a filter receiving space. In such an embodiment, a filter is positionable in the filter receiving space with the filter comprising an antimicrobial material for collecting mucus.

[0019] Reference throughout this specification to features, advantages, or similar language does not imply that all of the features and advantages that may be realized with the present subject matter should be or are in any single embodiment of the subject matter. Rather, language referring to the features and advantages is understood to mean that a specific feature, advantage, or characteristic described in connection with an embodiment is included in at least one embodiment of the present subject matter. Thus, discussion of the features and advantages, and similar language, throughout this specification may, but do not necessarily, refer to the same embodiment.

[0020] Furthermore, the described features, advantages, and characteristics of the subject matter may be combined in any suitable manner in one or more embodiments. One skilled in the relevant art will recognize that the subject matter may be practiced without one or more of the specific features or advantages of a particular embodiment. In other instances, additional features and advantages may be recognized in certain embodiments that may not be present in all embodiments of the subject matter.

[0021] These features and advantages of the present subject matter will become more fully apparent from the following description and appended claims, or may be learned by the practice of the subject matter as set forth hereinafter.

**BRIEF DESCRIPTION OF THE DRAWINGS**

[0022] In order that the advantages of the subject matter will be readily understood, a more particular description of the subject matter briefly described above will be rendered by reference to specific embodiments that are illustrated in the appended drawings. Understanding that these drawings depict only typical embodiments of the subject matter and are not therefore to be considered to be limiting of its scope, the subject matter will be described and explained with additional specificity and detail through the use of the accompanying drawings, in which:

[0023] FIG. 1 is a perspective view illustrating one embodiment of an apparatus to inhibit the spread of disease in accordance with the present subject matter; and

[0024] FIG. 2 is an exploded view further illustrating the apparatus to inhibit the spread of disease of FIG. 1 in accordance with the present subject matter.

**DETAILED DESCRIPTION**

[0025] Reference throughout this specification to “one embodiment,” “an embodiment,” or similar language means that a particular feature, structure, or characteristic described in connection with the embodiment is included in at least one embodiment of the present subject matter. Thus, appearances of the phrases “in one embodiment,” “in an embodiment,” and similar language throughout this specification may, but do not necessarily, all refer to the same embodiment.

[0026] Furthermore, the described features, structures, or characteristics of the subject matter may be combined in any suitable manner in one or more embodiments. In the following description, numerous specific details are provided for a thorough understanding of embodiments of the subject matter. One skilled in the relevant art will recognize, however, that the subject matter may be practiced without one or more of the specific details, or with other methods, components, materials, and so forth. In other instances, well-known structures, materials, or operations are not shown or described in detail to avoid obscuring aspects of the subject matter.

[0027] FIG. 1 depicts a perspective view of an apparatus 100 to inhibit the spread of disease. The apparatus 100, in certain embodiments. Includes a mucous collection chamber 102 and a coupling element 104 coupled to the mucous collection chamber 102. The apparatus 100 allows a user to cough and/or sneeze into the mucous collection chamber 102 without passing infectious germs to another individual. In at least one embodiment, the apparatus allows for hands free use such that the user can still shake hands with another individual without passing germs to the other individual.

[0028] The coupling element 104, in one embodiment, is configured to couple the mucous collection chamber 102 to the user. In the embodiment illustrated in FIG. 1, the coupling element is an elongated band positionable about a user’s wrist. The elongated band 106 is coupled to the coupling surface 202 (FIG. 2) on the mucous collection chamber 102. In one embodiment, the band 106 is coupled to the coupling surface 202 of the mucous collection chamber 102 by a chemical adhesive. In other embodiments, the band 106 may be coupled to the coupling surface 202 of the mucous collection chamber 102 by a hook and loop system. In yet another embodiment, the coupling surface 202 of the mucous collection chamber 102 may include a physical coupling system such as tab’s under which the band 106 is passed to couple the band 106 to the coupling surface 202 of the mucous collection chamber 102. One of skill in the art will recognize other ways of coupling the mucous collection chamber 102 to the band 106.

[0029] In certain embodiments, the apparatus 100 may include a fastening element that fastens the band 106 to the user’s wrist. For example, in the embodiment illustrated in FIG. 1, a first end 108 of the band 106 is attached at to a retention ring 110. To couple the apparatus 100 to a user, a second end 112 of the band 106 is passed around a user’s wrist and through the retention ring 110. In such an embodiment, at least a portion 114 of the band 106 includes a hook and loop fastening element to loop the second end 112 of the band 106 back upon a middle portion 116 (the middle portion 116 of the band 106 is the portion disposed between the first end 108 and the second end 112 of the band 106) to fasten the apparatus 100 about the user’s wrists. One of skill in the art will recognize other fastening elements to fasten the band 106 about the user’s wrist.
In other embodiments, rather than a band 106, the coupling element is a fastening element configured to couple the mucuous collection chamber 102 to a user's garment. For example, in one embodiment, a male or female portion of a snap fastener may be coupled to the coupling surface 202 of the mucuous collection chamber 102. In such an embodiment, the other of the male or female portion of a snap fastener may be coupled to a user's garment (i.e., a sleeve of a shirt or blouse). The male and female portions of the snap fasteners are matingly coupleable to one another to removably couple the mucuous collection chamber 102 to the user's garment. One of skill in the art will recognize other fastening elements that may be used to couple the mucuous collection chamber 102 to the user's garment.

In certain embodiments, the mucuous collection chamber 102 is configured to receive mucus expelled during either a cough, a sneeze, or both. In one embodiment, the mucuous collection chamber 102 is a substantially hollow chamber coupled to a user (i.e., at a user's wrist) and configured to receive mucus expelled during either a cough, a sneeze, or both. In other embodiments, the mucuous collection chamber 102 may be configured to receive a tissue to retain the mucus expelled during either a cough, a sneeze, or both.

In yet another embodiment, the apparatus 100 may include a filter 118 positioned within the mucuous collection chamber 102. For example, FIG. 2 depicts an exploded view of one embodiment of an apparatus 100 to inhibit the spread of disease. In the embodiment illustrated in FIG. 2, the elements comprising the mucuous collection chamber 102 have been exploded to more clearly illustrate such components. Similarly, in the embodiment illustrated in FIG. 2, the coupling element 104 (the elongated band 106) is depicted as being removed from the mucuous collection chamber 102.

In one embodiment, the mucuous collection chamber 102 includes a support member 200 having a coupling surface 202 disposed opposite a filter receiving surface 204. A wall 206 extends perpendicularly from the filter receiving surface 204 of the support member 200 in a direction opposite the coupling surface 202 of the support member 200.

In the embodiment illustrated in FIGS. 1 and 2, the support member 200 is a substantially planar circular disk and the wall 206 is substantially cylindrical. The wall 206 extends perpendicularly from an outer circumference of the support member 200. In other embodiments, the support member 200 may have any other geometric shape (i.e., triangular, rectangular, square, oval, etc.). In such embodiments, the wall 206 may extend substantially perpendicularly from the outer edges of the support member 200. In yet another embodiment, the wall 206 may extend from the outer edges of the support member 200 at an angle other than perpendicularly.

In an exemplary embodiment, an inner surface 208 of the wall 206 and the filter receiving surface 204 of the support member 200 define a filter receiving space 210. For example, in one embodiment, the wall 206 extends from a first end 212 to a second end 214. The first end 212 of the wall 206 is coupled to the filter receiving surface 204 of the support member 200. The second end 214 of the wall 206 extends away from the filter receiving surface 204 of the support member 200 in a direction opposite the coupling surface 202 of the support member 200.

A filter 118 is positionable within the filter receiving space. In certain embodiments, the filter 118 is positioned adjacent the second end 214 of the wall 206 and substantially covers the filter receiving space 210. In other embodiments, the filter 118 is positioned adjacent the first end 212 of the wall 206. In yet another embodiment, the filter 118 is sized to substantially fill the entire filter receiving space 210.

In embodiments where the filter 118 does not fill the entire filter receiving space 210, a spacing element 216 may be used to take up any space not occupied by the filter 118. For example, in one embodiment, the spacing element 216 may be inserted into the filter receiving space 210 before the filter 118 is positioned within the filter receiving space 210. Thus, the spacing element 216, in one embodiment, is disposed between the filter receiving surface 204 of the support member 200 and the filter 118. The spacing element 216 positions the filter 118 a predefined distance from the filter receiving surface 204 of the support member 200.

In one embodiment, the predefined distance that the spacing element 216 positions the filter 118 away from the filter receiving surface 204 of the support member 200 is such that the filter rests at a position adjacent the second end 214 of the wall 206. One of skill in the art will recognize that in other embodiments, the spacing element 216 may position the filter 118 at a position other than where the filter 118 is adjacent the second end 214 of the wall 206.

By spacing the filter 118 away from the filter receiving surface 204 of the support member 200, the filter 118, the filter receiving surface 204 of the support member 200 and the wall 206 define an air gap. In certain embodiments, the air gap enhances airflow through the filter receiving space 210. By enhancing airflow through the filter receiving space 210, airflow through the filter 118 is likewise enhanced. An increase in airflow through the filter 118 increases the chances that viruses, bacteria and other germs will be filtered by the filter 118.

To further enhance airflow through the filter 118, in certain embodiments, the apparatus 100 may include at least one exhaust port 218 that extends through the support member 200, the wall 206 and both. The exhaust port(s) 218 release air from the filter receiving space 210 in response to an increase in air pressure within the filter receiving space 210 (i.e., in response to a sneeze or cough directed towards the filter receiving space 210).

The spacer 216, in one embodiment, is substantially solid. In other embodiments, the spacer 216 may include at least one void through which air may flow. For example, in the embodiment illustrated in FIG. 2, the spacer 216 includes a ring 220 and a plurality of spokes 222. The ring 220 and spokes 222 define a number of pie shaped voids 224 through which air flows when a user coughs or sneezes into the mucuous collection chamber 102.

In addition to defining the pie shaped voids 224, the ring 220 and each spoke 222 provide support for the filter 118. Thus, in embodiments where the filter 118 is made of a relatively pliable material, the spokes 222 and the ring 220 support the filter 118 and hold the filter near the second end 214 of the wall 206.

In certain embodiments, the filter 118 is a conventional tissue. In other embodiments, the filter 118 is made of an antimicrobial material for collecting mucous dispelled within the mucuous collection chamber 102. One of skill in the art will recognize other materials which may be used for the filter 118.

In certain embodiments, the entire apparatus 100 is made of disposable and/or recyclable materials such that the entire apparatus 100 may be disposed of once the apparatus 100 is used. In other embodiments, the apparatus 100 is wash-
able such that the apparatus 100 may be re-used once the apparatus 100 has been washed.

[0045] In yet another embodiment, the filter 118 is disposable. In such an embodiment apparatus 100 may include a way to access the filter 118 for disposal of the filter 118. For example, in the embodiment illustrated in FIG. 2, the apparatus 100 includes a removable lid 226 that is configured to trap the filter 118 between the lid 226 and the spacing element 216.

[0046] The lid 226 includes a substantially circular void 228 through which a user coughs or sneezes. Threads 230 are disposed about a lower periphery of the lid 228. The inner surface 208 of the wall 206 also includes threads 232. The threads 230 disposed about the lower periphery of the lid 228 are matingly receivable with the threads 232 on the inner surface of the wall 206 to removable couple the lid 226 to the mucus collection chamber 102.

[0047] In certain embodiments, the lid 226 includes a plurality of ridges 234 disposed about an upper periphery of the lid 226. The ridges 234, in one embodiment, assist a user is coupling the lid 226 to the mucus collection chamber 102. One of skill in the art will recognize other ways in which to removably couple the lid 226 to the mucus collection chamber 102.

[0048] With the lid 226 coupled to the mucus collection chamber 102, the filter 118 and the spacing element 216 are retained within the filter receiving space 210 in the mucus collection chamber 102. In this position, the user may use the mucus collection chamber 102 and filter 118 to collect mucus expelled during a cough or sneeze.

[0049] The present invention may be embodied in other specific forms without departing from its spirit or essential characteristics. The described embodiments are to be considered in all respects only as illustrative and not restrictive. The scope of the invention is, therefore, indicated by the appended claims rather than by the foregoing description. All changes which come within the meaning and range of equivalency of the claims are to be embraced within their scope.

What is claimed is:

1. An apparatus to inhibit the spread of disease, the apparatus comprising:
   a mucus collection chamber configured to receive mucus expelled during one of a cough and a sneeze, the mucus collection chamber comprising a support member having a coupling surface disposed opposite a filter receiving surface, wherein a wall extends perpendicularly from the filter receiving surface of the support member in a direction opposite the coupling surface of the support member, the wall defining a filter receiving space; and a filter positionable in the filter receiving space, the filter comprising an antimicrobial material for collecting mucus.

2. The apparatus of claim 1, further comprising at least one exhaust port disposed through one of the support member and the wall, wherein the at least one exhaust port releases air from the filter receiving space in response to an increase in air pressure within the filter receiving space.

3. The apparatus of claim 1, wherein the support member comprises a substantially planar circular disk and wherein the wall is substantially cylindrical, the wall extending perpendicularly from an outer circumference of the support member.

4. The apparatus of claim 1, wherein the wall extends from a first end to a second end, the first end of the wall coupled to the filter receiving surface of the support member, the second end of the wall extending away from the support member, wherein the filter is positioned adjacent the second end of the wall and substantially covers the filter receiving space.

5. The apparatus of claim 1, wherein the filter receiving surface of the support member, the filter, and the wall define an air gap, the air gap enhancing airflow through the filter receiving space.

6. The apparatus of claim 1, further comprising a spacing element disposed between the filter receiving surface of the support member and the filter, the spacing element positioning the filter a predefined distance from the filter receiving surface of the support member.

7. The apparatus of claim 6, wherein the spacing element comprises a ring and a plurality of spokes, each spoke supporting the filter.

8. The apparatus of claim 1, further comprising a coupling element coupled to the mucus collection chamber, the coupling element configured to couple the mucus collection chamber to a user.

9. The apparatus of claim 8, further comprising a fastening element and wherein the coupling element comprises an elongated band coupled to the coupling surface of the support member, the band positionable around a user’s wrist, the fastening element fastening the band around the user’s wrist.

10. The apparatus of claim 8, wherein the coupling element comprises a fastener coupleable to a garment.

11. An apparatus to inhibit the spread of disease, the apparatus comprising:
   a mucus collection chamber configured to receive mucus expelled during one of a cough and a sneeze, the mucus collection chamber comprising a support member having a coupling surface disposed opposite a filter receiving surface, wherein a wall extends perpendicularly from the filter receiving surface of the support member in a direction opposite the coupling surface of the support member, the wall defining a filter receiving space; a filter positionable in the filter receiving space, the filter comprising a material for collecting mucus; and a coupling element coupled to the mucus collection chamber, the coupling element configured to couple the mucus collection chamber to a user.

12. The apparatus of claim 11, further comprising at least one exhaust port disposed through one of the support member and the wall, wherein the at least one exhaust port releases air from the filter receiving space in response to an increase in air pressure within the filter receiving space.

13. The apparatus of claim 11, wherein the wall extends from a first end to a second end, the first end of the wall coupled to the filter receiving surface of the support member, the second end of the wall extending away from the support member, wherein the filter is positioned adjacent the second end of the wall and substantially covers the filter receiving space.

14. The apparatus of claim 11, wherein the filter receiving surface of the support member, the filter, and the wall define an air gap, the air gap enhancing airflow through the filter receiving space.

15. The apparatus of claim 11, further comprising a spacing element disposed between the filter receiving surface of the support member and the filter, the spacing element positioning the filter a predefined distance from the filter receiving surface of the support member.
16. The apparatus of claim 15, wherein the spacing element comprises a ring and a plurality of spokes, each spoke supporting the filter.

17. The apparatus of claim 11, further comprising a fastening element and wherein the coupling element comprises an elongated band coupled to the coupling surface of the support member, the band positionable around a user’s wrist, the fastening element fastening the band around the user’s wrist.

18. An apparatus to inhibit the spread of disease, the apparatus comprising:
   a mucus collection chamber configured to receive mucus 
   expelled during one of a cough and a sneeze; and 
   a coupling element coupled to the mucus collection chamber, the coupling element configured to couple the mucus collection chamber to a user.

19. The apparatus of claim 18, wherein the mucus collection chamber comprises a support member having a coupling surface disposed opposite a filter receiving surface, wherein a wall extends perpendicularly from the filter receiving surface of the support member in a direction opposite the coupling surface of the support member, the wall defining a filter receiving space.

20. The apparatus of claim 19, further comprising a filter positionable in the filter receiving space, the filter comprising an antimicrobial material for collecting mucus.