USPTO coversheet:
Collaborative deferred-fee provisional patent application pilot program for COVID-19 invention, 85 Fed. Reg. 58038 (September 17, 2020)

Identification number	DFPUB_62706952
Date of filing	09/20/2020
Date available to public	09/23/2020
First inventor	Kasravi
Title of invention	Locking Mask Strap
Assignee (if any)	None provided
Contact information	kas@mindmoto.com

ABSTRACT

A locking mask strap used to help a user comfortably wear a face mask. The core components of the invention are a bar, a locking retainer clip at one end of the bar, multiple open retainer clips at the opposite end of the bar, and finger grips in the middle of the bar. The bar, the retainer clips, and the finger grips are made with a flexible material such as flexible polyvinyl chloride to help secure mask straps behind the user's head. An antimicrobial agent, such as titanium dioxide or tungsten oxide nanoparticles are impregnated within the material of the locking mask strap, killing most pathogens during use. The invention prevents losing the locking mask strap by attaching one side of it to a mask, relieves the pressure from the back of the user's ears, and prevents the spread of disease by killing pathogens.

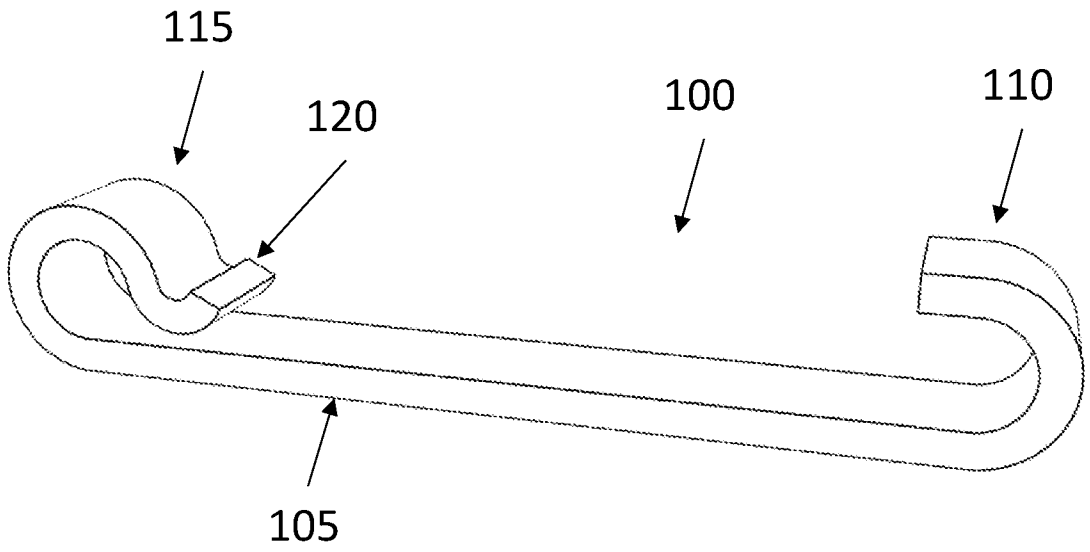

Figure 1A

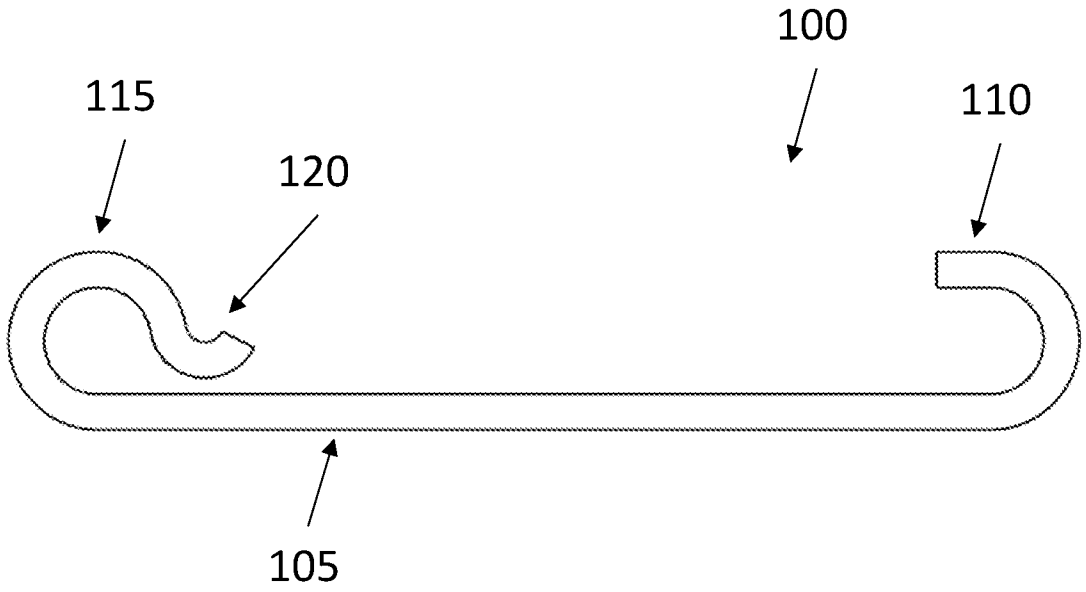

Figure 1B

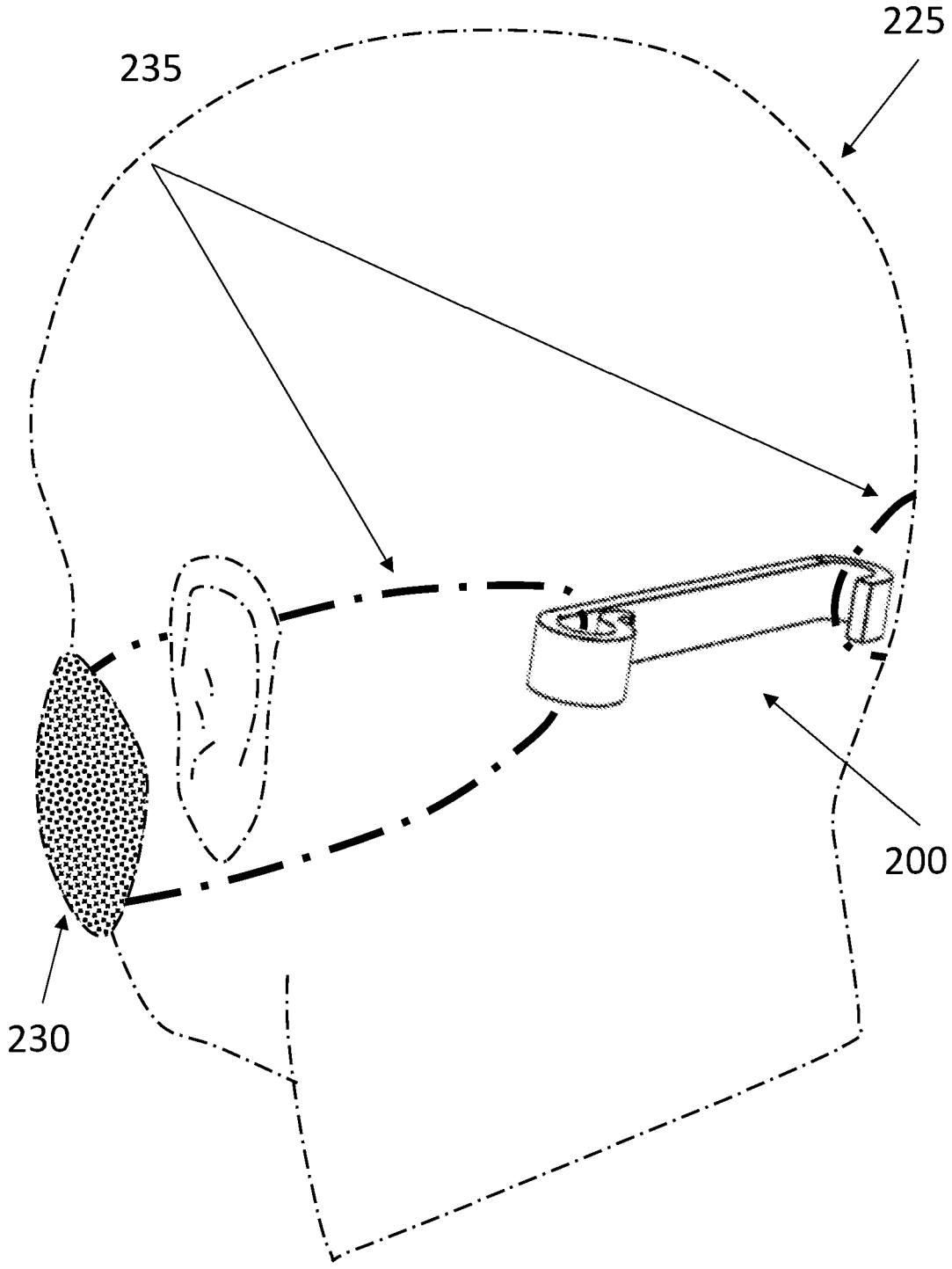

Figure 2

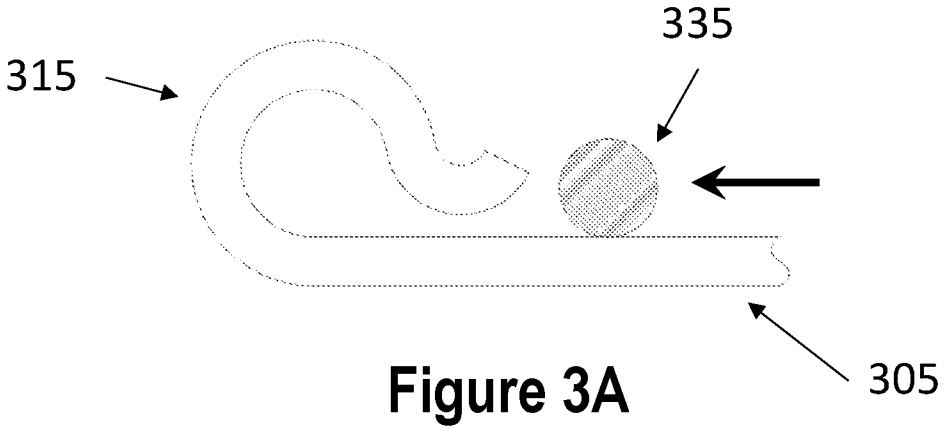

Figure 3A

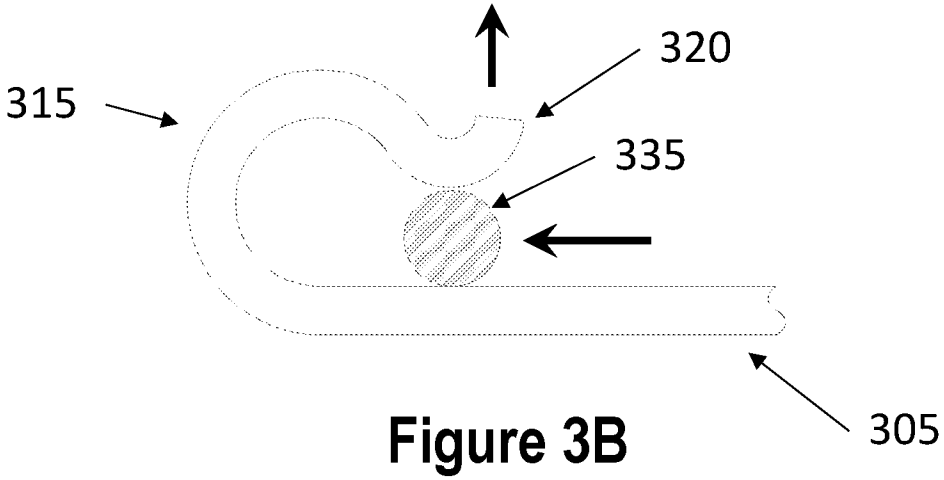

Figure 3B

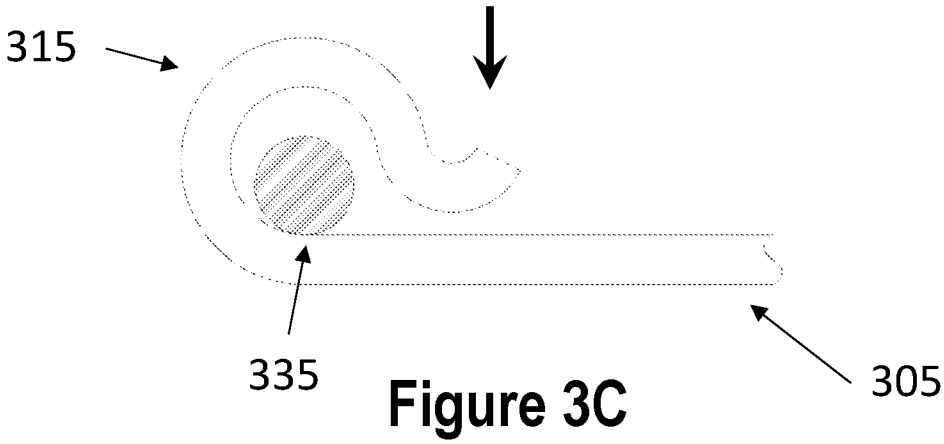

Figure 3C

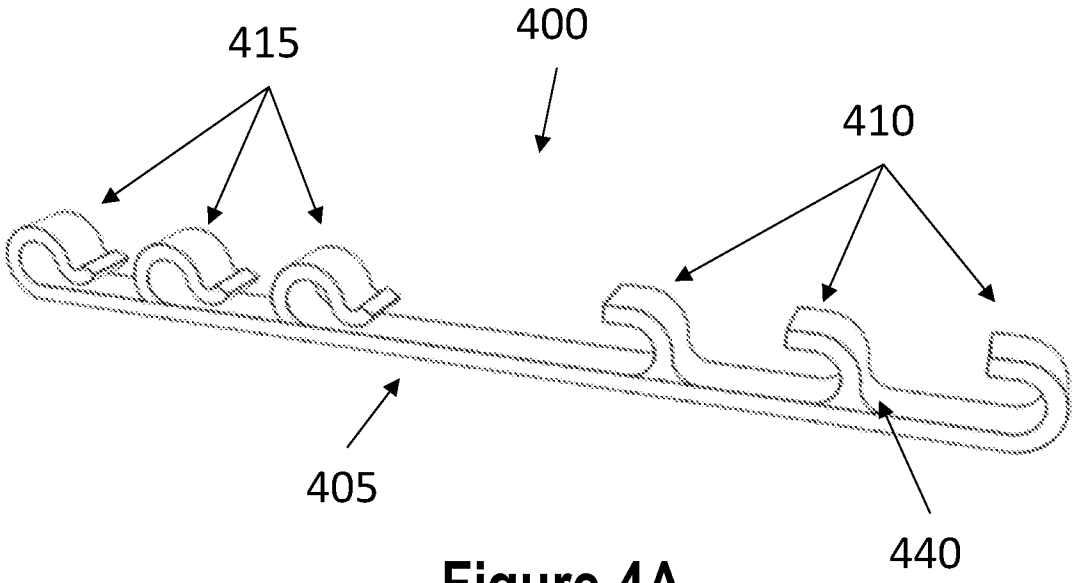

Figure 4A

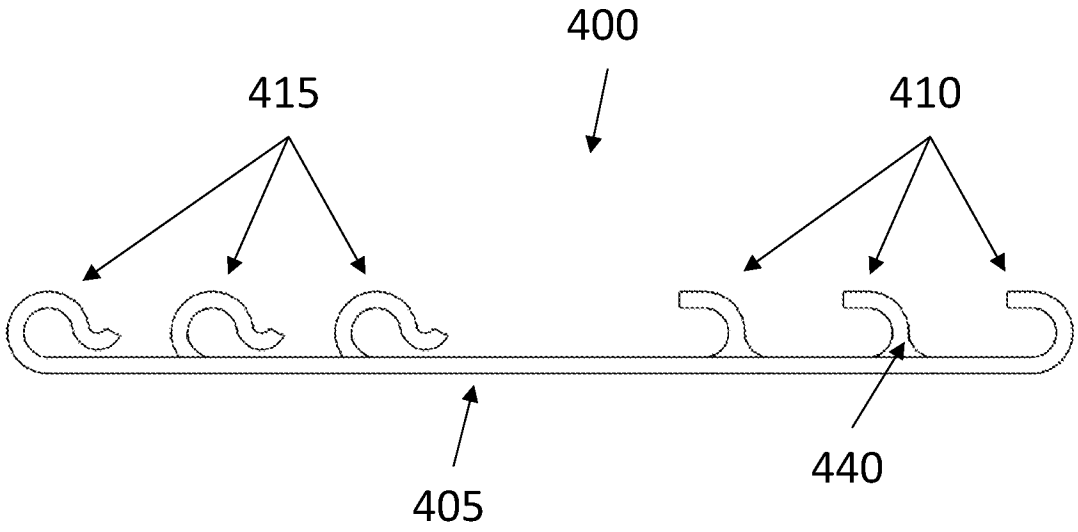

Figure 4B

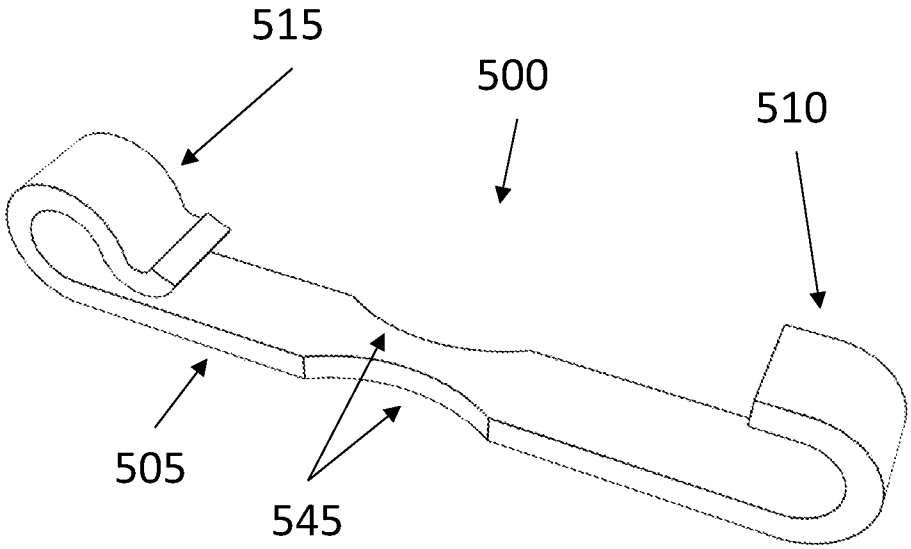

Figure 5A

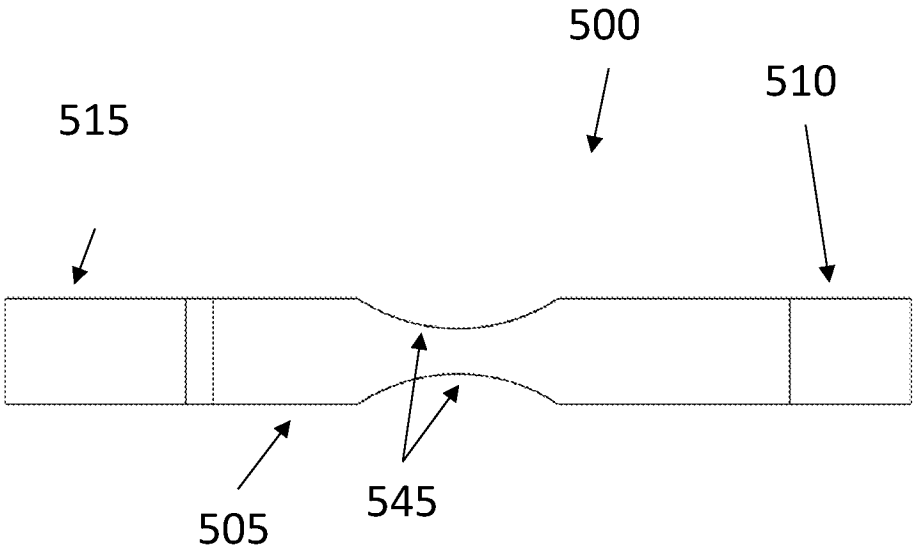

Figure 5B

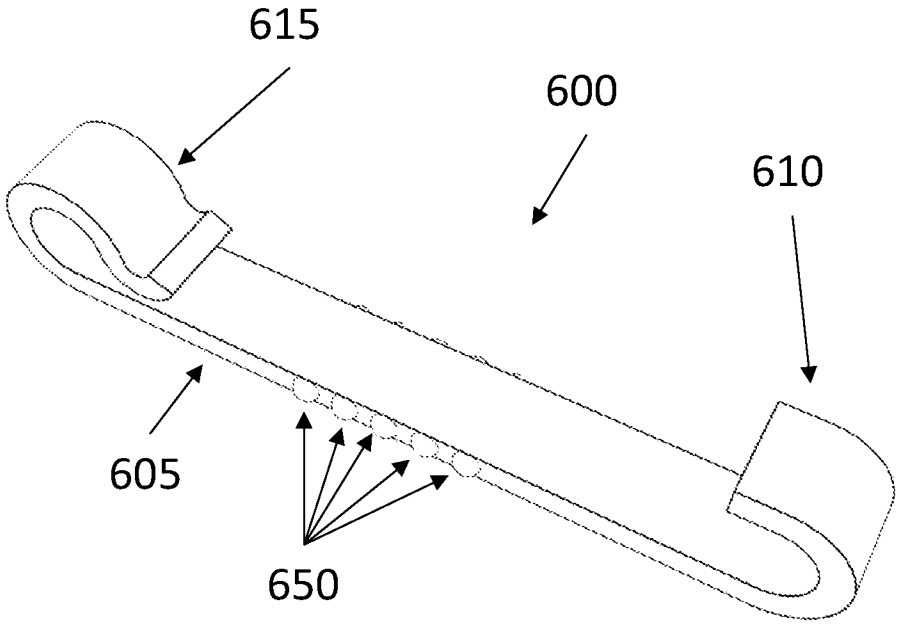

Figure 6A

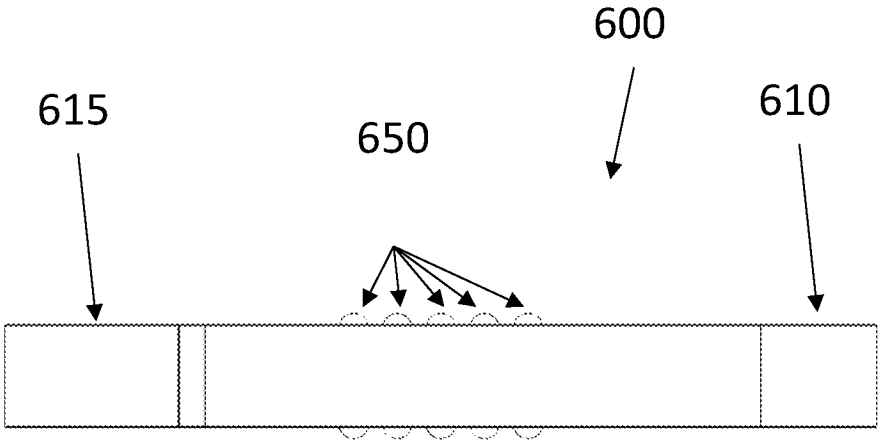

Figure 6B

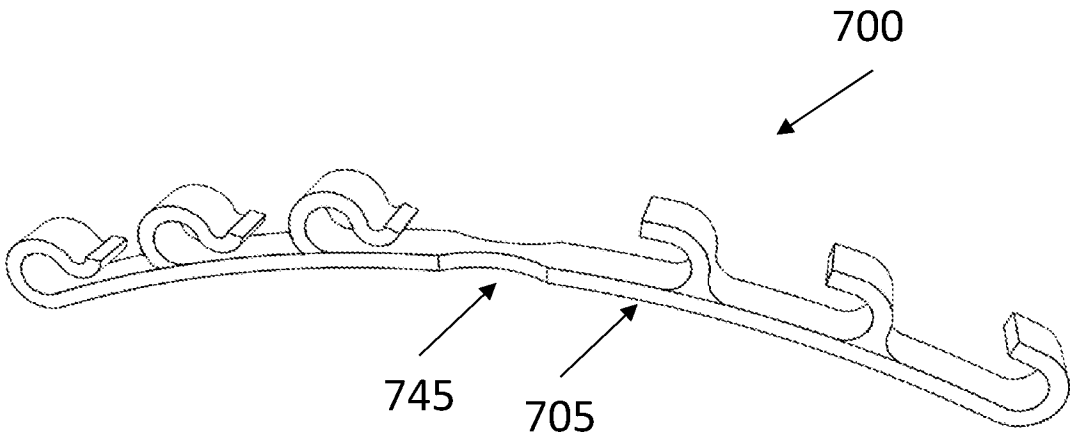

Figure 7A

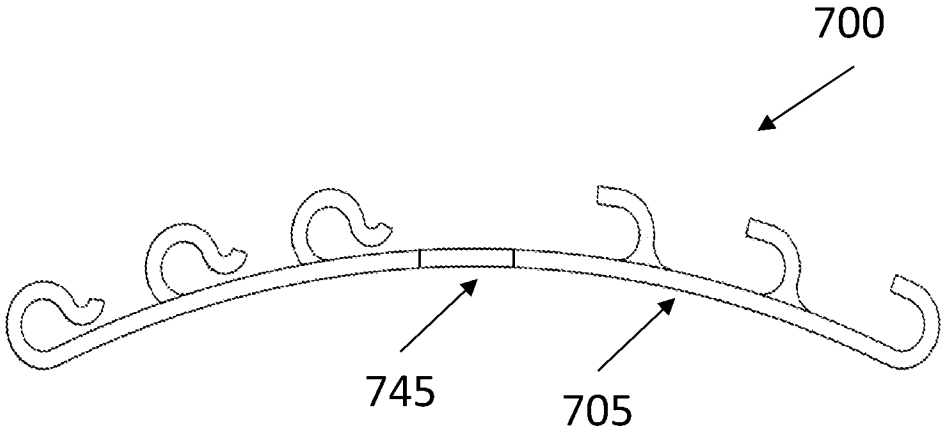

Figure 7B

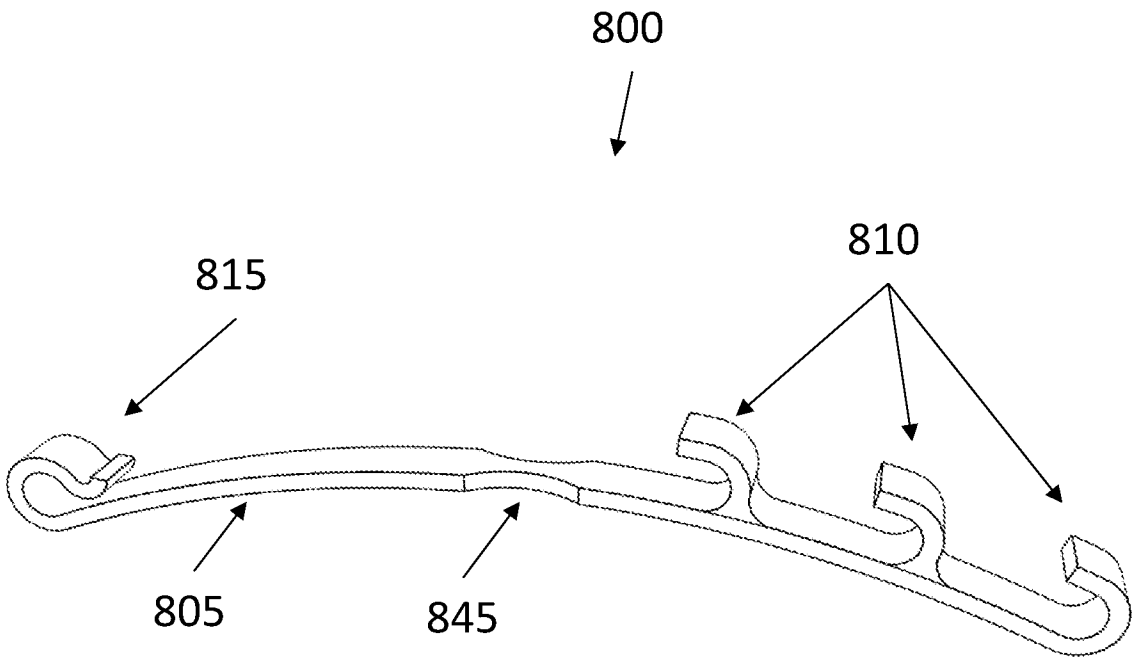

Figure 8

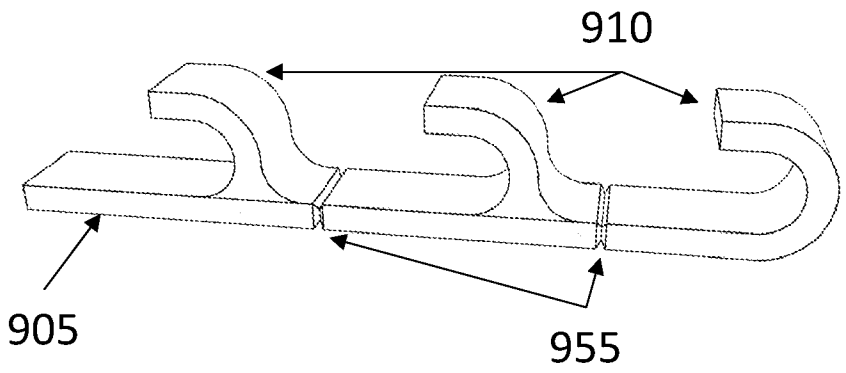

Figure 9A

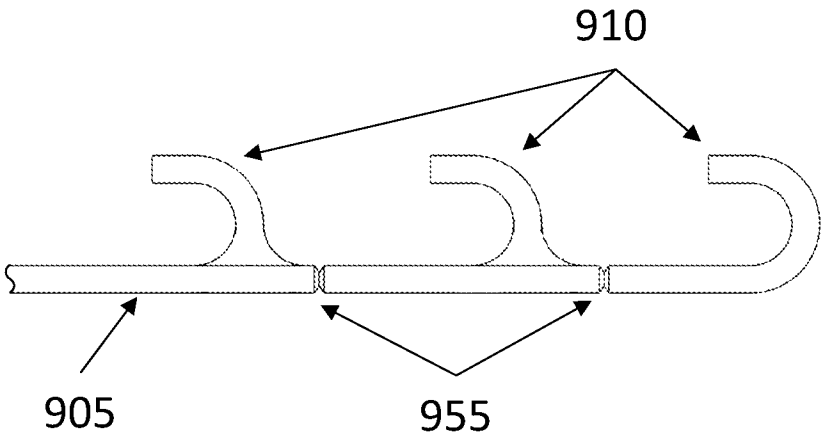

Figure 9B

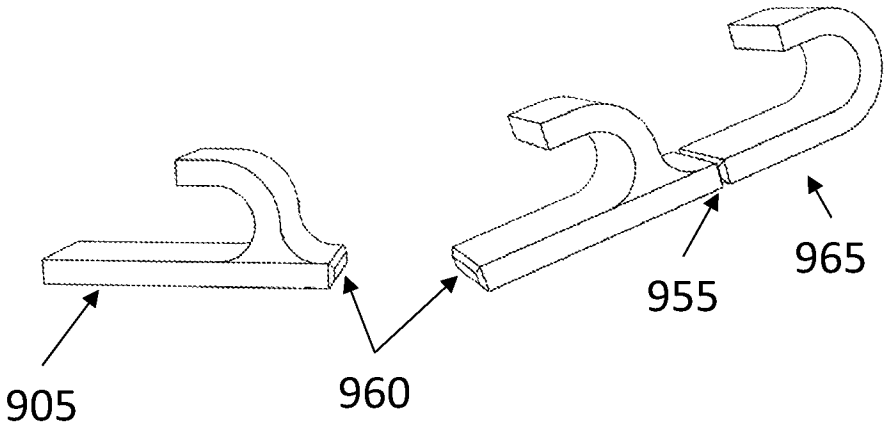

Figure 9C

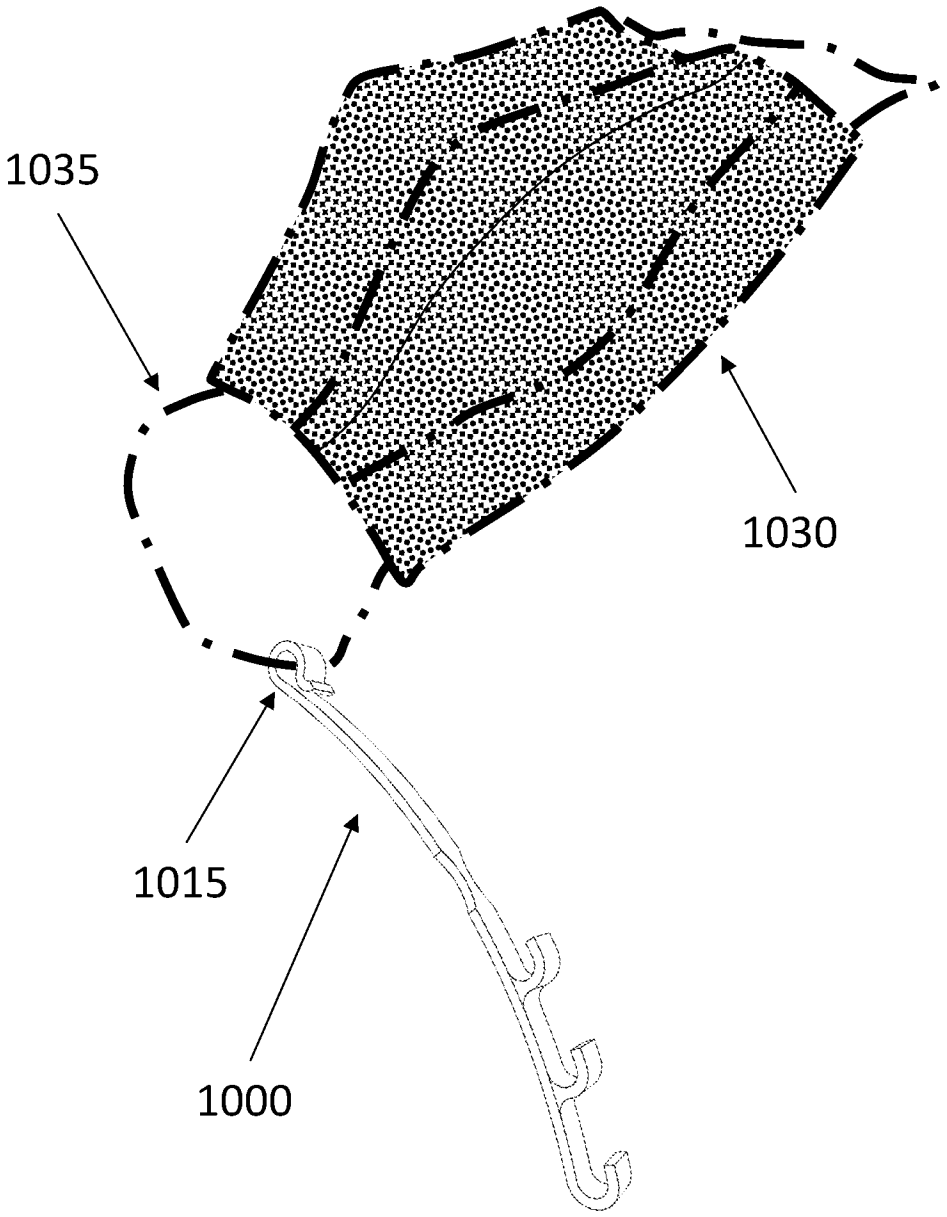

Figure 10

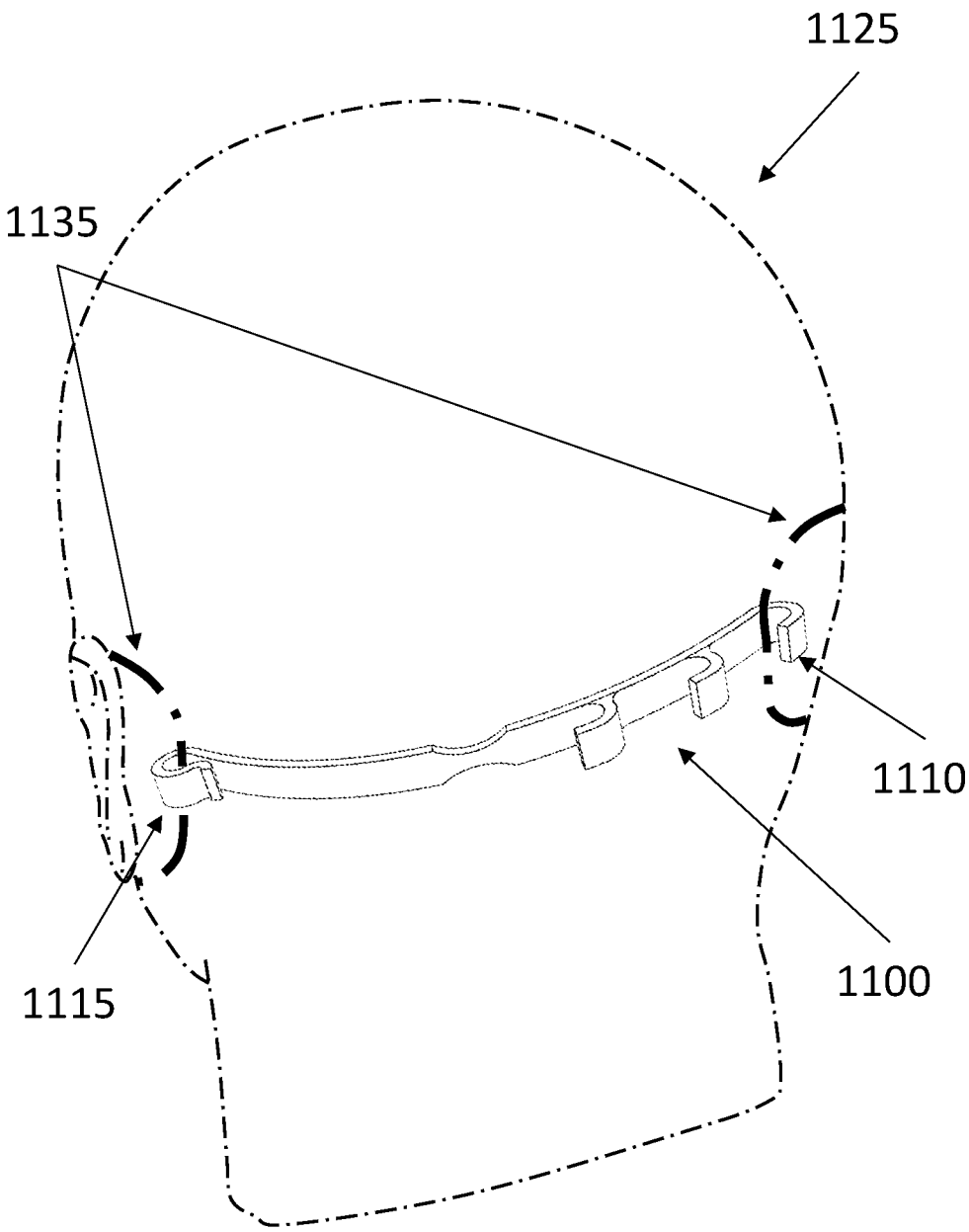

Figure 11

Locking Mask Strap

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention generally relates to medical and occupational breathing face masks, and specifically to a locking mask strap for comfortably wearing and using a mask with reduced possibility of spreading disease.

2. Background

[0002] Currently there are a number of solutions for securing medical and occupational breathing face masks when in use. Some of these solutions attempt to use elastic bands that secure behind the user's ears, but these solutions fail to meet the needs of the industry because they irritate the ears and can't be comfortably worn for extended periods of time. Other solutions attempt to provide elastic bands that wrap behind the head, but these solutions are similarly unable to meet the needs of the industry because they are difficult to wear and interfere with hair and appearance. Still other solutions seek to non-elastic strings that tie behind the head, but these solutions also fail to meet industry needs because tying the strings behind the head is difficult and the strings interfere with hair and appearance. Further, masks straps are available that attach to the mask string behind the head, but these solutions also fail to meet industry needs because they

are an extra part to carry and subject to loss and the hooks in these devices tangle with hair. Still further, all available solutions can host pathogens and help spread disease.

[0003] It would be desirable to have a mask strap that is adjustable and easy to wear, attaches to the mask, relieves pressure from the back of the user's ears, does not tangle with hair, and provides antimicrobial properties. Furthermore, it would also be desirable to have a mask strap that attaches to a mask and cannot be easily lost. Still further, it would also be desirable to have a mask strap that has antibacterial properties. Therefore, there currently exists a need in the industry for a mask strap that is adjustable and easy to wear, locks with the face mask, does not tangle with hair, and has antibacterial properties.

SUMMARY OF THE INVENTION

[0004] The present invention advantageously fills the aforementioned deficiencies by providing a locking mask strap, which provides user adjustments, easy to wear, locks with the mask strap and cannot be lost, does not tangle with hair, and has antibacterial properties.

[0005] The present invention is a locking mask strap, which is made up of the following components: a bar, at least one retainer clip at each end of the bar, at least one of the retainer clips is a locking retainer clip, at least one open retainer clip, the bar and the retainer clips are made of a flexible material, and an antimicrobial agent. These components are configured as follows: The retainer clips and the bars are integrated as one component, the retainer clips are

positioned at the end of the bar with their open ends facing the middle of the bar, and the antibacterial agent is mixed with the flexible material used to make the locking mask strap as a single piece.

[0006] The present invention may also have one or more of the following: The locking retainer clip has a lip, a finger grip in the middle, multiple open retainer clips, clip fillets on the back side of the retainer clips, flexible polyvinyl chloride material, and an antimicrobial additive. A person having ordinary skill in the art recognizes that certain additive such as titanium dioxide or tungsten oxide nanoparticles promote mediation of the inhibition of microbial growth and used as antimicrobial additives in the present invention. Titanium dioxide or tungsten oxide nanoparticles are impregnated into plastic products by mixing them with plastics, such as pellets in the injection molding process during manufacturing.

[0007] The present invention is unique when compared with other known devices and solutions because the present invention provides: (1) it locks to a face mask and cannot be lost; (2) easy to adjust and wear; (3) does not tangle with hair; and (4) has antimicrobial properties.

[0008] The present invention is unique in that it is structurally different from other known devices or solutions. More specifically, the present invention is unique due to the presence of: (1) a locking retainer clip that attaches to a mask and cannot be lost; (2) easy to adjust and wear by the user due to providing multiple retainer clips and finger grips; (3) flexible enough to conform to the user's head; and (4) provides safer use via its antimicrobial properties.

[0009] Among other things, it is an objective of the present invention to provide a locking mask strap that does not suffer from any of the problems or deficiencies associated with prior solutions.

[0010] It is an objective of the present invention to create an artifact that is easy to adjust and wear by the user regardless of the dimensions of the mask or the user's head. It is further an objective of the present invention to create an artifact that cannot be easily misplaced or lost by the user. It is still further an objective of the present invention to create an artifact that is safe and does not promote the spread of disease. Yet still further it is an objective of the present invention to create an artifact that is more economical to produce, easier to manufacture, and more durable. Further still, it is an objective of the present invention to create an artifact that is smaller and more lightweight than other solutions, thereby enabling the artifact to be more easily portable.

[0011] The present invention now will be described more fully hereinafter with reference to the accompanying drawings, which are intended to be read in conjunction with both this summary, the detailed description and any preferred and/or particular embodiments specifically discussed or otherwise disclosed. This invention may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein; rather, these embodiments are provided by way of illustration only and so that this disclosure will be thorough, complete and will fully convey the full scope of the invention to those skilled in the art.

BRIEF DESCRIPTION OF THE DRAWINGS

- Figure 1A shows a perspective of the basic version of the locking mask strap.
- Figure 1B shows the front view of the locking mask strap.
- Figure 2 shows a perspective view of how the basic version of the locking mask strap is worn by the user.
- Figure 3A shows the front view of the cross-section of a mask string being engaged with the locking retainer clip.
- Figure 3B shows the front view of the cross-section of a mask string being inserted into the locking retainer clip.
- Figure 3C shows the front view of the cross-section of a mask string having been inserted into the locking retainer clip.
- Figure 4A is a perspective view of an embodiment with multiple locking retainer clips and open retainer clips.
- Figure 4B is the front view of an embodiment with multiple locking retainer clips and open retainer clips.
- Figure 5A is a perspective view of the basic version of the present invention with an indented finger grips in the middle of the bar.
- Figure 5B is the front view of the basic version of the present invention with an indented finger grips in the middle of the bar.
- Figure 6A is a perspective view of the basic version of the present invention with raised finger grips in the middle of the bar.

- Figure 5B is the front view of the basic version of the present invention with raised finger grips in the middle of the bar.
- Figure 7A is a perspective view of an embodiment with multiple locking retainer clips and open retainer clips with indented finger grips.
- Figure 7B is the front view of an embodiment with multiple locking retainer clips and open retainer clips with indented finger grips.
- Figure 8 is a perspective view of an embodiment with multiple locking retainer clips and open retainer clips and indented finger grips worn by the user.
- Figure 9 shows a perspective view of the preferred embodiment of the present invention with a single locking retainer clip, multiple open retainer clips, finger grips, and a curved bar.

DETAILED DESCRIPTION OF THE INVENTION

[0012] The present invention is directed to a locked mask strap, which generally relates to medical and occupational breathing face masks, and specifically to a locking mask strap for comfortably wearing and using a mask with reduced possibility of spreading disease.

[0013] The figures herein follow a numbering convention in which the first digit or digits correspond to the drawing figure number and the remaining digits identify an element or component in the drawing. Similar elements or components between different figures may be identified using similar digits. For example, 145 may reference element “45” in Figure 1, and a similar element may be referenced as 245 in Figure 2. Elements shown in the various figures herein can be added,

exchanged, and/or eliminated to provide a number of additional examples of the present disclosure. In addition, the proportion and the relative scale of the elements provided in the figures are intended to illustrate the examples of the present disclosure and should not be taken in a limiting sense.

[0014] Figure 1A shows a perspective view of the most basic version of the locking mask strap (100), comprising a bar (105), an open retainer clip (110) positioned at one end of the bar (105), and a locking retainer clip (115) positioned at the other end of the bar (105). The said retainer clips are positioned such that their open ends point towards the opposite end of the bar (105), as shown. The locking retainer clip (115) has a retainer clip lip (120) and the tip of the locking retainer clip (115), as shown. The locking retainer clip (115) and the retainer clip lip (120) are configured to allow a mask string to slide under the retainer clip lip (120) and remain within the cavity of the locking retainer clip (115) until intentionally pulled out. The bar (105) and the said retainer clips are integrated and manufactured as a single piece. Figure 1B shows the front view of the elements in Figure 1A.

[0015] Figure 2 shows a perspective view of a user (225) wearing the locking mask strap behind the head by sliding mask strings (235) of mask (230) on both sides. A person having ordinary skill in the art would recognizes that masks and their strings are available in multiple configuration and may differ from the representation in Figure 2, while maintaining the intended utility of the locking mask strap (200).

[0016] Figures 3A, 3B, and 3C are front views of the locking retainer clip (315) at the end of the bar (305), showing how the mask string (335) is inserted into the locking retainer clip (315). Figure 3A shows the cross section of the mask string (335) positioned in front of the locking retainer clip (315) and moved forward in the direction shown. Figure 3B shows the mask string (335) sliding under the retainer clip lip (320), raising the locking retainer clip (315) up as shown. Figure 3C shows the mask string (335) locked inside the cavity of the locking retainer clip (315) and the locking retainer clip (315) flexes back into its original position, as shown. A person having ordinary skill in the art recognizes that the locking mask strap (305) is made of a material sufficiently flexible to operate as shown in Figures 3A, 3B, and 3C. The mask string (335) is locked within the cavity of the locking retainer clip (315) until the user reverses the aforementioned steps to remove the mask string (335); thus the said locking mask strap remains attached to the said mask at the user's discretion. Many different plastics are available with the desired flexibility, and the preferred embodiment of the present invention uses flexible polyvinyl chloride.

[0017] Figure 4A shows a perspective view of the locking mask strap (400) with multiple locking retainer clips (415) and open retainer clips (410). Thus, the user chooses the preferred clip for proper and snug fit of the mask on the user's face. A clip fillet (440) is optionally placed on the back side of the open retainer clip (410). The clip fillet (440) blends into the open retainer clip (410) and the bar (405) to prevent cracks in the material and offer product longevity. A person having ordinary skill in the art recognizes that the said clip fillet can also be

use with the locking retainer clip (415) if desired. Figure 4B shows the front view of the elements in Figure 4A.

[0018] Figure 5A shows a perspective view of the locking mask strap (500) with the bar (505), the open retainer clip (510), and the locking retainer clip (515). As shown, an indented finger grip (545) is added to the sides of the bar (505) to help the user with gripping the locking mask strap (500) while attaching the said mask straps. Figure 5B shows the front view of the elements in Figure 5A.

[0019] Figure 6A shows a perspective view of the locking mask strap (600) with the bar (605), the open retainer clip (610), and the locking retainer clip (615). As shown, and as an alternative gripping mechanism, at least one raised finger grip (650) is added to the sides of the bar (605) to help the user with gripping the locking mask strap (600) while attaching the said mask straps. Figure 6B shows the front view of the elements in Figure 6A. A person having ordinary skill in the art recognizes that many other finger grip configurations are possible in addition to the two representations shown in in Figures 5A, 5B, 6A, and 6B.

[0020] Figure 7A shows a perspective view of the locking mask strap (700) where the bar (705) is bent in a manner to conform to the back of user's head for better fit and comfort. This figure also shows the indented finger grip (745). The preferred embodiment of the present invention employs the bent configuration of the locking mask strap (700) in addition to the flexibility offered by the aforementioned choice of material. Figure 7B shows the front view of the elements in Figure 7A.

[0021] Figure 8 is a perspective view of the preferred embodiment of the present invention. In this configuration the locking mask strap (800) has the bar (805) with multiple open retainer clips (810) at one end, a single locking retainer clip (815) at the opposite end, and the indented finger grip (845) in the middle of the bar (805), where ethe bar (805) is bent as shown for better fit by the user.

[0022] Figure 9A, Figure 9B, and Figure 9C show the option for a break-away notch (955) to facilitate separating an unwanted portion of the bar (905). These figures only show the part of the bar (905) with the open retainer clips (910). The break-away notch is an indentation on at least one surface of the bar (905) located between at least one pair of the open retainer clips (910), intended to introduce a weak region that can be easily broken, snapped, or cut by the user. The utility of the break-away notch (955) is to reduce the overall size of the locking mask strap by removing the unwanted portion. After sizing the locking mask strap, the user breaks off and removes the excess portion of the locking mask strap along a desired break-away notch (910). Figure 9A shows a perspective view of the portion of the bar (905) with the open retainer clips (910) and two break-away notches (955). Similarly, Figure 9B shows the front view of the elements in Figure 9A. Figure 9C shows a broken notch (960) and a separated bar (965) broken off from the bar (905). The user discards the separated bar (965) after breaking it off. The size and position of the break-away notches (955) are configured to promote deliberate breaking by the user but avoid accidental breaking.

[0023] Figure 10 shows how the locking retainer clip (1015) of the locking mask strap (1000) engages with the string (1035) of a mask (1030). The locking

function of the locking retainer clip (1015) securely keeps the locking face mask (1000) with the mask (1030) until the user wishes to pull them apart.

[0024] Figure 11 is a perspective view of the user (1125) securing the mask strings (1135) with the locking mask strap (1100). The locking retainer clip (1115) is securely attached to one side of the mask string (1135), resulting in the locking mask strap (1100) to remain attached to the user's mask. The other side of the mask strings (1135) is temporarily attached to one of the open retainer clips (1110) as needed to best fit the user (1125).

[0025] An antimicrobial agent, such as titanium dioxide or tungsten oxide nanoparticles are mixed with the flexible material of the locking mask retainer at the time of manufacturing, thus the antimicrobial agent is impregnated within the locking mask strap, present on all its surfaces, and actively killing disease carrying pathogens during use. Such additives cause a break-up of carbon-carbon bonds, leading to a break-down of organic molecules.

[0026] As such, the user securely attaches and locks one string of a face mask to the locking retainer clip, thus avoiding having a separate mask strap that can be misplaced or lost. When wearing the mask, the user holds the locking mask strap behind the head and slides the other mask string onto an open retainer clip. The outward pointing configuration of the retainer clips prevents hair entanglement. The finger grips facilitate attaching the locking mask retainer behind the head by only attaching the strap on to one of the open retainer clips. The antibacterial agent kills most disease carrying pathogens on the surfaces of the locking mask strap during use.

[0027] While the present invention has been described above in terms of specific embodiments, it is to be understood that the invention is not limited to these disclosed embodiments. Many modifications and other embodiments of the invention will come to mind of those skilled in the art to which this invention pertains, and which are intended to be and are covered by both this disclosure and the appended claims. It is indeed intended that the scope of the invention should be determined by proper interpretation and construction of the appended claims and their legal equivalents, as understood by those of skill in the art relying upon the disclosure in this specification and the attached drawings.

CLAIMS

1. A mask retainer strap comprising:

- a bar having two ends;
- at least one retainer clip at each end of the bar, where the open end of the clip faces the opposite end of the bar;
- at least one retainer clip is a locking retainer clip, configured to temporarily lock a face mask strap; and
- optionally, at least one retainer clip is an open retainer clip, configured to temporarily hold the face mask strap.

2. The mask retainer strap of Claim 1, where the mask retainer strap is made of a flexible material, such that the locking retainer clip flexes to allow the face mask strap to slide into the locking retainer clip.

3. The mast retainer strap of Claim 2, where the locking retainer clip has a retainer clip lip configured to guide the face mask strap into the said locking retainer clip.

4. The mask retainer strap of Claim 3, where a finger grip is positioned between the ends of the bar, where the finger grip is at least one of an indentation in the bar, and a raised bump on the bar.

5. The mask retainer strap of Claim 4, where the retainer clip has a clip fillet on the side opposite to its opening and such that the clip filler blends with the bar.

6. The mask retainer strap of Claim 5, where the mask retainer strap is made of flexible polyvinyl chloride.

7. The mask retainer strap of Claim 5, where the mask retainer strap has a break-away notch between pairs of open retainer clip.

8. The mask retainer strap of Claim 5, where the mask retainer strap has an antibacterial agent as an additive to the flexible material.

9. The mask retainer strap of Claim 8, where the antibacterial agent is titanium dioxide.

10. The mask retainer strap of Claim 8, where the antibacterial agent is tungsten oxide nanoparticles.

Doc Code: CV19.PUB.PRO
Document Description: COVID-19 Collab Database Request for Prov Appl

PTO/SB/452 (09-20)

CERTIFICATION AND REQUEST FOR COVID-19 PROVISIONAL PATENT APPLICATION PROGRAM

(Page 1 of 1)

First Named Inventor:	Kas Kasravi
Title of Invention:	Locking Mask Strap
Contact information to include in database (optional)	kas@mindmoto.com

APPLICANT HEREBY MAKES THE FOLLOWING CERTIFICATIONS AND REQUESTS THAT THE USPTO INCLUDE THE DESCRIPTION OF THE ACCOMPANYING PROVISIONAL PATENT APPLICATION IN A PUBLIC DATABASE.

1. The description of the accompanying provisional patent application concerns a product or process relating to COVID-19 and such product or process is subject to an applicable FDA approval for COVID-19 use.

2. The accompanying application is in the English language.

3. The accompanying application is being filed in DOCX format via the USPTO's Patent Center filing system, together with this form.

4. The applicant understands that while the required filing fee for the accompanying provisional application may be deferred by acceptance into this program, the appropriate filing fee must be paid in order for a subsequent U.S. nonprovisional application to claim the benefit of the filing date of the accompanying provisional application. Applicant recognizes that the filing fee due in the future may be more than the current fee due and that by deferring payment of the filing fee, there may be an increase in the total fee due.

5. Applicant authorizes and requests that the description, including the specification and any drawings, claims and/or abstract of the accompanying provisional patent application, as well as this form, be included in a searchable online public database.

6. Applicant understands that inclusion in the public database is a publication of the description and this form.

Signature /Kas Kasravi/	Date 9/20/2020
Name (Print/Typed) Kas Kasravi	Practitioner Registration Number

Note: *This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. Submit multiple forms if more than one signature is required.**

☐ *Total of _____ forms are submitted.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.