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(54) **FACE COVERING**

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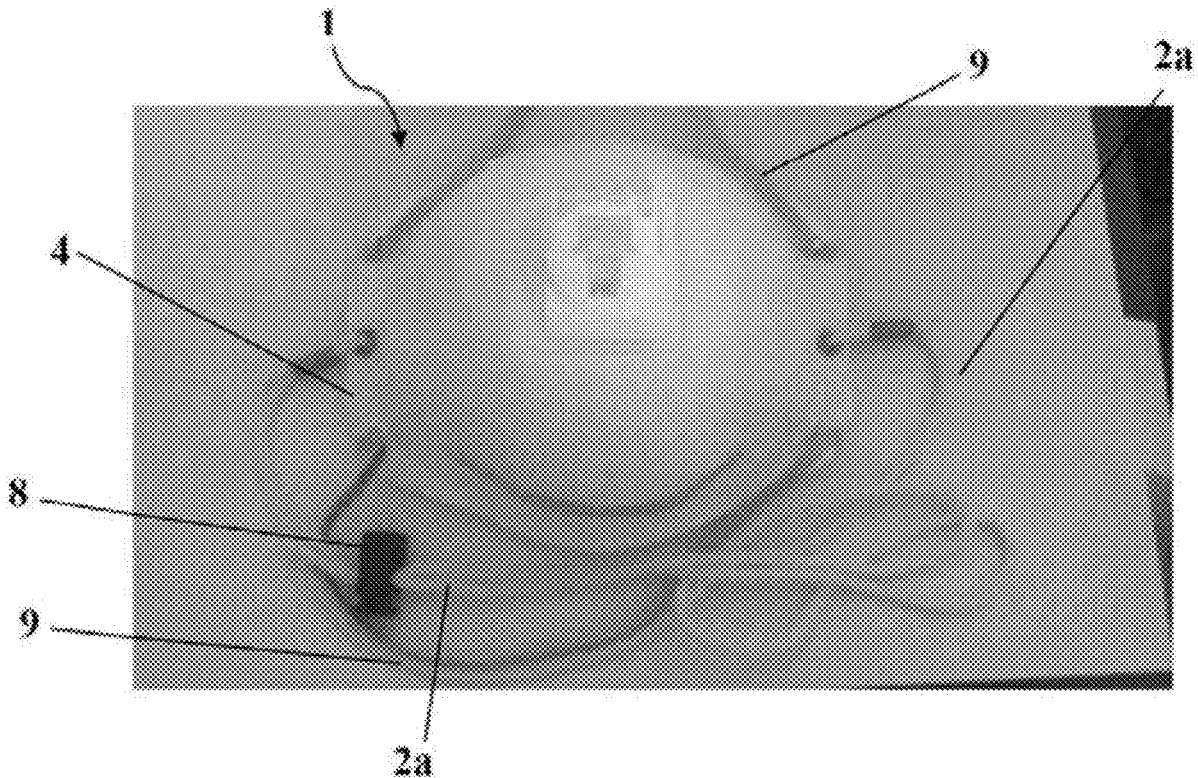
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CPC **A41D 13/1161** (2013.01)

(57) **ABSTRACT**

An improvement in a face covering for covering the nose and mouth of the user of the mask, the improvement being the incorporation into the face covering of a neck loop or neck drawstrings.



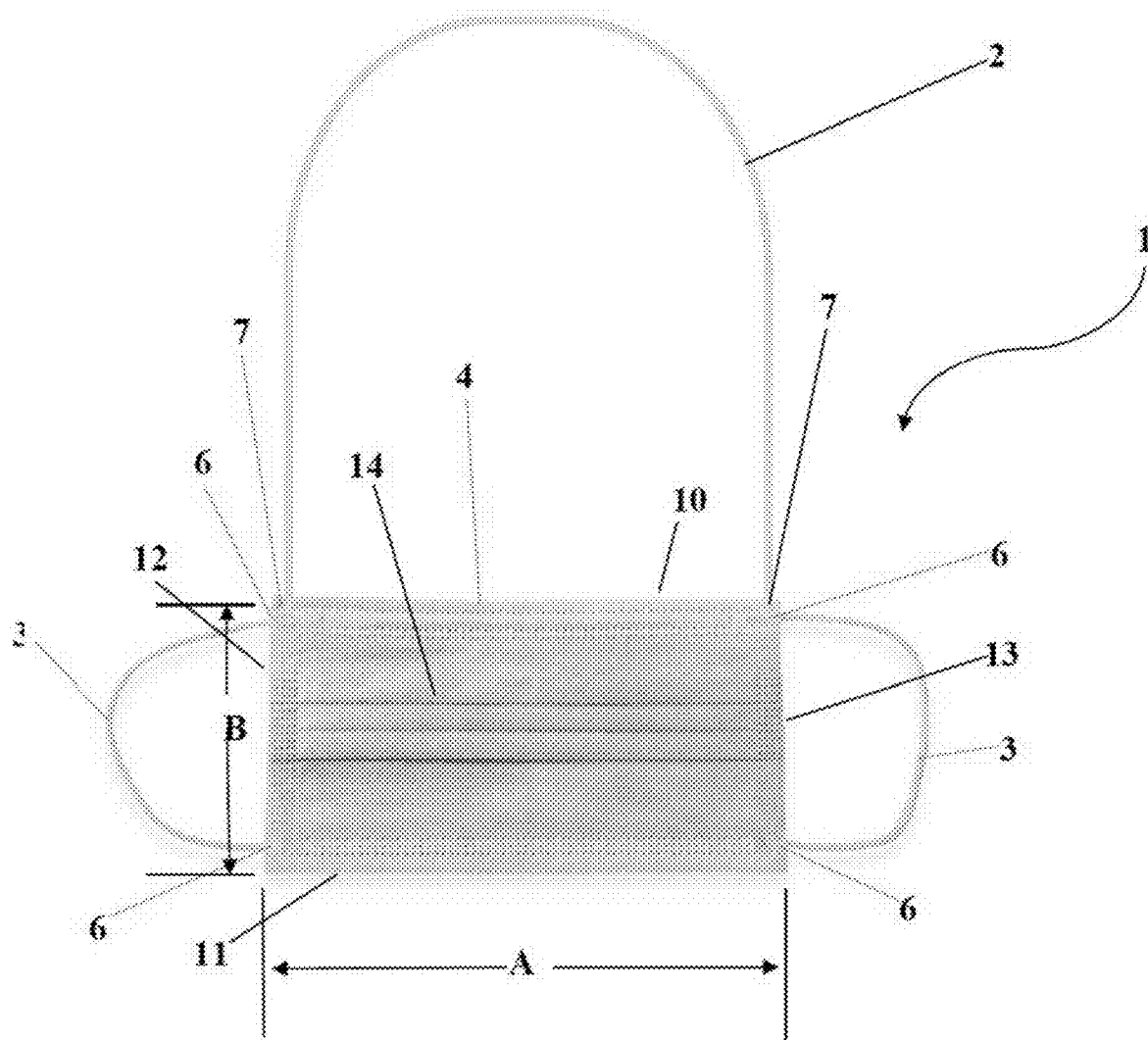


FIGURE 1

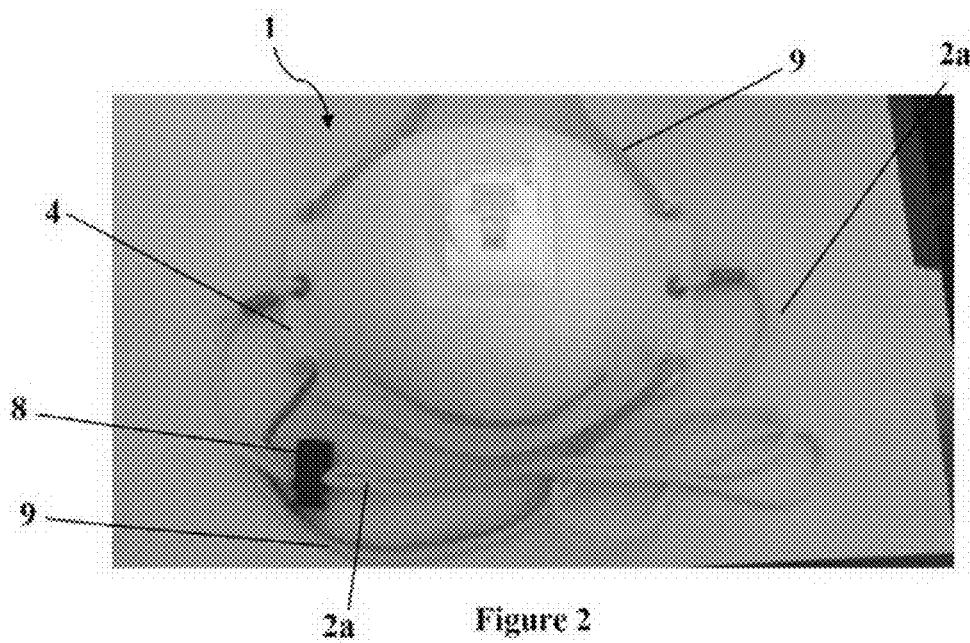


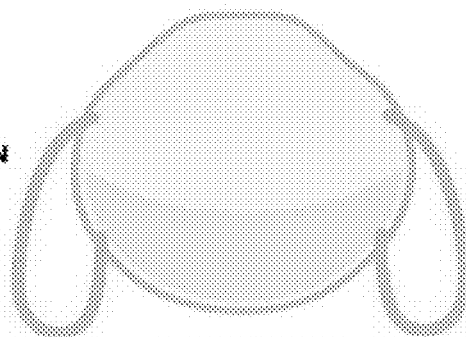
Figure 2

Figure 3A



FRONT VIEW

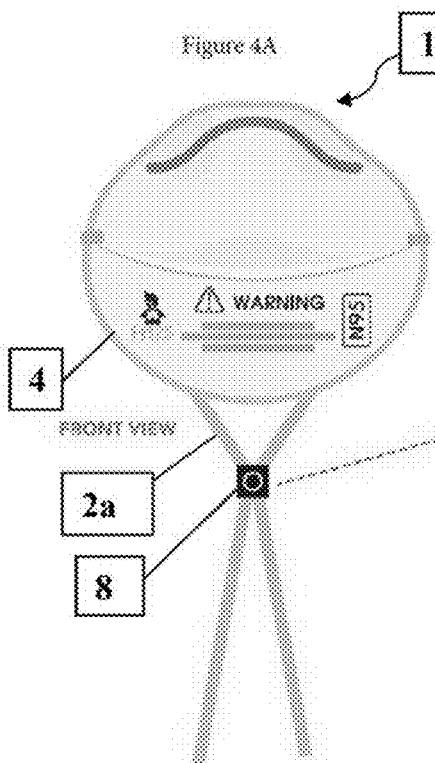
Figure 3B



BACK (INSIDE) VIEW

CURRENT N95 DESIGN
2 ELASTIC PIECES
TO SECURE ON FACE

Figure 4A

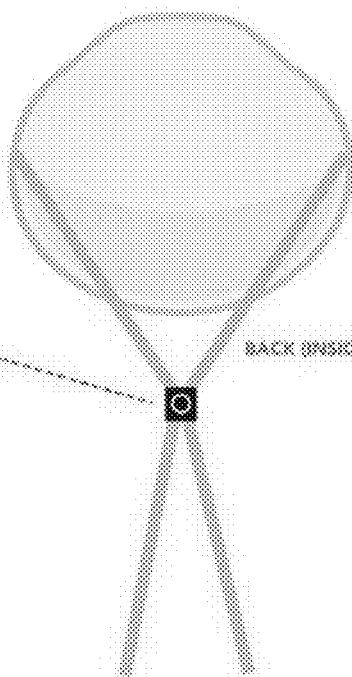


FRONT VIEW

2a

8

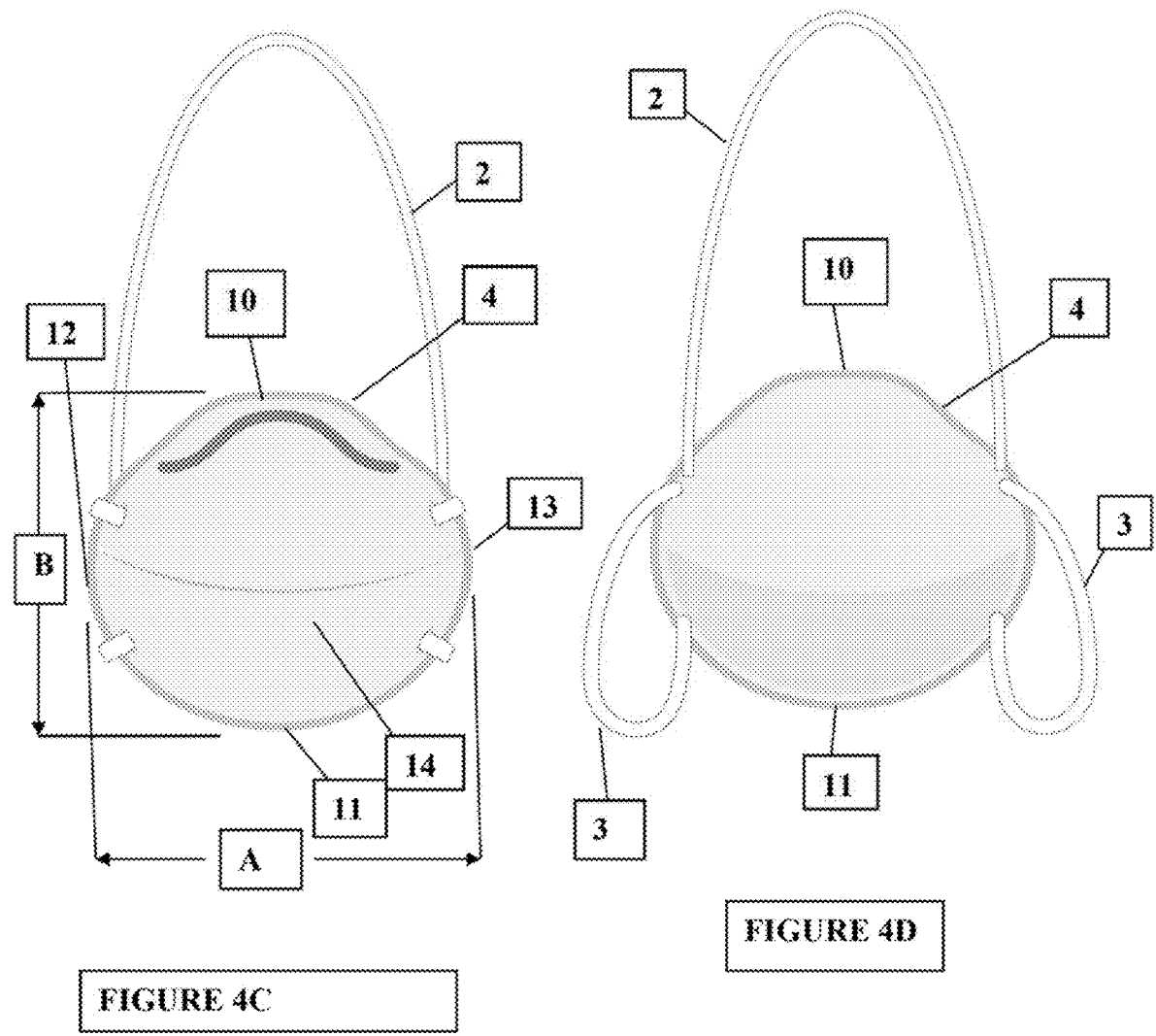
Figure 4B



BACK (INSIDE) VIEW

NEW N95 DESIGN
1 STRING CENTERED
ON EACH SIDE
CAN BE TIGHTENED
AND
LOOSENED
WITH BEAD

ALLOWS
MASK TO HANG
FROM NECK
WHEN NOT IN
USE



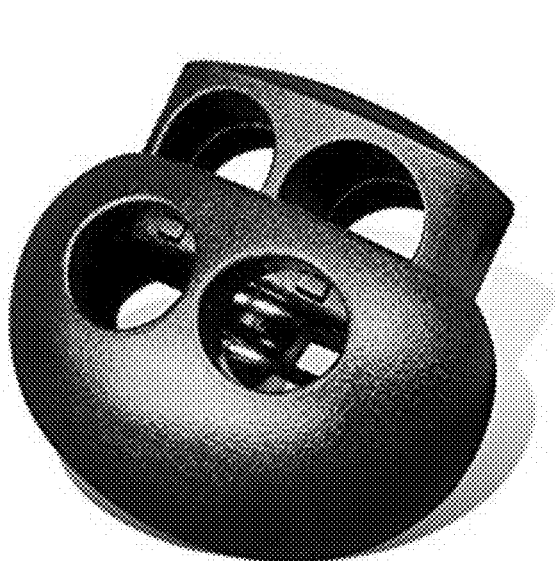


Figure 5A



Figure 5B

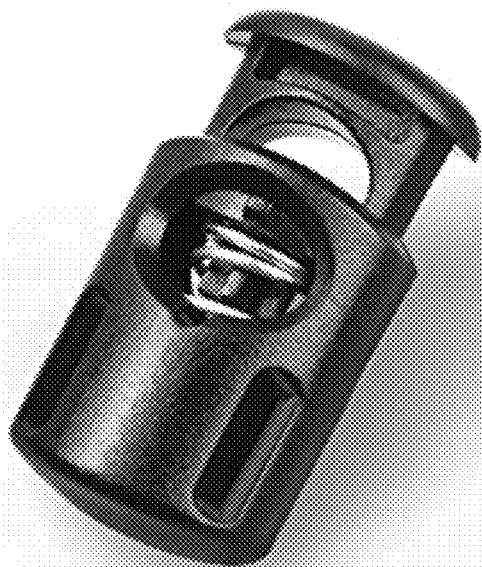


Figure 5C

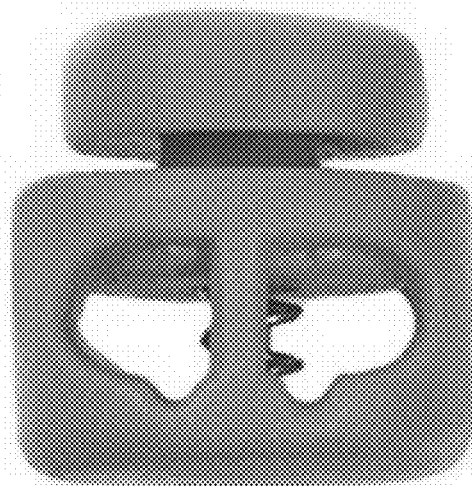


Figure 5D

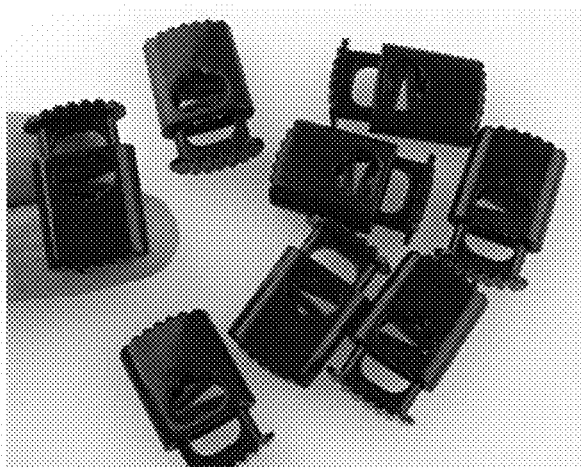


Figure 5E

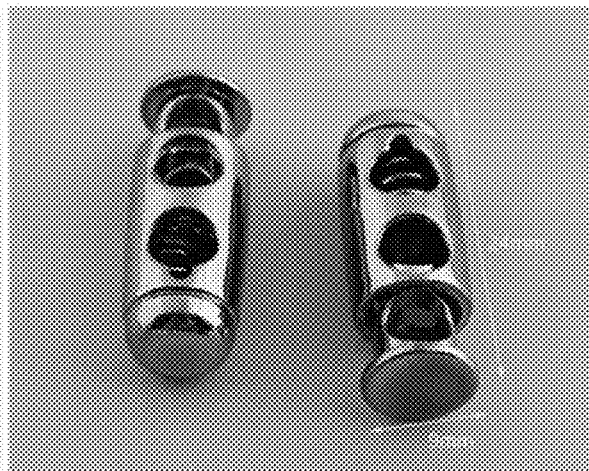


Figure 5F

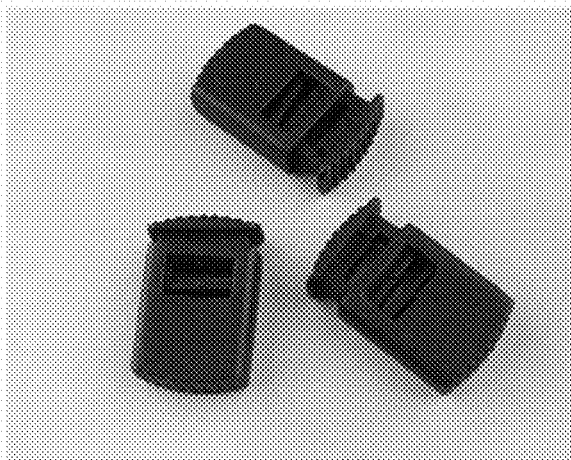


Figure 5G



Figure 5H



Figure 5I



Figure 5J



Figure 5K



Figure 5L

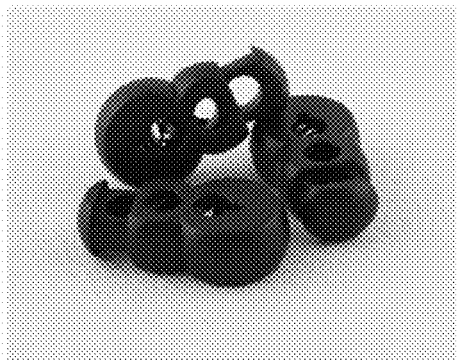


Figure 5M

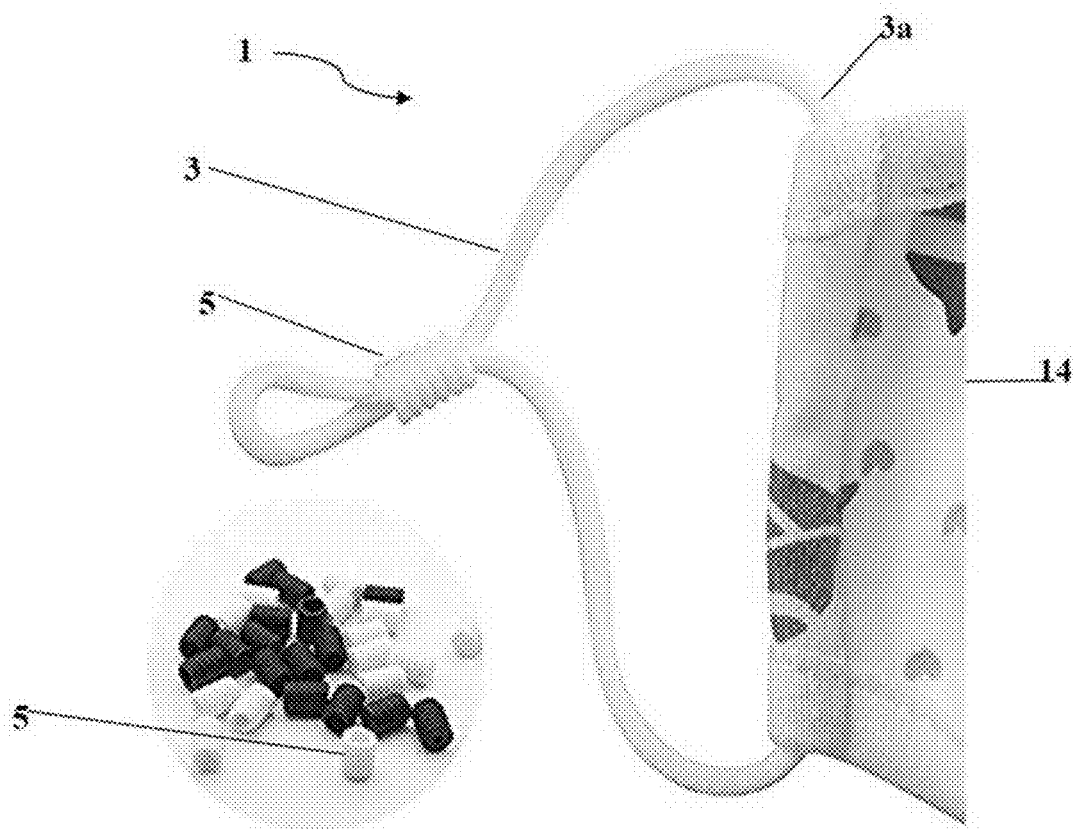


Figure 6A

Figure 6B



FIGURE 7A



FIGURE 7B



FIGURE 7C



FIGURE 7D

FACE COVERING

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] Not Applicable

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

[0002] Not Applicable

FIELD OF THE INVENTION

[0003] This invention relates to the field of face masks generally, but more particularly to face masks worn in the context of aiding in the reduction and/or prevention of (a) inhalation of particulate matter by the wearer and/or (b) the inhalation by the wearer and/or dissemination by the wearer of droplets emanating from the nose and/or mouth of others or of the wearer, respectively. The field of the invention also relates to drawstring locks used in clothing.

BACKGROUND OF THE INVENTION

[0004] Facial masks are worn in multiple contexts, from industrial applications, in the construction and other industries, in household and hobbyist applications, disaster search, rescue, and cleanup, to scientific experimentation, and medical fields, among others. More recently, with world-wide pandemics, even the ordinary person is being encouraged to wear facial coverings (masks) that cover both mouth and nose in an effort to help limit the spread of contagion. Masks that are worn for short periods of time in specific activities and specific industries can and frequently are adequately utilized from the existing range of available masks. However, in the context of the ordinary person being urged to wear masks in a greater portion of the day, a major disadvantage is having masks available for ready use in the rather frequent placing a mask on and taking it off, yet still having it available. In prior times, where wearing masks such as in the health care field, masks were worn when with a patient, discarded and a fresh mask used with the next patient. Due to the large demand for masks caused by a pandemic or other overly large widespread infectious disease, those most in need of such masks are at increased risk of running out of adequate supplies and are being urged to reuse the same mask over the course of a major portion of the day. Such conditions require the mask user to remove and reapply the same mask multiple times per day, especially as the more secure the fit of the mask, the more the mask can irritate the skin with which it is in contact. This further requires mask removal when possible.

[0005] These needs are problematic as frequently health care workers are required to move from situation to situation quickly and cannot always be focused on the masks, especially when they have been used to having a ready supply of fresh mask at the next work station.

[0006] In a similar vein, the ordinary person, not having been used to wearing masks on a daily basis is also frequently less focused on keeping track of their mask for ready availability for use at multiple times during the day.

[0007] In many industrial applications, consumer repair, and hobbyist activity where masks are used, if intermittently wearing the mask and not wearing the mask are needed, the mask is frequently simply pulled off the nose or mouth or both and lowered to under the chin (in whole or in part) or

raised up to above the hairline and allowed to rest there until needing to put it back in place over the nose and mouth.

[0008] Furthermore, many people do not handle their masks appropriately since an especially important point is not touching the portion of the mask that covers the mouth and nose. However, it is quite cumbersome to remove a mask with one hand, which is frequently required when one has other things in their hands. In addition, many masks are not easy to apply properly without touching the portion of the mask that will be covering the mouth and nose. In addition, it is important to refrain from exposing the mask body surface that is placed up against the mouth and nose from being exposed to the very things that the mask is trying to prevent from being inhaled or when trying to prevent release of droplets from the wearer's nose or mouth from exposing that surface to the general exterior environment.

OBJECTS OF THE INVENTION

[0009] It is therefore an important object of certain embodiments of the invention to provide a mask that can be readily removed from the face without the use of two hands and without having to touch the portion of the mask that will cover the mouth and nose.

[0010] It is another object of certain embodiments of the invention to provide a mask that can be taken off of the face and readily retained with the wearer without having to touch any part of the mask that covers the face so as to allow for the mask being readily available for reuse.

[0011] It is still another object of the invention to provide a mask that can be reapplied without having to touch the portion of the mask that covers the mouth and nose.

[0012] Yet further objects of the invention will be apparent to those of ordinary skill after reading the entire Specification.

BRIEF SUMMARY OF THE INVENTION

[0013] The foregoing objects are surprisingly achieved by a mask body having attached thereto at least a neck loop attached to the mask body for allowing the mask to rest freely on the wearer's chest when in a non-use position, and which can either (a) optionally be adjusted to tighten the neck loop to bring the mask into an in-use position, and/or optionally (b) has either ear loops or head loops which can be placed around the ears or head respectively to fix the mask body into the in-use position. In the case of the mask having either ear loops or head loops, the neck loops can, but need not be capable of being tightened and if capable of being tightened may or may not be as desired. When the mask body has head loops (bands that go from one portion of the mask body around the head when worn in the in-use position to another portion of the mask body) these may be elastic or non-elastic, but in order to avoid a multitude of sizes, these should be adjustable if not elastic, and may be adjustable, even if elastic in nature. When the mask has earloops these may be either elastic or non-elastic in nature, but if non-elastic should also be (and if elastic may be) adjustable in order to avoid a proliferation of multiple sizes. In general, one or more of the head loops, ear loops, and neck loops can be used to secure the mask into an in-use position in which the mask is covering the wearer's mouth and nose. The mask body when a generally rectangular shape, generally has a top edge, a bottom edge, a left edge, and a right edge along the periphery of the mask body and

a generally horizontal dimension along the top and bottom edges and a vertical dimension along the right and left edges. The neck loop(s)/drawstrings are attached either along (or near) the right and left edges (one end of the loop at or near the right edge, the other end at or near the left edge, or if not a loop, but a pair of individual drawstrings, then one each individually attached to the left edge and right edge, respectively) in the region at or near the top edge or if desired along the right or left edges, respectively in the first half of the vertical dimension starting from the top edge. It is important that the attachment point for the neck loop (or the drawstrings when used) to be no further down the vertical dimension than $\frac{1}{2}$ of the vertical dimension so that when lying free in the non-use position, the surface that will be in contact with the mouth and nose when in an in-use position, will not be facing out to the external environment, but will be facing toward the chest of the wearer. The optional (optionally elastic) drawstrings or ropes (and optionally the neck loop) are optionally threaded through an appropriately sized drawstring clasp which drawstrings or rope in a first position is sufficient to allow one to put the mask on one's chest and place the drawstring lock on the back while placing one's head simultaneously therebetween and between the left edge drawstring and the right edge drawstring, and then by gripping a portion of the drawstring that is more remote from the mask than the drawstring lock is in one hand and releasing the pressure of the drawstring lock on the drawstrings with the other, one can move the drawstring lock to a second position which is close to the back of the neck or back of the head and draws the mask into position. In addition, for a mask that is in place over the nose and mouth, the user can release the drawstring lock pressure on the drawstrings and while so released, move the drawstring lock to a more remote position from the mask, allowing the mask to ease away from the face and come to rest against the chest with the in-use environmentally facing surface remaining as the environmentally facing surface when resting in the non-use position so as to have it readily available for reuse. Mask bodies having contours to more closely track facial features have the same general features.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] FIG. 1 shows a front view of basic 3-ply commercially available disposable mask that has been modified in accordance with an embodiment of the present invention.

[0015] FIG. 2 shows a front view of a commercially available N95 mask that has been modified in accordance with one embodiment of the present invention.

[0016] FIGS. 3A and 3B, respectively show a front and rear view of a currently available N95 mask having an alternate arrangement for securing the mask to the head using ear-loops.

[0017] FIGS. 4A and 4B, respectively show a front (FIG. 4A) and rear (FIG. 4B) view of an embodiment of the invention using an N95 mask having no fixed ear loops and no fixed head bands or loops, but only drawstrings.

[0018] FIGS. 4C and 4D, respectively show a front (FIG. 4C) and rear (FIG. 4D) view of an embodiment of the invention using an N95 mask having fixed ear loops and a neck loop, but no fixed head bands or loops.

[0019] FIGS. 5A through 5M show some of the variously shaped drawstring locks that are suitable for use in the present invention.

[0020] FIG. 6A depicts an alternative drawstring lock that can be used in the present invention.

[0021] FIG. 6B shows the vertical edge of a cloth mask body with an adjustable ear fabric ear loop having an alternative drawstring lock if FIG. 6A in place on the ear loop.

[0022] FIGS. 7A through 7D show alternative masks that have been modified in accordance with one or more embodiments of the present invention and are within the scope of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0023] The present invention is an improved mask for covering the mouth and nose to aid in the prevention of inhalation of particulate matter and to act as a partial barrier in the transmission from host to host of infectious droplets that may be expelled in the course of a day from the mouth or nose of an infected individual who wears the mask, and as a partial barrier from inspiration of infectious droplets expelled from the mouth or nose of another, whether such other party is wearing a mask of the invention, a different mask not of the present invention, or no mask at all. The improvement is in the addressing of the difficulty of maintaining a suitable mask at hand without having to handle the portions of the mask itself that actually cover the nose and mouth in potentially removing and replacing the mask over the mouth and nose, and not having to find a suitable container to insert the mask into a suitable container while not having the mask in place. The present invention addresses these issues in a number of inter-related manners that are individually or in combination applied to mask designs currently available in the market, and which may further eliminate one or more of the currently used manners of affixing the masks in place on the face. The present invention also presents an improvement in that the masks of the invention, when moved to a non-use position, lay against the chest of the wearer in a manner that the environmentally facing surface (that not coming in contact with the mouth and nose of the wearer when in an in-use position) remains environmentally facing when moved to the worn non-use position.

[0024] In a simple disposable mask of the invention such as shown in FIG. 1, the mask 1 comprises a mask body 4, which is intended to cover both mouth and nose when properly in place on a user when in an in-use position, and two ear loops 3, one each for being placed around a right and a left ear of the user, and the improvement of the present invention, which for the FIG. 1 embodiment is a neck loop 2, so that the mask 1 is held in place on the face (in a "primary in-use" position) when in use and allowed to hang loosely from the neck ("secondary use position") of the user (by the neck loop 3) when one wishes to remove the mask from the face. This allows the user to easily remove the mask 1 from the face without risk of dropping the mask 1 or fumbling for a container to put it in and not having the mask 1 in uncomfortable positions. From the secondary use position, one can readily grasp the ear loops 3 and place them back over the ears to re-secure the mask 1 in place in the primary in-use position without having to remove the mask 1 from a carrying case or pocket and without having any need to touch the mask body 4 with the fingers.

[0025] While the embodiment shown in FIG. 1 shows mask body 4 as being rectangular in shape when viewed

from the front (i.e. the environmentally facing surface **14** when in the in-use position), the mask body **4** can be of any desired size and shape that is consistent with covering the mouth and nose of the user simultaneously. Thus masks **1** that are more form-fitting to the human face and which more effectively secure off the flow of particulates and droplets from the user into the environment and from the environment into the mouth or nose of the user may have further benefits. Each of such more form-fitting masks, when adapted to have the neck loop **2** or drawstrings **2a** as shown in FIGS. **3** and **4** are also within the present invention.

[0026] The mask body **4** can be constructed from any suitable material that can act as a filter to help prevent passage of variously sized particulates and droplets from passing from the environment into the mouth and nose of the user (or to help resist passage of droplets from the mouth or nose of the user) when the mask **1** is properly in place in the primary in-use position while still permitting what would be considered normal breathing, breathing which is neither strained or difficult for the average user who does not have an impaired lung function. Different reasons for use will require different levels of filtering capability and such are well known to those of ordinary skill in the construction of masks for differing purposes. For example, a mask for use for allergy sufferers to avoid inhalation of pollen has different requirements than for industrial construction personnel dealing with asbestos particles, yet each such masks can be adapted to the various aspects of the present invention and thus, as adapted, are within the scope of the present invention. Mask body **1** materials can include synthetic and natural materials. Various grades of paper as well as cloth and other materials can be used, either alone or in combination. For example, a suitable cloth mask body **15** is seen in FIG. **6B**.

[0027] The ear loops **3** are generally of elastic material and are of a size that the elastic needs to be slightly stretched to go over the users ears. Thus when so placed, the elastic pulls the mask **1** somewhat snug against the face. In some masks, elastic bands are not used for the ear loops **3**, but rather these are made of cloth or other non-elastic materials. In these cases, there have been masks **1** that have the ear loops pulled through barrel clasps **5** (shown in FIGS. **6A** and **6B**). The barrel clasps **5** can be used to shorten the loop size of the ear loops **3** to make the mask fit the individual user better, and also to allow for use of single size ear loops **3** for masks **1** for different sized individuals and particularly for use in children without having to manufacture different sized masks **1**.

[0028] The ear loop **3** attachment points **6** are generally located near the four corners of the rectangular mask body **4** shown in FIG. **1**. However, the exact positions are not critical in the vertical positioning with respect to the top and bottom (as seen in FIG. **1**). Notwithstanding, the foregoing, the positioning of the ear loop **3** attachment points **6** is more generally near the right edge **13** or left edge **12** so as to not result in excess mask body **4** not serving any function. As alternatives to having ear loops **3** and ear loop attachment points **6**, the mask body **4** can be constructed such that a ring of ear loop material **3a** can be used where a portion of the mask body **4** encloses a portion of the ear loop material **3a** as is shown in FIG. **6B**.

[0029] The neck loop **2** can be of any suitable material to serve as a loop from which the rest of the mask **1** can hang on the neck of the user (the secondary non-use position

mentioned above). Such materials include natural or synthetic materials such as without limitation, string, twine, rope, nylon, polyester, etc. In embodiments such as in FIG. **1**, the neck loop **2** attachment points **7** are near or at the top left and top right corners of the mask body **4**. However, in other embodiments, they can be placed at slightly more central positions along the top edge **10** of the mask body **4** or can be placed at various points along the top half of the left edge **12** and the top half of the right edge **13** of the mask body **4**, as may be desired. The neck loop may, where desired be passed through a barrel clasp **5** analogously to that discussed above for the ear loops to allow for one to tighten the neck loop **2** when the mask **1** is placed in the in-use position. However, the use of a barrel clasp **5** is cumbersome for this purposes and is more suitably replaced by a drawstring button clasp **8**. In instances where it is desired to tighten and loosen the neck loop **2**, it is acceptable to thread the neck loop through either an appropriately sized barrel clasp **5** or drawstring button clasps **8**. Alternatively, the neck loop **2** can be replaced by a pair of neck drawstrings **2a** and have the neck drawstrings **2a** threaded through a drawstring button clasp **8** or barrel clasp **5**. Once so threaded the drawstring button clasp **8** or barrel clasp **5** can be used to make the loop formed by the mask body **4**, the two neck drawstrings **2a**, and the drawstring button clasp **8**/barrel clasp **5**, tighter or looser by simply moving the barrel clasp **5** along the neck loop **2** or drawstrings **2a**, or alternatively depressing the button of the drawstring button clasp **8** and moving the drawstring button clasp **8** along the neck drawstrings **2a**. The tightening movement requires the use of two hands, but the loosening operation only requires one hand to operate the drawstring button clasp **8** and pull it along the neck drawstrings **2a** away from the head. Various non-limiting shapes and sizes of commercially available drawstring button clasps **8** are shown in FIGS. **5A** through **5M**.

[0030] In other embodiments of the invention, the above elements may be used to modify all other known face masks **1** and such modified masks **1** are considered part of the present invention.

[0031] Another embodiment, is shown with respect to an N95 mask in FIG. **2**. However, it should be understood that the inventive features described for this embodiment can also be applied to any known mask to arrive at certain embodiments of the present invention. In this embodiment, the mask **1** (shown as an N95 mask, but can be any mask) has the mask body **4** and instead of the ear loops **3** (as in FIG. **1**) has two head loops **9** to secure the mask **1** in place over the face. In place of the neck loop **3** of the embodiment in FIG. **1**, the embodiment in FIG. **2** has two neck drawstrings **2a** and a drawstring button clasp **8** through which the ends of the drawstrings are drawn. When there is no pressure on the button of the drawstring button clasp **8**, the drawstring button clasp **8** holds tight on the two neck drawstrings **2a**. When the button of the drawstring button clasp **8** is depressed, the pressure is relieved and the neck drawstrings **2a** can be moved therethrough to result in a loop comprising the mask body **4**, the two neck drawstrings **2a**, and the drawstring button clasp **8**, which loop can be made of smaller size (to aid in fixing the mask **1** into the primary in-use position) and of larger size (to move the mask **1** into the secondary non-use position or for removal of the mask **1** entirely). In an alternative, the two neck drawstrings **2a** can be replaced by a single neck loop **2**, onto which a drawstring button clasp **8** can optionally be threaded such

that the left half and the right half of the single neck loop can be drawn through the drawstring button clasp **8** simultaneously in an analogous fashion to that described above in this paragraph for the two neck drawstrings **2a**. Various drawstring button clasps known in the art as shown in FIGS. **5A-5M**. Barrel clasps known in the art are shown in FIGS. **6A-6B**.

[0032] FIG. **3A** shows a front view of an N95 mask of the art having two ear loops. FIG. **3B** shows the rear view of the mask of FIG. **3A**. FIG. **4A** shows a mask of the instant invention with respect to such N95 masks, while FIG. **4B** shows the rear view of FIG. **4A**. As noted in FIGS. **4A** and **4B**, the shown invention embodiment utilizes the neck drawstrings **2a** and eliminates all of the ear loops **3** and all of the head loops **9**. As stated with other embodiments of the invention, this embodiment is not limited to an N95 mask body **4**, but is also applicable to mask bodies **4** in general, without limitation. However, this embodiment is best suited with stiffer mask materials that are shaped to more closely contour to the face so that a single neck loop **2** or a single pair of neck drawstrings **2a**, each with either a barrel clasp **5** or drawstring button clasp **8** is sufficient. When all of the ear loops **3** and all of the head loops **9** are eliminated, the use of the barrel clasps **5** or the drawstring button clasps **8** are required; and in such situations, the attachment points for the neck loop **2** or the single pair of neck drawstrings **2a** are approximately at the midpoint between the top and bottom of the mask body **4** along each of the left edge **12** and right edge **13** thereof; or are slightly above the midpoint so as to effectively hold the mask **1** in place on the face in the primary in-use position when the barrel clasp **5** or drawstring button clasp **8** is used to tighten the mask **1** into the primary in-use position.

[0033] As stated previously, in embodiments having a single neck loop **2** or a single pair of neck drawstrings **2a**, and not having either earloops **3** or headloops **9**, the attachment points for such (attachment points **7**) need to be at the center of the left edge and at the center of the right or just slightly closer to the top edge **10** because the neck loop **2** or the neck drawstrings **2a** function to keep the mask **1** in place in the in-use position, and simultaneously function to keep the mask **1** in its proper orientation when in the non-use

position (i.e., keeping the surface that will be in contact with the mouth and nose of the wearer from facing the outward environment when being worn in the non-use position. In other embodiments, where ear loops or head loops are present, the neck loop **2** and the neck drawstrings **2a** do not need to function so as to hold the mask **1** in place in the in-use position, and therefore, the placement of these attachment points **7** are less tied to the center of the left edge **12** and center of the right edge **13** and can be varied more widely over the top half of the left edge **12** and top half of the right edge **13**, and somewhat along the top edge **10**.

1. A mask comprising a mask body, said mask body designed to cover the nose and mouth of a user of said mask when said mask is in a primary in-use position on the face of said user of said mask, said mask further comprising

(a) a neck loop, optionally in the absence of or in conjunction with a clasp, or

(b) a pair of neck drawstrings in conjunction with a clasp; said clasp being selected from a barrel clasp and a drawstring button clasp said mask having a top edge, a bottom edge, a left edge, and a right edge defining said mask body.

2. The mask of claim **1** wherein said mask body is a paper mask, a cloth mask, or an N95 mask.

3. The mask of claim **1** wherein said mask further comprises two ear loops or two ear loop rings.

4. The mask of claim **1** wherein said mask further comprises one or two head loops.

5. The mask of claim **1** further comprising:

(a) a pair of ear loops, the ear loops formed by a portion of ear loop material attached at each end to a portion of said mask body or a pair of rings of ear loop material, one for each of said left edge and said right edge wherein a portion of one of said rings of ear loop material is encased in said mask body material at said left edge and a portion of the other of said rings of ear loop material is encased in said mask body material at said right edge; or

(b) one or more head loops; or

(c) both

said ear loops and/or said head loops designed for securing said mask body to the face of a user of said mask.

* * * * *