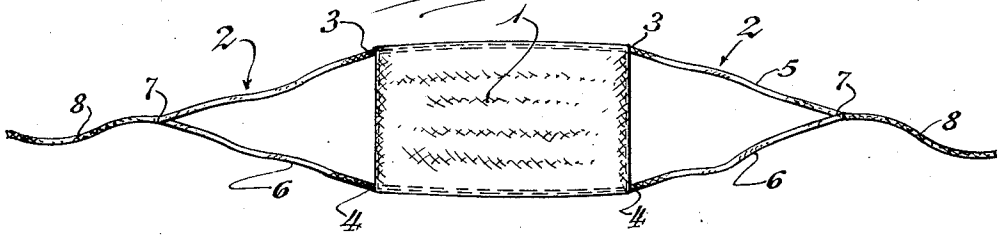
Sept. 22, 1959 R. J. WOLD 2,905,173

SURGICAL MASK

Filed Sept. 25, 1958

Fig. 1.



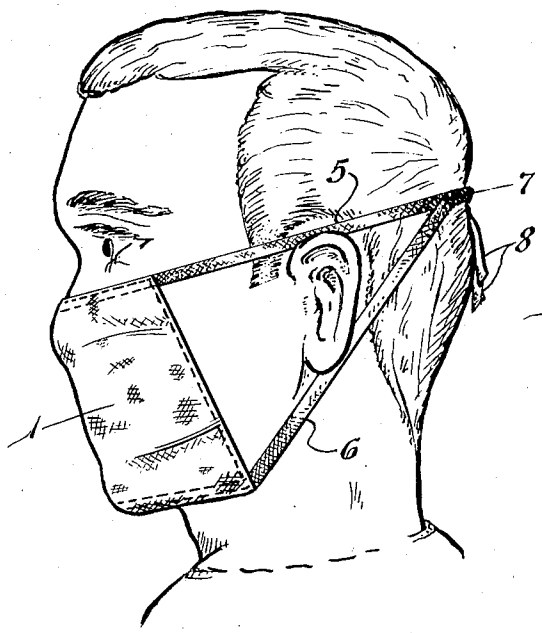
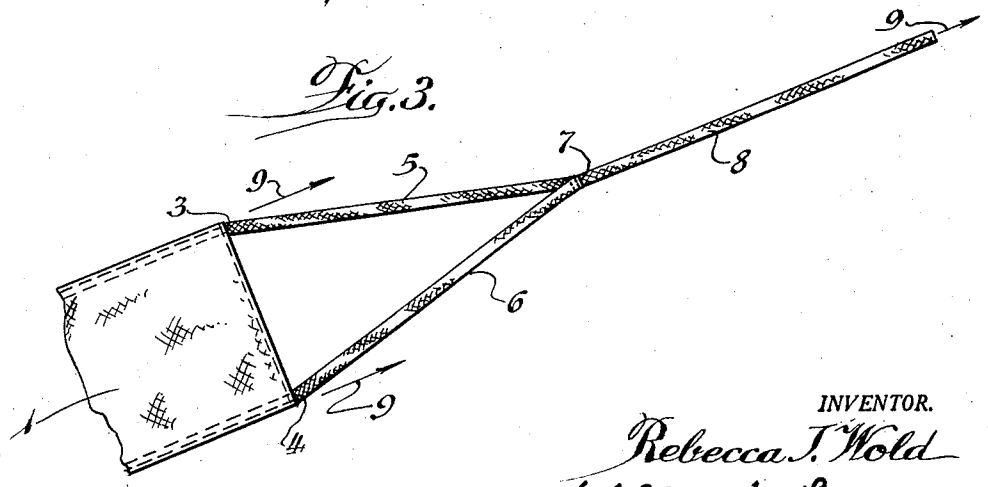


Fig. 2.

Fig. 3.



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United States Patent Office 2,905,173 Patented Sept. 22, 1959

2,905,173

SURGICAL MASK

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Application September 25, 1958, Serial No. 763,239

1 Claim. (Cl. 128—146)

The present invention relates to a new and improved type of surgical mask of the type worn by surgeons, nurses and similar persons in maintaining aseptic conditions and preventing infections from breath-borne bacteria during surgical and the like procedures.

The type of surgical mask most widely used heretofor consisted of a generally rectangular portion of finely woven surgical gauze or the like material which covered the mouth and nose of the wearer in such a fashion as to allow the wearer to breathe, but being of a fine enough mesh as to trap breath-borne bacteria. Masks of this type are most often secured to the face of the wearer by four fabric cords or tapes, each of which is attached to one of the corners of the rectangular face-covering portion. In putting on such a mask, the two tapes attached to the corners of opposite sides of the nose-covering portion each pass over an ear of the wearer and are tied together at the back of the head, while the two remaining tapes of the mouth-covering portion each pass under an ear and are tied together at the back of the neck.

Although generally adequate, a mask of the above type has a number of distinct disadvantages. First, if the two tapes passing over the ears of the wearer are tied high enough on the back of the head to avoid the ears completely, a resultant upward force is thereby produced on the nose-covering portion of the mask which is greater than that acting downwardly on the mouth-covering portion. The natural movement of the wearer's face, especially the lower jaw during conversation, almost inevitably causes the mask to "ride up," so to speak, on the wearer's face. This not only tends to uncover the wearer's mouth, which defeats the aseptic purpose of the mask, but also interferes markedly with the wearing of spectacles. Since proper aseptic surgical technique prohibits touching the face mask with the hand, such as would be required in pulling it down, the inconvenience of this undesirable upward movement of the mask can readily be appreciated.

If, on the other hand, the tapes on the nose-covering portion of the mask which pass over the wearer's ears are tied together low enough on the back of the wearer's head to prevent this upward movement of the mask, the tapes inevitably rub on the top of the wearer's ears. This is not only an inconvenience, but in long involved surgical procedures can cause considerable discomfort and, indeed, even actual trauma to the wearer's ears.

Another disadvantage inherent in the surgical masks used heretofor is the difficulty encountered in providing a tight seal between the sides of the mask and the face of the wearer. In the above-described conventional mask wherein two of the tapes are tied at the back of the head and the other two at the back of the neck, the tension on the corners of the face-covering portion of the mask tends to be in relatively dissimilar directions. This not uncommonly results in an out-pouching of the sides of the mask which provides an open means of communication between the wearer's air passages and the ambient atmosphere. The manner in which this obviates the breath-filtering action of the mask is apparent.

In the instant invention the above-noted disadvantages have been eliminated by the provision of new and novel means for securing the surgical mask to the face of the wearer. Such means have as their main feature and object a pair of novel, generally V-shaped attaching members, each of which is secured to an opposite side of the mask at the open end of the V. Each of the attaching members is adapted to extend from the mask around an ear of the wearer in such a manner that the apex of the V is disposed behind the ear; and in which means are provided for encircling the back of the wearer's head for uniting one attaching member with its mate from the opposite side.

In this manner all physical contact between the ears of the wearer and the attaching members is avoided.

Another object is the provision of a surgical mask in which the tension on opposite sides of the mask is equal and in parallel directions toward the back of the wearer's head, thus obviating the tendency of the mask to "ride up" on the wearer's face.

A further object is the provision of a surgical mask in which the mask is held in tight but comfortable sealing engagement with the face of the wearer in such a manner as not to interfere with the wearing of spectacles.

Other objects, features and advantages of the present invention will be readily apparent from the following detailed description of a preferred embodiment thereof taken in conjunction with the accompanying sheet of drawings in which:

Figure 1 is a plan view of a preferred form of the instant invention;

Figure 2 is a side view of a preferred form of the instant invention showing it applied to the face of a wearer; and,

Figure 3 is a fragmentary somewhat diagrammatic view of the present invention illustrating the manner in which tension on the mask is directed toward the back of the head of the wearer in a parallel manner.

As shown in Figure 1 of the drawings, the preferred embodiment of the present invention comprises a surgical mask 1, having a generally rectangular face-covering portion produced from surgical gauze, finely-woven cotton or the like material adapted to have a bacteria-filtering action on the breath stream of the wearer.

Means for securing the face-covering portion of the mask 1 over the nose and mouth of the wearer are provided in the form of a pair of generally V-shaped attaching members 2, each secured to an opposite end or side of the mask 1, at the open end of the V, as at 3 and 4.

In the preferred form shown in the drawings each attaching member 2 includes a pair of tapes of substantially equal length produced of cords or flexible tapes 5 and 6, or a suitable fabric or the like material, which are secured at one end to a side of the mask 1, preferably at the corners thereof, as at 3 and 4 respectively. The tapes 5 and 6 extend from the mask 1 in a directly converging manner toward the back of the wearer's neck and have their ends opposite those attached to the mask 1 united together, as at 7, to form the V-shaped ear-avoiding attaching member 2.

The tapes 5 and 6 are of a sufficient length so that the apex 7 of the V-shaped attaching member will be disposed behind the ear of the wearer, as at 7 in Figure 2. With the apex 7 of the attaching member 2 disposed behind the ear of the wearer, one tape, such as 5, will pass over and avoid the ear of the wearer, while the other tape, such as 6, will pass under the ear in such a manner as to avoid the ear completely.

Means are provided for securing the attaching member of one side of the mask to its mate of the opposite side so as to secure the mask 1 to the face of the wearer. In the preferred form shown in the drawings such means include

a tape 8, of material similar to that of tapes 5 and 6, which has one end thereof secured to tapes 5 and 6 at their point of union 7. The tape 8 is of a sufficient length to encircle the back of the head of the wearer and be tied or otherwise suitably united with a similar tape from the attaching member of the opposite side in such a manner as to insure securing tight but comfortable engagement of the surgical mask with the face of the wearer.

Although the means for securing the attaching member 2 of one side to its opposite mate are shown as separate tapes 8 adapted to encircle the back of the wearer's head for tying engagement to one another, it will be obvious that a single elastic or the like band could also be used to effect the same results. Within the scope of such means may be included a tape, slidably attached by a loop or the like to the apex portion of the V-shaped attaching member adapted to be drawn upward in the act of donning the mask. Such an arrangement permits the point of force to be adjusted so as to be directed through the ties and forming a fulcrum for the lower leg of the attaching member at the lobe of the ear.

As seen best in Figures 2 and 3, the novel V-shaped attaching members of the instant invention not only avoid trauma to the wearer's ears, but also provide mask-securing tension on the face-covering portion of the mask which is equal on all corners and directed therefrom toward the back of the wearer's head in such a manner that the lines of force are parallel to one another and to the longitudinal axis and side edges of the mask 1, as shown by the arrows 9 in Figure 3. This parallel direction of tension toward the back of the wearer's head is effected

through the V-shaped attaching members 2, wherein the backward tying tension of tape 8 is transmitted equally through tapes 5 and 6 to the corners 3 and 4. Thus equal, parallel backward tension on the mask 1 allows the edges of said mask to be held in snug fitting conformity to the contour of the face of the wearer without undesirable upward movement of the mask.

It will be understood that various modifications and variations may be effected without departing from the scope of the novel concepts of the present invention.

I claim:

In a surgical mask having a face-covering portion, means for securing said mask to the face of the wearer which comprises a pair of attaching members each being secured to opposite sides of said mask and each including a pair of tapes comprising a first tape attached to said mask and adapted to extend directly therefrom in a downwardly converging, ear-avoiding manner over the ear of the wearer, a second tape attached to said mask and adapted to extend directly therefrom in an upwardly, ear-avoiding manner under the ear of the wearer and united to said first tape at a point behind the ear of the wearer, and means encircling the back of the head of the wearer for securing the attaching member of one side of the mask to its mate of the opposite side.

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