

Oct. 16, 1962

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3,058,463

SURGICAL MASK

Filed Nov. 25, 1959

2 Sheets-Sheet 1

FIG. 1

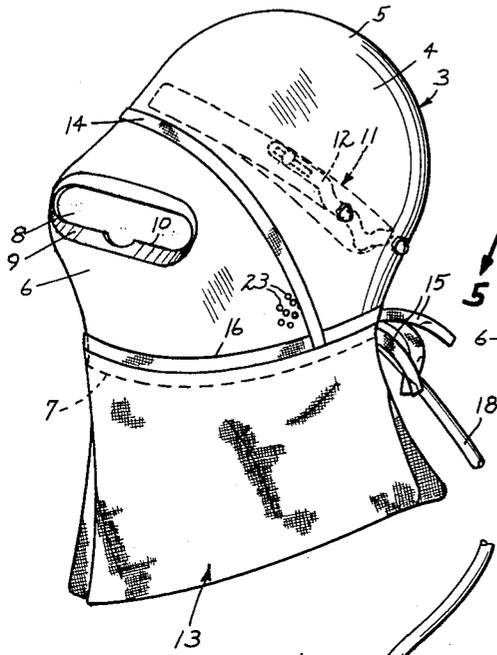


FIG. 4

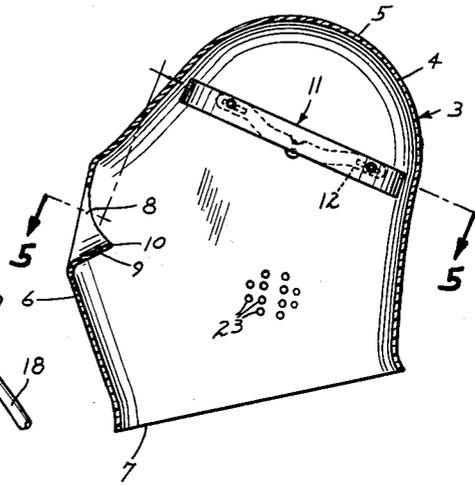
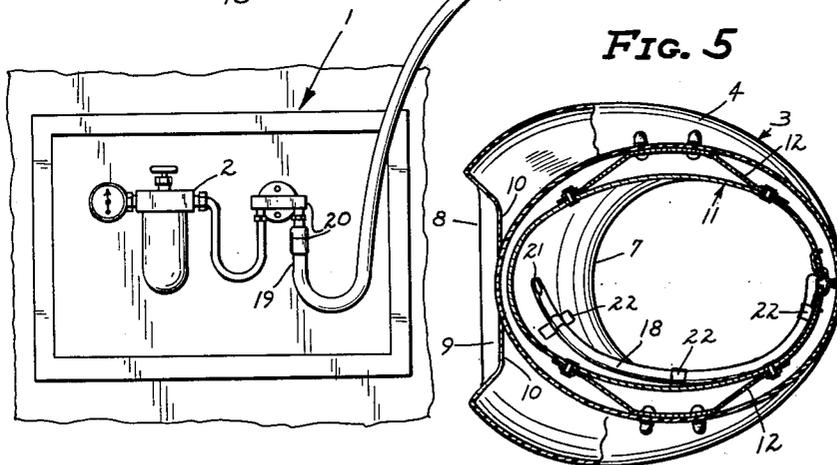


FIG. 5



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FIG. 2

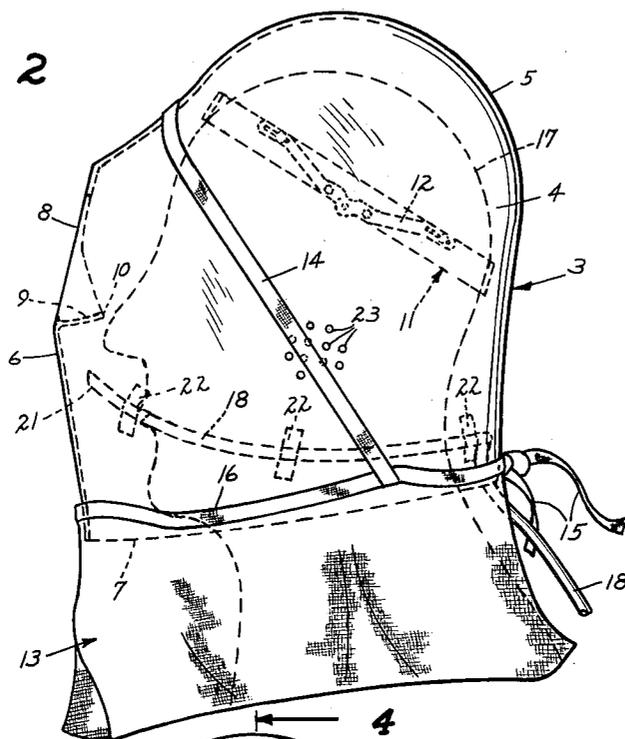
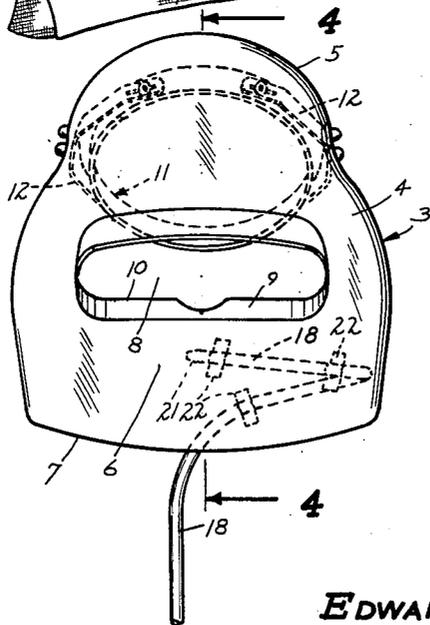


FIG. 3



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3,058,463

SURGICAL MASK

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2 Claims. (Cl. 128-139)

This invention relates generally to masks for surgeons and more particularly to a new and extremely useful device for exhausting the air exhaled by surgery personnel to a space outside the operating room.

The cloth masks commonly worn by operating room personnel have been found to have definite limitations in that their filtering effectiveness, which is questionable from the beginning, becomes greatly reduced or nearly eliminated after approximately one hour of use. The old type cloth mask is also undesirable because it deflects the user's exhaled breath around the perimeter of the mask which in turn causes fogging of eyeglasses worn by the user. The cloth mask is also thought by many users to be uncomfortable since it causes pressure on the nose and other parts of the face.

In view of the above noted limitations of the commonly used cloth mask, and inasmuch as many of the infections by staphylococci, which has become an increasingly serious problem in hospitals and operating rooms, are thought to be traceable to the nasopharynges of the operating room personnel, this invention contemplates a novel device for greatly reducing or completely eliminating the number of wound contaminating bacteria which escape from the respiratory systems of operating room personnel.

A further object of the applicant's invention is the provision of a mask for surgery personnel the effectiveness of which does not decline in the least after an extended period of use.

A further object of my invention is the provision of a mask for surgery personnel which does not create pressure on the nose or other parts of the face and is not otherwise uncomfortable to the wearer and which mask also allows free head movement by the wearer.

A still further object of my invention is the provision of a mask for surgery personnel which does not impair the sight of the wearer, and which also allows the wearer to wear eyeglasses without interference from the mask in any way.

A further object of my invention is the provision of a mask for surgery personnel which because of the constant ingress of fresh operating room air into the facial portion of the mask provides inspired air that is less humid and stale than that inhaled from behind and through a cloth mask. This gives the added advantages of providing a refreshing draft which makes the face cooler, and also prevents the fogging of eyeglasses if worn of the user of the mask.

A further object of my invention is the provision of a mask for surgery personnel which is extremely strong and durable, and at the same time is light in weight and can be inexpensively produced.

The above and still further objects of my invention will become apparent from the following detailed specification, appended claims and attached drawings.

Referring to the drawings wherein like characters indicate like parts throughout the several views:

FIG. 1 is a perspective view showing the invention assembled for use;

FIG. 2 is an enlarged view in side elevation;

FIG. 3 is an enlarged view in front elevation;

FIG. 4 is a vertical sectional view taken on the line 4-4 of FIG. 3; and

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FIG. 5 is a horizontal sectional view taken on the line 5-5 of FIG. 4.

Referring with greater particularity to the drawings, the reference numeral 1 represents generally air circulating means having a sub-atmospheric pressure inlet 2 and an outlet, not shown, exhausting to space outside the operating room.

The reference numeral 3 represents the surgical mask in its entirety. The body of the mask comprises a relatively rigid hood 4 which may be molded from any suitable material, but preferably and as shown from a transparent sheet material such polystyrene plastic. The hood 4 has a generally hemispherical cranial portion 5 and an enlarged facial portion 6 which is contiguous with said cranial portion 5 to form a lower marginal endless edge 7 on said hood 4. The facial portion 6 has a generally rectangular air and sight opening 8. The longer dimension of said opening 8 extends generally horizontally and is of a length greater than the distance between the eyes, and its width is substantially less than its length. Said opening 8 has an inwardly turning flange 9 around its lower limits which extends toward but does not touch the face of the wearer thereby providing a generally horizontal incoming air directing flange and barrier beneath which the bridge of the nose of the wearer extends in use (FIG. 2). The opening 8 is thus disposed so that its lower portion is slightly upturned and terminates in rear edge portions 10 separated by an intermediate notch above the horizontal plane of the nostrils of the wearer all as is clearly shown in FIGS. 2, 3 and 4 of the drawings.

As shown, the hood 4 is also provided with an adjustable annular head band 11 which is slidably secured within said cranial portion 5 of the hood 4 by a pair of brackets 12 which allow the band 11 to adjust to the contour of the head of the particular wearer.

Snugly embracing and depending from the lower edge 7 of said hood 4 is a detachable bib-like flexible skirt 13 which is provided with suitable means for attaching it to the hood 4; said means preferably and as shown comprising a strap 14 to be disposed in the area between said cranial portion 5 and said facial portion 6 and a pair of tie strings 15 depending from the upper edge 16 of the skirt 13. After said strap 14 has been placed in position, the skirt 13 is draped around the lower edge 7 of the hood 4 and said tie strings 15 are securely tied so as to snugly secure said skirt 13 about the hood 4. The skirt 13 is then received under the collar of a surgical gown, not shown, of the wearer 17.

Also provided is a long flexible exhaust tube 18, one end 19 of which is connected by a suitable connector 20 to said sub-atmospheric pressure inlet 2. The inlet end 21 of said tube 18 is removably secured by any suitable means such as clips 22 or with tape, not shown, within the facial portion 6 of said hood at a position below the plane of the wearer's nostrils, preferably at the level of the mouth.

Provided on both sides of the hood 4 in spaced relationship to the ears of the wearer are a plurality of small apertures 23 which allow the wearer to hear better while wearing the mask.

The applicant's novel mask is extremely easy to put on and remove. After the head band 11 is adjusted to correspond to the wearer's head size, the hood 4 is lowered over the head with the facial portion 6 located in front of the wearer's face. After the skirt 13 is placed in position, as above described, and the surgical gown, not shown, is donned in the usual manner, the exhaust tube 18 is placed in position and connected to the vacuum source or air circulating means 1. The tube 18 must be

of sufficient length to permit the wearer to move freely about the operating room.

This invention has been thoroughly tested and found to be completely satisfactory for the accomplishment of the above objects; and while I have shown a preferred embodiment thereof, I wish it to be specifically understood that same is capable of modification without departure from the scope and spirit of the appended claims.

What I claim is:

1. A surgical mask for use by surgeons and surgeons attendants in an operating room having air circulating means with a sub-atmospheric pressure inlet and an outlet exhausting to space outside the operating room, said mask comprising a removable head enclosing relatively rigid hood having a cranial portion and an enlarged facial portion which is contiguous with said cranial portion to form a lower marginal endless edge, said facial portion having an air inlet and sight opening the lower portion of which is provided with an inturned generally horizontal flange disposed above the horizontal plane of the nostrils of the wearer and terminating adjacent the wearer's face whereby to provide an incoming air directing barrier beneath which the bridge of the wearer's nose extends, an adjustable head band, brackets slidably securing said head band within said cranial portion, a detachable bib-like flexible skirt snugly embracing and depending from said lower endless edge to be received under the collar of the surgical gown, and a long flexible exhaust tube one end of which is connected to said sub-atmospheric pressure inlet and the other end of which is removably secured within said facial portion of said hood below, said air and sight opening at a position below the plane of

the incoming air directing flange and adjacent the wearer's nostrils.

2. A surgical mask for use by surgeons and surgeons attendants in an operating room, said mask comprising a removable, head enclosing rigid hood having a cranial portion and an enlarged facial portion which is contiguous with said cranial portion having an air inlet and sight opening the lower inturned flanged portion of which is slightly upturned and disposed above the horizontal plane of the nostrils of the wearer and extending adjacent the wearer's face, an adjustable head band, brackets slidably securing said head band within said cranial portion, a detachable bib-like skirt snugly embracing and depending from said lower endless edge to be received under the collar of the surgical gown, air circulating means with a sub-atmospheric pressure inlet and an outlet exhausting to space outside the operating room, and a long flexible exhaust tube one end of which is connected to said sub-atmospheric pressure inlet and the other end of which is removably secured within said facial portion of said hood at a position below the plane of said inturned flanged portion of the air inlet opening and the wearer's nostrils, and at the general level of the mouth.

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