March 15, 1932. J. E. LEDUC 1,850,016

RESPIRATORY MASK

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Fig. 1

Fig. 10

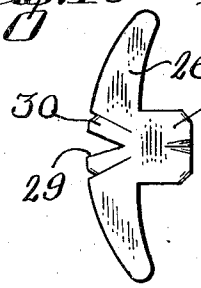


Fig. 11

Fig. 12

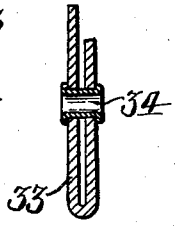


Fig. 8

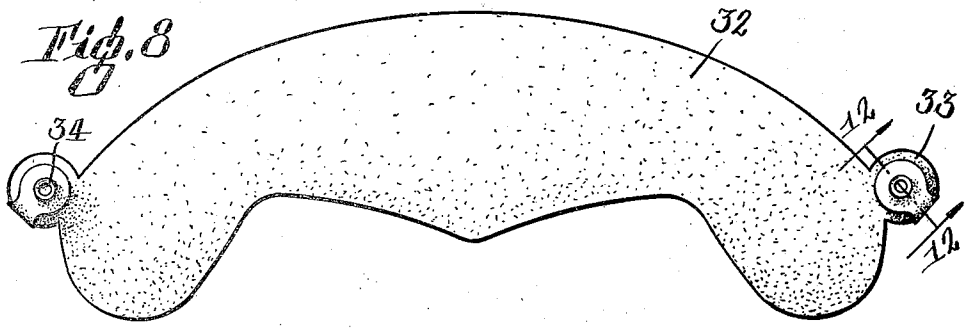
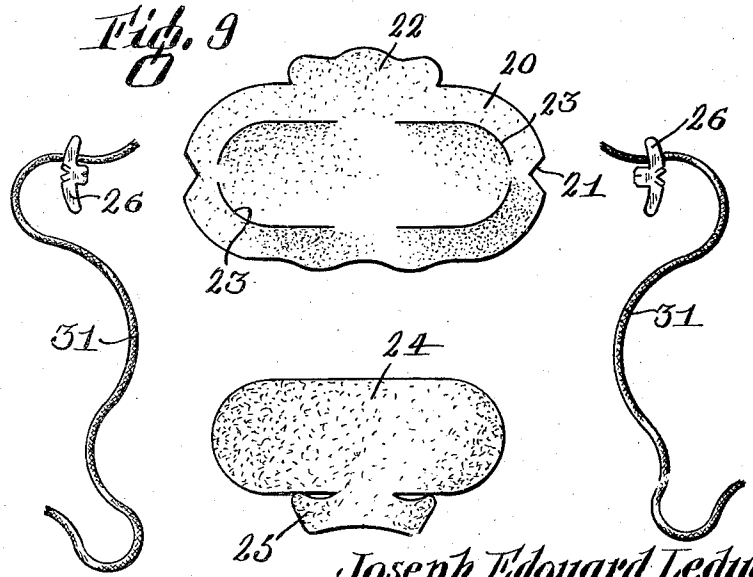


Fig. 9



Joseph Edouard Leduc Inventor

By Marion & Marion

Attorney

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RESPIRATORY MASK

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Fig. 2

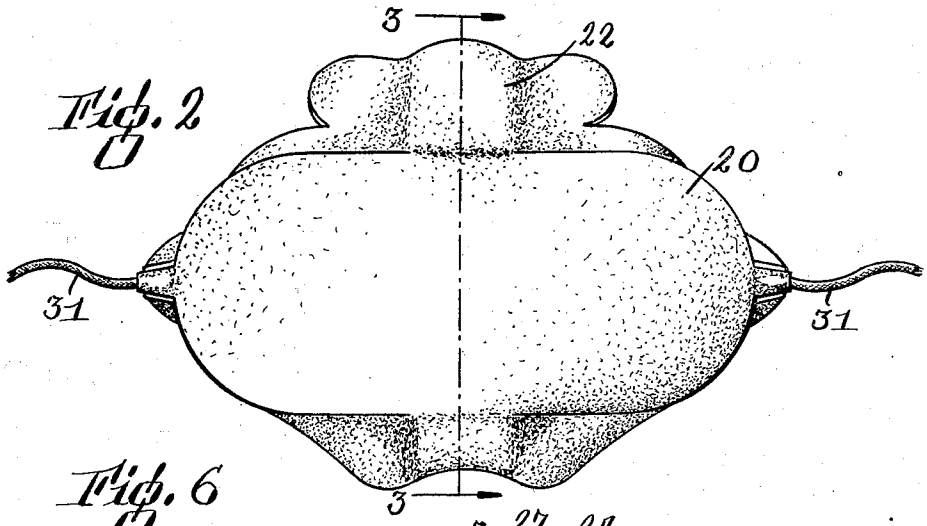


Fig. 6

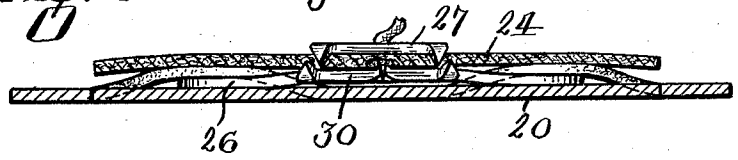


Fig. 3

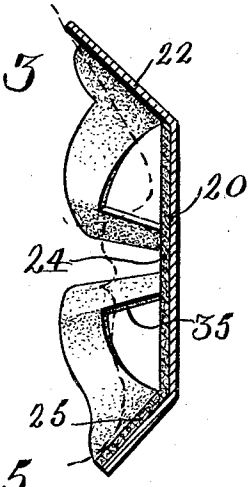


Fig. 4

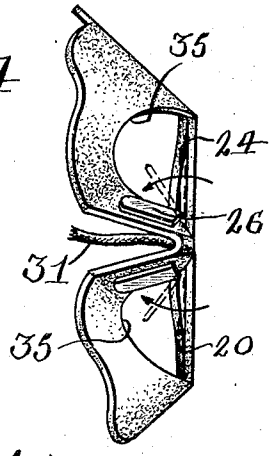


Fig. 5

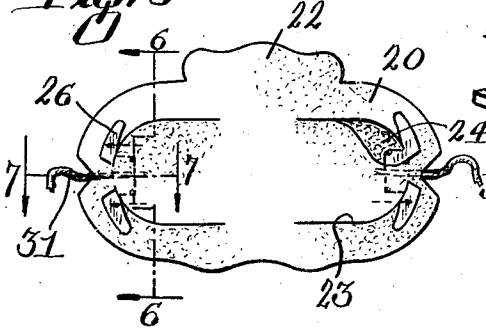
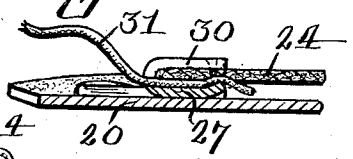


Fig. 7



Joseph Edouard Leduc Inventor

By Marion & Marion

Attorneys

Patented Mar. 15, 1932 1,850,016

UNITED STATES PATENT OFFICE

JOSEPH EDOUARD LEDUC, OF MONTREAL, QUEBEC, CANADA, ASSIGNOR OF ONE-HALF TO PAUL A. DIONNE, OF WESTMOUNT, QUEBEC, CANADA

RESPIRATORY MASK

Application filed January 8, 1930. Serial No. 419,415.

The present invention relates to improvements in respiratory masks and has for its primary object to provide a simple and inexpensive mask which can be conveniently applied to effectively cover and protect the mouth and nose of the wearer.

A further object of the invention is the provision of a respiratory mask of the above character which will be extremely sanitary and which can be manufactured of such material as to be discarded or destroyed after use during a single operation.

Another object of the invention is the provision of a respiratory mask which can be employed in conjunction with a head piece designed to restrain the hair and obviate the same falling over the face of the operator.

Still another object of the invention is the provision of a mask of the above type which will retain its proper form for a suitable period of time and which will be efficient for the purpose intended.

Other objects and advantages of the invention will become apparent as the description progresses.

In the accompanying drawings forming a part of this specification and in which like reference characters are employed to designate corresponding parts throughout the same:

Figure 1 is a fragmentary perspective view showing the mask and head piece disposed in operative arrangement upon the head of a wearer,

Figure 2 is an enlarged front elevational view of the mask in assembled wearing arrangement.

Figure 3 is a transverse section taken on the line 3—3 of Figure 2,

Figure 4 is an end view of the assembled mask,

Figure 5 is a front view of the assembled mask prior to the folding operation,

Figure 6 is an enlarged transverse section taken on the line 6—6 of Figure 5,

Figure 7 is an enlarged fragmentary longitudinal section taken on the line 7—7 of Figure 5,

Figure 8 is a plan view of the hair cord in flat arrangement,

Figure 9 is a plan view of the constituent elements of the mask in flat separated arrangement,

Figure 10 is a plan view of the flat unfolded fastening clips,

Figure 11 is an edge view of the same, and

Figure 12 is an enlarged section taken on the line 12—12 of Figure 8.

Referring to the drawings, wherein for the purpose of illustration is shown a preferred embodiment of the invention, the numeral 20 generally designates the mask forming piece, which is preferably formed of flexible, inexpensive material, such as paper. The mask piece 20 is originally formed in and normally retains, prior to use, a flat condition having a substantially elliptical form provided with V-shaped notches 21 in the ends thereof. A nose covering portion 22 projects transversely from the upper edge at the intermediate portion of the piece, the purpose of which will be later described. The mask piece is cut, at intervals, to form a series of interrupted slits 23 having an arcuate form adjacent the ends and straight parallel extensions at the intermediate portion of the piece so as to define the centre portion in the mask.

Formed so as to be fitted in the mask piece 20 and securely attached thereto is a pad forming strip 24, preferably embodying a strip of absorbent paper having an elongated shape rounded at the ends and conforming to the form of the mask slits 23 so as to assume a position coincident therewith. Projecting transversely from the bottom edge of the pad strip 24 is a longitudinally elongated lip 25, the purpose of which will be hereinafter described.

In order to permit convenient and effective connection of the pad strip with the mask piece, a pair of complementary fastening members 26 are provided, these members being preferably of metallic structure embodying an arcuate body having a transversely extending web 27 disposed at a medial position and provided at the outer edges with laterally projecting pointed prongs 28. At a position opposed to the web 27, the body is cut to form

a V-shaped notch 29 adjacent which the body is formed with slits providing, at the margins of the notch, a pair of outwardly diverging tongues 30 arranged between the side wings of the body and formed with lateral prongs at their outer ends.

For the purpose of retaining the mask on the face of the wearer, are provided two sections of flexible connecting members 31, preferably embodying elastic cords. One end of each cord, in assembly, will be connected with the end portions of the mask through the medium of the fastening clips 26. The opposed end of each cord will be connected with the ends of a head band 32.

The head band 32 is preferably formed from an arcuate strip of paper provided at its ends with transversely projecting ears 33, preferably disposed in doubled arrangement and carrying through aligned apertures a liner sleeve 34, for suitable connection of the fastening cords.

The constituent elements of the mask are originally formed and subsequently stored in flat condition, as shown to advantage in Figures 8 to 12 inclusive, and are preferably packed in a sanitary air sealed container.

When required for use, the elements are assembled by initially attaching the fastener clips 26 to the pad member 24. This is accomplished by placing the web of each fastener over the end portion of the pad and bending the tongues 30 into doubled arrangement in opposed position on the opposite side of the pad, the prongs 28 carried by the web and tongues being firmly pressed into the pad to prevent disconnection of the fastener. Thus, the intermediate portion of the fastener elements will be tightly clamped over the ends of the pad strip while the side body wings will project beyond the end thereof. During the connection of the fastener with the pad strip, one end of each of the cords 31 is compressed between the doubled portions of the clips to securely attach the same to the pad.

The pad strip and clips are then associated with the mask piece 20 by positioning the pad against the rear side of the mask and disposed so that the edge of the pad strip will coincide with the slits 23 formed for this purpose. The outwardly projecting wings of the fastener 26 are then forced through the end portions of the slits, the V-shaped notch in the fastener coinciding with the end connecting portion between the end strips.

The outer marginal portion of the mask piece 20 is then bent inwardly at an acute angle with the plane of the central portion which retains a straight form, the upper and lower side portions of the piece being folded on parallel creased lines forming a nose and chin cover, while the ends are bent in substantially doubled arrangement with the wings of the clips, as shown in Figures 3 and 4, to form a side wall between the face of the wearer and central body of the mask. By thus folding the marginal portion a plurality of apertures 35 are formed in the ends of the mask, providing indirect openings for proper respiration. Before placing the mask in a mouth and nose covering position on the wearer, the pad strip 24 and lip 25 protruding therefrom are saturated with an antiseptic solution.

As previously stated, the pad strip 24 comprises a lip 25 which is adapted to snugly fit over the lower lip of the wearer, the edge of said lip 25 being furthermore adapted to follow the curve of the chin whereby direct radiation of the breath may be prevented at this point and absorption of the humidity from the mouth be effectually had by means of said absorbent lip 25. Again, this member 25 is useful to prevent direct projection of the saliva of the wearer during talking or otherwise.

One end of each of the side cords 31 is also connected with the eyelet forming sleeves 34 in the ears 33 of the head band 32. The band is disposed on the forehead of the wearer immediately in front of the hair, the band strip being bent longitudinally in arcuate disposition with one edge resting upon the forehead and the band projecting upwardly. The mask is then properly positioned in a nose and mouth covering arrangement and the cords 31 fitted back of the ears of the wearer so as to securely retain the head band and mask in convenient position.

The head band 32 will serve to restrain the hair of the operator, obviating the possibility of the hair falling over the face and obstructing the eyes as well as protecting the same against direct exposure to the respiration of the patient.

The mask will be maintained in a position effectively covering the nose and mouth to obviate any direct forward expiration, or the inspiration of the exhalations of the patient. The antiseptic pad, being placed directly in front of the mouth and nose, will protect the wearer by the destruction of bacteria during the respiration of the wearer.

It is to be understood that the form of my invention herein shown and described is to be taken as a preferred example of the same, and that various changes as to the shape, size, and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims:

Having thus described my invention, I claim:

1. A respiratory mask comprising a substantially flat mask body having a plurality of relatively spaced slits formed at opposite points thereon, a pad of absorbent material positioned upon one face of said body, fastener means carried by portions of the pad

and passed through the spaced slits on the body to extend upon the other face of the latter for retaining the pad thereon, and means fixed to the pad by said fastener means for securing the mask in position upon the wearer.

2. A respiratory mask comprising a substantially flat body of flexible material and having relatively spaced slits formed at opposite points thereon defining a central and marginal portion, the marginal portion of said body being adapted to be bent in relation to the central portion to constitute a nose and mouth covering, and the slits in said body forming apertures with the bending of the marginal portion in relation to the central portion of the body.

3. A respiratory mask comprising a substantially flat body of flexible material and having relative spaced slits formed at opposite points thereon defining a central and marginal portion, upon the latter, the marginal portion of said body being adapted to be bent in relation to the central portion to constitute a nose and mouth covering, the slits in said body forming apertures with the bending of the marginal portion in relation to the central portion of the latter, and semi-rigid clips associated with said body and bendable in clamping position upon the latter to retain the marginal portion in bent relation to the central portion of the same.

In witness whereof I have hereunto set my hand.

JOSEPH EDOUARD LEDUC.