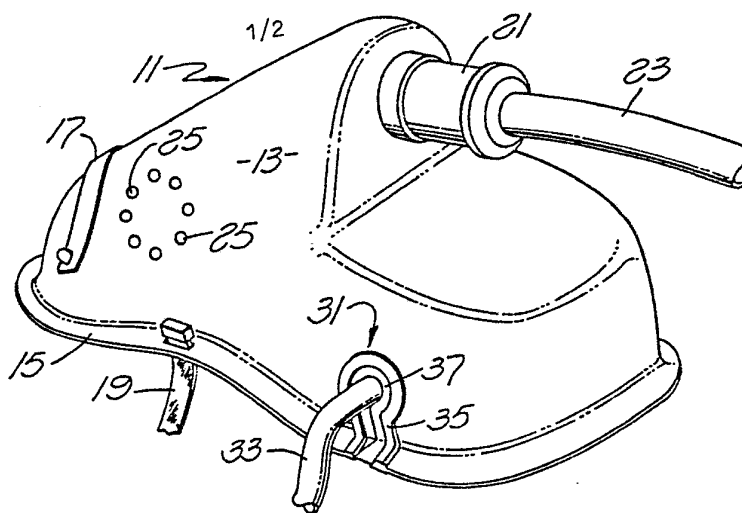




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ³ : A61M 16/00	A1	(11) International Publication Number: WO 82/00254 (43) International Publication Date: 4 February 1982 (04.02.82)
<p>(21) International Application Number: PCT/US80/00946</p> <p>(22) International Filing Date: 21 July 1980 (21.07.80)</p> <p>(71) Applicants; and (72) Inventors: ROLLINS, Offord, L. [US/US]; WILLIAMS, Anthony, F. [US/US]; 3772 Lockland Drive 20, Los Angeles CA 90008 (US).</p> <p>(74) Agents: FINKELSTEIN, Don, B. et al.; Finkelstein, McGuire & Thut, Suite 904, Broadway Plaza, 700 South Flower Street, Los Angeles, CA (US).</p>	<p>(81) Designated States: AT (European patent), BR, CH (European patent), DE (European patent), FR (European patent), GB, JP, LU (European patent), NL (European patent), SE (European patent).</p> <p>Published <i>With international search report</i> <i>With amended claims</i></p>	

(54) Title: NASO-GASTRIC OXYGEN MASK



(57) Abstract

A mask (11) for delivery of gas, such as oxygen, to a patient and useable in a naso-gastric intubation procedure without disruption of the seal between the mask and the face of the patient. The body (13) of the mask includes a fenestration, or opening (31) through which the naso-gastric tube may be inserted. The fenestration is preferably shaped to support the tube (33) in manner which is comfortable for the patient and which eliminates or minimizes the amount of gas lost to the atmosphere outside the mask. In at least some embodiments, the fenestration is closed when a tube is not inserted therethrough so that the mask may be used normally without loss of the gas through the fenestration.

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1 periods of time. This might occur, for example, during
2 the postoperative recovery state of a patient. Such a
3 mask might also be used, for example, during either tem-
4 porary or interim therapy when a patient is being weaned
5 from continuous oxygen administration.

6 Most masks available today are relatively
7 crude, causing a prediction of the exact volume of oxy-
8 gen delivered to the patient to be impossible. However,
9 it is known that the delivered concentrations vary from
10 35% to 55%, at gas flow rates of 6 to 10 liters per
11 minute.

12 The nasal cannula is an appliance which nor-
13 mally includes two tips which extend from an oxygen
14 supply tube and are inserted into the nostrils of a
15 patient. The cannula can be held in place by head
16 straps or by bows that hook over the ears, in the manner
17 of eye glasses.

18 Unfortunately, the cannula suffers from the
19 disadvantage of being instable, i.e., it is easily
20 dislodged from a restless or unobservant patient. While
21 a doctor or nurse making medical rounds might note that
22 an oxygen flow meter is open, he or she might not notice
23 that the cannula is so twisted out of place that the
24 patient could not get any significant amount of oxygen.

25 The cannula also suffers from the disadvantage
26 that it is often necessary to pay attention to a
27 patient's comfort when instituting oxygen treatment.
28 An excessive flow rate of oxygen, the definition of
29 which varies according to the patient, can produce a
30 considerable amount of pain in the frontal sinuses of
31 the patient. Also, such nasal pathology as a deviated
32 septum, mucosal edema, mucus drainage, and polyps may
33 interfere with a patient's oxygen intake.

34 In those cases in which a naso-gastric tube
35 might be used together with the nasal cannula, the uti-
36 lity of the latter is further degraded. In addition to



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1 dislodgment problems, the combined affect of the two
2 tubes placed in one nostril creates a physical irritant
3 to the delicate mucosal tissues of the nasal passage and
4 sinuses. Such irritation often takes the form of
5 ulcerative lesions. Since a decreased volume of oxygen
6 is often experienced during the use of the two tubes,
7 the normal procedure is to increase the rate of oxygen
8 flow. However, that often results in the desiccation of
9 tissues, further traumatizing them, causing severe
10 frontal sinus pain and various pathalogic results.

11 Consequently, it is believed that the basic
12 oxygen mask having a body which is pressed against the
13 face of the patient is far superior to the nasal cannula
14 for the application of oxygen. Nevertheless, such masks
15 suffer from the disadvantage that, in many postoperative
16 and related cases, a naso-gastric intubation procedure
17 is necessary. In such a case, plastic tubing is usually
18 inserted into the patient's nasal passageway and guided
19 down the esophagus into the upper gastric area. This
20 tubing is an obstruction, as far as the administration
21 of oxygen is concerned, and complicates the application
22 of the mask or the cannula.

23 If, today, a naso-gastric tube and an oxygen
24 mask are to be used simultaneously, the tube is put in
25 place first and the mask is then applied. The seal of
26 the mask against the face of the patient is incomplete
27 due the protrusion of the tube at the point that the
28 tube intersects the body of the mask. In other words,
29 it is impossible to conform the mask to the facial con-
30 figuration of the patient and, in many cases, the mask
31 is generally askew. Such incorrect seating of the mask
32 allows oxygen to freely pass to the atmosphere,
33 resulting in treatment of the patient with a decreased
34 and uncontrolled volume.

35 Additionally, the stability of the mask as
36 well as the patient's comfort are complicated by the



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1 tube. The mask is much less secure and more easily
2 dislodged by an unobservant, restless, or mobile
3 patient. Also, the tube is usually placed across and
4 secured to the facial skin in an attempt to prevent
5 relative movement among the patient, tube, and mask.
6 The taping of the tube to the skin often produces
7 discomfort and runs the risk of producing a pressure
8 necrosis of the skin.

9 An example of a prior art mask which may be
10 used together with a naso-gastric tube in the manner
11 described above has been illustrated in U.S.
12 Patent 3,357,426 to Cohen. The drawings of that patent
13 clearly depict the manner in which the naso-gastric tube
14 is located on the face of the patient in such a manner
15 as to prevent a complete seal about the edge of the mask
16 body, rendering the mask less stable on the face of the
17 patient.

18 On the other hand, U.S. patent 3,809,079 to
19 Buttaravoli discloses a combined resuscitation mask and
20 airway for ventilation of a patient's lungs in a posi-
21 tive and reliable manner. However, that disclosure
22 includes a rigid body which may extend down the throat
23 of the patient; it does not relate to a structure which
24 would facilitate a naso-gastric intubation.

25 Consequently, a need currently exists for a
26 oxygen-administration device which may be simultaneously
27 employed with a naso-gastric tube in such a manner that
28 the volume of oxygen can be controlled at least to the
29 same extent as may be attained with a fully seated oxy-
30 gen mask.

31

32 SUMMARY OF THE INVENTION

33 The present invention relates to an oxygen
34 mask which may be employed in the well-known manner.
35 Such a mask is produced, for example, by Ideal Medical
36 Products of Lansing Michigan. A mask which can be



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1 utilized with the present invention may be of any
2 desired size, configuration, etc. Preferably, the mask
3 is relatively pliable, such as might be the case with a
4 soft, clear vinyl, and easily adaptable to the facial
5 contours of the patient in order to provide sealing
6 throughout the periphery of the mask body where it con-
7 tacts the skin of the patient.

8 More specifically, the present invention rela-
9 tes to such a mask which is adapted to particularly pro-
10 vide for the passage of a tube therethrough, such as
11 that which might be employed in a naso-gastric intuba-
12 tion procedure.

13 The present invention, which may be employed
14 in a wide variety of embodiments, basically comprises a
15 fenestration in the wall of the mask body. When a tube
16 is not in place in the fenestration, the latter will be
17 substantially closed so as to minimize or completely
18 prohibit any escape therethrough of oxygen from the
19 interior of the mask body.

20 In the presently preferred embodiment, the
21 fenestration may be provided adjacent to and extending
22 through the sealing portion of the mask. The fenestra-
23 tion may be located at any desired position about the
24 periphery of the mask so that a tube may be so arranged
25 as to be substantially and comfortably aligned with the
26 nostril of the patient.

27 The fenestration may be of any desired size
28 and configuration. In many cases, however, it will be
29 preferred that the fenestration be of such a con-
30 figuration that it will firmly hold the naso-gastric
31 tube in place without allowing relative movement between
32 the tube and the mask. In some embodiments, it is
33 currently preferred that the fenestration be provided
34 with some type of lining material or other structure
35 which will provide a form of seal, either about the
36 tube, or across the fenestration itself so that the



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1 opening is sealed when a tube is not in place. The
2 invention allows this type of mask to be used with or
3 without a naso-gastric tube, with little or no
4 difference, in the placement of the mask and the availa-
5 bility of the oxygen to the patient.

6 Upon review of the following Detailed
7 Description, taken together with the accompanying
8 drawings, those skilled in the art will realize that the
9 present invention may be employed in a wide variety of
10 embodiments, many of which may not even resemble those
11 described and depicted here. Nevertheless, it should be
12 borne in mind that that the description and accompanying
13 drawings are merely illustrative of the principles of
14 the present invention and only set forth the best mode
15 presently contemplated for accomplishing the invention.
16 They are not intended to delimit or restrict the scope
17 of the invention which is defined and limited only by
18 the appended claims.

19

20 BRIEF DESCRIPTION OF THE DRAWINGS

21

22 Figure 1 comprises an isometric illustration
23 of a mask formed in accordance with the present
24 invention, depicting the use of a fenestration in the
25 wall of the mask;

26 Figure 2 comprises a top plan view of the mask
27 depicted in Figure 1 depicting a fenestration on each
28 side of the mask;

29 Figure 3 comprises a side elevation view of
30 the mask depicted in Figures 1 and 2;

31 Figure 4 comprises an elevation view of the
32 bottom end of a second mask embodiment formed in accor-
33 dance with the present invention, illustrating a single
34 fenestration in the base end of the mask;

35 Figure 5 comprises a sectional plan view of
36 the mask shown in Figure 4, as seen along a line V-V

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1 therein; and

2 Figures 6-15 depict various shapes and
3 configurations of fenestrations which may be employed in
4 a facial mask in accordance with the present invention.

5

6

DETAILED DESCRIPTION

7

8 Referring now to Figure 1 in greater detail, a
9 mask 11 is shown including a body 13 which surrounds an
10 internal cavity. The body 13 may be placed over the
11 nose and mouth of a patient so that the patient may
12 inhale and exhale into the mask cavity. The periphery
13 of the body 13, at the open edge of the cavity, is pre-
14 ferably surrounded by a sealing surface 15 which may be
15 placed against the patient's face to prevent the passage
16 of gas or oxygen in or out of the mask cavity except
17 through preselected passages. In the current state of
18 the art, the mask body 13 and sealing lip 15 are pre-
19 ferably constructed of transparent, thin, pliable
20 plastic which is relatively inexpensive. Consequently,
21 the mask readily conforms to any patient's face. It can
22 be easily used and then disposed of without risking
23 cross-contamination of patients, requiring cleaning bet-
24 ween uses, etc.

25 If desired, the upper portion of the mask may
26 be provided with a pliable nose piece 17 which may be
27 bent to generally conform to the nose of the patient.
28 The nose piece assists in holding the mask in place and
29 keeping it sealed against the patient's face.
30 Similarly, the mask may be provided with a band,
31 strap or earpiece 19 which cooperates with the head of
32 the patient in order to hold the mask to his face.

33 In the particular type of mask illustrated, a
34 relatively rigid inlet connection device 21 may be
35 fixedly attached to the mask body 13 for receipt and
36 support an oxygen or other gas hose 23. Thus, oxygen

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1 can be fed through the hose 23 into the mask 13 through
2 the connector 21 for increasing and controlling the oxy-
3 gen intake of the patient. In order to allow the
4 exhaled breath of the patient to be exhausted from the
5 mask, one or more aperatures 25 may be provided in
6 either or both sides of the mask.

7 As described thus far, such masks are
8 currently readily available and constitute prior art, of
9 which this invention is an improvement.

10 As seen in Figure 1, the mask may be provided
11 with a cleft or fenestration 31, through which a
12 naso-gastric tube 33 may pass and within which it may be
13 secured. Of course, those skilled in the art will
14 realize that, as shown in Figure 2, two clefts or
15 fenestrations may be provided for the passage of a like
16 number of naso-gastric tubes. In any event, it is pre-
17 ferred that the cleft or fenestration 31 be so posi-
18 tioned as to allow comfortable and convenient aligned of
19 a tube 33 with the nostril of a patient so that the use
20 of the mask and the naso-gastric tube will not conflict
21 with one another in servicing the patient.

22 In the embodiment illustrated in Figure 1, the
23 fenestration 31 is shown shaped in a form similar to a
24 "key hole" 35 having a foam rubber or other flexible
25 lining 37 which may be split down the middle for inser-
26 tion and receipt of the tube 33. The lining and the
27 central slit or opening therein preferably extend down
28 to and through the sealing portion 15 of mask 11.
29 Consequently, proper selection of the liner 37 will
30 allow the slit to remain substantially closed throughout
31 the entire length of the fenestration 31 when a tube,
32 such as that illustrated at 33, is not in place. On the
33 other hand, when the tube 33 is installed, the lining 37
34 will closely surround the tube and be substantially
35 closed throughout its length for the remainder thereof.

36 As a result, such a fenestration will produce



1 a significant advancement in the technology of thera-
2 peutic application of oxygen simultaneously with the use
3 of a naso-gastric tube. The volume of oxygen applied
4 will be relatively precise in accordance with the orders
5 of the doctor to the medical personnel.

6 In use, the naso-gastric tube would be applied
7 to a patient in the well-known manner. The mask may
8 then be placed in position against the face of the
9 patient. The cleft or fenestration 31 may be manually
10 split and pushed over the tube 33 until the tube is
11 located in the upper portion of the slit or opening.
12 Thus, the tube may be substantially sealed and firmly
13 seated in the upper portion of the key hole-shaped
14 opening and the mask will remain sealed against the face
15 of the patient.

16 Referring now to Figures 4 and 5, an alternate
17 embodiment of the device shown in Figures 1-3 has been
18 illustrated. In that embodiment, the fenestration 41
19 may comprise a slit formed in the bottom portion of the
20 mask and extending upwardly from the sealing 15 to a
21 location intermediate the seal and the connector 21.

22 A rib 45 may be formed integral with or
23 suitably attached to the body 13 about the vicinity of
24 the slit, thus preventing stress, imposed when the tube
25 is installed, is in place, and/or is removed, from
26 damaging the mask. Thus, with this embodiment, the
27 edges of the slit, i.e., the adjacent portions of the
28 mask body 13, will form a pair of flaps 47 and 49 which
29 are normally closely adjacent one another to seal off
30 the fenestration.

31 When the mask is placed over a tube 33, the
32 fenestration may again be manually split and pushed over
33 the tube. When the tube reaches the upper portion of
34 the split, it will thus be seated and substantially
35 sealed therein. The fenestration may then be closed so
36 that the flaps 47 and 49 are as close together as



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1 possible. As a result, the naso-gastric tube can be
2 properly positioned and will not move about if the
3 patient should be become restless or mobile. At the
4 same time, the mask will continue to be sealed against
5 the patient's face at all times to provide the optimum
6 sealing effect. Any oxygen loss through the fenestra-
7 tion slit between flaps 47 and 49 will be minimal since
8 any separation therein will be relatively small.

9 Referring now to Figures 6-15, it can be seen
10 that a wide variety of shapes, sizes, etc., of clefts or
11 fenestrations may be employed, realizing that they may
12 be used singly or in pairs and at any convenient
13 location in the mask so as to properly hold the
14 naso-gastric tube in a convenient and comfortable
15 location for the patient.

16 In Figure 6, for example, it can be seen that
17 the mask body 13 may be provided with a fenestration 61
18 having a slit 63 therein and a reinforcing wall or
19 rib 65 spaced from the rib a convenient distance for
20 allowing the insertion and position maintenance of a
21 tube (not shown). In this illustrated embodiment, the
22 fenestration 61 may be formed in a shape resembling a
23 crook of a sheppard's staff. Consequently, when the
24 mask is installed over the tube, the latter may be moved
25 into the inner end of the slit to provide substantial
26 sealing of the tube and also to firmly ensure that it is
27 properly seated and held in place.

28 If desired, of course, the internal end
29 portion of the fenestration 61 may be enlarged so as to
30 provide an opening of substantially the same size as
31 that for the cleft 31 shown in Figure 1. Also, it will
32 be realized by those skilled in the art that the slit 63
33 may be formed in the wall of the body 13 similarly as
34 shown in Figure 5, or it may be provided between opposed
35 edges of a foam rubber liner, similar to that structure
36 shown in Figure 1. In either case, the slit will be



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1 substantially closed with the tube in place, again mini-
2 mizing inadvertant oxygen loss.

3 Referring now to Figure 7, a fenestration 71
4 is illustrated having a slit 73 for receipt of a
5 naso-gastric tube. The vicinity of the slit 73 may be
6 substantially surrounded and strengthened by a rib or
7 wall 75 of substantially circular configuration. Thus,
8 with the tube in place, the fenestration may be manually
9 split, such as by pulling one side away from the mask
10 cavity and pushing the other side into the cavity, may
11 then be gently pushed down over the tube. When the tube
12 is substantially surrounded by the rib 75, the opposite
13 sections of the cleft 71 may be realigned, thus holding
14 the tube in place with a substantial seal about the
15 periphery thereof through the actions of flaps 77 and
16 79. Once again, flaps 77 and 79 may be part of the wall
17 of mask body 13 or they may be separate, attached
18 elements.

19 If desired, this fenestration may be held in
20 the closed position during use, such as by means of a
21 suitable clasp 74 which may include one or more
22 protrusions 76 and a cross-piece 78. Alternatively, the
23 protrusions may be used to located and hold a small
24 rubber band or similar element to hold the fenestration
25 closed. Although shown only in this embodiment, those
26 skilled in the art will readily realize that such a
27 positive closure may be used with any fenestration.

28 Another embodiment of a fenestration is
29 illustrated in Figure 8 at 81. In this instance, a
30 strengthening rib or wall 85 may be provided on opposite
31 sides of a pair of flaps 87 and 89. The flaps may
32 either be integral with the wall of the body 13 or spe-
33 cifically attached thereto. In any event, each flap may
34 be provided with a square side edge so that the flaps
35 normally overlap. Alternatively, the slit 83 may be
36 formed by cutting the portion of the wall 13 below the



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1 rib 85 on an acute angle or bias relative to the surface
2 of the wall. Thus, when the flaps 87 and 89 are
3 aligned, the opposed surfaces of the slit, which are at
4 an identical acute angle relative to the wall 13, will
5 abut one another and serve to seal the fenestration.

6 When it is desired to use such a mask with a
7 naso-gastric tube, it is only required that the medical
8 personnel gently push the mask down over the tube.
9 Thus, the tube will be substantially sealed in place and
10 the mask will still fit closely against the face of the
11 patient without undue loss of oxygen.

12 As shown in Figure 9, a fenestration 91 may be
13 provided of substantially rectangle configuration having
14 a slit 93 bounded by a rib or wall 95. In this
15 instance, the slit is illustrated as having a squared
16 edge between opposed flaps 97 and 99, although those
17 skilled in the art will realize that a biased slit could
18 also be provided in the manner of that illustrated in
19 Figure 8. Alternatively, the flaps 97 and 99 could be
20 slightly enlarged so that the adjacent edges thereof
21 overlap to provide a more positive sealing when a tube
22 is not in place.

23 Once again, when a fenestration such as that
24 at 91 is to be employed, it is simply necessary to
25 install the tube and then push the mask down over the
26 tube so that it is sealed by the flaps 97 and 99 for
27 minimal oxygen loss.

28 Referring now to Figure 10, a fenestration 101
29 may be provided with a slit 103 bounded by a
30 strengthening rib or wall 105 resembling an inverted,
31 truncated triangular configuration. With this
32 structure, when the mask is to be applied over the tube,
33 the opposite ends of the slit adjacent the sealing edge
34 of the mask may again be manually split and the tube
35 gently pushed over the mask. The ends may then be
36 manually realigned to hold the tube in place and

1 substantially seal it to achieve the desired result.

2 The fenestration 111 illustrated in Figure 11
3 is shown as comprising a slit 113 bounded by a rib 115
4 having two legs which meet at an acute angle, i.e.,
5 resembling two legs of an isosceles triangle.
6 Consequently, when a mask using this type of cleft is
7 pushed down over a tube, opposed flaps 117 and 119 will
8 part and allow the tube to be substantially sealed in
9 position while the mask is still sealed to the face of
10 the patient throughout the remainder of its periphery.

11 A still further embodiment of a fenestration
12 is illustrated at 121 in Figure 12. In this
13 illustration, a multisided polygonal rib 125 may provide
14 the external boundary for a plurality of flaps 127 which
15 are separated by slits in the wall material of the
16 body 13. Preferably, the number of flaps is equal to or
17 greater than the number of sides of the polygon. Thus,
18 this mask may be employed by manually misaligning the
19 opposite edges of the fenestration adjacent the sealing
20 lip 15 and pushing the mask down over the tube. The
21 flaps 127 will part along the slits at their respective
22 edges, allowing the tube to be held in place and
23 substantially sealed when the opposite edges of the
24 fenestration are again realigned.

25 As shown in Figures 13 and 14, in some
26 instances it may be desired to provide an open
27 fenestration such as the ovoid configurations
28 illustrated at 131 or that illustrated at 141. The
29 opening 134 or 144 may be provided with a generally
30 oval-shaped ridge 135 or 145, respectively. Such masks
31 may also be applied by temporarily misaligning the oppo-
32 site edges of the fenestration adjacent the sealing lip
33 and then realigning them after the mask is pushed over
34 the tube. It will often be preferable to use structures
35 such as those shown in Figures 13 and 14 when the shape
36 of the open fenestration is substantially identical to

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1 that of the tube to be used, thus allowing the tube to
2 be sealed against the rib or wall of the fenestration
3 and also be held in place by the alignment of the lower
4 portions of the fenestration against the sealing lip 15.

5 Of course, those skilled in the art will
6 realize that a cleft or fenestration such as those found
7 in this disclosure may be provided with any kind of
8 sealing means or structure which substantially seals and
9 holds the mask in a fixed relationship with the
10 naso-gastric tube. As shown in Figure 15, for example,
11 a key hole-type fenestration 151 may be provided with a
12 rib 155 which abounds an opposed pair of overlapping
13 flaps 157 and 159. Thus, as illustrated, it is not
14 necessary that the flaps meet one another along a
15 single, clean line. It is only necessary that the
16 fenestration be substantially closed when a naso-gastric
17 tube is not in place in the patient and also
18 substantially closed and sealed about the tube when the
19 patient is undergoing naso-gastric intubation and oxygen
20 therapy simultaneously.

21 As a result of a review of the various
22 embodiments of this invention, it should now be apparent
23 to those skilled in the art that the oxygen mask
24 fenestration or cleft which may be utilized with any
25 particular tube or similar devices may be of any desired
26 size or shape, depending only upon the particular
27 apparatus which is extend therethrough. Similarly, any
28 suitable sealing device may be employed in the
29 fenestration, including opposed flaps, a liner, or a
30 reasonably close tolerance fit between the tube and
31 the rib which strengthens the opening. Also, even
32 simpler embodiments may be employed.

33 For example, the mask body 13 might simply be
34 provided with an aperture through which a tube may
35 extend in reasonably close relationship. For tube
36 installation purposes, a slit may extend from the

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1 aperture through the sealing lip 15. As packaged or
2 used without a tube, the aperture and slit may be closed
3 or covered by a small piece of tape which can be
4 manually removed when necessary. When a tube is in
5 place within the aperture, the slit may be retaped to
6 close it, strengthen the mask (particularly if no rib
7 such as that at 45 is used), and hold the tube in place.

8 Having now reviewed this Detailed Description
9 and the drawings of the presently preferred embodiment,
10 those skilled in the art will realize that these merely
11 define a presently preferred embodiment of the invention
12 instead of delimitating it. Rather, it must be kept in
13 mind that the scope of the invention, as set forth
14 below, is broad enough to encompass a substantial number
15 and wide variety of embodiments, many of which may not
16 even resemble that depicted and described here.
17 Nevertheless, such additional embodiments will employ
18 the spirit and scope of the invention which is
19 established only by the following claims.



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CLAIMS

- 1 1. A face mask for the administration of a gas
2 such as oxygen comprising
3 a body of such size and shape as to
4 deliver oxygen to at least one of the mouth and the nose
5 of a patient;
6 means for holding the mask against the
7 face of a patient;
8 means for directing the flow of a gas to
9 the interior of the mask;
10 means for substantially sealing at least
11 a portion of the body of the mask against the skin of
12 the patient; and
13 means for admitting a naso-gastric tube
14 into the interior of the mask body for insertion into
15 the nostril of the patient comprising
16 a fenestration in the body in a
17 position conveniently located so as to allow the passage
18 of the tube through the fenestration and into the
19 nostril of the patient, and
20 means for substantially closing the
21 fenestration to prevent the loss therethrough of gas
22 directed into the mask body by the directing means.
23
24
- 25 2. The mask of claim 1 wherein
26 the fenestration includes
27 means on the mask body including
28 a slit through which a
29 naso-gastric tube may be passed and seated near one end
30 thereof,
31 means on either side of
32 and defining the slit for substantially sealing a naso-
33 gastric tube therebetween.
34
35
- 36 3. The mask of claim 1 or 2 including



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- 1 means extending about at least a portion
2 of the fenestration for preventing damage to the mask
3 body as a tube is installed within the fenestration.
4
5
- 6 4. The mask of claim 2 wherein
7 the sealing means compri-
8 ses a sealing liner extending throughout the fenestra-
9 tion and including opposed sealing portions therein
10 defining the slit.
11
12
- 13 5. The mask of claim 2 wherein
14 the sealing means compri-
15 ses means integral with the mask body and defining the
16 slit therebetween.
17
18
- 19 6. The mask of claim 4 or 5 including
20 means extending about at least a portion
21 of the fenestration for strengthening the mask body to
22 prevent damage thereto as a naso-gastric tube is
23 installed and seated in the fenestration.
24
25
- 26 7. The mask of claim 6 wherein
27 the fenestration includes means for
28 holding the fenestration closed.
29
30
- 31 8. In an oxygen mask having a body and a sealing
32 means extending about the periphery of the body,
33 a fenestration formed in the body and
34 extending through the sealing means, and
35 means in the fenestration for accepting and
36 seating a naso-gastric tube therein.

1 9. The mask of claim 8 including
2 means for substantially sealing the tube
3 in the fenestration when the former is seated therein to
4 minimize the loss of oxygen through the fenestration.

1 10. The mask of claim 9 wherein
2 the sealing means comprises a liner posi-
3 tioned within the fenestration and having a central slit
4 extending substantially therethrough and being openable
5 in the vicinity of the sealing means.

1 11. The mask of claim 9 wherein
2 the sealing means comprises at least two
3 opposed flaps located on opposite sides of the fenestra-
4 tion for holding and sealing a tube therebetween.

1 12. The mask of claim 9 wherein
2 the sealing means comprise a plurality of
3 flaps so situated within the fenestration as to hold and
4 seal a tube therebetween.

1 13. The mask of claim 8, 9, 10, or 12 including
2 strengthening rib means located about the
3 fenestration to prohibit damage to the mask as a naso-
4 gastric tube is installed and seated in the
5 fenestration.

1 14. The mask of claim 13 including
2 means for holding the fenestration closed
3 at the end thereof extending through the sealing means.

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1 15. The mask of claim 8 wherein
2 the fenestration is shaped in a form
3 generally resembling a keyhole with the enlarged portion
4 thereof distal from the sealing means for seating the
5 tube when the fenestration is closed.

1 16. The mask of claim 8 wherein
2 the fenestration is shaped in a form
3 generally resembling
4 the crook of a shepards staff
5 wherein an inner end thereof is provided for seating the
6 tube therein.

1 17. The mask of claim 8 wherein
2 the fenestration is shaped in a form
3 generally resembling
4 a circle having an open portion at
5 the sealing means for movement of the mask onto the
6 tube.

1 18. The mask of claim 8 wherein
2 the fenestration is shaped in a form
3 generally resembling
4 a semicircle having an open portion
5 at the sealing means for movement of the mask onto the
6 tube.

1 19. The mask of claim 8 wherein
2 the fenestration is shaped in a form
3 generally resembling
4 a rectangle having an open portion

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5 at the sealing means for movement of the mask onto the
6 tube.

1 20. The mask of claim 8 wherein
2 the fenestration is shaped in a form
3 generally resembling
4 a truncated triangle having an open
5 portion at the apex thereof at the sealing means for
6 movement of the mask onto the tube.

1 21. The mask of claim 8 wherein
2 the fenestration is shaped in a form
3 generally resembling
4 an isosceles triangle having an open
5 portion at the sealing means for movement of the mask
6 onto the tube.

1 22. The mask of claim 8 wherein
2 the fenestration is shaped in a form
3 generally resembling
4 a polygon having a number of
5 accepting and seating means therein at least equal to
6 the number of sides of the polygon and having an open
7 portion at the sealing means for movement of the mask
8 onto the tube.

1 23. The mask of claim 8 wherein
2 the fenestration is shaped in a form
3 generally resembling
4 an ovoid having an open portion at
5 the sealing means for movement of the mask onto the
6 tube.



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1 24. The mask of claim 8 wherein
2 the fenestration is shaped in a form
3 generally resembling
4 a keyhole including overlapping
5 sealing flap therein with the enlarged portion thereof
6 distal from the sealing means for seating of the tube
7 between the sealing flaps when the fenestration is
8 closed.



AMENDED CLAIMS
(received by the International Bureau on 25 August 1981 (25.08.81))

(amended) 1 1. A face mask for the administration of a gas
2 such as oxygen comprising
3 a mask body of such size and shape
4 adapted to cover at least the nose of a patient and
5 having a peripheral edge;
6 means for holding the mask against the
7 face of a patient;
8 means for directing a flow of a gas to
9 the interior of the mask;
10 means for substantially sealing at least
11 a portion of the body of the mask against the skin of
12 the patient; and
13 means for admitting a naso-gastric tube
14 into the interior of the mask body for insertion into
15 the nostril of the patient comprising
16 a fenestration in the body extending
17 through a peripheral edge and sealing means and located
18 in a convenient position for allowing the passage of the
19 tube through the fenestration and into the nostril of
20 the patient, and
21 means for substantially closing the
22 fenestration to prevent the loss therethrough of gas
23 directed into the mask body by the directing means.

(amended) 1 2. The mask of claim 1 wherein
2 the fenestration includes
3 means on the mask body including
4 a slit through which a
5 naso-gastric tube may be passed and seated near one end
6 thereof,
7 means on either side of
8 and defining the slit for substantially sealing a naso-
9 gastric tube therebetween.



- (amended) 3. The mask of claim 1 or 2 including
2 means extending about at least a portion
3 of the fenestration for preventing damage to the mask
4 body as a tube is installed within the fenestration.
- (amended) 1 4. The mask of claim 2 wherein
2 the sealing means compri-
3 ses a sealing liner extending throughout the fenestra-
4 tion and including opposed sealing portions therein
5 defining the slit.
- (amended) 1 5. The mask of claim 2 wherein
2 the sealing means compri-
3 ses means integral with the mask body and defining the
4 slit therebetween.
- (amended) 1 6. The mask of claim 4 or 5 including
2 means extending about at least a portion
3 of the fenestration for strengthening the mask body to
4 prevent damage thereto as a naso-gastric tube is
5 installed and seated in the fenestration.
- (amended) 1 7. The mask of claim 6 wherein
2 the fenestration includes means for
3 holding the fenestration closed.



(amended) 1 8. In an oxygen mask including a mask body
2 adapted to cover at least the nose and mouth of a wearer
3 and having a peripheral edge and a sealing means extend-
4 about the peripheral edge of the body for substantially
5 sealing the mask to the face of a wearer,
6 a fenestration formed in the body and extend-
7 ing through the peripheral edge and sealing means, and
8 means in the fenestration for accepting and
9 seating a naso-gastric tube therein.



1 9. The mask of claim 8 including
2 means for substantially sealing the tube
3 in the fenestration when the former is seated therein to
4 minimize the loss of oxygen through the fenestration.

1 10. The mask of claim 9 wherein
2 the sealing means comprises a liner posi-
3 tioned within the fenestration and having a central slit
4 extending substantially therethrough and being openable
5 in the vicinity of the sealing means.

1 11. The mask of claim 9 wherein
2 the sealing means comprises at least two
3 opposed flaps located on opposite sides of the fenestra-
4 tion for holding and sealing a tube therebetween.

1 12. The mask of claim 9 wherein
2 the sealing means comprise a plurality of
3 flaps so situated within the fenestration as to hold and
4 seal a tube therebetween.

1 13. The mask of claim 8, 9, 10, or 12 including
2 strengthening rib means located about the
3 fenestration to prohibit damage to the mask as a naso-
4 gastric tube is installed and seated in the
5 fenestration.

1 14. The mask of claim 13 including
2 means for holding the fenestration closed
3 at the end thereof extending through the sealing means.



1 15. The mask of claim 8 wherein
2 the fenestration is shaped in a form
3 generally resembling a keyhole with the enlarged portion
4 thereof distal from the sealing means for seating the
5 tube when the fenestration is closed.

1 16. The mask of claim 8 wherein
2 the fenestration is shaped in a form
3 generally resembling
4 the crook of a shepards staff
5 wherein an inner end thereof is provided for seating the
6 tube therein.

1 17. The mask of claim 8 wherein
2 the fenestration is shaped in a form
3 generally resembling
4 a circle having an open portion at
5 the sealing means for movement of the mask onto the
6 tube.

1 18. The mask of claim 8 wherein
2 the fenestration is shaped in a form
3 generally resembling
4 a semicircle having an open portion
5 at the sealing means for movement of the mask onto the
6 tube.

1 19. The mask of claim 8 wherein
2 the fenestration is shaped in a form
3 generally resembling
4 a rectangle having an open portion

5 at the sealing means for movement of the mask onto the
6 tube.

1 20. The mask of claim 8 wherein
2 the fenestration is shaped in a form
3 generally resembling
4 a truncated triangle having an open
5 portion at the apex thereof at the sealing means for
6 movement of the mask onto the tube.

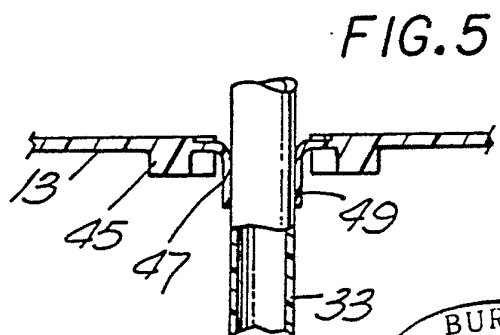
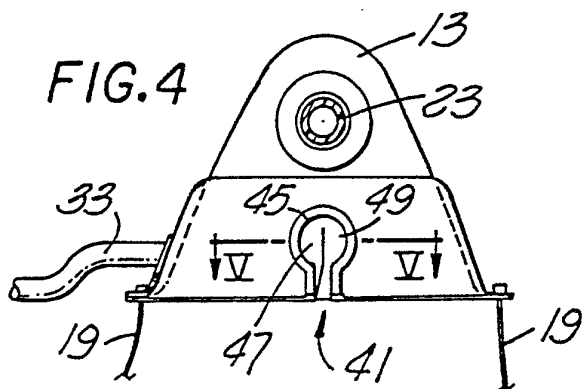
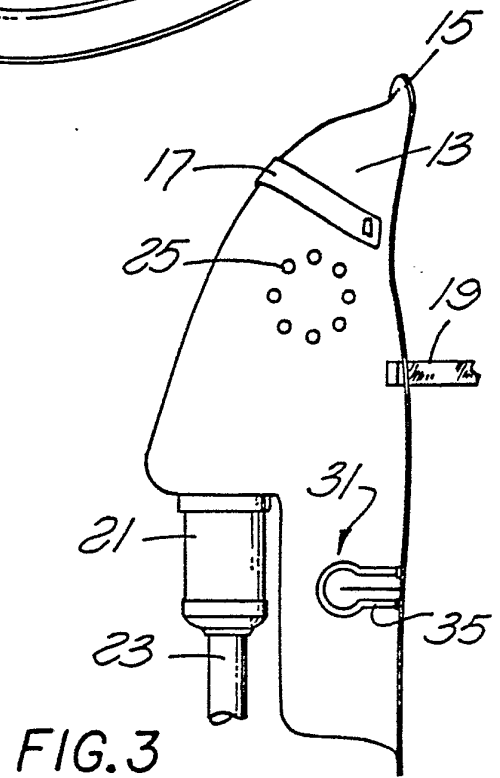
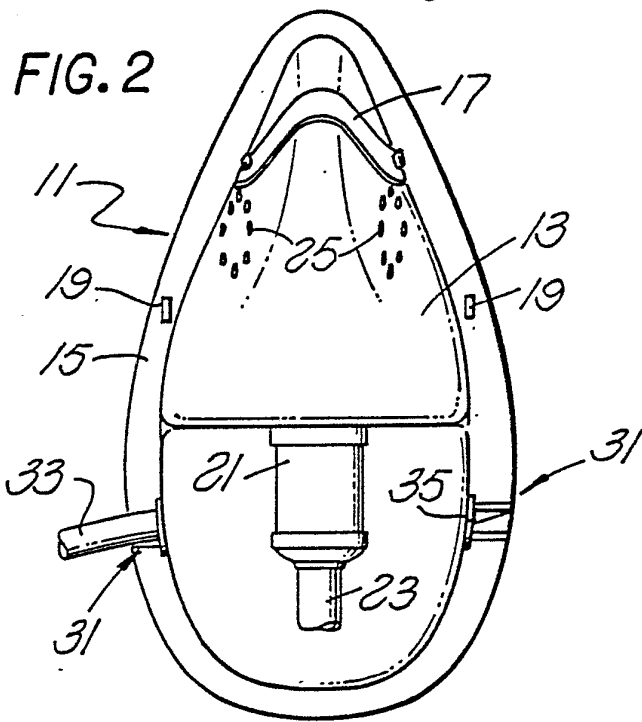
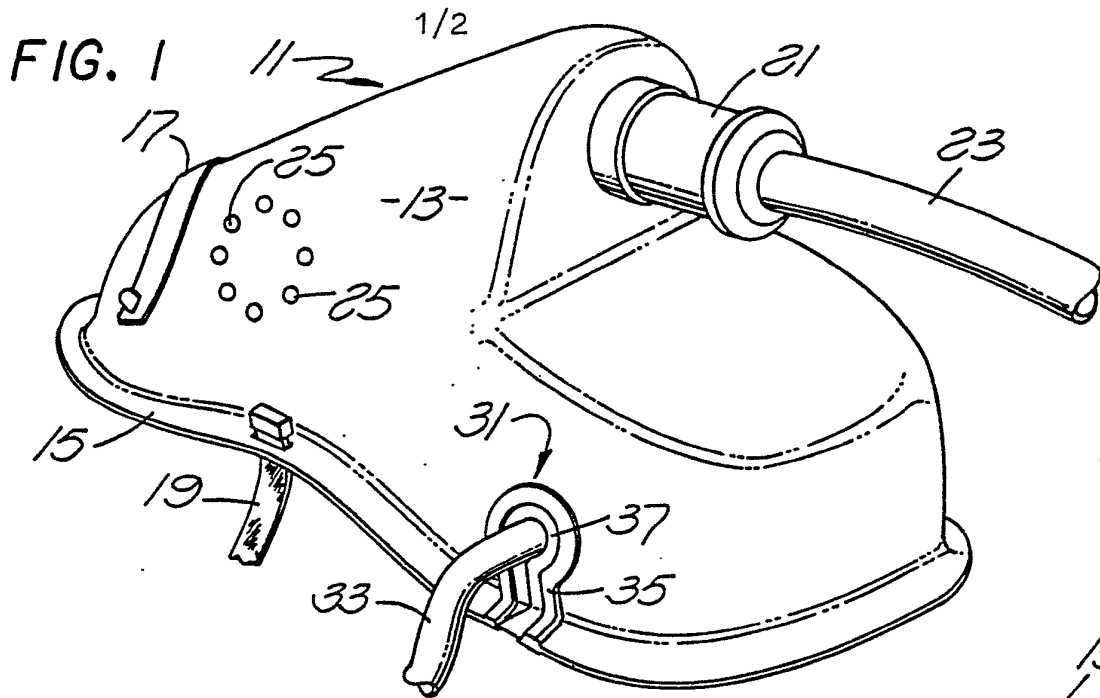
1 21. The mask of claim 8 wherein
2 the fenestration is shaped in a form
3 generally resembling
4 an isosceles triangle having an open
5 portion at the sealing means for movement of the mask
6 onto the tube.

1 22. The mask of claim 8 wherein
2 the fenestration is shaped in a form
3 generally resembling
4 a polygon having a number of
5 accepting and seating means therein at least equal to
6 the number of sides of the polygon and having an open
7 portion at the sealing means for movement of the mask
8 onto the tube.

1 23. The mask of claim 8 wherein
2 the fenestration is shaped in a form
3 generally resembling
4 an ovoid having an open portion at
5 the sealing means for movement of the mask onto the
6 tube.

1 24. The mask of claim 8 wherein
2 the fenestration is shaped in a form
3 generally resembling
4 a keyhole including overlapping
5 sealing flap therein with the enlarged portion thereof
6 distal from the sealing means for seating of the tube
7 between the sealing flaps when the fenestration is
8 closed.





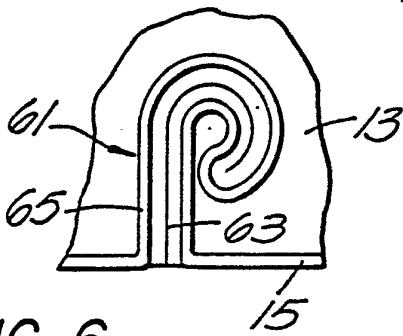


FIG. 6

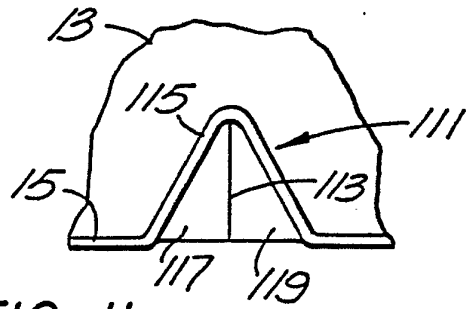


FIG. 11

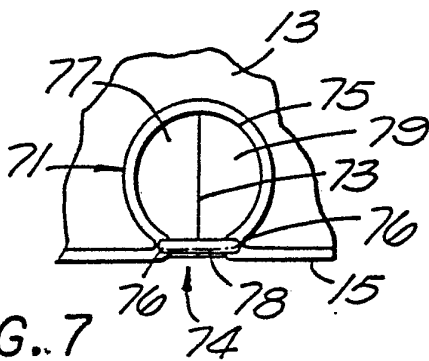


FIG. 7

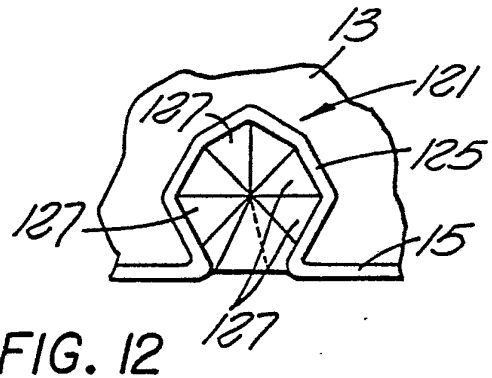


FIG. 12

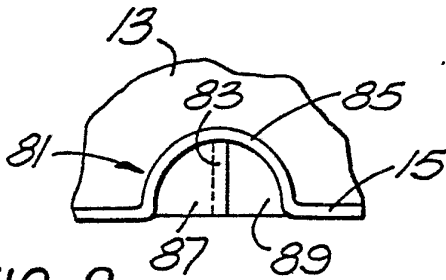


FIG. 8

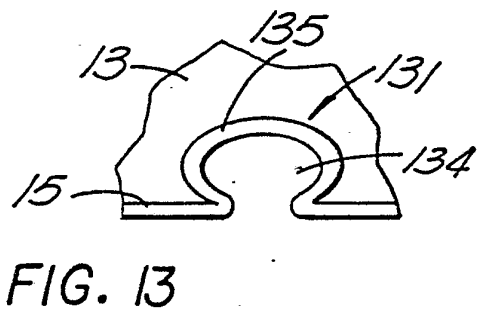


FIG. 13

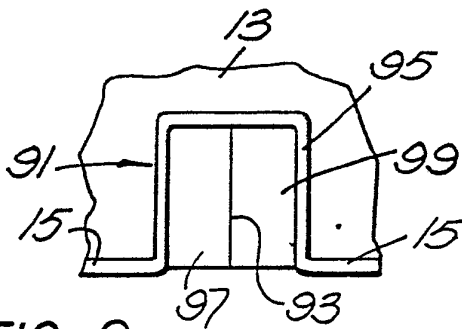


FIG. 9

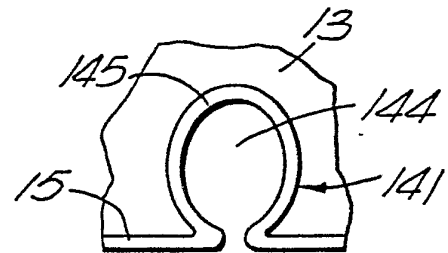


FIG. 14

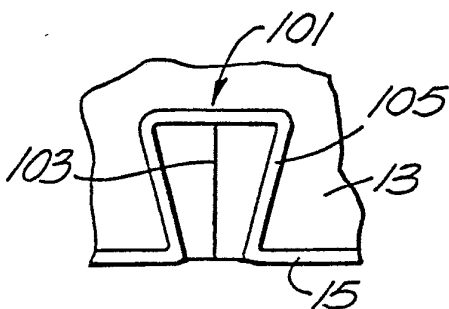


FIG. 10

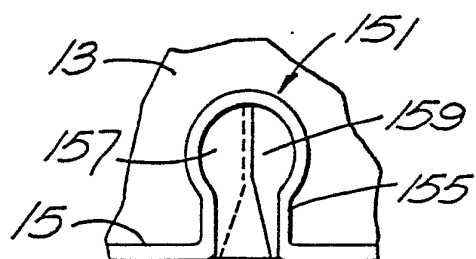
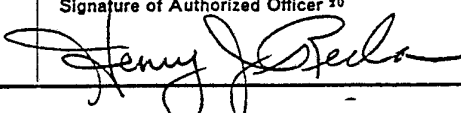


FIG. 15

INTERNATIONAL SEARCH REPORT

International Application No PCT/US80/00946

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ³				
According to International Patent Classification (IPC) or to both National Classification and IPC				
INT CL. ³ A61M 16/00				
US. CL. 128/205.25				
II. FIELDS SEARCHED				
Minimum Documentation Searched ⁴				
Classification System	Classification Symbols			
U.S.	128/205.25, 203.29, 206.21, 206.24, 202.27, 202.28, 202.15, 206.28, 206.29, 207.11, 207.14, 207.18.			
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁵				
III. DOCUMENTS CONSIDERED TO BE RELEVANT ¹⁴				
Category ⁶	Citation of Document, ¹⁶ with indication, where appropriate, of the relevant passages ¹⁷	Relevant to Claim No. ¹⁸		
X	U.S. A, 2,831,487 Published 22 April 1958 Tafilaw	1-7		
X	CA, A, 503,739 Published 15 June 1954 Turnberg	1-7		
X	U.S. A, 2,675,803 Published 20 April 1954 Kaslow	1-7		
X	U.S. A, 2,859,748 Published 11 November 1958 Hudson	1-7		
X	U.S., A, 4,201,205 Published 06 May 1980 Bartholomew	1-7		
X	U.S. A, 3,067,425 Published 11 December 1962 Colley	1-7		
X	U.S. A, 2,023,267 Published 03 December 1935 De Saint Rapt et al.	1-7		
Cont.				
<p>¹⁵ Special categories of cited documents:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"> <p>"A" document defining the general state of the art</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document cited for special reason other than those referred to in the other categories</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> </td> <td style="width: 50%; border: none;"> <p>"P" document published prior to the international filing date but on or after the priority date claimed</p> <p>"T" later document published on or after the international filing date or priority date and not in conflict with the application, but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance</p> </td> </tr> </table>			<p>"A" document defining the general state of the art</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document cited for special reason other than those referred to in the other categories</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p>	<p>"P" document published prior to the international filing date but on or after the priority date claimed</p> <p>"T" later document published on or after the international filing date or priority date and not in conflict with the application, but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance</p>
<p>"A" document defining the general state of the art</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document cited for special reason other than those referred to in the other categories</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p>	<p>"P" document published prior to the international filing date but on or after the priority date claimed</p> <p>"T" later document published on or after the international filing date or priority date and not in conflict with the application, but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance</p>			
IV. CERTIFICATION				
Date of the Actual Completion of the International Search ²	Date of Mailing of this International Search Report ²			
01 JUL 1981	08 JUL 1981			
International Searching Authority ¹	Signature of Authorized Officer ²⁰			
ISA/US				

A.	U.S., A, 3,357,426	Published 12 December 1967 Cohen	1-24
A.	U.S., A, 3,730,179	Published 01 May 1973 Williams	1-24
A.	U.S., A, 3,388,705	Published 18 June 1968 Grosshandler	1-24
A.	U.S., A, 3,809,079	Published 07 May 1974 Buttaravoli.	1-24