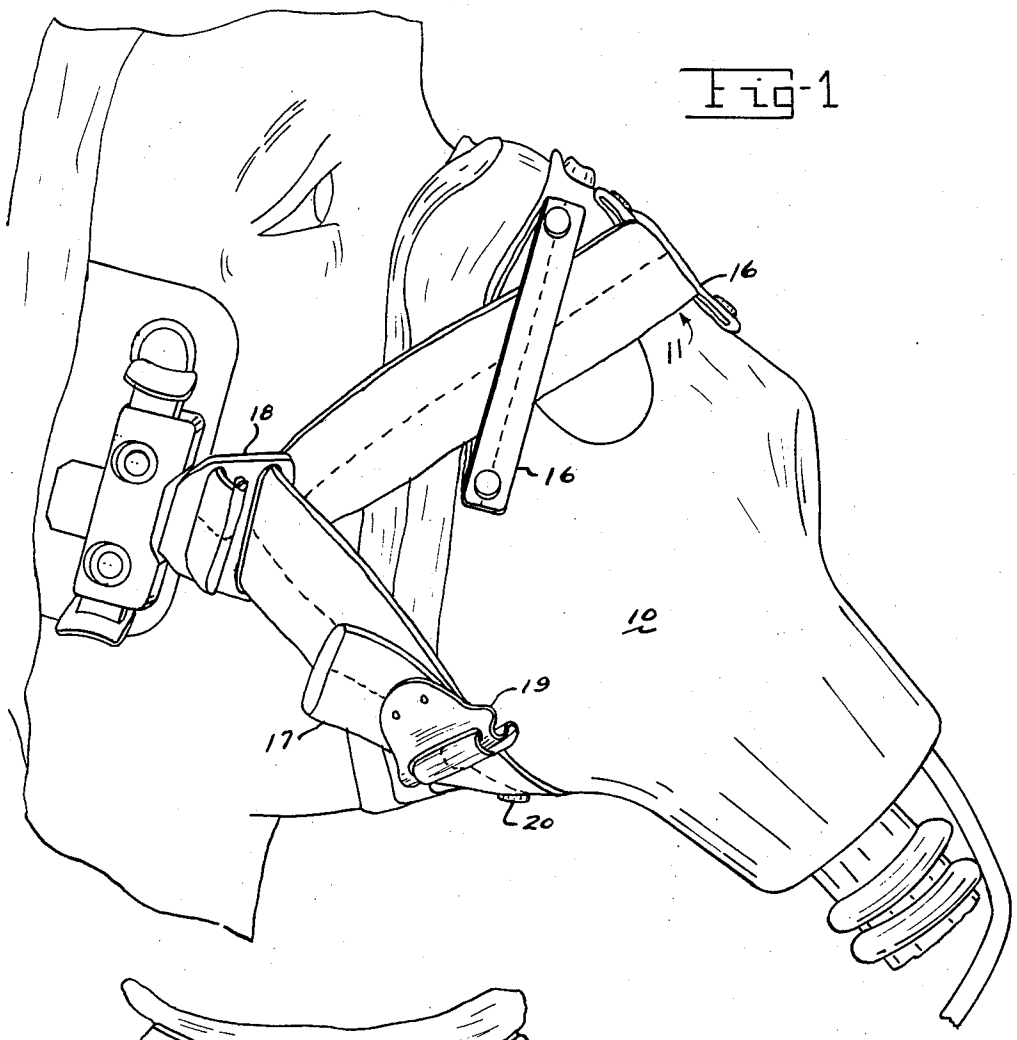
Nov. 17, 1959 H. W. SEELER 2,912,978

SELF ORIENTED MASK HARNESS ARRANGEMENT

Filed Aug. 8, 1957 2 Sheets-Sheet 1

Fig-1



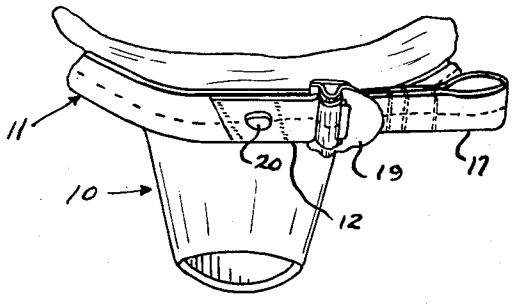


Fig-3

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SELF ORIENTED MASK HARNESS ARRANGEMENT

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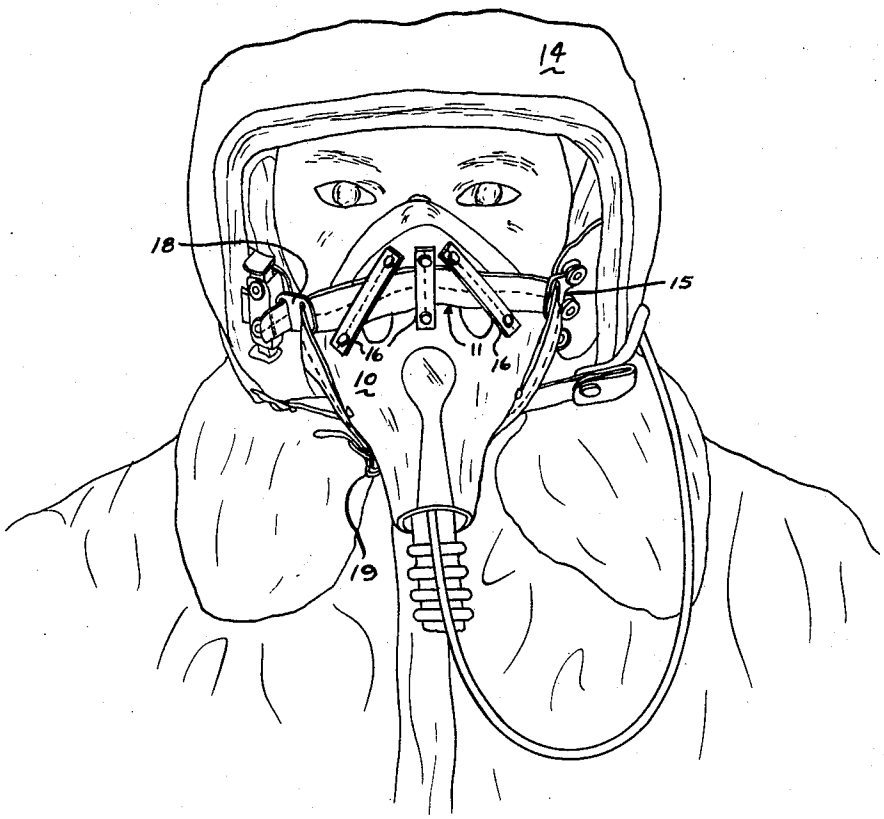


Fig-2

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SELF ORIENTED MASK HARNESS ARRANGEMENT

Henry W. Seeler, Dayton, Ohio, assignor to the United States of America as represented by the Secretary of the Air Force

Application August 8, 1957, Serial No. 677,167

4 Claims. (Cl. 128—146)

(Granted under Title 35, U.S. Code (1952), sec. 266)

The invention described herein may be manufactured and used by or for the United States Government for governmental purposes without payment to me of any royalty thereon.

This invention relates to a harness arrangement for supporting a breathing mask and, more particularly, to a single strap harness arrangement for orienting a mask against the face of the wearer.

Breathing masks, which are used by pilots of aircraft operating at high altitudes, must be fixed against the face of the wearer at high altitude with sufficient force to prevent escape of oxygen from the interior of the mask to the ambient atmosphere. When the mask is retained against the face of the wearer with a large force for a long period of time, it may become uncomfortable and the pilot may desire to shift the position of the mask on his face. The present invention satisfactorily solves this problem by permitting the mask to be retained with its desired force against the face of the wearer and yet be capable of being adjustable on the face of the wearer to a more comfortable position through the single harness strap arrangement of the present invention.

The occupant of an aircraft is sometimes subject to large gravity forces. These forces tend to cause the mask to slip down upon the face of the wearer and possibly hinder his vision. The movement of the mask due to the gravity forces also may cause the seal formed against the face of the wearer by the mask to become ineffective and the wearer no longer receives the needed oxygen. This invention satisfactorily solves these problems by retaining the mask in the desired position despite it being subject to large gravity forces.

An object of this invention is to provide a single strap harness arrangement for a breathing mask.

Another object of this invention is to provide a harness apparatus that retains a breathing mask in position when subjected to large gravity forces.

A further object of this invention is to provide a harness arrangement for a breathing mask that allows the mask to glide freely within the arrangement when the wearer pushes the mask to its most comfortable position.

Other objects of this invention will be readily perceived from the following description.

This invention relates to a means for orienting a breathing mask against the face of the wearer and includes a harness strap having a portion adjacent one of its ends secured to a lowermost portion of the mask. The harness strap extends through guide means secured to one side of a headgear or the like, guide means secured to an uppermost portion of the mask, and guide means secured to the other side of the headgear. The end of the strap, which is adjacent the portion secured to the lowermost portion of the mask, has adjustment means secured thereto to hold the other end of the strap with an adjustable force to retain the mask in its oriented position.

The attached drawings illustrate a preferred embodiment of the invention, in which

Fig. 1 is a side elevational view of the apparatus of the present invention;

Fig. 2 is a front elevational view of the apparatus of Fig. 1; and

Fig. 3 is a bottom plan view of the portion of the mask having the harness secured thereto.

Referring to the drawing, there is shown a breathing mask **10** having a single harness strap **11** secured to the lowermost portion of the mask by securing means **20** such as a rivet. The portion of the harness strap, which is secured to the lowermost portion of the mask, is adjacent one end **12** of the strap **11**. The mask is secured to a headgear **14**, which the wearer has supported on his head, by the strap **11** extending through a guide member **15**, which is secured to one side of the headgear **14**.

The mask **10** has a plurality of clamps **16** secured to the uppermost portion of the mask adjacent the nose of the wearer. The clamps **16** function as guide means for the harness strap **11** to pass therethrough after it has passed through the guide member **15** of the headgear **14**. While a plurality of clamps **16** is shown, it will be understood that only one may be employed along the uppermost portion of the mask, if desired. After the free end **17** of the strap **11** has passed through the clamps **16**, it extends through a guide member **18** on the other side of the headgear **14**.

The end **12** of the strap **11** has an adjustment means such as a buckle **19** attached to it. After the free end **17** of the harness strap **11** has passed through the guide member **18**, it extends through the buckle to be held therein by friction to retain the mask in its oriented position. The exact force, which is employed to hold the mask **10** against the face of the wearer, depends upon the position in which the free end **17** of the strap **11** is held within the buckle **19**, and, of course, is adjustable as desired.

By mounting the harness strap **11** so that it is attached to the uppermost portion of the mask **10** and secured adjacent the lowermost portion of the mask **10**, it will be observed from Fig. 1 that substantially equal forces are applied against the uppermost portion of the mask and the lowermost portion of the mask because the portion of the strap between the clamps **16** and either of the guide members **15** or **18** and the portion between the lowermost portion of the mask and the guide member are at substantially right angles. Since the force is applied through the headgear **14** and its guide member, the resultant forces equally divide between the portion of the strap, which is disposed between the clamps **16** of the mask **10** and the guide member **15** or **18** of the headgear **14** and the portion of the strap between the lowermost portion of the mask **10** and the guide member **15** or **18** of the headgear **14**. After the mask has been secured with sufficient force against the face of the wearer through adjustment of the strap by the buckle **19**, the mask **10** may be moved as desired without changing the force exerted on the mask. Thus, the harness strap arrangement of the present invention maintains the mask in oriented position against the face of the wearer at all times.

Since the forces are divided equally between the uppermost portion of the mask and the lowermost portion of the mask, the mask retains its position against the face of the wearer even when subjected to large gravity forces because of the harness arrangement. Any tendency for the mask to slip due to the large gravity forces is prevented by the force of the strap **11** acting against the mask **10**.

An advantage of this invention is that the harness arrangement produces substantially the same force at both the top and bottom of the mask to thereby keep a uniform

force upon the mask against the face of the wearer to maintain the desired seal between the mask and the face of the wearer. Another advantage of this invention is that it permits easy adjustment of the mask by only one buckle on the face of the wearer without changing the force holding the mask against the face of the wearer.

For purposes of exemplification, a particular embodiment of the invention has been shown and described according to the best present understanding thereof. However, it will be apparent that changes and modifications in the arrangement and construction of the parts thereof may be resorted to without departing from the true spirit and scope of the invention.

I claim:

1. Means for orienting a breathing mask against the face of a wearer including a single harness strap having a portion adjacent one of its ends secured to the lowermost portion of the mask; the single harness strap extending through guide means for securement to one side of a headgear or the like, guide means on an uppermost portion of the mask, and guide means for securement to the other side of the headgear; and the other end of the strap adjacent the portion secured to the lowermost portion of the mask having adjustment means secured thereto to hold the other end with an adjustable force to retain the mask in its oriented position.

2. Means for orienting a breathing mask against the face of a wearer including a single harness strap having a portion adjacent one of its ends secured to a lowermost portion of the mask; the harness strap extending through guide means for securement to one side of a headgear or the like, guide means on an uppermost portion of the mask, and guide means for securement to the other side of the headgear; and the other end of the strap adjacent the portion secured to the lowermost portion of the mask having a buckle secured thereto to hold the other end with

an adjustable force to retain the mask in its oriented position.

3. In combination, a headgear or the like having a pair of guide members, a breathing mask having securing means to said headgear comprising, a single harness strap having a portion adjacent one of its ends secured to the lowermost portion of the mask, the strap extending through one of said guide members secured to one side of said headgear or the like, said mask having guide means adjacent the upper portion thereof through which the strap passes, the strap passing through the other of said guide members secured to the other side of said headgear, and adjustment means attached to the end of the strap adjacent the portion secured to the mask to hold the other end of the strap with an adjustable force to retain the mask against the face of the wearer.

4. In combination, a breathing mask, a single harness strap having a portion adjacent one of its ends secured to the lowermost portion of the mask, the strap extending through guide means for securement to one side of a headgear or the like, said mask having guide means adjacent the upper portion thereof through which the strap passes, the strap passing through guide means for securement to the other side of the headgear, and a buckle attached to the end of the strap adjacent the portion secured to the mask to hold the other end of the strap with an adjustable force to retain the mask against the face of the wearer.

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