June 27, 1967 H. F. STICKNEY 3,327,318

WELDER'S MASK

Filed Sept. 30, 1965

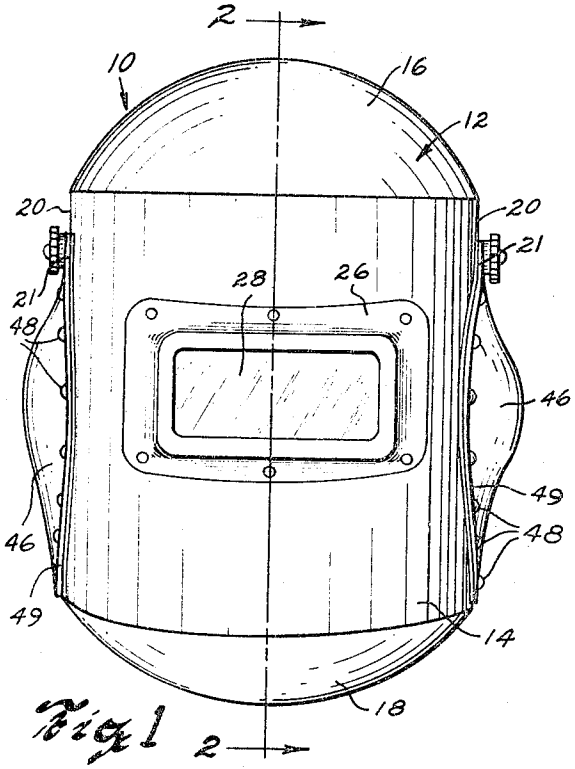


Fig 1

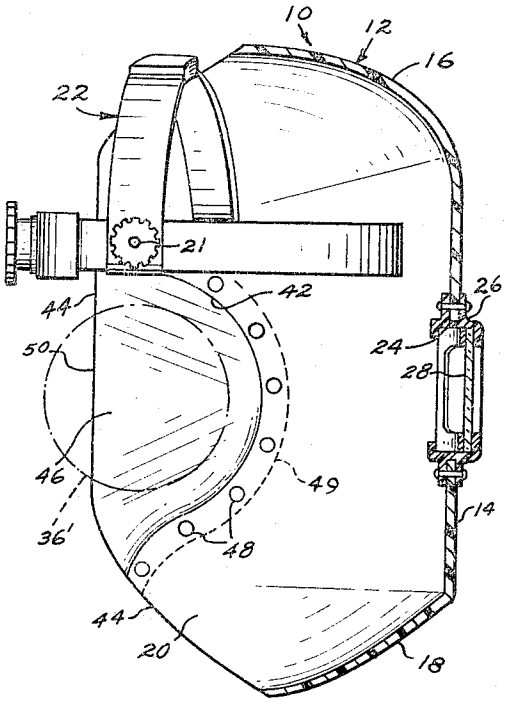


Fig 2

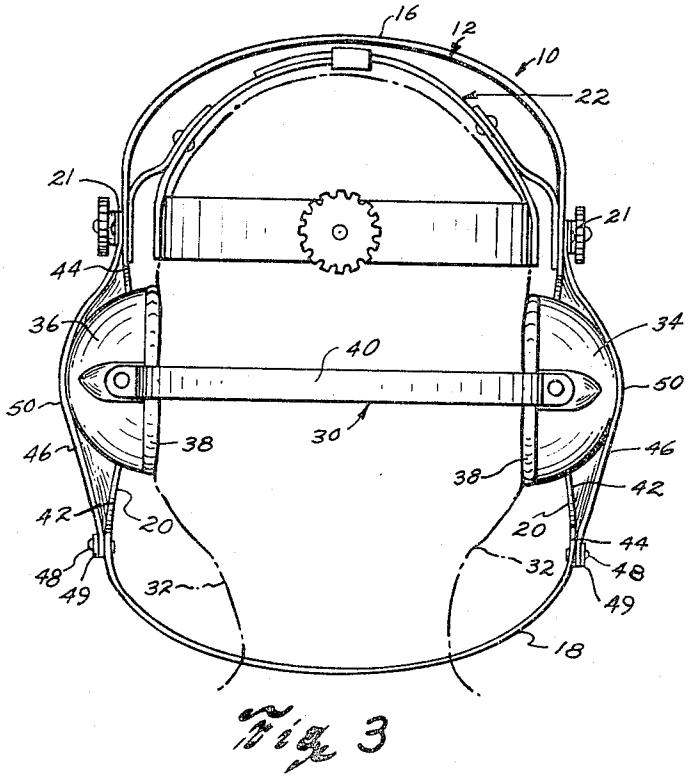


Fig 3

INVENTOR.
HERBERT F. STICKNEY
BY J. Albert Hultquist

ATTORNEY

United States Patent Office 3,327,318 Patented June 27, 1967

3,327,318

WELDER'S MASK

Herbert F. Stickney, North Woodstock, Conn., assignor to American Optical Company, Southbridge, Mass., a voluntary association of Massachusetts

Filed Sept. 30, 1965, Ser. No. 491,516
5 Claims. (Cl. 2—8)

This invention relates to welder's masks and has particular reference to improvements in masks intended to be used in conjunction with noise attenuating ear protectors.

An object of the present invention is to uniquely provide for the combined efficient use of noise attenuating ear protectors and welders' masks for protecting welders from the annoyance and/or danger of intense noise as well as the usual spattering of hot metal and injurious light during welding operations such as are required to be performed in environments of high level ambient noise.

In order to assure adequate protection from spattering hot metal and intense light produced during welding, a welder's mask must cover the front and a substantial portion of the sides of his face, including the ears, and be in such proximity that flashes of intense light from the weld are not permitted to enter between the mask and face at least to the extent of reaching the eyes. Accordingly, in situations where welding under conditions of intense noise requires the wearing of ear protectors, there is the attending problem of the ear protectors interfering with the fit as well as operation of the mask and vice-versa. In this regard, a welder's mask should be free to swing from a position away from the face theretoward and into proper alignment before the face and eyes with only slight urging such as a nod of the head. Engagement of the mask with an ear protecting headset being worn at the time of such movement must be avoided at least to the extent of not interfering with the aforementioned swinging movement of the mask and/or not causing dislodgement of the ear protectors. The latter being of importance to the achievement of optimum performance of the ear protectors in that, dislodgement of the protectors to the point of breaking their seal with a wearer's head creates air leaks which admit ambient noise. This reduces the attenuation of noise which would otherwise be enjoyed.

The problem of avoiding interference between face masks and ear protectors also concerns the transmission of mechanical vibrations from hard resilient parts of a mask to the earpieces of an ear protecting headset. Mechanical vibrations frequently occur in rigid portions of welder's masks as a result of sympathetic resonance of a mask to particular frequencies or modes of sound. Accordingly, if direct contact between the mask and rigid parts of an ear protecting headset is permitted during use thereof, transmission of such vibrations to the headset would adversely affect the expected normal attenuation of ambient noise.

It will become apparent hereinafter that the present invention takes into consideraiton all of the aforementioned problems and uniquely provides for their solution in a simple, economical and efficaceous manner. Means by which this is achieved, in accordance with one aspect of the present invention, comprises a welder's mask having a rigid facepiece pivotally carried by a head harness for swinging movement toward and from the face. Rearwardly disposed edges of opposite sides of the facepiece are recessed to the extent that the earpieces of an ear protecting headset may be received therein with ample free space for preventing their engagement by the facepiece. The recesses are each covered with a flexible material, such as leather, which is opaque, sound-absorbent and fireproof. The coverings are each riveted or otherwise fastened to sides of the facepiece adjacent the periphery of their respective recesses.

In order to freely receive the earpieces of a sound attenuating headset when the facepiece is lowered thereover, each covering is permanently bulged outwardly to form an admitting pocket. The pockets are of such size as to receive the earpieces without jamming or harsh contact. Accordingly, the facepiece may be lowered and raised to and from a position of use without positionally upsetting the earpieces or interfering with swinging movement of the facepiece. The coverings protect the sides of the face around the earpieces from spattering hot metal and prevent intense light from entering into the recessed portions of the mask. Also, in functioning as sound-deadening means, the covering shield a substantial portion of the earpieces themselves from direct exposure to ambient noise and, at the same time, they are non-conductive to mechanical vibrations occurring in the mask proper.

The present invention will be more fully understood by reference to the following detailed description which is accompanied by a drawing in which FIG. 1 illustrates, in front elevation, an embodiment of the present invention;

FIG. 2 is a longitudinal cross section of the improved welder's mask of my invention; and

FIG. 3 is a rear elevational view of the mask and an ear protecting headset both illustrated in their related positions of use.

In the illustrated embodiment of the present invention, mask **10** comprises facepiece **12** formed of a hard and durable fireproof plastic, fiberglass or fiber reinforced sheet material. Facepiece **12** is moulded, pressed from sheet stock or otherwise formed as a unitary structure having a generally cylindrical front section **14** for protecting the eyes and front of the face, a crown section **16** for forehead and top-of-the-head protection, a depending skirt section **18** for protection of the chin and neck and rearwardly directed opposing sides **20** for side-of-the-head protection.

Facepiece **12** is pivotally mounted on head harness **22** which, when supported upon the top of a head, positions the mask for swinging movement about pivot members **21** from and toward the face. Front section **14** of facepiece **12** is apertured as by opening **24** which is fitted with frame **26** having window **28** therein through which a welder can view his work. As it is customary, window **28** comprises a light filtering glass or the equivalent which is capable of filtering light from a welding arc in such manner that injurious rays emitted therefrom are not permitted to reach the eyes. When mask **10** is in a position of use, the rearwardly disposed edges of crown section **16**, skirt section **18** and sides **20** are in such proximity to the head as to prevent dangerous light from entering between the mask and head to the extent of reaching the eyes.

A typical noise attenuating headset **30** is illustrated in FIG. 3 as being in a position of use, in conjunction with mask **10**, upon a wearer's head. The wearer's head is depicted by dot-dash outline **32**. Headset **30** comprises right and left ear cups **34** and **36** respectively each adapted to receive the auricle of an ear. Cups **34** and **36** each have an annular soft cushion **38** which, when the cups are fitted over the ears and pressed toward the head, forms an air-tight seal about the ear to prevent ingress of annoying or dangerous ambient noise. Headband **40** which interconnects cups **34** and **36** is formed of spring steel or an equivalent resilient material so shaped as to extend from one cup to another about the nape of the neck or adjacent thereto in an out-of-the-way relationship with mask **10**. Spring tension in the headband urges cups **34** and **36**

toward each other tightly against the head so as to secure headset **30** thereinplace.

According to principles of the present invention, mask **10** is constructed and arranged to accommodate earpieces of noise attenuating headsets without physical and/or functional interference between the mask and headset. To accomplish this, a bay or recess **42** is formed in each of the rearwardly disposed edges **44** of sides **20** of facepiece **12** (see FIGS. 2 and 3). Recesses **42** are of such size and shape as to receive ear cups **34** and **36** with ample space therearound for preventing direct contact of facepiece **12** with the ear cups when mask **10** is supported in a position of use upon the head. This is shown not only in FIG. 3 but in FIG. 2 where circular outline **36'** is intended to illustrate the approximate diametral size and position relative to recess **42** of the portion of ear cup **36** which, in a normal position of use, is nearest the edges of recess **42**.

Since openings such as recesses **42** would ordinarily be deleterious to the protection of a welder's face and eyes in that they might permit spattering hot metal or sparks from a weld to strike through the space around ear cups **34** and **36** and/or allow an excessive amount of dangerous light including ultra-violet radiations to enter the mask, coverings **46** are extended over recesses **42**. Coverings **46** each comprise a piece of flexible sound-deadening sheet material such as leather or a suitable heavy plastic which is opaque and fireproof. They are secured, as by a series of rivets **48** extended through outwardly disposed escutcheons **49**, tightly to sides **20** of facepiece **12** adjacent the respective edges of recesses **42**. Escutcheons **49** are formed of a hard plastic or fibrous sheet material and thus prevent the heads of rivets **48** from becoming excessively indented into and/or pushed through the relatively soft material of coverings **46** during riveting. Also they assure a continuous tight seal between the coverings **46** and facepiece **12** with fewer rivets than might otherwise be required. Escutcheons **49** also function as means for concealing raw edges of coverings **46**. It should be understood, however, that coverings **46** and/or escutcheons **49** may be secured to facepiece **12** with a cement.

Coverings **46** in their secured relationship with facepiece **12** are permanently bulged ontwardly (see FIGS. 1 and 3) so as to each form, together with their respective recess **42**, a pocket at the side of facepiece **12** which is adapted to freely but relatively intimately receive an ear cup **34** or **36** of headset **30** when facepiece **12** is lowered thereover to a position of use. As it can be seen in FIG. 2, coverings **46** extend rearwardly to such an extent on facepiece **12** that edges **50** thereof are continuous with edges **44** of sides **20** so as to provide full protection of the sides of the face. Coverings **46** thus extend over a substantial portion of ear cups **34** and **36** when facepiece **12** is in a position of use and, as sound-deadening means, they shield such portion of the ear cups from direct exposure to ambient noise. Transmission of mechanical vibrations from facepiece **12** to ear cups **34** and **36** is prevented in that direct contact between the cups and rigid side portions of facepiece **12** is avoided by recesses **42**. Coverings **46**, being formed of a non-resonant or sound-deadening material, as already mentioned, are substantially nonconductive to such mechanical vibrations.

I claim:

1. A welder's mask comprising a facepiece having a front section and oppositely disposed rearwardly extending sides, a head harness, means mounting said facepiece upon said head harness for positioning said facepiece before the face and sides of a head when said mask is worn, said sides of said facepiece each having a recess extending forwardly a substantial distance from respective rearward edges thereof, a pair of coverings, of soft, flexible opaque material, means securing one of said covering to one side and the other of said coverings to the other side of said facepiece in extended relationship over said recess.

2. A welder's mask as recited in claim **1** wherein said coverings are formed of sound-deadening material.

3. A welder's mask as recited in claim **1** including an escutcheon of hard sheet material overlying the edge of each of said coverings which is secured to a side of said facepiece, and wherein said means securing said covering to said facepiece comprise a series of rivets extending through said escutcheons of hard sheet material, said covering and said facepiece.

4. A welder's mask as recited in claim **1** wherein said recesses are of such size and configuration as to each accommodate an earpiece of a sound attenuating headset with ample free space therearound to prevent engagement of such earpieces by said facepiece when said mask and headset are worn simultaneously.

5. A welder's mask as recited in claim **4** wherein said coverings are bulged outwardly to form, together with said recesses, a pocket at each side of said facepiece for receiving said earpieces of said headset.

No references cited.

JORDAN FRANKLIN, *Primary Examiner.*

J. R. BOLER, *Assistant Examiner.*