Feb. 20, 1962 H. A. LARSEN 3,021,527

FACE SHIELD FOR DETACHABLE MOUNTING ON A SAFETY HELMET, AND A SAFETY HELMET FOR USE IN CONNECTION WITH THE FACE SHIELD

Filed June 23, 1958

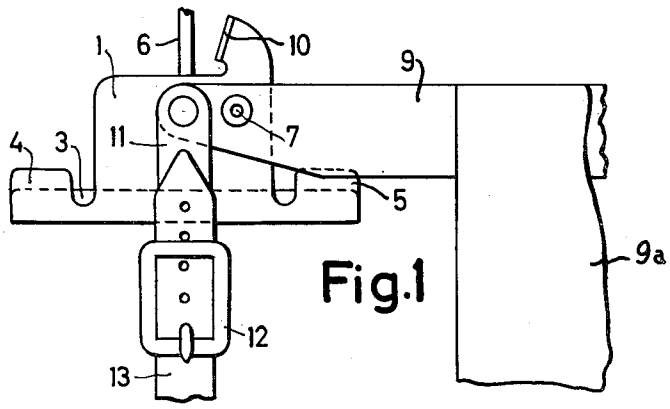


Fig.1

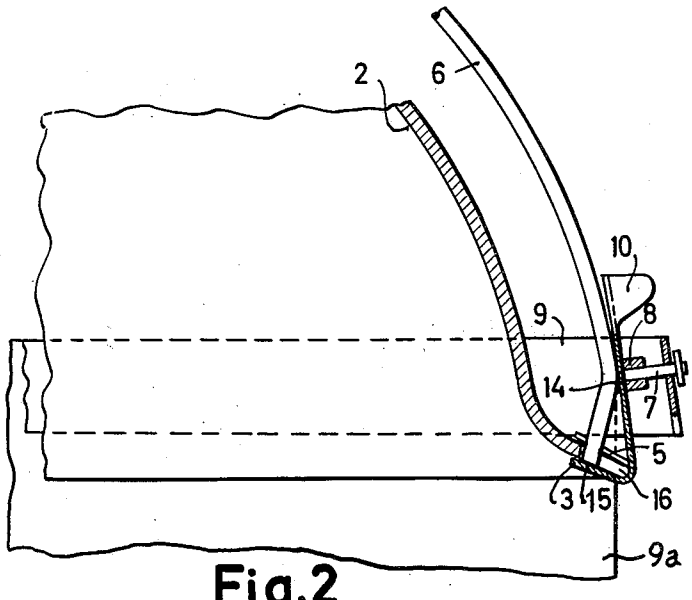


Fig.2

Hans Andreas LARSEN
INVENTOR

By:
Wenderoth, Lind & Ponack
Attys

United States Patent Office 3,021,527 Patented Feb. 20, 1962

3,021,527

FACE SHIELD FOR DETACHABLE MOUNTING ON A SAFETY HELMET, AND A SAFETY HELMET FOR USE IN CONNECTION WITH THE FACE SHIELD

Hans Andreas Larsen, 11 Rodovrevej, Copenhagen-Vanlose, Denmark

Filed June 23, 1958, Ser. No. 743,814
Claims priority, application Denmark June 27, 1957
4 Claims. (Cl. 2—8)

The invention relates to a face shield for detachable mounting on a safety helmet and with two carrying mountings provided with tongues for gripping around the rim of the helmet at opposite sides of the latter and interconnected by means of an elastic member intended for securing the carrying mountings on the helmet.

In a known construction of this type, which is particularly intended for protecting workers during the performance of works as e.g. welding, the elastic member is formed by a band of an extensible material, e.g. rubber or an elastic plastic, the said band lying taut on the outside of the helment between the two carry mountings, when the face shield is mounted on the helmet, and thereby exerting a substantially upwards-directed pull in the carrying mountings causing the latter to be retained on the helmet.

This known construction suffers from various drawbacks. The elastic band may during the use be damaged, e.g. by sparks, and has no well-defined shape, and therefore it may, particularly during the mounting of the face shield on the helmet, cause trouble, as i.a. it may be difficult to make the band lie smoothly on the outside of the helmet when the carrying mountings are brought to engage the rim of the helmet. As mentioned above, the pull in the carrying mountings exerted by the band is directed substantially vertically upwards when the helmet is kept in its normal operating position. In most types of helmets the rim is, however, bent over so much that at the points where the carrying mountings are fitted the rim zone extends substantially horizontally, and this means that the direction of engagement of the mountings is almost at right angles to the direction of the force intended for keeping them engaged. Consequently, no safe engagement is obtained, and thus there will be a great risk that one or both mountings, e.g. by an unintentional outer stress on the face shield, will lose its or their grip around the rim of the helmet so that the face shield may drop off, thereby endangering the user.

The invention has for its purpose to remedy the said drawbacks connected with the known construction. The face shield according to the invention is in order to achieve this characterized in that the elastic member is formed by a resilient, approximately semi-circular hoop of such a size that in its slack state it keeps the carrying mountings, which are rigidly connected to the ends of the hoop, at a distance from each other that is less than the corresponding distance when the face shield is mounted on the helmet. Hereby is, firstly, obtained such a sturdiness of the resilient member that the risk of damage caused by the influences, to which it is normally subjected, will be practically speaking elminated. Furthermore, the member has in itself a well-defined shape and the carrying mountings have a well-defined position in relation to the hoop, which facts entail a considerable facilitation in mounting the face shield on the helmet. Finally, the force, with which the hoop in its mounted state acts on the carrying mountings, has substantially the same direction as the direction of engagement of the mountings, and therefore far greater forces are required to bring the mountings out of engagement than is the case with the known construction.

In the cases where the face shield is swingable in bearings in the carrying mountings, the said bearings may, as the carrying mountings during their mounting on the helmet must necessarily be moved some distance away from each other, according to the invention be so arranged as to permit this motion without the face shield proper being deformed.

To ensure a great rigidity of the connections between the ends of the hoop and the carrying mountings the hoop may according to the invention extend down to the lower tongues of the carrying mountings.

The invention also relates to a safety helmet for use in combination with a face shield in accordance with the embodiment just described, this helmet furthermore making possible a fixation of the carrying mountings in certain places along the rim of the helmet. To obtain this fixation the helmet according to the invention is provided with cuts so located and designed that the hoop can engage them and thereby fix the face shield in its proper position.

In the following the invention will be described in detail with reference to the drawing where

FIG. 1 illustrates a side elevation of an embodiment of a carrying member for a face shield according to the invention, and

FIG. 2 a rear view section of the same carrying mounting mounted in place on a safety helmet according to the invention.

The carrying mounting shown comprises a main part **1** which, when the carrying mounting is fitted on a safety helmet **2** kept in its normal operating position, is substantially vertical, besides a lower tongue **3** which extends for the full length of the main part, reaching out under two upper tongues **4** and **5**. The tongues are intended for gripping around the rim of the helmet **2**, see FIG. 2, and thereby fixing the carrying mounting in the vertical direction in relation to the helmet.

The carrying mounting shown in the drawing is through a resilient, approximately semi-circular metal hoop **6** connected to a corresponding carrying mounting at the opposite side of the helmet. The metal hoop has such a size that the distance between the carrying mountings in the slack state of the hoop is less than the corresponding distance when the carrying mountings are fitted on the helmet. In their mounted state the carrying mountings are therefore stressed in the direction towards each other, and hereby a secure engagement is obtained between the tongues of the carrying mountings and the rim of the helmet.

In the carrying mountings there is on a pin **7**, which through a distance piece **8** is secured to the main part, journalled an approximately semi-circular bar **9** which can swing between two positions, viz. the substantially horizontal position shown in the figures, where it abuts on the upper tongue **5**, and an approximately vertical position, where it abuts on a tongue **10** on the main part **1**. The bar **9** carries a face shield **9a** of a transparent, possibly coloured material or having a window of such a material. In the position of the bar **9** shown in the figures this shield is substantially vertical.

At one end the bar **9** is rotatably connected to a strap **11** which carries a buckle **12** for a leather thong **13**. This thong is connected to a chin cup, not shown, which at its opposite side has a corresponding connection with the other end of the bar **9**. Hereby is attained that, when the lengths of the thongs **13** are suitably adjusted, the user can make the bar **9** swing from the position shown in the figures into the other extreme position by lowering his lower jaw. By this motion of the bar **9**, the face shield is removed from the face. For the sake of perspicuity the actuating mechanism for the bar is not shown in FIG. 2.

In order to obtain a great rigidity of the connections

between the ends of the hoop **6** and the carrying mountings, the hoop extends all the way down to the lower tongue **3** and is secured, e.g. by soldering or welding, to two points on each carrying mounting, viz. to a point of fixation **14** on the main part **1** and to a point of fixation **15** on the lower tongue **3**. This rigidity of the connections ensures an easy mounting on the helmet **2** of the total face shield construction comprising the two carrying mountings with the parts **1**, **3**, **4**, **5**, and **10**, the hoop **6**, and the bar **9** with associated shield and actuating mechanism.

The fact that the hoop **6** extends all the way down to the lower tongue **3** can also be utilized for positioning the carrying mountings along the rim of the helmet **2**, for which purpose cuts **16** have been made in this rim, which cuts have such a form that the hoop **6** can engage them. By these means the carrying mountings are secured in a certain position along the rim.

The mounting of the assembled face shield construction on the helmet is effected either by one carrying mounting being fitted in its final place at one side of the helmet, whereupon the other carrying mounting is against the resilience of the hoop **6** led out over the rim of the helmet at the opposite side of the latter so that the said rim engages between the tongues **3** and **4**, **5**, or by a simultaneous sliding in of the two carrying mountings along the rim zones of the helmet from the front or rear of the helmet. As in all cases a motion of the two carrying mountings in the direction away from each other is required, and as the bar **9** with the face shield mounted on it is usually so stiff that it cannot participate in this motion, the bearings for the bar **9**, i.e. the pins **7**, are so designed that they permit the said motion of the carrying mountings without the bar **9** being deformed.

In the embodiment shown in the figures the main part **1** and the tongues **3**, **4**, **5**, and **10** are made in one piece. One or more of the tongues may, however, also be secured, e.g. welded, to the main part **1**.

In the figures the hoop **6** is shown located in a vertical plane. The plane of the hoop may, however, also have other inclinations, e.g. be horizontal, and furthermore the hoop may have such a form that it extends substantially below the outwards-directed rim zone of the helmet.

The hoop **6** need not, as is the case in the embodiment described, be of metal, but may be of some other material, e.g. plastic, of such a nature that the hoop has a well-defined form in its slack state.

Finally, the face shield proper may, with or without preserving the bar **9**, be secured immovably to the carrying mountings and not, as shown, be swingable in the latter.

I claim:

1. In combination, a safety helmet having an outwardly directed rim, a detachable face shield, two carrying mountings connected to opposite ends of said shield, a plurality of tongues on each of said mountings gripping said rim of said helmet at substantially diametrically opposite points thereon, a resilient substantially semi-circular shaped hoop having each end connected to one of said carrying mountings and having a dimension such that in the unstressed condition of said hoop the distance between said carrying mountings is smaller than the corresponding distance when said mountings are in position at said points on said rim, said rim of said helmet having notches therein at the points of attachment of said carrying mountings, and positioning members on said carrying mountings engaging with said notches.

2. A combination as claimed in claim 1, wherein said positioning members are constituted by the end portions of said hoop.

3. A combination as claimed in claim 1, in which said plurality of tongues comprises a number of upper tongues and a number of lower tongues, said hoop extending down to said lower tongues, and wherein said positioning members are constituted by the portions of said hoop lying between the upper tongues and the lower tongues.

4. In combination, a safety helmet having an outwardly directed rim, two detachable carrying mountings, a plurality of tongues on each of said mountings gripping said rim of said helmet at substantially diametrically opposite points thereof, a resilient substantially semi-circular shaped stable-form hoop having each end connected to one of said carrying mountings and having a dimension such that in the unstressed condition of said hoop the distance between said carrying mountings is smaller than the corresponding distance when said mountings are in position at said points on said rim, said rim of said helmet having notches therein at the points of attachment of said carrying mountings, positioning members on said carrying mountings engaging with said notches, a bearing in each of said mountings, and a face shield rotatably mounted in said bearings, each of said bearings having a pin therein on which the face shield is slidably mounted, said pins being of a length so as to allow relative movement of said mountings and said face shield in the axial direction of said pins.

References Cited in the file of this patent

UNITED STATES PATENTS

2,326,376	Markgraf	Aug. 10, 1943
2,358,978	Huntsman	Sept. 26, 1944
2,588,553	McWethy	Mar. 11, 1952
2,759,188	Maillart	Aug. 21, 1956
2,801,423	Shaw et al.	Aug. 6, 1957

FOREIGN PATENTS

1,096,543	France	Feb. 2, 1955