

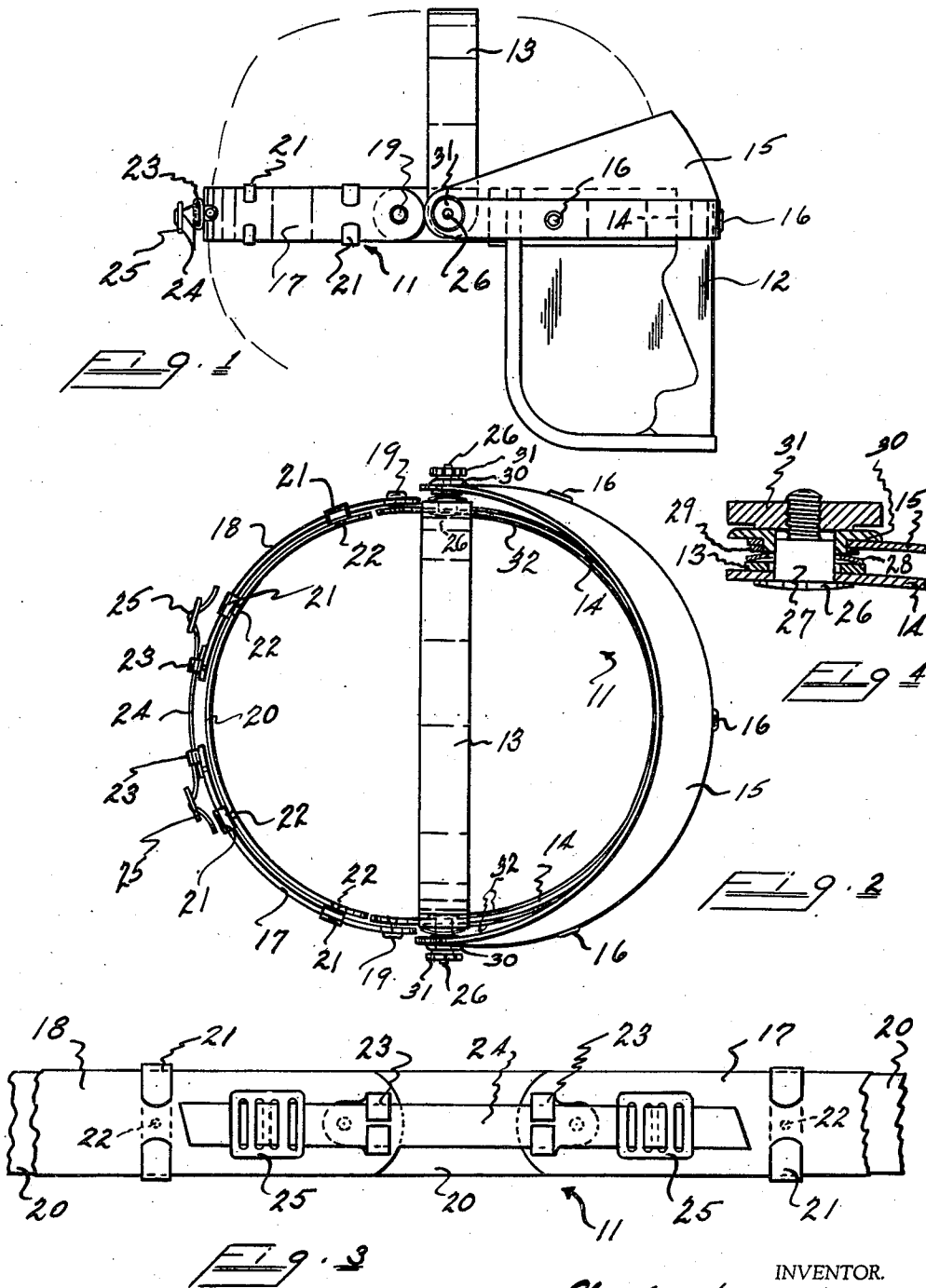
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PROTECTIVE DEVICE

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PROTECTIVE DEVICE

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18 Claims. (Cl. 2—8)

This invention relates to a new type of adjustable head gear worn over the head, supporting a shield suitable to protect the face and eyes of a user engaged in welding, grinding, chemical, wood, or metal working, or other work necessitating protection of the head, face, and eyes.

More particularly, this invention relates to an axially adjustable face protecting device supported in spaced relation upon a headband, the latter being provided with resilient means rendering said headband comfortably adaptable to different sized and shaped heads.

The object of this invention is the provision in a face-protecting device of a headband with the inside thereof of a substantially continuous smooth curvature, whereby an even tension is produced entirely around the operator's head, eliminating bumps and other irregularities therein, which heretofore have occasioned discomfort.

It is the object of this invention to provide a headband with the ends thereof separated and arcuately movable with respect to each other, and with an inner intermediate member slidably mounted on said end portions whereby a continuous head-engaging band is formed, adapted to a plurality of head sizes.

It is the further object of this invention to provide means integral with said inner intermediate member slidably engageable with the loose end portions of the headband, whereby adjustment thereof is accomplished with a minimum of friction, at the same time maintaining substantial rigidity.

It is the still further object hereof to provide in a protective device of this class, an adjustable resilient means between the loose ends of the headband whereby the same is readily adaptable to a plurality of head sizes and also readily adaptable to various positions upon the operator's head.

It is the further object of this invention to provide means on said intermediate member to act as a stop for the ends of the headband, and at the same time prevent the head gear from becoming accidentally disassembled.

It is the further object hereof to provide a featherweight construction with ample ventilation, so designed that the shield may be worn over prescription glasses.

It is the further object of this invention to provide a pivotal connection between the rotatable shield, and headband, with a resilient friction means interposed therebetween, whereby

said shield may be rotatably adjusted and secured upon an immovable pivot.

It is the further object hereof to provide pivots for the back band, disposed independently of the shield assembly pivots, whereby a better grip is accomplished by the rear band upon the back portion of the head, and whereby a substantially continuous inner curvature relation between the front and back bands results.

The invention hereinafter described in detail relates to the various arrangements of parts and combinations thereof, as shown in the drawing, of which:

Figure 1 is a side elevational view of the head-gear.

Figure 2 is a top-plan view thereof.

Figure 3 is an enlarged rear-end elevational view of the headband forming a part of said headgear.

Figure 4 is an enlarged sectional segment of the shield pivotal connection.

It is understood that the drawing referred to is merely by way of illustration, as preferable embodiments of the invention, and that the inventor herein does not intend to be limited thereby.

In the drawing, the protective device consists of a fibre headband 11, a shield 12 pivotally mounted thereon at points 26, and a transversely positioned semi-circular headband supporting fibre member 13 also pivoted at points 26.

In the preferable embodiment of the invention, the elastic members are made of steam-moulded fibre segments.

The headband 11 consists of an arcuate front member 14 to which is pivotally secured at points 26 a rotatable shield supporting member 15, said support providing forehead protection. The shield 12, preferably made of a transparent non-inflammable material, or other non-inflammable material with a sight opening, preferably cellulose acetate, downwardly depends from said rotatable shield support 15, being removably secured thereto at points 16.

The rear portion of the headband 11 consists of arcuate members 17 and 18 loosely riveted on their ends at points 19 to the end portions of the front member 14 and on the outside thereof. Members 17 and 18 of steam-moulded fibre are flexible, and are designed for radial flexion, whereby the peripheral size of the headband may be varied as required to fit the individual head.

An intermediate flexible member 20 is slidably disposed within and upon members 17 and 18 by means of a plurality of clips 21, the latter being

riveted to said intermediate member 20 at points 22. It will be noted that clips 21 are spaced relatively far apart and have minimum bearing surfaces on the sliding members 17 and 18, whereby rigidity is obtained for headband 11, at the same time minimizing friction.

Intermediate member 20 is positioned within expansible members 17 and 18 in order that a smooth and comfortable head-engaging surface is obtained within headband 11. It is seen, then, that the inner surface of member 20 coincides and co-operates with the inner surface of member 14 to form a substantially continuous, comfortable head-engaging surface.

A resilient adjustable connection is provided between the ends of members 17 and 18 by means of clips 23 riveted thereto. An elastic member 24, preferably made of rubber or other resilient material, is slidably disposed through clips 23 and has buckles 25 adjustably disposed adjacent its ends, outside clips 23.

It will be noted that clips 21 shown in Figure 3 co-operate with clips 23, and thus positioned with respect to each other, prevent the headband from becoming accidentally disassembled. It is seen also that buckles 25 are readily adjusted to any desired position. Resilient connection 24 enables the headband 11 to comfortably seat upon an operator's head, and is never tight enough to interfere with circulation.

The rear portion of headband 11 comprising members 17 and 18 is loosely riveted at points 19 on the ends of member 14, enabling an operator to axially rotate said rear portion to other points on the back of the head by virtue of the resilient connection 24 between members 17 and 18. The adjustment is easily accomplished without the need of loosening screws, bolts, or other devices.

Being pivoted at points 19 behind the shield pivots 26 a more acute angle may be obtained between the rear portion of the headband and the front portion thereof, whenever said rear portion is tilted upon the back of the operator's head. Consequently a better grip is obtained.

Referring to Figures 2 and 4, arcuate member 14 has disposed through square openings in its ends headed pivot screws 26, having square portions 27 co-operating with said openings whereby a non-rotatable relation is maintained between parts 14 and 26.

Head-engaging band 13 with openings on its ends is loosely and rotatably journaled on said screws adjacent headband member 14.

A resilient spring steel or other washer 28 journaled on screw 26 provides, when compressed, a frictional relationship at said pivotal connections.

A fibre washer 29 is interposed between washer 28 and the ends of the shield support 15, and a bushing 30 with a square opening to co-operate with the square portions 27 is disposed on the outside of said rotatable shield support 15. Consequently, the latter rotates on the bushing, while said bushing remains fixed with respect to screw 26.

A knurled hand adjusting nut 31 threadedly journaled on screw 26 provides for manual adjustment of said pivotal connection.

By this precision construction, a positive pivot assembly is provided and consequently, any rotative movement of the shield and its support 15 is independent of headband 11, so that nut 31 will not work loose.

The spring washer 28 is designed to exert an even frictional compression whereby the shield

is at all times maintained in adjusted position.

By separately pivoting members 17 and 18, it is seen also that their rotative adjustment is entirely independent of the pivotal adjustment of the shield with respect to the headband. This has an advantage in permitting the user to rotatably regulate the back portions 17 and 18 of said headband to various restful positions on the back of the head, without interfering with the position of the shield.

When not in use, the face guard 12 and its support are rotatable upwards on said screws 26, tightening adjustment being provided by means of knurled nuts 31, threadedly journaled on the ends of said screws.

Member 14 forming a part of headband 11 is disposed in spaced relation to the surface of shield 12 and its support 15. Said member 14 may be provided with a padded sanitary and comfortable perspiration-resistant band 32, suitably secured thereto. Similarly, though not shown in the drawing, it is contemplated that a sweatband be also provided upon the rear portion of the headband such as on the inside surface of member 20, thereby providing a substantially continuous inner curvature in relation to the padded sweatband 32.

Having described my invention, reference should be had to the claims which follow for determining the scope of said invention.

I claim:

1. A protective device comprised of a flexible adjustable headband, consisting of an arcuate front member, arcuate rear member pivoted to said front member, an intermediate arcuate member adjacent said rear members and substantially coextensive therewith with its inner surface coinciding with the inner surface of the front member to form a substantially continuous and smooth head engaging surface, and means secured to said intermediate member for slidably supporting said rear members, to permit peripheral adjustment of said headband; and a shield pivoted to said front member.

2. A protective device comprised of a flexible headband consisting of an arcuate front member, arcuate rear members pivoted to said front member, an intermediate arcuate member slidably supporting said rear members, resilient means joining the loose ends of said rear members; and a shield pivoted to said front member.

3. A protective device comprised of a flexible adjustable headband, consisting of an arcuate front member, arcuate rear members pivoted to said front member, an intermediate arcuate member adjacent said rear members and substantially coextensive therewith with its inner surface coinciding with the inner surface of the front member to form a substantially continuous and smooth head engaging surface, and means secured to said intermediate member for slidably supporting said rear members, to permit peripheral adjustment of said headband; a shield pivoted to said front member; and head-engaging means pivotally secured to said head-band.

4. A protective device comprised of a flexible and resiliently adjustable headband, consisting of an arcuate front member, arcuate rear members pivoted at one of their ends to said front member, an intermediate arcuate member adjacent said rear members, and means in spaced relation secured to said intermediate member for slidably supporting separately said rear members to permit peripheral adjustment of said headband; a shield pivoted to said front member; and

head-engaging means pivotly secured on its ends to the pivotal connection of said shield.

5. A protective device comprised of a headband, consisting of an arcuate front member, arcuate rear members pivoted on their ends to the ends of said front member, an intermediate arcuate member slidably supporting said rear members and substantially coextensive therewith with its inner surface coinciding with the inner surface of the front member to form a substantially continuous and smooth head engaging surface, and resilient means joining the ends of said rear members; a shield pivotly connected to said front member; and a head-engaging band pivotly secured upon its ends to said head-band.

6. In a protective device of the class described, having a rotatable shield, an adjustable headband, consisting of an arcuate front member, arcuate rear members, rotatably pivoted to said front member and having free ends, an intermediate arcuate member with means secured thereto for slidably supporting said rear members said arcuate member being substantially coextensive with said rear members, with its inner surface coinciding with the inner surface of the front member to form a substantially continuous smooth head engaging surface, retaining means secured to said free ends, a resilient member disposed through said retaining means, and adjustable means on said resilient member on the outside of said retaining means.

7. In a protective device of the class described, having a rotatable shield, an adjustable headband, consisting of an arcuate front member, arcuate rear members, rotatably pivoted to said front member and having free ends, an intermediate arcuate member with clips secured thereto for slidably supporting said rear members said arcuate member being substantially coextensive with said rear members, with its inner surface coinciding with the inner surface of the front member to form a substantially continuous smooth head engaging surface, looped clips secured to said free ends, an elastic member disposed through said clips, and adjustable buckles on said elastic member on the outside of said clips.

8. A protective device of the class described comprised of a headband consisting of an arcuate front member, and arcuate resiliently adjustable rear members rotatably pivoted on their ends to the ends of said front member, an intermediate arcuate member adjacent said rear members having means thereon for slidably supporting said rear members, said intermediate member being inside the rear members and substantially coextensive therewith, with its inner surface coinciding with the inner surface of the front member, so as to provide a substantially continuous smooth surface to co-operate with said front member, and resilient means interposed upon the ends of said rear members for regulating the peripheral length of said head-band.

9. A protective device comprised of a peripherally adjustable headband having an arcuate front member, an arcuate rear member pivoted thereto, said rear member consisting of two arcuate members with free ends, an intermediate arcuate member substantially coextensive with said rear members with its inner surface coinciding with the inner surface of the front member to form a substantially continuous and smooth head engaging surface, and means secured thereto for slidably supporting said rear

member, whereby said headband is expansible, while maintaining a substantially elliptical shape, resilient means connecting said free ends, and adjusting means journaled on said resilient means; a shield pivotly connected to said front member; and a head-engaging band connected on its ends to said head-band.

10. In a protective device of the class described, having a rotatable shield, an adjustable headband, consisting of an arcuate front member, arcuate rear members, rotatably pivoted to said front member and having free ends, an intermediate arcuate member with means secured thereto for slidably supporting said rear members, said arcuate member being substantially coextensive with said rear members, with its inner surface coinciding with the inner surface of the front member to form a substantially continuous smooth head engaging surface, retaining means secured to said free ends, a resilient member disposed through said retaining means, and adjustable means on said resilient member on the outside of said retaining means, the rear members of said headband being pivoted independently of the pivotal connection of said face shield, whereby the rear members of said headband are rotatable independently of said front member and shield.

11. In a protective device of the class described, having a rotatable shield, an adjustable headband, consisting of an arcuate front member, arcuate rear members, rotatably pivoted to said front member and having free ends, an intermediate arcuate member with means secured thereto for slidably supporting said members, said arcuate member being substantially coextensive with said rear members, with its inner surface coinciding with the inner surface of the front member to form a substantially continuous smooth head engaging surface, a resilient member joining said free ends, and adjustable means on said resilient member.

12. In a protective device of the class described, having a rotatable shield, an adjustable headband, consisting of an arcuate front member, arcuate rear members, rotatably pivoted to said front member and having free ends, an intermediate arcuate member with means secured thereto for slidably supporting said rear members, said arcuate member being substantially coextensive with said rear members, with its inner surface coinciding with the inner surface of the front member to form a substantially continuous smooth head engaging surface, retaining means secured to said free ends, and a resilient member disposed through said retaining means.

13. In a protective device of the class described, having a rotatable shield, an adjustable headband, consisting of an arcuate front member, arcuate rear members, rotatably pivoted to said front member and having free ends, an intermediate arcuate member adapted to slidably support said rear members, retaining means secured to said free ends, and a resilient member joining said retaining means.

14. A protective device comprised of a flexible headband consisting of an arcuate front member, arcuate rear members pivoted to said front member, an intermediate arcuate member slidably supporting said rear members, resilient means joining the loose ends of said rear member, and a shield pivoted to said front member, the rear members of said headband being pivoted independently of the pivotal connection of said shield, whereby the rear members of said

headband are rotatable independently of said front member and shield.

15. In a protective device of the class described, a flexible headband consisting of an arcuate front member, arcuate rear members pivoted to said front member, an intermediate arcuate member slidably supporting said rear members, resilient means joining the loose ends of said rear members, non-rotative pivot means disposed through said front member adjacent the pivotal connections of said rear members, a bushing non-rotatively disposed upon each of said pivot means, a shield support rotatively journaled on said bushings, friction means interposed between said headband and shield support, the opposite ends of said friction means cooperatively engaging said headband and shield support, and means for compressively adjusting said friction means.

16. A protective device comprised of a flexible headband consisting of an arcuate front member, arcuate rear members pivoted to said front member, an intermediate arcuate member slidably supporting said rear members, resilient means joining the loose ends of said rear members, non-rotative pivot means disposed through said front member, a bushing non-rotatively disposed upon each of said pivot means, a shield

support rotatably journaled on said bushings, friction means interposed between said headband and shield support, and means for compressively adjusting said friction means.

17. A protective device comprised of a flexible headband consisting of an arcuate front member, arcuate rear members pivoted to said front member, an intermediate arcuate member slidably supporting said rear members, resilient means joining the loose ends of said rear members, non-rotative pivot means disposed through said headband, a bushing non-rotatively disposed on each of said pivot means, a shield support rotatively journaled on said bushings, and means for frictionally engaging said shield support.

18. A protective device comprised of a flexible headband consisting of an arcuate front member, arcuate rear members pivoted to said front member, an intermediate arcuate member slidably supporting said rear members, resilient means joining the loose ends of said rear members, pivot means disposed through said headband, bushings mounted upon said pivot means, a shield support rotatably journaled on said bushings, and means on said pivot means for frictionally engaging said shield support.

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