July 3, 1962 F. J. GURTOWSKI 3,041,622

ADJUSTABLE HEADBAND

Filed Sept. 11, 1959

Fig.1.

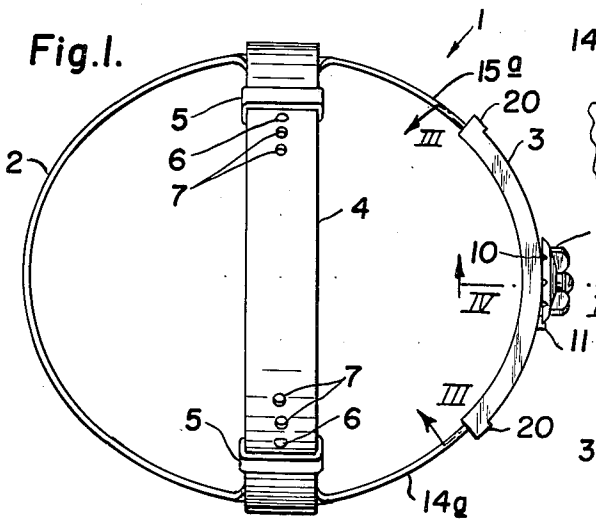


Fig.3.

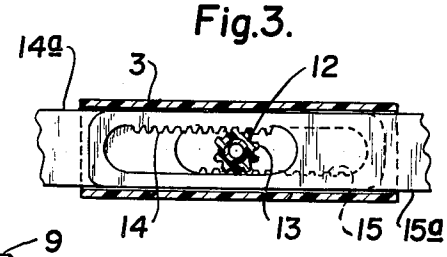


Fig.4.

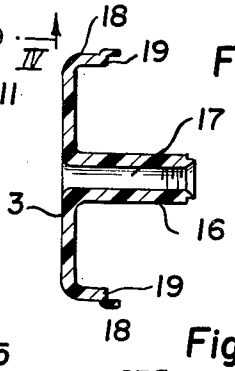


Fig.5.

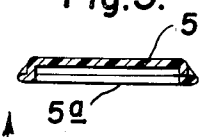


Fig.2.

Fig.7.

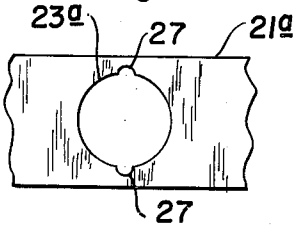


Fig.8.

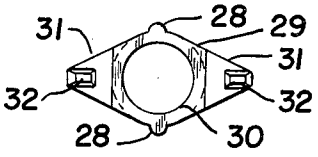
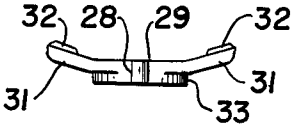


Fig.9.



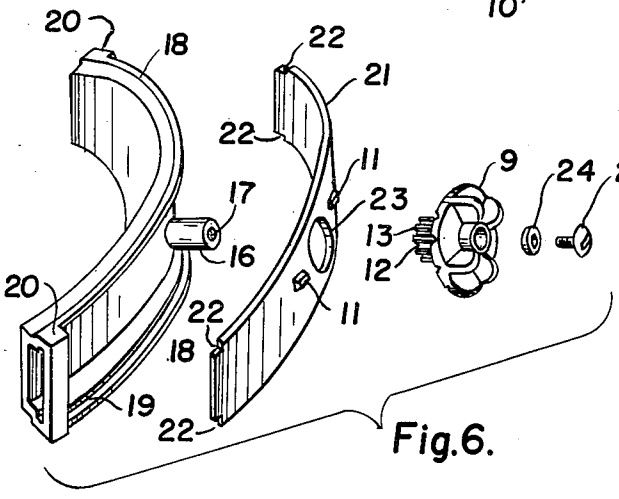


Fig.6.

INVENTOR.

Francis J. Gurtowski

BY

William J. Ruano

ATTORNEY

United States Patent Office

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ADJUSTABLE HEADBAND

Francis J. Gurtowski, Reading, Pa., assignor to The Electric Storage Battery Company, Philadelphia, Pa.

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This invention relates to an adjustable headband of the type for use with welding helmets, eye shields and the like, for the purpose of mounting a protective element in position to protect the face of the wearer.

It is now common practice in the art to provide a headband with means for adjusting the headband to fit the head of different wearers. However, one outstanding disadvantage of adjustable means commonly employed is that they are complicated in construction, comprising numerous parts, particularly parts of metal, such as springs, which are expensive to manufacture and which are unsafe in certain types of work wherein there exists the possibility of the shield or associated parts striking a live electrical conductor which might transfer an injurious shock to the wearer.

A still further disadvantage of common types of headband adjustments is that they are often difficult to adjust and do not provide a symmetrical adjustment, particularly about the crown strap, nor do they permit substitution of one crown strap for another so as to permit the mounting of shields other than welding shields, such as face shields, eye shields and the like, as is possible in accordance with the present invention.

An object of the present invention, therefore, is to provide a novel adjustable headband including inexpensive and easily operable adjusting means which may be made entirely of plastic material, which adjusting means is devoid of the above named disadvantages.

A more specific object of the present invention is to provide a headband assembly including a novel hair guard which may be made entirely of plastic material in an easily removable or dismountable fashion whereby metal spring elements and the like may be omitted without omitting their spring functions.

A still further object of the invention is to provide an adjustable headband for shields, including a simple and inexpensive crown strap which may be easily adjusted in a symmetrical fashion and which may be easily replaced by another crown strap for mounting other than welding shields, such as a face or eye shield.

Other objects and advantages of the present invention will become more apparent from a study of the following description taken with the accompanying drawing wherein:

FIG. 1 is a top view of an adjustable headband embodying the principles of the present invention;

FIG. 2 is a side, elevational view of the headband shown in FIG. 1;

FIG. 3 is an enlarged, longitudinal, cross-sectional view taken along line III—III of FIG. 1;

FIG. 4 is an enlarged, cross-sectional view taken along line IV—IV of FIG. 1;

FIG. 5 is a cross-sectional view taken along line V—V of FIG. 2;

FIG. 6 is an exploded, perspective view of the hair guard assembly shown in FIGS. 1 and 2;

FIG. 7 is a fragmentary, plan view of the cover portion 21*a* of a modification of the hair guard;

FIG. 8 is a top view of a friction spring for mounting in opening 23*a* shown in FIG. 7;

FIG. 9 is a front, elevational view of the friction spring shown in FIG. 8.

Referring more particularly to FIGS. 1 and 2 of the drawing, numeral 1 denotes generally a headgear assembly which is molded of plastic material, preferably, although it may also be of fibrous or other materials. The headband is of the adjustable type and includes a headband strap 2 having overlapping end portions surrounded or enclosed within a hair guard 3 of tubular construction, and includes an adjustable crown strap 4.

The crown strap 4 is an entirely separate strap, therefore may be easily replaced by a different type of strap, and is provided with a plurality of longitudinally spaced holes 7. In one of each of the holes, along the side portions of the strap, there is inserted a collar button 6, preferably of plastic material, such as nylon mounted on upward extensions 5*a* on the sides of the headband 2. Instead, the collar button may be integrally secured to each of the upwardly extending, side extensions 5*a* of the headband.

The collar button is selectively inserted in any one of the holes, depending upon the size of the head of the wearer. By such adjustment there is provided equal or symmetrical adjustments for the side portions or extensions of the headband 4, that is to say, the extensions 4*a* thereof, on which are pivotally mounted the welding helmet or shield, may be omitted or made shorter in some applications so as to mount other items, such as face shields or eye shields, by the simple expedient of replacing the crown strap 4 with another suitable strap. The enlarged base of the collar button rests on part 5*a* at the adjustable positions of the crown strap. Thus by simply pushing down on the outwardly projecting portion of the collar button so as to remove it from one of the holes 7 and sliding the crown strap 4 through loop 5, the collar button may be reinserted in any of the other holes 7 to adjust the size of the crown strap to suit the head of the particular wearer.

An important feature of the present invention resides in the construction of the hair guard which is shown more clearly in FIG. 6 and which comprises an arcuate channel or base portion 18 having integrally molded loops 20 at the ends thereof and a removable cover portion 21 which together with portion 18, forms a tubular element of rectangular cross-section, as shown more clearly in FIGS. 1 and 2. The cover piece 21 is adapted to be supported on the shelf portions or ledges 19 extending along the length of the base to provide shoulders upon which may be supported the longitudinal edge portions of the cover piece 21 after the cover portion is slid through one of the loops 20. A hollow cylindrical stud 16, also plastic material, is integrally molded to and extends from the central portion of the base of channel 18 and has a threaded hole 17 in the end thereof in which is adapted to be screwed a screw 25. Lugs 11 are integrally molded substantially centrally on and project upwardly from the top piece 21. An adjusting knob 9, also preferably of plastic material, has integrally molded thereon an extension 12 having spur gear teeth 13 which are adapted to mesh with the rack teeth 14 formed on the band extension 14*a* and the rack teeth 15 formed on the end extension 15*a* of the headband 2 when the end portions of the headbands are in overlapping relationship inside hair guard 3, as shown more clearly in FIG. 3. Thus depending upon the direction of rotation of adjusting knob 9, there would be more or less overlapping, therefore a smaller or greater circumference of the headband. Screw 25 projects through washer 24 which rests on the central tubular portion of knob 9, which tubular portion telescopically fits on stud 16 thereby holds the adjusting knob in place, that is, surrounding the stud 16. The outer end portion of said tubular portion is made of larger diameter than stud 16 forming an annular well in the knob. Since there is no immediate support transversely of the cover piece 21 it has a certain springiness,

therefore the lugs **11** will yield or flex somewhat as the knob **9** is turned so that lugs **11** will selectively fit into any pairs of radial grooves **10** for maintaining any selected adjustment of knob **9**.

FIGS. 7, 8 and 9 show a modification wherein the headband strap **21***a* has a hole **23***a* and slots **27** in which may fit the hub portion **33** and projections **28** of the friction spring of plastic or metal, shown in FIGS. 8 and 9. Lugs **11**, shown in FIG. 6, are omitted and in place thereof will be substituted the arms **31** of the friction spring which have upstanding integral projections **32** which are engageable in selective pairs of slots **10** on the under surface of knob **9**. The springiness of the arms will permit projections **32** to yield and retract as the knob is rotated and to spring back into a new pair of radial slots **10**.

Thus it will be seen that I have provided an efficient headband assembly which is particularly suitable for supporting welding shields but which may be used for supporting other types of shields by simply replacing a separable crown strap; furthermore I have provided a crown strap adjusting means which provides a symmetrical adjustment on both sides of the head by providing two adjustments, one on each side of the head to provide equal extensions for pivotally supporting the welding shield; furthermore, I have provided a hair guard assembly including an adjusting knob means, which assembly is made up of a minimum number of parts, all of which may be of plastic material and being devoid of a metal spring, yet which retains the spring function of the normal metal spring, also which enables easy and quick removal of the parts forming the hair guard; furthermore I have provided a novel hair guard adjusting knob which is easy to turn to any desired adjustment and which assures maintenance of said adjustment.

While I have illustrated and described a single embodiment of my invention, it will be understood that this is by way of illustration only, and that various changes and modifications may be made within the contemplation of my invention and within the scope of the following claims.

I claim:

1. An adjustable headband for welding shields and the like, comprising an adjustable, flexible headband strap having upstanding, flexible portions on opposite sides thereof which are adapted to extend upwardly, and terminating at the sides of the wearer's head, each terminating in an integral, transverse loop, a separate, flexible crown strap having end portions of such thickness as to snugly fit inside said loops, each of said end portions having a plurality of longitudinally spaced holes, and a projection of a size corresponding to that of said holes extending outwardly from each of said upward extensions for selective insertion in any of said respective holes for symmetrically adjusting the crown strap, the extremities of said crown strap having holes for pivotal mounting of said welding shield, whereby said pivotal mounting holes may be adjustably raised or lowered.

2. A headband for supporting a welding shield or the like, comprising a crown strap and an adjustable headband strap, both of flexible material, said headband strap including overlapping end portions, each having rack teeth in opposed, spaced relationship, a hair guard comprising an arcuate base of channel cross-section having closed loops integrally formed on each end plane thereof and having a separate cover portion in the form of an arcuate, flexible strip whose end portions snugly fit inside and extend through and are held by said loops, a stud integrally secured to a central portion of said base and extending through a central hole formed in said cover portion, and an adjusting knob having a spur gear integrally formed thereon in meshing relationship with said rack teeth and having a central cylindrical opening into which said stud telescopically fits, fastening means for securing said knob to said stud, said cover portion having outwardly projecting lugs, said knob having radially extending grooves on the under surface confronting said cover portion which are yieldingly and selectively engageable by said lugs by virtue of yielding of said flexible strip so as to maintain said knobs in any desired rotated position.

3. An adjustable headband as recited in claim 2 wherein said base has longitudinally extending sidewalls terminating in ledges for supporting the longitudinal edges of said cover portion and wherein the portion of said cover portion on which said lugs are mounted is unsupported centrally to permit flexing thereof as said knob is rotated and as said lugs are forced outwardly from a pair of said radial notches and to provide spring action for holding the lugs in the selected radial notches.

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