April 24, 1951 R. L. MALCOM 2,550,575

ADJUSTABLE HEADBAND CONSTRUCTION

Filed June 11, 1945

Fig. 1

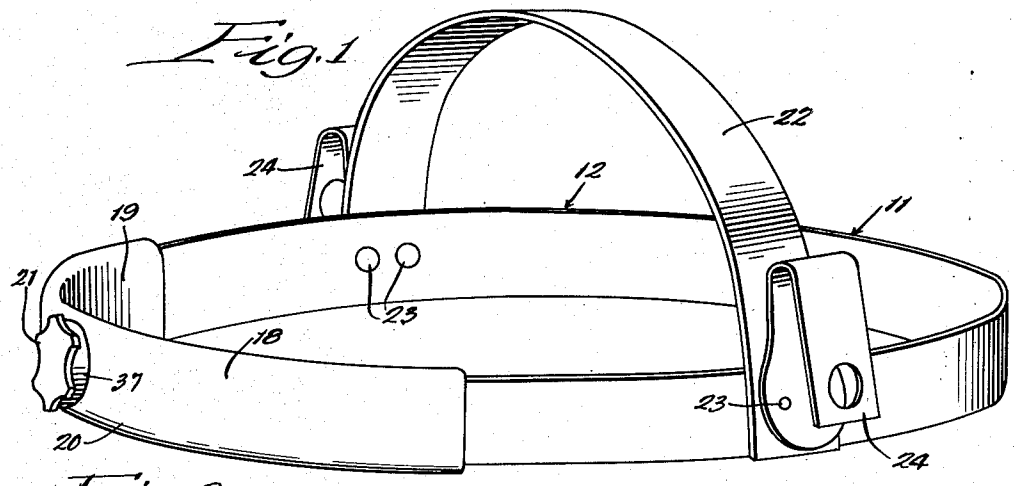


Fig. 2

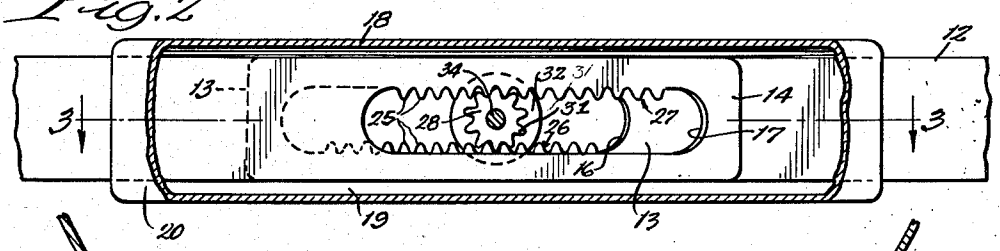


Fig. 3

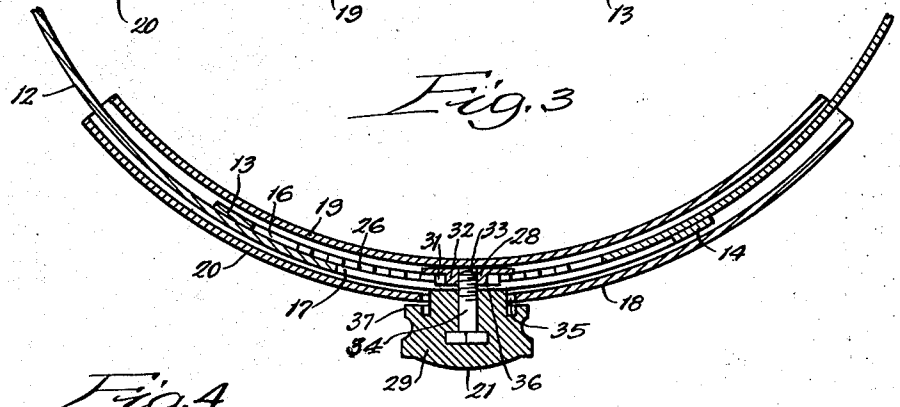
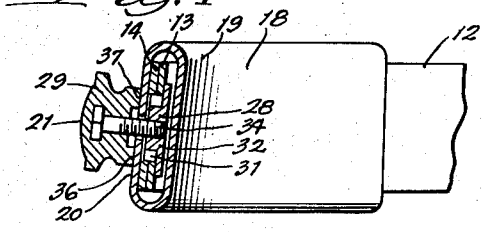


Fig. 4



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Patented Apr. 24, 1951 2,550,575

UNITED STATES PATENT OFFICE

2,550,575

ADJUSTABLE HEADBAND CONSTRUCTION

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Application June 11, 1945, Serial No. 598,849

4 Claims. (Cl. 2—8)

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The invention relates to an adjustable headband construction.

It is an object of the invention to provide a headband that is easily and conveniently adjusted to the desired size.

A further object of the invention is to provide a headband utilizing a locking means that securely engages the movable portions of the headband.

A still further object of the invention is to provide a headband in which the movable portions of the headband are controlled by means of a geared engagement of such portions to a locking means.

Among the other objects of the invention is the provision of a headband having a substantially smooth inner surface, the provision of a headband that is adjustable without being removed from the wearer's head, and the provision of a headband that will remain in its adjusted position until released.

Further objects and advantages of the invention will be apparent from the following description and the drawing appended thereto.

In the drawing in which like reference characters refer to like parts:

Fig. 1 is a perspective view of one embodiment of the invention;

Fig. 2 is an enlarged sectional view in elevation of the headband shown in Fig. 1;

Fig. 3 is a sectional view taken on line 3—3 of Fig. 2; and

Fig. 4 is a sectional view of a modified form of the invention.

In the embodiment of the invention illustrated in Fig. 1, the headband 11 comprises circular strip 12 having overlapping ends 13 and 14. The end portions 13 and 14 have slots 16 and 17 formed lengthwise of the strip. Sleeve 18 is positioned around the overlapped end portions 13 and 14, and provides a substantially smooth inner surface 19 for contact with the wearer's head. Locking means 21 is provided in the front of the headband for adjustment of the overlapped portions 13 and 14 within the sleeve 18. Cross piece 22, adapted to fit over the wearer's head, may be utilized with the headband. Cross piece 22 is secured to the sides of strip 12 by fastening means 23. Anchor members 24 may be provided in conjunction with the cross piece 22 for attaching the headband to a helmet or other device with which the headband may be used.

The headband may be formed of a durable, semi-rigid material such as phenol-formaldehyde resin, urea-formaldehyde resin, hard rubber,

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metal, or the like. A material that has been found to be particularly suitable for the headband construction is a cured plastic having mechanical properties of cellulose acetate. Locking means 21 and anchor members 24 may be suitably formed of metal.

In the preferred embodiment of the invention, opposite walls of slots 16 and 17 are provided with rack teeth 25 thereby providing rack 26 on end portion 13 and rack 27 on end portion 14. As shown, the racks are on opposite walls of the slots.

Locking means 21 comprises a gear element 28 and knob 29. The gear element 28 includes a hub with teeth 31 and a head 32. Threaded orifice 33 is provided in the center of gear element 28. The teeth 31 of the gear element are adapted to mesh with and engage the rack teeth 25 of racks 26 and 27. Head 32 is provided to bear against the overlapped end portion that is adjacent the inner wall 19 of the sleeve. The knob 29 includes threaded shank 34 adapted to engage the threads inside of orifice 33.

Slots 16 and 17, provided in the end portions 13 and 14, are of sufficient width to accommodate the teeth 31 of gear element 28. Likewise, the width of the teeth 31 is sufficient to provide engagement with racks 26 and 27.

Sleeve 18 may be formed of the same material as the strip 12 and has a sufficient cross-sectional dimension to conveniently contain overlapped portions 13 and 14. Aperture 35 may be provided in the outer wall 20 of the sleeve to receive shank portion 34 of knob 29. In the embodiment illustrated in Fig. 3, aperture 35 is of a sufficiently large diameter also to receive the portion of knob 29 forming a bearing surface 36. By this construction, bearing surface 36 is adapted to contact the overlapped end portion that is adjacent outer wall 20 of the sleeve.

Flange 37 is provided on that portion of knob 29 adjacent outer wall 20 of the sleeve. The dimensions of flange 37 are such that when knob 29 is tightened so that the end portions 13 and 14 are clamped between the bearing surface 36 and the head 32, flange 37 is close to but out of contact with wall 20. In this manner, the flange provides a guard against foreign matter entering aperture 35.

The gear element 28 of the locking means is positioned within sleeve 18 in conjunction with racks 26 and 27 of the end portions. Head 32 is maintained between wall 19 of the sleeve and the end portion adjacent such wall, this end portion being designated 13 in the embodiment shown

in Fig. 3. The teeth 31 extend toward the wall 20 of the sleeve and into slots 16 and 17. In this position, the teeth 31 engage the teeth of racks 26 and 27. Knob 29 is secured to gear element 28 by the threaded engagement of shank 34 with the walls of orifice 33. Upon tightening knob 29, bearing surface 36 is brought into contact with the overlapped end portion adjacent wall 20 of the sleeve, thereby clamping end portions 13 and 14 between bearing surface 36 and head 32 of the gear element.

In assembling the headband, cross piece 22 and anchor members 24 are secured to strip 12. With sleeve 18 positioned over strip 12, the end portions 13 and 14 are overlapped with slots 16 and 17 in alignment with each other. Gear element 28 is inserted in the slots so that the teeth 31 engage the middle teeth of racks 26 and 27. Head 32 of the gear wheel is in contact with the end portion adjacent wall 19 of the sleeve. The sleeve is then slipped over the overlapped end portions until aperture 35 is in alignment with orifice 33. Knob 29 is then secured to the gear element by a threaded engagement of the shank 34 in the orifice.

The headband 11 may be adjusted as to size by loosening knob 29 and moving end portions 13 and 14 lengthwise within the sleeve. Upon obtaining the desired size of the headband, knob 29 is tightened thereby clamping end portions 13 and 14 between bearing surface 36 and head 32 of the gear element. Readjustment of the headband may be effected in a similar manner.

In the modification of the invention illustrated in Fig. 4, the aperture 35 of wall 20 of the sleeve is formed with a diameter larger than that of shank portion 34 and smaller than that of the portion of knob 29 providing bearing surface 36. When shank 34 is secured to gear element 28 by threaded engagement within orifice 33, bearing surface 36 is adapted to contact outer wall 20 of the sleeve. Upon tightening knob 29, wall 20 and end portions 13 and 14 are clamped between bearing surface 36 and head 32.

One important use of the headband that is contemplated is in conjunction with helmet constructions. Protective helmets for military or industrial purposes may be made more comfortable for the wearer by utilizing the headband embodying the invention.

The above detailed description is given for purposes of illustration and the invention is to be limited only by the scope of the appended claims.

I claim:

1. An adjustable head band comprising a circular strip having overlapping ends and slots in the overlapping ends extending lengthwise of the strip, rack teeth formed on opposite walls of the slots, and a locking means extending through the slots including a gear element having teeth engageable with the rack teeth and a head overlying one of the overlapping ends, a knob having a bearing surface overlying the other overlapping end and a screw threaded connection between the gear element and knob for clamping the overlapping ends between the head and knob.

2. An adjustable head band comprising a circular strip having overlapping ends and slots in the overlapping ends extending lengthwise of the strip, rack teeth formed on opposite walls of the slots, a sleeve around the overlapping ends and provided with an aperture, and a locking means extending through the slots and the aperture including a gear element having teeth engageable with the rack teeth and a head overlying one of the overlapping ends, a knob having a bearing surface overlying the other overlapping end and a screw threaded connection between the gear element and knob for clamping the overlapping ends between the head and knob.

3. An adjustable head band comprising a circular strip having overlapping ends and slots in the overlapping ends extending lengthwise of the strip, rack teeth formed on opposite walls of the slots, a sleeve around the overlapping ends and provided with an aperture, and a locking means extending through the slots and the aperture including a gear element having teeth engageable with the rack teeth and a head overlying one of the overlapping ends and interposed between said overlapping end and the sleeve, a knob having a bearing surface overlying the other overlapping end and extending through the aperture and a screw threaded connection between the gear elemnet and knob for clamping the overlapping ends between the head and knob.

4. An adjustable head band comprising a circular strip having overlapping ends and slots in the overlapping ends extending lengthwise of the strip, rack teeth formed on opposite walls of the slots, a sleeve around the overlapping ends and provided with an aperture, and a locking means extending through the slots and the aperture including a gear element having teeth engageable with the rack teeth and a head overlying one of the overlapping ends and interposed between said overlapping end and the sleeve, a knob having a bearing surface overlying the other overlapping end and engaging the sleeve and a screw threaded connecton between the gear element and knob for clamping the overlapping ends between the head and knob.

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