Aug. 14, 1956 S. V. GRANCSAY ET AL 2,758,306

HELMET SUSPENSIONS

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FIG. 1.

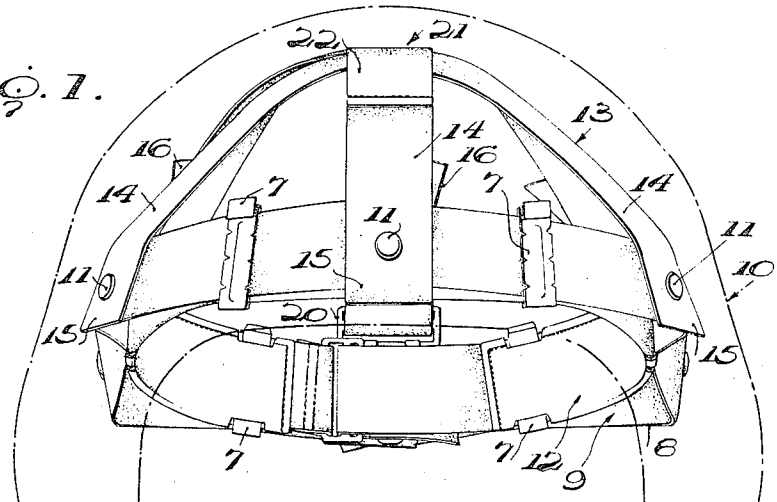

FIG. 2.

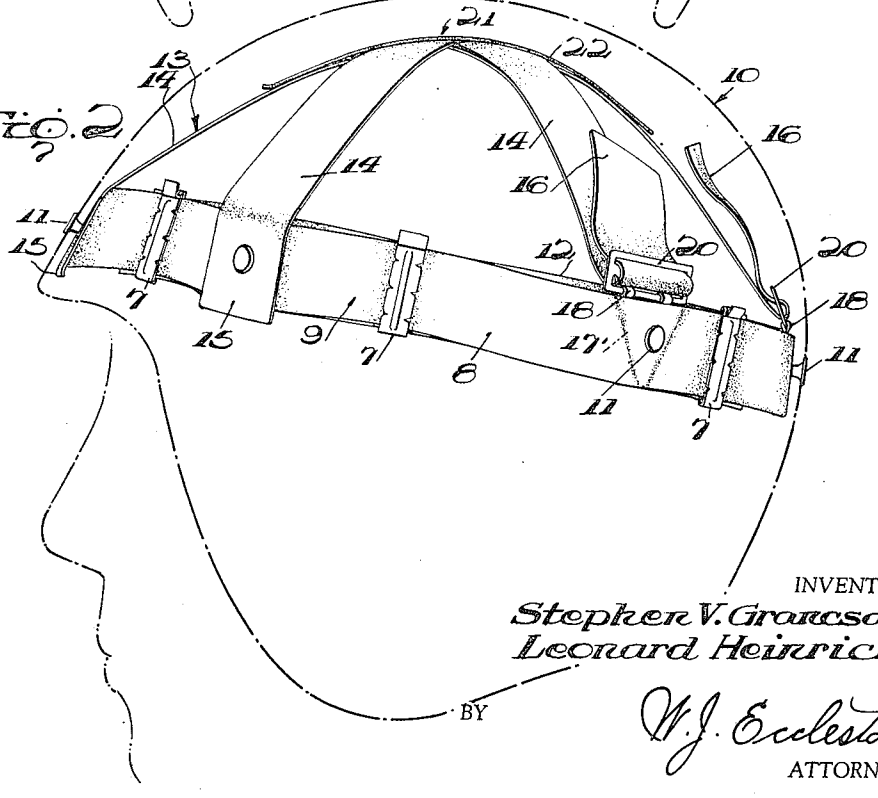

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Fig. 3

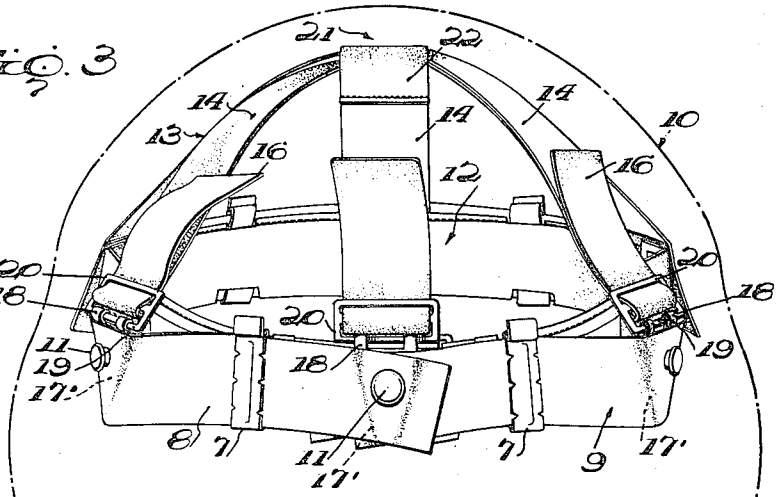


Fig. 5.

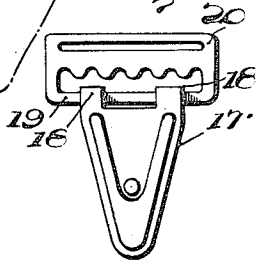
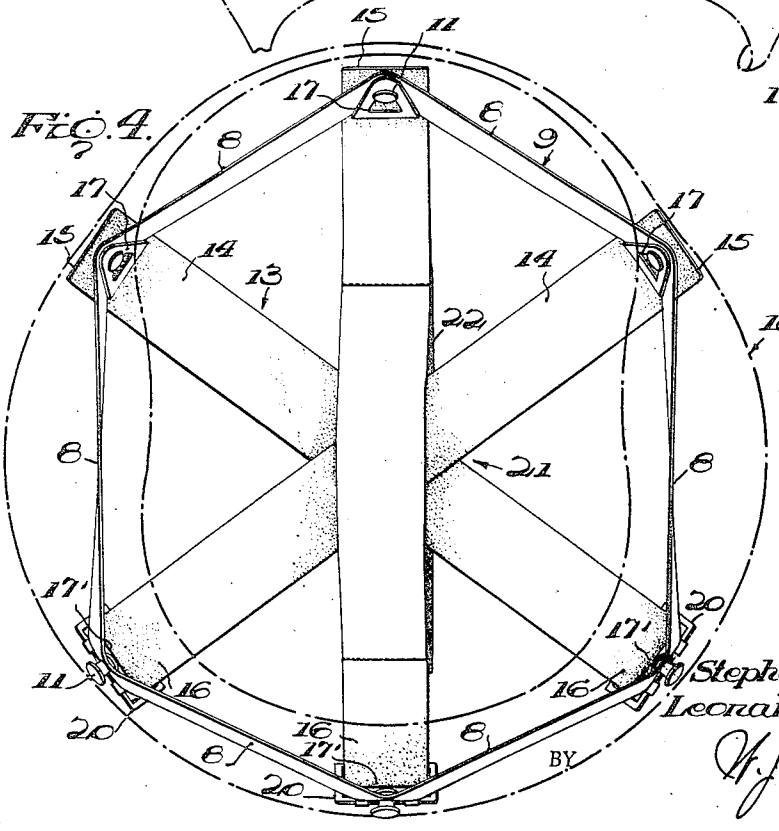


Fig. 4.



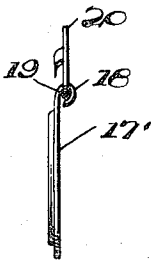


Fig. 6.

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HELMET SUSPENSIONS

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Application September 24, 1954, Serial No. 458,298

3 Claims. (Cl. 2—3)

Our invention relates to helmet suspensions of the type wherein a headband and a cradle cooperate to space the wearer's head from the wall of the helmet shell. More particularly, the invention relates to the structure of the cradle. Currently, most cradles of this sort comprise two or more straps or strips which have the lower ends secured to the helmet shell and the upper ends secured together by an annular loop of flexible cord or the like having the ends tied together. The size of the loop is varied to vary the shape and depth of the cradle whereby to achieve a better fit on heads of various sizes and shapes. Such structures have the disadvantage that the knot on the cord or string bears on the head and is uncomfortable. The very nature of the adjustment is such that a circular center point of the cradle is empty. It is considered desirable to cause the straps to cross centrally of the shell and to provide improved means for adjusting the shape and depth of the cradle.

With the foregoing in view, it is an object of my invention to provide an improved cradle for a helmet suspension.

A further object is to provide an improved helmet suspension which includes a plurality of cradle straps, one end of each of which is fixedly secured to the helmet shell and the opposite end of which is adjustably secured to the helmet shell whereby to vary the shape and depth of the cradle.

A further object is to provide in a cradle such as that last described keeper means loosely connecting the cradle straps together at their crossing point centrally of the top of the shell.

Other objects and advantages reside in the particular structure of the invention, combination and arrangement of the several parts thereof, as will be readily understood by those skilled in the art upon reference to the attached drawing in connection with the following specification, wherein the invention is shown, described and claimed.

In the drawing:

Fig. 1 is a front elevational view of a helmet suspension incorporating the invention, the helmet being shown in chain-dot lines;

Fig. 2 is a side elevational view of the same;

Fig. 3 is a rear elevational view of the same;

Fig. 4 is a bottom plan view of the same with the headband omitted;

Fig. 5 is a front view of an element of the invention; and

Fig. 6 is an edge view of the same.

Referring specifically to the drawing, wherein like reference characters designate like parts in all views, **10** designates generally any suitable helmet shell shown in chain-dot lines. The helmet shell **10** has secured thereto in any suitable manner as by an annular member **9**, a headband generally indicated by **12** and corresponding substantially to that illustrated in Patent No. 2,250,275, dated July 22, 1941. The headband **12** is supported by the annular, flexible member **9** which is disposed about the interior of the shell **10** and is connected thereto at spaced intervals by rivets **11** and A-washers **17** or **17'** to provide an endless series of adjacent chordal portions **8**. Headband **12** is readily detachably connected to a central portion of each chordal portion by any suitable means such as the clips **7** which may correspond substantially to the clip of the patent to Hallock No. 2,380,430, dated July 31, 1945. As so far described, the structure is conventional and forms no part of our invention.

The cradle embodying the invention is generally indicated by **13** and comprises a plurality of cradle straps **14** the like ends of which **15**, **15** are fixedly secured to the shell **10** in any suitable manner as by the rivets **11** aforesaid. The opposite ends **16** of the cradle straps are detachably secured to the helmet shell **10** in any suitable manner. In the embodiment illustrated although the A-washers **17** are of well-known configuration, the A-washers **17'** have been modified. Thus, the upper edges of the A-washers **17'** are modified to provide the loops **18** which pivotally engage the lower bars **19** of buckles **20**. In the embodiment illustrated, it is the front ends **15** of the cradle straps **14** which are secured to the forward portion of the shell **10**. Obviously, the arrangement could be varied so that the rear ends or even alternate ends of the cradle straps are fixedly secured to the shell.

As best seen in Fig. 4, the cradle straps **14** cross at a crossing point **21** disposed centrally of the top of the shell **10**. To maintain a loose connection between the cradle straps **14** at the crossing point, one cradle strap underlies the other cradle straps and has secured to the upper surface thereof a keeper strap **22** which overlies the other cradle straps whereby to loosely connect all of the cradle straps together at the crossing point. This arrangement permits considerable side play and also sufficient latitude in the adjusting of the length of the cradle straps so that no bunching or distortion or other unevenness of the straps occurs in the upper central area thereof which is the part engaged by the head of the wearer.

As best seen in Fig. 4, the buckles **20** are located close to the shell **10** and laterally outwardly of the headband **12** whereby they will not engage and injure the wearer's head at any time. At the same time, they are so located as to be readily adjustable as desired.

An important feature of the invention is the individual adjustability of the straps **14**. Thus, where the upper ends of the cradle straps are secured to a cord loop, no individual adjustment of each strap (and the resultant better fitting) is possible.

It is apparent from the foregoing that the structure shown and described hereinabove accomplishes the objects of the invention in a simple manner and with a minimum of modification of standard equipment. That is to say, it is a simple matter to apply the particular cradle straps and A-washers **17'** to the standard headband assembly.

Moreover, while we have shown and described what are now thought to be the preferred embodiments of our invention, it is to be understood that the same is susceptible of other forms and expressions. Consequently, we do not limit ourselves to the precise structures shown and described hereinabove except as hereinafter claimed.

We claim:

1. In a suspension for a helmet shell, the combination with a headband assembly including an annular flexible member, means securing said flexible member to said shell at spaced points to provide a series of chordal portions and a headband secured at spaced points to said chordal portions; a plurality of cradle straps, one end of each strap being fixed to said shell, buckles secured

to said shell in laterally outwardly spaced relation to said headband, and the opposite ends of said straps being readily detachably and adjustably secured to said buckles.

2. In a suspension for a helmet shell, the combination with a headband assembly including an annular flexible member, means securing said flexible member to said shell at spaced points to provide a series of chordal portions and a headband secured at spaced points to said chordal portions; of a plurality of cradle straps, one end of each strap being fixed to said shell, buckles secured to said shell in laterally outwardly spaced relation to said headband, each of said buckles being disposed between two adjacent chordal portions and being secured to said shell by said means securing said flexible member thereto, and the opposite ends of said straps being readily detachably and adjustably secured to said buckles.

3. In a suspension for a helmet shell, the combination with a headband assembly including an annular flexible member, means securing said flexible member to said

shell at spaced points to provide a series of chordal portions and a headband secured at spaced points to said chordal portions; the improvement comprising washers and rivets providing said means securing said flexible member to said shell, a buckle pivoted to half of said washers, a plurality of cradle straps, one end of each cradle strap being fixed to said shell by the other half of said washers and rivets, and said straps having opposite ends adjustably and readily detachably secured to said buckles.

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