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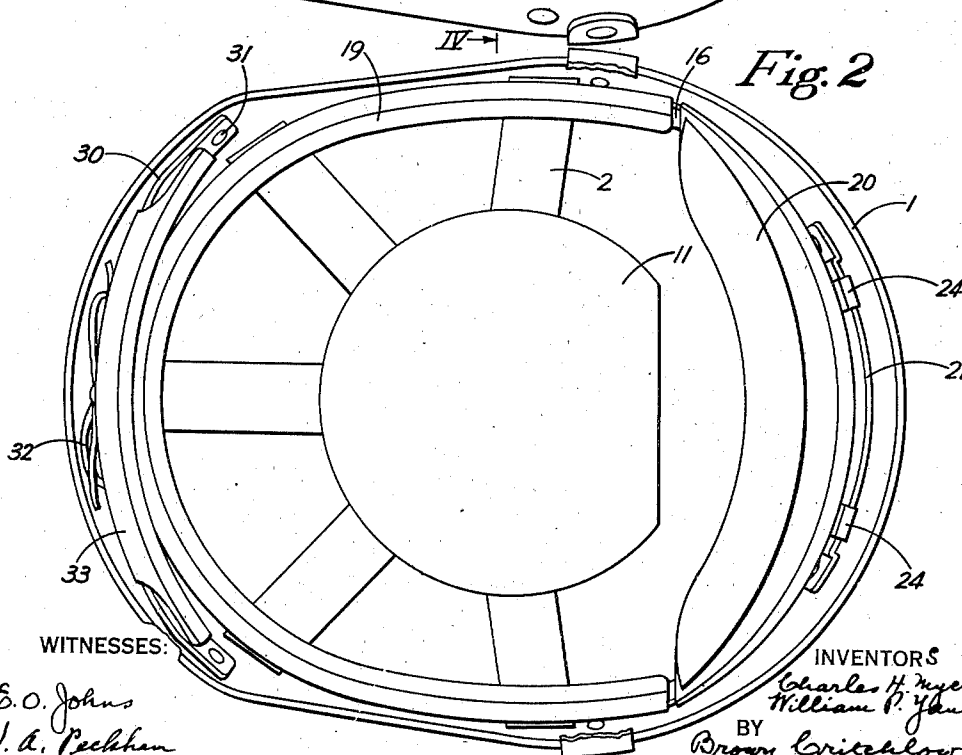
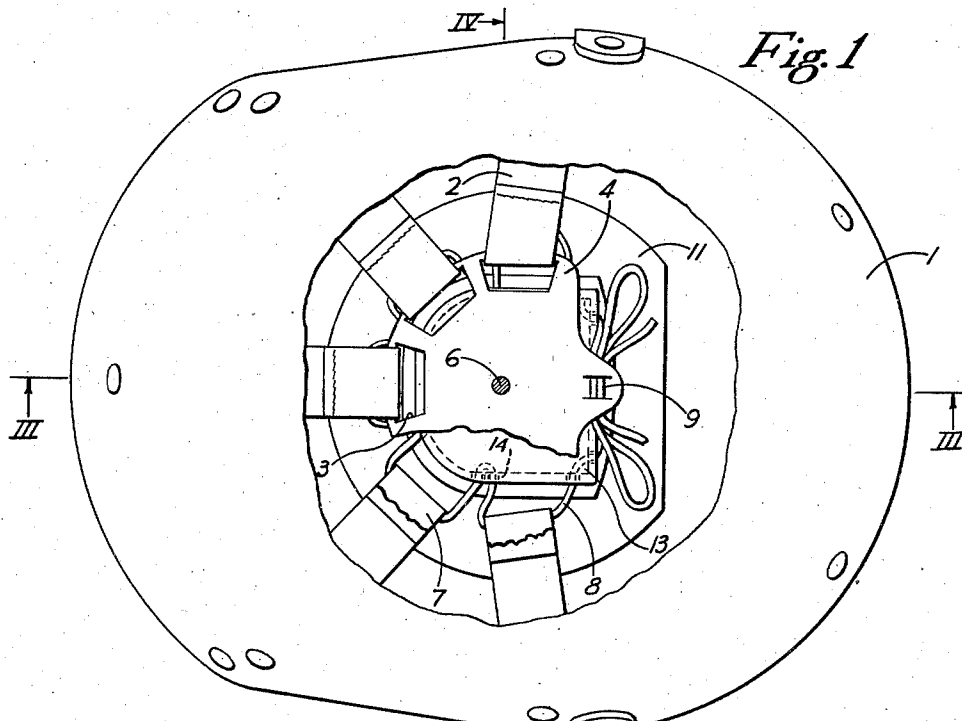
C. H. MYERS ET AL

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HELMET

Filed July 6, 1946

2 Sheets-Sheet 1



WITNESSES:

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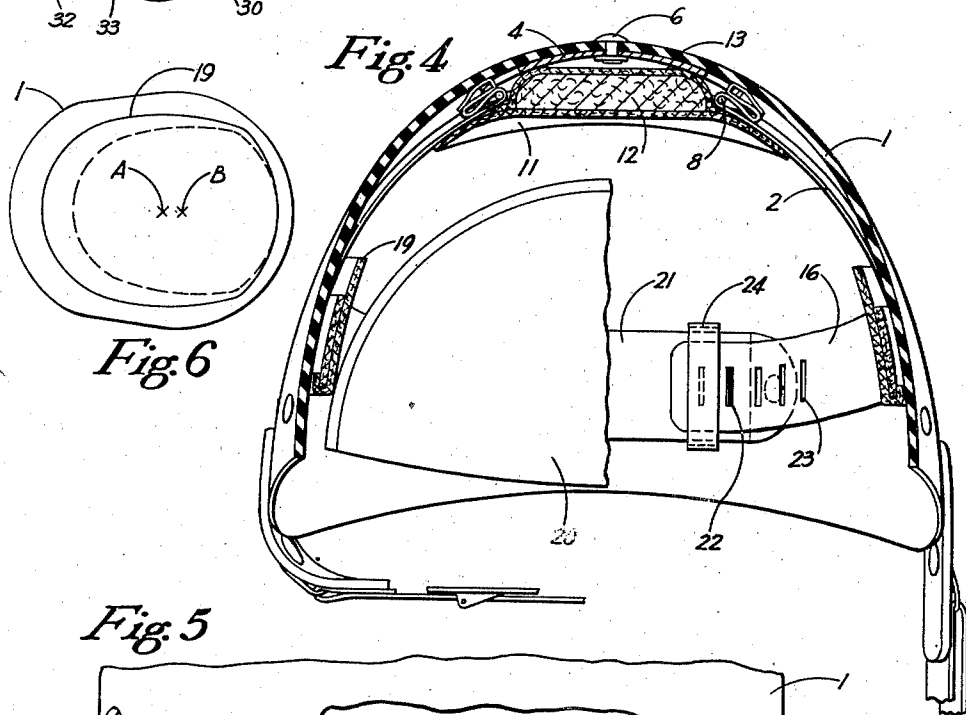
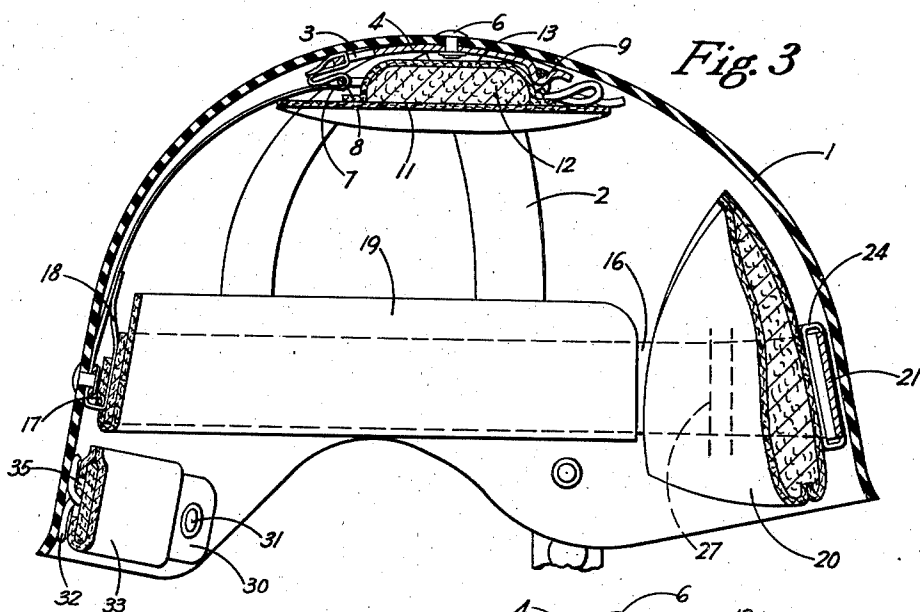
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HELMET

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This invention relates to helmets, and more particularly to those worn by the occupants of military tanks.

There are several problems that arise in connection with helmets worn in military tanks. One arises from the very limited head room that exists in a tank, on account of which the top of the head must remain close to the top of the helmet. Another problem relates to the use of the tank's guns. That is, it is important that the gunner be able to keep his eye in as fixed position as possible relative to the gun sights. For example, in some cases his forehead should not be more than one-half inch from the front of his helmet. With ordinary helmets this becomes difficult or impossible when the head band is adjusted to decrease its size, because such adjustments pull the band away from the front of the helmet. In other words, the front of the helmet is moved forward away from the wearer's forehead and interferes with the gunner holding his eye close to the sights. Such helmets also do not provide good protection from blows from the front. A further problem arises from the wearing of headphones in a tank. The cradle strap inside an ordinary helmet liner press against the head straps of the phones and cause material discomfort.

It is among the objects of this invention to provide a helmet which can be worn comfortably with head phones and where there is restricted head room, which is adjustable for different head sizes, which stays in position on the head very well, and the front portion of which remains spaced a fixed distance from the forehead regardless of head band adjustments.

In accordance with this invention an adjustable head band inside a head-protecting shell has its ends disposed near each other in any convenient location, preferably at the front of the shell. Means are provided for adjusting the band ends toward and away from each other to vary the size of the band. When the band ends are located at the front of the shell, the adjusting means are connected to the shell because it is desired to have some means for permanently securing the front of the band to the front of the shell. Consequently, the position of the front of the head band relative to the front of the shell will not change, regardless of head band adjustments. The remainder of the head band is flexibly connected to the shell to permit it to move forward in the shell when the size of the band is decreased. A pad mounted in the front of the shell spaces the forehead a fixed distance

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from the shell to protect it from blows from the front and also to protect the head from the band-adjusting means. Another pad is mounted in substantially fixed position in the top of the shell to space it from the top of the head. Extending across a depending back portion of the shell below the head band is a longitudinally adjustable or resilient strap for engaging the back of the neck to keep the back of the helmet from being pushed forward and thereby tilting the front of the helmet up on the head. The shell is provided with cradle straps that are mounted therein in an improved manner which permits the usual straps over the front of the head to be omitted. The cradle is adjustable for size, and most of the head band is connected to the shell through the lower portions of the cradle straps.

The preferred embodiment of the invention is illustrated in the accompanying drawings in which Fig. 1 is a plan view of our helmet with the crown broken away; Fig. 2 is a bottom view of the helmet; Fig. 3 is a vertical section taken on the line III—III of Fig. 1; Fig. 4 is a vertical section taken on the line IV—IV of Fig. 1, but showing only half of the front pad; Fig. 5 is a fragmentary rear view of the helmet with part of the shell broken away to show the neck strap; and Fig. 6 is a diagrammatic view illustrating the head band adjusted to two different sizes.

Referring to the drawings, a shell 1 for protecting the head may be made of metal, but for tank wear preferably is made of a hard composition material like that used for helmet liners. Inside the shell there are several flexible cradle straps 2, the lower ends of which are riveted or otherwise attached to the side wall of the shell. The upper ends of these straps preferably are looped through openings 3 in a rigid concave plate 4 which is secured in the top of the shell by means of a rivet 6 or other suitable means. A short distance below their upper ends each strap is doubled upon itself and sewed to form an inwardly extending loop 7. A lace 8 extends through these loops and through a loop 9 struck down from the front end of the plate. It will be observed that with this mounting of the ends of the straps in fixed positions, it is possible to eliminate the cradle straps usually located in the front of the shell. Therefore, the cradle straps that otherwise would press against ear-phone straps, which generally extend across the front of the head, are omitted.

The wearer's head is spaced a fixed distance from the plate and the top of the shell by means of a pad which projects up in the space sur-

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rounded by the loops and engages the plate. The bottom of the pad is formed from a piece of leather 11 or other flexible material which projects beyond the sides of the pad to underlie strap loops 7. The pad has a sponge rubber body 12 enclosed by a cover 13 of leather or the like. The sides of this cover are provided with spaced openings 14 (Fig. 1) between the strap loops for receiving lace 8, whereby the pad is supported by the lace. By tightening the lace the strap loops 7 can be swung inwardly to take the slack out of the cradle straps so that the cradle will fit smaller heads, but without lowering the pad materially from the top of the shell to change the spacing between the top of the head and the shell an appreciable amount. This adjustment moves the upper portions of the rear straps forward in the shell.

A head band 16 is mounted in the lower part of the shell and has separated ends which most suitably are located at the front of the shell. As shown in Fig. 3, the band preferably is connected to the lower ends of the cradle straps by means of a flexible strap 17 that extends through loops 18 with which the cradle straps are provided and that is stitched or otherwise secured to the head band between those loops. Consequently, the cradle straps and strap 17 are connected by interengaging loops. The cradle strap loops are rather large to permit the major portion of the head band to move forward in the shell when the band is adjusted to a smaller size, and the connecting strap 17 is adapted to slide forward in those loops at the sides of the shell. The cradle strap loops prevent the head band raising a material distance in the shell. The side and rear portions of the head band may have their inner surface covered by a soft leather lining 19 which is folded around the lower edge of the band and stitched to its outside. To provide fixed spacing between the forehead and the front of the shell, and to protect the forehead from injury from blows against the front of the shell, a protective pad 20 is mounted in front of the forehead. The front of this pad is slotted to provide loops 27 through which the front ends of the head band slidably extend for supporting the pad in a manner that will not interfere with adjustment of the band.

The front ends of the head band are adjustably connected to the front wall of the shell. Preferably, this is accomplished in part by a metal plate 21, the ends of which are riveted to the shell and the intermediate portion of which is offset inwardly. Near each end of this offset portion of the plate is a tongue 22 (Fig. 4) which has been struck from the plate and bent inwardly. These tongues project into vertical slots 23 cut in the ends of the straps at longitudinally spaced intervals. By inserting the tongues in different slots the distance between the ends of the head band can be changed, thereby varying the size of the band. To hold the tongues in any given slots, metal loops 24 are loosely mounted on the offset portion of the plate where they are adapted to slide over the ends of the head band to lock them on the tongues. When it is desired to adjust the head band the loops are slid toward each other off the band to permit the band to be removed from the tongues. The front pad 20 protects the forehead from the adjusting members in the front of the shell.

It will be seen that by permanently connecting the front of the head band to the front of the

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shell, any adjustments of the band to change its size will cause all but its front portion to move forward or backward in the shell. This movement of the band is permitted by the flexible loops 18 of the cradle straps and by the sliding connection between the straps and head band. Consequently, the forehead of the wearer of this helmet always remains in the same position, close to the front of the shell, regardless of the size of the head band. This shifting of the center of the head band toward or away from the front of the shell is illustrated diagrammatically in Fig. 6 where the full size head band is shown in full line with its center at A. When the band is adjusted to smaller size, it may take the broken line position the center of which is at B. In both cases the front of the band is not disturbed, so the forehead will remain the same distance from the front of the shell. Due to the lack of cradle straps in the front part of the shell, the head is not pulled back away from pad 20 if the cradle is adjusted to a smaller size. Of course, the distance between the back of the head and the back of the shell will vary with the size of the band, but a change in that location is unimportant. However, to prevent the protruding back portion of the shell, which extends down in back of the neck, from accidentally being knocked forward and thereby swinging the front of the shell back on the head, a neck strap is provided. This strap may be formed from a pair of longitudinally spaced strap members 30 which extend across the inside of the back part of the shell below the head band. The outer ends of these members are pivotally connected to the shell by rivets 31, while their inner ends are adjustably connected together by means of a lace 32. To provide a comfortable cushion for the strap members and lace, a pad 33 is mounted on them. The back of this pad has slots 34 (Fig. 5) near its opposite ends to permit the strap members to extend through it, and the central portion of the back of the pad is provided with an opening 35 which gives access to the lace.

According to the provisions of the patent statutes, we have explained the principle and construction of our invention and have illustrated and described what we now consider to represent its best embodiment. However, we desire to have it understood that, within the scope of the appended claims, the invention may be practiced otherwise than as specifically illustrated and described.

We claim:

1. A helmet comprising a head-protecting shell, an adjustable flexible head band therein having its ends spaced apart and located at the front of the shell inside thereof, means between said band ends connected to the front of the inside of the shell for adjusting said band ends toward and away from each other to vary the size of the head band, and means flexibly connecting the remainder of the head band to the shell to permit said remainder to move forward therein when the size of the band is decreased, whereby the position of the front of the head band relative to the front of the shell does not change regardless of head band adjustments.

2. A helmet comprising a head-protecting shell, an adjustable flexible head band therein having its ends spaced apart and located at the front of the shell inside thereof, means between said band ends connected to the front of the inside of the shell for adjusting said band ends toward and away from each other to vary the

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size of the head band, means flexibly connecting the remainder of the head band to the shell to permit said remainder to move forward therein when the size of the band is decreased, whereby the position of the front of the head band relative to the front of the shell does not change regardless of head band adjustments, and a pad mounted in the front of the shell adapted to space the forehead from said band-adjusting means and the shell.

3. A helmet comprising a head-protecting shell, an adjustable head band therein having ends disposed adjacent each other, means for adjusting said band ends toward and away from each other to vary the size of the head band, the front of said band being secured to the front of the shell, means flexibly connecting the remainder of the head band to the shell to permit said remainder to move forward therein when the size of the band is decreased, whereby the position of the front of the head band relative to the front of the shell remains unchanged regardless of head band adjustments, and a longitudinally adjustable strap in the shell extending across the back portion thereof below the head band for engaging the back of the neck.

4. A helmet comprising a head-protecting shell, an adjustable head band therein having ends disposed adjacent each other, means for adjusting said band ends toward and away from each other to vary the size of the head band, the front of said band being secured to the front of the shell, cradle straps in the shell with their lower ends secured to its sides adjacent the head band, and means connecting the head band to said straps with a sliding engagement that allows the band to move across them when the size of the head band is changed, the sides and rear portion of said band moving forward relative to said cradle straps when the size of the head band is decreased.

5. A helmet comprising a head-protecting shell, an adjustable head band therein having ends disposed adjacent each other, means for adjusting said band ends toward and away from each other to vary the size of the head band, the front of said band being secured to the front of the shell, cradle straps in the shell with their lower ends secured to its sides adjacent the head band, means flexibly connecting the head band to said straps to allow the sides and rear portion of said band to move forward relative to said cradle straps when the size of the head band is decreased, and a pad mounted in substantially fixed position in the upper part of the shell to space the top of the head a predetermined distance from the top of the shell.

6. A helmet comprising a head-protecting shell, an adjustable head band therein having ends disposed adjacent each other, means for adjusting said band ends toward and away from each other to vary the size of the head band, the front of said band being secured to the front of the shell, cradle straps in the shell with their lower ends secured to its sides adjacent the head band and with their upper ends secured to the top of the shell, a pad in the upper part of the shell, a cord connecting the pad to said straps below their upper ends and being adapted to be drawn up in order to pull upper end portions of the straps closer together, and means flexibly connecting the head band to the cradle straps to permit the side and back portions of the band to move forward in the shell when the size of the band is decreased.

7. A helmet comprising a head-protecting shell,

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an adjustable head band therein having ends disposed adjacent each other, means for adjusting said band ends toward and away from each other to vary the size of the head band, the front of said band being secured to the front of the shell, means flexibly connecting the remainder of the head band to the shell to permit said remainder to move forward therein when the size of the band is decreased, a pair of longitudinally spaced strap members extending across the inside of the back part of the shell below the head band, means connecting the outer ends of said members to the shell, a lace connecting the adjacent ends of said strap members, and a pad slidably mounted on said strap members and provided behind them with an access opening for said lace.

8. A helmet comprising a head-protecting shell, an adjustable head band therein having spaced ends located at the front of the shell, each of said ends being provided with a plurality of laterally spaced openings, a pair of laterally spaced tongues secured to the front of the shell and projecting into a pair of said openings in said band ends, removable means for holding said band ends on said tongues, whereby different band openings may be placed over the tongues to change the size of the head band, and means flexibly connecting the remainder of the head band to the shell to permit said remainder to move forward therein when the size of the band is decreased.

9. A helmet comprising a head-protecting shell, an adjustable band therein having spaced ends located at the front of the shell, each of said ends being provided with a plurality of laterally spaced openings, a retaining member extending across the front of the inside of the helmet with its ends secured thereto and with its central portion spaced from the shell, each end of said central portion being provided with a tongue projecting into one of the openings in the adjacent head band end, a pair of clips slidably mounted on said central portion of the retaining member for holding the band ends on said tongues, said clips being slidable off the band ends to permit different band openings to be placed over the tongues to change the size of the head band, and means flexibly connecting the remainder of the head band to the shell to permit said remainder to move forward therein when the size of the band is decreased.

10. A helmet comprising a head-protecting shell, an adjustable head band therein having its ends located at the front of the shell, means connected to the front of the shell for adjusting said band ends toward and away from each other to vary the size of the head band, means flexibly connecting the remainder of the head band to the shell to permit said remainder to move forward therein when the size of the band is decreased, whereby the position of the front of the head band relative to the front of the shell does not change regardless of head band adjustments, and a pad slidably mounted on the head band in the front of the shell and adapted to space the forehead from said band adjusting means.

11. A helmet comprising a head-protecting shell, an adjustable head band therein having ends disposed adjacent each other, means for adjusting said band ends toward and away from each other to vary the size of the head band, the front of said band being secured to the front of the shell, cradle straps in the shell with their lower ends connected to its sides adjacent the head band, means connecting the upper ends of said straps to the upper part of the shell, said

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shell being free of cradle straps that would engage the front portion of the head, and means flexibly connecting the head band to the lower portions of said straps to permit the sides and rear portion of said band to move forward relative to said straps when the size of the band is decreased.

12. A helmet comprising a head-protecting shell, a head band mounted therein, cradle straps in the shell, means anchoring the upper and lower ends of said straps to the shell, and means in the upper part of the shell adapted to space the top of the head a substantially fixed distance from the top of the shell, all of said cradle straps being located at the sides and back of the shell, whereby the shell is free of cradle straps that would engage the front part of the head.

13. A helmet comprising a head-protecting shell, an adjustable head band therein having ends disposed adjacent each other, means for adjusting said band ends toward and away from each other to vary the size of the head band, the front of said band being secured to the front of the shell, cradle straps in the shell with their lower ends secured to its sides adjacent the head band and with their upper ends secured to the top of the shell, a cord connecting the straps

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below their upper ends, means connecting the cord to a fixed position in the shell in front of the upper ends of the straps, said cord being adapted to be drawn up to pull the upper end portions of the straps closer together and forward in the shell, and means flexibly connecting the head band to the cradle straps to permit the side and back portions of the band to move forward in the shell when the size of the band is decreased.

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