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W. A. STUART ET AL

2,861,272

HINGED HELMET

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2 Sheets-Sheet 1

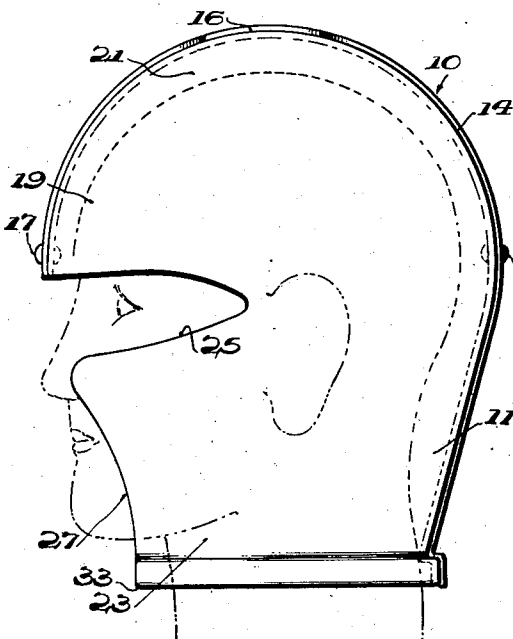


FIG. 1.

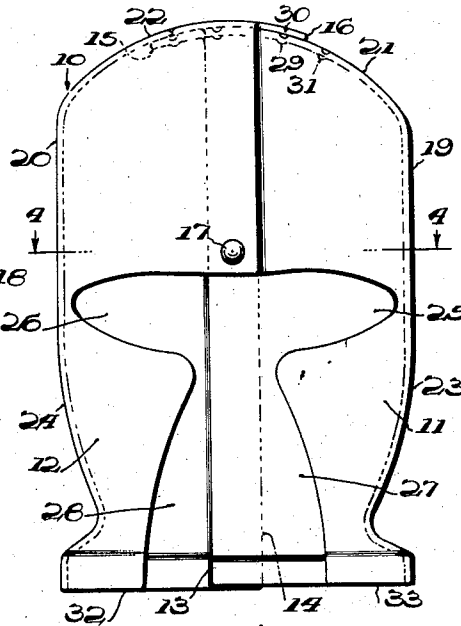


FIG. 2.

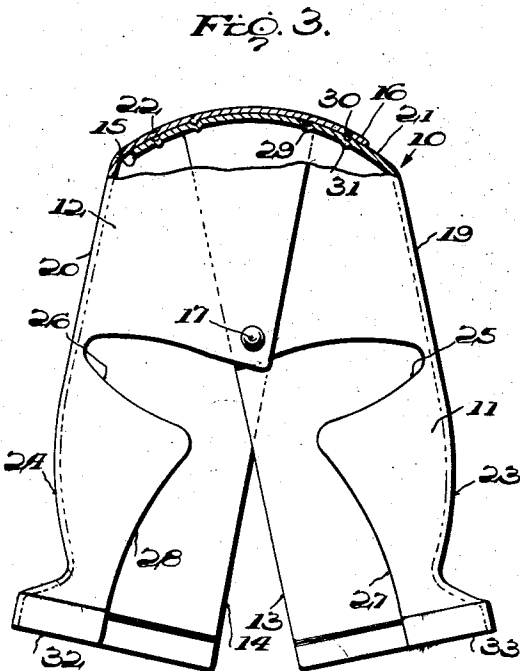


FIG. 3.

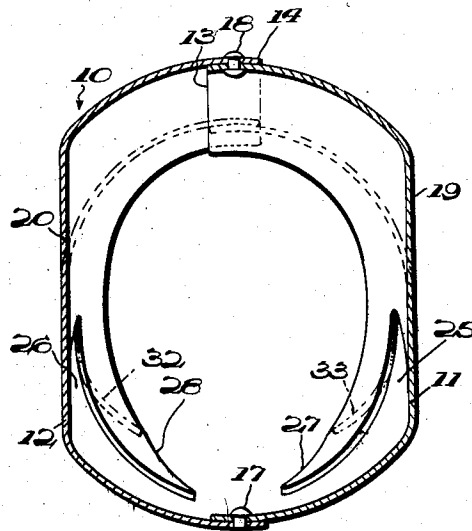


FIG. 4.

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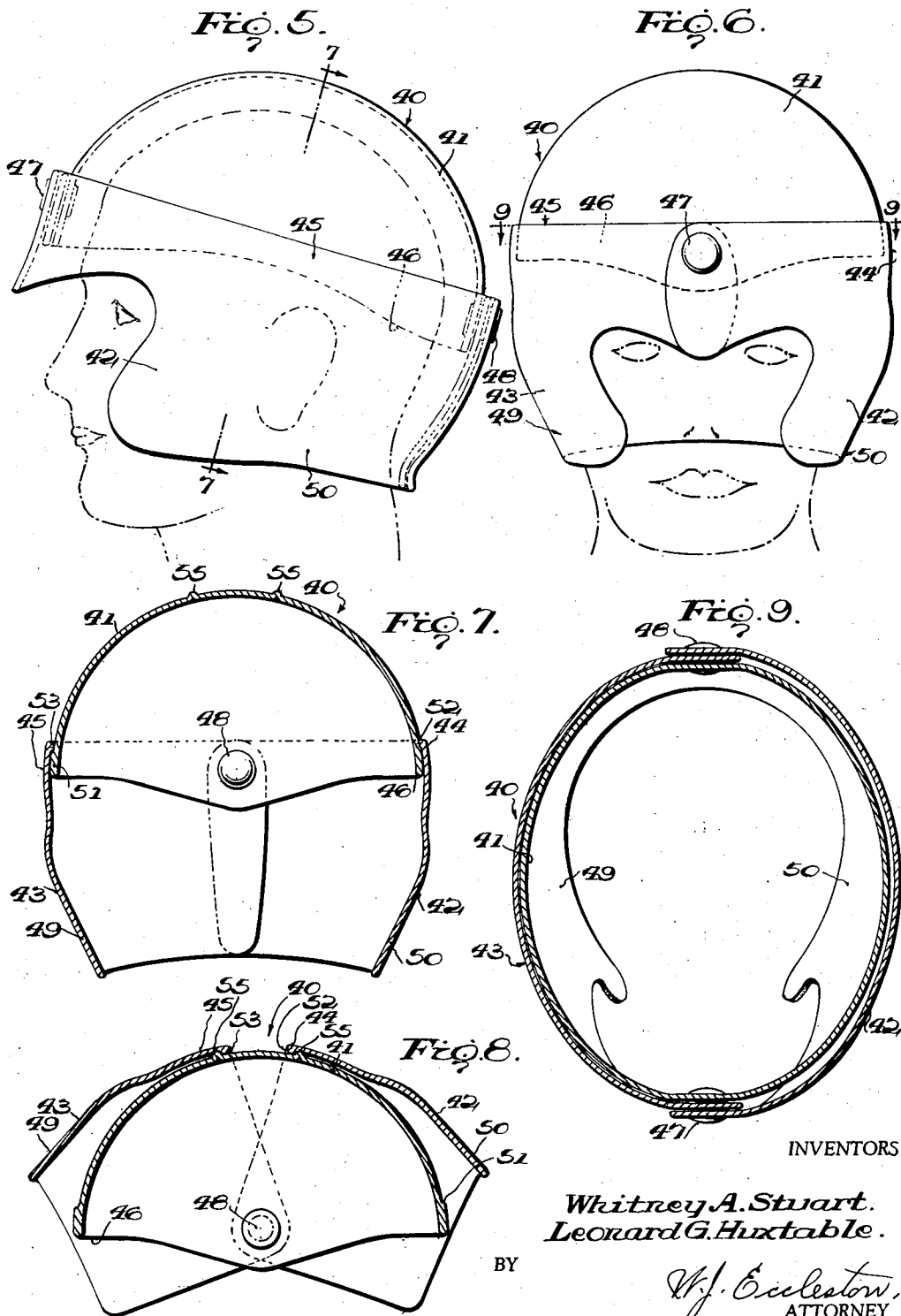
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HINGED HELMET

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Application February 21, 1957, Serial No. 641,774

13 Claims. (Cl. 2—6)

The invention relates to protective helmets or the like and more particularly to means for donning and doffing the same.

Where a helmet is made of metal or other substantially rigid material it must have an opening larger than the largest dimension of the head to permit it to be put on and taken off. Thus, when such helmets are shaped to protect the neck and lower parts of the face, they do not fit these parts closely. One style of football helmet solves this difficulty by hinging ear flaps to a crown portion. The most widely used current football helmet makes the helmet sufficiently flexible to permit the free lower edges to be spread apart when the helmet is taken off and put on. Neither of these expedients is suitable for a rigid helmet for military use. Hinges would have to be quite large to have sufficient strength and would add materially to the weight and cost of the helmet. Flexible material is not a satisfactory substitute for rigid material for military helmets.

With the foregoing in view, an object of the invention is to provide an improved helmet having a close fit with the face and neck together with improved means for spreading the lower portions of the helmet apart to allow the same to be donned and doffed.

A further object is to provide such a helmet which comprises at least two sections pivotally connected together between the top and bottom of the helmet so that the lower edges of such sections can be moved to and from spread and adjacent or operative positions.

Other objects and advantages reside in the particular structures of several species involved, the structure of the elements thereof, combinations and subcombinations of such elements, all of which will be readily apparent to those skilled in the art upon reference to the drawing wherein two species of the invention are shown and to the following specification wherein the invention is described and claimed.

In the drawing:

Figure 1 is an elevational view of one species of the invention;

Figure 2 is a front view thereof;

Figure 3 is also a front view thereof but shows the parts in the spread positions parts being broken away to illustrate a portion in transverse vertical section;

Figure 4 is a horizontal sectional view taken substantially on the plane of the line 4—4 of Figure 2;

Figure 5 is an elevational view of a modification of the invention;

Figure 6 is a front view thereof;

Figure 7 is a vertical sectional view taken substantially on the plane of the line 7—7 of Figure 5;

Figure 8 is a view like Figure 7 but shows the parts in the spread position; and

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Figure 9 is a horizontal sectional view taken substantially on the plane of the line 9—9 of Figure 6.

Referring specifically to the drawing wherein like reference characters designate like parts in all views and referring at first to the species of Figures 1—4 inclusive, 10 designates generally a helmet which comprises a left hand section 11 and a right hand section 12. The left hand section 11 has a free edge 13 which is disposed in opposed overlapping relation to a corresponding free edge 14 of the right hand section 12. The overlapped free edges 13 and 14, centrally of the top portion of the helmet are formed with laterally extending projections 15 and 16 respectively which combine to provide a substantially disc-shaped area of double thickness centrally of the top of the helmet for a purpose to be apparent hereinafter.

The overlapped edges 14 and 13 are pivotally connected together by coaxial front and rear pins, rivets or the like 17 and 18 which are located between the top and bottom of the helmet 10. The upper portions 19 and 20 respectively of the sections 11 and 12 which are above the pivots 17 and 18 include crown portions 21 and 22 which are formed as segments of hollow concentric spheres or prolate spheroids whereby to maintain a close sliding fit at all times as the sections are moved on the pivots 17 and 18, as best seen in Figure 3. The pivots 17 and 18 are located on a line passing through the center of the spheres of which the crown portions 21 and 22 are segments. The lower portions 23 and 24 of the sections 11 and 12 respectively are mostly cut away at the front to provide any suitable eye openings 25, 26 and merging combined nose and mouth openings 27 and 28. The merged openings provide a substantially T-shaped front opening for the helmet illustrated when the sections 11 and 12 are in the adjacent or operative position of Figure 2. Obviously the front opening may be otherwise shaped.

The operation of the device is readily understood. To don or put on the helmet, the lower edges 33 and 32 respectively of the sections 11 and 12 are spread apart from the adjacent or operative positions of Figure 2 to the spread positions of Figure 3. The helmet is then applied to the head in the usual manner and the sections 11 and 12 are then returned to the operative position wherein the head of the wearer is substantially entirely enclosed. The helmet is supported on the wearer's head by any suitable sweatband and/or helmet suspension, not shown, such as those disclosed in the patent to Riddell, No. 2,250,275. Such head band would be located generally along the plane of the pivotal axis so that there would be no stretching of the sweatband as the sections 11 and 12 are moved to the spread positions. Any suitable latch means such as the latch keeper providing dimples 29 and 31 of the crown portion 21 and the latch dog 30 of the projection 16, Figure 3, serve to releasably retain the sections 11 and 12 in either the operative or the spread positions. The latch keeper 31 seats the latch dog 30 when the sections are spread while the keeper 29 seats the latch dog when the sections are returned to the operative positions. It is understood that the material of the projection 16 is sufficiently resilient to provide a spring latch and permit the operation described above. This latch structure may be duplicated on the projection 15 and crown portion 22 as shown to provide a dual latch or alternately, a concealed latch.

It is readily understood from the foregoing that the helmet 10 may be made of any suitable rigid material yet may be readily donned and doffed without loss of time. Moreover, the lower portions of the helmet sec-

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tions may closely embrace the face and neck of the wearer to provide maximum protection. No heavy and expensive hinges are necessary and by forming the crown sections 21 and 22 as segments of hollow spheres or prolate spheroids they may have the close friction fit shown at all times. It should be understood that the lower portions 23 and 24 of the sections 11 and 12 are preferably lined on the inside by suitable padding or the equivalent, not shown. The helmet may be retained on the wearer's head by any suitable chin strap, nape strap or the like, not shown.

The species of Figures 5-9 inclusive, comprises a three-piece helmet 40 which includes a crown 41 and left and right hand sections 42 and 43 respectively. The crown 41 preferably is in the form of a segment of a hollow, prolate spheroid. The sections 42 and 43 have upper edge portions 44 and 45 respectively which are likewise formed as segments of prolate spheroids which are concentrically overlapped with the lower edge 46 of the crown 41. The front and rear edges of the upper edge portions 44 and 45 are themselves overlapped and pivotally connected together and to the crown 41 by any suitable coaxial, front and rear pivot means 47 and 48 respectively. The pivot means 47 and 48 are disposed on the axis of the prolate spheroids of which the crown 41 and edge portions 44, and 45 comprise segments. Thus, the edge portions 44, 45 have a close concentric fit with the crown 41 at all times and in all positions. The lower portions 49 and 50 of the sections 43, 42 respectively have a close fit with the lower parts of the head and face of the wearer and may have lower and front edges shaped in any suitable manner to provide neck and face openings shaped as desired.

The lower edge 46 of the shell 41 may be formed with any suitable means such as the annular shoulder 51 which engages inwardly directed edge flanges 52, 53 of the sections 42 and 43 respectively to provide stops which limit pivotal movement of the sections in downward directions to the operative positions of Figures 6 and 7 as best seen in Figure 7. Any suitable means such as the bosses 55 cooperate with flanges 52 and 53 to provide spring latches like those of the first described species of the invention are provided to secure the sections 42 and 43 in the spread or raised positions illustrated in Figure 8.

Likewise, the crown 41 is provided with a suitable sweatband and suspension to space the same from the head of the wearer while the lower portions 49, 50 of the sections 42 and 43 are suitably padded. As seen in Figure 8 such lower sections are slightly outwardly offset with respect to the upper portions 44, 45, whereby to provide space for such padding. Chin and/or nape straps may be provided as desired.

This form of the invention is readily worn with the parts in either the raised positions of Figure 8 or the lowered, operative positions of Figure 7. Obviously, when the weather is warm and the need for full protection is not great, the raised positions of the side sections provides a relatively cool head gear but one which can be readily and quickly converted to a full helmet by merely pulling down both of the sections 42, 43. These sections are, of course, raised to the Figure 8 positions when donning or doffing the helmet.

While there has been shown and described what are now thought to be the preferred embodiments of the invention, it should be understood that the same is susceptible of other forms and expressions. Consequently, the invention is not to be considered as limited to the precise structures shown and described hereinabove except as hereinafter claimed.

We claim:

1. A protective rigid helmet, said helmet including two substantially rigid lower portions, said lower portions being shaped for a close fit with cheek and neck areas of a wearer, coaxial front and rear pivot means pivotally connecting said lower portions together, and said lower

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portions being movable on said pivot means laterally outwardly in opposite directions from operative positions close to said cheek and neck areas to spread positions remote from said areas, whereby to permit donning and doffing of said helmet.

2. A helmet according to claim 1, wherein said lower portions include overlapping rear free edges.

3. A helmet according to claim 1, wherein said lower portions include overlapping front and rear free edges.

4. A helmet according to claim 1, wherein said helmet includes a crown comprising a separate head covering portion having a free lower edge, and said lower portions having upper edges overlapping said lower edge of the head covering portion.

5. A helmet according to claim 4, wherein said lower portions include overlapping front and rear free edges.

6. A protective helmet, comprising a substantially rigid crown section formed as a segment of a hollow prolate spheroid, substantially rigid separate left and right hand lower sections, said lower sections being shaped to have a close fit with cheek and neck areas of a wearer, coaxial front and rear pivot means pivotally connecting said lower sections to said crown section in depending overlapping relation, said pivot means being located substantially on the longitudinal axis of said prolate spheroid, and said lower sections being movable on said pivot means laterally outwardly in opposite directions from operative positions close to said cheek and neck areas to spread positions remote from areas to permit donning and doffing of said helmet.

7. A helmet according to claim 6, wherein said lower sections include upper portions formed as segments of hollow prolate spheroids in abutting concentric relation to said crown section.

8. A helmet according to claim 6, wherein said lower sections include overlapping front and rear free edges.

9. A helmet comprising substantially rigid left and right hand sections, each section comprising a crown portion and an integral lower portion, said crown portions having opposed and overlapping portions said lower portions being shaped for a close fit with cheek and neck areas of a wearer, aligned front and rear pivot means between said crown and lower portions pivotally connecting said sections together, and said sections being movable on said pivot means from operative positions wherein said lower portions are disposed close to the related cheek and neck areas laterally outwardly in opposite directions to spread positions permitting the donning and doffing of said helmet and said overlapped portions of said crown portions being formed to overlap further as said lower portions are moved to said spread positions.

10. A helmet according to claim 9, wherein said crown portions include overlapped free edges.

11. A helmet according to claim 10, wherein said lower portions include rear free edges which overlap in said operative positions.

12. A protective helmet or the like, comprising separate right and left hand sections, each section having a lower portion and a crown, each section having opposed free edges, said free edges including overlapped upper and rear edge portions together with spaced and opposed front and lower edge portions, two aligned pivot means between said lower portions and crowns pivotally connecting said overlapped upper edge portions together, one pivot means being at the front and the other pivot means being at the rear, said spaced and opposed lower and front edge portions being movable on said pivot means from operative positions closely overlying cheek and neck areas of the wearer laterally outwardly in opposite directions to spread positions to permit donning and doffing of said helmet, and said overlapped upper free edge portions being formed to overlap further as said lower portions are moved to said spread positions.

13. A helmet according to claim 12, wherein said crowns are formed as segments of hollow concentric

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spheres and said pivot means being located at points corresponding substantially to the radii of said spheres.

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