April 14, 1959 T. J. SOWLE 2,881,442

COMBINATION FACE AND HEAD PROTECTOR

Filed Aug. 23, 1954 2 Sheets-Sheet 1

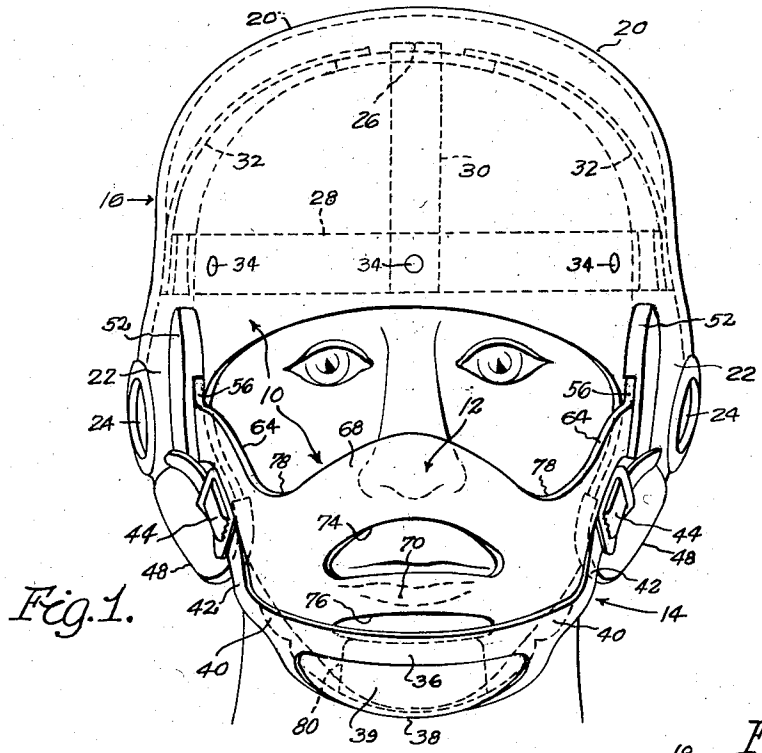


Fig. 1.

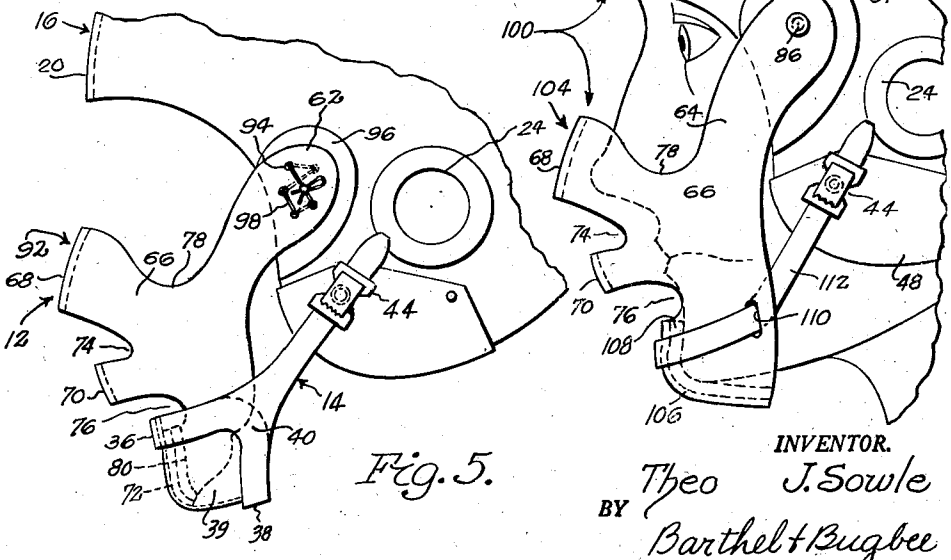


Fig. 5.

Fig. 6.

INVENTOR.
Theo J. Sowle
BY Barthel & Bugbee
Attys

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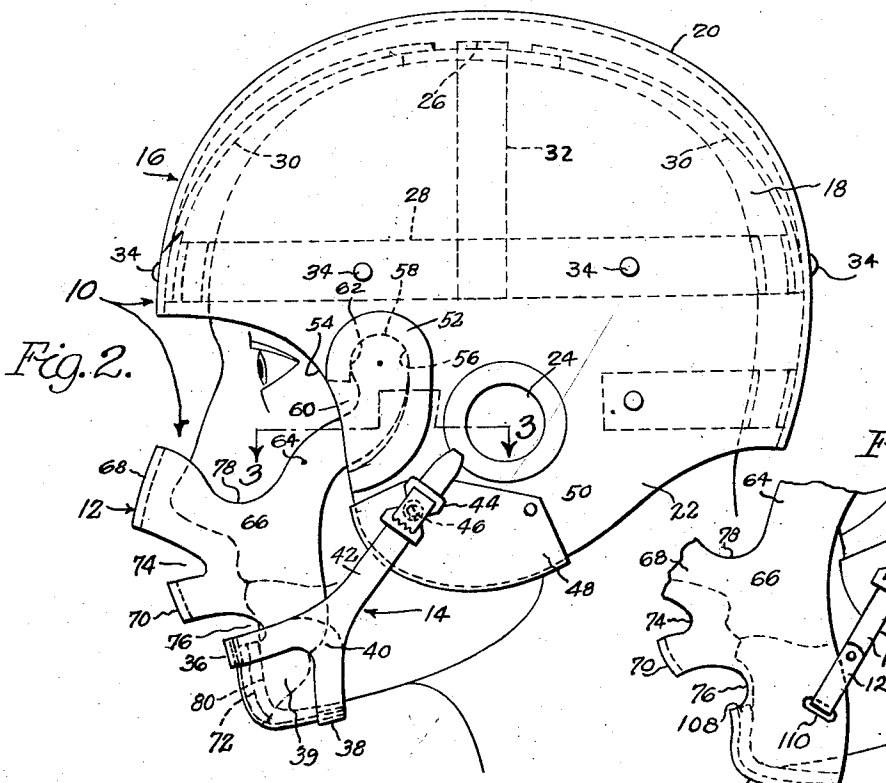


Fig. 2.

Fig. 8.

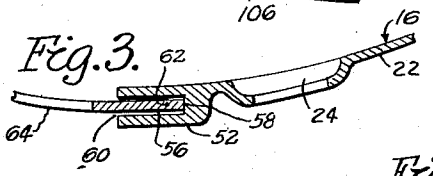


Fig. 3.

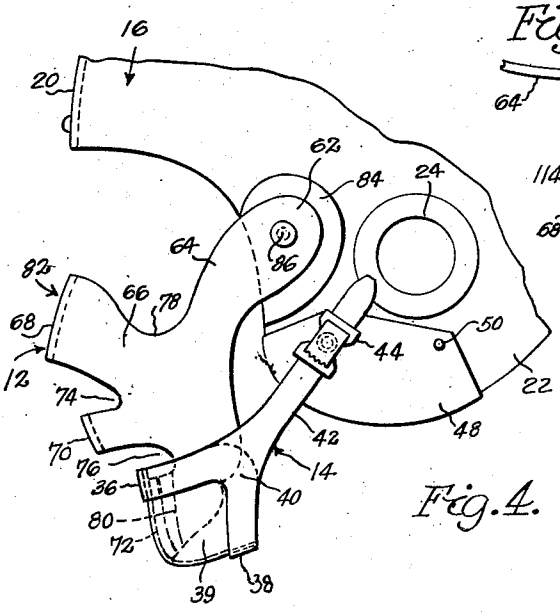


Fig. 4.

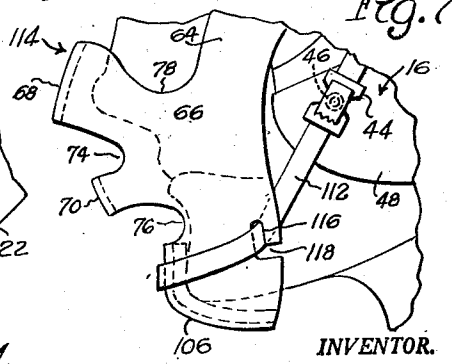


Fig. 7.

INVENTOR.
Theo J. Sowle
BY
Barthel & Bugbee
Attys

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COMBINATION FACE AND HEAD PROTECTOR

Theo J. Sowle, Grand Rapids, Mich.

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4 Claims. (Cl. 2—9)

This invention relates to face and head protectors for athletes and, in particular, to combination face and head protectors.

One object of this invention is to provide a combination face and head protector wherein blows received upon the face guard are transmitted back to and distributed by the helmet or head gear through a force-transmitting connection therebetween, rather than being transmitted locally to the portion of the face adjacent the point of impact of the blow.

Another object is to provide a combination face and head protector of the foregoing character wherein the face guard is spaced away from the face so that it does not immediately engage the face or permit dirt and other foreign matter to enter and form an irritant between the face guard and face.

Another object is to provide a combination face and head protector wherein the face guard is connected to the head gear at a high point near or above the eye level so as to provide a high fulcrum on which the face guard pivots and swings upward for easy removal of the protector.

Another object is to provide a combination face and head protector as set forth in the object immediately preceding, wherein the fulcrum and force-transmitting connection has detachable and removable interengagement, thereby enabling quick and complete removal of the face guard upon disconnection of the chin strap, when it is not desired to wear the face guard.

Another object is to provide a combination face and head protector of the character set forth in the two objects immediately preceding, wherein the chin strap has a line of pull disposed in front of the line between the point of articulation of the jaw bone and the point of the chin, so as to prevent the wearer from opening his mouth more than slightly, and thereby preventing injury to the teeth, tongue and lips resulting from blows received with the mouth open yet permitting sufficient opening of the mouth for necessary conversation or transmitting of orders or signals.

Another object is to provide a combination face and head protector of the foregoing character wherein the face guard is made of thin flexible resilient material and is spaced at a relatively wide separation from the face so as to permit wide deflection thereof without hitting the face and also to permit flow of air between the face and face guard for ventilation and dissipation of perspiration.

Another object is to provide a combination face and head protector as set forth in the foregoing objects, wherein the face guard is pivoted to the helmet at exceedingly high fulcrum points, at or above the eye level, thereby enabling the use of a cup-shaped chin protecting portion on the face guard by enabling it to swing outward before moving upward, to clear the chin.

Another object is to provide a face guard having protection for the nose, teeth and chin with spacing therebetween so as to facilitate breathing, expectoration, talking and ventilation while guarding these parts of the face from injury.

Another object is to provide a face guard, as set forth in the object immediately preceding, wherein the face guard is of such contour and spacing away from the face as to permit vision downward through that space in order to enable the athlete to have substantially unobstructed vision downward so as to permit him to sight downward or, if bent over, to sight backward between his legs, as in the case of a football center snapping the ball backward to the back or other player behind him.

Another object is to provide a face guard of the foregoing character having provision, as by open or closed slots therein, for receiving a chin strap of the plain or non-military type which does not pass around both in front of and beneath the chin.

Another object is to provide a face guard of the foregoing character having provision, as by closed slots therein, for receiving a strap on each side thereof, thereby providing a unitary face guard and chin strap.

Other objects and advantages of the invention will become apparent during the course of the following description of the accompanying drawings, wherein:

Figure 1 is a front elevation of a combination face and head protector, as worn according to one form of the invention;

Figure 2 is a side elevation of the combination face and head protector shown in Figure 1, as worn;

Figure 3 is a fragmentary substantially horizontal section taken along the line 3—3 in Figure 2, showing the detachable pivotal connection or articulation between the face guard and head gear;

Figure 4 is a fragmentary side elevation of a combination face and head protector with a slightly modified articulation or pivotal connection between the face guard and head gear;

Figure 5 is a fragmentary side elevation of a combination face and head protector with a further modified articulation between the face guard and head gear;

Figure 6 is a fragmentary side elevation of a modification of the combination face and head protector of Figure 2, wherein the face guard has a cup-shaped chin protecting portion, and swings on a high fulcrum, with slots for receiving a chin strap;

Figure 7 is a further modification of Figure 6 wherein open-ended slots are provided for receiving the chin strap; and

Figure 8 is a still further modification of Figure 6, wherein the face guard and separate chin straps on opposite sides thereof form a unitary face guard and chin strap.

Hitherto, persons engaged in sports such as football, automobile racing and the like have sustained serious injuries to the nose, teeth, lips, jaw, cheek bones, eyes and other portions of the face and head because of the lack of sufficient protection to these parts. Certain prior face guards have snugly fitted the face in such a manner that a blow delivered thereon was localized in the vicinity of the point of impact. Such close fitting face guards, moreover, in order to give even superficial protection were necessarily of thick and heavy construction in order to be rigid enough to provide such superficial protection. Moreover, dirt entering between such a close fitting mask and the face created irritation and annoyance to the wearer, diverting his attention from the sport in which he was engaged. Such closely fitting face guards also prevented flow of air between the face and the face guard for ventilation and dissipation of perspiration. Furthermore these prior face guards gave inadequate protection for the nose and teeth and at the same time obstructed vision downward so as to prevent a football player, for example, from sighting backward between his

legs when snapping the ball backward to a player behind him.

The combined face and head protector of the present invention provides a face guard of relatively thin, light and flexible construction firmly connected to the helmet or head gear through a force-transmitting connection, and spaced away from the face, the face guard being preferably pivoted to the head gear at a level near or above the eye level so as to provide a high fulcrum for swinging the face guard upward to afford easy removal thereof. The present face guard, moreover, because of its relatively wide separation from the face permits wide deflection thereof before it hits the face and also permits air flow through this space for ventilation and dissipation of perspiration. The present face guard, moreover, by reason of its positive connection to the head gear transmits the force of such a blow backward from the point of impact to the head gear and dissipates the force of the blow rather than concentrating it near the point of impact of the blow. The high fulcrum point of the face guard of the present invention to the head gear, and the use of a chin strap pulling along a line of pull disposed in front of the line between the point of articulation of the jawbone and the point of the chin holds the mouth of the wearer firmly closed while permitting sufficient power of speech to transmit orders or signals, thereby preventing injury to the teeth, lips or tongue from blows received against the mouth when partly or fully open.

Referring to the drawings in detail, Figures 1 to 3 inclusive show a combination face and head protector, generally designated **10**, according to one form of the present invention, as consisting generally of a face guard **12** and a chin strap **14** connecting the face guard **12** to a head gear **16**. The head gear **16** is in the form of a helmet shell **18** of plastic or other suitable material having an upper skull protecting portion **20** and lower ear protecting portion **22** extending downwardly therefrom with ear protecting portions or members **24** located adjacent the locations occupied by the ears of the wearer's head.

The head gear **16** is mounted on the head of the wearer by a harness, generally designated **26**, which in turn consists of a circumferential band or strap **28** extending around the head and crossing mutually perpendicular overhead bands or straps **30** and **32** respectively. The harness **26** is spaced away from the helmet **20** and secured thereto as by the fasteners **34** in a conventional way, the details of which are beyond the scope of the present invention. The chin strap **14** is of the so-called military type having upper and lower chin engaging portions **36** and **38** secured as by stitching to the front and bottom of an approximately cup-shaped chin rest **39** of leather or other suitable material which rests against the lower front portion of the face guard **12**. The chin strap portions **36** and **38** meet at a common junction **40** and form a Y-shaped connection with their connection straps **42**. The upper ends of the connection straps **42** are passed through buckles **44** which in turn are secured as by the fasteners **46**. The fasteners **46** pass through protecting pads **48** and the helmet portions **22** to which these are secured as at **50**. The buckles **44** are preferably so mounted on the helmet **20** that the line of pull from the chin through the connecting strap portions **42** to the buckles **44** lies forward of a line from the chin to the point of articulation or pivoting of the jaw bone upon the skull of the wearer. As stated above, this serves to hold the mouth of the wearer firmly closed while permitting him to move his lips sufficiently to talk to his teammates.

The helmet **20** is provided with a pair of plates or socket members **52** secured on opposite sides thereof near the forward edge **54** of the helmet side portions **22**. Each socket member **52** contains a fulcrum socket **56** which is open at the front and shaped somewhat like the handle of a teacup or the outline of the human ear, having an arcuate bearing surface or recess **58** in its upper portion extending above the front slot or opening **60**. Fitting into the socket **56** and shaped arcuately to pivot in the recess **58** thereof is the convex arcuate bearing surface or fulcrum portion **62** disposed at the upper end of each of a pair of supporting arms **64** which extend upward from and are integral with the frontal portion, generally designated **66**, of the face guard **12**. The frontal portion **66** interconnects the arms **64** and extends in front of the face to protect the various portions of the face.

The frontal portion **66** of the face guard **12** has three separate subportions or components, namely a nose protecting portion **68**, at the top, a teeth protecting portion **70** in the middle, and a chin-protecting portion **72** at the bottom, these three portions **68**, **70** and **72** being separated from one another by elongated openings **74** and **76** through which the user may breathe and talk respectively. The portions **68**, **70** and **72** thus act as bridge portions extending between the arms **64** at different levels thereof. The nose protecting portion **68** is arched upward (Figure 1) to cover the nose, leaving downwardly-extending cutout portions **78** on opposite sides of the portion **68** for facilitating downward vision. The chin protecting portion **72**, which extends downwardly from the lower part of the frontal portion **66** at the lower ends of the arms **64** and is engaged by the chin rest **39** of the chin strap **14**, is cupped slightly to conform to the shape of the front of the chin, and is provided with a pad **80** of rubber or other suitable resilient material secured to the inner surface thereof as by the use of an adhesive and serving as a point of support against the front of the chin or jawbone. The remainder of the frontal portion **66** with its nose and teeth protecting portions **68** and **70** is spaced away from the adjacent portions of the face, so that the face guard **12** when subjected to a blow can yield considerably before touching any portion of the face. Since the face guard **12** is of flexible transparent plastic or other resilient material, it has an elastic resisting effect tending to absorb the force of a blow, as stated below in connection with the operation of the invention.

The modification shown in Figure 4 provides a face guard, generally designated **82**, similar in most respects to the face guard **12** except that the fulcrum portions **62**, instead of being inserted in the socket **56**, are pivoted directly to reinforcing plates **84** secured to the depending helmet portions or side portions **22** by means of pivot members **86**, such as rivets. The reinforcing plates **84** are of similar shape to the socket members **52** and are similarly secured to the helmet **20** or molded integrally therewith.

The modification shown in Figure 5 employs a face guard, generally designated **92**, similar to the face guards **12** and **82** except that a different means is provided for securing the face guard **92** to the helmet **20**. In Figure 5, the fulcrum portions **62** are drilled with spaced multiple holes **94** which are aligned with one or more pairs of holes (not shown) in the supporting and reinforcing plate **96**. The latter is similar to the supporting and reinforcing plate **84** and is similarly formed on the helmet **20**. A lace **98** of leather, rawhide or other suitable material is inserted through the holes **94** and provides an adjustable means for varying the position of the frontal portion **66** of the face guard **92** outwardly from or inwardly toward the helmet **20**, in order to adapt the face guard **92** to individuals of different head and facial dimensions.

The further modified combination face and head protector, generally designated **100**, shown in Figure 6 has a head gear, generally designated **102**, similar to the head gear **16** of Figures 1 and 4, except that the reinforcing plates **84** are placed slightly higher up on the helmet shell **18** so that the fulcrum or pivot members **86** are located at or above the eye level of the wearer. The arms **64** of the face guard **104** are slightly lengthened

to enable the use of these high fulcrum points **86**, and the latter in turn permit the use of a cup-shaped chin-protecting portion **106** which extends underneath the chin as well as in front of it, and is provided with a pad **108** of rubber or other resilient material similar to the pad **80** but extending further under the chin. The cup-shaped chin protector **106** is optionally slotted as at **110** to receive a chin strap **112** of a non-military type, or the military-type chin strap **14** may be used if desired. If the non-military type chin strap **112** is used it may have its central portion extending around the front of the chin-protecting portion **106**, as shown in Figure 6 or it may be bent perpendicularly thereto to pass underneath the chin. The high fulcrum location of the pivot members **86** enables the cup-shaped chin-protecting portion **106** to swing on a long radius so as to cause the bottom of the chin-protecting portion **106** to clear the chin without interference therewith.

The further modified face guard **114**, shown in Figure 7, is identical in all respects to the face guard **104** of Figure 6, except that an open-ended chin strap slot **116** with an entrance **118** is provided on each side of the chin protecting portion **106** instead of the closed slots **110** of Figure 6. This construction enables the strap **112** to be easily inserted and removed or detached from the face guard **114** without requiring it to be unthreaded from the closed slots **110** of Figure 6.

The operation of the invention is chiefly the same in all forms thereof, differing only in the pivotal connection by which the face guard **12**, **82** or **92** is attached to the helmet **20**, the construction and connection of the chin strap to the face guard, and the shape of the chin protecting portion of the face guard. The face guard **12** (Figures 1 and 2) is applied after the head gear **16** has been placed on the head, by inserting the fulcrum portion **62** of the arms **64** through the entrances **60** of the sockets **56** and pushing upward until the fulcrum portion **62** is firmly seated in the correspondingly-shaped recess **58**. The chin strap **14** is then tightened, with its upper and lower portions **36** and **38** engaging the chin rest **39** which in turn engages the chin by means of the resilient pad **80**. It is quickly and easily detached by reversing the procedure just described.

The face guard **82** of Figure 4 and the similar face guards **104** and **114** of Figures 6 and 7, being permanently connected by the pivot pins **86** to the helmet shell **18**, involve no detachment procedure, but swing forward and upward out of the way when their respective chin straps **14** or **112** are disconnected from their respective buckles **44**. In the high fulcrum face guard **104**, the radius of swing is so long that the bottom of the cup-shaped chin protecting portion thereof swings clear of the chin without interfering therewith, thus giving more complete protection to the wearer's chin and at the same time enabling the face and head protector to be easily and rapidly removed. The face guard **92** of Figure 5, on the other hand, being laced to the reinforcement plates **96**, enables the face guard **92** to be set higher or lower relatively to the head gear **16**, thereby adjusting the face guard **92** to the different sizes of face and head. The different possible arrangements and advantages of the military chin strap **14** of Figures 1, 4 and 5 versus the non-military or single chin strap **112** of Figures 6 and 7 has already been described in connection with the description of the respective figures.

In any case, as stated above, the present face guard, whatever its form as shown in the accompanying drawings, by being made of flexible resilient material and spaced away from the face permits circulation of cooling air to carry away heat and evaporate perspiration, prevents dirt from collecting and forming an irritant between the face guard and the skin of the face, as in prior face guards which directly contact the face at close range, and absorbs the impact of a blow and transfers it to the head gear before it deflects sufficiently to touch the face. It thus does not localize the impact of the blow upon the face, as in prior close fitting face guards. Moreover, the spaced, separate bridge portions **68**, **70** and **72** protect the nose, teeth and chin for the same reason, while permitting the maximum vision downward or rearward, if the wearer is bending forward.

The still further modified face guard, generally designated **124**, shown in Figure 8, is also identical in all respects to the face guard **104** shown in Figure 6, except that separate chin straps **126** are provided on opposite sides of the face guard chin protecting portion **106**, and attached as by the riveted or otherwise secured loops **128** to the closed slots **110** therein. In this manner, the face guard **104** and its chin straps **126** become a single unit. The operation and use of the face guard **126**, except as affected by this difference of construction, is otherwise the same as that of the face guard **104** of Figure 6 described above.

What I claim is:

1. A combination face and head protector comprising a helmet having a top portion adapted to cover substantially the entire upper part of the wearer's head and having sides adapted to extend downwardly on opposite sides of the wearer's head, a face guard having a frontal part of flexible resilient material and laterally-spaced arms extending upwardly and rearwardly therefrom, a force-transmitting pivot device connecting the upper end of each arm to the adjacent side of said helmet, and means disposed below said pivot devices for separately securing said face guard to said sides of said helmet, said frontal part having a lower chin-protecting portion engaging the front of the wearer's chin and elsewhere being spaced widely away from the adjacent facial portions of the wearer, each of said force-transmitting pivot devices including pivot members with arcuate concave bearing surfaces mounted on said helmet sides forming sockets and socket-engaging portions with arcuate convex bearing surfaces disposed on the ends of said arms in rocking engagement with said arcuate concave bearing surfaces.

2. A combination face and head protector comprising a helmet having a top portion adapted to cover substantially the entire upper part of the wearer's head and having sides adapted to extend downwardly on opposite sides of the wearer's head, a face guard having a frontal part of flexible resilient material and laterally-spaced arms extending upwardly and rearwardly therefrom, a force-transmitting pivot device connecting the upper end of each arm to the adjacent side of said helmet, and means disposed below said pivot devices for separately securing said face guard to said sides of said helmet, said frontal part having a lower chin-protecting portion engaging the front of the wearer's chin and elsewhere being spaced widely away from the adjacent facial portions of the wearer, said force-transmitting pivot devices including sockets with arcuate bottoms mounted on said helmet sides and arcuate socket-engaging portions disposed on the ends of said arms in rocking engagement with said arcuate bottoms.

3. A combination face and head protector comprising a helmet having a top portion adapted to cover substantially the entire upper part of the wearer's head and having sides adapted to extend downwardly on opposite sides of the wearer's head, a face guard having a frontal part of flexible resilient material and laterally-spaced arms extending upwardly and rearwardly therefrom, a force-transmitting pivot device connecting the upper end of each arm to the adjacent side of said helmet, and means disposed below said pivot devices for separately securing said face guard to said sides of said helmet, said frontal part having a lower chin-protecting portion engaging the front of the wearer's chin and elsewhere being spaced widely away from the adjacent facial portions of the wearer, each of said force-transmitting pivot

devices including pivot members with arcuate concave bearing surfaces mounted on said helmet sides forming sockets and hook-shaped socket-engaging portions with arcuate convex bearing surfaces disposed on the ends of said arms in rocking engagement with said arcuate concave bearing surfaces.

4. A combination face and head protector comprising a helmet having a top portion adapted to cover substantially the entire upper part of the wearer's head and having sides adapted to extend downwardly on opposite sides of the wearer's head, a face guard having a frontal part of flexible resilient material and laterally-spaced arms extending upwardly and rearwardly therefrom, a force-transmitting pivot device connecting the upper end of each arm to the adjacent side of said helmet, and means disposed below said pivot devices for separately securing said face guard to said sides of said helmet, said frontal part having a lower chin-protecting portion engaging the front of the wearer's chin and elsewhere being spaced widely away from the adjacent facial portions of the wearer, each of said force-transmitting pivot devices including pivot members with arcuate concave bearing surfaces mounted on said helmet sides forming sockets and socket-engaging portions with arcuate convex bearing surfaces disposed on the ends of said arms in rocking engagement with said arcuate concave bearing surfaces and detachably engaging said sockets.

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