July 7, 1964 D. C. HUMPHREY 3,139,624

FACE GUARD FOR FOOTBALL HELMET

Filed March 18, 1963

FIG-1

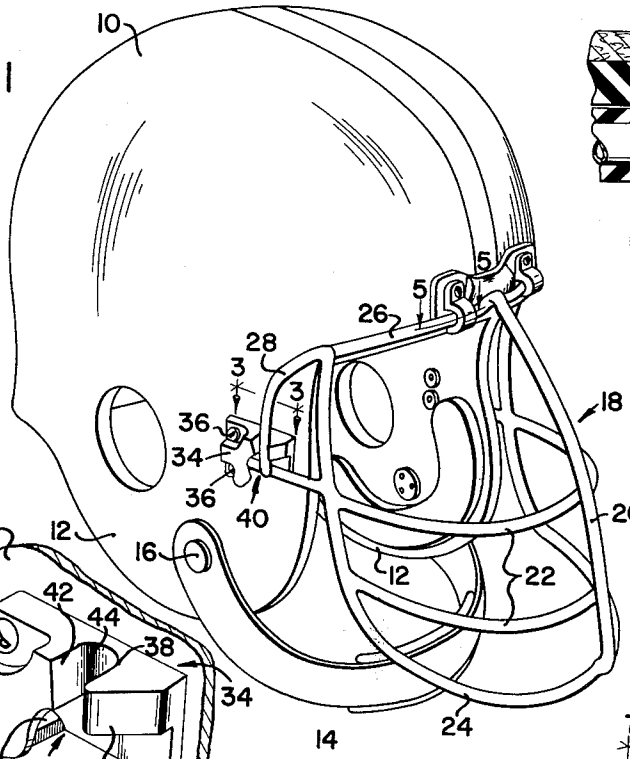


FIG-5

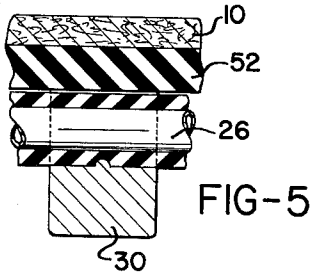


FIG-4

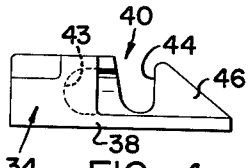


FIG-2

FIG-6

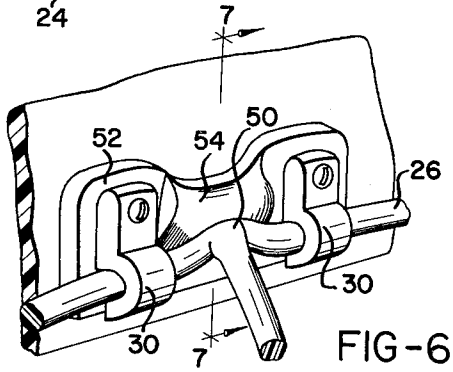


FIG-7

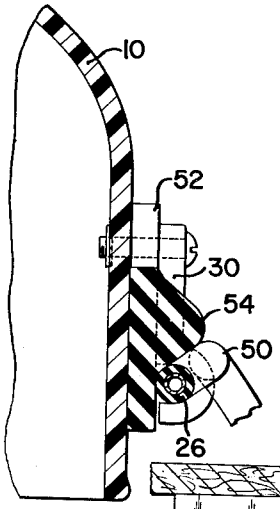


FIG-3

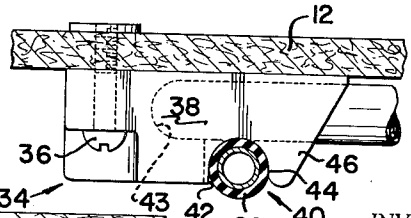
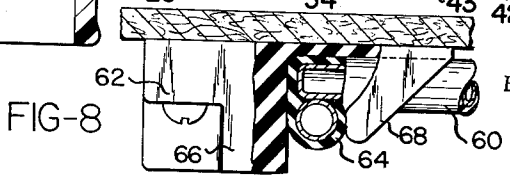


FIG-8



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FACE GUARD FOR FOOTBALL HELMET

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14 Claims. (Cl. 2—9)

This invention relates to athletic equipment and is particularly concerned with an improved and novel combination of a football helmet and a face mask therefor and a mounting arrangement for the face guard. The present application is a continuation in part of my copending application Serial No. 244,760 filed December 14, 1962 and now abandoned.

In connection with football helmets, face masks are, of course, used at all times. These face masks can comprise plastic members, such as nylon, but a preferred face mask presently is constructed of steel tubing with a resilient rubber-like covering thereon. These face masks are relatively stiff and give added protection in that they will deform if extremely heavy loaded instead of springing to the degree that the plastic face masks do under the same circumstances.

In the interests of increased safety, face masks have grown to be rather large in size and, on account of this, certain hazards have been introduced along with the added safety that the guard affords. A particular hazard is that the face mask forms a ready hand hold, and it has been the case that players have been severely injured by an opponent grasping the face mask and pulling on the face mask so that the helmet rotates about the chin strap, or the back edge presses into the back of the player's neck.

This can be fatal if the face mask is pulled with enough strength.

Still further, a helmet with a full face mask thereon of the type referred to can be difficult to put on and remove on account of the limited opening that is provided between the face mask and the helmet unless the face mask is made so that it projects outwardly a substantial distance from the front of the helmet.

The difficulty of puting helmets on and removing them sometimes leads players to helmets that are too large because it is easier to put on, and this can be exeremely dangerous on account of the loose fit that results, permitting the helmet to turn and to be defective for protecting the player. This is particularly the case with face masks made of rubber-covered steel tubing because these masks are stiff and detract materially from the resilience of the helmet, and it is not easy to take a helmet of the right size having a rigid face mask thereto and spring the helmet outwardly to permit it to be put on easily when it is a good fit.

Face masks of the nature referred to are customarily rigidly fastened to helmets and, because of this rigid fastening, any shock to the mask is transmitted directly to the helmet. Such shocks are usually well cushioned from the players head by the internal cushioning of the helmet, but such shocks can cause the helmet material to break.

In connection with the rigid fastening of face masks to helmets, the possibility of the helmet breaking is an extreme hazard so that the tendency has been to employ a resilient face mask with the idea of protecting the helmet against breakage with the result that imperfect protection of the player results.

While the foregoing remarks are particularly pertinent to the rubber covered metal tubing face masks, it will be understood that they also apply to plastic face masks and that the present invention is useful with a face mask of either material.

While I have found the swing out feature of the face masks to be extremely important, both in connection with the fitting of a helmet and in connection with the safety of the helmet in avoiding whiplash injuries, I have also found certain drawbacks with having a face mask freely swingable on a helmet. While in normal use the free swinging face mask is a distinct advantage over a face mask fixedly connected to the helmet, some possibility exists that a player could fall on a mask swung outwardly from the helmet, and in this way, sustain some injury. Still further with the free swinging mask, the possibility is present that the mask could be swung up and the player wearing the mask could receive injury by accident from another player during play. Still further, if a free swinging mask of the nature referred to is unlatched from the helmet at the sides and the conditions of the game require the player to be running, the free swinging mask will tend to flop around and this could form somewhat of a hazard to the runner.

With the foregoing in mind, a primary objective of the present invention is the provision of an arrangement for mounting a face mask on a football helmet which avoids the drawbacks and hazards that have been encountered with face masks according to the prior art.

Another object of this invention is the provision of a relatively inexpensive arrangement for mounting face masks on football helmets.

A still further object of this invention is the provision of a face mask mounted on a football helmet which will reduce shock transmited to the helmet and which will prevent the helmet from being rocked backwardly on a players head by grasping the face mask.

It is also an object of this invention to provide an improved combination of a football helmet and a face mask having advantages with respect to safety and as to ease of putting the helmet on and taking it off.

A still further object of the present invention is the provision of a football mask which is swingably connected with the football helmet so that it can be moved outwardly from its operative position in order to obtain the advantages of minimizing the possibility of whiplash injuries and the like, but wherein the mask is baised toward the helmet thereby to prevent the mask from flopping about or swinging outwardly if the player falls and forming a hazard.

These and other objects and advantages of this invention will become more apparent upon reference to the following specification, taken in connection with the accompanying drawings, in which:

FIGURE 1 is a perspective view showing a football helmet and a face mask and mounting for the face mask according to my invention;

FIGURE 2 is a perspective view showing a latch or retainer member carried by the helmet for releasably retaining the face mask thereon;

FIGURE 3 is a sectional view indicated by line 3—3 on FIGURE 1 showing the latch or retainer member of FIGURE 2 in plan;

FIGURE 4 is a view looking up from beneath one of the latch members showing a pocket formed therein that receives a portion of the face mask;

FIGURE 5 is a sectional view indicated by line 5—5 on FIGURE 1 showing the construction of one of the supporting clips for the top of the mask;

FIGURE 6 is a perspective view showing a preferred manner of providing resilient means on the helmet for biasing the face mask for closed or operative position;

FIGURE 7 is a vertical sectional view indicated by line 7—7 on FIGURE 6; and

FIGURE 8 is a view similar to FIGURE 3 but partly in section showing a modified structure.

General Arrangement

The present invention comprises, generally, a substantial conventional football helmet and a face mask which may be substantially conventional with respect to the manner in which it protects the face area of the player wearing the helmet. Instead of rigidly mounting the face mask on the helmet, however, the face mask, according to the present invention, is pivotally secured to the front of the helmet while, at the sides of the helmet and, located downwardly from the aforementioned pivotal connection are releasable latch elements that engage the sides of the face mask.

The face mask can be snapped out of the latch elements with a forcible pull thereon and will snap into the latch elements fairly easily. Preferably, the latch elements are a resilient rubber-like material for shock absorbing purposes and also because such material is not subject to breakage from the relatively severe use to which it will be subjected.

According to the present invention, the helmet is provided with spaced strap means 30 secured to the helmet as by the screws 32 and pivotally engaging the upper bar means 26. This will permit the face mask to be swung outwardly from the helmet about a substantially horizontal axis passing through the pivot centers provided by the straps 30.

For retaining the face mask in an operative position, the helmet is provided with a detent or latch member 34 on each side of the helmet and carried by the dependent portions 12. These detents or latch members are fixed to the helmet as by the screws 36.

The detent or latch members are more clearly illustrated in FIGURES 2 or 3 wherein it will be seen that each comprise a base portion 38 resting on the side of the helmet and which base portion toward the bottom is provided with a notched region 40 for receiving the end of the bar portion 28 and the rearmost part of the bar means 22 and which extends rearwardly beyond the circumferential bar means 24 and also beyond portion 28 of bar means 26.

The notched region 40, which will be particularly noted in FIGURE 4, forms a pocket 43 for receiving the extreme end portion of the pertaining horizontal bar means 22. This pocket serves to join the mask with the helmet so that they do not tend to become disconnected upon the application of transverse pulls or loads to the helmet or the face mask.

Substantially the only way in which the mask can be dislodged from the other members is by a straight pull or an upward blow. The pull would be by way of grasping the mask and the blow could be, for example, by way of an arm or a knee. It will be appreciated that the latch elements would be free of sharp corners or edges for the sake of safety.

Each detent or latch member is also provided with a vertically extending notch 42 for receiving the turned down end parts 28 of the lateral bar means 26. Notches 42 may have a slight inclination on their forward side as will best be seen at 44 in FIGURE 3 and the front side of each latch member has a less steep incline 46 or even no incline at all. The arrangement is such that the face mask, if pivoted forwardly from the helmet, can be pushed downwardly toward the helmet and the portions 28 will snap relatively easily into notches 42 by riding up the inclined surfaces 46 at the forward ends of the detent or latch members. The face mask material is relatively stiff, but inclines 46 are so shaped that it will not require a great force to push the face mask into latching position.

With the face mask in latched position, however, a considerably greater force is required to dislodge portions 28 from the notches 42. This comes about on account of the steepness of the surfaces 44, so that, once the face mask is pushed down into latched position, there is no possibility that it will become accidentally unlatched.

The force required to unlatch the face mask from the detents or latch members, however, is small enough that, if the face mask is grasped and pulled by another player, or is accidentally forced in a direction away from the helmet, the face mask will snap free from the detents or latch members before the face mask will bend, and in particular, before the helmet will rock backwardly and impose any dangerous pressure on the back of the player's neck that is wearing the helmet.

The player can always easily release the face mask by grasping it and pulling straight outwardly in the bottom edge thereof.

It is contemplated that the members 34 will be made of a firm but somewhat resilient rubber-like material because this will not only absorb shocks but will also withstand breakage. It is conceivable, however, that the members 34 could be formed of a relatively hard plastic such as nylon, or could even be formed of metal. In any case, the particular advantages of the present invention will obtain, namely, that the face mask is pivotable outwardly from the helmet in response to a pre-determined and substantial thrust thereon.

According to the present invention, the upper transverse bar 26 of the face mask is provided with an upwardly outwardly formed portion 50 which is availed of for establishing a bias resiliently urging the face mask toward latched position. This comes about by clamping beneath the spaced pivot strap means 30 a resilient pad of rubber-like material indicated at 52. This pad or block of rubber-like material has a projection 54, as will best be seen in FIGURES 6 and 7 and which forms a resilient abutment against which the protruding portion 50 of the top bar 26 of the face mask abuts. The arrangement is such that the protruding portion 50 either abuts projection 54 when the face mask is latched closed in operative position or, positioned quite close to projection 54 so that abutment by the projection 50 will occur substantially simultaneously with the unlatching of the face mask from the helmet. What occurs is that the face mask is biased toward its closed position so that it does not swing freely completely outwardly from the face mask. This eliminates the possibility that the face mask will swing outwardly and be in this forwardly projection position when the player may, for some reason, fall on the ground. However, the resiliency of projection 54 permits a face mask to swing out a substantially distance from the helmet when it is pulled outwardly, and this will avoid the danger of what is referred to above as a whiplash injury and which has been sustained many times in the past by players wearing helmets having rigidly attached face masks. It is felt that if the mask can swing out on the order of about 30° or so that even encountering the exceptions of the present invention will be achieved. This will prevent whiplash injuries and will protect the helmet from breakage and will also retain the advantage of the swinging mask in that the head gear is more easy to put on and take off, and can thus be fitted more accurately to the individual playing football.

It will further be understood that the resilient member 52 disposed between the top bar 26 of the face mask and the body of the helmet will tend to protect the helmet against shocks imposed on the face mask and this will, in turn, reduce breakage and reduce the shock of such an impact to the player wearing the helmet.

The resilience in the block also has a protective effect on the pivot straps 30, which have considerably less tendency to break off in view of the resilience provided behind the face mask.

By resiliently biasing the face mask toward its closed position, it is possible for the mask to become unlatched during play, but the player can still run freely with the unlatched mask without it bobbing and swinging around as was referred to earlier in the specification.

FIGURE 8 shows a modification in which the face mask or guard 60 has the bars at the back that engage

the latch member 62 so arranged that they come together substantially at right angles with no raised projection requiring a pocket such as the pocket 43 in FIGURE 3. Instead there is merely a groove 64 formed in the latch member for receiving the bars of the face mask or guard. FIGURE 8 also illustrates that the back abutment portion 66 of the latch member is increased substantially in height so as to form a firm abutment for the face guard that will assist in absorbing shocks and will prevent the face guard from being disengaged from the latch even if struck with a severe blow.

The latch member of FIGURE 8, of course, comprises the approach ramp 68 to assist in snapping the face guard into engagement with the latch.

It will be appreciated that while the resilient pad or block arrangement as disclosed has advantages in connection with shock absorption and simple and low in cost, another means could be provided by pivotally supporting the face mask on the helmet and for biasing it toward closed position. Such means would occur to those skilled in the art and could take the form of spring devices of another nature, for example, spring devices embodied in the pivot straps or disposed between the face mask and the helmet. It will therefore be appreciated that the broad concept of the present invention includes, primarily, the physical support of the face mask on the helmet, particularly where the support is disposed at the top of the face mask, and secondly, the resilient biasing of the face mask on the helmet toward its closed or latched position thereon.

It will be understood that this invention is susceptible to modification in order to adapt it to different usages and conditions; and accordingly, it is desired to comprehend such modifications within this invention as may fall within the scope of the appended claims.

I claim:

1. In combination; a football helmet, a grid-like face mask for the helmet, means pivotally connecting the face mask to the helmet at the top of the helmet in front on a transverse horizontal axis so that face mask can be swung in a vertical plane about said axis between operative and inoperative positions on the helmet, said face mask including portions which extend along and embrace the sides of the helmet a substantial distance below the top of the helmet when the face mask is in operative position, and means mounted on the sides of the helmet at the level thereof embraced by said portion of the mask having means to detachably engage said portions and abutment means to abuttingly engage said portions for positively halting the face mask on said helmet in said operative position thereon when the face mask is moved from inoperative position into operative position to prevent movement of the face mask beyond said operative position and for releasably retaining the face mask in said operative position to prevent accidental movement of the face mask from said operative position to inoperative position.

2. In combination; a face mask for a football helmet comprising a stiff grid-like member having an upper transverse bar, pivot means for engagement with said transverse bar of said face mask and adapted for being attached to the helmet in front at the top for the pivotal connection of the mask to a helmet, and latch means engageable with the sides of said face mask below the top thereof and adapted for being attached to the sides of a helmet to provide for releasable latching engagement of the mask with the sides of a helmet.

3. In combination; a football helmet, a grid-like face mask for the helmet, means pivotally connecting the face mask to the helmet at the top of the helmet in front on a transverse horizontal axis so the face mask can be swung in a vertical plane about said axis between operative and inoperative positions, said face mask including portions at the sides spaced downwardly from said axis which extend along and embrace the sides of the helmet when the face mask is in operative position, cooperating elements of abutment means on the helmet and on said portions of face mask operable for engaging each other for positively halting the face mask in said operative position when the face mask is moved from inoperative position into operative position, cooperating elements of detent means on the helmet and on said portions of said face mask engageable when the mask is in operative position and operable for releasably holding the face mask in operative position on the helmet, and means acting between the mask and the helmet resiliently biasing the mask toward operative position on the helmet.

4. In combination; a football helmet, a grid-like face mask comprising interconnected bars forming a stiff structure, means pivotally connecting the face mask to the helmet at the top of the helmet in front on a transverse horizontal axis so the face mask can be swung in a vertical plane about said axis between operative and inoperative positions, said face mask including portions at the sides spaced downwardly from said axis which extend closely along the sides of the helmet when the face mask is in operative position, and latch elements on the opposite sides of the helmet positioned thereon for receiving said portions of the face mask and operable for latching the face mask in said operative position, said latch elements including abutment means positioned for abuttingly engaging said portions for positively stopping and supporting the face mask in said operative position, said latch elements also including recess means vertically extending opening outwardly from the helmet to receive said portions for effecting the said latching of the face mask in operative position, said latch elements including inclined approaches on the front side leading to said recess means to permit easy movement of the said portions into said recess means, at least one of said helmet and mask being yieldable to permit said portions to ride up said inclines to said recess means.

5. In combination; a football helmet, a grid-like face mask comprising interconnected bars forming a stiff structure, means pivotally connecting the face mask to the helmet at the top of the helmet in front on a transverse horizontal axis so the face mask can be swung in a vertical plane about said axis between operative and inoperative positions, said face mask including portions at the sides spaced downwardly from said axis which extend closely along the sides of the helmet when the face mask is in operative position, latch elements on the opposite sides of the helmet for releasably receiving said portions of the face mask for latching the face mask in said operative position, said latch elements including abutment means positioned for abuttingly engaging said portions for positively stopping and supporting the face mask in said operative position, said latch elements also including recess means opening outwardly from the helmet and positioned to receive said portions when the mask is in operative position for effecting the said latching of the face mask in operative position, said latch elements including inclined approaches on the front sides leading to said recess means to permit easy movement of the said portions into said recess means, and means acting between the mask and the helmet continuously resiliently biasing the mask toward operative position on the helmet.

6. In combination; a football helmet, a grid-like face mask comprising interconnected bars forming a stiff structure, pivot member means on the helmet pivotally connecting the top edge of the face mask to the upper front of the helmet on a transverse axis so the face mask will swing from an operative position adjacent the helmet outwardly away from the helmet, said bars including portions spaced downwardly from said horizontal axis which extend backwardly closely along the sides of the helmet when the face mask is in operative position, a latch element on each side of the helmet positioned to engage said portions and each having an outwardly opening re-

cess therein to receive the adjacent said bar portion, an inclined approach to each recess on the front side of each latch element so the respective bar portions will cam easily into the respective recess, and a forwardly facing abutment surface on each latch element for abutment by the respective said bar portion when the face mask is moved into operative position.

7. In combination; a football helmet, a grid-like face mask comprising interconnected bars forming a stiff structure, pivot member means on the helmet pivotally connecting the top edge of the face mask to the upper front of the helmet on a transverse axis so the face mask will swing from an operative position adjacent the helmet outwardly away from the helmet, said bars including portions which extend backwardly along the sides of the helmet when the face mask is in operative position, a latch element on each side of the helmet having an outwardly opening recess therein to receive the adjacent said bar portion, an inclined approach to each recess so the respective bar portions will cam easily into the recess, and an abutment surface on each latch element for abutment by the respective said bar portion when the face mask is moved into operative position, said bars having a rubber-like covering and said pivot member means comprising strap-like means enclosing the top bar of the mask and having ridge means biting into the said covering to prevent lateral movement of the mask therein.

8. In combination; a football helmet, a grid-like face mask comprising interconnected bars forming a stiff structure, pivot member means on the helmet pivotally connecting the top edge of the face mask to the upper front of the helmet on a transverse axis so the face mask will swing from an operative position adjacent the helmet outwardly away from the helmet, said bars including portions which extend backwardly along the sides of the helmet when the face mask is in operative position, a latch element on each side of the helmet having an outwardly opening recess therein to receive the adjacent said portion, an inclined approach to each recess so the respective portions will cam easily into the recess an abutment surface on each latch element for abutment by the respective said portion when the face mask is moved into operative position, said bars having a rubber-like covering and said pivot member means comprising strap-like means enclosing the top bar of the mask and having ridge means biting into the said covering to prevent lateral movement of the mask therein, and means acting between the mask and the helmet resiliently biasing the mask toward operative position on the helmet.

9. In combination; a football helmet, a grid-like face mask comprising interconnected bars forming a stiff structure, at least one pivot member on the helmet pivotally connecting the top edge of the face mask to the upper front of the helmet on a transverse axis so the face mask will swing from an operative position adjacent the helmet outwardly away from the helmet, said bars including portions which extend backwardly along the sides of the helmet when the face mask is in operative position, a latch element on each side of the helmet having an outwardly opening recess therein to receive the adjacent said portion, an inclined approach to each recess so the respective portions will cam easily into the recess, and an abutment surface on each latch element for abutment by the respective said portion when the face mask is moved into operative position, said bars in the region of the latch members including substantially vertical bars receivable in said recesses and horizontal bars extending rearwardly from the vertical bars, and pockets in said latch members receiving the end parts of said horizontal bars.

10. In combination; a football helmet, a grid-like face mask comprising interconnected bars forming a stiff structure, at least one pivot member on the helmet pivotally connecting the top edge of the face mask to the upper front of the helmet on a transverse axis so the face mask will swing from an operative position adjacent the helmet outwardly away from the helmet, said bars including portions which extend backwardly along the sides of the helmet when the face mask is in operative position, a latch element on each side of the helmet having an outwardly opening recess therein to receive the adjacent said portion, an inclined approach to each recess so the respective portions will cam easily into the recess, an abutment surface on each latch element for abutment by the respective said portion when the face mask is moved into operative position, said bars in the region of the latch members including substantially vertical bars receivable in said recesses and horizontal bars extending rearwardly from the vertical bars, and pockets in said latch members receiving the end parts of said horizontal bars, and means acting between the mask and the helmet resiliently biasing the mask toward operative position on the helmet.

11. In combination; a football helmet, a grid-like face mask comprising interconnected bars forming a stiff structure, pivot member means on the helmet pivotally connecting the top edge of the face mask to the upper front of the helmet on a transverse axis so the face mask will swing from an operative position adjacent the helmet outwardly away from the helmet, said bars including portions spaced downwardly from said horizontal axis which extend backwardly closely along the sides of the helmet when the face mask is in operative position, a latch element on each side of the helmet positioned to engage said portions and each having an outwardly opening recess therein to receive the adjacent said bar portion, an inclined approach to each recess on the front side of each latch element so the respective bar portions will cam easily into the respective recess, and a forwardly facing abutment surface on each latch element for abutment by the respective said bar portion when the face mask is moved into operative position, said latch elements comprising a rubber-like resilient material for absorbing shocks.

12. In combination; a football helmet, a face mask for the helmet, said mask including transversely extending bar means at the top, means attached to the helmet in the front at the top engaging said bar means for pivotally securing the mask to the helmet, cooperating elements of latch means on the helmet at the sides thereof and on the face mask for releasably latching the face mask to the helmet in operative position thereon, said transverse bar means comprising a portion formed upwardly and outwardly therefrom when the face mask is in operative position, and a resilient block on the helmet beneath said portion so that the block will be compressed when the mask is swung outwardly to bias the mask toward closed position.

13. In combination; a football helmet, a face mask for the helmet, said mask including transversely extending bar means at the top, means attached to the helmet in the front at the top engaging said bar means for pivotally securing the mask to the helmet, cooperating elements of latch means on the helmet at the sides thereof and on the face mask for releasably latching the face mask to the helmet in operative position thereon, said transverse bar means comprising a portion formed upwardly and outwardly therefrom when the face mask is in operative position, and a resilient block on the helmet beneath said portion so that the block will be compressed when the mask is swung outwardly to bias the mask toward closed position, said resilient block comprising laterally extending portions disposed between the said bar of the face mask and the helmet so as to provide a resilient cushion for absorbing shocks.

14. In combination; a football helmet, a face mask for the helmet having an upper transverse far extending across the front of the helmet, pivot members attached to the

helmet and engaging said top bar of the mask for connecting the mask to the helmet for swinging movement of the mask in a vertical plane, cooperating elements of a releasable latch means carried on the sides of the helmet and formed on the face mask for releasably retaining the face mask in operative position on the helmet, a pad of resilient material on the front of the helmet and beneath said pivot members, said bar of the face mask having an upwardly and outwardly extending portion thereon between said pivot members and said resilient pad having a projection thereon adapted for engagement by said upwardly and outwardly extending portions when

the mask is swung outwardly from outward position whereby the mask is biased toward operative position.

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