This invention relates to a novel face mask subassembly for use on football helmets characterized by a pair of bracket-forming attachments for opposite sides of the helmet that cooperate therewith to define forwardly opening sockets alongside the face, and mating rearwardly-extending tongues formed on the ends of the face mask arch operative when slidably received within said sockets to define a quick-disconnect coupling therebetween that remains effective to protect the wearer against injury from blows directed against the face while, at the same time, enabling said mask to separate from the helmet if pulled upon. While a slideable friction connection can be used to hold the mask onto the helmet until an extraordinary force tending to separate same is exerted, the invention also encompasses the inclusion of positive mechanical latches of a type effective to releasably lock the tongues into their respective sockets. The invention also encompasses the inclusion of a stabilizing strut and cooperating pin centered within that portion of the helmet covering the forehead.

1 Claim, 10 Drawing Figures
TEAR-AWAY FACE MASK SUBASSEMBLY FOR FOOTBALL HELMETS

In an effort to protect the face against injury, nearly all football helmets worn by players in organized football from the Little Leaguer all the way up through the top professionals are equipped with face masks. These masks differ in style and complexity from the simple single-bar arch worn by quarterbacks, some offensive ends and defensive backs to the considerably more complicated grid worn by interior linemen on both offense and defense, linebackers and even some halfbacks. While such face masks provide adequate protection for the eyes, nose and mouth without unduly interfering with the vision, they are a mixed blessing as they form a convenient and readily accessible “handle” for the defensive player to use in tackling the ball carrier. Despite maximum yardage penalties being imposed for face mask violations, they still occasionally occur during the heat of battle on the field even though such violations are unintentional in all but rare instances.

Unfortunately, the injuries to the neck, back and spinal cord resulting from one player wrestling another to the ground by grabbing his face mask are likely to be far more serious and permanently debilitating than the injuries to the face that the masks are employed to protect against. This is especially true of the younger and less experienced players. While the “pros” still, occasionally, grab one another’s face mask, it is relatively rare because their experience and skill causes them to avoid such infractions. Even when they do occur, a superbly conditioned athlete like any professional must have neck and shoulder muscles capable of resisting such action without injury in most instances. The problem, therefore, becomes critical with the non-professional player and especially the kids from grade school age through high school who oftentimes have a man’s weight and size but rarely the requisite skill, muscle development agility and strength necessary to resist a full force wrench of the neck while running. As a result, far too many serious, and sometimes permanent, injuries are directly attributable to face mask violations, so many in fact that it has become a matter of major concern to the coaches individually as well as the coach and player organizations.

It has now been found in accordance with the teaching of the instant invention that these and other objectionable features of the prior art football helmet face masks can, in large measure, be overcome by the simple, yet unobvious, expedient of detachably connecting the guard to the helmet so that it pulls free when an opponent grabs it, yet, still resists impact blows directed at the face. The subassembly includes the guard together with the brackets that detachably fasten same to the helmet. The connection may take the form of a simple friction fit or, alternatively, some type of simple mechanical latch releasable under the influence of loads of a predetermined magnitude.

The construction is entirely compatible with the same materials already used in the face masks and brackets fastened to the present helmets. While somewhat more complicated than existing units, the subassembly forming the subject matter hereof need be little, if any, heavier. Furthermore, it can be made in any size and is readily adaptable to the various conventional designs and styles of face masks.

It is, therefore, the principal object of the present invention to provide a novel and improved face mask and mounting bracket subassembly for football helmets.

A second objective is the provision of a subassembly of the type aforementioned which is compatible with existing helmets.

Another object of the within described invention is to provide a tear-away face mask that still retains its prime function of protecting the face of the wearer except in those infrequent instances and brief intervals when it is torn free.

Still another objective is to provide a protective device for the faces of football players that requires no additional impediments positioned to obstruct their vision and adds little, if any, significant weight to the headgear.

An additional object is the provision of a tear-away face mask subassembly having a quick-disconnect coupling adaptable for use on virtually all types, sizes and styles of existing guard designs.

Further objects are to provide an improved football helmet face guard that is simple, dependable, rugged, easy to manufacture and install, compact, versatile and even somewhat decorative.

Other objects will be in part apparent and in part pointed out specifically hereinafter in connection with the description of the drawings that follows, and in which:

FIG. 1 is a fragmentary perspective view showing a player wearing a football helmet equipped with the tear-away face mask of the present invention as viewed from a vantage point above and in front of the player's right-hand side;  
FIG. 2 is an exploded fragmentary view to the same scale as FIG. 1 and essentially identical thereto except that the face mask has been shown detached from its bracket-forming attachments mounted upon the earflaps of the helmet;  
FIG. 3 is a front elevation of the helmet and face mask subassembly;  
FIG. 4 is a side elevation thereof;  
FIG. 5 is a fragmentary section to an enlarged scale taken along line 5--5 of FIG. 3 showing the details of the stabilizing strut and pin thereof;  
FIG. 6 is a fragmentary section to the same scale as FIG. 5 taken along line 6--6 of FIG. 3 that shows a spring latch and cooperating notch in the tongue of the mask that cooperate to produce one type of detachable connection between said mask and the helmet;  
FIG. 7 is a fragmentary section taken along line 7--7 of FIG. 4 to the same scale as FIGS. 5 and 6 disclosing the tongue along with the socket therefor defined by mounting the bracket-forming attachment onto the earflap of the helmet;  
FIG. 8 is a fragmentary section taken along line 8--8 of FIG. 4 and to the same scale as FIGS. 5, 6 and 7 showing the same connection as revealed in the latter figure, but from a different position;  
FIG. 9 is a perspective view to the same scale as FIGS. 1--4, inclusive, and taken from the same vantage point as FIGS. 1 and 2 showing a simplified face mask of the type including no stabilizing strut; and,  
FIG. 10 is a fragmentary section like FIG. 6 and to the same scale as the latter showing a different form of latch, namely, a spring-biased ball and mating notch.

Referring next to the drawings for a detailed description of the present invention and, initially, to FIGS.
has been chosen to broadly designate the tear-away face mask assembly forming the subject matter hereof and which will be seen to include the mask 12 and the bracket-forming attachments 14 by means of which said mask is detachably fastened to the earflaps 16 of a conventional football helmet 18. In the particular form illustrated, the mask has a centrally-disposed post 20 terminating in a yoke 22 which detachably fastens onto a pin 24 projecting from the portion of the helmet that protects and covers the wearer's forehead. Masks with posts 20 are in common use, particularly by interior linemen, as are those without as exemplified by the modified form 10m shown in FIG. 9. In fact, some players prefer masks having a single-bar arch in place of the double-bar arches shown. Be that as it may, any of the conventional types and styles of face masks in common use can be modified to include the tongues 26 formed on opposite ends of the arch. These tongues extend rearwardly in transversely-spaced essentially parallel relation to one another and are preferably formed integral with the mask as shown.

The bracket-forming attachments 14 are most clearly revealed in FIGS. 6, 7 and 8 to which reference will now be made. Two such attachments are used, one for the right side of the helmet and the second, a mirror image of the first, for the left side. Each includes a forwardly-opening channel 28 closed at the rear end to define a stop 30. The upper and lower margins of channel 28 cooperate with one another and with the corresponding edges of tongue 26 to guide the latter into telescoped relation therein while, at the same time, defining stops that prevent the mask from being tilted either up or down. Stop 30 engages the rear end of the tongue and limits its rearward penetration into the channel caused by a head-on blow. When mounted on the earflaps 16 of the helmet as shown, these bracket-forming attachments cooperate therewith to enclose the inside of the channels 28 and form a forwardly-opening socket therefrom sized to slidably receive and releasably retain the tongues.

With the tongues seated as shown within the sockets thus formed, it will be apparent that the face mask remains fully effective to resist and protect the wearer against blows directed at his face regardless of whether they come at him head-on, from one side or the other, underneath so as to bend his head back or from above in a direction to bring his chin down against his chest. Since these are the only face-directed blows one needs to be protected against, the assembly remains completely effective for its intended purpose. If, on the other hand, an opposing player grabs the mask and pulls it away from the face and the helmet to which it is attached, the tongues will immediately slide forwardly out of their respective sockets thus disconnecting the mask from the helmet altogether. It becomes almost impossible to grab the mask so far to one side that the resultant forwardly-acting force component becomes insufficient to pull the mask free of the socket especially when the wearer need only turn slightly toward the opposing player in order to bring the tongues into a more favorable attitude for release. Actually, a pull of sufficient force to cause injury in the first place will turn the head around to where the mask will tear away.

The brackets 14 are screwed to the earflaps of the helmet in the usual way and, in the particular form shown, each carries an element 32 of a two-part snap fastener so that the chin strip 34 can be detachably connected thereto. The same type of high-impact plastic material presently employed on the mask-mounting brackets has proven adequate for those of the present invention. There is nothing, however, to prevent formation of these tongue-receiving sockets as an integral part of the helmet and, in fact, such would be preferred for new helmets. The form of the invention shown, on the other hand, is ideally suited for modifying existing helmets having conventional face masks rather than the tear-away kind forming the subject matter hereof.

Referring once again to FIGS. 1-4 along with FIG. 5, it will be seen that those face masks equipped with struts 20 are modified in accordance with the teaching hereof to eliminate all permanent connections between the latter and the helmet. Instead, a simple pin 24 projects forwardly from the forehead-covering portion of the helmet and the upper end of the strut is modified to terminate in a yoke 22 that seats with said pin confined between the legs thereof so as to resist both side-wise and upward movement of the strut while, at the same time, having the strut free to separate forwardly from the pin whenever the tongues 26 leave their sockets. The generally Y-shaped plastic material of the struts are so contoured that it is prevented over one with an eye at the end thereof because of the possibility that an eye could catch on the pin under some circumstances thus preventing the mask from disconnecting from the helmet as intended; whereas, even this remote contingency is virtually eliminated with the more open yoke configuration.

The simplest form of the invention is one in which the tongues are frictionally held within their respective sockets until a pulling load is applied to the mask of a magnitude capable of causing injury, whereupon, it will become detached from the helmet. There are certain obvious difficulties associated with establishing and maintaining the desired degree of frictional contact between the tongues and sockets therefor that can be eliminated by adding some kind of releasable latch mechanism, the ones shown having been broadly designated by reference numeral 36. The latch shown in FIG. 6, to which reference will now be made, is a simple one consisting of a leaf spring 38 seated within a spring pocket 40 formed in the bottom of channel 28 so as to open underneath the tongue 26. The crown 42 of the spring 38 projects into the channel 28 where it enters notch 44 in the tongue when the latter is fully seated in the rear end of the socket as shown. As such, the spring and notch cooperate with one another in the well-known manner to releasably latch the face mask to the helmet until a pulling load is exerted thereon of a predetermined magnitude necessary to separate same by compressing the spring as it rides out of the groove and onto the rear of the tongue.

Another modified form of latch 36m has been shown in FIG. 10 and it will be seen to comprise a conventional spring-biased pin detent 46 housed within a suitably shaped cavity 40m therefor. Compression spring 48 normally urges the pin into latched engagement within notch 44 in the tongue. A threaded plug 50 screwed into the cavity 40m can be used to adjust the preload bias upon the pin. Opposed shoulders 52 on the pin and portion of the cavity opening into the channel 28 keep the pin in place when the tongue is absent. What is claimed is:
1. A tear-away face mask assembly for football helmets and the like which comprises: a pair of bracket-forming members each having a channel formed therein effective when mounted in transversely-spaced opposed relation to one another upon the exterior face of the earflaps of a football helmet to cooperate therewith and define substantially parallel forwardly-opening sockets alongside thereof; a face mask having a horizontally-arched portion with the terminal ends thereof shaped to define a pair of transversely-spaced parallel tongues positioned and adapted for simultaneous insertion into the sockets in the bracket members and a vertically-disposed upwardly and rearwardly-curved arcuate strut depending from the midpoint of said arched portion terminating at the forehead-covering portion of the helmet when attached thereto, said sockets and tongues when interengaged cooperating to produce a quick-disconnect coupling therebetween operative to permit instantaneous detachment of the mask upon application of a pulling force thereto in a direction to separate same from the helmet; and, a quick-disconnect coupling connecting said terminal strut end to said helmet, said coupling comprising a pin mountable upon the forehead-covering portion of the helmet in position to receive the terminal end of the strut and an upwardly extending generally U-shaped yoke formed on said strut end positioned to receive said pin.

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