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L. F. KEITH
PROTECTIVE MASK

3,196,458

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2 Sheets-Sheet 1

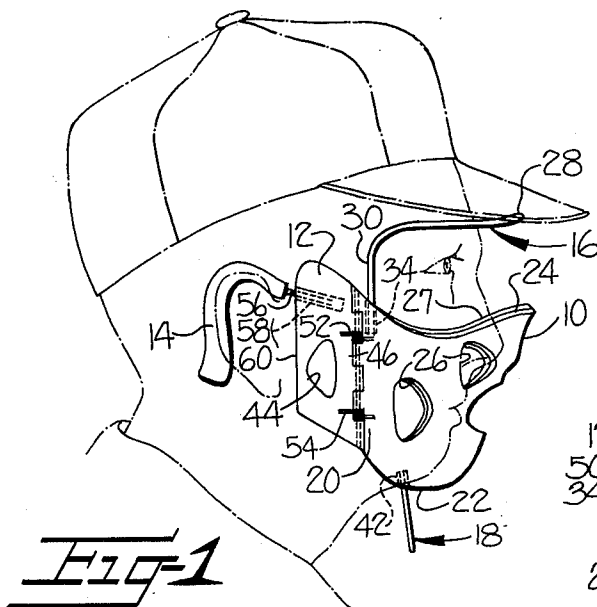


Fig-1

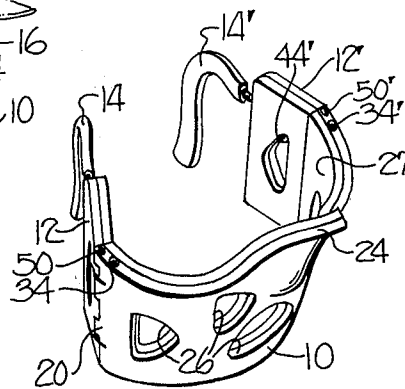


Fig-3

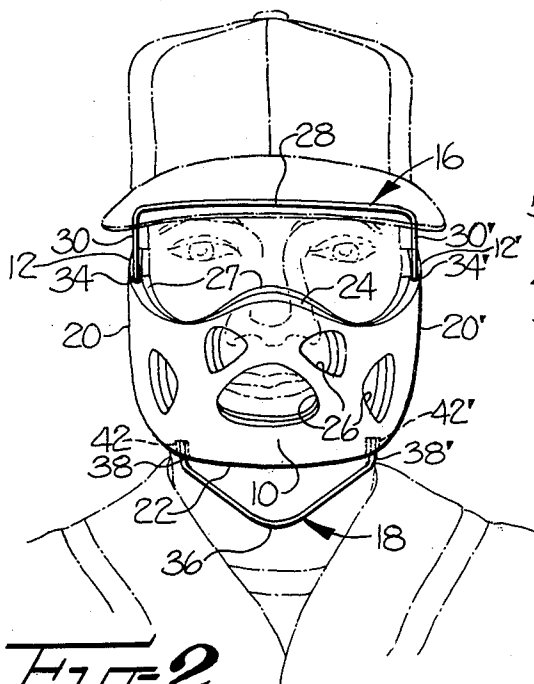


Fig-2

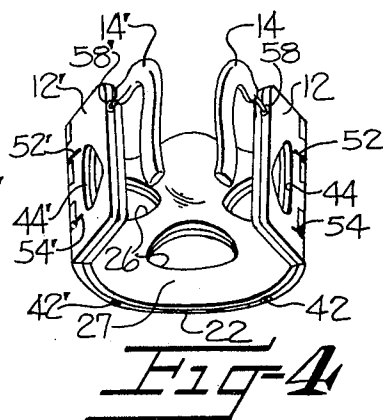


Fig-4

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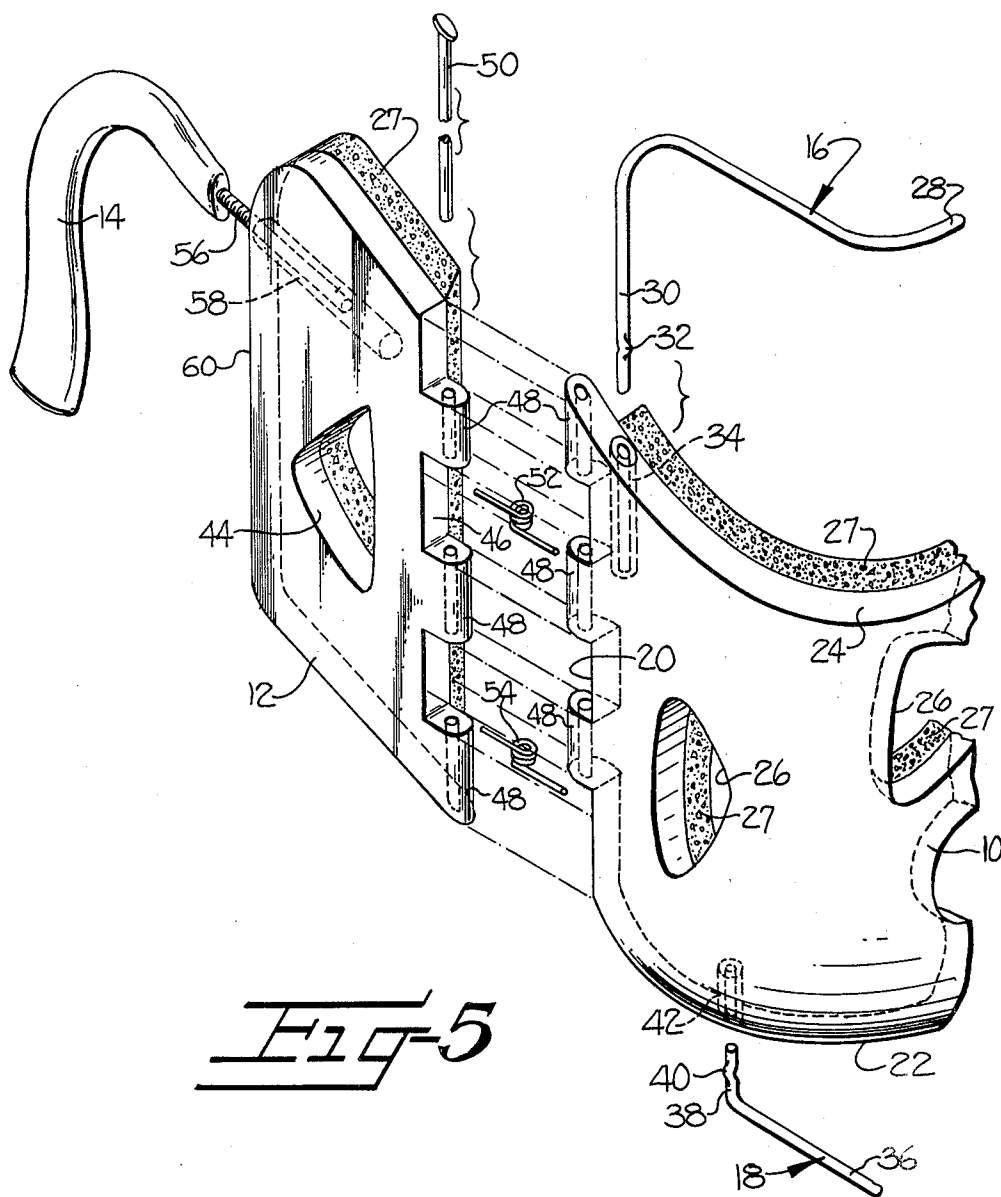
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PROTECTIVE MASK

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12 Claims. (Cl. 2—9)

This invention relates to protective masks for athletes and, more particularly, to an improved protective mask especially, although not exclusively, adapted for use by athletes engaging in the sport of baseball.

This application is a continuation-in-part of applicant's co-pending application Serial No. 106,302, filed April 28, 1961, now Patent No. 3,132,345 and entitled Protective Mask Assembly. As is pointed out in said co-pending application, while the usefulness of protective masks in preventing painful and frequently disabling injuries to athletes has been recognized for some time, the general usage of such masks has not been accepted in many sports, of which baseball is illustrative. This reluctance to accept the benefits afforded by protective masks is deemed largely attributable to the means for maintaining such masks in position upon the head of a wearer heretofore frequently having been of an unusual and cumbersome appearance and nature. As a consequence, wearers of such masks have frequently possessed unconventional, if not grotesque, appearances, and the procedures for donning and doffing such masks have been awkward and time consuming. Consequently, the use of protective masks and the benefits which might be afforded thereby have all too frequently been foregone.

A primary object of this invention, as with the invention of applicant's aforesaid co-pending application, is the provision of a protective mask free from the foregoing disadvantages and deficiencies in that it does not distract from the appearance or comfort of the wearer and may be donned and doffed with speed and facility, and which additionally is lightweight and of economical manufacture. The mask is primarily adapted and intended for use by athletes engaged in the sport of baseball, and is so described and illustrated herein. As will subsequently be apparent, however, the mask also possesses utility in other activities, such as the sport of softball, and therefore no restriction of the use of the mask of the invention to the sport of baseball alone is intended or should be made.

A related and more specific object is the provision of a protective mask of the type described which requires no supporting straps or similar head-encircling members of any kind to maintain the same securely in place upon the head of a wearer. There being no such straps or similar members to fasten and unfasten or to distract from either the appearance or comfort of the wearer, the mask is capable of being quickly and easily donned and doffed and, when worn, is lighter, less noticeable and more comfortable than masks heretofore employed.

Another related and more specific object is the provision of a mask of the type described in which the means maintaining the same in place upon the head of a wearer is largely self-adjusting, such that a single mask is capable of being quickly donned and worn by any one of a number of wearers with widely varying head sizes. This feature is deemed especially desirable in relation to the sport of baseball since it obviates the necessity for each player to keep track of a particular mask during those times when his team is in the dugout and the masks are not being worn. It is also highly desirable in the case of amateur or "little-league" baseball, since it permits the interchange of a limited number of masks between the players of the opposing teams without causing any delay in the progress of the game.

Another object is the provision of a mask of the type

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described which is capable of being quickly and easily modified in accordance with the wishes of a particular wearer so as to afford or not afford protection for his eyes and throat, as well as for that area of his face lying therebetween. The mask of the instant invention provides simple yet highly effective protection for the eyes and throat, as well as for that area of the face lying therebetween, for those wearers who desire to avail themselves of such additional protection. On the other hand, the structure affording this additional protection is so constructed and arranged as to be capable of quick disconnection and removal from the remainder of the mask by those wearers who do not desire the additional protection, but who wish to still avail themselves of the basic facial protection afforded by the mask.

Still other objects and advantages will be in part evident and in part pointed out hereinafter in the following description of an illustrative embodiment of the invention, which should be read in conjunction with the accompanying drawings, in which:

FIGURES 1 and 2 are, respectively, side and front views of a protective mask embodying the invention in place upon the head of a wearer;

FIGURES 3 and 4 are, respectively, perspective and rear views of the mask, but with the additional eye and throat protecting members disconnected and not shown; and

FIGURE 5 is an enlarged, partially exploded, perspective, fragmentary view of one side of the mask, illustrating certain details of construction.

Referring more particularly to the drawings, the protective mask there shown consists generally of a frontal portion 10, side portions 12, 12', optional ear hooks 14, 14', and optional eye and throat protecting members 16, 18, respectively. Frontal portion 10 and side portions 12, 12' of the mask are formed of stiff, non-shattering material capable of withstanding and dissipating shocks and blows to which it might be subjected as, for example, when struck by a baseball. The material should also be relatively light in weight, and capable of being readily formed to a desired shape. One preferred material possessing these desired characteristics is the plastic commonly known as "Plexiglas," but others might also be employed.

Frontal portion 10 of the protective mask is adapted to overlie and shield a substantial area of the face of the wearer, and is thus shaped and dimensioned so as to generally possess and comfortably conform to an average facial contour. Side edges 20, 20' of frontal portion 10 extend substantially vertically in overlying, adjacent relationship to the cheeks of the wearer of the mask. Lower edge 22 of frontal portion 10 lies slightly below and generally follows the jaw line of the wearer. Upper edge 24 of the frontal portion of the mask is sinuously curved, extending symmetrically downwardly from a central point in spaced, adjacent relationship to the bridge of the nose of the wearer to lowermost points beneath the eyes of the wearer, and then upwardly again at its opposite ends to merge with side edges 20, 20'. In order to deflect blows or objects, such as baseballs, striking thereagainst away from the eyes of a wearer of the mask, upper edge 24 is also curved or flared outwardly away from the face of the wearer along at least the medial section of its length, for example and as shown, between the lowermost points of its heretofore described sinuous contour. Intermediate its side edges 20, 20', frontal portion 10 is generally convexly curved, and is provided with a plurality of apertures 26 which provide ventilation and also serve to reduce the weight of the mask. Resilient padding 27 such as foam rubber is adhesively secured to the entire inner surface of frontal

portion 10 and serves to render the mask more comfortable to the wearer, while also serving to absorb and dissipate shocks and blows imparted to the mask.

It will be apparent that when the protective mask is in place upon the head of a wearer, frontal portion 10 thereof overlies and shields that substantial area of the face extending from approximately the bridge of the nose to the chin and from cheek to cheek. Additional optional protection for the eyes and throat of the wearer of the mask are provided by eye and throat protecting members 16, 18, respectively. Referring now to FIGURES 1, 2 and 5, eye protecting member 16 consists of a substantially rigid rod having an elongate, curved central section 28 terminating at its opposite ends in integral downwardly and right-angularly depending sections or legs 30, 30'. As is best shown in FIGURE 5, the lowermost end portions of legs 30, 30', which each are provided with a crimp or projection—identified in the case of leg 30 by the numeral 32—thereon, are adapted to be closely received within sleeves 34, 34' permanently sunk within bores provided in upper edge 24 of frontal portion 10 adjacent opposite ends thereof. When the lowermost end portions of legs 30, 30' are thus received within sleeves 34, 34', central section 28 of eye protecting member 16 extends horizontally in spaced, substantial vertical alignment with upper edge 24 of frontal portion 10. The length of legs 30, 30' is such that central section 28 is disposed sufficiently far above the eyes of the wearer of the mask as to not obstruct or interfere with his vision, yet sufficiently close to upper edge 24 as to cooperate therewith in preventing a baseball or any object of comparable size from striking the eyes of the wearer. The friction or jam fit between sleeves 34, 34' and the legs 30, 30' received therein is sufficiently snug by reason of the crimps or projections upon the latter as to prohibit accidental disengagement of eye protecting member 16 from frontal portion 10 of the mask. Should a particular wearer of the mask not desire the additional protection afforded by member 16, however, the latter can be readily disconnected and removed from frontal portion 10 merely by pulling upwardly on legs 30, 30' and thereby removing the same from the sleeves 34, 34'. The subsequent re-insertion of legs 30, 30' within sleeves 34, 34', so as to re-connect eye protecting member 16 to frontal portion 10, can obviously be accomplished with equal speed and facility.

Throat protecting member 18 is constructed and mounted in substantially the same manner as eye protecting member 16. Thus, member 18 is also of substantially rigid, rod-like construction and includes a central section 36 having integral, angularly extending sections or legs 38, 38' at its opposite ends. Legs 38, 38' are each also provided with an integral crimp or projection, identified in the case of leg 38 by the numeral 40, and are adapted to be received and maintained by a jam or friction fit within sleeves 42, 42' permanently sunk within bores in lower edge 22 of frontal portion 10 of the mask. When legs 38, 38' of member 18 are thus received within sleeves 42, 42', central section 36 of member 18 depends downwardly from lower edge 22 of frontal portion 10 and cooperates therewith in preventing a baseball or other object of comparable size from striking the throat of a wearer of the mask. As with eye protecting member 16, throat protecting member 18 can obviously be quickly and easily connected to or disconnected from frontal portion 10 of the mask, at the option of a particular wearer.

Turning now to the means by which the protective mask is clamped to and maintained in place upon the head of a wearer, side portions or flaps 12, 12' of the mask are pivotally or hingedly connected to side edges 20, 20' of frontal portion 10 and are adapted to extend generally rearwardly therefrom toward the ears of the wearer of the mask, overlying and shielding areas of the cheeks and temples. Side portions 12, 12' are each of substantially flat, rhomboidal shape, and are preferably—in keeping with frontal portion 10—provided with ventilating and weight-reducing apertures 44, 44' and with resilient padding 27

adhesively secured to their inner surfaces. The length or height of side portions 12, 12' is preferably approximately the same as the length of side edges 20, 20' of frontal portion 10. The width of side portions 12, 12' is preferably such that they terminate short of the ears of the wearer of the mask.

The pivotal or hinged connection between side portion 12 and frontal portion 10 of the mask is best shown in FIGURE 5, to which reference is now made, it being understood that side portion 12' is similarly connected to the opposite side of the frontal portion. As shown, forwardmost edge 46 of side portion 12 and side edge 20 of frontal portion 10 are each provided with a plurality of integrally formed hinged knuckles 48 which, when interdigitated, receive and are permanently connected together by an elongate pivot or hinge pin 50. Pin 50 also passes through biasing means in the form of coil springs 52, 54 disposed between adjacent knuckles 58 of side portion 12 and frontal portion 10, and the opposite ends of which bear against the outer surfaces of side portion 12 and frontal portion 10 (see FIGURE 1).

The effect of the above-described connection between side portion 12 and frontal portion 10 is that while side portion 12 is pivotable about the substantially vertical axis of pin 50 toward and away from side portion 12' of the mask and the face of the wearer disposed therebetween when the mask is being worn, springs 52, 54 resiliently urge or bias side portion 12 with considerable force inwardly toward side portion 12' of the mask and the face of the wearer. Similarly, the identically mounted side portion 12' of the mask is resiliently urged or biased inwardly with considerable force toward side portion 12 and the other side of the face of the wearer of the mask. The clamping engagement thus realized between side portions 12, 12' and that area of the temples and cheeks of the wearer which they overlie and shield is, in most instances, adequate by itself to securely maintain the mask in position upon the head of a wearer without the additional assistance of any straps or other supporting members whatsoever. Thus, in the usual case it is contemplated that a person wishing to don the mask need only pivot side portions 12, 12' outwardly away from each other against the bias of springs 52, 54, 52', 54' while positioning frontal portion 10 in the overlying relationship to his face shown in FIGURES 1 and 2. When frontal portion 10 has been thus positioned, which requires but an instant, side portions 12, 12' are released, whereupon they immediately pivot inwardly under the biasing influence of their associated springs toward each other and into clamping engagement with the face of the wearer. The mask is then maintained by this clamping engagement securely in position upon the head of the wearer until such time as its removal is desired, which removal or doffing is effected with equal facility merely by again pivoting side portions 12, 12' outwardly while moving the entire mask bodily in a forward direction away from the face.

While it is contemplated that side portions 12, 12' of the mask will usually constitute the only means for maintaining the same in place upon the head of a wearer, additional optional means is provided for this purpose for the benefit of those wearers who might desire to avail themselves of it. Such additional optional means includes the ear hooks 14, 14' hereinbefore noted. Since the construction and mounting of each of these ear hooks are the same, description relative to the hook 14 clearly shown in FIGURE 5 will suffice for both. As shown in FIGURE 5, hook 14 is carried by and rigidly secured to the rear-most end of an elongate externally threaded rod 56. The forward-most end portion of rod 56 is received within a mating, internally threaded sleeve 58 permanently mounted within a bore extending through rear-most edge 60 of side portion 12 adjacent its upper end. Adjustment of the distance between ear hook 14 and side portion 12 for the purpose of accurately positioning the hook in comfortable engagement with the ear of a par-

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tical wearer of the mask is readily accomplished merely by rotating hook 14 and its fixedly connected rod 56 about the axis of the latter, thus causing the forward-most end portion of rod 56 to be received to a greater or lesser—depending upon the direction of rotation—extent within threaded sleeve 58. Similarly, by merely continuing such rotative movement in the appropriate direction until the forward-most end portion of rod 56 is completely disengaged from sleeve 58, ear hook 14 and rod 56 may be completely disconnected from the remainder of the mask.

When connected to the remainder of the mask, it will be apparent that ear hooks 14, 14' assist the side portions 12, 12' in securing the mask to the head of the wearer, and are particularly useful in preventing such pivotal movement of the upper part of frontal portion 10 of the mask away from the face of the wearer as might otherwise sometimes tend to occur when throat protecting member 18 is struck by a baseball or similar object. The use of ear hooks 14, 14' is therefore particularly desirable during those times when throat protecting member 18 is employed.

It will thus be seen that there has been provided a protective mask realizing the objects and possessing the benefits hereinbefore noted, together with many practical advantages. The mask hereinbefore shown and described as a preferred embodiment of the invention is lightweight, comfortable, non-distracting to a wearer, and of economical manufacture. It does not cause a wearer to possess a grotesque or highly unconventional appearance. It affords individual wearers wide freedom of choice in selecting the particular protection deemed necessary or desirable. Most importantly, it is capable of being donned and doffed with marked speed and facility, particularly when side portions 12, 12' constitute the only means then employed for maintaining the mask in place upon the head of the wearer, but also when optional ear hooks 14, 14' are additionally utilized. When side portions 12, 12' constitute the only supporting means employed, the mask is self-adjusting so as to automatically properly fit any one of a number of wearers with widely varying head sizes, since the side portions will be automatically pivoted inwardly to a greater extent to fit narrower heads and to a lesser extent to fit wider heads. Even when ear hooks 14, 14' are additionally employed, the mask is largely self-adjusting since the hooks are carried by and movable with side portions 12, 12'. Moreover, if in the latter case additional adjustment of ear hooks 14, 14' should be desirable, this can be quickly and easily accomplished by reason of their heretofore described connection with side portions 12, 12'.

While a specific protective mask has been hereinbefore shown and described, this was for purposes of illustration only, and not for purposes of limitation, since numerous modifications and different embodiments within the scope of the invention will be apparent to those skilled in the art. For example, only one of the side portions might be movable toward and away from the other, rather than both being movable. The scope of the invention should therefore be construed only in accordance with the following claims.

That which is claimed is:

1. A protective mask adapted to be worn on the head of a wearer and comprising a frontal portion formed of stiff non-shattering material adapted to overlie and shield a substantial area of the face of the wearer, means connected to and extending rearwardly from said frontal portion generally toward and terminating short of the ears of the wearer for clamping the mask to the head of the wearer, said clamping means including a pair of side portions formed of stiff non-shattering material, said side portions being pivotally connected to and extending rearwardly from said frontal portion generally toward and terminating short of the ears of the wearer, and spring

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means biasing said side portions toward each other and into clamping engagement with the head of the wearer.

2. A protective mask adapted to be worn on the head of a wearer and comprising a frontal portion formed of stiff non-shattering material adapted to overlie and shield a substantial area of the face of the wearer, an eye protecting member and a throat protecting member detachably connected to and carried by said frontal portion, and means connected to and extending rearwardly from said frontal portion generally toward and terminating short of the ears of the wearer for clamping the mask to the head of the wearer.

3. A protective mask as in claim 2, wherein said clamping means includes a pair of side portions formed of stiff non-shattering material connected to and extending rearwardly from said frontal portion toward and terminating short of the ears of the wearer, at least one of said side portions being movable relative to said frontal portion toward and away from the other of said side portions, and said one side portion being biased toward said other side portion and into clamping engagement with the head of the wearer.

4. A protective mask as in claim 2, and further including hook members connected to and disposed rearwardly of said clamping means, said hook members being adapted to fit about the ears of the wearer and thereby assist in securing the mask to the head of the wearer.

5. A protective mask adapted to be worn on the head of a wearer and comprising a frontal portion formed of stiff non-shattering material adapted to overlie and shield a substantial area of the face of the wearer, a pair of side portions formed of stiff non-shattering material connected to and extending rearwardly from said frontal portion along opposite sides of the head of the wearer, at least one of said side portions being movable relative to said frontal portion toward and away from the other of said side portions, and resilient means biasing said one side portion toward said other side portion and into clamping engagement with the head of the wearer therebetween for clamping the mask to the head of the wearer, said resilient means comprising at least one spring engaging said one side portion and said frontal portion.

6. A protective mask adapted to be worn on the head of a wearer and comprising a frontal portion formed of stiff non-shattering material adapted to overlie and shield a substantial area of the face of the wearer, an eye protecting member and a throat protecting member detachably connected to and carried by said frontal portion, a pair of side portions connected to and extending rearwardly from said frontal portion along opposite sides of the head of the wearer, at least one of said side portions being movable relative to said frontal portion toward and away from the other of said side portions, and resilient means biasing said one side portion toward said other side portion and into clamping engagement with the head of the wearer therebetween for clamping the mask to the head of the wearer.

7. A protective mask as in claim 5, and further including a pair of hook members connected to and disposed rearwardly of said side portions, said hook members being adapted to fit about the ears of the wearer and thereby assist in securing the mask to the head of the wearer.

8. A protective mask adapted to be worn on the head of a wearer and comprising a frontal portion formed of stiff non-shattering material adapted to overlie and shield that area of the face of the wearer extending from approximately the bridge of the nose to the chin and from cheek to cheek, a pair of side portions extending generally rearwardly from said frontal portion and being pivotally connected thereto for pivotal movement toward and away from each other, said side portions being formed of stiff non-shattering material and being adapted to overlie and shield parts of the cheeks and temples of the wearer, and resilient means biasing said side portions toward each

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other and into clamping engagement with said parts of the cheeks and temples of the wearer for clamping the mask to the head of the wearer.

9. A protective mask as in claim 8, wherein said side portions are of substantially flat rhomboidal shape, and further including resilient padding material adhesively secured to the surfaces of said side and frontal portions adjacent the head of the wearer.

10. A protective mask as in claim 8, and further including a pair of hook members, and means adjustably and detachably connecting said hook members to said side portions, said hook members when connected to said side portions being adapted to fit about the ears of the wearer and thereby assist in securing the mask to the head of the wearer.

11. A protective mask as in claim 8, wherein said resilient means engages and acts between said frontal portion and said side portions.

12. A protective mask adapted to be worn on the head of a wearer and comprising a frontal portion formed of stiff non-shattering plastic material adapted to overlie and shield a substantial area of the face of the user, said frontal portion having a pair of side edges and an upper edge and a lower edge, said side edges of said frontal portion being adapted to extend substantially vertically adjacent the cheeks of the wearer and said frontal portion being convexedly curved therebetween, said upper edge of said frontal portion being symmetrically curved between said side edges thereof from a central point adjacent the bridge of the nose of the wearer downwardly to lowermost points beneath the eyes of the wearer and the medial length of said upper edge being flared outwardly away from the face of the wearer, said lower edge of said frontal portion extending between said side edges thereof adjacent the jaw of the wearer, a pair of side portions formed of stiff, non-shattering plastic material adapted to overlie and shield parts of the cheeks and temples of the wearer, said side portions each being of substantially flat rhomboidal shape and having forwardmost and rearmost

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side edges and an uppermost edge and a lowermost edge, a plurality of hinge knuckles formed integral with said side edges of said frontal portion and said forwardmost side edges of said side portions, a pair of hinge pin members extending through said hinge knuckles and pivotally connecting said side portions to said frontal portion for pivotal movement of said side portions toward and away from each other and said parts of the cheeks and temples of the wearer, coil spring means disposed about said hinge pin members and biasing said side portions toward each other and into clamping engagement with said parts of the cheeks and temples of the wearer for clamping the mask to the head of the wearer, said rearmost side edges of said side portions each having a bore extending there-
15 through, internally threaded sleeve members mounted within said bores, a pair of ear-hook members, a pair of elongate threaded rod members secured to said hook members and adapted to be received within said sleeve members for adjustably and detachably connecting said
20 hook members to said side portions, said ear-hook members when connected to said side portions being adapted to fit about the ears of the wearer and thereby assist in securing the mask to the head of the wearer, a substantially rigid rod-like eye protecting member detachably
25 connected to and extending generally above said upper edge of said frontal portion, and a substantially rigid rod-like throat protecting member detachably connected to and extending generally below said lower edge of frontal portion.

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