

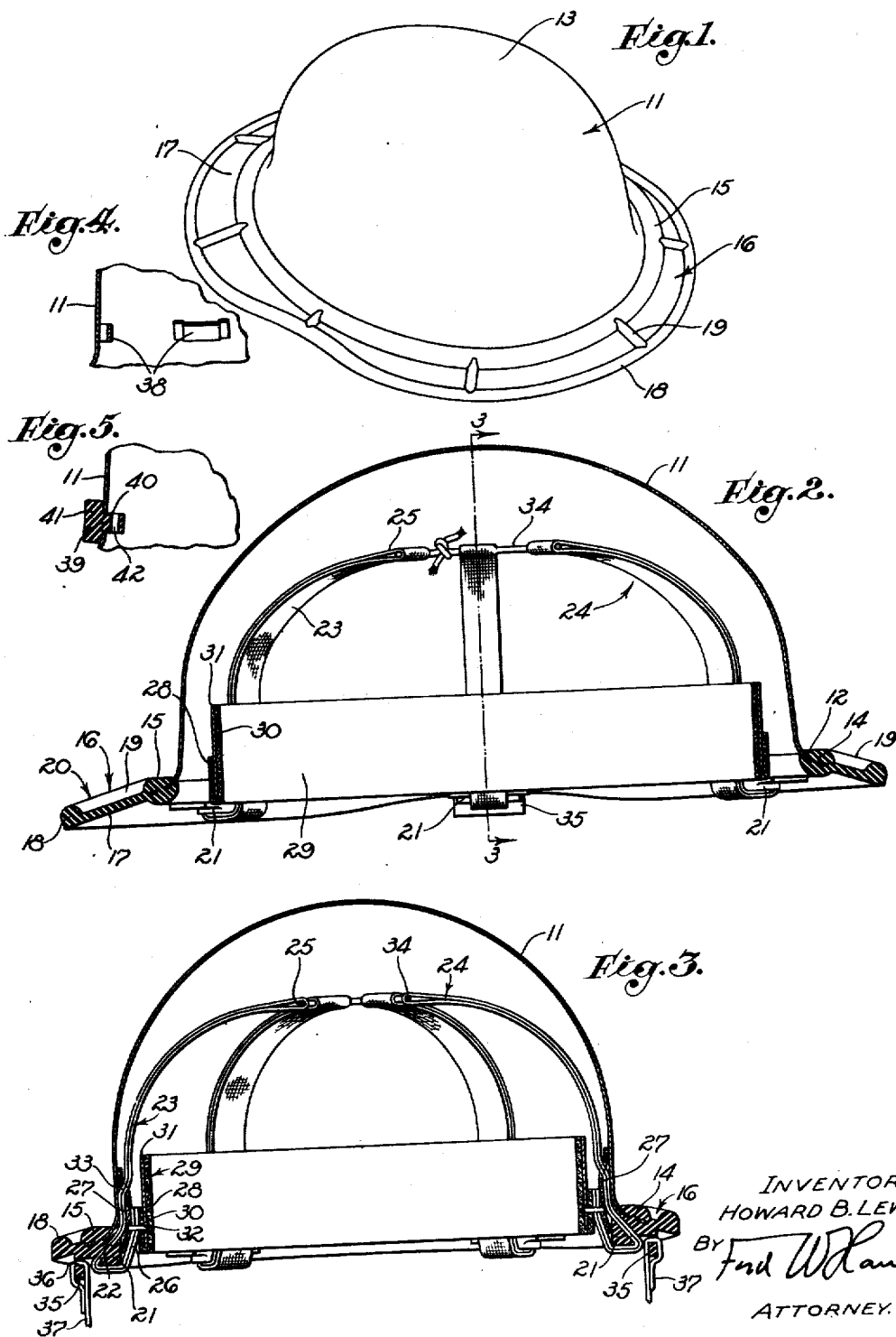
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H. B. LEWIS

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SAFETY HAT

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SAFETY HAT

Howard B. Lewis, Venice, Calif.

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11 Claims. (Cl. 2—3)

My invention relates to a protecting device, and more particularly to a safety hat.

In many fields of work, such as the construction of oil well derricks, buildings and tunnels, and in mining operations, there is a considerable hazard from falling objects which frequently maim or kill the workmen. In such fields of work as mining, there is also a considerable danger of head injuries to the workmen resulting from collision with depending or projecting ledges or the like.

It is an object of my invention to provide a head protector which will effectively prevent injury to the head of the workman from impact with such objects.

More specifically, it is an object of my invention to provide such a device which will absorb a part of the force of impact of objects striking the device and dissipate the remainder of such force by applying it over broad areas of the head of the wearer to prevent that injury which would accrue if such force were suddenly applied to a small area of the head.

In some fields of work where a device for protecting the head of the workman from impact is desirable, the temperature is quite high and the shielding of the head of the workman from heat rays is necessary.

It is an object of my invention to provide a head gear the outer surface of which presents a reflecting surface for reflecting a substantial proportion of the light and heat rays impinging thereon.

Further, it is another of my objects to provide a protecting device in which the reflecting surface is maintained in spacial relation with the head of the wearer so that the free circulation of air between the head gear and the head is permitted at all times.

To maintain the efficiency of the reflecting surface it is desirable that it be of comparatively rigid construction. Since the heads of the wearers vary greatly in their outline, it is not expedient to form the rigid reflecting element of such head gear to snugly fit the head of the wearer.

It is another purpose of this invention, therefore, to provide a head protector which includes a comparatively rigid reflecting crown member and head engaging means connected thereto and conforming to the outline of the head of the wearer independently of the outline of said reflecting crown.

Likewise, the extent to which the heads of wearers project into the crowns of such head protectors to provide the maximum comfort to the wearers varies with the shapes of the heads of the wearers.

It is a corresponding object of my invention to provide a rigid crown and head engaging means for supporting the crown in spaced relation to the head, which head engaging means is adjustable to vary the extent to which the head may project into the crown.

A head protecting device formed entirely of a comparatively rigid material, such as metal, is objectionable because of the likelihood of its being broken or deformed when it is dropped or when its edge is subjected to impact. Further, such an all metal head protector is objectionable in some fields of work because of destructive effect, particularly of its edge, upon materials such as sacks of cement carried upon the shoulders of the wearer.

It is a purpose of my invention to remedy these objections by providing a head gear which includes a rigid metal crown and a brim or rim of resilient or deformable material which will cushion the impact of the head gear when it is dropped and prevent damage to itself or to objects with which it comes in contact.

In order to increase the comfort of the wearer, it is still another object of my invention to provide a protective hat which includes a crown the outer surface of which constitutes a reflecting surface and a forwardly projecting portion extending out over the eyes of the wearer, this projecting portion having at least its lower surface as a light absorbing medium as contrasted with a light reflecting medium.

Embodiments of my invention capable of accomplishing the foregoing objects and purposes, and others, which will be made evident hereinafter, are illustrated in the drawing, in which

Fig. 1 is a perspective view of the preferred embodiment of my invention;

Fig. 2 is a sectional view of the embodiment illustrated in Fig. 1;

Fig. 3 is a sectional view taken as indicated by the line 3—3 of Fig. 2;

Fig. 4 is a fragmentary sectional view of an alternative means of securing the head engaging member to the crown; and

Fig. 5 is a fragmentary sectional view of a second alternative embodiment of such a means.

Referring to the drawing, which is for illustrative purposes only, the numeral 11 indicates the crown of the head protecting device of my invention. The crown 11 may be semi-spherical in shape, but is preferably semi-ellipsoidal, as illustrated in the drawing, and is provided with an outwardly flared portion 12 adjacent its edge. The crown 11 is formed of impact resisting mate-

rial, and is made as thin as possible commensurate with the desired resistance to impact to diminish its weight and provide consequent comfort to the wearer. I have found that duralumin of a thickness of about .032 inch is a metal well fitted for making the crown 11. The crown is preferably in one piece, the metal being stamped into the desired shape, although it is possible to form the crown of several pieces.

10 The exterior of the crown 11 is highly polished or heated in any suitable manner to provide a reflecting surface, indicated by the numeral 13. If desired, this reflecting surface 13 may be secured by electroplating, but I have found that such metals as duralumin when polished provide a surface of sufficient reflecting qualities to reflect substantially all of the heat and light rays impinging thereon and to absorb only an extremely small proportion of such heat rays.

20 Formed in the outwardly flared portion of the crown 11 is a plurality of openings 14. A bead 15 of a resilient or deformable material, such as rubber, is formed upon the upper and lower surface of the outwardly flared portion 12 and securely fastened thereto by portions extending through the openings 14. The bead 15 is a part of a brim 16 which includes an outwardly declining portion 17 and an upwardly projecting edge bead 18. Reinforcing ribs 19 may be provided extending between the beads 15 and 18 if desired. The beads 15 and 18 are preferably not equidistant but, as illustrated in Fig. 1, are closest together at the sides of the crown, and are at their greatest distance from each other at the front of the crown where a forwardly projecting eye protecting portion 20 is provided. A rearwardly projecting portion may be provided, if desired, to protect the neck of the wearer.

40 The beads 15 and 18, the outwardly declining portion 17 and the reinforcing ribs 19 are preferably molded in one integral piece, the mold being placed around the outwardly flared portion 12 of the crown 11 so that when the rubber is formed in the mold it fills all of the openings 14 and thus fastens the brim 16 securely to the crown 11, the brim and crown constituting a unitary hat-like member.

50 Extending inwardly from the bead 15 and preferably formed integrally therewith and of the same material as the bead 15, are lugs 21, illustrated as six in number. Each of the lugs 21 is provided with an inwardly inclined opening 22. As is well illustrated in Fig. 3, a tape or strap member 23 is passed through the opening 22 in each of the lugs 21, passes beneath the associated lug 21 and extends upwardly within the crown 11. The strap members 23 are a part of a cradle member or head engaging means 24 and are formed of any flexible material of sufficient tensile strength. I have found that woven cotton fabric is well suited for this purpose, and when employing such material I prefer to double it, passing the two free ends through the opening 22 in one of the lugs 21 so that the folded upper end of each of the strap members provides an eye or loop 25.

70 Positioned adjacent the lower end of each of the strap members 23, which end is indicated by the numeral 26, is an engaging member 27 formed of leather, fiber board, or the like, and positioned adjacent the inner side of the lower ends 26 is an outer fold 28 of a head band 29. The head band 29 is formed of leather or the like and is adapted for engagement with the head of the wearer. As is well illustrated in both Figs. 2 and

3, the band 29 is folded upon itself to provide an upwardly extending inner fold 30, and a reinforcing band 31 is positioned between the outer and inner folds 28 and 30 and is substantially coextensive with the inner fold 30. The reinforcing band 31 is selected for its ability to resist heat, moisture and tensile and shearing stresses. I have found that a thin band of composition or fiber board is well suited for this purpose. The ends of the head band 29 are secured together in any suitable manner, as by sewing, and the ends of the reinforcing band 31 are lapped over each other.

15 Extending through the reinforcing band 31, the outer fold 28 of the head band 29, the lower end 26 of a strap member 23 and the engaging member 27, is a fastening member 32, which may be a brad or rivet. One of the fastening members 32 passes through two thicknesses of the reinforcing band 31 so that the two lapped ends of the reinforcing band are secured together. The inner ends of the fastening members 32 are prevented from causing any discomfort to the wearer by the cushioning effect of the inner fold 30 of the head band 29.

25 Each of the engaging members 27 is provided with a slot 33 therein above its connection to the fastening member 32 and the associated strap member 23 is extended through the opening 33, as illustrated in Fig. 3. Extending through the eyes or loops 25 in the upper ends of the strap members 23 is a securing member 34 which may be a woven lace or the like. It is contemplated that the upper ends of the strap members 23 will be at some distance from each other and that the securing member 34 connecting them will roughly approximate a circle when the device is positioned upon the head of the wearer.

40 Extending downwardly from the bead 15 or the outwardly declining portion 17 of the brim 20 at substantially the middle of each of the sides of the brim 20 is a lug 35 having an opening 36 therein. The openings 36 receive a chin strap 37 which may be of woven fabric similar to the strap members 23, this chin strap being adapted for extending under the chin of the wearer to maintain the hat in proper position upon his head.

50 With the head band 29 secured to the strap members 23 and the engaging members 33 in the manner described, it will be obvious that the head band 29 is permitted to conform to the outline of the head of the wearer even though this outline be different from the outline of the crown 11. Thus with a crown of the semielliptical shape illustrated in the drawing, the space between the head band 29 and the crown 11 may be substantially uniform around the head of a dolichocephalic wearer, whereas for a brachycephalic wearer the head band 29 will be separated from the crown 11 a lesser distance at the sides of the crown 11 than at the front and rear of the crown 11.

65 It should be apparent also that by varying the effective length of the securing member 34 the distance between the upper ends of the strap members 23 may be varied so that the vertical distance between the plane of the bead 15 and the securing member 34 may be adjusted and thus the extent to which the head of the wearer projects into the crown 11 may be varied. A tie loop of fixed length may be used in addition, if desired.

75 The formation of the lugs 21 on the bead 15 or outwardly declining portion 17 of the brim 16 permits these lugs to be formed simultaneously with

the molding of the brim 16 and permits a portion of any impact to which the crown 11 is subjected to be absorbed by the resilient material of the lugs 21 and the brim 16 adjacent thereto.

5 The remainder of the force of impact upon the crown 11 is transferred through the strap members 23, the securing member 34 and the head band 29 to broad areas of the head of the wearer so that an impact which, if it were applied to a small area of the head, would cause serious injury, is dissipated over broad areas by the head protecting device of my invention and causes no injury and little or no discomfort to the wearer.

15 The anchoring of the chin strap 37 to the resilient lugs 35 and the resilient brim 16 causes the absorption by the lugs and brim of a portion of any impact tending to dislodge the head protector from the head of the wearer.

20 It will be apparent that comfort is assured to the wearer of the protecting device of my invention even in hot weather by the reflection of substantially all of the heat rays impinging upon the reflecting surface 13 of the crown 11, and by the free circulation of air between the head band 29 and the crown 11 and between the head of the wearer and the crown 11.

The alternative embodiment of the means for securing the head engaging member 24 to the crown 11, which is illustrated in Fig. 4, includes eye members 38 of metal or the like which are secured in any suitable manner as by welding to the inner surface of the crown 11. The strap members 23 extend through the eye members 38 and are joined to the engaging members 27, the head band 29, the reinforcing band 31 and the securing member 34 in the manner previously described.

40 In Fig. 5 is illustrated another embodiment of such fastening means which includes a plurality of plugs or stoppers 39, each of which extends through an opening 40 provided in the crown 11. Each of the stoppers 39 is provided with an enlarged head 41 engaging the outer surface of the crown 11 and is provided with an opening 42 therein for the reception of one of the strap members 23. This form of securing means, by providing the member 39 of resilient material which is preferably rubber or the like, accomplishes the absorption of some of the force of impact to which the crown 11 is subjected in the same manner as that embodiment illustrated in Figs. 1 to 3 and previously described.

50 In all the forms of my invention described, the straps 23 serve several functions. Thus, the upper ends of the straps in combination with the securing member 34 constitute the cradle 24; the lower ends of the straps serve as means for connecting the head band 29 to the rest of the assembly; and the intermediate portions of the straps are slidably looped through apertures in the outer hat-like member to connect the hat-like member into the combination. It is apparent from Fig. 3 that the upper end of each strap 23 will be, in effect, supported by the wearer's head; that the lower end of each strap 23 will, through the medium of the head band 29, in effect, also be supported by the wearer's head; that each strap 23 forms an intermediate downwardly disposed loop; that the outer hat-like member, when worn, is, in effect, hung in and supported by the plurality of loops, whereby impact forces from the hat-like member will be distributed to both the cradle and the head band; and that the sliding engagement of the straps

with the hat-like member permits adjustment of the relative length of each strap employed between the hat-like member and the head band. It is to be noted further that the engaging members 27 serve to maintain the loops and to keep the head band in place when the hat is not being worn.

While those embodiments of my invention hereinbefore illustrated and described are fully capable of performing the purposes and objects and providing the advantages primarily stated, there are various other embodiments likewise capable of accomplishing these objects and purposes and providing these advantages, and I therefore wish my invention to be understood as not restricted to the specific embodiments hereinbefore set forth.

I claim as my invention:

1. In a head protector, the combination of: a metal crown; a brim of yieldable non-metallic material secured to said metal crown; and strap members secured to said brim and adapted, by engagement with the head of the wearer, for maintaining said crown in spaced relation with the head.

2. In a head protecting device, the combination of: a metal crown; a brim of non-metallic deformable material associated with said crown; flexible strap members within said crown and secured to said brim; a band secured to said strap members and adapted for fitting a head of outline different from said crown, whereby sudden impact on said crown is partially absorbed by said brim and applied to broad areas of the head by said strap members and said band.

3. In a head protecting device, the combination of: a crown of impact resisting material of outline substantially larger than the head of the wearer; a rim of resilient material secured to said crown, said rim having a plurality of openings therein; straps looped through said openings and adapted, by engagement with the head, for maintaining said crown in spaced relation with the head; and a band associated with said straps and adapted for snugly encircling the head independently of the relative shapes of the head and said crown and for maintaining said rim in spaced relation with the head.

4. In a head protector, the combination of: a metal substantially semispherical crown the outer surface of which is a reflector; a resilient brim secured to said crown and projecting therearound; resilient lugs projecting inwardly from said brim; a plurality of strap members the upper end of each of which is provided with an eye, and the lower end of each of which is passed through one of said lugs; an engaging member secured to the lower end of each of said strap members and engaging a portion of the same strap member above the associated lug whereby each strap member is secured to one lug; a securing member extending through said eyes in the upper ends of said strap members; and a band secured to said engaging members, said band, strap members, and securing member engaging the head of the wearer whereby said crown and brim are maintained in spaced relation with the head.

5. In a protecting device, the combination of: a metal substantially semispherical crown having a reflecting surface on its exterior, said crown being of dimensions substantially greater than the head of the wearer; a resilient brim secured to said crown and projecting therearound, the lower face of at least the forward portion of said

brim being a light absorbing surface, said brim having a plurality of openings therein; resilient lugs projecting downwardly from said brim; a plurality of strap members of substantial width, the upper end of each of which is provided with an eye and the lower end of each of which is passed through one of said openings in said brim; an engaging member secured to the lower end of each of said strap members and engaging said associated strap member above said brim, whereby each strap member is secured to said brim; a securing member extending through said eyes in the upper ends of said strap members; a band secured to said engaging members and adapted for snugly engaging a head of outline different from said crown, whereby impact on said crown or brim tending to move said crown into contact with the head is partially absorbed by said brim and applied to extensive areas of the head through said strap members, said securing member and said band; and a chin strap secured to said resilient lugs and adapted for engagement with the chin of the wearer, whereby impact on said crown or said brim tending to move said crown to a greater distance from the head is partially absorbed by said lugs and said brim and applied to the chin of the wearer.

6. In a head protector, the combination of: a metal substantially semispherical crown; resilient lugs associated with said crown adjacent its lower edge; a plurality of strap members the upper end of each of which is provided with an eye and the lower end of each of which is passed through one of said lugs; an engaging member secured to the lower end of each of said strap members and engaging a portion of the same strap member above the associated lug whereby each strap member is secured to one lug; a securing member extending through said eyes in the upper ends of said strap members; and a band secured to said engaging members, said band, strap members, and securing member engaging the head of the wearer whereby said crown is maintained in spaced relation with the head.

7. In a head protecting device, the combination of: an outer hat-like member; a cradle within said member to receive the head of the wearer; a head band within the hat-like member; and a plurality of flexible members, each of said flexible members being connected at one end to the

cradle, and at the other end to the head band and having an intermediate sliding connection with the hat-like member.

8. In a head protecting device, the combination of: a crown of rigid impact-resistant material and a flexible brim of rubber molded integral therewith and encasing the edges thereof.

9. In a head protecting device, the combination of: an outer hat-like member; a head band within the hat-like member; and a plurality of flexible members radially disposed within the hat-like member, the inner ends of said flexible members being interconnected to form a cradle for a wearer's head, the other ends of the flexible members being secured to said head band, and the intermediate portions of said flexible members being formed into loops in sliding engagement with said hat-like member.

10. In a head protecting device, the combination of: an outer hat-like member; a head band within the hat-like member; a plurality of flexible members radially disposed within the hat-like member; and means adjustably interconnecting the inner ends of said flexible members to form a cradle of adjustable configuration for a wearer's head, the other ends of said flexible members being secured to said head band, and the intermediate portions of said flexible members forming loops in sliding engagement with said hat-like member.

11. In a head protecting device, the combination of: an outer hat-like member; a head band within the hat-like member; a plurality of flexible members radially disposed within the hat-like member, the inner ends of said flexible members being interconnected to form a cradle for a wearer's head, the other ends of the flexible members being secured to said head band, and the intermediate portions of said flexible members being formed into loops in sliding engagement with said hat-like member; and means fixedly connected with said head band and slidably engaging said flexible members at points above the sliding engagement between the flexible members and the hat-like member, whereby said means maintains the loops in said flexible members and supports said head band within the hat-like member when the head protecting device is not being worn.

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CERTIFICATE OF CORRECTION.

Patent No. 2,177,145.

October 24, 1939.

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It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, first column, line 11, for the word "heated" read treated; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 12th day of December, A. D. 1939.

(Seal)

Henry Van Arsdale,
Acting Commissioner of Patents.

brim being a light absorbing surface, said brim having a plurality of openings therein; resilient lugs projecting downwardly from said brim; a plurality of strap members of substantial width, the upper end of each of which is provided with an eye and the lower end of each of which is passed through one of said openings in said brim; an engaging member secured to the lower end of each of said strap members and engaging said associated strap member above said brim, whereby each strap member is secured to said brim; a securing member extending through said eyes in the upper ends of said strap members; a band secured to said engaging members and adapted for snugly engaging a head of outline different from said crown, whereby impact on said crown or brim tending to move said crown into contact with the head is partially absorbed by said brim and applied to extensive areas of the head through said strap members, said securing member and said band; and a chin strap secured to said resilient lugs and adapted for engagement with the chin of the wearer, whereby impact on said crown or said brim tending to move said crown to a greater distance from the head is partially absorbed by said lugs and said brim and applied to the chin of the wearer.

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