

[54] HEAD LOAD BALANCER

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Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 1,704, Jan. 9, 1970, abandoned.
[52] U.S. Cl. 224/5 R
[51] Int. Cl. A45f 3/00
[58] Field of Search 224/5 R, 5 A, 25 R; 2/181.2, 2/181.3, 181.4, 181.5, 181.6, 181.7, 3, 6

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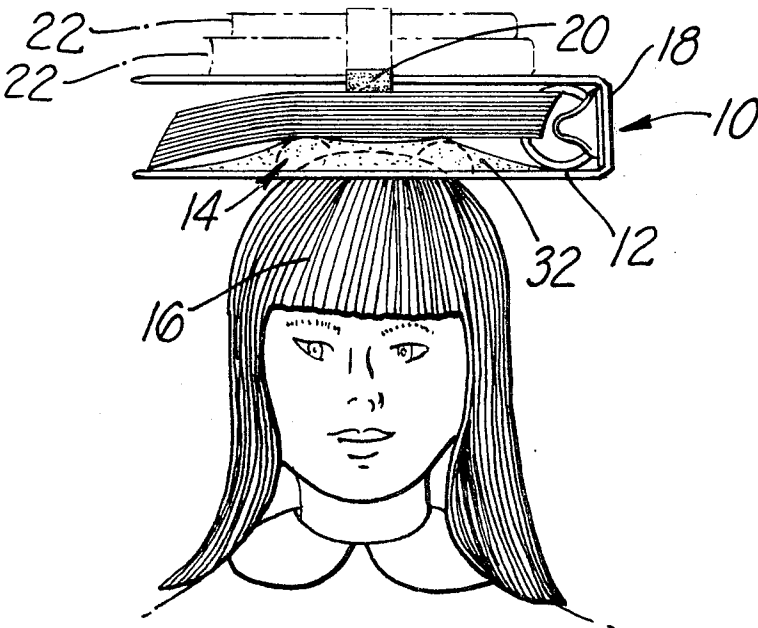
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[157] ABSTRACT

A head load balancer to be worn on the top of the head and including a load support having head engaging means automatically conforming fairly rigidly to the shape of the top of the wearer's head without any mechanical internal mechanism adjustment. The head engaging means comprises a plurality of circumferentially spaced elements engageable with the top of the wearer's head at circumferentially spaced points pivotally moveable independently of each other and yet flexibly interconnected and having substantial relative movement to each other so as to automatically conform to the wearer's head.

5 Claims, 19 Drawing Figures



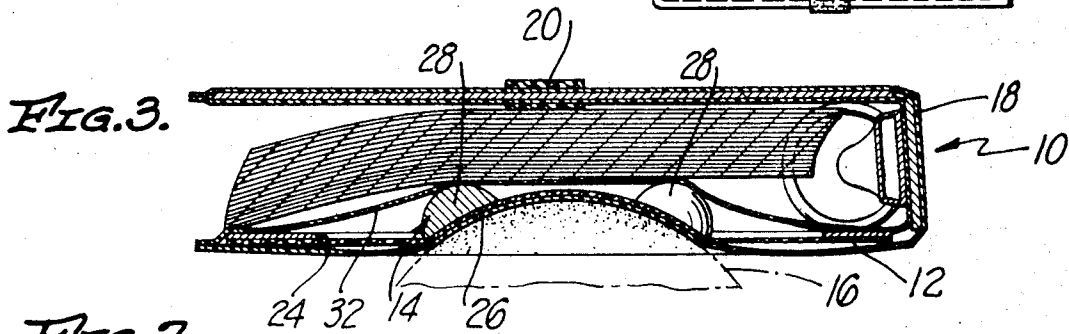
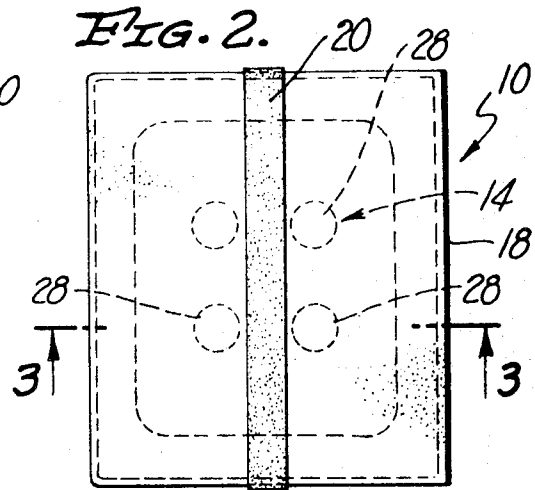
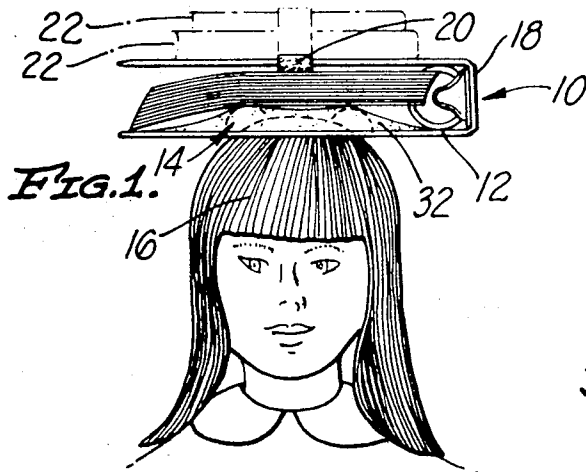
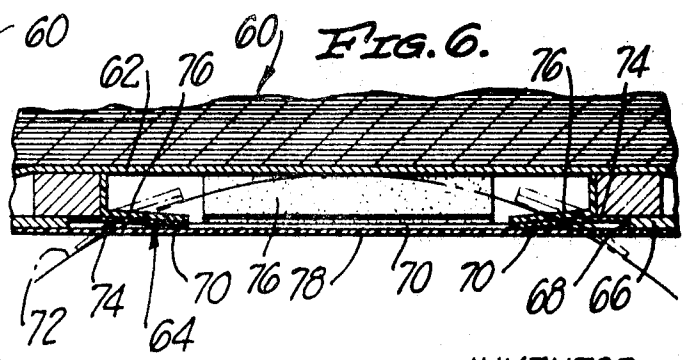
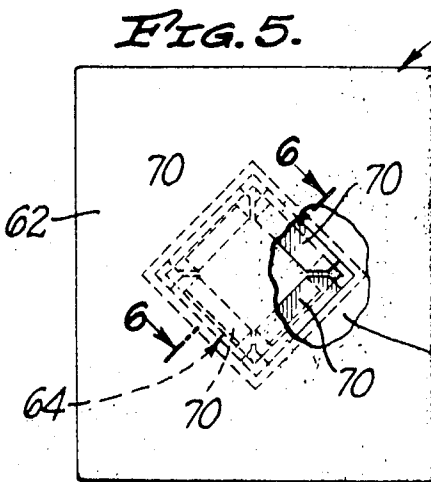
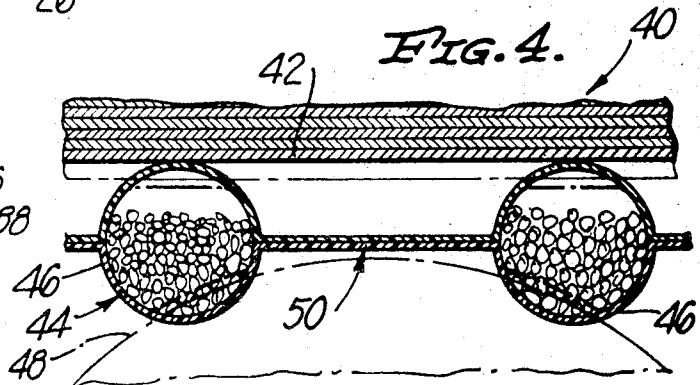
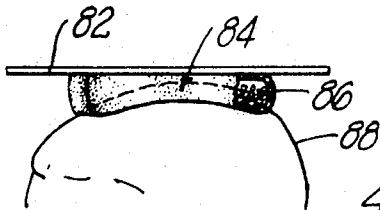


FIG. 7.



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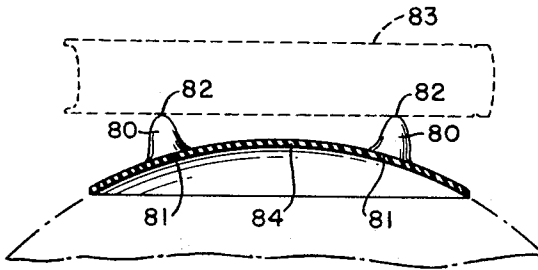


FIG. 9

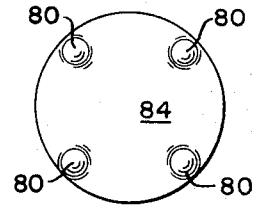


FIG. 8

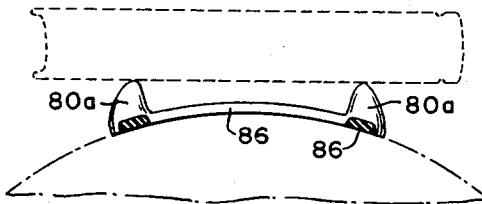


FIG. 10

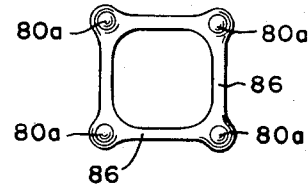


FIG. 11

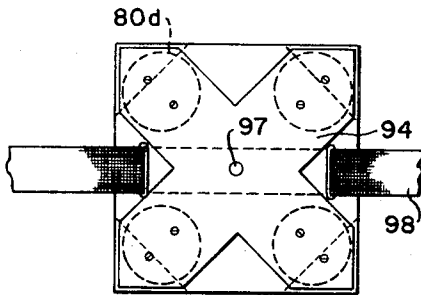


FIG. 14

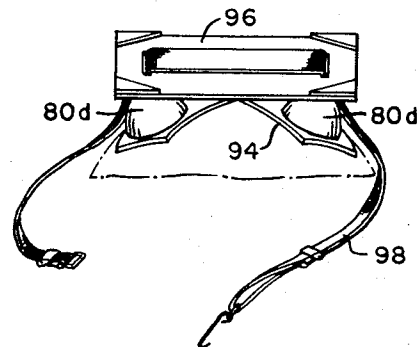


FIG. 15

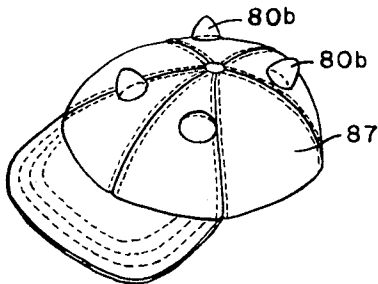


FIG. 12

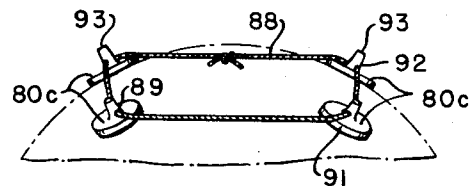


FIG. 13

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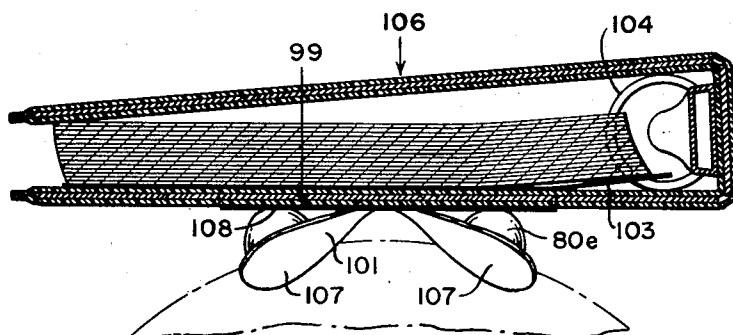


FIG. 16

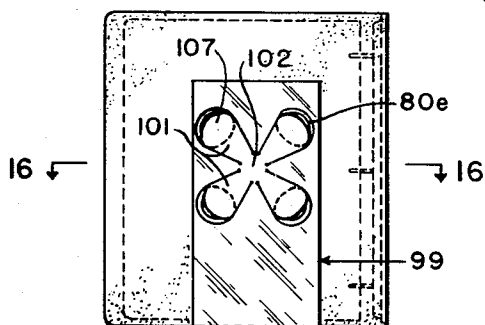


FIG. 17

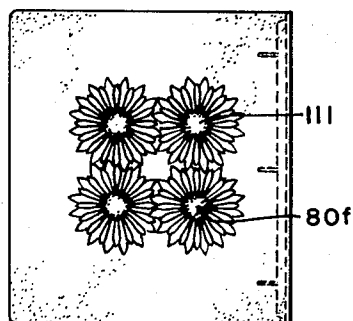


FIG. 18

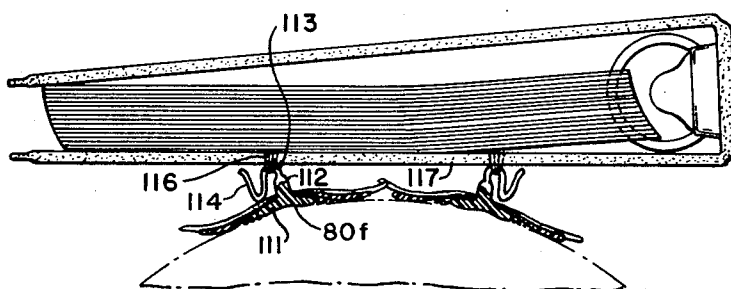


FIG. 19

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HEAD LOAD BALANCER

This application is a continuation in part of my prior co-pending U.S. Pat. application Ser. No. 1,704 filed Jan. 9, 1970 and now abandoned.

BACKGROUND OF THE INVENTION

The present invention relates in general to a head load balancer to be worn on the top of the head and including a support on which a relatively light load may be placed. Although not limited thereto, the invention is particularly suitable for use by persons to support textbooks, notebooks, brief cases, or the like. Such a head load balancer serves not only as a means for transporting articles of various kinds, but further serves to improve posture. Also, it may be used in games, and the like.

While people living in unmechanized cultures have been balancing and carrying loads on their heads for centuries, those of us living in societies which have either beasts of burden or the wheel have traditionally avoided carrying loads of any kind on our heads except for head protection devices such as helmets or lights which miners carry. Such helmets and attachments to helmets require little or no effort in carrying the head protector and certainly no balancing skill. The few devices requiring the use of balancing skills are single purpose devices or are primarily children's toys.

SUMMARY AND OBJECTS OF THE INVENTION

The gist of this invention is the discovery that a great many types of objects and loads could be easily balanced and carried on top of the head by an amazingly simple, light weight device which consists essentially of three or more relatively rigid elements which are connected to one another by various means.

An object of the present invention is to provide a head load balancer which can be molded from a single piece of flexible material containing a plurality of rigid elements integrally carried thereby.

Another object is to provide a device having relatively rigid elements connected to one another by thin flexible members molded from an identical material.

Still another object is to provide a device consisting of relatively rigid elements connected to one another by a thin flexible line.

A further object is to provide a device having a plurality of rigid elements flexibly connected one to another and having a rigid platform connected to the means connecting the rigid elements.

A still further object is to provide a head load balancing device which consists in attaching a plurality of rigid elements to a flexible head gear such as a baseball cap or other close fitting cap.

Another object is to provide a device having a plurality of rigid elements which can be removably attached to a ring notebook.

A further object is to provide an improved head load balancer in which the rigid elements attach directly to the platform such as a ring notebook.

A further object is to provide a device which is interposed between the top of a person's head and a load to be carried which is easily and inexpensively manufactured in a variety of forms to meet certain functional and esthetic requirements.

Another object is to provide relatively rigid head engaging elements which have lower surfaces engageable

with the top of the wearer's head and which are interconnected by flexible sheet means permitting substantial independent movement of the head engaging elements relative to each other to permit the assembly of head engaging elements to conform to the wearer's head automatically and accurately.

Another object is to provide a construction wherein the head engaging elements are flexible hollow elements which are partly filled with a flowable incompressible material and which deform partially when in engagement with the top of the wearer's head and when a load is applied to the support thereby rigidizing the element. Thus, such flexible hollow elements deform independently of each other to the extent required to conform to the wearer's head.

Still another object of the invention is to provide a load support having therein a central opening with rigid head engaging elements spaced around the periphery of such opening and pivotally connected to the support independently of each other so that relative pivotal movement thereof can take place to conform to the wearer's head.

The foregoing objects, advantages, features and results of the present invention, together with various other objects, advantages, features and results thereof which will be evident to those skilled in the head load balancing art in the light of this disclosure, may be achieved with the exemplary embodiments of the invention described in detail hereinafter and illustrated in the accompanying drawings.

Brief description of the Drawings:

FIG. 1 is a perspective view of a head load balancer which embodies the invention.

FIG. 2 is an enlarged plan view of the head load balancer shown in FIG. 1.

FIG. 3 is an enlarged sectional view taken as indicated by a line 3—3 of FIG. 2.

FIG. 4 is a fragmentary sectional view similar to FIG. 3, but illustrating another embodiment of the invention.

FIG. 5 is a plan view of still another embodiment of the invention.

FIG. 6 is an enlarged, fragmentary sectional view taken as indicated by the line 6—6 of FIG. 5.

FIG. 7 is a view of another embodiment of the invention but not claimed.

FIG. 8 is a plan view of still another form of the invention.

FIG. 9 is a cross sectional view of the device of FIG. 8.

FIG. 10 is a side and partial cross section of the device of FIG. 11.

FIG. 11 is a plan view of another form of the invention.

FIG. 12 is a perspective view of another form of the invention.

FIG. 13 is a perspective view of still another form of the invention.

FIG. 14 is a top plan view of another form of the invention.

FIG. 15 is a perspective view of the device of FIG. 14.

FIG. 16 is a side view of another form of the invention with a cross section taken substantially along line 16—16 of FIG. 17.

FIG. 17 is a bottom plan view of the device of FIG. 16.

FIG. 18 is a bottom plan view of still another form of the invention.

FIG. 19 is a cross sectional view taken substantially on line 19—19 of FIG. 18.

A brief description of the preferred embodiments follows on the next pages.

Referring to FIGS. 1 to 3 of the drawing, illustrated therein is a head load balancer 10 of the invention which includes a load frame 12 having on the bottom thereof head engaging rigid elements 14 capable of automatically conforming to the shape of the top of the wearer's head 16. In the particular construction illustrated, the load frame 12 comprises a cover panel of a binder or notebook 18 the other cover panel of which carries a strap 20 for securing textbooks 22, or the like. However, it will be understood that the binder or notebook 18 is illustrative only and that the load frame 12 may be constructed in many ways. For example, it may be a simple platform, a part of a brief case, or the like.

The load frame 12 is provided with a central opening 24 which is spanned by a flexible sheet or sheet means 26, which may be of fabric, plastic, or the like. The flexible sheet 26 forms a part of the rigid elements 14, which also includes a plurality, shown as four, circumferentially spaced elements 28 having lower surfaces which bear against the top of the wearer's head, through the flexible sheet 26, at circumferentially spaced points. The lower surfaces of the head engaging elements 28 are suitably secured to the flexible sheet 26. These elements also have rounded upper surfaces engageable by an overlying flexible sheet 32 which separates the elements 14 from the load carried by the frame 12, e.g., from the interior of the notebooks 18 in the particular illustrated.

As will be apparent, since the rigid elements 28 are flexibly interconnected by the sheet 26, they are engageable with the top of the wearer's head 16 relatively independently of each other and are relatively freely moveable with respect to each other so that the head engaging elements 14 automatically conforms to the configuration of the top of the wearer's head, without any necessity for any adjustment. Thus, the self adjusting head engaging means 14 provides a stable base for the load frame 12, and any load carried thereby, which is an important feature of the invention.

Turning now to FIG. 4 of the drawing, fragmentarily illustrated therein is a head load balancer 40 which includes a load frame 42 and a self adjusting head engaging load rigidizing means 44. The latter comprises flexible hollow elements 46 which are partially filled with a flowable incompressible material and which deform partially when in engagement with the top of a wearer's head 48 and when a load is applied to the support 42. It is to be understood that the walls of the elements 46 are relatively thin and are designed to deform easily under normal loads so that the load frame rests directly on the incompressible material inside the elements 46 so that they become rigid. It is the fact that the elements are rigid and that there is a rigid connection between the load and the wearer's head via the rigid elements 46 which permits him to feel any imbalance and thus maintain the load in balance.

As in the case of the head carrier 10, there are a plurality, e.g., four, of the hollow elements 46 in circumferentially spaced relation and engageable with the top of the wearer's head 48 at correspondingly circumferentially spaced points. The hollow elements 46 are mounted on the under side of the load support 42 and are interconnected by a sheet means 50 which serves to maintain them in the proper spaced relation.

In the embodiment of FIG. 4, the independent deformability of the hollow elements 46 permits free relative movement of the head engaging and load support engaging portions of these hollow elements to achieve automatic conforming to the configuration of the top of the wearer's head.

Turning now to FIG. 6 of the drawing, illustrated therein is a head load balancer 60 which includes a load frame 62 having on the under side thereof a self-adjusting head engaging means 64. In this case, the load frame 62 carries a lower wall 66 having a central opening 68 provided around its periphery with circumferentially spaced, head engaging rigid element 70 engageable with the top of a wearer's head 72 at circumferentially spaced points independently of each other and freely movable relative to each other so as to automatically conform to the shape of the top of the wearer's head. In this instance, the head engaging rigid elements 70 are pivoted elements suitably hingedly connected to the structure beneath the load frame 62 at points 74. As suggested in broken lines in FIG. 6, the head engaging rigid elements 70 may pivot independently of each other to different degrees to accommodate different head shapes. The head engaging rigid elements may simply be slightly concave trapezoidal members extending along the respective sides of the opening 68 and hingedly mounted by flexible hinge members 76. The head engaging rigid elements 70 bear against the wearer's head 72 through a flexible sheet 78 covering the central opening 68.

Turning now to FIG. 7 of the drawing, illustrated therein is a head carrier which again includes a load support 82 of any suitable nature having on the under side thereof a self-adjusting head engaging means 84. In this embodiment, the head engaging means 84 comprises a flexible bag containing a flowable incompressible material 86 and flattenable against the top of a wearer's head 88 with the flowable material concentrated around the periphery of the flattened bag. The flowable material is preferably of relatively high density, and may comprise such things as metal shot, sand, or the like.

The head load balancer of the present invention consists briefly of a plurality of relatively rigid elements 80 of three or more in number, each having a relatively flat or slightly concave base 81 adapted for releasable engagement with the top portion of a person's head and an elevated portion 82 spaced from said base providing a relatively point load contact with said load 83 and adapted for releasable engagement with said load; and means 84 flexibly attaching said rigid elements to one another selectively restraining separation of said elements to a predetermined limit.

One of the preferred forms of the invention is shown in FIG. 9. This form of the invention may be readily mass produced as it is made throughout of the same material, preferably rubber or plastic. The means by is

flexible because of its thin cross 84 Means 84 is preferably constructed with a slight concave shape to more readily adapt to the top of a person's head.

Another form of the invention is shown in FIGS. 10 and 11 in which the rigid elements 80a are connected one to another by means of flexible bands 86 which are made from the same material as the rigid elements. The bands are thin and flexible and provide relatively little restraint to the free movement of the rigid elements.

Still another form of the invention is shown in FIG. 12 in which the rigid elements 80b are connected to a substantially different material such as a cloth cap 87. The rigid elements may be made from rubber or plastic and attached by any suitable means such as by an adhesive or stitching.

Referring to FIG. 13, a very simplified version of the device is shown. Here, rigid elements 80c are attached together with a cord element 88. Each of the rigid elements are formed with an opening 89 through which the cord is inserted. Thus a single elongated cord holds all of the elements together. The elements could be connected by individual cords if desired. The elements could be made in various shapes but are here shown as having large circular bases 91 with a stem 92 rising to a relatively pointed top portion 93. Note that the rigid elements in FIG. 12 are cone shaped with the flat base engaging the head whereas the rigid elements in FIGS. 8 - 11 are somewhat like blunted horns.

FIGS. 14 and 15 show a somewhat more elaborate load bearing device which nevertheless carries all of the elements of the previously described devices. Thus, rigid elements 80d are hard or rigid hemispheres connected flexibly together with a cross shaped member such as plastic or leather 94. The member 94 is suitably connected to a rigid sheet 96 by means of a rivet 97 or other connector. The load rests on top of the sheet 96 and the sheet rests on the rigid hemispheres 80d. A strap 98 is an optional feature for assisting in holding large loads such as a plurality of books.

Another variation of the basic device is shown in FIGS. 16 and 17. The rigid elements 80e are connected to a plastic "U-shaped" sheet 99 having one leg carrying the elements and the other leg being connected to a load. Specifically, the rigid elements are connected to "petal-like" members 101 which are interconnected at a portion 102. As a means of manufacture the "petal-like" members can be punched or cut directly from the plastic sheet 99. The other leg 103 can be inserted into a ring notebook, formed with ring holes and connected to the rings 104 of the notebook 106. It can be seen that the rigid members 80e are in direct contact with the head at their flat bases 107 and with the load at

their pointed (rounded) ends 108.

Still another form of the basic invention having some aesthetic design is shown in FIGS. 18 and 19. Here, the rigid elements 80f are disguised as daisies but are nevertheless identical in structure and function to the previously described forms of the invention. Specifically, the "daisies" have a relatively wide base 111 an elongated portion 112 and a distal end 113 which corresponds to the "stem" 114. The "stem" is looped and connected by a fastener 116 to the rigid portion 117 of a notebook.

Although exemplary embodiments of the invention have been disclosed herein for purposes of illustration, it will be understood that various changes, modifications and substitutions may be incorporated in such embodiments without departing from the spirit of the invention.

I claim: comprising:

1. A head load balancing device comprising;

- a. a plurality of relatively rigid elements having terminal ends in a common plane, each having a relatively flat or slightly concave base adapted for releasable engagement with the top portion of a person's head and an elevated portion spaced from said base providing a relatively point-load contact with said load and adapted for releasable engagement with said load; and
- b. means flexibly attaching said rigid elements to one another selectively restraining separation of said elements to a predetermined limit.
- c. said rigid elements and said means attaching said rigid elements are constructed integrally one with another wherein the base of said means forms the base of said elements; and
- d. said means is a flexible sheet material of concave shape

2. A head load balancing device as described in claim 1 comprising:

- a. said means is formed with opening therein.

3. A head load balancing device as described in claim 1 comprising:

- a. said rigid elements are constructed from a material substantially more rigid than said means.

4. A head load balancing device as described in claim 1 comprising:

- a. a rigid load platform pivotally connected to said means adapted for interposition between said rigid elements and said load.

5. A head load balancing device as described in claim 1 comprising:

- a. said means being formed with a substantial opening therein.

* * * * *