Sept. 12, 1967 A. F. RYAN 3,341,201

HEAD MOUNTED REBOUNDING DEVICE

Filed Dec. 2, 1964

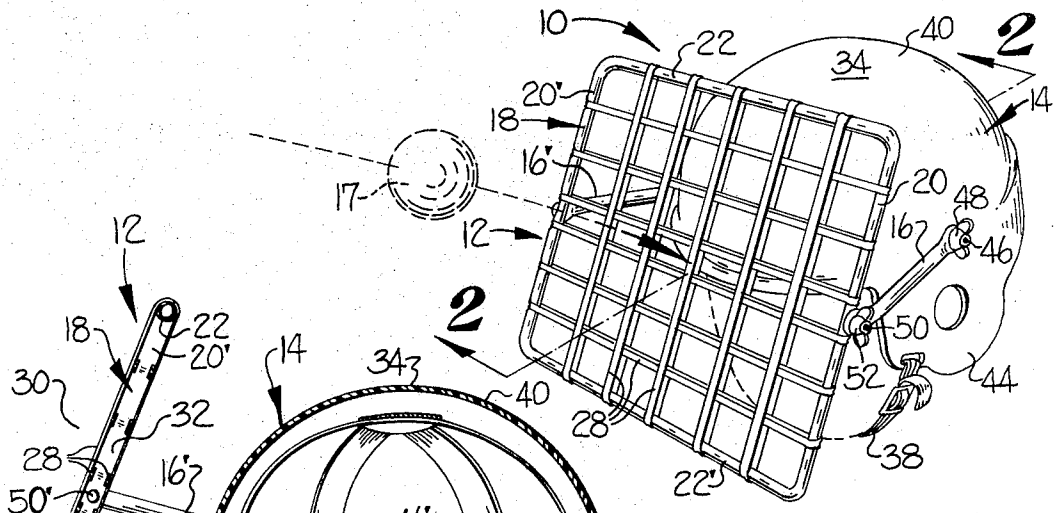


Fig-1

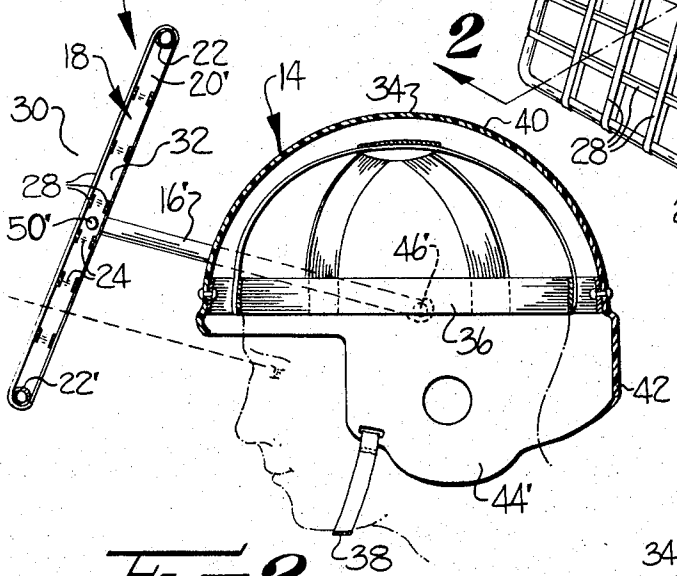
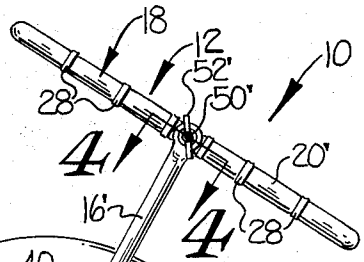


Fig-2



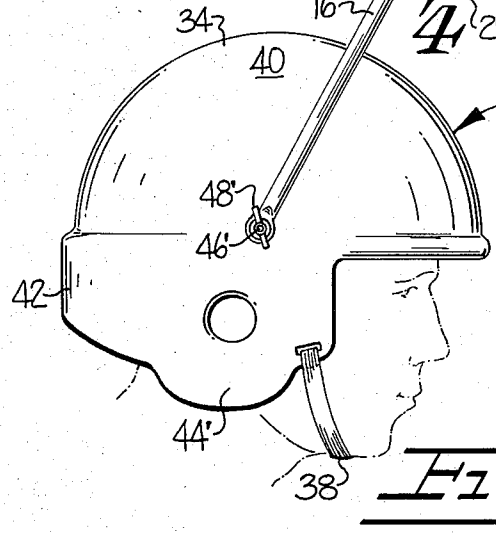


Fig-3

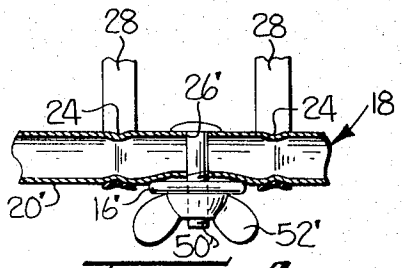


Fig-4

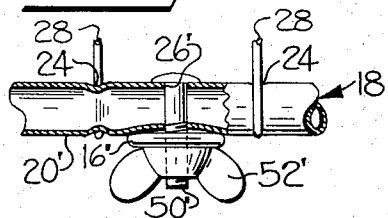


Fig-5

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HEAD MOUNTED REBOUNDING DEVICE

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ABSTRACT OF THE DISCLOSURE

A recreational device for projecting a missile through the air comprising a racket having a substantially planar resilient playing surface adapted to strike the missile, and supports adjustably connecting the racket to a headpiece adapted to be worn upon the head of a person, said racket being positionable at any desired ones of a plurality of positions relative to the person for use.

This invention relates to sporting or recreational devices, and has for its primary object the provision of a novel recreational device capable of being used by both children and adults alike, in either individual or group play, to provide enjoyable and beneficial physical activity.

More specifically, the primary object of this invention is to provide a novel, readily-adjustable recreational device adapted to be carried upon the head of a person and to be used in either individual or group play to project a ball or other suitable missile, for instance one similar to a shuttlecock, through the air without use of the hands, and to thereby provide a recreational activity which is not only challenging and enjoyable, but which is also beneficial by reason of its tendency to improve a person's coordination, muscular condition and reflexes. Illustrative of the group or team activities in conjunction with which the device of the present invention is readily usable would be those similar to "Volleyball" or "Badminton," and in which opposing players each equipped with the devices according to the present invention would endeavor to project a ball or other suitable missile over a net or similar obstacle to their opponents on the opposite side, the projection of the missile in each case (except, perhaps, on the initial serve) being achieved without use of the hands.

A related and more specific object is the provision of a device of the type described which is readily adjustable relative to the head of a wearer so as to meet the varying requirements of group versus individual play, and so as to permit an increase or a decrease in the degree of skill and coordination required for its successful utilization. Thus, in the latter connection, the device might in one position of adjustment be successfully and enjoyably employed by novice or very young players possessing a modicum of skill and coordination, but in other adjustive positions might present quite challenging recreational activity even to skilled adult players.

Another related object is the provision of a device of the type described which is safe and enjoyable to use, and which causes no discomfort to the wearer, by reason of its light-weight construction and additionally by reason of the head of the wearer being shielded from the impact of the ball or other missile employed in conjunction therewith, both when the ball is properly struck by the person wearing the device and on those occasions when it is not.

Another object is to provide a device of the type described which is sensitive to, and capable of successfully projecting with only minimal effort on the part of a wearer, a ball or other missile striking the same with only a very light impact, while also being capable of

successfully projecting a ball or other missile striking with severe impact.

Still another object is the provision of a device of the present type which is quite durable although of simple and economical construction.

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 drawing, in which:

FIGURE 1 is a front perspective view of a device made in accordance with the invention, there also being shown in dotted lines a missile usable in conjunction therewith and portions of the head of a wearer thereof;

FIGURE 2 is a vertical cross section taken substantially along the line 2—2 through the device of FIGURE 1;

FIGURE 3 is a side elevational view of the device of FIGURE 1, but showing the same in another of its adjustive positions;

FIGURE 4 is an enlarged cross section taken substantially along the line 4—4 through a component of the device shown in FIGURE 3, illustrating details for construction; and

FIGURE 5 is an enlarged cross section similar to FIGURE 4, but illustrating an alternative construction.

Referring more specifically to the drawing, the device identified in its entirety in FIGURE 1 and 3 by the numeral **10** consists generally of racket means **12** which is secured to the head of a person, shown in dotted lines, by adjustable means including head-gear in the form of a helmet **14** and further including strut members **16, 16'**. Device **10** is intended to be used, in a manner explained subsequently herein, in conjunction with a suitable light-weight missile capable of being projected through the air and of which the hollow plastic ball **17** shown in dotted lines in FIGURE 1 is illustrative.

Racket **12** consists of a substantially rigid, generally rectangular frame **18** having opposed pairs of parallel side members **20, 20'** and **22, 22'** preferably integrally formed from a single length of light-weight metallic (e.g., aluminum) or plastic tubing which has been bent upon itself and joined together at its opposite ends in any suitable manner. When thus formed, the frame can be economically produced and weighs little, but has been found to possess the requisite strength and durability. In addition, it will be noted that the illustrated and described construction of frame **18** eliminates the presence of sharp corners, and therefore contributes to the safe utilization of device **10**. Spaced along the lengths of all of the side members of frame **18** are a plurality of circumferential indentations **24**, and provided midway of the lengths of side members **20, 20'** are a pair of bores **26, 26'**, two of the indentations **24** and one of the bores **26** being clearly shown in FIGURES 4 and 5.

Carried by frame **18** and extending across the open portion thereof are a plurality of elongate, endless flexible members **28**. Approximately one-half of the members **28** extend about and between frame side members **20, 20'**, at the locations of the indentations **24** thereof, in spaced, generally parallel relationship to each other and to frame side members **22, 22'**. The remaining members **28** similarly extend about and between the frame side members **22, 22'**. The members **28** thus collectively define a pair of substantially planar playing surfaces **30, 32** (see FIGURE 2), which extend in spaced, adjacent and parallel relationship to each other and which are each of an open, grid-like construction. The number and spacing of members **28** are such that the playing surfaces **30, 32** are sufficiently open to allow a person to readily see through

them, but are sufficiently closed to insure that the ball **17** or other missile employed in conjunction with the device **10** cannot penetrate therethrough.

Members **28** preferably comprise rubber bands of the inexpensive and well-known type, as shown in FIGURES 1 through 4, but may consist of lengths of gut material, as shown in FIGURE 5, the opposite ends of which have been tied or otherwise secured together. Of whatever material they might be formed, members **28** are of such lengths as to be maintained in a tensioned condition when mounted as described upon frame **18**. This insures not only that members **28** will be securely retained in their proper positions upon the frame, with the assistance of indentations **24**, but additionally imparts a highly-desirable resiliency to the grid-like playing surfaces **30, 32** which they collectively define.

Helmet **14** of device **10** is of a generally known type including an outer substantially-rigid shell **34** formed of molded plastic or the like, an inner webbing **36** adapted to fit about the head of a wearer and to secure shell **34** in spaced relationship thereto, and a strap **38** depending from the shell and adapted to pass about the chin of the wearer to further assist in preventing accidental dislodgment. Preferably both webbing **36** and chin-strap **38** are adjustable so as to permit helmet **14** to be worn by persons with various head sizes. It should be noted that shell **34** of helmet **14** is provided not only with a crown portion **40** which shields and protects the upper part of the head of a wearer, but also with a rear portion **42** and side portions **44, 44'** which shield and protect the corresponding additional parts of the head of the wearer as well.

Carried by and projecting horizontally outwardly from the respective opposite side portions **44, 44'** of helmet **14** are a pair of externally-threaded pivot pins **46, 46'**. Pins **46, 46'** project through suitable bores provided in the inner ends of strut members **16, 16'** of device **10**, which strut members are constructed of tubular material comparable to that employed for frame **18**, and mount the strut members for pivotal movement about a substantially horizontal axis through 360 degrees and thus through a plurality of possible positions relative and generally parallel to side portions **44, 44'** of helmet **14**. Threaded onto the outer end portions of pivot pins **46, 46'** are wing nuts **48, 48'**, respectively. Wing nuts **48, 48'** prevent disengagement of strut members **16, 16'** from their respective pivot pins, and additionally constitute a clamping type of locking means by which the strut members can be releasably secured in any desired ones of their possible pivotal positions merely by appropriate tightening of the wing nuts.

Frame **18** of device **10** extends between the outer end portions of strut members **16, 16'**, in such a manner that its playing surfaces **30, 32** face outwardly away from helmet **14**, and is pivotally connected to the strut members by comparable pivot pins **50, 50'** and wing nuts **52, 52'**. More specifically, and as illustrated in FIGURES 4 and 5 in the case of strut member **16'**, pivot pins **50, 50'**, respectively, extend through bores provided in the outer end portions of the strut members and through the previously-mentioned bores **26, 26'** provided through frame side members **20, 20'** and carry wing nuts **52, 52'** upon their threaded outer end portions. When thus interconnected, it will be appreciated that frame **18** may be pivotally moved through a plurality of possible positions relative to strut members **16, 16'**, about a generally horizontal axis alined with pins **50, 50'**, and may be locked or clamped in any desired one of its possible pivotal positions merely by tightening nuts **52, 52'**.

As noted previously, device **10** may be enjoyably employed either in individual activity or in group or team play, an illustration of the latter being two or more players projecting ball **17** back and forth across a net or other obstacle. When the group or team activity includes novice or very young players, the recommended adjustive positions of frame **18** and struts **16, 16'** of device **10** are those shown in FIGURES 1 and 2, wherein racket **12** of

the device is disposed in a forward position relative to helmet **14** and extends generally vertically, although not precisely so since the slight rearward inclination thereof shown in the drawing assists in imparting a usually-desirable "loft" to the ball **17**. With the components of the device so disposed, racket **12** intersects and extends across the line-of-sight of the wearer of helmet **14**, as indicated in FIGURE 2. The wearer is therefore able to continue viewing the approaching ball **17**, through the playing surfaces **30, 32** which he should be attempting to place in the ball's trajectory, up to the time of its actual impact with the playing surfaces, thereby making a proper return much less difficult. If more challenging group play is desired, as where more experienced players are involved, then racket **12** may be easily moved to any one of its many other possible positions relative to helmet **14**, either by adjustment of its pivotal position relative to strut members **16, 16'**, or by adjustment of the pivotal position of strut member **16, 16'** relative to helmet **14**, or by both. Illustrative is the position of the racket shown in FIGURE 3, which might be achieved by first loosening wing nuts **48, 48', 52, 52'**, then pivoting strut member **16, 16'** and frame **18** from their FIGURE 2 to their FIGURE 3 positions, and then re-tightening the wing nuts. For individual play, particularly where a novice player is concerned, it is recommended that racket **12** be positioned above helmet **14** with playing surfaces **30, 32** thereof extending substantially horizontally. The ball **17** may then be repeatedly projected upwardly, as it falls under the influence of gravity, in a substantially vertical path of travel with a minimum of ambulatory movement on the part of the wearer or device **10** being required.

The satisfactory projection of the ball **17** or other missile can be achieved by a wearer of device **10** with very little head or body movement in addition to that required for initially positioning racket **12** in the trajectory of the approaching missile. This is due to the aforementioned resiliency of playing surfaces **30, 32** of the racket, and also to there being two such surfaces rather than merely one. Thus, even if the force of the missile's impact against racket **12** is slight, as by reason of the missile's relatively slow speed and/or light weight, at least the outermost playing surface **30** will tend to be inwardly deflected thereby, and upon returning to its non-deflected position will satisfactorily project the missile outwardly from the racket. A missile striking racket **12** with greater impact, as by reason of its greater velocity and/or weight, will act upon and inwardly deflect not only outer playing surface **30**, but inner playing surface **32** as well, and will be projected outwardly from the racket by the return of both of these surfaces to their non-deflected position. The provision of inner playing surface **32** therefore insures that device **10** will successfully project missiles striking racket **12** with heavy, as well as light, impact, and additionally insures that in the case of the former the face of the wearer of the device will also not be subjected to a blow.

The resiliency of playing surfaces **30, 32** also contributes markedly to the comfortable use of device **10**, by reason of the deflection thereof absorbing the major portion of the impact of a missile striking the racket. The small remaining impact force not absorbed by such deflection is transmitted to strut members **16, 16'** and thence to helmet **14**, and is there absorbed and/or distributed by the helmet over such a large area of the head of the wearer of device **10** as to be negligible in its effect. Helmet **14** also protects the head of a wearer who fails, as will sometimes happen, to properly position racket **12** in the trajectory of the ball **17** or other missile, by reason of its overlying and shielding the crown, side and rear portions of the wearer's head, as noted previously.

It will thus be seen that there has been provided a recreational device realizing the objects and possessing the advantages, together with many practical benefits, hereinbefore noted. Although in the drawing and speci-

fication there have been set forth preferred embodiments of the invention and specific terms have been employed, this was for purposes of illustration only and not for purposes of limitation, the scope of the invention being defined in the following claims.

That which is claimed is:

1. A recreational device adapted to be used by a person for projecting a missile through the air without use of the hands, comprising:

(a) racket means having a substantially planar, resilient playing surface adapted to strike the missile and to thereby project the same through the air, said playing surface including a plurality of elongate flexible members mounted in spaced relation to each other; and

(b) adjustable means adapted to be worn upon the head of the person and connected to said racket, means for mounting said racket means in any desired ones of a plurality of possible positions relative to and adjacent the head of the person with said playing surface of said racket means facing away from the head of the person.

2. A recreational device as in claim 1, wherein said racket means when in one of said possible positions thereof extends generally horizontally.

3. A recreational device as in claim 1, wherein said racket means when in one of said possible positions thereof intersects the line-of-sight of the person, and wherein said playing surface of said racket means is of an open grid-like construction through which the person may see an approaching missile when said racket means is in said one of said possible positions thereof.

4. A recreational device as in claim 1, wherein said racket means when in one of said possible positions thereof extends generally vertically and intersects the line-of-sight of the person and when in another of said possible positions thereof extends generally horizontally and is disposed above the head of the person, and wherein said playing surface of said racket means is of an open grid-like construction through which the person may view an approaching missile when said racket means is in said one of said possible positions thereof.

5. A recreational device as in claim 1, wherein said racket means further includes a second resilient playing surface extending in adjacent spaced relationship to said first-mentioned playing surface intermediate said first-mentioned playing surface and the head of the person.

6. A recreational device adapted to be used by a person for projecting a missile through the air without use of the hands, comprising:

(a) open frame means, a plurality of elongate flexible members carried by said open frame means and extending in tensioned condition across the open portion thereof, said flexible members defining a resilient playing surface adapted to strike the missile and to thereby project the same through the air; and

(b) adjustable means adapted to be worn upon the head of the person and connected to said frame means for mounting said frame means in any desired ones of a plurality of possible positions relative to and adjacent the head of the person with said playing surface carried by said frame means facing away from the head of the person.

7. A recreational device as in claim 6, wherein said frame means comprises a substantially rigid, generally-rectangular frame having first and second pairs of opposed side members extending in spaced, generally parallel relationship to each other, said side members having means spaced along the length thereof for reception of said flexible members.

8. A recreational device adapted to be used by a person for projecting a missile through the air without use of the hands, comprising:

(a) racket means having a resilient playing surface adapted to strike the missile and to thereby project the same through the air, said racket means including a substantially rigid, generally-rectangular frame having first and second pairs of elongate opposed side members, the side members of each of said pairs extending in spaced generally parallel relationship to each other and having indentation at spaced locations along the lengths thereof, and a plurality of elongate flexible members received by said indentations of and extending between the opposed side members of each of said pairs and defining said playing surface; and

(b) adjustable means adapted to be worn upon the head of the person and connected to said racket means for mounting said racket means in any desired ones of a plurality of possible positions relative to and adjacent the head of the person with said playing surface carried by said racket means facing away from the head of the person.

9. A recreational device as in claim 8, wherein said flexible members comprise endless rubber bands, and wherein said rubber bands encircle the opposed side members of each of said pairs to define said first-mentioned playing surface and to also define a second resilient playing surface extending in spaced, generally parallel relationship to said first-mentioned playing surface.

10. A recreational device adapted to be used by a person for projecting a missile through the air without use of the hands, comprising:

(a) racket means including a substantially rigid open frame, a plurality of elongate flexible members carried by said open frame and extending in tensioned condition across the open portion thereof to define a resilient playing surface of open, grid-like construction through which the person may view an approaching missile, said playing surface being adapted to strike the missile and to thereby project the same through the air;

(b) head-gear means adapted to be worn upon the head of the person; and

(c) adjustable means interconnecting said head-gear means and said racket means for mounting said racket means in any desired ones of a plurality of positions relative to and adjacent said head-gear means and the head of the person with said playing surface of said racket means facing away from said head-gear means and the head of the person, said racket means being mounted by said adjustable means for pivotal movement relative to said head-gear means and the head of the person about first and second substantially horizontal axes, said racket means when in one of said possible positions thereof extending generally vertically and intersecting the line-of-sight of the person and when in another of said possible positions thereof extending generally horizontally and being disposed above said head-gear means and the head of the person.

11. A recreational device as in claim 10, wherein said head-gear means comprises a substantially rigid helmet adapted to be worn upon the head of the person and to shield the major portion thereof, and wherein said adjustable means includes a pair of elongate strut members having first and second opposite end portions, means pivotally connecting said first end portions of said strut members to opposite sides of said helmet for pivotal movement of said strut members about a substantially horizonal axis through a plurality of possible pivotal positions relative to said helmet, lock means for retaining said strut members in any desired one of said possible pivotal positions thereof, means pivotally connecting said racket means to said second end portions of said strut members for pivotal movement of said strut members about a substantially horizontal axis through a plurality of possible positions relative to said strut members, and lock means for retaining said racket means in any desired one of said possible pivotal positions thereof.

12. A recreational device as in claim 11, wherein said pivotally connecting means comprises externally-threaded pivot pins, and wherein said lock means comprises wing-nuts mounted upon said pivot pins.

13. A recreational device adapted to be used by a person for projecting a missile through the air without use of the hands, comprising:

(a) a substantially rigid helmet having a crown portion and having opposite side portions extending downwardly from said crown portion, said helmet being adapted to be worn upon and to shield the head of the person;

(b) a pair of elongate, substantially rigid strut members having first and second opposite end portions;

(c) means pivotally connecting said first end portions of said strut members to said opposite side portions of said helmet for pivotal movement of said strut members about a substantially horizontal axis through a plurality of possible pivotal positions relative and generally parallel to said side portions of said helmet;

(d) lock means for releasably retaining said strut members in any desired one of said possible pivotal positions thereof;

(e) a substantially rigid open frame extending between said second end portions of said strut members;

(f) a plurality of elongate flexible members carried by said frame and extending in tensioned condition across the open portion thereof, said flexible members defining a substantially planar resilient surface adapted to strike the missile and thereby project the same through the air;

(g) means pivotally connecting said frame to said second end portions of said strut members for pivotal movement of said frame and of said flexible members carried thereby about a substantially horizontal axis through a plurality of possible positions relative to said strut members; and

(h) lock means for releasably retaining said frame and said elongate members carried thereby in any desired one of said possible pivotal positions thereof.

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