

Nov. 16, 1965

D. A. SWEET ETAL

3,217,333

PNEUMATIC BOXING GLOVE

Filed Aug. 9, 1963

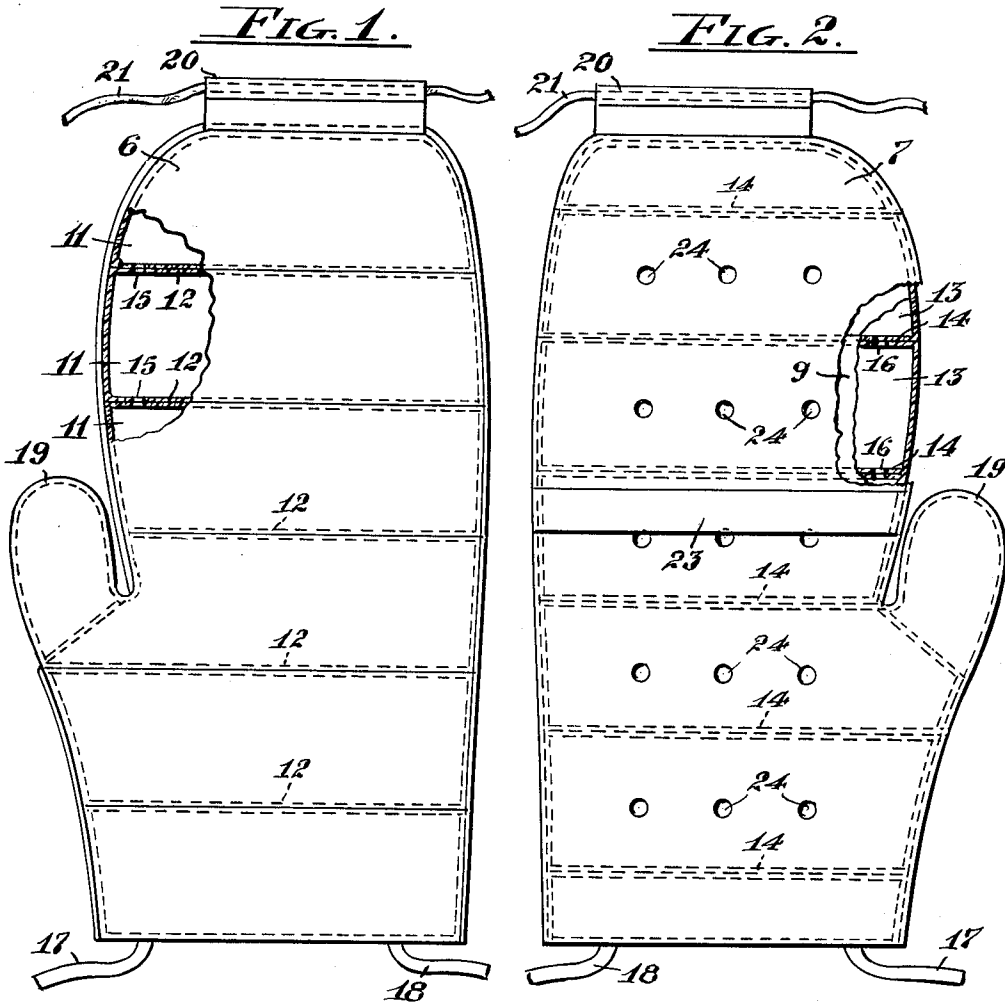


FIG. 3.

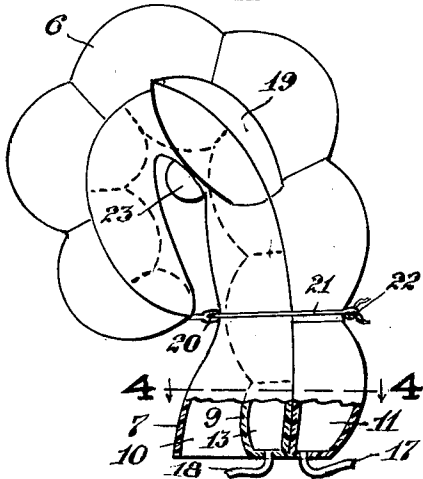
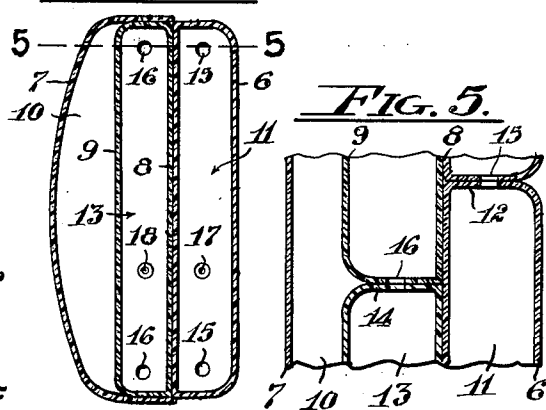


FIG. 4.



1

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3,217,333

## PNEUMATIC BOXING GLOVE

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Filed Aug. 9, 1963, Ser. No. 300,979

3 Claims. (Cl. 2-18)

This invention relates to a pneumatic boxing glove and has as its primary object the provision of a boxing glove embodying a multiple of inflatable cells so constructed and arranged as to impart high shock absorbing qualities to the glove and such as to effectively cushion impacts imposed thereon.

A particular object of the invention is to provide a means whereby depression of the walls of an inflated cell in the glove by impact thereon will effect combined compression and displacement of the air content of the impacted cell by delivering a portion of the air content of the impacted cell to the neighboring cells thereby distributing the shock imposed on one or more of the cells throughout the cellular structure of the glove.

Another object is to provide an arrangement of overlying cells in the glove whereby shock imposed on the outer cells will be cushioned by the inner cells.

A further object is to provide a construction in the glove whereby when in use, a boxer is prevented from delivering a blow with the flat of the hand and whereby a blow delivered by the heel of the hand will be cushioned.

With the foregoing objects and advantages in view the invention is carried into effect as hereinafter described and claimed, and illustrated by way of example in the accompanying drawing, in which:

FIG. 1 is a view in elevation with portions broken away of the outer side of a right hand glove;

FIG. 2 is a view in elevation with portions broken away of the inner side of the glove shown in FIG. 1;

FIG. 3 is a view in side elevation depicting the glove shown in FIGS. 1 and 2 as bent upon itself when worn while boxing, with portions broken away;

FIG. 4 is a detail in cross section taken on the line 4-4 of FIG. 3 as seen in the direction of the arrows showing the glove as partly inflated; and

FIG. 5 is an enlarged fragmentary section taken on the line 5-5 of FIG. 4.

The glove as shown, is in the form of a mitten having an outer wall 6, shown in FIG. 1, and an inner wall 7 shown in FIG. 2, with a pair of overlying intermediate inner walls 8 and 9 as shown in FIG. 4. The walls 6, 7, 8 and 9 are co-extensive with their margins coinciding and are collectively united along their side margins and outer ends to provide the side margins and outer end of the glove while the walls 6, 8 and 9 are connected at their inner ends to provide the inner end of the glove. The inner end of the wall 7 is free and constitutes a sleeve which associated with the intermediate wall 9 forms a pocket 10 for the reception of the hand of the wearer.

Interposed between the outer wall 6 and the intermediate wall 8 is a series of transversely extending elongated cells 11 separated by dividing walls or partitions 12, which partitions extend in parallel relation to each other between the side margins of the glove. Interposed between the walls 8 and 9 is a similar series of elongated cells 13 extending in parallel relation to each other between the side margins of the glove.

The cells 11 constitute an outer layer of cells adjacent the outer wall 6 while the cells 13 constitute an inner layer adjacent the intermediate wall 9 bordering the pocket 10.

The partitions 12 and 14 are offset relative to each other so that the cells 11 of the outer layer thereof are staggered relative to the inner layer of cells 13 longitudinally of the glove.

The partitions 12 and 14 are provided adjacent their ends with restricted apertures 15 and 16 respectively whereby the contiguous cells 11 are in communication with each other, as are the contiguous cells 13. An inflating tube 17 connects with the end cell 11 at the base of the glove and a separate inflating tube 18 connects with the end cell 13 whereby the series of cells 11 and the series of cells 13 may be independently inflated by directing air under pressure through the tubes 17 and 18 in the usual manner.

The walls 6 and 7 are continued at one margin of the glove to extend in overlying relation to each other in corresponding contours and have their margins united to provide a thumb piece 19 the interior of which opens to the chamber 10.

The glove thus formed is bodily flexible and is designed to be folded inwardly upon itself as indicated in FIG. 3, and to have its outer end fastened to the wrist portion of the glove during boxing operations.

For this purpose the outer end of the glove is provided with a transversely extending sleeve 20 through which is rove a ribbon 21 of sufficient length to be passed around the wrist portion of the glove and have its end portions tied together, as indicated at 22 in FIG. 3, so as to securely hold the tip of the glove close to the base of the palm portion thereof. Extending transversely across the palm of the glove is a padded rib 23 adapted to be gripped by the closed hand encased in the glove.

As a means for ventilating the pocket 10 the wall 7 is provided with a multiple of perforations 24 as shown in FIG. 2.

In the application and operation of the invention the hand of the wearer is inserted in the open end of the pocket 10 while the glove is in its extended position shown in FIGS. 1 and 2; the glove being passed over the hand until the fingers are positioned in the outer portion of the glove and the thumb is projected into the thumb piece 19. The several cells of the glove are inflated by directing air under pressure through the flexible tube 17 to inflate the cells 11 and through the tube 18 to inflate the cells 13; the flexible tubes 17-18 being folded upon themselves and held in such position to effect sealing thereof in the usual manner, commonly employed in inflatable cushions, balloons and the like. If desired the pressure of air within one series of the cells may be varied relative to the pressure of air in the other series.

On the glove being thus applied, and the fingers on the enclosed hand folded inwardly to thereby produce a fist and thus bending the glove so that the tip portion thereof will overlie the heel of the hand, the ribbon 21 is drawn taut around the body of the glove and tied to thereby hold the inturned end portion of the glove in its folded position as shown in FIG. 3. This tying operation is usually performed by an attendant. When the glove is thus positioned the padded rib 23 affords a cushion between the fingers and the palm of the hand.

An important feature of the invention resides in the provision of the restricted apertures 15 and 16 in the dividing walls 12 and 14 between the adjacent cells of the inner and outer layers thereof, whereby on impact being delivered to the walls of one or more of the cells such as to depress such walls and thereby compress the air content of the affected cells, a portion of the compressed air will be displaced and directed through the apertures 15-16 into adjacent cells to thereby effectively cushion the shock of impact on the glove.

The apertures 15 and 16 are restricted so as to prevent free and easy passage of air therethrough and whereby the flow of displaced air from a cell is restrained or resisted so as to prevent such displacement of air in a cell under impact as to permit bottoming of the outer wall thereof.

3

Another important feature of the invention resides in the provision of the overlying or double layers of the air cells with the cells of the outermost layer offset relative to the cells of the innermost layer.

By this arrangement the inflated cells of the inner layer thereof absorb and cushion shocks imposed on the walls of the cells of the outer layer, and to a large extent preventing transmission of forces of impact on the outer walls of the glove to the hand encased thereby.

The walls of the glove consist of sheet flexible plastic material with abutting margins and surfaces thereof inter-engaged, being adhered together as by means of suitable adhesives or by the employment of heat and pressure, or both, as is commonly practiced in fabricating sheet plastic structures.

By fastening the tip portion of the glove in overlying relation to the palm and heel of the hand the wearer is prevented from striking an opponent with either the flat of the hand or the heel thereof, which unfair blows are sometimes resorted to by boxers wearing gloves which can be spread by opening the clenched hands to expose the palm and heel portions of the gloves.

We claim:

1. In a boxing glove, spaced apart overlying inner and outer walls, a pair of separate intermediate walls interposed between said inner and outer walls and extending throughout the length and breadth thereof, said walls comprising flexible sheet plastic material and being collectively inter-engaged at the side margins and at the outer end of the glove, transverse partitions between said pair of intermediate walls providing an inner series of contiguous inner air cells between said intermediate walls extending transversely of the glove, said partitions having restricted apertures forming a communication between adjacent of said cells, means for collectively inflating said cells; a series of transverse partitions between said pair of intermediate walls and said outer wall extending throughout the width of the glove forming an outer series of contiguous outer air cells between the pair of intermediate walls and said outer wall, said last named partitions being provided with restricted apertures communicating the air cells on the opposite sides thereof, and means for collectively inflating said last named cells independent of said first named cells, said restricted aper-

4

tures serving to permit the flow of air between adjacent cells in inflating the glove and to equalize pressure throughout each series of cells and to permit restrained displacement of air in a cell subjected to pressure.

2. The structure called for in claim 1 wherein the partitions between adjacent cells of the outer series thereof are offset relative to the partitions between the adjacent cells of the inner series thereof, whereby the outer and inner cells are staggered relative to each other longitudinally of the glove.

3. In a pneumatic boxing glove, overlying inner and outer walls, an intermediate wall extending between and co-extensive with said inner and outer walls, said walls having coinciding side margins and inner and outer end margins and being inter-engaged at their side and outer end margins with said intermediate wall inter-engaged with said outer wall at the inner ends thereof; said inner wall and intermediate wall enclosing a hand receiving pocket opening at the inner ends of said walls; and a multiplicity of air cells interposed between said intermediate wall and said outer wall comprising an inner series of cells overlying said intermediate wall and an outer series of cells extending between said inner series of cells and said outer wall; said cells being elongated and extending longitudinally transversely of said wall throughout the width thereof with adjacent cells of each series separated by dividing walls, and means for inflating said cells; said inner and outer walls, intermediate wall and dividing walls comprising a flexible sheet plastic material, said dividing walls having restricted apertures therein communicating the adjacent cells.

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