Nov. 24, 1942. G. B. EMERSON 2,302,845

SHUTTLECOCK

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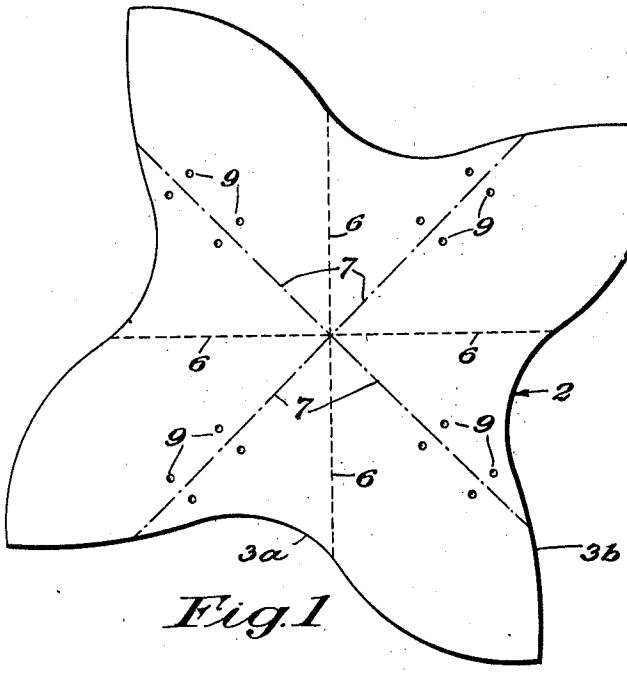

Fig. 1

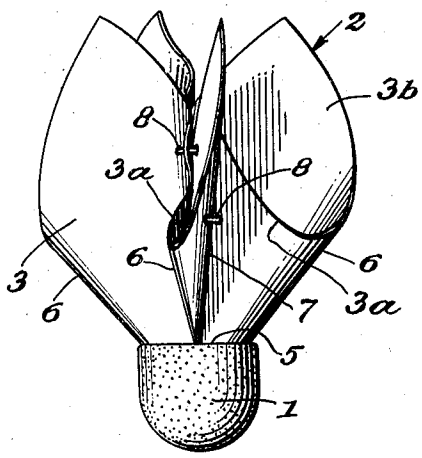

Fig. 2

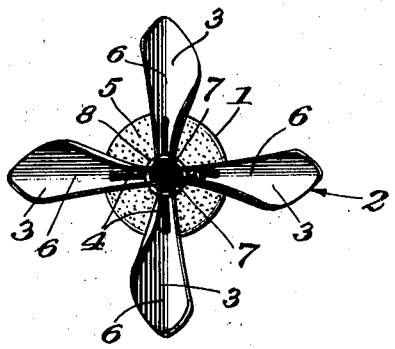

Fig. 3

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SHUTTLECOCK

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5 Claims. (Cl. 273—106)

My present invention relates to shuttlecocks and like game devices of the type shown in my Letters Patent No. 2,247,486, dated July 1, 1941.

Such shuttlecocks each comprise a body and a flexible skirt attached to the body to provide pleats disposed to rotate and control its flight as desired. As one objection has been that a pleat of such shuttlecocks, occasionally when struck with a racquet, became folded upon itself and thereby destroyed temporarily the desired flight characteristics of the shuttlecock, my present invention has for its purpose a shuttlecock construction in which the folding of a pleat upon itself under the impact of the racquet is obviated without interference with desired flight characteristics.

In accordance with my invention, I interconnect the flight controlling pleats a sufficient distance beyond the ends of the lines of fold defining their outer edges to maintain the pleats positively in flight controlling position. In practice, I have changed the shape of the flexible blank forming the skirt when attached to the body so that the lines of fold interconnecting adjacent pleats are longer than the lines of fold defining the outer edges of the pleats to permit both sets of corresponding sides of the pleats to be interconnected in a zone intermediate the ends of the pleats and the ends of their outer lines of fold. By that construction, I have eliminated the possibility of "buckling" or folding of the pleats when the shuttlecock is in play and at the same time I have made it possibel for the desired flight characteristics of completed shuttlecocks to be more accurately established.

In the accompanying drawing, I have illustrated an embodiment of my invention from which its novel features and advantages will be readily apparent. In the drawing:

Fig. 1 is a plan view of a skirt with the indicated fold lines by which the flight controlling pleats are established.

Fig. 2 shows a shuttlecock in accordance with my present invention, and

Fig. 3 is a plan view of the shuttlecock shown in Fig. 2.

At 1 I have indicated the body of a shuttlecock that may be shaped and finished as desired and at 2 I have shown a blank of suitable stock to be attached to the body 1 to establish a plurality of flight controlling pleats 3. In practice, the blank 2 is forced into radially disposed slots 4 (see Fig. 3) in the rear face 5 of the body 1 and cemented in place.

The blank 2 is preferably shaped so that one set of corresponding sides 3^a of the pleats 3 is of lesser area than the other set of corresponding sides 3^b in order that the shuttlecock will rotate in flight. Preferably, I form the blank so that the corresponding sides 3^b each terminate in an apex spaced outwardly from the flight axis of the shuttlecocks.

The pleats 3 may be defined by the outer lines of fold 6 flaring outwardly with respect to the flight axis of the shuttlecock and the inner lines of fold 7 intermediate each pleat 3 adjacent and parallel to the flight axis. The lines of folds 6 and 7 are each indicated in Fig. 1 with the line of fold 6 indicating the position of the blank 2 with reference to the slots 4 when the shuttlecock is being assembled.

In order to avoid the doubling over or folding of the pleats when the shuttlecock is in play, I interconnect the pleats 3 a sufficient distance beyond the ends of the lines of fold 6 to maintain the pleats 3 positively in flight controlling position. In practice, as may be clearly seen in Fig. 2, the lines of fold 7 are longer than the lines of fold 6 and the pleats 3 are loosely interconnected intermediate the ends of the folds 6 and 7.

As shown in the drawing, I may interconnect the pleats 3 by one or more cords 8 threaded through the sides 3^a and 3^b of the pleats 3 adjacent the folds 7 and knotted, with the knots lying interiorly of the pleats with one of the cords 8 being located substantially at the outer end of the folds 7.

By this construction, the normal action of the pleats 3 in controlling the flight of the shuttlecock is not interfered with, but the pleats 3 because of their shape and because of the means interconnecting them cannot be folded into a position wherein their normal condition must be manually restored so that accurately established flight characteristics can be positively maintained during play.

What I therefore claim and desire to secure by Letters Patent is:

1. A shuttlecock or like game device comprising a body, a flexible skirt anchored to said body to provide a plurality of flight controlling pleats disposed to rotate the shuttlecock and having lines of fold adjacent the flight axis of said body and lines of fold relatively remote from said flight axis and flaring outwardly relative thereto, and means interconnecting said pleats a sufficient distance beyond the ends of said second-

named line of fold to maintain positively said pleats in flight controlling position.

2. A shuttlecock or like game device comprising a body, a flexible skirt anchored to said body to provide a plurality of flight controlling pleats having lines of fold adjacent and parallel to the flight axis of said body and lines of fold relatively remote from said flight axis and flaring outwardly relative thereto, said first-named lines of fold extending beyond the ends of said second-named lines of fold, one set of corresponding sides of said pleats being of less area than the other set of corresponding sides to rotate the shuttlecock in flight, and means loosely interconnecting said pleats a sufficient distance beyond the ends of said second-named line of fold to maintain positively said pleats in flight controlling position.

3. A shuttlecock or like game device comprising a body, a flexible skirt anchored to said body to provide a plurality of flight controlling pleats having lines of fold adjacent and parallel to the flight axis of said body and lines of fold relatively remote from said flight axis and flaring outwardly relative thereto, said first-named lines of fold extending beyond the ends of said second-named lines of fold, one set of corresponding sides of said pleats being of less area than the other set of corresponding sides to rotate the shuttlecock in flight, and means extending through both sets of sides of said pleats adjacent said first-named lines of fold and intermediate the ends of said first and second-named lines of fold, said means positively maintaining said pleats in flight controlling position.

4. The shuttlecock of claim 2 in which the means interconnecting the pleats comprises at least one thread passing through both sets of sides of said pleats adjacent the first-named lines of fold.

5. A shuttlecock or like game device comprising a body, a flexible skirt anchored to said body to provide a plurality of flight controlling tapering pleats having lines of fold adjacent and parallel to the flight axis of said body and lines of fold relatively remote from said flight axis and flaring outwardly relative thereto, said first-named lines of fold extending beyond the ends of said second-named lines of fold, one set of corresponding sides of said pleats being of greater area than the other set of corresponding sides to rotate the shuttlecock in flight, each of the sides constituting said first set extending beyond the ends of said first-named lines of fold and tapering to an apex located radially outwardly thereof, and means loosely interconnecting said pleats adjacent the ends of said first-named lines of fold.

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