March 24, 1953 W. C. CARLTON 2,632,647

SHUTTLECOCK

Filed Feb. 28, 1952

FIG. 1.

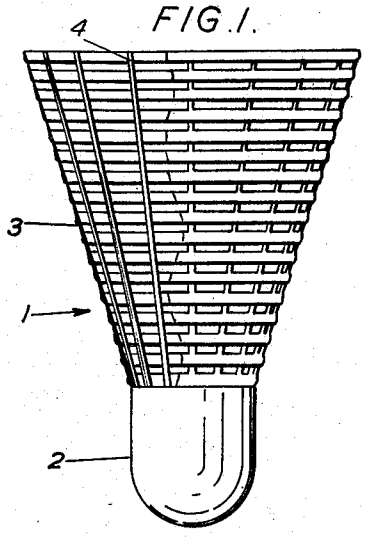


FIG. 2.

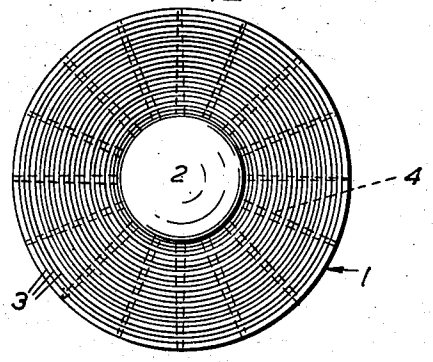
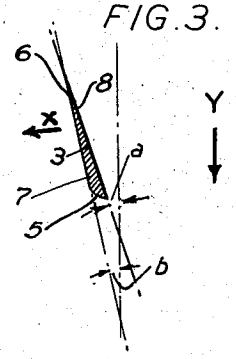


FIG. 3.



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SHUTTLECOCK

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3 Claims. (Cl. 273—106)

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This invention relates to the skirts of shuttlecocks of the type that are usually made in one piece. The object of the invention is to prevent some deflection of the skirt when the shuttlecock is travelling through the air at high speed.

Deflection of the skirt can be caused by impact with the racket and by the passage of air, and this invention is devoted to reducing the deflection caused by the passage of air.

A shuttlecock being cone-shaped, in the types hitherto known, the tendency of the air has been to collapse the shuttlecock skirt whilst travelling forward at high speed.

The object of this invention is achieved by incorporating in the skirt of the shuttlecock at least one but preferably a number of air foils which will tend to expand the skirt of the shuttlecock because of the passage of air as distinct from causing it to collapse.

In practice this is achieved by making up the skirt of a shuttlecock comprising a plurality of rearwardly diverging lengthwise extending stems and a plurality of circumferentially extending ribs disposed outwardly of the stems whereby there is formed a series of steps of material with air spaces between them and using the step as the material space for necessary strength.

The material in the step is not of constant thickness and the use of an air foil section enables an increased effect to be obtained because although the air at some little way from the shuttlecock is travelling parallel to the direction of flight, near the shuttlecock skirt it is travelling at an angle between that of parallel to the direction of flight and parallel to the angle of the cone so that the air will swoop over these tiny air foils and cause the cone to be expanded.

To enable the invention to be clearly understood an example will now be described with reference to the accompanying drawings in which

Fig. 1 is a top plan of a shuttlecock in accordance with this invention as it would appear in horizontal flight.

Fig. 2 is a front elevation of the shuttlecock shown in Fig. 1.

Fig. 3 is an enlarged section through one of the ribs taken at the left side of Fig. 1 where a rib is designated by the numeral 3.

As shown in Figures 1 and 2 the shuttlecock comprises a skirt (1), a cap (2) and a number of air foil ribs (3) which are connected by the stems or stiffeners (4) formed integral with the ribs.

Closely examining Figure 3, the direction of flight of the shuttlecock is indicated by the arrow Y, with the leading edge of the rib designated 5, the trailing edge 6, the outer surface 7

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and the inner surface 8. The angle (*b*) is the angle between the outer surface 7 and the direction of flight of the shuttlecock while the angle (*a*) is the angle between the interior conical surface of the shuttlecock and the direction of flight.

The air on passing over the air foil will tend to cause a force in the direction of the arrow X and this reduces the tendency of the skirt to collapse.

To get the tool machined properly to permit this series of steps it is necessary that the rims should be machined with their leading edge in the female tool.

It will be understood that the specific air foil shape shown in Figure 3 is not essential, the main essential being that a series of steps on the outside surface of the shuttlecock with air spaces between them should be formed so that air thrown off one step is forced against another from the outside surface of one step to the inside surface of the next one astern of it and that, of course, the ribs should be integral with the stems.

I claim:

1. A shuttlecock comprising a cap and a one piece skirt including stems which are thicker than other parts of the skirt and characterised in that the stems have integral with them at least one rib, the outside surface of which is at a smaller angle than the interior conical surface of the skirt to the direction of flight of the shuttlecock.

2. A shuttlecock as in claim 1 in which there are a number of ribs so sited that air passing over the top surface of one will strike the undersurface of the next succeeding rib.

3. A shuttlecock as in claim 1 in which the outside surface of the rib is disposed outwardly from the outside surfaces of the stems.

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