Aug. 11, 1970 R. E. SMITH 3,523,387

TOY HOOPS

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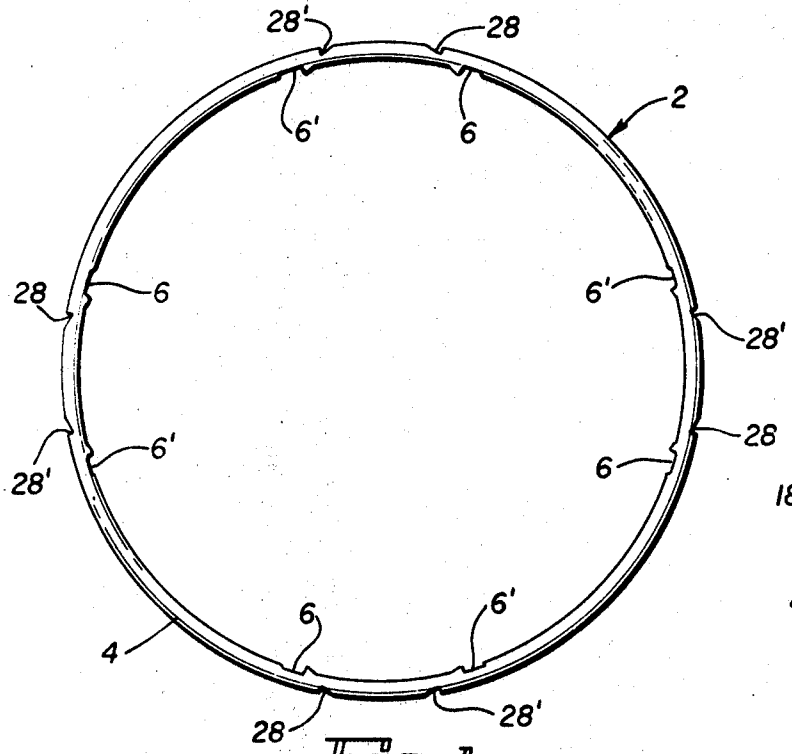


Fig_1

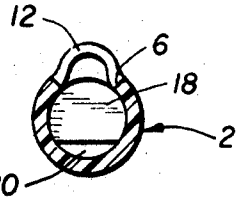


Fig_5

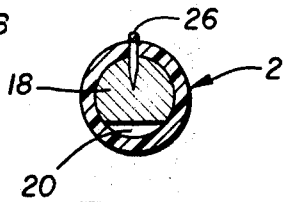


Fig_6

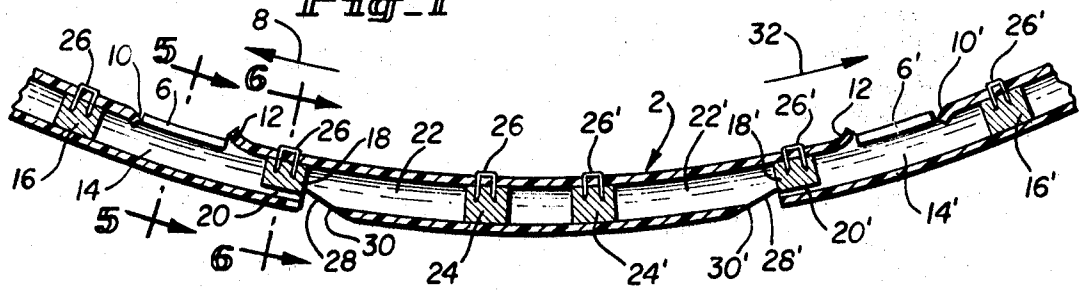


Fig_2

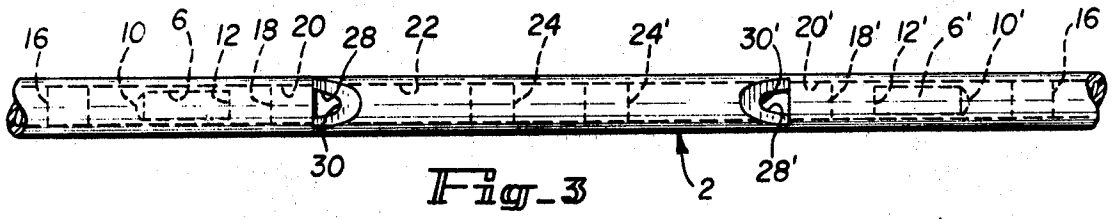


Fig_3

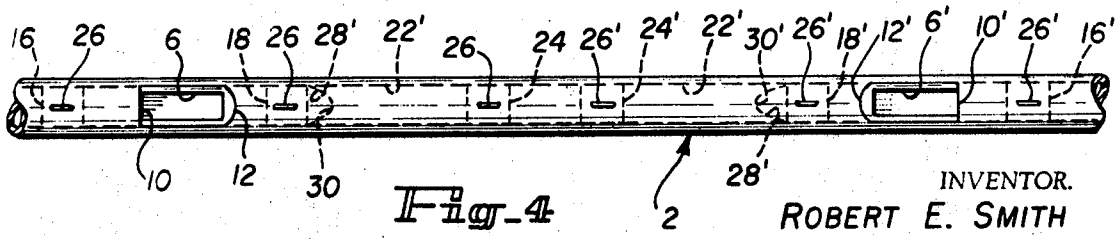


Fig_4

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# TOY HOOPS

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## ABSTRACT OF THE DISCLOSURE

A toy hoop having a hollow body with spaced air inlet and outlet openings and an air restrictor inbetween which produce one whistling sound when the hoop is rotated in one direction and a different sound when it is rotated in the opposite direction.

This invention relates to new and useful improvements in toy hoops, and has particular reference to that class of toy hoops commonly known as "hula" hoops, of which the most common usage is to place such a hoop in a generally horizontal plane encircling the waist of the user, and to maintain said hoop in a whirling motion about the body by orbital or gyrating movements of the torso. Such hoops have been extremely popular and are in wide usage at the present time.

The principal object of the present invention is the provision of a toy hoop of the type described having novel means associated therewith whereby a whistling noise is emitted as the hoop is spun about the body in its normal mode of usage.

Another object is the provision of a toy hoop of the general character described formed of tubular stock, and wherein the whistling means is confined substantially entirely within the tubular confines of the stock, whereby said whistling means does not appreciably alter its configuration, appearance, or operation.

Still another object is the provision of means for adjusting the pitch of the note emitted by the whistling means.

Other objects are extreme simplicity and economy of construction, efficiency and dependability of operation, and adaptability for application to existing toy hoops of the character described.

With these objects in view, as well as other objects which will appear in the course of the specification, reference will be had to the drawing, wherein:

FIG. 1 is a plan or face view of a toy hoop embodying the present invention.

FIG. 2 is an enlarged fragmentary central sectional view of the hoop taken in the plane of the hoop.

FIG. 3 is an enlarged layout view of a portion of the hoop.

FIG. 4 is an enlarged external lay-out view of the portion of the hoop shown in FIG. 3, and

FIGS. 5 and 6 are enlarged, enlongated sectional views taken respectively on lines V—V and VI—VI of FIG. 2.

Like reference numerals apply to similar parts throughout the several views, and the numeral **2** applies to a hoop of the character described, commonly known as a "hula" hoop. It comprises a length of tubular material, usually but not necessarily a light weight, semi-rigid plastic, formed into a circular hoop.

A plurality of whistling means are incorporated in the tube comprising the hoop, at spaced intervals therealong. As best shown, each of said whistling means includes an air inlet opening **6** formed in the inner peripheral wall of the tube, tube wall at the leading edge of said opening, when the hoop is rotated in the direction of arrow **8** being formed to present an inturned lip **10**, and the tube wall at the trailing edge of said opening, being formed to present an outturned lip **12**, so as to facilitate the entry of air to an air receiving chamber **14** within the tube when the hoop is rotated in the direction of arrow **8**. The extension of lip **12** outwardly from the normal circular contour of the tube is small, however, and does not interfere with normal usage of the hoop.



Air receiving chamber **14** within the tube is defined at its forward end, considering the direction of arrow **8**, by a plug **16** secured in the tube ahead of opening **6**, and at its rearward end by an air restricting plug **18**. Plug **18** is cylindrical in form, except that a segmental portion thereof adjacent the outer peripheral wall of the tube is cut away whereby to form, in conjunction with said tube, a restricted air passage **20** operable to direct air rearwardly from chamber **14** to an air column chamber **22** also formed by a length of the tube. Chamber **22** is defined at one end by plug **18**, and at its opposite end by a plug **24** spaced apart from plug **18**. Plugs **16**, **18** and **24** are each secured in place in the tube by a staple **26**, or by any other suitable means. Immediately behind plug **18**, a notch **28** is formed in the outer peripheral wall of the tube, said notch being tapered in depth so that a thin edge of the tube wall defining said notch, as indicated at **30**, is in the path of the stream of air emerging from passage **20**.

Thus when the hoop is placed around the torso or other portion of the body of a person, and the torso or other body portion is gyrated about a circle of smaller diameter than the hoop, the hoop will whirl about the torso or other body portion in an orbital type movement, as is well known in this type of toy. If the rotation is in the direction of arrow **8**, air will be forced through opening **6** into chamber **14** and through passage **20** to impinge on edge **30** of notch **28**, and be exhausted through said notch. The cutting of the air stream by edge **30** sets up a vibration of the air column in a chamber **22**, and creates a whistling note. The pitch of the note depends on the length of the air column in chamber **22**, and this may be adjusted by moving plug **24** to different distances from plug **18**. This may be accomplished through notch **28**, after first removing the staple **26** securing plug **24**. Plug **16** prevents air entering chamber **14** from being dissipated forwardly in the tube.

The disposition of inlet opening **6** and notch **28** respectively in the inner and outer peripheral walls of the tube is peculiarly important to the provision of a good whistling action in a "hula" hoop. In the normal usage of the hoop as previously described, the actual rotation of the hoop about its axis is quite slow, since the hoop does not normally move rotationally at its point of contact with the user's body. Depending on the size of the body member as compared to the diameter of the hoop, the hoop may pass orbitally several times around the user's body before it has turned about its axis one full revolution. Hence the axial rotation alone would not produce sufficient speed of inlet **6** through the air to provide an efficient whistling action. However, due to the orbital motion of the hoop, each portion of the hoop is strongly accelerated alternately toward and away from the user's body, and this produces additional speed of the inlet opening relative to the air. Thus as the portion of the hoop containing inlet opening **6** is pulled rapidly toward the user's body, the combined velocity resulting from both axial rotation and movement toward the user's body produces ample air velocity to operate the whistling means efficiently. This combination of velocities is possible only if the air inlet and outlet are disposed respectively at the inner and outer peripheral walls of the tube. The device has been found to be virtually inoperable with any other arrangement.

Since only one portion of the hoop at a time is being moved toward the user's body, it is desirable in the inter-

ests of producing a continuous whistling action to place a plurality of the whistling means just described in regularly spaced relation about the periphery of the hoop, as indicated in FIG. 1 by the corresponding pairs of inlet openings **6** and notchings **28**. While four pairs are shown, it will of course be apparent that any number desired could be used. Also, since the air velocity producing the whistling action is partially dependent on the axial rotation of the hoop, it is desirable to include a series of whistling means reversed from those described above, in order that the whistling will occur when the rotation of the hoop is in the opposite direction, or in the direction of arrow **32**. The parts of the reversed whistling means are indicated by primed numerals corresponding to those indicating the whistling means first described.

While I have shown and described a specific embodiment of my invention, it will be readily apparent that many minor changes of structure and operation could be made without departing from the spirit of the invention as defined by the scope of the appended claims.

I claim:

**1.** In combination with a circular toy hoop operable to be placed in encircling relation about a body portion of its user and to be whirled about said body portion responsively to a gyrating motion of said body portion, an air-actuated whistling means carried by said hoop and operable to be actuated by air currents generated by said whirling motion of said hoop, comprising a hollow body member having an air inlet openings at the side thereof toward the center of said hoop and an air outlet opening at the side thereof distant from the center of said hoop, and an air restricting member fixed in said body member and operable to direct a stream of air from said inlet chamber across an edge of said body member bounding said outlet opening, whereby a whistling note is created.



**2.** The combination recited in claim **1** with the addition of a member carried adjustably in said body member and operable to vary the length of the portion of said body member interconnected with said outlet opening, whereby to vary the pitch of said whistling note.

**3.** The combination as recited in claim **1** wherein said hoop is formed of tubular material, and wherein said body member constitutes a length of said tube, said inlet and outlet openings constituting openings formed respectively in the inner and outer peripheral walls of said tube with said air restricting member fixed in said tube intermediate said openings, and with the addition of a pair of plugs fixed in said tube to seal the portion thereof containing said inlet and outlet openings.

**4.** The combination as recited in claim **1** wherein said hoop is formed of tubular material, and wherein said body member constitutes a length of said tube, said inlet and outlet openings constituting openings formed respectively in the inner and outer peripheral walls of said tube with said air restricting member fixed in said tube intermediate said openings, and with the addition of a pair of plugs fixed in said tube to seal the portion thereof containing said inlet and outlet openings, the plug adjacent the outlet opening being adjustably movable along said tube whereby to adjust the pitch of the whistling note produced by said whistling means.

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