March 14, 1933. J. H. BRADY 1,901,547

WHIRL WHISTLE

Filed Jan. 16, 1932

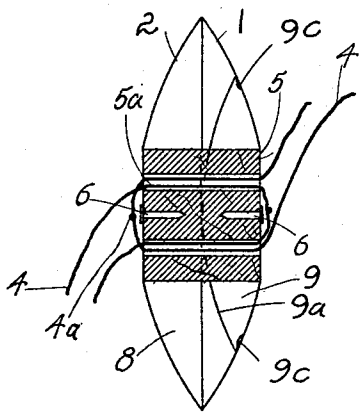


Fig. I

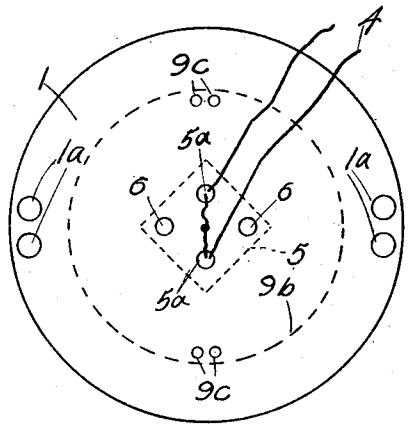


Fig. II

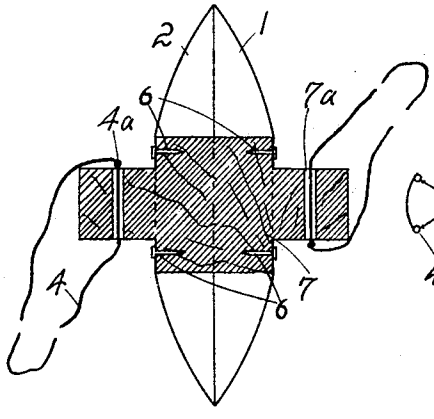


Fig. III

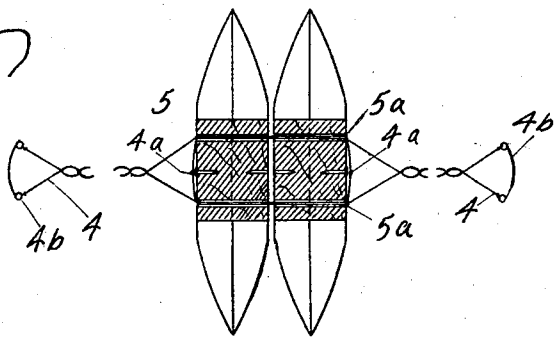


Fig. IV

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UNITED STATES PATENT OFFICE

JAMES HENRY BRADY, OF LOUISVILLE, KENTUCKY

WHIRL-WHISTLE

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My invention relates to audible rotating toys for the use and entertaining of children and others; and, in its simple form, it consists of two symmetrical, concaved discs whose edges are fastened together in an air-tight seam to form a hollow, globular shell whose equatorial diameter is approxiamtely three or four times its axial diameter and whose central, interior portion is occupied with a cubical block of wood or other light material securely fastened therein and adapted, when the hollow globular shell is whirling rapidly on its axis, to force the interior air from the central region of the shell outward toward the equatorial rim of the body where the interior air is connected with the outer surrounding atmosphere through two pairs of perforations which have been made in one of said concaved discs near the periphery thereof, each pair being adjacent and diametrically opposite the other pair, all perforations being equi-distant from the center of said concaved discs; said hollow, globular shell being adapted to be rotated on its axis by means of two string-loops threaded through the centrally disposed wood blocks and coming out a short distance apart on either side of the centers thereof.

The general object of my invention is the development and production of an attractive and harmless spinning and whistling toy for the use and entertainment of children and others,—an interesting toy of such a nature as to be easily operated or rotated on its axis first in one direction and then in the other by means of two string-loops threaded through the centrally-disposed wood blocks. And some special objects of my invention are: First, to devise means for forcing the enclosed air in the shell from the central regions to the zone of the periphery of the shell when it is rotated rapidly on its axis, so that the pressure of the interior air in the peripheral regions may be increased for the purpose of increasing the volume and pitch of the whistling sound through the two pairs of adjacent disc perforations where the interchange of the different pressures between the inside and the outside air, takes place; second, to design a method of attaching the string-loops to the hollow shell in such a way that the strings are not cut in the normal operation of the whirl-whistle, by sharp edges of metal cleats; third, to devise sets of correlative perforations adapted in size and relative positions in respect to one another and to the rims of the hollow, globular shells, so that the shell when rotated by the alternate twisting and untwisting of the attached string-loops, as they are alternately released and pulled, will give forth a whistling sound with volume and tone corresponding to the size of the shell so perforated and the air pressure in the peripheral region thereof where the perforations are; and fourth, to provide novel means of producing two or more different tones with apparently only one of my whirl-whistles.

All of these objects are attained in my present inventions; and my new whirl-whistle illustrated in the accompanying drawing which forms a part of this specification, is a practical apparatus embodying the aforesaid novel means and other new and useful details of construction, arrangement and combination of parts; all of which, together with their functions, will be described in detail with reference to said drawing, and will be definitely pointed out in the claims that follow the description.

In said drawing, Figure I is a sectional view of one of my whirl-whistles on a plane cutting through the centers of the perforations for the string-loops, showing the interior of the hollow, globular shells and the cubical block occupying the central region of the shell. In Fig. I is also shown the edge and the relative position of an internal auxiliary shell adapted on rotation of the main shell, to give forth a whistling sound.

Figure II is a side elevation of my whirl-whistle showing the concaved disc having pairs of adjacent perforations adapted to make the whistling sounds as the whirl-whistle is rotated. The dotted circle indicates the position of the internal auxiliary

shell. In this Fig. II is also shown in dotted lines the outstanding angles of the cubical block fastened in the central region of the shells and adapted when the shell is rotated in either direction, to force the internal air to the regions of the peripheries of the shells.

Figure III is a sectional view through the axis of one of the whirl-whistles with its wooden block securely fastened in the central region of the shell and having long hubs extending out through the sides of the shell on either side and adapted to engage the string-loops and to hold the globular shell more steadily in its equatorial plane while operating with alternate rotations.

Figure IV is an edge view in axial section of the type of my whirl-whistles as shown in Fig. I; but in this Fig. IV are shown two of my whirl-whistles threaded together by means of the operative string-loops so they can be operated in multiple formation. In this Fig. IV is, also, shown modified forms of my string-loops provided with smooth handles fitted into the outer ends of the loops and adapted to prevent the string in operation from chafing the fingers of young children.

This invention has been designed and developed in its various types, forms and sizes for the use and harmless entertainment of children; and with this general purpose and the special objects aforesaid in view, I will now proceed to describe my invention in detail, pointing out specifically the new and useful features and explaining the various uses and the operations of the individual parts and combinations thereof throughout my invention, as illustrated in the drawing hereinabove delineated, in which similar letters and characters refer to similar parts throughout the several views.

Referring to said drawing, the numeral 1 indicates the concaved disc of my whirl-whistle, in which the whistling perforations are made and 2 indicates the opposite side of my whirl-whistle; while 4, 4, point out the strings of the two string-loops used in rotating the whistle; and 4*a*, 4*a*, are the knots in the string-loops. The numerals 5, 5, indicate the cubical wood block fastened in the central part of the hollow shell by means of the nails 6, 6; while 7, 7, point out the long hubs on one type of my whirl-whistle, centrally disposed and standing out on either side through the concaved disc to form attachments for the operative string-loops, which are threaded through the transverse perforations 7*a*, 7*a*, therein.

In the Figs. I and II I have shown in detail the construction and arrangement of the parts of one of my double-toned whirl-whistles in which there is one main compartment 8 embracing another smaller interior compartment 9 formed by means of an interior concaved disc 9*a* fixed to the inner wall 1 of the main compartment 8 in an air-tight seam 9*b*, the whistle-openings 9*c*, 9*c*, of the interior compartment 9 are smaller than whistle-openings 1*a*, 1*a*, of the main compartment. In a similar way another interior compartment larger or smaller than the compartment 9 could be set in to produce whistling tones of a lower or a higher pitch.

In the experimental development of my whirl-whistle, I have found that the comparative tones produced by the various types of whirl-whistles, depend principally upon the various sizes and air-volume capacities of the various whistles and also upon the difference in pressure between the interior air of the whistle and the surrounding atmosphere,—that is, a comparatively small whistle produces a comparatively sharp tone while a larger whirl-whistle produces a tone of lower pitch. But a centrifugal fan, as may be seen in the radiating angles of the cubical block outlined in Fig. II, greatly increases the pressure of the interior air in the regions of the perepheries of my whirl-whistle, when the whistle is rotated rapidly on its axis; and this increased pressure of the interior air in the region of the whistle-openings increases both the volume and the pitch of the whistling tones in the normal operation of the whirl-whistle.

Thus, it may be readily understood how my double and triple-toned whirl-whistles in normal operation produce two or three different tones. For example, in the case of Figs. I and II, the large compartment 8 with its comparatively large whistle openings 1*a*, 1*a*, produces a tone of greater volume and lower pitch than the small interior compartment 9 with its smaller whistle openings 9*c*, 9*c*.

Moreover, in the development of my invention, I have discovered a method of connecting up in multiple formation two or more of my whirl-whistles on the same pair of string-loops so that they may be all whirled in unison responsive to the normal operation of common string-loops, as shown in Fig. IV where the two string-loops 4, 4, threaded through the perforations 5*a*, 5*a*, in the centrally disposed blocks 5, 5, of the two whirl-whistles, are shown at about the middle of the twisting or the untwisting stroke. And as shown in Fig. IV, I have designed convenient loop handles 4*b*, 4*b*, which at the option of the operator may be set into the outer ends of the string-loops 4, 4.

Now to understand thoroughly the operation and efficiency of my new whirl-whistle, we should put it to use in the following way:

When we start to operate my whirl-whistle, as shown in Fig. I, with its operative string-loops 4, 4, drawn out straight, we

should place the thumb or two fingers of each hand through the outer ends of the string-loops; and allowing the whirl-whistle to hang on the slightly-drooping string-loops 4, 4, between our hands, we should then begin twirling the whirl-whistle between our hands until both the string-loops become slightly twisted, as shown in Fig. IV. Then, when we pull outwardly on the loops 4, 4, the whirl-whistle begins spinning as the string-loops are untwisting. And when the string-loops are once more out straight, the momentum of the spinning whirl-whistle will go on twisting the strip-loops again to the maximum extent of the strings, as we, accordingly, recede from our outward pull, allowing the string-loops to twist; and as we again pull outwardly on the string-loops, the whirl-whistle will, in response, start spinning swiftly in the opposite direction. And this operation may be continued indefinitely at the will of the operator. And the spinning speed of the whirl-whistle is, also, under the control of the operator.

Now, it is noticeable that in the construction of my whirl-whistle, whether single or multiple-toned, the whistle openings are made in pairs with a narrow partition between each pair and that their centers are on arcs described about the centers of their respective compartments and near the rims thereof, so that in the spinning of the whirl-whistle in either directions, one whistle opening is always trailing in line just behind the other opening, cutting the air in such a manner as to produce a whistling sound of a certain predetermined tone corresponding to the size and air volume and air pressure in the compartment; while the volume of sound depends upon the spinning speed of my whirl-whistle and the interior air pressure.

And, now, having thus described the various features of my invention, the detail construction, arrangement and combination of its parts as well as its functions and ways of operation, those features and combinations of my invention that I consider new and useful and representative of interest and efficiency, on which I desire Letters Patent granted to me, I have hereinbelow set forth and specifically described in the following claim:—

In a multi-toned whirl-whistle: a main circular compartment made up of two concaved discs whose concaved faces have been fastened together in an air-tight seam at their rims, forming a hollow, globular shell; two pairs of adjacent whistle-apertures in one of said discs made diametrically opposite each other near the rim of the disc and adapted to produce a whistling sound when the shell is rotated rapidly on its axis; a cubical block securely fastened in the central portion of said shell and bearing tightly against the inner sides thereof, the angles of said block being adapted to act as a fan to force the interior air from the central regions to the periphery zone of the hollow shell when the shell is rotated rapidly on its axis, as in normal operation; a secondary compartment within the main compartment, having one concave disc whose edges are fastened in an air-tight seam to the inner surface of the concaved disc opposite said whistle-apertures of the main compartment shell, the central part of the secondary compartment disc being cut and adapted to fit tightly about the sides of the central cubical block of the main compartment; two pairs of adjacent whistle-openings diametrically opposite each other made through the contiguous wall of the main compartment and leading directly into the secondary compartment near its periphery and adapted to produce a whistling sound of a higher pitch than the whistle-apertures of the larger main compartment when the main globular shell is rapidly rotated on its axis; and means adapted for spinning said main shell by torsion force with the twisting and untwisting of attached string-loops.

In testimony whereof I have hereunto set my signature.

JAMES HENRY BRADY.