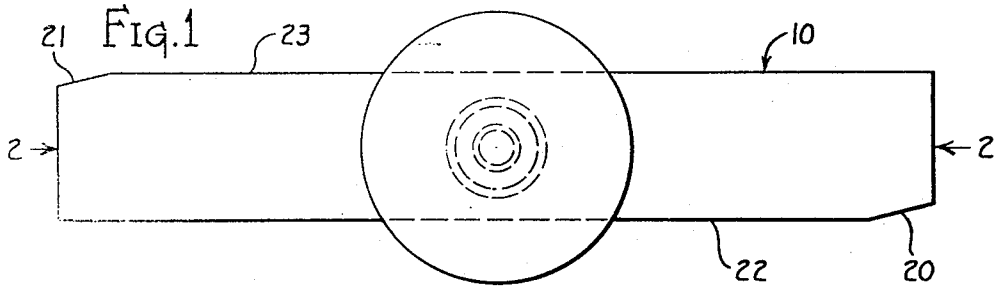
July 17, 1951 C. M. WAGNER 2,560,833

SPIN TOY

Filed Oct. 28, 1946

Fig. 1



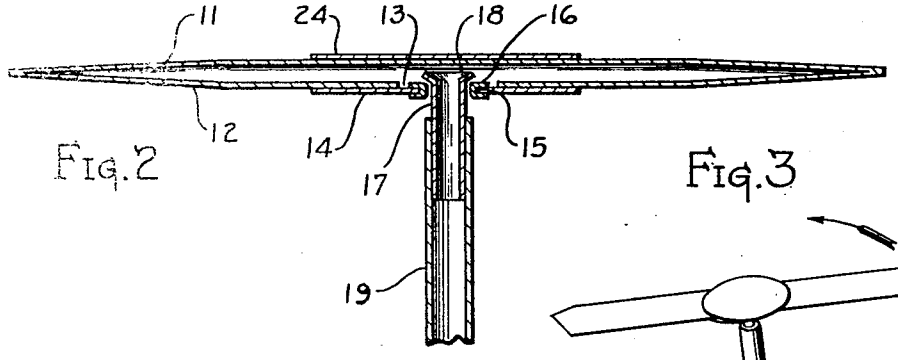
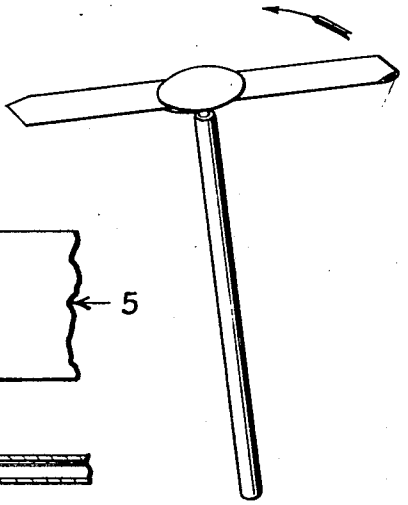


Fig. 2

Fig. 3



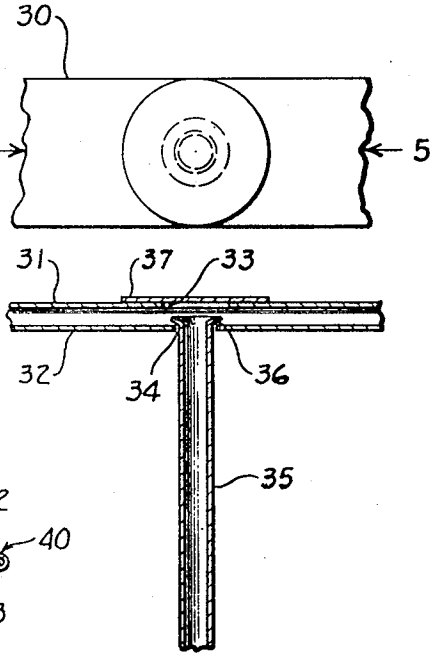


Fig. 4

Fig. 5

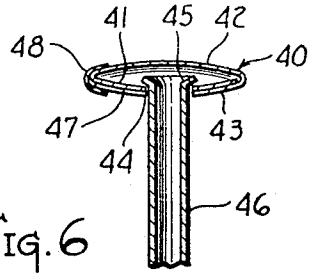


Fig. 6

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SPIN TOY

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3 Claims. (Cl. 46—41)

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This invention relates to spinning structures, and especially to a spin toy of the type employing the jet principle for effecting the rotational movement of the spinnable member.

An object of this invention is to produce a new and improved assembly of parts that employs the jet principle for the generation of such forces as will impart rotational movement to a shaft mounted blade of a spin toy.

Another object of this invention is to produce a spinning toy having the features of enabling the admission of fluids into a rotatable blade in a manner which does not effect rotational movement thereof, but on emission from offset parts of the blade, such tangential forces are generated as will cause the rotatable member to spin.

A further object is to produce a structure of the type described consisting of relatively few simple parts readily manufactured and assembled on a mass production basis of low cost materials into a product adapted to operate in response to the movement of fluids received from a fluid source and released through properly positioned jet ports.

These and other objects and advantages of this invention will hereinafter appear, and for purposes of illustration, but not of limitation, embodiments of the invention are shown in the accompanying drawings in which,

Figure 1 is a top view of the spin toy showing the exhaust ports in the diagonally disposed corner sections of the blade;

Figure 2 is a sectional elevation taken along the line 2—2 of Figure 1 showing the spin toy with a part of the blow pipe broken away;

Figure 3 is a perspective view of the spin toy illustrated in Figures 1 and 2;

Figure 4 is a fragmentary top view of another form of spin toy;

Figure 5 is a sectional elevation taken along the line 5—5 of Figure 4; and

Figure 6 is a fragmentary sectional view of still another form of spin toy differing only in the method of manufacture and assembly.

In one aspect of the invention, an article of manufacture is produced consisting of a hollow blade, which is centrally journalled on a shaft through which a fluid is introduced to the blade. Since the incoming fluid generates forces operating axially of the blade center, its admission in no way affects or retards the rotational movement of the blade in one direction or the other. However, on emission of the fluid from the blade through ports provided in edge portions of the blade, which are offset from the center, such

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tangential forces are generated as will urge the movement of the blade in a direction to effect rotational movement thereof about the shaft. Thus, the blade may be spun on the end of the shaft merely by admission thereto of fluids supplied from a fluid source, the rotational movement relating proportionally to the rate of fluid emission.

Referring now to the drawings, 10 indicates a blade consisting of front and rear walls 11 and 12 respectively, joined at their adjacent edges to provide a fluid tight hollow structure. Although the hollow blade may be contoured to simulate any desirable elongate member, such for example as an airplane propeller or an ellipsoidal member, for simplicity and ease of manufacture, it is preferably formed rectilinear as is readily obtained, by partially crushing tubular stock and then sealing the open ends, by folding and sealing the adjacent edge portions of rectangular sheet stock, or by such fabrication processes as molding, stamping, casting and the like of rigid and formable materials such as paper, plastics, metal, wood and the like.

The blade 10 is centrally journaled on a hub structure through which the driving fluid is admitted, as previously pointed out. Full understanding of the hub structure may be had with reference to its method of manufacture. Suffice it to say that a central aperture 13 is provided in the rear wall 12, which aperture is adapted to be substantially concealed by a separate disc member 14 having a central aperture 15 that is lined with a grommet 16. Before the disc member 14 is fixed to the rear wall 12, a tubular coupling 17 having a flared end portion 18, the maximum diameter of which is greater than that of the grommet, is inserted through the grommet in a manner to dispose the flared end portion within the blade when assembled. In the mounted position, the disc member is sealed to the blade so that they rotate together about the tubular coupling, which with the grommet provides bearing metal surfaces that enhances their relative rotational movement.

Telescoping with the outwardly extending end portion of the tubular coupling 17 is an extension in the form of a blow pipe 19 for connecting the coupling with a fluid source. When air comprises the fluid means for actuating the blade, it may be supplied by blowing from the mouth through a rigid blow pipe, a pressure pump, or an air accumulator.

20 and 21 indicate outlet ports formed in respective diagonally disposed corner portions of

the blade 10, which ports are adapted principally to face laterally, so that, on emission of the fluids therefrom, complementary tangential forces are generated which effect balanced rotational movement of the blade. It is apparent that equally suitable driving forces may be generated if the port apertures are formed solely to be disposed in the lateral edge portions of the blade, it being only necessary in such instances that the apertures be positioned to one side of the transverse blade center in one edge 22 and to the other side of the center in the other edge 23. Thus, the generated tangential forces will be additive and not counteracting, to impart balanced operation of the blade.

For purposes of rigidity and design, another disc member 24 is fixed to the outer wall 11 and the over extending portion of the disc member 14 with which it coincides, and the surfaces of the blade member and discs may be tinted in a manner to produce novel and attractive designs and effects while spinning.

In operation, when fluid, such as air, is forced into the hollow blade, as by blowing through the blow pipe, such forces are created in the hollow blade as will urge the blade outwardly axially of the blow pipe, this movement being restricted upon engagement of the flared end portion 18 of the coupling 17 and the grommet 16. Coincidentally such engagement effects a seal that is suitable for preventing substantial emission of the admitted fluids from the opening 13. Thus, the major portion of the fluid is contained under pressure in the blade until emitted from the offset ports, which fluids on emission generate such tangential forces as to urge the movement of the blade in the direction opposed to the fluid flow, thereby to effect rotational spinning movement of the blade. The spinning movement of the blade continues a short time even after the admission of fluids has ceased in view of the forces of inertia which have been generated. When a liquid is used as the driving fluid, a spray is emitted from the ports which in combination with the spinning blade adds to the novel and attractive effects.

A modified form of the invention is illustrated in Figures 4 and 5 of the drawings in which the blade structure is substantially the same as that described with reference to Figures 1 to 3 inclusive, the differences residing principally in the structure and assembly of the central hub portion. The illustrated embodiment comprises a blade 30 having outer and inner walls 31 and 32 respectively, the outer wall 31 having a central aperture 33 which is larger in diameter than an axially aligned aperture 34 formed in the inner wall 32. The unmodified end portion of a tubular blow pipe 35, which is flared at the other end 36, is inserted first through the larger aperture and then the smaller until the flared end portion 36 passes through the first but is engaged and stopped by the peripheral edge portion of the latter. Thereafter the opening 33 is sealed by a cover member 37 which is fixed to the outer wall 31 of the blade.

It is apparent that the latter described modification is simpler and involves fewer steps and parts in its assembly and manufacture. However, in an assembly of the type described, it is desirable that such materials be used as will withstand the forces tending to effect disengagement of the blow pipe from the apertured blade, and also will enable the free rotational movement of the one relative to the other. For such purposes the latter structure preferably is formed of such

rigid but formable material as treated paper, plastics, sheet metal and the like.

A further simplification differing only in the method of manufacture and assembly of the spin toy, is illustrated in Figure 6. In this form, the tubular member 40 is illustrated as being formed of a rectangular sheet of paper or the like subdivided lengthwise into three substantially equal sections 41, 42 and 43, one outer section 41 having a central aperture 44 for receiving the flared end portion 45 of the tubular member 46. The other outer section 43 is provided with a laterally extending slot 47, the inner end portion of which is in registry with the aperture 44 when the sections are folded upon each other as illustrated. In this manner, the spinning device may be formed of but two parts, the rectangular sheet 40 and the tubular member 46 which in assembly is first inserted through the aperture 44, then the center section 42 is folded over so as to cover the flared end portion 45, the outer section 43 is then folded over the section 41 so that the tubular member 46 passes through the slot 47. The radial ends of the blade are then sealed with adhesive or sealing strips while the edge of the outer section 43 is fastened to the adjacent section by adhesives, stapling, or other sealing strips 48. Since the pressures generated by the incoming fluids suffice to force the section 41 tightly to bear against the abutting section 43, it is apparent that only means tacking the one section 43 to the section 41 will suffice. In this manner, a double ply of sheet material lies adjacent the flanged end portion of the tubular member, enabling the use thereof without reinforcing strips.

In a similar manner, it is readily seen that the toy may also be formed with a central aperture only in the central section 42, the outer sections being then folded one on the other over the flared end portion 45 of the tubular member after which the radial ends are sealed and the lateral edges connected as previously described.

Manifestly, I have produced a new and improved spinning toy which may be formed of readily available and formable materials into relatively few parts that are easily assembled to produce a rotatably mounted blade member that is actuated on the emission of fluids from selected ports in the form of apertures in the blade itself. The admission of the driving fluid may be effected merely by blowing into the shaft forming a part of the hub section, so that the generated forces of admission do not counterbalance the tangential forces of emission which effect the desired spinning action.

It is to be understood that numerous changes in the shape of the hollow blade and in the details of construction and arrangement of parts and ports may be effected without departing from the spirit of the invention, especially as defined in the appended claims.

What I claim is:

1. A spin toy comprising an elongate hollow blade having outlet ports disposed diagonally in the edge portions thereof, said blade having upper and lower walls of sheet material and the lower wall having a central aperture, a disc secured to said lower wall and having a central aperture coaxial with said wall aperture, an annular metal grommet in said disc aperture and in clamping relation to the edges thereof, a cylindrical tube having its end portion slidably and rotatably extending freely through said grommet, and an outwardly flared integral annular end portion on said tube of greater diameter than the inside di-

ameter of the grommet and permanently positioned between said upper and lower walls and constituting a thrust bearing engageable with either said upper wall or said grommet upon relative sliding axial movement of said blade and disk with respect to said tube for retaining the tube in place, whereby the blade and disc are enabled to rotate about said tube.

2. A spin toy as claimed in claim 1, in which the blade is relatively narrow and the diameter of the disc is greater than the width of the blade.

3. A spin toy as claimed in claim 1, said upper wall having an axial portion comprising a second disc of greater diameter than the width of the

blade secured to the upper blade wall coaxially with said first disc.

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