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PATENT SPECIFICATION 1,135,350

DRAWINGS ATTACHED.

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COMPLETE SPECIFICATION

Painting Toy of the Printing Wheel Type.

We, DENYS FISHER TOYS LIMITED, a British Company, of Street 5, Thorp Arch Trading Estate, Boston Spa, County of York, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to toys and more particularly to a painting toy of the printing wheel type, the toy being adapted for use by children to paint pictures or other original designs.

Marking devices utilizing rotating print wheel members whereby indicia of one type or another is "rolled on" a surface to be printed, are well known in the prior art. Such marking devices have been employed, for example, as stamp cancellers, ruling pens, striping markers, and fluid applicators. There are many different types of products known for each class of the marking device and uses just stated. However, in each case the prior art devices are not adaptable for use as toys by children of a relatively young age. For example, the prior art devices do not readily permit changing the colour of the printed indicia, an attribute that is desirable in a painting toy of the printing wheel type in order that the attention of children may be maintained. In addition, the prior art devices do not readily permit changing the printing indicia itself, another desirable attribute in a painting toy so that children may paint pictures and other designs with some degree of originality. Also, the prior art devices do not lend themselves to production line or efficient modes of manufacture as the end cost of such devices is high enough to make their manufacture as toys prohibitive.

It is therefore the primary objective of this invention to provide a painting toy of the printing wheel type having a printing wheel which is adapted for use by children in the creative painting of pictures or other original designs.

It is another objective of this invention to provide a painting toy for use by children which has a structure permitting easy assembly and disassembly of the toy to provide for quick, simple changes of printing indicia.

It is a further objective of this invention to provide a painting toy for use by children which provides a rapid snap-in, snap-out relationship of the printing wheels with the handle of the toy.

It is still another objective of this invention to provide a painting toy for use by children wherein the printing wheel is formed of a relatively flexible material and the handle structure is formed of a relatively rigid material, thereby facilitating the snap-in, snap-out relationship of the printing wheel with the handle.

It is a still further objective of this invention to provide a painting toy for use by children which permits rapid changes of colours by using a plurality of ink cartridges, each carrying a different colour and each being readily slidable into operational relationship with the printing wheel.

It is yet another objective of this invention to provide a painting toy for use by children which permits the ink cartridge to be displaced from cooperation with the printing wheel by merely turning the hand painting toy upside down.

It is yet a further objective of this invention to provide a painting toy for use by children that carries printing indicia on the printing wheel which has a relatively high coefficient of friction, thereby providing improved transference of the ink from the

[*Price* 4*s*. 6*d*.]

printing indicia to the surface to be printed or painted.

It is another objective of this invention to provide a painting toy for use by children which is produced from moulded plastic parts such that it is economical to manufacture.

It is an additional object of this invention to produce a painting toy for use by children having structural characteristics such that it will withstand the abuse and rough handling to which toys of this type are subjected in the normal course of use.

Broadly, the simple painting toy of this invention alleviates the abovementioned problems by providing a hollow handle having one end closed and one end opened, a yoke secured to the handle at its open end, a printing wheel having printing indicia thereon and being journalled in the yoke by means of an axle carried by said wheel, and an ink cartridge having a wick, the ink cartridge residing inside the hollow handle and being adapted to freely slide between a first position whereat the wick engages the printing indicia and a second position whereat the wick is out of engagement with the printing indicia. The axle and yoke structure is adapted to provide a simple snap-in, snap-out relationship with the printing wheel.

According to the present invention, there is provided a hand painting toy of the printing wheel type comprising, a handle having an open end and a closed end, said handle being substantially hollow, a printing wheel, suspension means whereby said printing wheel may be held in operational relationship with said handle, and an ink pad adapted to be inserted within said hollow handle, said ink pad being freely slidable within said handle between a first position whereat said pad abuts said printing wheel and a second position whereat said pad is recessed into said handle out of contact with said printing wheel.

In order that the invention may be more readily understood, the same will now be described with reference to the accompanying drawings which illustrate preferred embodiments of the invention. In the drawings:—

Figure 1 is a side perspective view of the handle of the painting toy showing the sliding of an ink cartridge into the hollow handle interior;

Figure 2 is a side perspective view similar to Figure 1 showing engagement of a printing wheel with the handle;

Figure 3 is a side perspective view of the assembled painting toy showing the toy in operational or painting position;

Figure 4 is a cross-sectional view taken along line 4—4 of Figure 3;

Figure 5 is a view of the yoke-printing wheel assembly showing the cooperation of the relatively flexible printing wheel axle with the relatively rigid yoke as the printing wheel is inserted into operational position;

Figure 6 is a side view of a typical printing wheel used with this invention;

Figure 7 is a cross-sectional view taken along line 7—7 of Figure 6;

Figure 8 is a side view of an alternative embodiment of a printing wheel which may be used in this invention;

Figure 9 is a cross-sectional view taken along line 9—9 of Figure 8; and

Figure 10 is a side perspective view of printing blocks which are for use with the alternative printing wheel embodiment shown in Figures 8 and 9.

As may best be seen from Figures 1 and 2, the painting toy produced according to this invention includes a handle and yoke, indicated generally by reference numeral 11, a printing wheel 12, and an ink cartridge 13. The handle and yoke 11 includes a handle 14 which is tubular in shape and which is closed at one end 15 and open at the other end 16. Integral with the open end 16 of the tubular handle 14 is a yoke 17. The yoke 17 is provided with flanges 18 on either side of each of its arms 19 to increase its structural rigidity ~~upder~~ under operational conditions. At the tip 20 of each of the yoke's arms 19 is provided a keyhole slot 28 having a bearing surface 21 into which one end of a hollow axle 22 of the printing wheel 12 may be journalled. Each bearing surface 21 communicates with the top 20 of each arm 19 of the yoke 17 through a throat 23 of the keyhole slot 28, the width of the throat being slightly less than that of the bearing surfaces 21 and the diameter of the hollow axle 22. The yoke 17 and handle 14 are preferably formed from an ABS plastic, i.e., a copolymer of acrylonitrile, butadiene and styrene, the ABS having a relatively high styrene content. Thus, the ABS employed is a relatively rigid or stiff material. Because ABS materials are thermoplastic, the yoke 17 and the handle 14 are preferably integrally formed and may be economically produced by an injection moulding machine.

The printing wheel 12 is best depicted in Figures 6 and 7 and includes printing indicia 24, a wheel rim 25, spokes 26 and the hollow axle 22. The structural rigidity of the printing wheel 12 is augmented by a rim support disc 27 formed integral with the wheel rim 25, spokes 26, and axle 22, the disc being of a thickness sufficient to provide the necessary support to maintain the wheel rim 25 circularly disposed. The flexibility of the wheel axle 22 is increased because it is formed as a hollow, instead of a solid, axle. The printing wheel 12 is preferably formed from a relatively flexible, yielding material such as a rubber, and when such material is used the print wheel may be economically produced by an injection moulding machine.

It will be noted that the printing indicia 24 are formed integral with the wheel rim 25; for this reason a plurality of printing wheels 12, each carrying different indicia 24, are supplied with the toy as it is sold commercially, thereby providing the child with a choice of printing indicia. Also, a plurality of colour cartridges 13 are supplied to permit ink colour changes. Therefore, the relative flexibility of the printing wheel axle 22 and the relative rigidity of the yoke 17 forms an important part of this invention because the simple, quick interchangeability of the printing wheel 12 with the yoke 17 provides one of the primary attributes of the toy.

Because of the flexibility of the printing wheel axle 22, it may be quickly and ~~simple~~ simply snapped into or out of the keyhole slots 28 in the yoke 17. As may be seen in Figure 5, the keyhole slot throat 23 as each arm tip 20 of the yoke 17 does not spread apart to permit entry of the axle 22 into the bearing surfaces 21. Instead the hollow axle 22, because of the relatively flexible material used in its information and because the axle is hollow, flexes or compresses such that it may be snapped into or out of the bearing surfaces 21. It is important that the printing wheel 12 be formed of the relatively flexible material and the yoke 17 be formed of the relatively rigid material, and not vice versa, as a flexible yoke would tend to hinder the painting qualities of the toy. That is, if the relatively flexible material were used to form the yoke 17, flexure would occur within the yoke which would possibly cause uneven application of ink to the printing or painting surface, as well as cause limited useful life of the toy through cracking of the yoke and handle 11 due to repeated stressing thereof. The fact that the relatively flexible material is used to form the printing wheel 12 also facilitates the transfer of the ink from the printing indicia 24 to the surface. That is, because there is a little "give" or resilience present in the printing indicia 24, better and more complete contact of the printing indicia with the surface to be coloured is provided, i.e., the printing indicia do not tend to "skip" over the surface to be printed and leave blank spaces.

The ink cartridge 13 is best shown in Figure 4 and includes an ink pad 29, a holder 30 for the pad, and a stem 31. The ink pad holder 30 is of dimensions slightly smaller than the internal diameter of the tubular handle 14, thereby permitting ready movement of the ink cartridge 13 into and out of, as well as within, the handle. Tip 32 of the stem 31 may slide between the closed end 15 of the handle and the operative or painting position of the toy, as shown in Figure 4. That is, when it is desired to clean or change the printing wheel 12, the toy need merely be turned upside down and the ink cartridge 13 will slide toward the closed end 15 of the tubular handle 14, its movement being limited by engagement of tip 32 with the closed end. When it is desired to paint with the toy, it is merely turned right-side up and the ink cartridge 13 will shift to the position shown in Figure 4, thereby engaging the printing indicia 24 for the transfer of ink thereto.

In operation, the first step in painting with the toy is to select an ink cartridge 13 from a plurality of different coloured ink cartridges provided with the toy, the ink cartridge selected having an ink pad 29 which carries the desired colour. The ink cartridge 13 is then inserted or dropped into the hollow tubular handle 14, as shown in Figure 1. The next step is to select a printing wheel 12 from a plurality of printing wheels provided with the toy, each carrying different printing indicia. Thereafter, the selected printing wheel 12 is inserted into operational relationship with the handle structure 11 by engaging the axle 22 with the bearing surfaces 21 on the yoke 17, as shown in Figures 2 and 5. That is, the printing wheel 12 is pushed into the yoke 17 through the throats 23 of the keyhole slots 28 until the axle 22 snaps into operational position with the bearing surfaces 21. Both the insertion of the ink cartridge 13 and the assembling of the printing wheel 12 into operational relationship with the handle structure 11 should be performed while the closed end 15 of the tubular handle 14 is in a position substantially below the open end 16 of the handle 14 to prevent inadvertent contact of the ink pad 29 with the printing indicia 24. After the painting toy has been assembled as described, the tubular handle 14 is grasped as is shown in Figure 3. When the painting toy is in the position shown in Figure 3, the ink pad 29 will rest on the printing indicia 24, as shown in Figure 4, thereby transferring ink to the printing indicia, the ink subsequently being rolled on the surface to be printed or painted. For best results, the printing wheel 12 should be rolled slowly with a light, even pressure to ensure sharp patterns in the transfer of ink.

The printing wheel embodiment described above possesses printing indicia that are integral with the wheel rim. In an alternative embodiment of the printing wheel, as depicted in Figures 8, 9, and 10, a child may formulate his or her own printing indicia 35 on printing wheel base 36 through use of printing blocks 34. As seen in Figure 9, the alternative embodiment of the printing wheel includes a hollow axle 37 as before described. Integral with the axle 37 is a support disc 39, which disc structurally interrelates wheel rim 40 and the axle 37. Integral with the wheel rim 40 is a rim bead 41, the rim bead

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being related to the rim 40 by means of an annular flange 42. Spokes 43 are also provided, as are shown in Figure 8.

The interchangeable printing indicia 35 are shown in the manufactured state in Figure 10. The printing blocks 34 each may possess either letters, numbers, or designs. As manufactured, the printing blocks 34 may be formed in an injection moulding machine, and are preferably held together by means of thin strips 44 that may be cut to separate the blocks. It will be noted that the sides of the print blocks 34 are rhomboidal in shape. The rhomboidal sides permit the blocks to be snapped adjacent one another on the rim bead 41 of the printing wheel base 36. A retainer channel 45 is provided in each block 34, the retainer channel having a cross-section design which permits the blocks to cooperate with the rim bead 41 and the flange 42. Thus, the blocks 34 are maintained in a snap-on, snap-off operational relationship with the printing wheel.

The alternative embodiment of the printing wheel is used with the handle 14 and yoke 17 in the same manner as described with relation to the printing wheels 12.

The painting toy of this invention provides children not only with the opportunity to paint pictures or other original designs, but may also be used in conjunction with colouring books. The toy may be used to decorate paper table covers and napkins for play parties. The toy may also be used on cloth such as, for example, to paint patterns for doll clothes and to make miniature Indian rugs and blankets.

WHAT WE CLAIM IS:—

1. A hand painting toy of the printing wheel type comprising, a handle having an open end and a closed end, said handle being substantially hollow, a printing wheel, suspension means whereby said printing wheel may be held in operational relationship with said handle, and an ink pad adapted to be inserted within said hollow handle, said ink pad being freely slidable within said handle between a first position whereat said pad abuts said printing wheel and a second position whereat said pad is recessed into said handle out of contact with said printing wheel.

2. A hand painting toy as claimed in Claim 1, wherein said suspension means include a yoke secured to the open end of said handle, said printing wheel being journalled in said yoke.

3. A hand painting toy as claimed in Claim 2, wherein said yoke includes a pair of arms each having a keyhole shaped slot therein, each said slot providing a bearing surface and a throat communicating between said bearing surface and one of the edges of its respective arm, said throat having a width less than that of said bearing surface, whereby said printing wheel may be journalled into said bearing surfaces by means of a snap-in, snap-out relationship.

4. A hand painting toy as claimed in Claim 2 or Claim 3, wherein said yoke is formed from a relatively rigid material and said printing wheel is formed from a relatively flexible material.

5. A hand painting toy as claimed in any one of Claims 1 to 4, wherein said printing wheel includes an axle that is hollow.

6. A hand painting toy as claimed in Claim 4, wherein said relatively rigid material is an ABS material and said relatively flexible material is a rubber.

7. A hand painting toy as claimed in any one of the preceding Claims, wherein said printing wheel comprises, an anxle, a wheel rim, a plurality of printing blocks, each printing block being separately removable from said wheel rim and carrying printing indicia thereon, and snap lock means whereby said printing blocks may be snapped into and out of engagement with said wheel rim.

8. A hand painting toy as claimed in Claim 7, wherein said axle includes a support ~~dies~~ disc integrally related between said axle and said rim, said disc being provided for maintaining said rim annularly disposed.

9. A hand painting toy as claimed in Claim 7, wherein said snap lock means include, a rim bead mounted on said wheel rim, said rim bead being of a narrower thickness at its point of engagement with said rim than at a point farther out radially from said wheel rim, and structure defining a channel in each of said printing blocks on a side opposite to said printing indicia, said channel being adapted to effect a snap lock relationship with said rim bead.

10. A hand painting toy as claimed in any one of Claims 7 to 9, wherein said printing blocks are formed from a rubber.

11. A hand painting toy of the printing wheel type substantially as herein described with reference to and as illustrated in Figures 1 to 7 or Figures 1 to 7 as modified by Figures 8 to 10 of the accompanying drawings.

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being related to the rim 40 by means of an annular flange 42. Spokes 43 are also provided, as are shown in Figure 8.

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2. A hand painting toy as claimed in Claim 1, wherein said suspension means include a yoke secured to the open end of said handle, said printing wheel being journalled in said yoke.

3. A hand painting toy as claimed in Claim 2, wherein said yoke includes a pair of arms each having a keyhole shaped slot therein, each said slot providing a bearing surface and a throat communicating between said bearing surface and one of the edges of its respective arm, said throat having a width less than that of said bearing surface, whereby said printing wheel may be journalled into said bearing surfaces by means of a snap-in, snap-out relationship.

4. A hand painting toy as claimed in Claim 2 or Claim 3, wherein said yoke is formed from a relatively rigid material and said printing wheel is formed from a relatively flexible material.

5. A hand painting toy as claimed in any one of Claims 1 to 4, wherein said printing wheel includes an axle that is hollow.

6. A hand painting toy as claimed in Claim 4, wherein said relatively rigid material is an ABS material and said relatively flexible material is a rubber.

7. A hand painting toy as claimed in any one of the preceding Claims, wherein said printing wheel comprises, an anxle, a wheel rim, a plurality of printing blocks, each printing block being separately removable from said wheel rim and carrying printing indicia thereon, and snap lock means whereby said printing blocks may be snapped into and out of engagement with said wheel rim.

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