United States Patent [19]

Vines

[11] **3,729,764**

[45] **May 1, 1973**

[54] PAINT TRAY

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[22] Filed: **Mar. 10, 1971**

[21] Appl. No.: **122,835**

[52] **U.S. Cl.** **15/257.06**

[51] **Int. Cl.** **B44d 3/12**

[58] **Field of Search** ..... 15/257.06, 104.92, 15/257.05; 68/229, 233; 206/1 R, 15.1 A; 118/263; 401/5, 121; 220/1; 229/30

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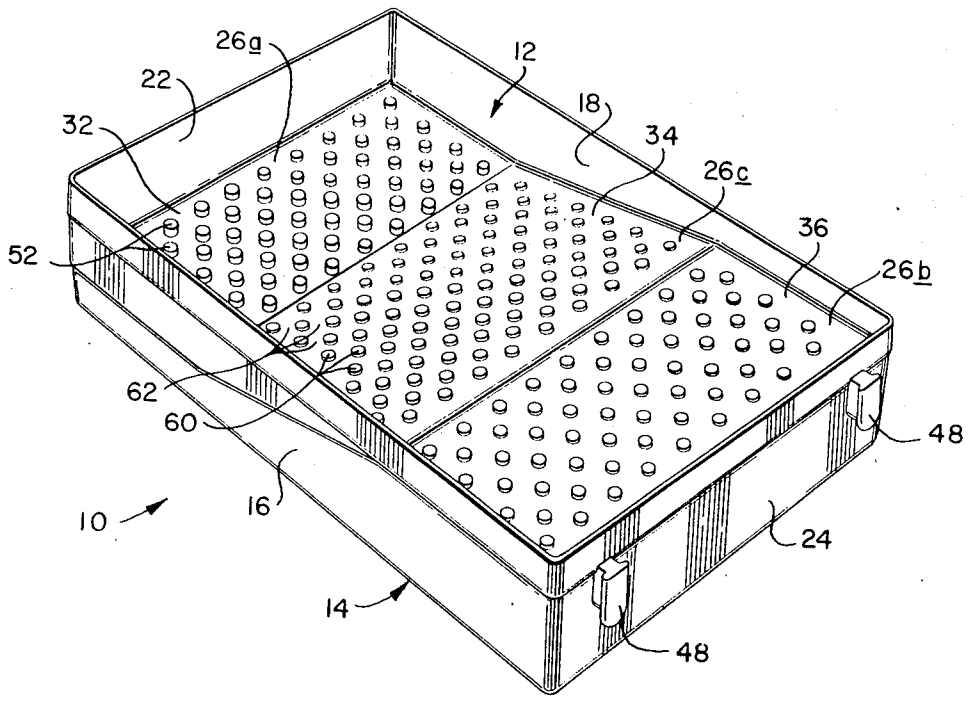
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[57] **ABSTRACT**

A reversible paint tray designed for serving thixotropic paint from a compartment on one side and conventional oil or water base paint from a second compartment on the other side is molded in one piece of a nonwettable plastic. A multiplicity of spaced-apart, generally cylindrical studs project up from the bottom of the one compartment. These studs have sharp upper edges which provide a toothed engagement with a napped surface of a paint roller so that when the roller is pulled across the bottom of the compartment, the teeth "dig" into the roller surface to complete a force couple which rotates the roller despite the opposition provided by the thixotropic paint. The other tray compartment has formed on its bottom wall the usual ribs arranged in a herringbone design and short stubs which suffice to rotate the roller immersed in the less viscous oil and water-base paint.

17 Claims, 4 Drawing Figures



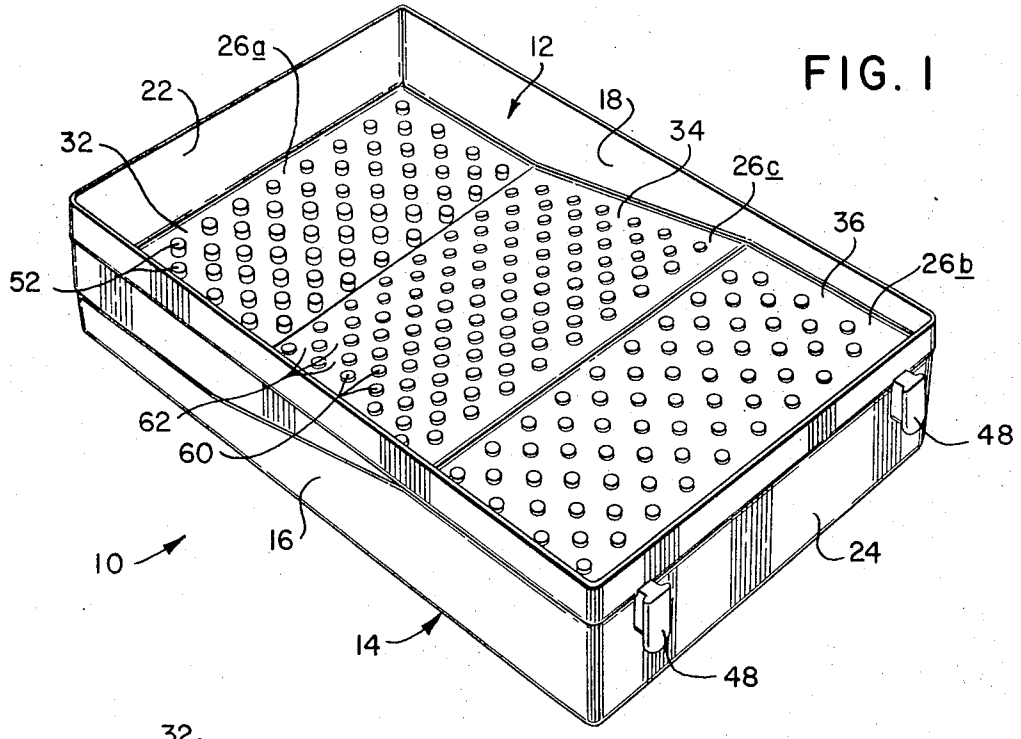


FIG. 1

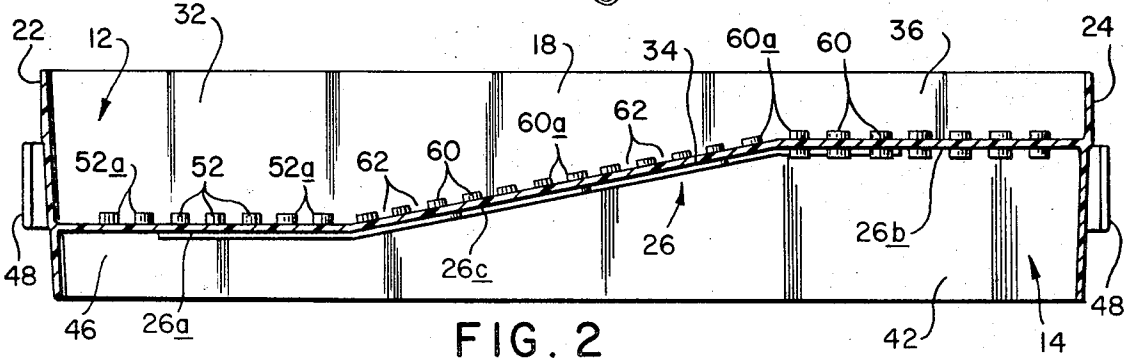


FIG. 2

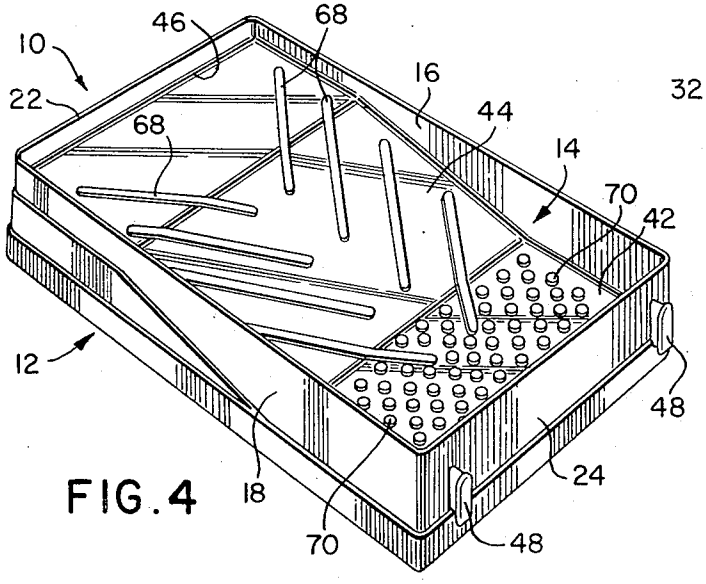


FIG. 4

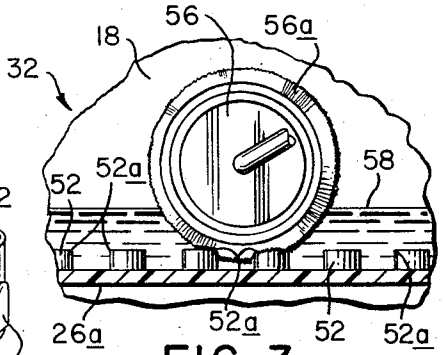


FIG. 3

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PAINT TRAY

BACKGROUND OF THE INVENTION

This invention relates to a paint tray. It relates more particularly to such a tray which is specially designed to serve viscous or thixotropic paint.

The paint trays with which we are concerned here are used to contain paint while the paint is being applied to a surface using a roller. These trays usually constitute a container having an inclined bottom wall. The roller is immersed in a body of paint maintained at the bottom of the inclined wall and the roller is rolled back and forth on the incline to distribute the paint over the entire surface of the roller. Following this, the roller is taken from the tray and rolled over the surface to be painted.

Generally, prior conventional trays used for this purpose have relatively long, smoothly rounded ribs arranged in a herringbone design formed in the bottom wall of the tray. These ribs form more or less a tread which help to rotate the roller as it is being rolled back and forth in the tray in order to distribute the paint over the surface of the roller. While these prior trays having this herringbone tread design work satisfactorily with oil or water-base paints which are not too viscous, they are not suitable for serving very viscous or thixotropic paint which is becoming more and more prevalant. This is because thixotropic paint is so "pudding-like" that when the roller is immersed in this paint and rolled, it sometimes just slides over the tread and does not turn. Consequently, the paint is transferred to the roller in the form of a gob on one side of the roller surface only. As a result, when the roller is applied to a wall to be painted, it either slides or skids across the wall surface without turning at all, or, if it does turn, it applies an excessive amount of paint to the wall during part of its revolution and practically none during the rest of its revolution. This requires the user to go over the surface to be painted several times in order to make the coat of paint uniform.

Furthermore, even if the roller is able to be rotated while it is immersed in the paint in the tray, too much paint adheres to the roller surface. Therefore, when the user tries to roll the roller over the surface to be painted, it skids and slides as described above so that the painting operation is quite tedious and time-consuming. One reason for this is that the paint is non-flowable in that it accumulates on the inclined bottom wall of the tray. Therefore, there is no relatively paint-free surface of the tray over which the roller can be rolled to remove excess paint. In other words, with conventional water or oil-base paint, the paint is thin enough so that it flows back down to the bottom of the inclined bottom wall of the tray so that by manipulating the roller over the upper portion of the inclined wall, the excess paint can be driven off. This is unlike the situation that prevails with the thixotropic paint which the present tray is designed to handle.

Prior patent trays have another drawback in that they are usually made of metal or foam material which cannot stand up during continued usage. Either the metal oxidizes or the constituents of the paint adversely affect it so that rust or other deposits build up on the tray surfaces. These are sometimes transferred to the painted surface and thus disfigure it.

SUMMARY OF THE INVENTION

Accordingly, this invention aims to provide a paint tray which is specially designed to handle very viscous or thixotropic paint.

Another object of the invention is to provide a paint tray which is relatively easy and inexpensive to make.

A further object of the invention is to provide a paint tray which resists oxidation and degradation due to the paint constituents.

Yet another object of the invention is to provide a paint tray which is able to handle both thixotropic and oil and water-base paints.

Another object of the invention is to provide a paint tray which is impact-resistant, rugged and durable.

Other objects will in part be obvious and will in part appear hereinafter.

The invention accordingly comprises the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth and the scope of the invention will be indicated in the claims.

Briefly, my paint tray is molded of an impact-resistant, paint-resistant plastic. Furthermore, it is reversible, having two operative sides. One side, e.g. the upper side, of the tray is designed particularly to serve thixotropic paint or so-called dripless paint. The other side of the tray, e.g. the lower side, is used for conventional flowable paint of the oil or water-base variety.

The upper side of the tray is formed with a relatively deep well for holding a supply of paint and a ramp extending up out of the well with the upper end of the ramp leveling off to form a raised platform. Walls contiguous with the well walls are formed around the sides and upper end of the ramp to contain the paint.

A multiplicity of spaced-apart studs having sharp top edges project up from the bottom of the well. These studs are arranged in staggered columns and rows and cover substantially the entire bottom wall of the well.

A similar array of studs is formed on the bottom of the ramp. Preferably, these studs are somewhat shorter than the ones in the well for reasons that will be described later.

In use, thixotropic paint is poured into the well to a depth somewhat less than the diameter of the usual cylindrical paint roller. The roller is then dipped into the well contents and drawn toward and up the ramp. The sharp edges of the staggered studs engage and even "dig" into the nap on the roller surface to complete the force couple necessary to turn the roller, even though such rotation is opposed by the thixotropic paint.

Once the roller starts to rotate, shear forces are developed in the paint, with the result that the paint becomes more flowable. This, in turn, makes it easier for the roller to rotate. Thus, by the time the roller reaches the bottom of the ramp, it is already rotating to some extent. As the roller is drawn up the ramp, its underside is engaged by the studs on that surface, so that it continues to rotate, developing the necessary shear forces to maintain the paint in a flowable condition. Since the paint is already relatively flowable at this point and opposes the motion of the roller to a lesser extent than was the case when the roller was in the well, the ramp studs can be shorter than those in the well. Consequently, the stud design is less apt to be im-

pressed or embossed on the roller surface and then be transferred to the surface being painted.

The continued penetrating engagement of the studs against the napped underside of the roller assures that the roller will continue to turn as it proceeds across the well and up the ramp. Consequently, the paint applied initially to one side of the roller surface becomes distributed all around the roller surface. Furthermore, since the studs are spaced relatively close together, the roller actually rides along the tops of the studs so that excess paint being swept or pressed from the roller surface as it proceeds up the ramp is free to drop down into the spaces between the studs. The result is that there is no accumulation of excess paint on any portion of the paint roller. The paint in the spaces between the studs may remain there, or slowly drain back into the tray well. In any event, it is available to be picked up by the roller as the user rolls the roller up and down the ramp in accordance with the customary practice.

In other words, as the user rolls the roller on the ramp, some portions of the napped roller surface are pressed down onto the tops of the studs so that paint is squeezed from these portions. On the other hand, other portions of the roller surface not engaging the studs project down into the spaces between the studs and dip into the paint there. Thus, after only a few passes of the roller over the ramp, essentially all portions of the roller surface are squeezed and dipped in the aforesaid manner. This produces a relatively thin, uniform paint distribution over the entire napped surface of the roller. With the paint applied to it in this fashion, the roller can be rolled directly on the surface to be painted to apply a smooth, continuous and uniform coat to that surface.

After the surface is completely painted, the excess paint can be poured out of the tray well and the tray washed in the usual way to remove any residual liquid. The plastic material used in the tray is essentially nonwettable so that liquids do not adhere tenaciously to its various surfaces. Furthermore, the spaces between the studs are sufficiently large that the force of water from an ordinary tap can penetrate between the studs and flush out any paint remaining there. However, if paint deposits should build up there, they can be removed with an ordinary brush.

The underside of the present reversible tray is essentially the negative image of the top side in the sense that the wells of the upper and lower tray compartments are located at opposite ends of the tray. The well floor is studded. However, the ramp in the bottom compartment is formed with the usual slightly raised ribs found in conventional paint trays. These suffice to distribute flowable oil or water base paints on the paint roller. The lower compartment, being formed of the same nonwettable plastic material as the upper compartment, has the same advantages vis-a-vis ease of cleaning, ability to withstand oxidation and deterioration due to the paint constituents.

Using the present tray, then, paint, and particularly thixotropic paint, can be rolled onto a surface in a minimum amount of time and with a minimum amount of effort. Yet, the present tray is priced competitively with comparable trays used for this purpose. Furthermore, unlike conventional metal trays of this type, it can be offered for sale in a variety of attractive colors and color designs which do not fade or become defaced despite repeated use of the tray.

BRIEF DESCRIPTION OF THE DRAWING

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description taken in connection with the accompanying drawing, in which:

FIG. **1** is a perspective view from above showing a paint tray embodying the principles of my invention;

FIG. **2** is a view on a larger scale in vertical section along the longitudinal axis of the FIG. **1** tray;

FIG. **3** is a perspective view on a smaller scale showing the underside of the FIG. **1** tray; and

FIG. **4** is a scrap view illustrating the operation of the tray in conjunction with a paint roller.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Turning now to the drawing, the present paint tray shown generally at **10** is molded of a suitable rigid, relatively impact-resistant plastic such as high density polyethylene. This material is particularly suitable because it is relatively nonwettable and is unaffected by air, moisture or the constituents of most present day paints. Furthermore, it is a relatively inexpensive material which can be molded easily using conventional molding techniques.

Tray **10** is reversible, having a compartment shown generally at **12** in its top side for serving very viscous or thixotropic paint and another compartment shown generally at **14** in its underside for handling conventional flowable oil or water base paint. As best seen in FIG. **2**, compartments **12** and **14** have essentially the same shape, being oriented 180° relative to one another.

The tray has a pair of spaced, parallel sidewalls **16** and **18** and a pair of spaced, parallel end walls **22** and **24** which together form a generally rectangular enclosure. A divider, shown generally at **26**, joined to these walls between their upper and lower edges separates the tray into the two compartments **12** and **14**. Divider **26** has a horizontal section **26*a*** integral with the end wall **22** and sidewalls **16** and **18** relatively near the lower edges of those walls. A similar section **26*b*** is located at the opposite end of the tray integral with the end wall **24** and the sidewalls **16** and **18**. Section **26*b*** is parallel to section **26*a*** but is positioned nearer the upper edges of the walls. A third inclined section **26*b*** extends between the free edges of sections **26*a*** and **26*b*** and is integral with the two sidewalls **16** and **18** forming a ramp in the middle of the tray. Thus, with the compartment **12** being uppermost as shown in FIG. **1**, the divider and walls form a relatively deep well **32** and a ramp **34** extending up out of the well which terminates in a relatively shallow receptacle **36** at the right hand end of the tray.

By the same token, if the tray is turned over (about its longitudinal axis) so that the compartment **14** is uppermost as shown in FIG. **3**, it is seen that compartment **14** has a relatively deep well **42** with a ramp **44** extending up out of the well to receptacle **46**. Thus, the two compartments **12** and **14** are essentially the same shape and differ only in the tread configuration to be described presently.

Tray **10** has a pair of vertically oriented keys **48** near the opposite ends of each end wall **22** and **24**. Keyways at the ends of a generally U-shaped wire bail (not shown) interfit in the two keys **48** at one end of the tray (preferably the shallow end) so that the bail can support the tray. Then the bail is engaged to the step of a ladder so that the tray is suspended horizontally with either compartment **12** or compartment **14** being uppermost.

Referring to FIGS. **1** and **2**, the compartment **12** used for serving thixotropic paint has a multiplicity of relatively closely spaced cylindrical studs **52** projecting up from the bottom of well **32**. The studs are formed integrally in staggered columns and rows on divider section **26***a* and have sharp upper edges **52***a*. The studs are spaced apart from one another approximately **1** inch on center and each stud is approximately one-fourth inch in diameter and relatively high, on the order of one-sixteenth inch. Typically, there are about **70** such studs in well **32**.

The number of studs **52**, the spacing between them in their height are selected so that their top edges **52***a* can engage and actually "dig" into the napped surface **56***a* of a conventional paint roller **56** being drawn across the bottom of well **32** as shown in FIG. **3**. In other words, instead of relying on the sliding friction between roller surface **56***a* and the tray to develop the torque necessary to rotate the roller as is done with conventional paint trays, here there is actually a mechanical engagement between the stud edges **52***a* and the roller surface so that the roller cannot slide across well **32**, but turns despite the resistance and opposition provided by the very viscous, "pudding-like" thixotropic paint **58** contained in well **32** and in which the roller **56** is immersed. Thus, as the roller **56** is drawn across well **32**, it makes one or more revolutions so that all points on the roller surface are at one time or another immersed in the paint **58**.

The user then draws the roller **56** up ramp **34** and out of the body of paint **58** in the well. At this point, the paint-laden surface **56***a* rides over the studs **60** on the ramp **34** and in receptacle **36**. Studs **60** are much the same as studs **52** and they are arranged in the same way. The only difference is that they are somewhat shorter, being only about one thirty-second inch high. In any event, they extend up sufficiently high to provide the toothed engagement between their sharp edges **60***a* and the roller surface **56***a*. The engagement between the studs **60** and the roller can be less tenacious than that provided by studs **54** in well **32** because the roller is not immersed in paint. Also, once the roller **56** starts to turn, it develops shear forces in the paint **58** which tend to make the paint more flowable so that the paint offers less opposition to rotation of the roller.

As the roller proceeds up the studded ramp **34**, the pressure of the tops of the studs **60** on portions of the roller surface moves paint around on those portions and squeezes or presses it from those surface portions so that excess paint tends to flow down and collect in the spaces **62** between studs **60**. On the other hand, other portions of the napped roller surface which are not contacted by the studs at any given instant project down into the spaces **62** and are dipped or immersed in the paint **58** therein. Thus, if the user rolls the roller up and down ramp **34** a few times as is the usual practice, all portions of the roller surface at one time or another will be pressed by the studs **60** and will be immersed in the paint containing spaces **62**. The result is that paint is distributed uniformly over all parts of the roller surface **56***a*.

Furthermore, this arrangement prevents the paint coating on the roller from becoming excessively thick. This is because there is no buildup of paint on studs **60** since the paint is free to flow or be pressed down into spaces **62** and thence flow to well **32**. Thus, the amount of paint left on the roller after it is rolled up and down the ramp **34** a few times is governed essentially by the extent to which the roller surface can penetrate into the paint-filled spaces **62**. This, in turn, is controlled more or less by the arrangement of studs **60**, assuming that the roller surface has a standard uniform nap height.

When the paint has been completely distributed on the roller as aforesaid, the user removes it to the surface to be painted. Since the roller is covered uniformly with a given thickness of paint, when it is rolled across the surface to be painted, a uniform, continuous coat of paint is transferred to the surface. While the roller carries enough paint to cover a relatively large surface area, the amount of paint is not so excessive that it is "squished" around on the roller surface until it drops on the floor or runs down the roller handle. Thus, the surface can be painted with very little effort in a minimum amount of time and with minimum clean up afterwards.

Of course, the present tray can be used also to handle conventional water or oil base paint. In this event, the tray **10** is oriented so that the compartment **14** is uppermost as shown in FIG. **3**. The bottom of compartment **14** has ribs **68** arranged in a herringbone design. Also, studs **70** similar to studs **60** are formed at the bottom of well **42** to provide a toothed engagement with the roller surface to assure that it will turn. This side of the tray is used in much the same way as a conventional paint tray. However, its inclusion here enables a single tray to be used with two completely different paint types which present completely different problems as far as transferring the paint from the tray to the roller is concerned. Yet the present tray is not appreciably more expensive than conventional paint trays which are only able to handle the usual flowable water or oil base paints which are readily transferred to the roller.

It will thus be seen that the objects set forth above, among those made apparent from the preceding description, are efficiently attained and, since certain changes may be made in the above construction without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described.

I claim:

1. A paint tray having an imperforate ramp extending out of a well, and comprising a multiplicity of relatively closely-spaced studs projecting up appreciably from the bottom of the ramp, said studs having sharp edges around the periphery thereof at their upper ends, said edges being adapted to engage and facilitate the rotation of the surface of a paint roller being drawn thereacross.

2. A paint tray as defined in claim 1 wherein said studs are cylindrical and about one-fourth-inch in average diameter.

3. A paint tray as defined in claim 2 wherein said studs are spaced on centers about one-inch apart arranged in rows which are diagonal with respect to sidewalls of said tray.

4. The paint tray defined in claim 1 and further including a relatively shallow horizontal receptacle contiguous with the upper end of the ramp.

5. The paint tray as defined in claim 1 wherein the paint tray is reversible containing a mating well and ramp on the opposite face of the tray.

6. The paint tray defined in claim 1 wherein the tray is molded of a relatively nonwettable plastic.

7. The paint tray defined in claim 6 wherein the plastic contains a pigment so that the molded tray has a uniform color.

8. The paint tray defined in claim 6 wherein the plastic comprises polyethylene.

9. A relatively rigid, impact-resistant, molded plastic, reversible, imperforate paint tray having nesting wells on opposite faces of the tray and ramps extending out of the wells, the improvement comprising an array of closely spaced studs extending generally perpendicularly from the floor of at least one of the wells and a second array of closely spaced studs projecting from the corresponding ramp, said studs having sharp upper edges about the top surface thereof to provide a toothed engagement with the surface of a conventional paint roller.

10. The paint tray defined in claim 9 wherein the studs are arranged in staggered columns and rows.

11. The paint tray defined in claim 1 wherein the studs in the well and on the ramp are generally cylindrical.

12. A paint tray having a well and a ramp extending up out of the well, the improvement comprising a multiplicity of relatively closely-spaced studs projecting up appreciably from the ramp and having sharp edges at their upper ends which enable them to obtain a toothed engagement with the surface of the paint roller which is drawn across the studs so that the roller rotates despite the opposition provided by thixotropic paint contained in the tray.

13. The paint tray defined in claim 12 wherein the studs on the ramp are generally cylindrical.

14. A paint tray having a well and a ramp extending up out of the well, the improvement comprising a multiplicity of relatively closely-spaced studs projecting up appreciably from the bottom of the well, said studs having sharp edges at their upper ends which enable them to obtain a toothed engagement with the surface of a paint roller which is drawn across the studs so that the roller starts to rotate despite the opposition provided by thixotropic paint contained in the well, and further including a multiplicity of closely-spaced studs projecting up from the ramp, these studs being shorter than the studs in the well and also having sharp upper edges for providing toothed engagement with the surface of a conventional paint roller being drawn up the ramp so that the roller continues to turn, thereby distributing the paint uniformly over the entire surface of the roller.

15. A paint tray having a well and a ramp extending up out of the well, the improvement comprising a multiplicity of relatively closely-spaced cylindrical studs projecting up appreciably from the bottom of the well, said studs having sharp edges at their upper ends which enable them to obtain a toothed engagement with the surface of a paint roller which is drawn across the studs so that the roller starts to rotate despite the opposition provided by thixotropic paint contained in the well, and further including a multiplicity of closely-spaced cylindrical studs projecting up from the ramp, these studs also having sharp upper edges for providing toothed engagement with the surface of a conventional paint roller being drawn up the ramp so that the roller continues to turn, thereby distributing the paint uniformly over the entire surface of the roller.

16. The tray defined in claim 15 wherein the studs in the well are on the order of one-fourth inch in diameter, one-sixteenth inch high and are spaced apart from one another approximately one inch on center.

17. The tray defined in claim 14 wherein the studs on the ramp are approximately one-half as high as those in the well.

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