CONCRETE FINISHING ROLLER

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ABSTRACT

A hollow cylindrical roller having an embossed design on its outer surface is rotatably mounted on an axle. A handle is connected to the axle so that the roller may be pushed across an unset concrete surface. The depth of the impression made in the concrete surface may be varied by the addition or the removal of weights on the handle and by vibrating the roller in a vertical plane as it moves across the concrete surface.

2 Claims, 4 Drawing Figures
CONCRETE FINISHING ROLLER

The present invention relates to an apparatus for impressing a design into an unset concrete surface and more particularly, to a roller having an embossed design on its outer surface which is rolled across a concrete surface, impressing a design therein. The concrete finishing art has seen little change over the years, with most of the designs that are made in concrete patios and sidewalks still being done by hand or crudely constructed dies which are pressed into the wet concrete surface. While the use of dies reduces the cost of the finished product somewhat, relative to the cost of the hand made design, the reduction is not substantial, and the results are not satisfactory.

In accordance with the present invention a device for impressing a design into an unset concrete surface includes a cylindrical roller having an embossed design on its outer surface. The roller is rotatably mounted on a handle so that a workman may push the roller across the concrete surface, impressing the roller design into the concrete. A means for selectively varying the weight of the device is mounted on the handle to allow the workman to adjust the depth of the impression being made in the concrete.

In accordance with another feature of the invention a vibrating means vibrates the roller in a vertical plane as it moves across the concrete surface. The vibration of the roller facilitates impressing the design into the concrete.

In accordance with still another aspect of the invention, the pattern repetition distance in the concrete may be changed by changing the diameter of the roller on the device. Thus, by using a roller having a large diameter, the pattern repetition distance is large and conversely a small diameter roller provides a small pattern repetition distance.

Brief Description of the Drawings

FIG. 1 is a perspective view of the present invention; FIG. 2 is a cross-section of the roller in FIG. 1 taken generally along line 2—2; FIG. 3 is a cross-section of a larger roller which may be used with the device of FIG. 1 also taken generally along line 2—2; and FIG. 4 is a cross-section of the handle shown in FIG. 1.

Referring to FIG. 1 and FIG. 2, there is shown generally at 10 a preferred embodiment of the present invention. A hollow generally cylindrical roller 14 is rotatably mounted on an axle 16. The axle 16 is a leg of a generally U-shaped member 18 which also includes a second leg 17 and a bight member 19. A handle member 20 is connected to the leg 17 and a handgrip 22 is connected to the handle member. The legs 16 and 17 are of unequal length with leg 17 being the shorter so that the longitudinal axis of the handle member 20 intersects longitudinal axis of the roller 14 approximately midway between the ends of the roller.

A means for selectively varying the weight of the device 10 is mounted on the handle member 20 and includes a weight retaining rod 24 mounted at the junction of the U-shaped member 18 and the handle member 20 in a generally vertical orientation. Disk shaped weights, such as disk 26, having holes in their centers, may be placed over the rod 24 to vary the weight of the device 10.

A vibrating means is mounted on the axle 16 for vibrating the roller 14 in a vertical plane as it is moved across an unset concrete surface 15. The vibrating means includes an electric motor 28 having a disk weight 30 eccentrically mounted on its armature shaft 32. The motor 28 is mounted on the lower side of the hollow axle 16 approximately midway between the ends of the roller 14 by a mounting means which allows the amplitude of the vibrations transmitted from the motor 28 to the axle 16 to be adjusted. The mounting means includes a pair of mounting bolts 34 and 36 and a pair of springs 38 and 40. The bolts 34 and 36 are inserted into the motor 28 from the inside of the hollow axle 16 through the springs 38 and 40. The bolts 34 and 36 may be adjusted through access holes 42 and 44 in the axle 16. A variation of the adjustment of the bolts 34 and 36 will vary the coupling between the motor 28 and the axle 16 and thus vary the amplitude of the vibrations transmitted from the motor 28 to the axle 16.

The amplitude also can be altered by selection of a different disk 30.

Alternating current is supplied to the motor 28 through a cord 46 which travels internal of the U-shaped member 18 and along the outside of the handle segment to a connector 48. The cord 46 is retained in position on the handle segment 20 by a plurality of retaining bands such as band 49. A potentiometer 50 is connected between the connector 48 and a plug 52. The plug 52 may be connected to an alternating current power source (not shown). A control knob 54 on the potentiometer 50 will vary the magnitude of the voltage applied to the motor 28 from the AC power source as it is turned, thus varying the speed of the motor 28 and the frequency of the vibrations transmitted to the axle 16.

Referring to FIG. 2, the construction of the roller 14 is shown in more detail. The roller 14 includes two circular end pieces 56 and 58 and a plastic drum 60 having a design embossed on its outer surface. The drum is retained on shoulders or flanges 57 and 59 formed on the outer periphery of the respective end pieces. The roller 14 is maintained in lateral position on an axle 16 by two annular collars 62 and 64 and a clip ring 66. The clip ring 66 is maintained in position on the axle 16 by an annular recess 68. It is contemplated that drums having various designs will be used with a single device. Thus, the drum is readily removed by removing the clip ring 66, and sliding the end piece 56 and drum 70 off the free end 69 of the axle 16. A new drum can then be installed by reversing the operation.

A second roller 14' having a greater width and diameter than the roller 14 is shown in FIG. 3. The circular end segment 58 is retained in the same position on the axle 16 by the collars 62 and 64, but the end piece 56 is moved down the axle 16 and retained in place by the clip ring 66 which is placed in a second annular recess 70. Two annular adapters 72 and 74 are mounted on the end portions 56 and 58 and provide an increased diameter to accommodate larger drums.

Each adapter has an annular inner flange 73 mating with the flange 57 or 59 of the end piece and an outer flange 75 similar to the flanges 57 and 59 for retaining the drum.

A longer drum (not shown) of the same diameter as drum 60 can be employed by using the end pieces 56 and 58 without the adapters 72 and 74, but with the clip ring 66 at the recess 68.
Referring again to FIG. 1, the length of the handle on the device 10 may be increased by adding additional handle segments 20. These handle segments will have associated with them further extensions of the cord 46 and the necessary connectors to provide power to the motor 28 from the AC power source.

Referring now to FIG. 4 there are shown cross sections of the connections between the handle member 20 and the U-shaped member 18, and the handle member 20 and the handgrip 22. The lower end of the handle member 20 and the handgrip 22 each have a male plug extension 80 and 81 which extend into respective mating sections on the U-shaped member and the upper end of the handle respectively. Each male plug contains a ball 84, a spring 86, and a ball retaining plug 82 mounted into a recess in the male section. Each mating section has a circular hole 88. The segments are connected together by inserting the male plug of one segment into the matching segment, depressing the ball and pushing the segments together until the ball is seated in the circular hole.

In operation the roller 10 is pushed across the concrete surface causing the roller 14 to rotate and impress the design on its outer surface into the concrete. As the impressionability of the concrete changes, the weight of the device 10 may be changed to achieve the desired impression depth by adding or removing weights 26 to the device 10 or by increasing or decreasing the frequency at which the drum 14 is vibrated.

Thus the above described device is one embodiment by which a design may be impressed on a concrete surface with a roller in accordance with this invention.

We claim:

1. A device for embossing a textured finishing design into an impressionable surface comprising:
   a handle member having a lower generally U-shaped portion;
   a generally cylindrical shaped roller having an embossed finishing design on its outer surface rotatably mounted on one leg of said U-shaped portion of said handle member;
   means mounted on said handle member for varying the weight of said device to vary the depth of impression made in said impressionable surface by said embossed finishing design of said roller;
   vibrating means mounted on said handle member for vibrating said device to facilitate impressing said embossed finishing design of said roller into said impressionable surface and the resulting impression of a textured finishing design; and
   wherein said roller comprises two end pieces and a removable outer surface, said end pieces being adapted to receive an extension bushing for increasing the diameter of said roller.

2. A device for impressing a design into an unset concrete surface comprising:
   a handle member being adapted to be extended by the addition of additional handle segments;
   a lower axle portion connected to said handle perpendicular to the handle member;
   a cylindrical roller rotatably mounted on said axle portion, said roller including two circular end pieces and a cylindrical drum mounted on said end pieces, said cylindrical drum having an embossed design on its outer surface, the width of said roller being variable by the substitution of drums having varying lengths, the diameter of said roller also being variable, said end pieces being adapted to receive an extension bushing for increasing the diameter of said end pieces in order to mount cylindrical surfaces of differing diameters;
   a weight retaining rod mounted on said handle member in a generally vertical orientation at the junction of said handle member and said lower axle portion, said rod being adapted to retain a selected member of a plurality of disk shaped weights having a hole in their center;
   an electric motor having an eccentrically mounted weight on its armature shaft;
   mounting means for attaching said motor to the axle portion of the handle member internal said roller and approximately midway between the roller end pieces, said mounting means being adjustable to vary the amplitude of the vibrations received by the axle portion from said motor; and
   a potentiometer electrically connected to the motor for varying the motor speed.

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