Nov. 20, 1962 A. K. GAST, JR 3,064,452

PLUG AND PIN ASSEMBLY FOR SHADE ROLLERS

Filed Oct. 30, 1961

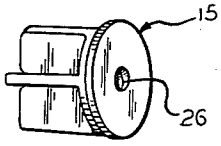


FIG. 2

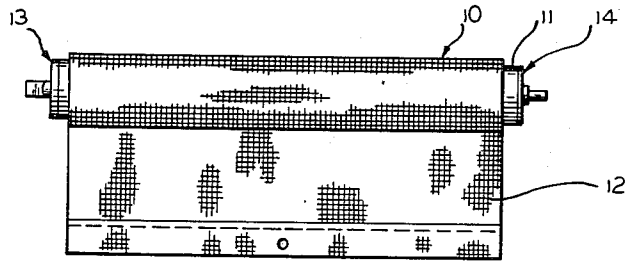


FIG. 1

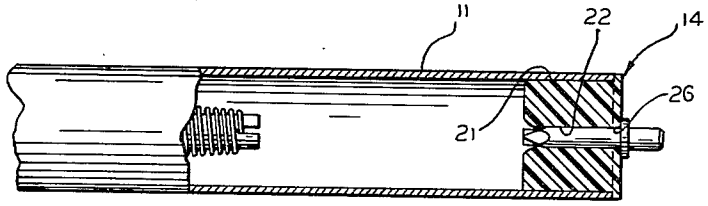


FIG. 3

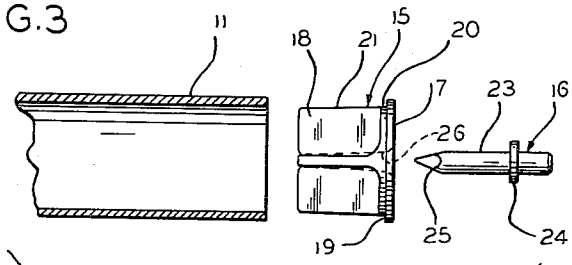


FIG. 4

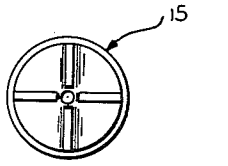


FIG. 7

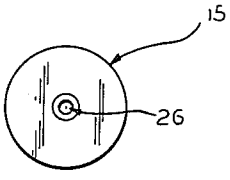


FIG. 8

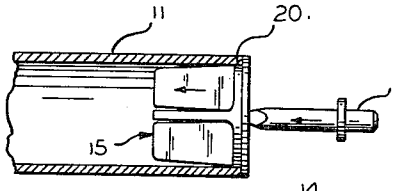


FIG. 5

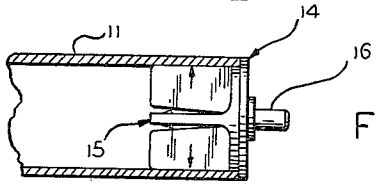


FIG. 6

INVENTOR.
ALBERT K. GAST JR.

BY
Marzall, Johnston, Cook & Root

ATTORNEYS

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PLUG AND PIN ASSEMBLY FOR SHADE ROLLERS

Albert K. Gast, Jr., St. Joseph, Mich., assignor to Star Shade Cutter Company, St. Joseph, Mich., a partnership

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6 Claims. (Cl. 64—5)

This invention relates in general to a plug and pin assembly for shade rollers and the like, and more particularly to a plug and pin assembly that is automatically centered and secured in the hollow end of a shade roller by insertion of the pin into the plug, although other uses and purposes of the present invention may be appreciated by someone skilled in the art.

Heretofore, shade rollers have been generally constructed of wood with a spring mounted driving and locking assembly in one end and a pin or pintle in the other end. The pin or pintle is merely driven into the center of one end of the wooden shade roller. Inasmuch as wood for shade rollers is becoming harder to find and purchase, manufacturers of shade rollers are turning at least in part to making shade rollers of sheet metal wherein they are completely hollow. And it is well known that shade rollers usually come in certain sizes and are cut to size according to the dimensions desired by the user at the retail stores which sell shade rollers. In cutting down a shade roller, it has been customary to remove the pin or pintle from the one end and cut off the excess from that end and then remount the pin or pintle in the shade roller. This is because the other end of the shade roller has mounted thereon the spring and locking arrangement for the roller. With the advent of the metal hollow rollers, it therefore becomes a problem as to how the pin or pintle may be mounted in the end of a shade roller so that it may be easily removed and replaced after a portion of the shade roller has been cut off to meet a certain dimension.

It is therefore an object of the present invention to provide means for removably mounting a pin or pintle in one end of a hollow metal shade roller to obviate the above named difficulties.

The present invention is primarily concerned with the mounting of a pin or pintle in the end of a metal roller, but it should be appreciated that the invention may also be employed for mounting a pin or pintle in the end of any hollow roller, no matter what type of material the roller is constructed of. The present invention involves a plug and pin assembly, the plug serving to receive the pin and secure it to the end of a hollow shade roller. The plug is of plastic and includes an end wall having a plurality of radially extending blades, vanes, or ribs exending laterally from the end wall and normal thereto. An aperture is provided in the end wall and in alignment with the inner edges of the vanes whereby insertion of a pin into the aperture and along the inner edges of the vanes forces the vanes outwardly so that the outer edges thereof grippingly engage the inner surface of the end of a hollow shade roller. Upon removal of the pin, the plug may then be removed and the shade roller could be cut down.

It is another object of the present invention to provide a plug and pin assembly for shade rollers wherein the shade roller is provided with a hollow end.

Another object of the present invention resides in the provision of a plug and pin assembly for hollow ended shade rollers, which includes a plastic plug and a pin that may be inserted into the plug and for causing the plug to be grippingly in engagement with the inner surfaces of the hollow end roller.

Other objects, features and advantages of the invention will be apparent from the following detailed disclosure, taken in conjunction with the accompanying sheet of drawings, wherein like reference numerals refer to like parts, in which:

FIG. 1 is a front elevational view of a shade roller having the plug and pin assembly mounted in one end in accordance with the present invention;

FIG. 2 is a front perspective view of the plug of the plug and pin assembly of the present invention;

FIG. 3 is a fragmentary enlarged view of a shade roller and an axial sectional view taken through the end of the shade roller having the plug and pin assembly of the present invention mounted therein;

FIG. 4 is an exploded view of the plug and pin assembly of the present invention and showing it removed from the end of a hollow shade roller;

FIG. 5 is a view similar to FIG. 4, but showing the plug in inserted position in the end of the shade roller and the pin about to be inserted into the plug;

FIG. 6 is a sectional view through a roller and showing the plug and pin in mounted relationship with the end of the hollow shade roller;

FIG. 7 is an end elevational view of the plug of the present invention and looking at it from the free ends of the vanes or ribs; and

FIG. 8 is an end elevational view of the plug of the present invention and looking at it from the end wall end thereof and showing the aperture opening extending through the end wall.

Referring now to the drawings, and particularly to FIG. 1, a shade roller generally designated by the numeral **10** includes a roller **11** having a shade **12** wound thereon, and a driving and locking assembly **13** permanently mounted in one end and a plug and pin assembly **14** according to the present invention removably mounted in the other end. The driving and locking assembly **13**, the shade and shade roller construction do not form any part of the present invention.

As noted more particularly in FIG. 3, the shade roller is of a hollow type construction such as sheet metal or the like and as seen in FIG. 4 has an open end into which the plug and pin assembly of the present invention may be mounted. It should be appreciated that the hollow roller **11** may be of metal or any other type of suitable material.

The plug and pin assembly of the present invention includes generally a plug **15** and a pin **16**. The plug **15** is constructed of any suitable type of plastic, such as hard rubber, nylon, Teflon and the like, while the pin is preferably constructed of metal, such as steel or the like.

The plug **15** includes a cylindrically shaped end wall **17** and a plurality of vanes or blades **18** extending from the end wall. The end wall is of a diametrical dimension substantially equal to the outer diametrical dimension of the shade roller as seen particularly in FIG. 3 wherein the outer periphery of the end wall is substantially flush with the outer periphery of the shade roller. The end wall is notched at **19** to provide a shoulder against which may be received the end edge of the shade roller and thereby also providing a guiding edge **20** on the end wall which fits telescopically within the end of the shade roller and provides a snug fit. Each of the vanes **18** includes an outer longitudinal edge **21** and an inner longitudinal edge **22**. The outer edge is adapted to grippingly engage the inner face of the roller, while the inner edge is adapted to be engaged by the pin **16**. While four vanes are shown in the drawings, it will be appreciated that any number of vanes may be provided that will suitably secure the plug in position. The vanes are preferably circumferentially and equally spaced from each other so that the forces applied along the inner sur-

face of the roller are equal to all vanes and properly center and hold the plug in position. The vanes also function to center the plug as the plug is initially inserted into the end of the roller as shown particularly in FIG. 5. The inner edges **22** of the vanes **18** are normally arranged to extend along an incline as seen particularly in FIG. 4 so that when the pin is inserted, it will force the vanes radially outwardly and the outer edges **21** into engagement with the inner surface of the hollow rollers as shown particularly in FIG. 6.

The pin **16** includes a uniformly dimensioned shank **23** having a radially extending flange **24** thereon intermediate the ends and more closely to the outer end, and a pointed end **25** adapted to guidably place the pin properly within the plug. The pin is received within an aperture opening **26** that extends axially through the end wall **17** and in alignment with the inner edges of the vanes **18**.

The operation is apparent from the above description wherein the pin and plug assembly may be removed by first withdrawing the pin **16**. This permits the vanes to disengage from the inner surface of the roller so it can then be easily withdrawn therefrom. Then the roller and shade may be cut down to any desired size and the plug first inserted followed by the pin as above described.

It will be understood that modifications and variations may be effected without departing from the scope of the novel concepts of the present invention, but it is understood that this application is to be limited only by the scope of the appended claims.

The invention is hereby claimed as follows:

1. A plug and pin assembly for mounting in a hollow end of a shade roller comprising a plastic plug and a pin, said plug having an end wall, a plurality of radial vanes extending from said end wall and substantially normal thereto and an axially extending opening through said plug converging from said end wall along the inner edges of said vanes, and said pin having a shank of uniform cross-section and a pointed end, whereby insertion of said pin expands the vanes into gripping engagement with the hollow end of a shade roller.

2. A plug and pin assembly for removably mounting a pin in an end of a hollow shade roller which comprises a plastic plug adapted to be received within the shade roller end, and a pin adapted to be received by said plug for connecting the plug to the end of the shade roller, said plug including an end wall for closing the end of the shade roller, a plurality of radial vanes extending from the end wall and normal thereto, and an opening extending through said end wall aligning with the inner edges of said vanes, and said pin having a pointed end and when received in said opening and along the inner edges of said vanes forces said vanes outward into engagement with the inner surface of the shade roller.

3. A plug and pin assembly for removably mounting a pin in an end of a hollow shade roller which comprises a plastic plug adapted to be received within the shade roller end, and a pin adapted to be received by said plug for connecting the plug to the end of the shade roller, said plug having an end wall with an aperture extending therethrough at the center thereof and a plurality of radially extending vanes extending laterally from the end wall, and said pin engaging the inner edges of said vanes and forcing same outward into gripping engagement with the inner face of the shade roller.

4. The plug and pin assembly as defined in claim 2, and said vanes being equally circumferentially spaced from each other.

5. A plug and pin assembly for removably mounting a pin in an end of a hollow shade roller which comprises a plastic plug adapted to be received within the shade roller end, and a pin adapted to be received by said plug for connecting the plug to the end of the shade roller, said plug having an end wall with an aperture extending therethrough at the center thereof and a plurality of radially extending vanes extending laterally from the end wall, each vane having an outer longitudinal edge adapted to grippingly engage the inner surface of said shade roller and an inner edge adapted to be engaged by said pin, and said pin extending through said aperture and engaging said inner edges of said vanes and forcing the vanes outwardly so the outer edges grippingly engage the inner surface of said shade roller.

6. The plug and pin assembly as defined in claim 5, and the inner edges of said vanes normally being inclined so that the inner free ends of the vanes are closer together than the outer ends thereof.

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Notice of Adverse Decision in Interference

In Interference No. 94,168 involving Patent No. 3,064,452, A. K. Gast, Jr., Plug and pin assembly for shade rollers, final judgment adverse to the patentee was rendered Sept. 28, 1964, as to claim 1.

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