No. 671,200. Patented Apr. 2, 1901.

J. P. WHITMORE & A. O. BILLSTINE.

SHADE ROLLER.

(Application filed Mar. 8, 1900.)

(No Model.)

Fig. 1

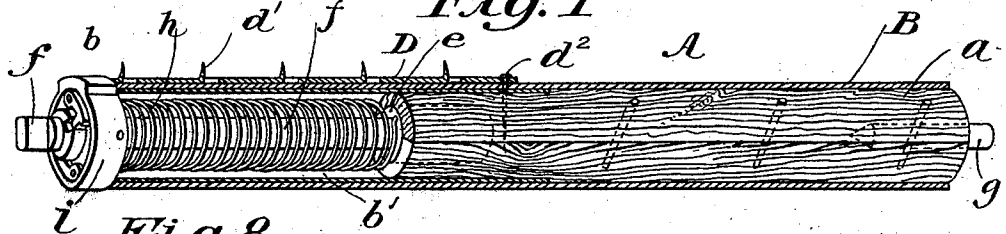


Fig. 8

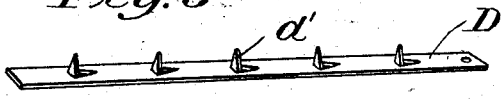


Fig. 2

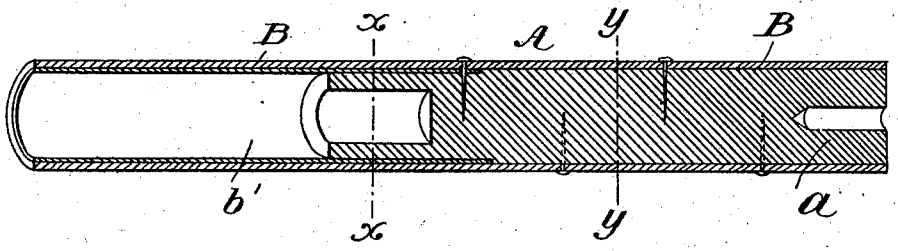


Fig. 4

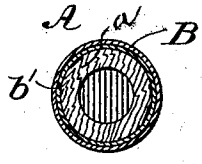


Fig. 3

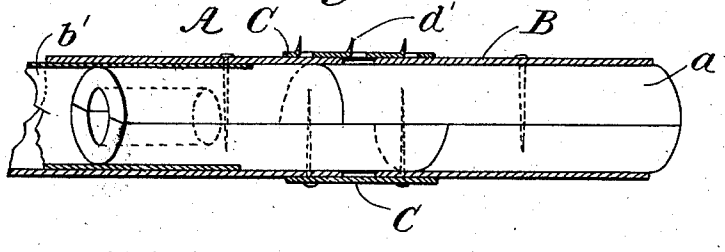


Fig. 5

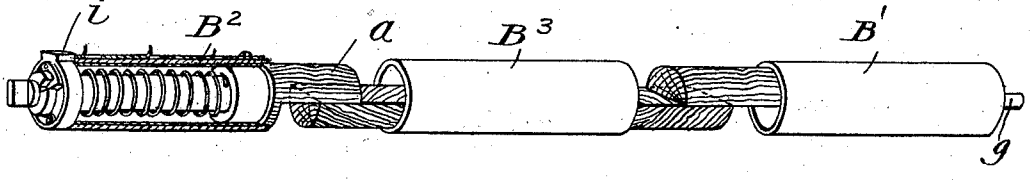
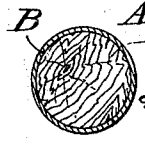


Fig. 6



Fig. 7



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN P. WHITMORE, OF WEST PULLMAN, AND AUGUST O. BILLSTINE, OF KENSINGTON, ILLINOIS.

SHADE-ROLLER.

SPECIFICATION forming part of Letters Patent No. 671,200, dated April 2, 1901.

Application filed March 8, 1900. Serial No. 7,782. (No model.)

To all whom it may concern:

Be it known that we, JOHN P. WHITMORE, a resident of West Pullman, and AUGUST O. BILLSTINE, residing at Kensington, in the county of Cook and State of Illinois, citizens of the United States, have invented certain new and useful Improvements in Shade-Rollers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making a part of this specification.

Our invention relates to rollers for window-shades formed of an outer tube of paper or similar fibrous material, with an inner section of wood to reinforce the outer shell of paper, and also to counteract the tendency of the paper tube to warp or twist, and also to adapt the roller to be made of any required length. Heretofore shade-rollers have been made with an inner tube of wood made in sections, in combination with an outer tube of paper or other fibrous material, and the said tubes have been made to overlie each other, and thus adapt the roller to be made of any required length. The difficulty has been to provide tube-sections of wood which are free from knots and flaws and which can be made of the diameter required of sufficient strength to withstand the tendency of the outer tube to warp and also to provide a body of sufficient strength and density to receive and hold the tacks or fastening-staples which are used to secure the paper thereto. To overcome the above-enumerated and other difficulties heretofore encountered, my improved roller is formed of a plurality of cylindrical sections of wood placed one upon the other to provide a solid core or filling-piece which will completely fill the closed outer tube and be held together thereby, preferably with break-joint and cross-grain connections, thus to form a solid roller of numerous pieces of different grain and texture which will act together to prevent warping and which will also receive the brads, tacks, or staples without splitting the wood or compressing the outer tube.

In the accompanying drawings, Figure 1 is a perspective view of the completed shade-roller, showing the outer tube in section; Fig. 2, a similar view of the roller, showing the outer tube and a solid wooden core made of one piece with the spring and other attachments removed; Fig. 3, a similar view of the said sectional wooden core made in four pieces and in two lengths spliced together; Fig. 4, a section in line $x\ x$ of Fig. 2; Fig. 5, a perspective view of a roller, one end being in section and made in three longitudinal pieces adapted to be overlapped and joined, as shown in Fig. 3. Fig. 6 is a transverse section showing a core in two sections wrapped with paper; Fig. 7, a transverse section in line $y\ y$ of Fig. 2, showing a solid one-piece wooden core within a tube; and Fig. 8, a perspective view of a metal spur-strip to be used with a paper-tube roller for fastening the shade thereto.

The shade-roller core A is formed of a solid one-piece wooden core a, as shown in Figs. 2, 4, and 7, or, preferably, as shown in Figs. 1, 3, and 5, of sections of wood laid one upon the other to form when placed together a solid cylinder of any required length, which are held together with an outer tube B of paper or other similar fibrous material, thus to provide a smooth veneering and outer surface for the wooden core-sections and together form a solid roller which will not warp or bend and which may be made of any required length by overlapping the said wooden strips and by employing a number of paper cylinders placed thereon and connected together by the ends of the wooden core-sections passing from one tube to another, as shown in Fig. 5. This last-named feature will admit of employing end sections B' and B^2 for the roller, adapted to receive the fittings, and a center section B^3, which may be made of variable lengths, thus to form a solid roller of any required length without changing the lengths of the end sections. The roller may also be made in four-part and two-length sections, as shown in Fig. 3, with the ends of the two-part sections made to overlie each other, the outer paper tube-sections also telescoping over the lapped portions of the wooden core and a metal tube C placed outside of and around the ends of the paper tube and core sections and all be held together by wire nails, as shown in Fig. 3 and as applicable to all of the figures. The wooden core-sections are preferably first glued together and then

fastened securely by nails or wooden pins, the latter being preferred, as the core can then be sawed at any point to splice or change the length of the sections without sawing into the metal.

The inner end of the wooden core *a* is bored to receive a bung *e*, into which the spindle *f* is stepped to turn freely in a well-known manner, a spear *g* being driven into the other end of the core and a coiled spring *h* connected at one end of the spindle *f* and at the other end to the bung *e* in the usual manner, a ferrule *i* upon the tubular extension *b* of the roller serving to hold in place thereon the ratchet-plate of any preferred construction. The tubular extension *b* of the outer tube B may be reinforced for the length required by an inner tube *b'*, of wood or metal, secured to the solid wooden core at one end and to the ferrule *i* at the other end and also to the said tubular extension. The end of the outer tube of paper projecting beyond the solid wooden core will not provide a solid body upon which the shade may be fastened, and we therefore fasten the shade thereto by means of spurs *d'*, turned up from a plate, as shown in Figs. 1, 3, 5, and 8, the said spurs being adapted to pass through the cloth or shade and be then turned down to hold the shade securely to the roller. The metal strip D, as shown in Fig. 8, is held to the roller by means of the ferrule *i* at one end and by means of a nail d^2 at the other end thereof. In Fig. 3 the spurs *d'* are made upon the metal joint-tube C, the said metal tube thus serving not only to hold the ends of the wooden core-sections together, but also serving to bridge over the gap, if there be any between the ends of the outer paper tube, the spurs *d'* thereon holding the curtain upon the roller at this point and presenting a smooth outer surface upon which the curtain will evenly roll. When rollers of fixed or predetermined lengths are to be made, the wooden half-cylinder core-sections, as shown in Fig. 6, are placed upon opposite sides of the end of a paper cover-strip and then nailed together and the roller then placed upon the mandrel of a lathe or cylinder wrapping-machine, the paper being properly pasted and rolled solidly around the wooden core, after which it is again tacked at its edge to the core to provide a complete roller, in accordance with our invention, of inexpensive material, which will be strong and light and may be made of any sort of wood scraps which cannot warp when bound together.

When a solid core of wood is made up of a number of pieces solidly glued together to break joint and to cross grain with each other and the core then tightly held within an unbroken tube of paper or other fibrous material, the unequal warping of the different materials and separate pieces forming the core will be prevented, even should flaws exist in said pieces, the strains exerted by the several pieces acting each in a different manner and direction, thus serving to counteract each other. With a solid core, either formed of a single piece or of a number of pieces one overlapping the other, the paper tube will be held firmly and not give way under the hammer when brads or staples are driven through it, the solid wood of the core also being better adapted to receive and firmly hold the fastening devices.

Although numerous scraps secured together may be used to form the wooden core, it is preferable to first turn up a wooden roller, and after boring it at an end to receive the bung and at the other end to receive the gudgeon then split the roller in its diameter from end to end and then secure each half of the roller to the half of a roller turned from a different piece of wood, thus to have pieces of different grains of wood opposite each other. Many woods other than white pine, which is now required and which has become expensive, may be used when thus made and put together and secured within an outer cylinder.

The wooden core is provided with the gudgeon at one end and a spindle at the other end to form fixed end supports for the roller, and the outer tube extends the full length of the core and projects beyond the spring end thereof to provide a tubular extension to inclose the spring and also form a smooth continuous outer surface the full length of the roller and the full width of the shade.

We claim as our invention and desire to secure by Letters Patent—

1. A shade-roller formed of a solid continuous wooden core made in overlying longitudinal strips and adapted to receive the end connections, and an outer tube of paper or similar material fitting upon said sectional core to bind the layers together and form a solid composite roller of differentiating material to prevent warping, substantially as described.

2. A shade-roller formed of a solid continuous wooden core comprising sections made to overlap each other at their adjacent ends and having a spring and spindle fitted to one end of the core and a spear fitted at the other end thereof and an outer tube of paper or similar material to bind the sections together and form a composite roller having a solid wooden core, substantially as described.

3. A shade-roller comprising a solid wooden core, a gudgeon at one end thereof and a spindle and spring supported at the other end thereof and an outer reinforcing-tube of paper fitted tightly over the full length of the wooden core and projecting beyond the spindle and spring-supported thereon to inclose the same and unite with the wooden core to form a composite roller having a continuous smooth penetrable outer surface projecting beyond the core and of the full length of the shade to be supported thereon, substantially as described.

4. A shade-roller formed of a solid wooden core, a tube of paper or like material fitted

thereon and projecting beyond one end of the core to receive the spring attachment, and a reinforcing-tube placed within the cover-tube projection and secured to the end of the wooden core, substantially as described.

5. A shade-roller formed of a solid wooden core having one of its ends bored to receive the bung of a spring attachment, and an outer tube of paper or like fibrous material projecting from the end of the wooden core to receive the spring attachment, a ferrule upon the end of the paper tube, and a spur-strip secured longitudinally upon the tubular ends of the roller by the ferrule at one end thereof, and to the paper tube and solid wooden core at the other end thereof, substantially as described.

6. A shade-roller comprising a plurality of wooden cylinder-sections, joined together by lap-joints at their ends paper tube-sections inclosing said wooden sections and a tube of sheet metal fitted outside of the paper tube-sections to cover the joint between them and nails connecting all of said parts, substantially as described.

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