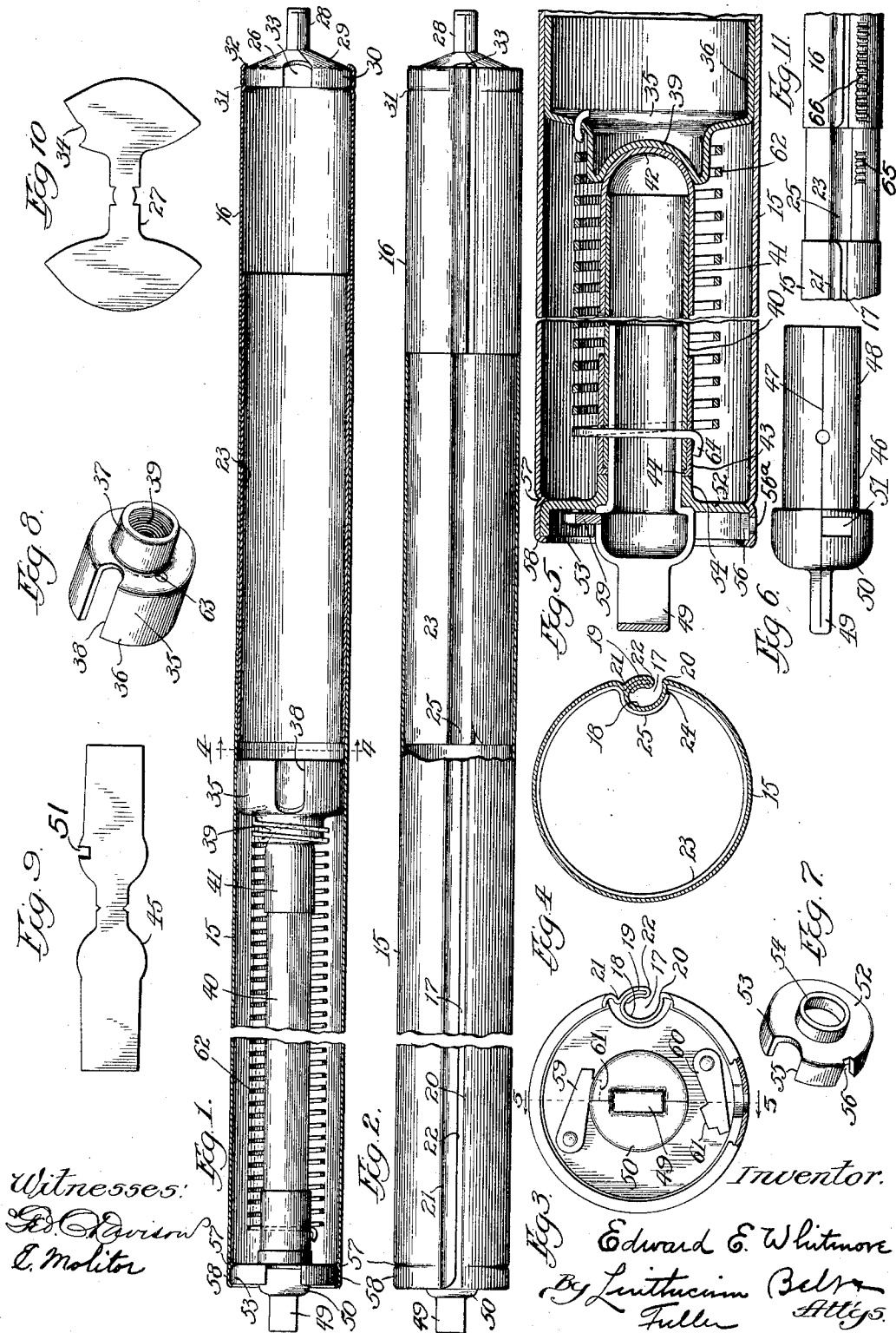


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CURTAIN ROLLER.
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CURTAIN-ROLLER.

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To all whom it may concern:

Be it known that I, EDWARD E. WHITMORE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Curtain-Rollers, of which the following is a specification.

By my invention I aim to produce a curtain roller which will be economical to manufacture, which will have no wooden parts likely to shrink, warp, twist, or the like, and which can be made without the use of solder. To obtain this result all parts of my improved roller are made of sheet metal, and are consequently produced at small expense, and unitedly form a curtain roller having marked superior features or characteristics over those made wholly or in part of wood or the like.

The preferred embodiment of the invention comprises two sheet metal telescoping expansible sections having aligned grooves for securing the curtain in place, the inter-fitting part of one section being transversely elastic, whereby to hold and maintain such sections in adjusted expanded or elongated relation. The parts of the roller proper are so formed and shaped as to maintain their cylindrical formation without the use of solder or the like, the adjacent edges of the sheet metal being bent to form interlocking parts. Such joint of interlocking parts is formed at one side of the curtain receiving groove, the curtain when applied thereto passing over the joint, and, owing to the advantageous construction employed, all tendency for the metal to cut or injure the curtain is obviated and eliminated.

Various other features of novelty and improvement will become apparent to those skilled in this art from a consideration of the following detailed description of an embodiment of the invention, which should be considered in connection with the accompanying sheet of drawings illustrating the same.

In the drawings—Figure 1 is a section of one of my improved metal expansible curtain rollers, a section of the same being omitted or cut away, as indicated; Fig. 2 is a similar view partly in section and partly in elevation; Fig. 3 is an enlarged view of the spear end of the roller; Fig. 4 is an enlarged section on line 4—4 of Fig. 1; Fig. 5 is a longitudinal section on line 5—5 of Fig.

3; Fig. 6 is an elevation of the spear or holding portion of the roller; Fig. 7 is a perspective view of the outer mandrel bearing; Fig. 8 is a perspective view of the bung or inner bearing for the mandrel; Fig. 9 indicates the blank from which the spear end of the mandrel is made; Fig. 10 illustrates the blank from which the spindle member at the opposite end of the roller is made; Fig. 11 illustrates holding means for the roller sections.

The curtain roller proper is composed of two cylindrical sheet-metal hollow parts or sections 15 and 16 each formed with a longitudinal undercut curtain receiving groove 17 made by bending the edge portion of the metal 18 inwardly and then somewhat reversely to form a tongue 19, a suitable opening being left between such tongue and that part of the roller 20 where the metal 18 begins its inward bend. The opposite edge or marginal part of the sheet metal is crimped longitudinally, as indicated at 21, and is bent or lapped around both sides of the tongue 19, forming a smooth curved edge 22 of substantial thickness. It will be apparent that, owing to the fact that the tongue 19 and the engaging parts on opposite sides thereof are curved as indicated, an unusually secure and effective lock or joint is maintained between these portions. The shorter section or portion 16 of the roller is supplied with an extension part 23 fitted partially within the section and held therein in any approved manner, by solder if necessary. The greater portion of this extension, however, is adapted to fit within the part 15 of the roller, its exterior diameter being substantially the same as the inner diameter of the part 15. This extension section 23 is longitudinally slit at 24 to give the same transverse elasticity, whereby without other means to hold the roller sections 16 in adjusted or extended relation to the companion part 15. One edge portion adjacent to such division or slit of the sheet metal of which this extension 23 is composed is bent inwardly to form a trough or groove 25 of sufficient size to accommodate the parts forming the groove of the section 15, as is clearly indicated in Fig. 4. Such part 25, as will be readily understood, operates to maintain the grooves of the two sections 15 and 16 in proper register and alinement.

At one end the section 16 is provided with

a sheet metal bearing or spindle member 26 formed by folding and pressing from a blank 27 of the shape indicated in Fig. 10, such member having a cylindrical spindle or stub shaft 28, an intermediate conical portion 29, and a cylindrical part 30 fitted in the end of the hollow roller and held from longitudinal displacement therein by the annular crimping of the sheet metal of the roller on opposite sides thereof at 31 and 32. Obviously, such a spindle or shaft member must be recessed for the accommodation of the parts of the trough or groove 17 of the roller, and accordingly the member is cut away at 33 for this purpose, such aperture being provided by the notch 34 of blank 27. The engagement of the trough or valley part of the roller in this aperture effectively prevents rotation of this spindle or shaft member in the roller, although relative rotation of the parts would not necessarily constitute any hindrance to the proper operation of the structure. As is clearly shown in Fig. 1, owing to the form of blank used (Fig. 10), this spindle member is divided longitudinally for almost its entire length, and is therefore split except at the extreme outer end of the spindle or shaft member 28.

Inside of the roller section 15 a sheet metal bung or inner mandrel bearing 35 is employed of substantially the same diameter as the internal bore or caliber of the roller, such member being formed or pressed up out of sheet metal and having two parts 36 and 37 of larger and smaller diameters, respectively. The part 36 is cut away longitudinally at 38 to receive the groove portions of the curtain roller, and the part 37 has in its end a concave or cup-shaped bearing 39 to accommodate the convex end of the mandrel. The latter is composed of a hollow cylindrical sheet-metal body 40, the inner end of which is received in a cap 41 having a substantially hemispherical end 42 fitted and rotatable in the bearing 39. The other end of this hollow mandrel fits in a shouldered ferrule 43, the inturned end shoulder 44 of which limits and determines the position of the ferrule on the mandrel. The spear of this roller, that is the holding member, at one end of the roller, occasioning a winding up of the spring when the curtain is pulled down, is made from a sheet-metal blank 45 of substantially the shape indicated in Fig. 9. This spear 46 is split longitudinally almost end to end along the line 47 and has a hollow cylindrical part 48 of substantial length fitted in the end of the mandrel, as is illustrated in Fig. 5. At its opposite end this spear member has a centrally-disposed transversely-arranged flat spear or projection 49, between which and the part 48 the member is round and somewhat enlarged at 50, such part having an

aperture or opening 51 leading to its hollow interior.

Inside of its outer end the roller section 15 is fitted with a mandrel bearing 52 made of sheet metal and composed of a cylindrical part 53 of larger diameter and a hollow bearing portion 54 of smaller diameter which receives that part of the spear member 46 between its enlargement 48 and the portion fitted within the mandrel proper. The larger part 53 of this bearing member is cut away at 55 for the accommodation of the groove portions of the roller section, and is also cut away at 56. This recess 56, is in register with another hole 56^a in the roller proper the two permitting the introduction of a pin or other implement whereby the pawls might be manually manipulated if occasion requires. To maintain and hold this bearing member in place in the roller section the sheet metal of the latter is crimped at 57 and 58 on opposite sides thereof. Pivoted on its outer face member 52 has a pair of centrifugally-actuated locking dogs or pawls 59 and 60 each supplied with a tongue or portion 61 adapted to fit in the aperture or notch 51 of the spear to prevent rotation of the roller relative to the spear. A comparatively long coil torsion spring 62 surrounds the mandrel 40, having its inner end secured in an aperture 63 of the inner mandrel bearing 35, the other end passing transversely through apertures in the ferrule 43, mandrel 40, and spear member 46, the extreme end 64 of such spring being bent over, as shown in Fig. 5, for its retention in proper position.

To those skilled in the art it will be apparent that, owing to the longitudinal division of the extension section 23 and its transverse elasticity, the parts of such extension tending to expand into firm engagement with the inner surface of the roller section 15, the length of the roller may, by sliding the sections 15 and 16 relative to one another, be made that which is desired, the extension portion 23 maintaining and holding the roller sections in proper adjusted relation. It will furthermore be obvious that the top edge of the curtain may be retained in the usual manner in the undercut groove 17, the curtain passing out of such groove over the curved, finished, smooth joint 22. The cylindrical projection or shaft 28, as is usual and customary, will rotate in a bearing or bracket fastened to the window casing, while the flat spear or ear 49 will be held against rotation in a suitable bracket on the window casing. When the curtain is pulled down the centrifugal force prevents either one of the pawls or dogs 59 or 60 from entering the aperture 51, and consequently the roller turns or rotates on the spear member 46 and mandrel, the spring 62 being wound up during revolution

of the roller. When the movement of the curtain and roller is slowed down, one or the other of the dogs readily drops into the notch 51 and prevents the wound-up spring from raising the curtain until the operator so desires, at which time by the manipulation of the curtain the holding dog is thrown out of locking position and the spring winds up the roller and curtain, as in the usual constructions.

It is to be noted especially that this curtain roller has no wooden or other parts which can display a tendency to warp, shrink, twist, swell, or the like, that the roller can be easily extended to the proper length, and be held in such elongated condition by the grasp of the extension 23 on the inner part of the roller section 15. It is to be noted also that such a roller may be made without solder if desired, although I have found it convenient to solder the extension 23 in the roller section 16, and in some instances have found it desirable to solder the abutting edges of the sheet metal forming the mandrel. A curtain roller of this type has but few parts, all of which may be quickly and cheaply produced from sheet metal, and all the elements of this roller are effectively and efficiently held in proper position and relation to the other parts of the construction.

Particular attention is directed to the fact that in the embodiment of the invention herein described and illustrated the sections or parts of the roller proper have their longitudinal edges formed without the employment of solder, and that advantage is taken of the bending of the metal for forming the joint to provide a smooth and non-cutting surface over which to draw that portion of the curtain leaving the groove or valley of the roller in which the curtain is held.

Whereas only one embodiment of this invention has been set forth in this application, it is to be understood that the invention is susceptible of incorporation in a variety of structures, and that it is not limited and restricted to the precise structural features herein indicated. Consequently many minor mechanical changes may be made in the curtain roller set out in this specification without departure from the essence of the invention and without the sacrifice of any of its substantial benefits and advantages.

In Fig. 11 I have shown an improved means applicable for employment in any form of extensible sheet-metal rollers for holding the roller sections fixedly in extended relation. The sheet-metal of the telescoping sections is crimped or corrugated at 65 and 66 and when the sections are fitted together the teeth or roughened parts of the two sections cooperate to pre-

vent their unintentional relative movement. In this figure the parts are shown unduly extended, but when properly and sufficiently telescoped they are by these means held from displacement, it being understood that the inner extension 23 has sufficient elasticity to permit forced riding of its roughened part over that of the outer section.

I claim:

1. In a device of the character described, the combination of a hollow, sheet-metal curtain-roller having a hollow internal longitudinal rib affording an external groove for the reception of the attachment edge of a curtain, and a one-piece sheet-metal spindle member of substantially the same caliber as the interior of the roller and fitted in the end thereof, said spindle member having a spindle portion protruding from the roller, said spindle member being also recessed to accommodate said internal rib, substantially as described.

2. In a device of the character described, the combination of a hollow sheet-metal curtain-roller having an internal longitudinal rib affording an external groove for the reception of the attachment edge of a curtain, and a one-piece sheet-metal spindle member divided longitudinally for the greater portion of its length, said member being of substantially the same caliber as the interior of and fitted in the end of said roller, said member also having a spindle portion protruding from the roller, said member in addition being recessed to accommodate said rib, substantially as described.

3. In a device of the character described, the combination of a hollow sheet-metal curtain-roller having an external longitudinal curtain-fastening groove formed by an internal longitudinal rib, a sheet-metal bung having a mandrel bearing fitted in said roller and cut away to receive said rib, a sheet metal mandrel bearing member fitting in an end of said roller, a hollow sheet-metal mandrel rotatable in the bearings of said bung and member, and a coil torsion spring cooperating with said mandrel, substantially as described.

4. In a device of the character described, the combination of a hollow curtain roller, a bung fitted in said roller and having a mandrel bearing, a mandrel bearing member fitted in an end of said roller, a mandrel rotatable in the bearings of said bung and member and composed of a main tubular portion, a cap at one end rotatable in the bearing of said bung, and a spear or holding member at the opposite end of the mandrel, and a coil torsion spring cooperating with said mandrel and roller, substantially as described.

5. In a curtain roller, a mandrel composed of a sheet-metal hollow cylindrical main body, a sheet-metal bearing cap for one end

of said body, and a sheet-metal spear fitted to the opposite end of said body, substantially as described.

6. In a curtain roller, a mandrel composed of a sheet-metal hollow cylindrical main body, a sheet-metal bearing cap fitted over one end of said body, a sheet-metal spear fitted in the opposite end of said body, and a ferrule on said latter end of the body, substantially as described.

7. In a device of the character described, the combination of a hollow sheet metal curtain roller having a hollow internal longitudinal rib affording an external groove for the reception of the attachment edge of a curtain, a sheet metal bung fitted in said roller and having a bearing for a mandrel, a sheet metal mandrel bearing member fitted in the end of said roller, a mandrel rotatable in the bearings of said bung and member and equipped with a sheet metal spear at one end, and one or more locking pawls or dogs pivoted on said bearing member and cooperating with said spear under certain conditions to prevent the roller from turning on the mandrel, said bung and bearing member being cut away for the accommodation of said rib, substantially as described.

8. In a device of the character described, the combination of a hollow sheet metal curtain roller having an internal longitudinal rib affording an external groove for the reception of the attachment edge of a curtain, a sheet-metal bung having a bearing for a mandrel and cut away to accommodate said rib, a sheet-metal mandrel bearing member fitted in an end of said roller and also cut away to accommodate said rib, a sheet-metal mandrel having a notched sheet-metal spear at one end rotatable in the bearings of said

bung and end bearing member, a spring cooperating with said bung and mandrel, and a locking pawl pivoted on said end bearing member and adapted to cooperate with the notch of said spear, substantially as described.

9. A hollow sheet-metal curtain roller having one edge portion of the metal bent to form a longitudinal undercut groove, the opposite edge portion of the sheet-metal being bent around the part of such groove forming portion to constitute therewith a transversely crimped locking joint or seam, substantially as described.

10. A hollow sheet-metal curtain roller having one edge portion of the metal bent transversely in a curve to form a longitudinal undercut groove, the opposite edge portion of the sheet-metal being bent around the marginal part of such groove-forming portion to constitute therewith a locking joint or seam presenting a curved surface with which the curtain may contact without injury, substantially as described.

11. A hollow sheet-metal curtain roller having one edge portion of the metal bent transversely in a curve to form a longitudinal undercut groove, the opposite edge portion of the sheet-metal being bent around the marginal part of such groove-forming portion and closely following the internal and external curved contour of the same to constitute therewith a locking joint or seam, one of said parts having a sheet-metal spear, the other part having a sheet-metal spindle substantially as described.

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