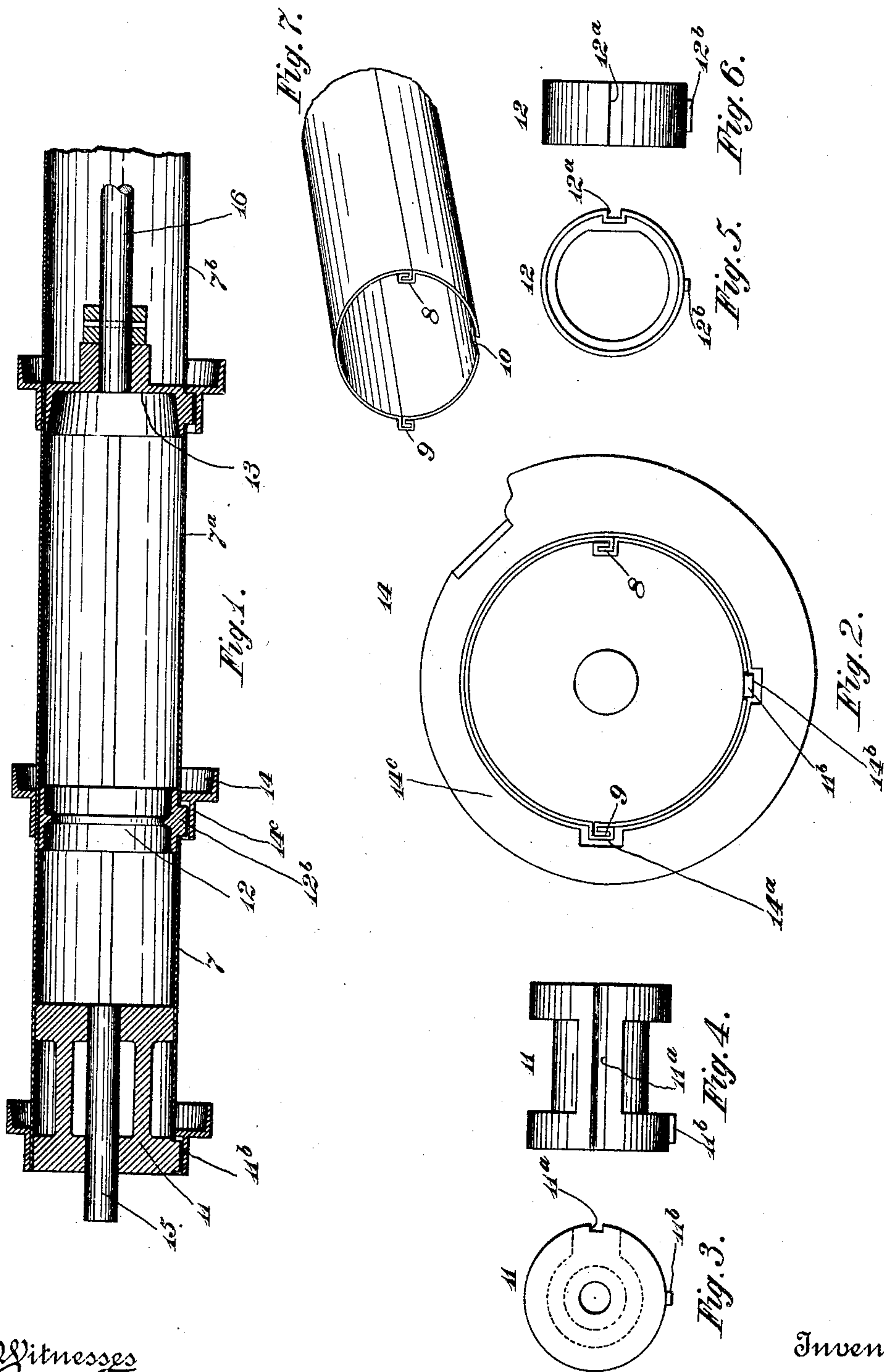


A. RUSH.  
 ROLLER FOR FLEXIBLE SHUTTERS OR CURTAINS.  
 APPLICATION FILED MAY 31, 1907.

929,885.

Patented Aug. 3, 1909.



Witnesses  
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# UNITED STATES PATENT OFFICE.

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## ROLLER FOR FLEXIBLE SHUTTERS OR CURTAINS.

No. 929,885.

Specification of Letters Patent.

Patented Aug. 3, 1909.

Application filed May 31, 1907. Serial No. 376,504.

*To all whom it may concern:*

Be it known that I, ALBERT RUSH, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented a certain new and useful Improvement in Rollers for Flexible Shutters or Curtains, of which the following is a specification.

The object of this invention is to provide an improved and simplified construction of roller for a flexible shutter or curtain and particularly of the metallic fire resisting kind.

Heretofore in practice a solid cast or drawn tube has usually been employed in the construction of such rollers. In the present invention the body of the drum is constructed of a sheet or sheets of metal shaped and united in such a way that the plugs and collars (which are also properly formed to cooperate in the construction) are secured in place without the aid of numerous separate pins, rivets or fastening devices. But the exact nature of the invention is to be gathered from the following description and claims taken in connection with the accompanying drawing, in which—

Figure 1 is a longitudinal sectional view of a portion of a roller showing my invention; Fig. 2 is an end view on a larger scale viewed from the left-hand end of Fig. 1; Figs. 3 and 4 are end and side views respectively of the end plug; Figs. 5 and 6 are end and side views respectively of the auxiliary plug; Fig. 7 is a perspective view of the end of a tube section.

In the views the drum or tube sections 7, 7<sup>a</sup> and 7<sup>b</sup> are each formed of two semi-cylindrical pieces of sheet metal joined longitudinally by lap seams bent down against the body of the material and so as to form a bead or longitudinal projection from the surface of the formed tube. At 8 the seam or bead is shown as projecting from the interior surface of the tube, and at 9 the seam is shown to project from the exterior of the tube. The end of each section of the tube is made with a slit or notch like that seen at 10 Fig. 7 to provide room for the insertion of a fitting and engaging lug on the plugs and the auxiliary rings employed in the construction.

The end plug, designated as a whole by the character 11, is a double-headed or spool-like solid or rigid structure having in its

side a longitudinal groove 11<sup>a</sup>, and projecting radially from one of the heads a lug 11<sup>b</sup> that is located the same distance from the end of the groove 11<sup>a</sup> that the notch 10 is from the bead 8. To fit the plug in place it is slid, the lugless end first, into the end of the tube section with the projecting bead 8 thereof in line with the groove 11<sup>a</sup> of the plug. When slid entirely in, the lug 11<sup>b</sup> of the plug enters the notch (10).

The engagement of the interior bead 8 with the plug prevents said plug from turning in the tube or prevents the tube from turning on the plug, according to the view point, and this function may be assisted by engagement of the lug 11<sup>b</sup> with the notch (10) in the end of the tube. When both the bead and lug cooperate to prevent relative movement of the plug and tube the strain is borne at two points, but the engagement of the lug with the tube prevents longitudinal slipping in one direction of the tube with reference to the plug. The plug, of course, serves to more or less brace the tube as well as to receive the shaft or spindle shown therein.

The character 12 designates the auxiliary ring. This ring which is also a solid or rigid structure is furnished across its rim with a groove 12<sup>a</sup> and a lug 12<sup>b</sup>. The groove 12<sup>a</sup> and lug 12<sup>b</sup> correspond in form and function to the groove 11<sup>a</sup> and lug 11<sup>b</sup> respectively of the plug 11, but the ring is designed to fit in the end of the tube section opposite that containing the plug and to brace that end or assist in connecting and bracing two sections at their junction. When assisting in connecting two sections of the tube the groove 12<sup>a</sup> and lug 12<sup>b</sup> can be engaged with the bead 8 and notch 10 at the ends of two sections, the ends of the sections being abutted over the ring.

13 designates another form of solid or rigid plug which has its rim provided with a groove and a lug like those already fully described and they operate in the same way.

14 designates a collar. Three of these collars are shown in Fig. 1. They are slid exteriorly on the tube and are designed to have attached to them the flexible shutter or curtain. The collar is made with a wide interior flange 14<sup>c</sup> containing a groove 14<sup>a</sup> to fit on the exterior bead 9 and a groove 14<sup>b</sup> to fit on the lug 11<sup>b</sup> or 12<sup>b</sup> or on the lug of the plug 13 accordingly as its location may be.



The engagement of the collar with the bead 9 prevents relative movement rotarily of the collar and tube and this function can be assisted by the lug on the plug or ring. Because the lug of the plug or ring projects beyond the inner rim of the collar, longitudinal movement of the collar on the tube is precluded in one direction.

In Fig. 1 is illustrated how shafts designated 15 and 16 for journaling the roller can be inserted in the plugs.

The forms of the plugs and rings and other parts can be varied.

By reason of this construction rollers for curtains or shutters can be made light, cheap and strong. The weight and cost incident to the use of the heavy cast or drawn tubes is much reduced by the use of sheet metal as herein proposed. The parts can be quickly assembled and secured together. The length of the completed roller can be varied by simply shearing off one or more sections of the sheet metal tubes and the tubing can be made in long pieces and cut off as needed.

What I claim and desire to secure by Letters Patent is:

1. In a roller for flexible shutters or curtains, a tube formed of sheet metal having edges folded and bent to form interiorly and exteriorly projecting longitudinal beads, combined with an interior device adapted to brace the tube provided with a groove to engage the interiorly projecting bead, and a collar provided with a groove to engage the exteriorly projecting bead.

2. In a roller for flexible shutters or curtains, a tube formed of sheet metal having portions bent to form interiorly and exteriorly projecting beads, combined with a non-resilient interior device adapted to brace the tube provided with a groove to engage the interiorly projecting bead, and a collar provided with a groove to engage the exteriorly projecting bead.

3. In a roller for flexible shutters or curtains, a tube formed of sheet metal having portions thereof bent to form interiorly and exteriorly projecting beads, and a non-resilient interior bracing device, and an exterior collar each provided with means to engage said beads.

4. In a roller for flexible shutters or curtains, a tube formed of sheet metal having a portion thereof bent to form a longitudinal bead and its end provided with a slit, combined with an interior bracing device for the tube provided with means to engage said bead, and a projection to enter said slit.

5. In a roller for flexible shutters or curtains, a tube formed of sheet metal having a portion thereof bent to form a longitudinal bead or projection and its end provided with a notch, combined with an interior bracing device provided with means to engage said

bead projection, and a lug to enter said notch, and an exterior collar provided with means to engage said lug.

6. In a roller for flexible shutters or curtains, a tube formed of sheet metal having portions thereof bent to form longitudinal beads and its end provided with a notch, combined with an interior bracing device provided with means to engage one of said beads and also a lug to enter said notch, and an exterior collar provided with means to engage the other of said beads, and means to engage said lug.

7. In a roller for flexible shutters or curtains, a tube formed of a plurality of tube sections of sheet metal placed end to end, each section provided with a longitudinal bead or projection, combined with an interior bracing device common to the adjacent ends of the tube sections, and a collar encircling the exterior of the adjacent ends of the sections and provided with means to engage the beads or projections at said ends.

8. In a roller for flexible shutters or curtains, a tube formed of a plurality of tube sections of sheet metal placed end to end, each section provided with longitudinal interior and exterior beads or projections, combined with an interior bracing device common to the adjacent ends of the tube sections and engaging the interior longitudinal bead or projection, and a collar encircling the exterior of the adjacent ends of the tube sections and provided with means to engage the exterior bead or projection.

9. In a roller for flexible shutters or curtains, a tube formed of a plurality of tube sections of sheet metal placed end to end, each section provided with a longitudinal bead or projection and one of said sections provided with a notch, combined with an interior bracing device common to the adjacent ends of the tube sections and provided with a lug to engage the said notch and a collar encircling the adjacent ends of the sections and provided with means to engage the lug.

10. In a roller for flexible shutters or curtains, a tube formed of a plurality of tube sections of sheet metal placed end to end, each section provided with a longitudinal bead or projection, one of said sections provided with a notch, an interior bracing device common to the adjacent ends of the tube sections and provided with a lug to enter said notch, and a collar encircling the adjacent ends of the sections and provided with means to engage the bead or projection and the lug.

11. In a roller for flexible shutters or curtains, a tube formed of a plurality of tube sections of sheet metal placed end to end, one of said sections provided with a longitudinal projection and one of said sections provided with a notch in its end, an interior



bracing device common to the sections provided with a lug to enter said notch and an exterior collar common to the sections and provided with means to engage said longitudinal projection and said notch.

12. In a roller for flexible shutters or curtains, a tube formed of sheet metal having portions thereof bent to form interiorly and exteriorly projecting beads, an interior bracing device provided with means to engage the interior bead, and an exterior collar provided with means to engage the exterior bead, said collar and bracing device secured on said tube at substantially the same cross section thereof.

13. In a roller for flexible shutters or curtains, a tube formed of sheet metal provided with an interior longitudinal projection, a bracing device engaging said interior projection, an exterior longitudinal projection on said tube, and an exterior collar for the attachment of the curtain engaging said exterior projection.

14. In a roller for flexible shutters or curtains, a tube formed of a plurality of tube sections of sheet metal placed end to end, combined with an interior bracing device common to the adjacent ends of the tube sections, and a collar encircling the exterior of the adjacent ends of the tube sections, said sections having means engaged by said interior bracing device and exterior collar to prevent the rotation of the bracing device and collar with reference to said sections.

15. In a roller for flexible shutters or curtains, a sheet metal tube provided with an interiorly and an exteriorly projecting bead, combined with an interior device adapted to brace the tube and provided with a groove

to engage the interiorly projecting bead, and a collar provided with a groove to engage the exteriorly projecting bead, said bracing device and collar secured on said tube at substantially the same cross section thereof.

16. In a roller for flexible shutters or curtains, a sheet metal tube, a rigid interior bracing device for the tube and an exterior ring for the attachment of the curtain, and means for preventing the rotation of said interior bracing device and exterior ring with reference to the tube.

17. In a roller for flexible shutters or curtains, the combination of a sheet metal tube, an interior bracing device and an exterior ring for the attachment of the curtain, said bracing device and ring being secured on said tube at substantially the same cross sections thereof, and means for preventing the rotation of the bracing device and ring with reference to the tube.

18. In a roller for flexible shutters or curtains, the combination of a sheet metal tube formed of a plurality of tube sections, an interior bracing device, an exterior ring for the attachment of the curtain, and means on one of said sections to prevent the rotation of the interior bracing device.

19. In a roller for flexible shutters or curtains, the combination of a sheet metal tube, an interior bracing device and an exterior ring for the attachment of the curtain, and means on one of said sections to prevent the rotation of both the interior bracing device and the exterior ring.

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