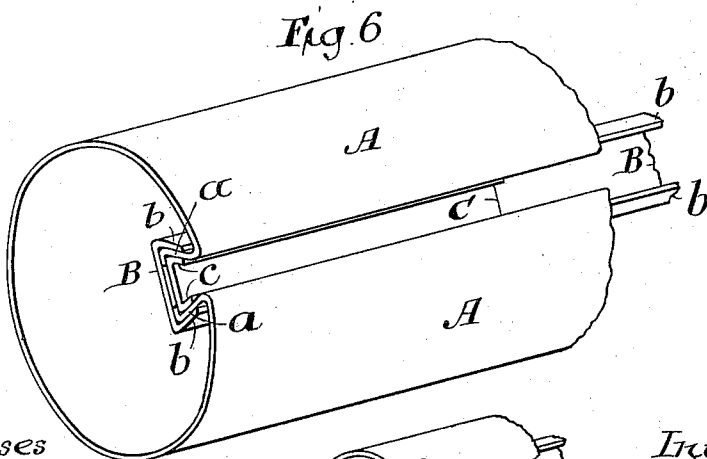
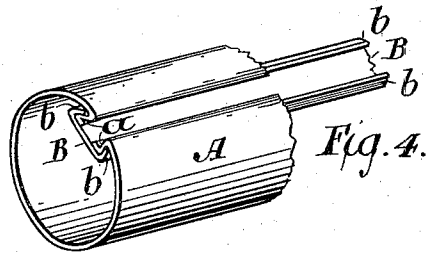
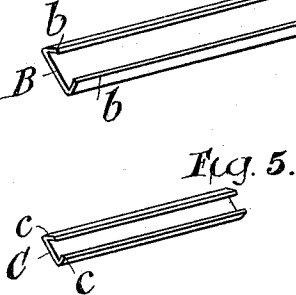
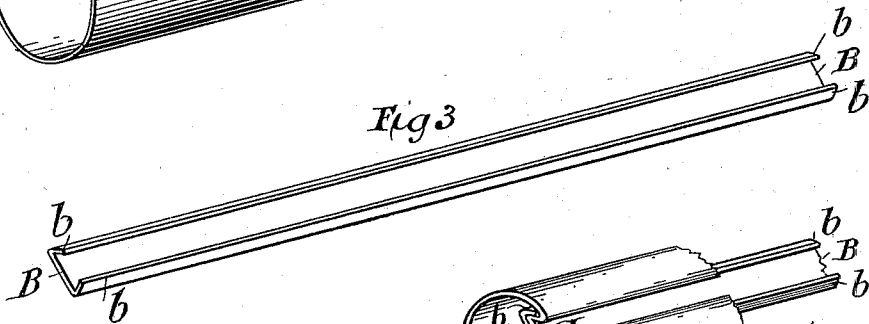
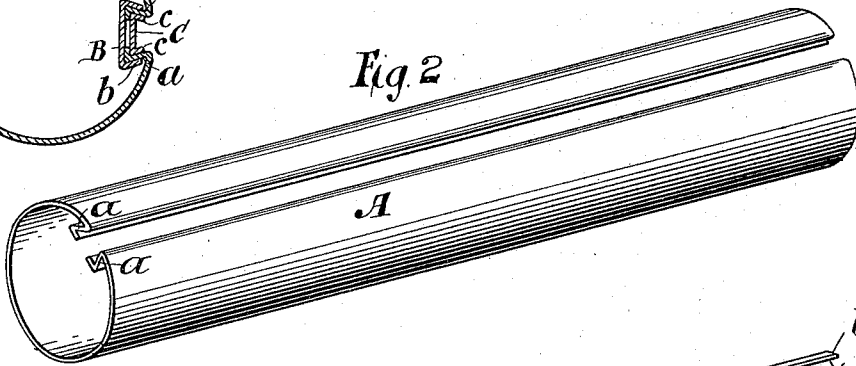
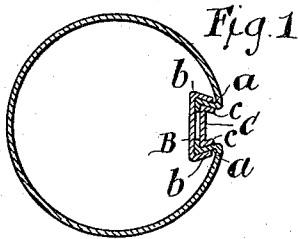


(No Model.)

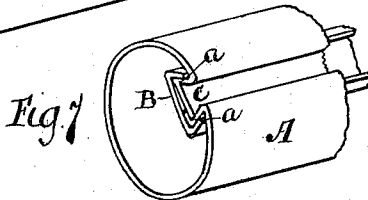
E. F. HARTSHORN.  
SHADE ROLLER.

No. 603,903.

Patented May 10, 1898.



Witnesses  
Geo. Wadman  
J. E. Greer



Inventor  
Edmund F. Hartshorn.  
By James N. Saw.  
Attorney.

# UNITED STATES PATENT OFFICE.

EDMUND F. HARTSHORN, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE STEWART HARTSHORN COMPANY, OF NEW JERSEY.

## SHADE-ROLLER.

SPECIFICATION forming part of Letters Patent No. 603,903, dated May 10, 1898.

Application filed February 20, 1897. Serial No. 624,396. (No model.)

*To all whom it may concern:*

Be it known that I, EDMUND F. HARTSHORN, a citizen of the United States, and a resident of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Shade-Rollers, of which the following is a specification.

My improvement relates to metal rollers on which window-shades or similar articles are mounted, and refers to those rollers having a longitudinal groove within which the shade or similar article is attached to the roller; and it consists of a novel construction of the roller-tube. In such rollers the usual method of construction has been to roll the tube with the groove from a single sheet of metal and unite the edges by soldering, the joint generally being at one edge of the groove. In my improvement I form the groove separate from the tube and connect it to the open edges of the latter.

In the accompanying drawings, illustrating my improvement, Figure 1 is a transverse sectional view of the complete roller. Fig. 2 is a view of the open tube before the groove is attached. Fig. 3 is a view of the groove. Fig. 4 is a view of the roller with the groove in place. Fig. 5 is a locking or holding device. Fig. 6 is an enlarged view of the complete roller, and Fig. 7 is a modification.

In my improved construction I form the tube in the usual manner; but instead of forming the groove with the tube and joining the edges of the tube together I leave the tube A open and fold over both edges of the tube inward and backward, as shown at *a a*, Fig. 2, and to this open tube attach the separate groove. The tube should be so constructed that the space between the folded edges at the surface of the tube will be the correct width to form the neck of the groove when the parts are put together and the roller completed.

The bottom part of the groove B is made separate from the tube and of a size and shape to form with the folded edges *a a* of the tube the complete groove of the contour desired.

As shown in Fig. 3, the edges *b b* of the groove-piece are bent inward at an angle to

correspond with that of the folded edges *a a* of the tube, so that when the groove is in place on the roller the edges of the tube and sides of the groove will fit and hug closely together, as is seen in Fig. 4. To attach the groove B to the roller, it is slid on from one end of the tube with the edges *a a* within the sides *b b* of the groove. The tendency of the tube to spread apart by reason of the spring of the metal causes the edges *a a* to press against the sides of the groove. The groove is thus not only held in place in the roller, but the open edges of the tube are joined and secured to form the complete roller.

To secure the groove to the roller, and thus fasten the edges of the tube and at the same time prevent the tube being compressed or the sides pressed together, I prefer the fastening device shown in Fig. 5. As there shown, this consists of a strip of metal C, with folded edges *c c* of a size and shape to fit within the folded edges *a a* of the tube, as is seen in Figs. 1 and 6. The edges *c c* press firmly against the edges *a a* of the tube, and the latter are thus locked between the edges of the strip C and of the groove B. The tube cannot spring apart by reason of the sides of the groove B and cannot be compressed, as its edges are held apart by the edges of the fastener C. The edges of the tube are thus securely locked and secured.

The fastening device C need not extend the full length of the roller, but may consist of several short strips placed along the groove.

In place of the separate fastening device C I may use the modified construction in Fig. 7. As there shown, one of the edges *a* of the tube is extended across the groove until it meets and rests against the opposite edge of the tube. When the groove-piece B is connected with the tube, as before described, the meeting edges of the tube are pressed together, and thus securely joined, and the edge of the tube locked and fastened, as in the former construction, with the separate center piece. In this modified construction the extended edge of the tube is virtually the fastening-piece C of the construction shown in Figs. 1 and 6, the fastening-piece instead of being separate forming part of one of the edges of the tube.

Instead of the fastening device C, I may use other means for attaching the groove B and securing the edges of the tube—as, for instance, a little solder may be used at points  
5 along the roller where the edges of the groove and tube overlap, or other means may be employed, as may be found desirable.

The groove thus formed in the roller may be of any shape desired, and I do not wish to  
10 confine myself to the shapes shown in the drawings.

With my improvement I can readily and cheaply form a groove of any desired form and where it is desired can readily join the  
15 edges of the tube without the use of solder and, moreover, insure both edges of the groove being smooth and rounded.

What I claim is—

1. In a shade-roller having an open horizontal groove for securing the shade to the roller, a tube, a separate, detached groove-piece adapted to be attached to the edges of the tube; and means whereby the edges of

the tube and open groove are joined and secured, substantially as described. 25

2. In a shade-roller having an open horizontal groove for securing the shade to the roller, in combination the tube A; detached groove-piece B; and means whereby the groove-piece is attached to the edges of the  
30 tube to form the open groove, substantially as described.

3. In a shade-roller having an open horizontal groove for securing the shade to the roller, in combination, the tube A; detached  
35 groove-piece B; and fastener C, whereby the groove-piece is attached to the tube and held open, substantially as described.

Signed at E. Newark, in the county of Hudson and State of New Jersey, this 15th day of  
40 February, A. D. 1897.

EDMUND F. HARTSHORN.

Witnesses:

F. E. HEATH,  
H. E. HEDDEN.