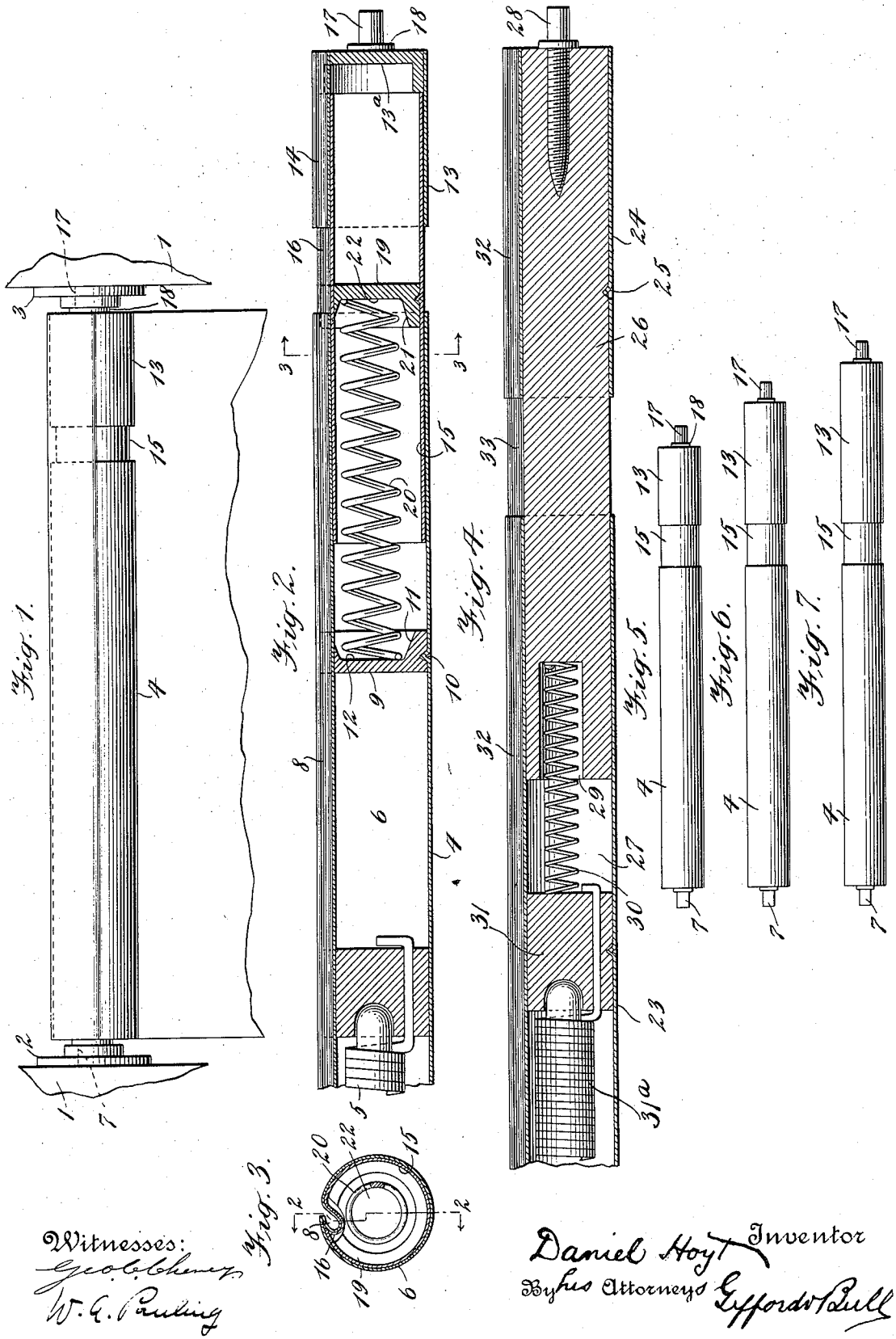
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ROLLER FOR WINDOW SHADES, SASH BALANCES, AND THE LIKE.

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Witnesses:
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UNITED STATES PATENT OFFICE.

DANIEL HOYT, OF EAST ORANGE, NEW JERSEY, ASSIGNOR OF ONE-HALF TO THE NATIONAL LOCK WASHER COMPANY, OF NEWARK, NEW JERSEY, A CORPORATION OF NEW JERSEY.

ROLLER FOR WINDOW-SHADES, SASH-BALANCES, AND THE LIKE.

1,170,068. Specification of Letters Patent. **Patented Feb. 1, 1916.**

Application filed June 11, 1913. Serial No. 772,930.

To all whom it may concern:

Be it known that I, DANIEL HOYT, a citizen of the United States, residing at East Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Rollers for Window-Shades, Sash-Balances, and the like, of which the following is a specification.

My invention relates to certain new and useful improvements in rollers of the type commonly used in connection with window-shades to have the latter wound thereon, as sash-balances and the like, and is especially adapted for use in connection with shades or sashes for car windows, although I do not desire to be limited specifically to such use.

One object of the invention, among others, is to produce a roller, the length of which will be automatically adjusted between the supporting brackets, which adjusted length will be retained while the roller is mounted in the brackets.

Another object of the invention is to produce a roller which may be easily inserted in, and removed from, its brackets.

Another object is to produce a roller constructed of two relatively movable sections consisting of a main section, which may be manufactured to a uniform length, and end sections in different lengths, so that a regular main section of uniform or standard length and one of the various end sections may be employed to make a complete roller of any desired length.

The invention consists in the construction, combination and arrangement of parts set forth in, and falling within, the scope of the appended claims.

I have fully and clearly illustrated my invention in the accompanying drawings to be taken as a part of this specification and wherein:

Figure 1 shows in front elevation parts of a window-frame equipped with a preferred embodiment of my improved roller, the same being installed in brackets secured to the window-frame and showing a curtain or shade secured to, and adapted to be wound on, the roller. Fig. 2 is a longitudinal sectional view of a part of a roller embodying my invention, taken on the line 2—2 of Fig. 3. Fig. 3 is a cross sectional view taken on the line 3—3 of Fig. 2. Fig. 4 is a longitudinal sectional view through a part of a roller showing another embodiment of the same invention. Figs. 5, 6 and 7 are views in elevation of rollers of a uniform length, and each having an end section of different length.

Referring to the drawings by characters of reference, 1 designates a window-frame, and 2, 3, are face brackets which may be of a well-known construction, secured on the inner faces of the side members of the frame and adapted to receive the pintles of the shade-roller. The bracket 2 may be of the type having a bearing seat with a guide slot leading thereto, while the bracket 3 may be of the type having a closed bearing aperture to receive a pintle of a shade-roller.

4 designates the main section of a shade-roller of a type to which my invention is applicable, the body of this section preferably consisting of a cylindrical metal shell which contains the ordinary torsion spring 5 operating in a well-known manner to rotate the roller to wind thereon a curtain carried by the roller or to balance a window-sash. The torsion spring preferably extends only part way through the length of the section 4, as shown in Fig. 2, leaving a hollow chamber or socket 6 at one end of said section, while at the other end thereof is secured the squared pintle 7 with which the spring coöperates to rotate the roller. As this spring arrangement may be of a type well-known in the art, I do not deem it necessary to show or describe completely or in detail the construction and arrangement thereof. Extending the entire length of the roller section 4 is a groove 8 for a curtain or other material, as clearly shown in Figs. 2 and 3, said groove being formed by bending inwardly the metal shell of the roller section. Within the hollow chamber or socket 6 at a given distance from the open end of the socket is secured a thrust member or abutment 9. This thrust member or abutment 9 may be secured in the shell 4 in any convenient manner, such as by prick-punching the metallic shell of the roller into a recess in the thrust member, as shown at 10. The thrust member 9 is preferably formed with a circular spring seat having a wall 11 converging toward the bottom of the seat, said seat facing the open mouth of

the socket 6, the bottom of said seat being formed by the central flat surface 12.

The open-ended hollow chamber or socket 6 is adapted to slidably carry an end section 13 made of a cylindrical metal shell of the same diameter as the main section 4, said section 13 also having a curtain groove 14, running preferably its entire length, and of uniform cross section with the curtain groove in the section 4. Within the end section 13 is secured a cylindrical hollow member 15, which extends for a given distance beyond the inner end of the end section 13, and projects within the chamber or socket 6 in the main section, in which socket it is designed to slide freely longitudinally of the roller. This cylindrical member 15 constitutes a connecting member between the two roller sections 4 and 13. On one side of the member 15, and extending longitudinally thereof, is formed a slot or groove 16 to fit around the inwardly-projecting portion of the shell of the section 4 forming the curtain groove in said section, by which arrangement the curtain grooves of both the main section and the end section of the roller are held in constant alinement. At its opposite end from the connecting member 15 the section 13 is closed by the plug 13^a, which carries a round pintle 17, on which pintle adjacent the end of the roller is formed a shoulder 18, for a purpose to be presently described.

Within the bore of the connecting member 15, at a given distance from the end thereof, adjacent the roller section 4, is secured a thrust member or abutment 19 similar to the thrust member 9 of the main section, and having a spring seat formed the same as the spring seat in the thrust member 9, having the central seat 22 and a surrounding inclined wall 21, the seat in the member 19 facing the open end of the section 13. Within the hollow connecting member 15 is located an open coiled expansion spring 20 of a given length, one end of which bears against, and is seated in, the said seat in the thrust member 19, while the opposite end of said spring extends beyond the open mouth of the hollow plug member 15 and is seated in, and bears against, the said seat in the thrust 9 in the main section 4 of the roller. The outside diameter of the spring is preferably the same as the central flat surfaces in the thrust members 9 and 19, whereby the spring will be held centrally in the roller. the inclined walls surrounding said seats serving to center the ends of the springs in the seats. In the preferred embodiment the thrust member 9 is arranged at such a distance from the open end of the main roller section, the thrust 19 at such a distance from the inner end of the connecting member, and the spring is made of such a length that, when the roller is extended to its maximum length the spring is not compressed, but the roller sections 4, 13, may be moved toward each other to shorten the length of the roller, under which condition the spring will be placed in compression, so that its force will be exerted expansibly to separate the sections 4 and 13.

In manufacture, the main section of the roller may be manufactured to a given length, and varying lengths of the complete roller may be secured by making the end sections of various lengths; that is, the end sections may be, say, one inch, one and one-half inch, two inches, or two and one-half inches in length, as indicated in Figs. 5, 6 and 7. In this manner the rollers can be manufactured much cheaper and with far less delay than when every roller of an approximate length has to be made to order and of a specific length.

In order to assemble the roller above described, it is only necessary to drop the spring 20 into the open end of the connecting member 15 and slide said member into the open socket or chamber 6 in the main section 4, the curtain groove in said member 15 coacting with the curtain groove in the main section to maintain the curtain grooves in both roller sections in straight alinement. The inclined walls surrounding the seats in the thrust members 9 and 19 will serve to guide the spring 20 to the center of the roller and maintain the same in position after the parts of the roller are assembled.

To install the roller in the brackets 2 and 3, the round pintle 17 is placed in the bracket 3, and then the main section 4 of the roller is moved toward, or telescoped on, the connecting member 15 until the length of the complete roller is such as to permit the squared pintle 7 to enter the bracket 2. When the roller is then released, the spring 20, which has been placed under compression when the roller sections were moved toward each other, will automatically expand the roller sections between the brackets 2 and 3, thereby forcing the shoulder 18 on the round pintle against the bracket 3. This shoulder 18 performs an important function by preventing the entire end of the roller from contacting with the bracket 3 under pressure of the spring, and thereby prevents undue friction between the end of the roller and said bracket. To remove the roller from the brackets 2 and 3 the section 4 is grasped and moved toward, or telescoped on, the section 15 a sufficient distance to remove the squared pintle 7 from the bracket 2.

In the form shown in Fig. 4 the construction is as follows: The roller consists of a main portion 23 and an end section 24, the latter being fastened by prick-punching, or

otherwise, as shown at 25, to a wooden cylindrical plug 26, the latter extending throughout the length of said end section and projecting at one end beyond the same to constitute a connecting member to enter and slide in the hollow chamber or socket 27 in the end of the main section. At its outer end this plug 26 carries a round pintle 28 and at its inner end has a longitudinally-extending central socket 29 constituting a spring seat to receive one end of an expansion coiled spring 30 located in said hollow chamber or socket, and the opposite end of which spring abuts the plug 31 in the main section, which plug constitutes the anchorage for one end of the torsion spring 31^a for rotating the roller. It will be understood that in this form of the invention both of the metal shells and the roller sections are provided with alining curtain-receiving grooves 32, 32, in a manner similar to the form shown in Figs. 2 and 3, and the portion of the wooden cylinder member 26, which projects into the hollow chamber of the main section, is formed with a longitudinally-extending groove 33 to receive the inwardly-projecting portions of the walls of the roller sections which form the curtain grooves. In assembling this form of the invention, the spring 30 is seated in the spring seat 29 in the end of the connecting member or plug 26, and the latter is inserted in the open hollow end 27 of the main section 23 of the roller. As the operation of installing this form of the invention in, and removing it from, the brackets is the same as that heretofore described for the preferred embodiment, it is not deemed necessary to repeat the operation here.

Either one of the constructions above described forms a very simple, cheap and efficient self-adjusting roller which can be easily inserted into its brackets, and which will fit any window of a set in a car where the widths of the frame may vary between the brackets. It also provides a construction which can be easily removed from the brackets.

What I claim and desire to secure by Letters Patent of the United States:—

1. An extensible roller of the character described consisting of two sections formed of metallic shells, said shells being of substantially equal outside diameter, and each having a groove extending lengthwise thereof, a hollow cylindrical member secured within the end of one shell and freely slidable in both directions within the end of the other shell, and an open coiled spring located within said other shell and said hollow cylindrical member and adapted automatically to exert its force to extend the shells of the roller.

2. An extensible roller of the character described consisting of two cylindrical shells of sheet metal of practically the same outside diameter, a connecting member for the two shells consisting of a hollow plug secured within one of the shells and freely slidable within the other shell, a thrust member secured within one of the cylindrical shells beyond where the connecting member reaches, and another thrust member secured within the connecting member, a spring within the roller, one end bearing on the thrust member in the roller shell, and the other end bearing on the thrust member within the connecting member tending to force the two roller shells from each other, and means on the thrust members to maintain the ends of the spring central within the roller.

3. An extensible roller of the character described consisting of two cylindrical shells of sheet metal of substantially equal outside diameter, a connecting hollow member for the two sections consisting of a hollow shell secured to one section and freely slidable in both directions in the other section, a thrust member secured in one section and another thrust member secured within said hollow member, said thrust members each having a central flat face surrounded by an inclined wall converging toward said face, and a coil spring within the roller and having its ends abutting said thrust members and adapted to exert its force expansibly to extend the roller, the inclined walls on the thrust members serving to center the said spring within the roller sections.

4. An extensible roller of the character described consisting of two cylindrical metallic shells of substantially equal outside diameter, a connecting member carried by one section and freely slidable in both directions within the other section, a thrust member in each section, a spring between the thrust members and adapted to exert its force expansibly to extend the roller sections, said thrust members being formed with cup-shaped seats having converging walls adapted to engage the ends of the spring to center the same within the roller.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

DANIEL HOYT.

Witnesses:
M. E. McNinch,
C. G. Heylmun.