(No Model.)

H. S. WAINWRIGHT.

CURTAIN FIXTURE.

No. 460,937. Patented Oct. 6, 1891.

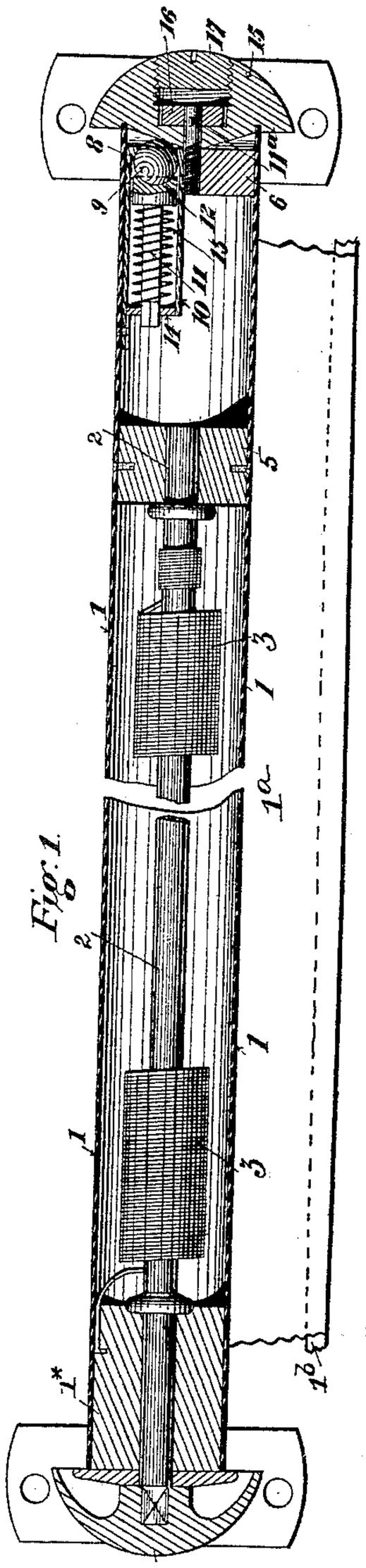

Fig. 1.

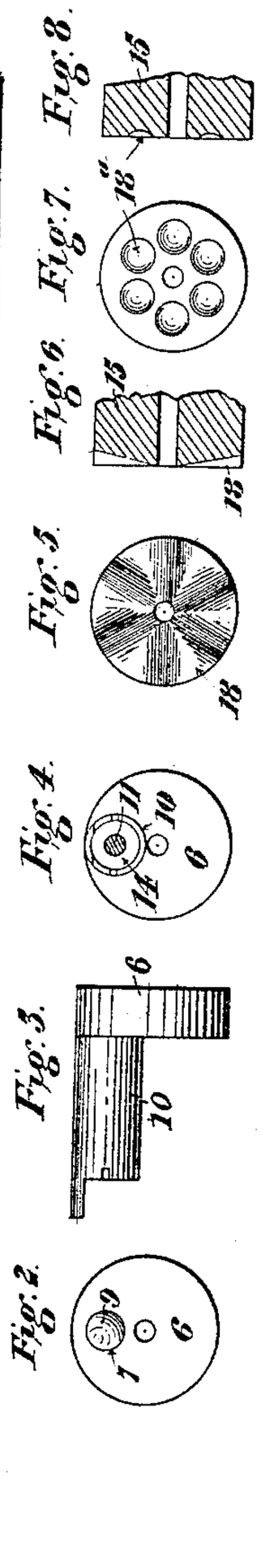

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

Fig. 8.

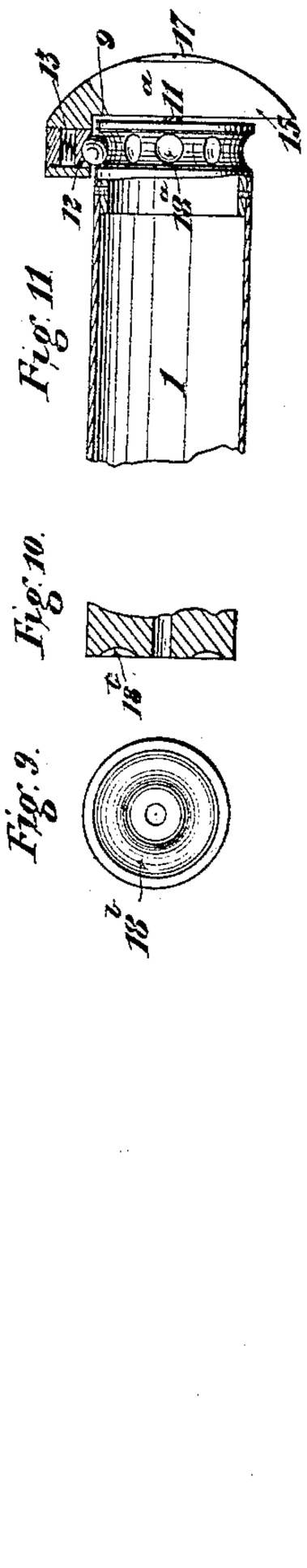

Fig. 11.

Fig. 10.

Fig. 9.

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UNITED STATES PATENT OFFICE.

HARRY SMITH WAINWRIGHT, OF ASHFORD, ENGLAND.

CURTAIN-FIXTURE.

SPECIFICATION forming part of Letters Patent No. 460,937, dated October 6, 1891.

Application filed June 30, 1890. Serial No. 357,303. (No model.) Patented in England February 3, 1890, No. 1,832, and in France June 5, 1890, No. 206,171.

To all whom it may concern:

Be it known that I, HARRY SMITH WAINWRIGHT, a subject of the Queen of Great Britain and Ireland, residing at Ashford, in the county of Kent, England, have invented Improvements in Curtain-Fixtures, (for which English Patent No. 1,832, dated February 3, 1890, and French Patent No. 206,171, dated June 5, 1890, have been obtained,) of which the following is a specification.

My invention has reference to self-acting window-blind apparatus such as used for railway-carriage blinds, wherein a roller to which the upper edge of the blind is secured is so mounted that it can be rotated in one direction—namely, to wind up the blind—by the action of a suitable spring or springs and in the reverse direction by pulling the blind to lower it; and my invention has reference to the construction of self-acting window-blind apparatus of this description with a retaining-brake in which a ball (or there may be more than one) is caused by the action of a spring to bear against a surface formed with cavities, recesses, or indentations, arranged in an annular row concentric with the blind-roller. With such an arrangement the pressure exerted by the brake-spring through the ball can be so adjusted as to cause the roller to be prevented from rotating whether the blind be up or down or in any intermediate position, but so, nevertheless, that the blind can be either wholly or partially pulled down or raised by hand, and when released by the hand will remain practically in the raised, lowered, or intermediate position to which it has been drawn or lifted. It will be understood that when the blind is pulled to lower it the resistance of the brake is overcome by the pull applied to the blind, and when the lower edge of the blind is lifted the blind-roller is rotated to wind up the blind by the action of the spring or springs that normally acts or act to raise and wind the blind upon its roller.

In the accompanying drawings, Figure 1 is a longitudinal central section of self-acting window-blind apparatus according to this invention. Fig. 2 is a view of the outer side of the disk carrying the brake-ball. Figs. 3 and 4 are respectively a side elevation and a view of the inner side of the disk with spring-holder carried thereby. Figs. 5 and 6 are respectively a face view and a central section of part of one of the roller-brackets or supports formed with an indented or waved surface against which the brake-ball bears. Figs. 7 and 8 are similar views to Figs. 5 and 6, respectively, illustrating a modified form of indented surface. Figs. 9 and 10 illustrate a further modified form of indented surface. Fig. 11 illustrates a further modification.

Referring to Figs. 1 to 6, inclusive, 1 is a tubular roller to which the blind 1^a is attached. Within it is arranged a stationary rod 2, around which is wound or coiled a spring 3, one end of which is secured to the rod and the other to the roller. The rod 2, which passes through a hollow plug $1^\times$, secured within one end of the cylinder, and for which it serves as a bearing, is held at one end in a suitable bracket 4 and at the other end extends through a disk 5, secured within the roller.

6 is a disk formed at one side of its center with a hole 7 and a seat 8 for a ball 9, forming part of a retaining-brake. This disk is secured to the roller 1 and has on its inner side a hollow cylinder 10, containing a rod 11 with cup or bearing 12 for the ball, and a spring 13, that acts at one end against a cup or bearing 12, and at the other end against a back plate 14, secured to the cylinder 10, and in such a manner as to normally keep the ball to its seat.

11^a is a pin screwed or otherwise secured to the disk 6 at its center. This pin, made of suitable material—for example, steel—has a bearing in a fixed bracket 15, and at its outer end has riveted upon it a washer 16 in such a manner that the pin and washer can turn freely in the bracket 15 when the roller rotates.

17 is a screw-plug that closes the hole in which the washer 16 works.

The surface 18 of the bracket 15 adjacent to the disk 6, and against which the ball 9 acts, as shown in Fig. 1, and over which it rolls when the blind is pulled down or wound up, is made of waved form, as clearly shown in Figs. 1, 5, and 6, the grooved or indented

parts of the surface being arranged in an annular row concentric to the axis of the blind-roller. The pressure exerted by the spring 13 upon the ball is so adjusted that the resistance offered by the indented surface to motion of the roller is sufficient to hold the blind practically in any position in which it is left after being drawn down or lifted, but not such as to prevent the blind being pulled down by hand or wound up by the spring 3 when its lower weighted edge is lifted.

The action of the apparatus is as follows: The blind is pulled down by hand against the action of the spring 3, which is thereby partially coiled, and the drawing up of the blind when its lower weighted edge 1^b is lifted is effected by the reaction of this spring, the blind, when released, being retained practically in any position to which it has been drawn or lifted by the action of the ball against the indented surface 18.

The bracket 15, instead of having a waved surface 18, as just described, can be formed with an annular row of cavities or recesses 18^a, of curved form in cross-section, as shown in Figs. 7 and 8, and in one or other of which the ball 9 rests when the blind is released; or the bracket may be made with an annular groove 18^b of curved form in cross-section, as shown in Figs. 9 and 10, for the brake-ball to run in. The surface of the groove may be either waved or smooth, or the bracket may have a projecting part carrying the ball, which acts against the smooth or indented grooved or channeled periphery of the disk, the ball or balls being inclosed between such disk and projection, as in Fig. 11.

As will be obvious, a retaining-brake such as described may be arranged in various ways. Thus the ball 9, with its spring attachment, can be attached to the fixed bracket 15 and the surface formed with cavities, recesses, or indentations, and against which the ball acts, can be fixed to and revolve with the roller; also, two or more balls may be used in any of the arrangements mentioned, each ball being acted upon by a spring, as described, arranged in a cylinder carried by and to one side of the center of the perforated disk 5. These modifications will be readily understood from the foregoing description without the aid of additional drawings.

The ball 9 can with advantage be made about five-sixteenths of an inch in diameter and be of ebony, gun-metal, white-metal, or steel; but gun-metal is preferred, owing to its smooth action and non-corrosive qualities. The recessed or indented surface against which the ball acts is also preferably of gun-metal.

What I claim is—

1. In self-acting window-blind apparatus, the combination, with the tubular blind-roller 1, of a blind 1^a, weighted at its lower edge, brackets 4 and 15 for said roller, a stationary rod 2, held by said bracket 4 and serving as a bearing for one end of said roller, a coiled spring 3, secured at one end to said roller and at the other end to said rod, a disk 6, secured to one end of said roller, journaled to said bracket 15, and formed with a hole 7 and a seat for a ball, a ball 8, carried by and arranged to partly project through said disk, an indented or waved surface 18, arranged adjacent to said disk and carried by said bracket 15, a cup or bearing 12 for said ball, and a spring 13, arranged to act against said cup or bearing and force said ball against said surface, substantially as herein described, for the purpose set forth.

2. In a self-acting window-blind apparatus having a main spring to wind the blind-roller in one direction, a blind weighted at its lower edge, a retaining-brake comprising a perforated disk or plate carrying a spring-holder, a part having a recessed or indented surface, a ball arranged to partly project through said perforated disk or plate, a cup or bearing for said ball, and a spring arranged within said spring-holder and adapted to act against said cup or bearing and cause said ball to bear against said surface, said perforated disk or plate and part with recessed or indented surface being pivoted together and so constructed that the one can be secured to one end of a blind-roller and the other to a window-frame or other fixed support, substantially as herein described, for the purpose set forth.

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

HARRY SMITH WAINWRIGHT.

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