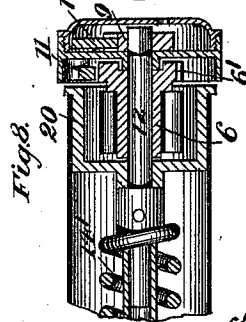
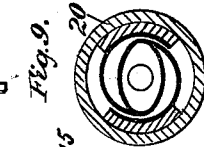
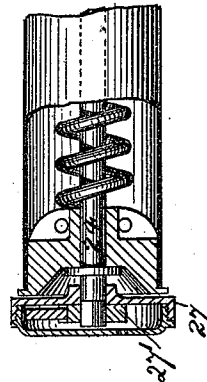
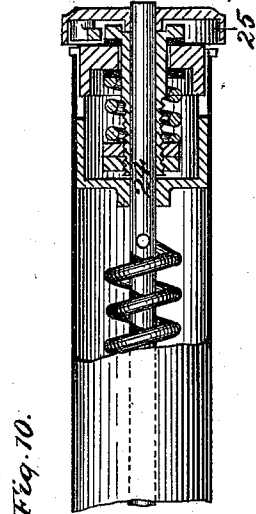
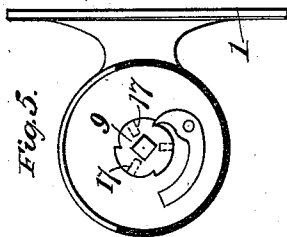
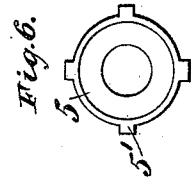
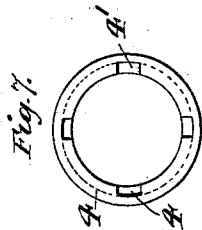
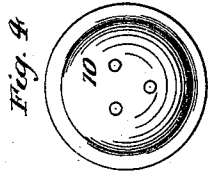
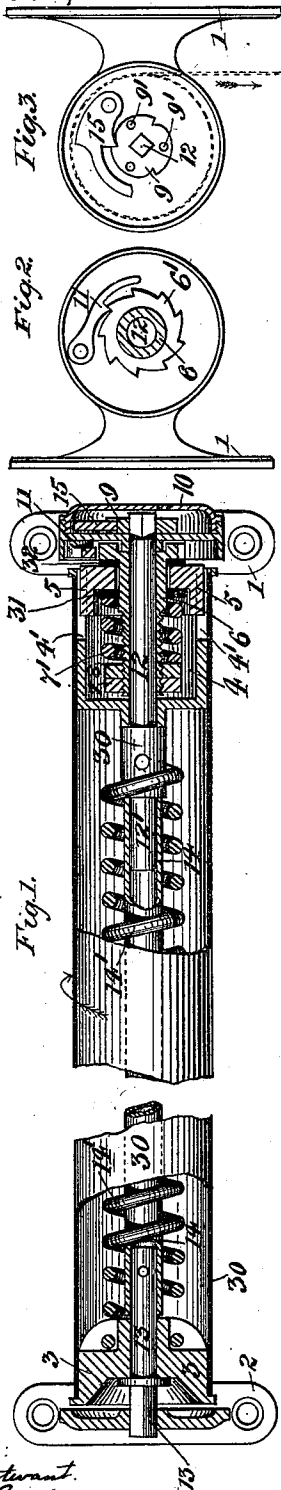


(No Model.)

W. H. NISBET & W. McLAREN.
WINDOW BLIND APPARATUS.

No. 507,747.

Patented Oct. 31, 1893.



Witnesses:
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E. A. Footh

Inventors:
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by *Richard A. Atty.*

UNITED STATES PATENT OFFICE.

WILLIAM HOLMES NISBET AND WILLIAM McLAREN, OF LONDON, ENGLAND.

WINDOW-BLIND APPARATUS.

SPECIFICATION forming part of Letters Patent No. 507,747, dated October 31, 1893.

Application filed November 12, 1892. Serial No. 451,821. (No model.) Patented in England October 13, 1892, No. 18,318.

To all whom it may concern:

Be it known that we, WILLIAM HOLMES NISBET, residing at 46 Blenheim Gardens, Willesden Green, and WILLIAM McLAREN, residing at 70 Canfield Gardens, West Hampstead, London, in the county of Middlesex, England, have invented new and useful Improvements in Window-Blind Apparatus, (which have been patented in Great Britain by Letters Patent dated the 13th day of October, 1892, No. 18,318;) and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art or manufacture to which it relates to make and use the same.

Our invention relates to spring rollers for window blinds in which frictional contact between two or more surfaces is employed for the purpose of retaining the blind in any desired position and it consists mainly in making provision for adjusting the said frictional contact, adjusting or regulating the tension or compression of the main or spiral spring within the body of the roller for the purpose of rotating said roller more efficiently.

In the accompanying drawings which illustrate the invention Figure 1 is a section of the roller and carrying brackets. Figs. 2 to 7 are details to be hereinafter described. Figs. 8 and 9 are longitudinal and cross sections of a modified form of the roller and Fig. 10 shows a further modification.

In Fig. 1 the blind roller or tube 30 which is carried by brackets 1 and 2 to be secured to a carriage window or other window has a hollow cylinder 4 fixed in one end and the said cylinder has one or more grooves 4' cut parallel to its axis as indicated in Fig. 7 which is an end view of the cylinder 4. A hollow disk 5 shown at Figs. 1 and 6 formed with projections 5' is fitted to engage the grooves 4'. Within the roller 30 is contained a smaller tube 14 having a short spindle 13 fixed in its one end and which passes through a bearing cap 3 in the end of the roller a square or round end being formed on the spindle 13 to engage with the bracket 2 by which the tube 14 and short spindle 13 are held stationary while the roller is fitted with the bearing cap 3 to enable it to revolve or rotate upon the spindle 13. In the other end of the tube 14 an-

other short spindle 12 is inserted the end of which 12' is free to rotate within the tube 14. This short spindle 12 is carried through the hollow cylinder 4 and the bracket 1 and has fixed upon its end a cog or ratchet wheel 9 the teeth of which are engaged by a pawl 15. Encircling the tube 14 is a spiral spring 14' one end of which is attached to the cap 3 in the end of the roller the other end of the spring being attached to the loose short spindle 12 which again is prevented from rotating by the engagement of the pawl 15 with the cog or ratchet wheel 9. Within the hollow cylinder 4 passing through the disk 5 and free to rotate about the spindle 12 is a loose sleeve or cylinder 6 having ratchet teeth 6' formed upon its end said ratchet teeth being engaged by a pawl 11 which in turn is secured to the bracket 1. One end of the sleeve or cylinder 6 is screw threaded upon its outer surface and carries two nuts 7 and 8 by means of which any desired amount of compression may be put upon the spring 7' which encircles the sleeve or cylinder 6 and exerts pressure upon a friction washer 31 of fibrous or other suitable material bearing upon the inner surface of the disk 5, the outer surface of which bears upon the washer 32 of fibrous or other suitable material. This washer 32 in turn bears upon the inner surface of the enlarged ratchet end of the sleeve or cylinder 6. When the blind is pulled down the roller rotates in the direction of the arrow upon the spindles 13 and 12, the spindle 13 being prevented from rotating by the square or keyed round end which is fixed in the bracket 2 and the spindle 12 being prevented from rotating by the cog or ratchet wheel 9 upon its end engaged by the pawl 15, the spring 14' of which one end is attached to the cap 3 fixed in the end of the tube or roller 30. The other end being attached to the short spindle 12 is coiled about the tube 14 and when the weight in the end of the blind is relieved or raised by the hand of the operator the reaction of the spring 14' causes the tube or roller 30 to rotate in the reverse direction to that indicated by the arrow by which means the blind is wound upon the roller 30. The object of the loose spindle 12 now becomes apparent. Should the tension on the

spring 14' be insufficient to wind the blind fully up, by removing the cap 10 which is screwed upon the outer face of the bracket 1 a key with prongs to engage the holes 9' in the cog or ratchet wheel 9 may be inserted and the spring wound to any desired degree of tension. When the key is removed the pawl 15 engaging the cog or ratchet wheel 9 retains the desired tension on the spring. The flange of the cap 10 when screwed in position coming between the outer or upper surface of the pawl 15 and the inner surface of the bracket 1 at 15' prevents the pawl becoming disengaged from the cog or ratchet wheel 9 and the spring 14' thereby losing its tension. Other means than a key with prongs on it may be adopted for winding the spring. For example the square upon the end of the spindle 12 may be made to project so far through the cog or ratchet wheel 9 that a key similar to an ordinary box spanner or clock key may be put upon it and the spindle 12 turned in the manner already described.

Fig. 5 is a modification in which the cog or ratchet wheel 9 has holes 17 in its periphery a pawl 16 being so placed as to engage the cog or ratchet wheel from the under side so that a needle or pricker or other pointed instrument may be inserted in the holes 17 and the spring wound by pulling the spindle round capstanwise a portion of the bracket being cut away to facilitate the operation. The pawl may be placed on the top and the bracket cut away on the bottom side if preferred. In pulling down the blind as aforesaid the grooves 4' in the hollow cylinder 4 engaging the projections 5' on the disk 5 cause it to rotate upon the loose sleeve or cylinder which in turn is prevented from rotating by the pawl 11 engaging the ratchet teeth 6' formed upon its large end. Sufficient force has therefore to be exerted in pulling down the blind to overcome the friction between the washers 31 and 32 and the inner and outer faces of the disk 5. When the hand of the operator is removed the blind remains in the position to which it has been drawn the weight in the bottom end of the blind being insufficient to overcome the aforesaid friction and at the same time sufficient to prevent the reactive energy of the spring 14' winding the blind up until the weight is relieved or raised by hand.

Figs. 8 and 9 represent a modification showing the same method of winding the spring 14' adapted to blind rollers in which the frictional contact or brake device acts upon the inner circumference of the hollow cylinder 20

which corresponds to the hollow cylinder 4 in Fig. 1.

Fig. 10 is a modification in which instead of a spindle composed of a tube and one or more parts a plain straight rod or spindle is used. In the arrangement shown the winding of the spring is effected from the opposite end of the roller to that in which the frictional brake apparatus is contained. The brackets 25 and 27 which correspond to 1 and 2 in Fig. 1 have round holes in their centers through which the spindle 24 is passed. The bracket 27 has a cap screwed into it similar to that at 10 Figs. 1 and 4. The spindle 24 after passing through the bracket 27 has a square formed upon it on which is fixed the cog or ratchet wheel 27' corresponding to 9 in Figs. 1 and 3.

The winding of the spring is performed in the manner described with reference to Fig. 1 and it will be seen that by substituting for the brackets 25 and 27 others similar to 1 and 2 Fig. 1 with the exception that the holes through which the spindle passes must be round in both brackets and by fixing the cog or ratchet wheel 27' on the end of the spindle that projects on the outer face of the bracket substituted for 25 the winding of the spring can be performed from the end of the roller in which the friction apparatus is contained. A straight rod or spindle may be substituted for the one shown in Fig. 9.

Having now described the invention, what we desire to claim and secure by Letters Patent is—

In window blind apparatus a roller having a hollow cylinder provided in one end in which are cut one or more grooves to engage corresponding projections upon a disk which is free to rotate or revolve about a sleeve or cylinder one end of which is screw threaded to receive one or more nuts the other end being enlarged and having ratchet teeth cut upon its periphery said sleeve being free to rotate or revolve upon the central or main spindle the spring 7' for pressing the friction disk laterally, the pawl 11, for engaging the teeth of the ratchet sleeve, and the stationary supporting brackets for the parts, substantially as described.

In witness whereof we have hereunto set our respective hands and seals this 10th day of October, 1892.

WILLIAM HOLMES NISBET. [L. s.]
WILLIAM McLAREN. [L. s.]

Witnesses:

EDMUND S. SNEWIN,
PERCY EDW. HOCKS.