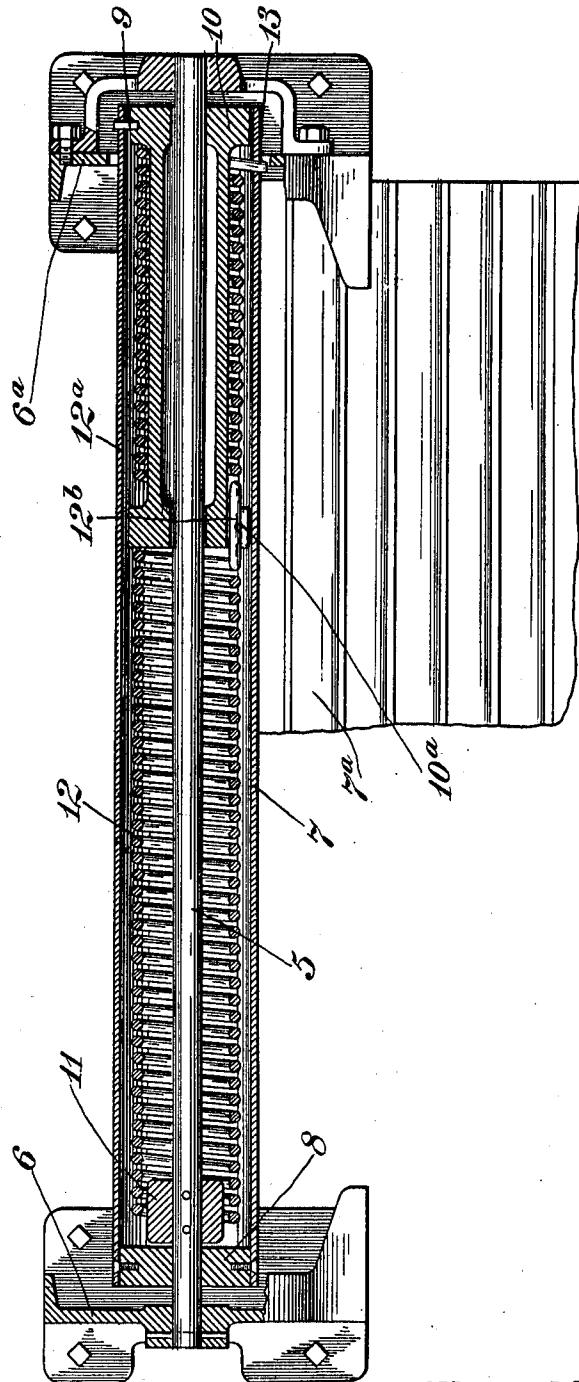


A. M. MacFARLAND.
 SPRING ROLLER.

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1,021,057.

Patented Mar. 26, 1912.



Witnesses
Benj. Finckel
Gertrude Lowry

Inventor
Allison M. MacFarland
 by *Finckel Finckel*
 his Attorneys

UNITED STATES PATENT OFFICE.

ALLISON M. MacFARLAND, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE KINNEAR MANUFACTURING COMPANY, OF COLUMBUS, OHIO, A CORPORATION OF WEST VIRGINIA.

SPRING-ROLLER.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ALLISON M. MACFARLAND, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented a certain new and useful Improvement in Spring-Rollers, of which the following is a specification.

It is well known that the lengthening of a portion of coil spring by the proper addition to it of coils of similar dimensions or strength diminishes the torsional resistance of the whole.

It is desirable in automatically releasable rolling fire shutters that they be manually operable in normal circumstances. If such shutters, when heavy, are to be made manually operable they should be provided with a suitable counterbalancing member. This member oftentimes is conveniently in the form of a spring. To entirely release such a spring as in case of fire permits a too violent descent of the shutter endangering its integrity and future usefulness.

The object of the present invention is, generally stated, to utilize the principle first stated and to provide in a normally operable shutter a construction in which the effective length of spring is automatically increased by a dangerous rise of temperature and its action on the barrel and shutter thereby lessened and therefore the shutter permitted to descend but without such violence as if there were no restraining action at all. The particular degree of restraining force can, of course, be provided for by the adoption of suitable dimensions of spring or spring portions. As an advantage incident to such construction the restraining force can be made such as to so far counterbalance the weight of the shutter in its closed position as to permit the latter to be easily raised by hand and therefore permit the egress of persons from the building or the access of firemen to the interior thereof.

The invention is embodied in the example herein shown and described and then pointed out in the claims.

In the accompanying drawing forming part hereof—the view represents a central vertical section taken longitudinally through the roller.

In the drawings the character 5 designates the shaft which is fixed by any suitable means in the brackets 6 and 6^a. The

character 7 designates a barrel to which the rolling shutter 7^a is secured as usual, said barrel having permanently secured in it at one end a plug or head 8. At its other end the barrel has secured to turn with it by means of a pin 9 that is fusible by a dangerous rise of temperature one end of a spool-shaped head 10.

Pinned to the shaft 5 within the barrel is a collar 11 to which is attached the tension member or coil spring. This spring is composed of two portions 12 and 12^a connected by a straight part 12^b. The main portion 12 of the spring is attached to the collar 11 while the supplementary portion 12^a encircles the spool-shaped device 10 and has its free end connected to the barrel at 13. The connecting portion 12^b of the spring fits in a transverse groove 10^a in the rim of the inner head of the spool-shaped device 10 so as to prevent operation of the spring portion 12^a when the spool-shaped head turns with the drum. The spring as a whole is secured to the shaft and barrel so that when the shutter is unwound the tension of the spring is increased. The spring portion 12 is made of sufficient length and power to counterbalance the shutter for normal operation and the spring portion 12^a is made of such length that when operatively added to the portion 12 the whole spring will be insufficient to counterbalance the shutter but sufficient to prevent a too violent precipitation of the shutter when the latter is automatically released.

From the construction shown and described, therefore, the operation is plain. When the barrel is turned on the shaft, as in unwinding the shutter, the portion 12 of the spring is placed under tension or increased tension, the spool-shaped device and spring thereon turning inert with the barrel. When the spool-shaped device is released by the melting of the fusible pin 9 both the spring portions 12 and 12^a become operable by the barrel because the spring portion 12^a is connected with the barrel and the portion 12 connected with the stationary collar 11 on the shaft.

Changes in the form and arrangement of the parts can be made without departing from the gist of the invention.

What I claim is—

1. In a rolling shutter, the combination with a shutter-receiving member, of a nor-

5 mally operable tension member therefor, a supplementary tension member and means whereby the two tension members are rendered jointly operable to lessen the resistance of the normally operable tension member.

10 2. In a rolling shutter, the combination with a rotatable shutter-receiving member, a normally operable tension member therefor, a supplementary tension member connected with the shutter-receiving member, a device to which the two tension members are connected and means releasable by a dangerous rise of temperature for connecting said device with the shutter-receiving member.

15 3. In a rolling shutter, the combination with a shutter-receiving member, of a normally operable tension member therefor, a supplementary tension member connected with the shutter-receiving means, a device about which the supplementary member is wound and connected, and fusible means for connecting the same with shutter receiving member, said normally operable tension member being connected with the means about which the supplementary tension member is wound.

25 4. In a rolling shutter, the combination

with a rotating shutter receiving member 30 and a stationary supporting shaft for the same, of a normally operable tension member connected with the shaft, a supplementary tension member connected with the shutter-receiving member and the first 35 named tension member, and means releasable by a dangerous rise of temperature for holding said supplementary tension member inert during the normal operation of the shutter.

40 5. In a rolling shutter, the combination with a rotatable shutter receiving member and a stationary supporting shaft for the same, of a normally operable tension member connected with the shaft, a supplementary 45 tension member connected with the first named tension member, a spool about which the supplementary tension member is wound, the two tension members engaging said 50 spool and the supplementary tension member connected with the shutter receiving member, and means fusible by a dangerous rise of temperature for connecting said spool with the shutter receiving member.

ALLISON M. MacFARLAND.

Witnesses:

WILLIAM O. AZZOLI,
J. L. J. BRADY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."