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No. 774,931. PATENTED NOV. 15, 1904.

E. S. BUCKNAM.

DEVICE FOR ADJUSTING THE TENSION OF SPRINGS.

APPLICATION FILED MAR. 31, 1904.

NO MODEL.

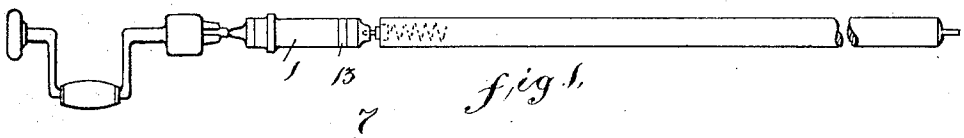


Fig. 1.

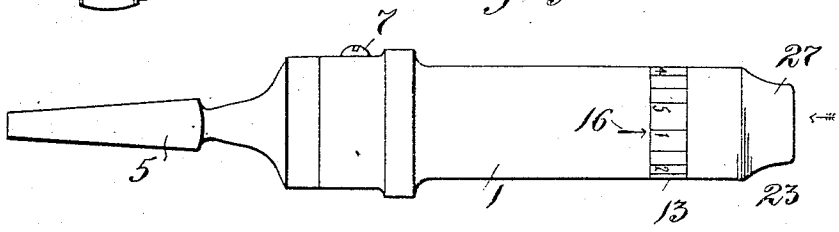


Fig. 2.

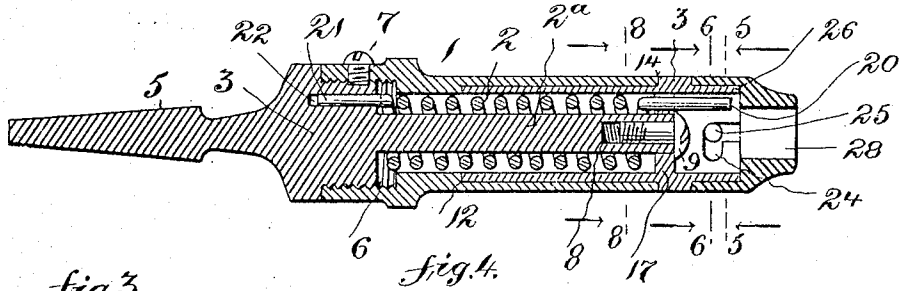


Fig. 4.

Fig. 3.

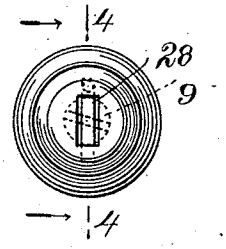


Fig. 6.

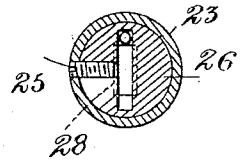


Fig. 5.

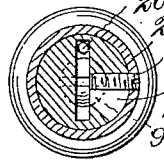


Fig. 7.

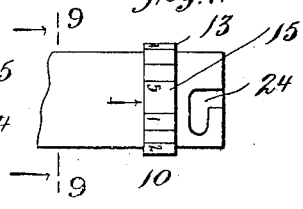


Fig. 10.

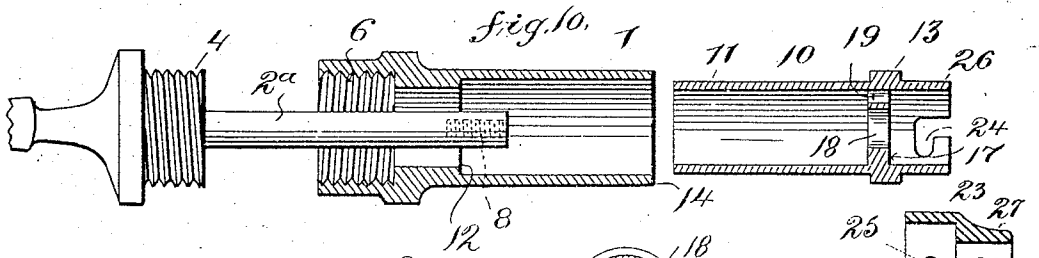


Fig 8

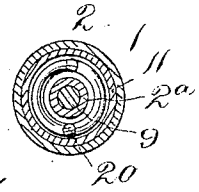


Fig. 9.

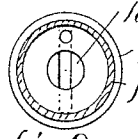
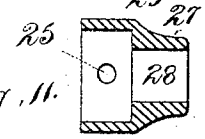


Fig. 11.



Witnesses
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Inventor
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By his Attorney Joseph L. Lew

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No. 774,931. Patented November 15, 1904.

UNITED STATES PATENT OFFICE.

EZRA S. BUCKNAM, OF LLANERCH, PENNSYLVANIA, ASSIGNOR TO JOHN A. BRILL, OF PHILADELPHIA, PENNSYLVANIA.

DEVICE FOR ADJUSTING THE TENSION OF SPRINGS.

SPECIFICATION forming part of Letters Patent No. 774,931, dated November 15, 1904.

Application filed March 31, 1904. Serial No. 200,906. (No model.)

To all whom it may concern:

Be it known that I, EZRA S. BUCKNAM, a resident of Llanerch, State of Pennsylvania, have invented certain new and useful Improvements in Devices for Adjusting the Tension of Springs in Curtain-Rollers or the Like, of which the following is a specification.

The object of my invention is to produce a simple means for adjusting the tension of springs in curtain-rollers or other similar articles, so that the tension may be made uniform in as many rollers as desired. This is especially desirable in curtain-rollers in cars where a number of curtains are employed, so that the springs in the various rollers may be adjusted to a uniform tension, and my device is also adapted to establish certain units of tension.

Further objects of my invention and details of construction will be hereinafter set forth, and further pointed out in the claims.

In the drawings forming part of this specification, in which similar numerals of reference indicate corresponding parts throughout the several views, Figure 1 illustrates the method of using my invention to adjust a curtain-roller spring with the aid of an ordinary brace. Fig. 2 is a side elevation of my improved adjuster. Fig. 3 is an end view of Fig. 2 looking in the direction of the arrows. Fig. 4 is a longitudinal section, taken on the line 4 4 of Fig. 3, looking in the direction of the arrows. Fig. 5 is a cross-section, taken on the line 5 5 of Fig. 4, looking in the direction of the arrows. Fig. 6 is a cross-section on the line 6 6 of Fig. 4 looking in the direction of the arrows. Fig. 7 is a side elevation of a portion of one of the parts. Fig. 8 is a cross-section on the line 8 8 of Fig. 4 looking in the direction of the arrows. Fig. 9 is a section on the line 9 9 of Fig. 7. Fig. 10 is a partial sectional view of the casing and spindle, and Fig. 11 is a cross-section through the cap.

My invention consists of a device by which the spring in a curtain-roller may be tightened to the desired tension against the action of a spring which will register the amount of tension, so that a number of spring-rollers may be adjusted to the same tension; and it consists of a casing 1, in which is inclosed a coil-spring 2. One end of the spring is adapted to engage a revolving cap and the other adapted to be revolved, so that the tension of the spring will revolve the cap.

Within the casing 1, which is preferably cylindrical, is a spindle 2^a, having an enlarged part 3, having the exterior threads 4 and a free end 5, which is preferably square, so as to readily fit an ordinary brace. The casing is provided at one end with interior screw-threads 6 to receive the threads 4 on the spindle when the latter is screwed into place, and through the casing is a small set-screw 7, which holds the spindle when the latter is in position. The inner end of the spindle is provided with a bore having interior screw-threads 8 to receive the screw 9, the purpose of which will appear later.

A secondary part of the casing is a cylinder 10, one end, 11, of which revolves within the casing 1, the end abutting against the shoulder 12 of the casing, and is provided with a flange 13, which abuts against the end 14 of the casing and is preferably of sufficient extension to lie flush with the outer surface of the casing. This flange is provided with marks or figures 15, adapted to register with an indicated point, such as the arrow 16 on the casing, so that it can be seen how many revolutions or fractions thereof are made by the spindle as against the tension of the coil-spring. Within the cylinder is a cross-piece 17, having an aperture 18 therethrough to receive the end of the spindle, and a small aperture 19 to receive the end 20 of the spring, the opposite end 21 of the spring being received by an aperture 22 in the rear of the spindle. By the means above described the casing 1 and cylinder 10 are held together by means of the screw 9, so that the cylinder may revolve within the casing, and when revolved the spindle engaging one end of the spring and the cross-piece of the cylinder engaging the other end causes a torsional strain on the coil-spring, which coacts with the spring of

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curtain-roller, as will appear in the further description.

On the outer end of the cylinder I attach a cap 23 by means of a bayonet connection, comprising an angular opening 24 in the cylinder and a pin 25 in the cap to pass in the opening and engage with the cylinder, or any other means, as may be preferred. The cap is preferably of such thickness as to fit over the end 26 of the cylinder and lie flush with the flange 13 to give symmetry to the device. The end 27 of the cap is provided with a rectangular opening 28 (see Fig. 3) to receive the rectangular (if such it be) end of the spring curtain-roller. The cylinder and cap may be made in an integral piece, if desired; but I prefer to make it as illustrated, so that the cap may be interchangeable and the parts more easily assembled.

The operation of my improved adjusting device is illustrated in Fig. 1, in which the spring in an ordinary curtain-roller (the mechanism of which is so well known that details need not be shown here) is adjusted by means of an ordinary brace combined with my invention. When the parts are in the position shown in this figure, the brace is turned, thus rotating the spindle, which exerts a torsional stress on the coil-spring, which in turn exerts the revolving stress on the cylinder and cap, and thus to the spring in the curtain-roller, the tension of the spring in the adjuster coacting with the tension of the spring in the curtain-rod. When the spring is being adjusted, notice is taken of the number of revolutions or parts of revolutions made by the cylinder and casing in opposite directions by means of the dial 15, so that other curtain-rollings may be adjusted to the same tension and a record made of the unit of tension, if required.

While I have described in detail my specific devices for carrying out my invention, I do not wish to be understood as limiting the scope of my broad claims herein, as details of construction may be altered without departing from the nature of my invention.

Having described my invention, what I claim is—

1. In a device for tightening springs, the combination of a coil-spring, means on one end of the spring for engaging with the spring-adjusting means on a curtain-roller, or similar device, means on the other end of the spring for applying a torsional twist thereto, and means for determining the relative revolutions of the ends of the spring.

2. In a device for tightening springs, the combination of a coil-spring, means on one end of the spring for engaging with the spring-adjusting means on a curtain-roller or similar device, means on the other end of the spring for turning the same, and means adapted to indicate the relative revolutions of the opposite ends of the spring.

3. In a device for tightening springs, the combination of a coil-spring, means on one end of the spring for engaging with the spring-adjuster on a curtain-roller or similar device, means on the other end of the said spring for turning the same, means for determining the relative revolutions of the end of the spring and a spindle in said spring.

4. In a device for tightening springs, the combination of a coil-spring, means connected with one of the ends thereof adapted to engage the spring-adjuster on a curtain-roller or similar device, means for revolving the opposite end of said spring, a spindle connecting the means on the ends of said spring, and means for determining the relative revolutions of the ends of the spring.

5. In a device for tightening springs, the combination of a spring, a casing, means on one end of the spring for engaging the spring-adjuster in a curtain-roller or the like, means on the other end of the said spring for revolving the same, and means for determining the relative torsional stresses of said spring.

6. In a device for tightening springs, the combination of a casing, a spindle, a spring within the casing, one end of said spring being adapted to revolve with the spindle and casing and means connected with the other end of said spring, adapted to engage with the spring-tightening means, on a curtain-roller or similar article.

7. In a tension-regulating device, the combination of a casing, a spindle within the casing, a spring surrounding said spindle, one end of the spring engaging with said spindle and means connected with the opposite end of the spring adapted to engage with the spring-adjuster on a curtain-roller or similar article.

8. In a tension-regulating device, the combination of a casing, a spindle within the casing, a spring within the casing engaging with the spindle, a cylinder revolving partly within the casing, said cylinder engaging with the opposite end of said spring and means connected with said cylinder for engaging with the spring-adjuster on curtain-rollers or the like.

9. In a spring-adjuster, a casing, a spindle within the casing, a spring within the casing, one end of which engages with the spindle, a cylinder adapted to revolve and means on the cylinder engaging the opposite end of said spring and means connecting the spindle and cylinder.

10. In a spring-tightening device, a casing, a spring within the casing, one end of said spring being secured to move with said casing, a cylinder adapted to revolve and means connecting the cylinder with the opposite end of said spring and means connected with said cylinder for engaging with the spring device for curtain-rollers and the like.

11. In a spring-tension-tightening device, the combination of a casing, a spindle, a spring within the casing, one end of said spring be-

ing engaged so as to move with said casing, and a cylinder connected with the opposite end of said spring and adapted to revolve, means connecting said cylinder, and casing, said cylinder being adapted to register with said casing.

12. In a spring-tension-tightening device, the combination of a casing, a spindle, a spring within the casing, one end of which is engaged so as to move with said casing, a cylinder connected with the opposite end of said spring, and adapted to revolve, a cross-piece within the said cylinder and means securing said cross-piece and spindle, together, so that said cylinder may revolve.

13. In a spring-tightening device, the combination of a casing, a spindle within the casing, an outer end to said spindle, a spring within the casing, one end of which engages with said spindle, the cylinder revolving partly within the said casing, means connecting the cylinder and other end of said spring, means connecting the cylinder and spindle, and a cap on the cylinder having an angular opening in the end adapted to engage with the spring-tightening device in a curtain-roller or similar article.

14. In a spring-tightening device, the combination of a casing, a spring within the casing, a revolving cylinder, and means on the cylinder to engage with the spring-tightener of a curtain-roller, said cylinder being adapted to revolve, and means whereby when said casing and cylinder are revolved, a torsional stress of said casing is caused to act on the said curtain-roller spring, and means for determining the relative revolutions of the said cylinder and casing.

15. In a spring-tightening device, the combination of a casing, a spindle having a free end adapted to fit a brace or similar device, said spindle extending within the casing, a spring, one end of which engages said spindle, a cylinder partly within said casing, a cross-piece in the cylinder engaging with the opposite end of said spring, a screw in the end of said spindle to secure the cross-piece and spindle, and a cap on the cylinder having an angular opening to engage a curtain-roller-spring adjuster.

16. In a spring-tightening device, the combination of a casing, a spring within the casing, means for engaging one end of the spring with the casing, a cylinder extending in the casing, a flange on the cylinder abutting against the end of the casing, and provided with means for registering with the casing, a cross-piece in the cylinder engaging with one end of the said spring, means securing the casing and a cylinder together, so as to allow the same to revolve, and a cap in the cylinder having an opening adapted to engage with the spring-tightening means on a curtain-roller or similar article.

Signed in the city and county of Philadelphia, State of Pennsylvania, this 28th day of February, 1904.

EZRA S. BUCKNAM.

Witnesses:
WM. J. FERDINAND,
TERRENCE MCCUSKER.