

Dec. 7, 1954

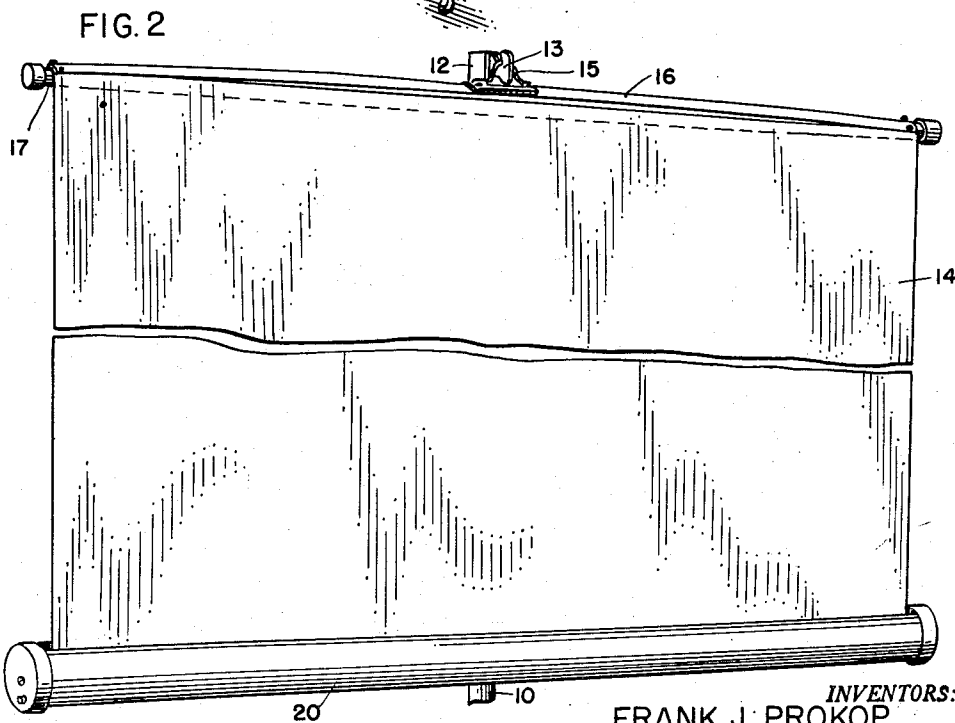
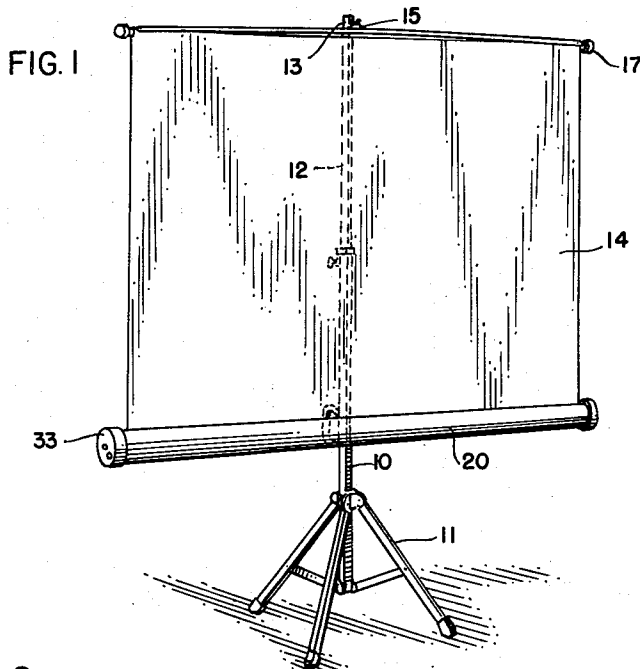
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2,696,249

SCREEN WEB TENSIONER

Filed Oct. 13, 1953

2 Sheets-Sheet 1



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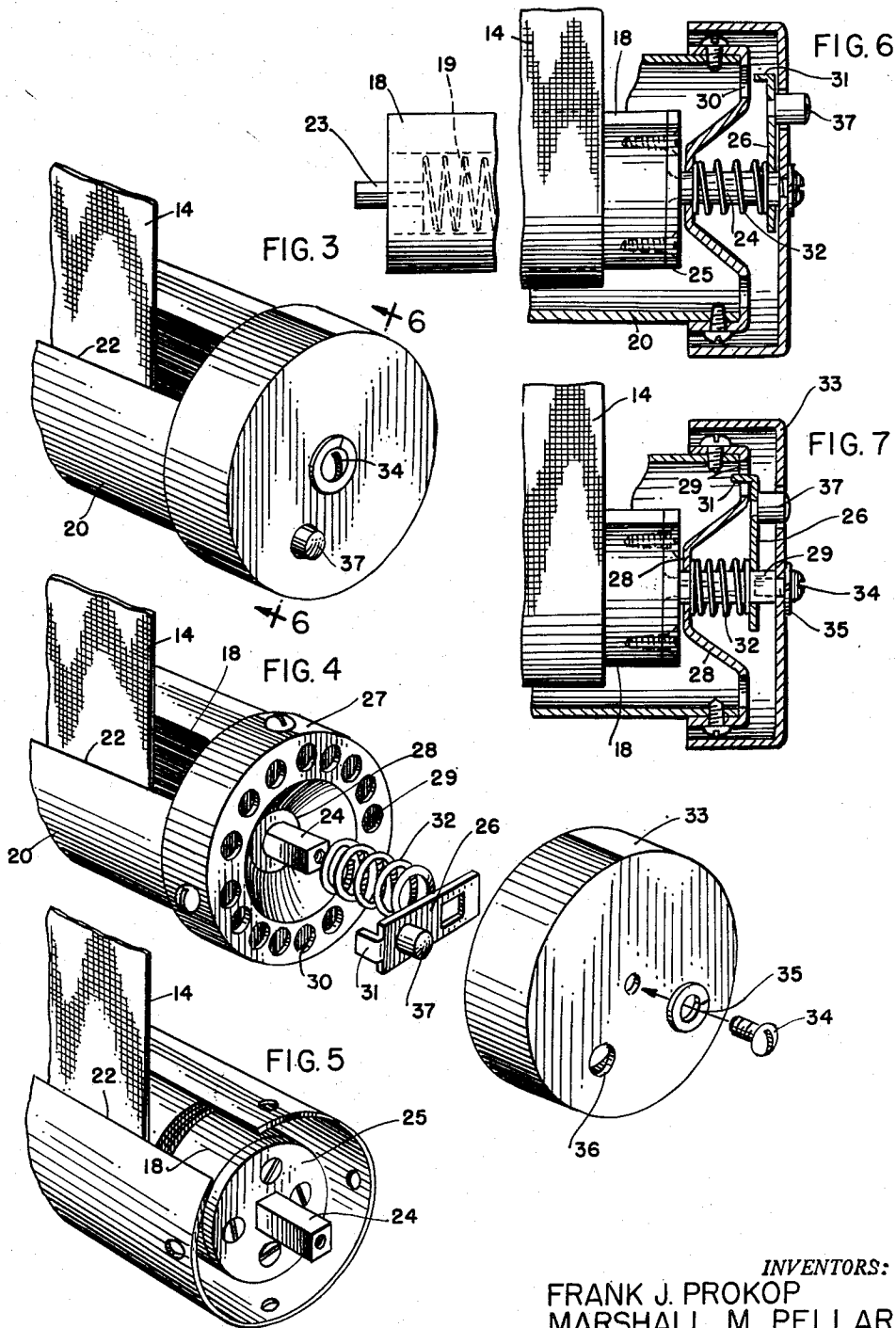
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SCREEN WEB TENSIONER

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Application October 13, 1953; Serial No. 385,788

5 Claims. (Cl. 160-24)

This invention relates to screens of the general type on which pictures are projected and has particular reference to means for tensioning a screen web.

The main objects of this invention are to provide an improved web tensioning mechanism for picture screens which will assure that the web of the screen can be stretched taut in an accurate planar disposition; and to provide tensioning mechanism which supplement the pull of the usual curtain roller tensioning devices, being normally inactive but adapted for subjecting the screen web to additional strain by manual means so as to pull the web in such manner as to remove any tendency of the same to curl, or warp, or otherwise depart from exact conformity with one plane.

A specific embodiment of this invention is shown in the accompanying drawings in which:

Figure 1 is a perspective view of a picture screen of the type to which this invention particularly relates.

Fig. 2 is an enlarged perspective view illustrating the mounting elements of the screen when the web is stretched taut.

Fig. 3 is a fragmentary perspective view of one end of the screen housing.

Fig. 4 is an exploded perspective view of the same illustrating the form of and assembly sequence of the parts of the tensioning device according to the present invention.

Fig. 5 is a view corresponding to Fig. 3 but with the bearing spider of the curtain roller and other parts of the tensioning mechanism removed.

Fig. 6 is a fragmentary sectional detail of the tensioning mechanism taken on the plane represented by the line 6-6 of Fig. 3 and shows the parts in their normal position.

Fig. 7 is a similar sectional detail showing the parts of the tensioning mechanism in their locked position.

In the form shown in the drawings, the screen comprises an upright standard 10 mounted on tripod legs 11 and having an extension rod 12 at the upper end of which is a hanger hook 13. The screen web 14 has a bail 15 mounted at the midpoint of a resilient spreader bar 16 which serves as a suspension spring and is attached at its ends to the stiff slat 17 at the upper or free end of the screen web 14. The lower end of the screen web is attached to a curtain roller 18 equipped with the usual internal torsion spring 19 of sufficient winding capacity to roll up the entire length of the web 14.

In the form shown, the roller 18 is housed in a cylindrical casing 20 which is mounted at its midpoint on the front side of the standard 10. The casing 20 has a longitudinal slot 22 through which the web 14 is withdrawn.

The roller 18 has journal bearings at both ends including the usual shaft 23 at the so-called live end of the roller 18 where the helical torsion spring 19 is located and also has a shaft 24 at the so-called dead end of the spring roller which is at the right of the detail shown in Figs. 3 to 7 inclusive. The shaft 24 is integrally secured centrally on the disc 25 which in turn is attached to the end of the dead end of the roller 18. The shaft 24 is square in cross section or otherwise shaped locally for relatively non-rotative but axial sliding engagement with the crank arm 26.

The end of the casing 20 adjacent the dead end of the roller 18 has mounted thereon a stationary cap 27 which serves as a spider for supporting the bearing 28 in which the shaft 24 rotates. This cap has an annular series of perforations 29 which provide shoulders 30

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which act as keepers for a latch tongue 31 on the crank arm 26.

A helical compression spring 32 is mounted on the shaft 24 between the crank arm 26 and the bearing 28 so as to normally urge the crank arm 26 to the limiting position in which it is shown in Fig. 6 where the latch tongue 31 is free from the shoulders 30 and the roller 18 is accordingly free to rotate to allow the bail 15 to be hung upon the hook 13 of the extension rod of the standard and allow the spring 19 to maintain the web 14 stretched taut, under the normal spring action.

A flanged disc 33, fixed at the outer end of the shaft 24, serves as a knob for manual rotation of the roller 18 and also as an ornamental covering cap for the adjacent end of the casing and the latch mechanism. This cap 33 is attached to the shaft 24 by means of a set screw 34 and lock washer 35.

The cap 33 also has an aperture 36 through which a lug 37 on the crank arm 26 extends loosely, so as to serve as a button whereby the operator may push the latch tongue 31 into engagement with one of the shoulders 30 of the keeper apertures 29, in which position it is shown in Fig. 7. This view shows the relation of the latch members after the web 14 has been withdrawn from the casing 20; its bail 15 has been hung on the hook 13 and the pull on the web by the spring 19 has been supplemented by manual rotation of the cap 33 against the pull of the suspension spring 16. There is thus produced sufficient tension on the web to cause friction between the keeper shoulder and the latch tongue 31 to hold the roller 18 locked despite the pressure of the compression spring 32 tending to release it. When the tension of the suspension spring is released by releasing the extension rod and allowing it to telescope within the standard 10 in the usual manner, thus friction is reduced and the spring 32 releases the hold of the latch.

The operation of the device shown is as follows:

After the screen has been spread upon the hanger in the position in which it is shown in Fig. 1, it is under the normal tension strain produced by the roller spring 19. But in order to stretch it so that its front picture projection receiving face is absolutely flat, additional stretching strain upon the web 14 may be applied uniformly throughout its width by manual rotation of the knob 33 in the same direction in which the roller 18 is normally urged by the spring 19.

When the web 14 is thus satisfactorily stretched to exact planar form, the operator pushes the button 37 inward so as to project the latch tongue 31 into the nearest one of the apertures 29. The pressure thus caused now produces sufficient friction between the shoulder 30 and the latch tongue 31 to prevent the arm 26 from being shifted by the pressure of the spring 32.

The resilient spreader bar 16 of the bail 15 assures that the strain of the web 14 is equally resisted at all points throughout the length of the slat 17. This strain pulls the spreader bar 16 to slightly bowed position as shown in Fig. 2, when the web 14 is subject to the additional strain produced by manual rotation of the knob 33 for applying extra strain upon the web.

The instant that the extension rod 12 is telescoped in the standard 10, the strain produced by the manual setting of the latch mechanism reduces the friction between the latch tongue 31 and the shoulder 30 to allow the compression spring 32, to shift the crank arm 26 to the position shown in Fig. 6, whereupon the roller 18 is free to pull the web into the housing 20 under the normal action of the rewinding spring 19.

Although but one specific embodiment of this invention is herein shown and described, it will be understood that numerous details of the structure shown may be altered or omitted without departing from the spirit of the invention as defined by the following claims.

We claim:

1. A screen web having a spring actuated web tensioning roller at one end of said screen, a slat at the opposite end of said web, a journal shaft extending from one end of said roller, a relatively stationary support comprising a bearing for said shaft, handle means fast on said shaft for rotating said roller manually, and latch

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means on said shaft acting between said handle means and stationary support, said latch means being shiftable into and out of locking engagement with said support means, and being normally urged out of such engagement with said stationary support and said latch means being held in locking engagement by tension on said web.

2. A screen web having a spring actuated web tensioning roller at one end of said screen, a slat at the opposite end of said web, a journal shaft extending from one end of said roller, a relatively stationary support comprising a bearing for said shaft, handle means fast on said shaft for rotating said roller manually, coaxing latch members respectively on said handle means and said stationary support to lock said roller against rotation due to tension of said web, and a spring normally urging said members out of such locking relation.

3. In a picture screen comprising a screen web, having a roller at one end including a rewinding spring acting on said roller and a slat at the free end of said web, a spring suspension for said slat having greater web pulling strength than that of said rewinding spring, a journal shaft at one end of said roller, a relatively stationary support for said shaft, handle means fast on said shaft for rotating said roller manually, axially shiftable latch means on said shaft acting between said roller and stationary support upon being shifted manually into holding engagement with said support for preventing rotation of said roller, and a spring normally urging said latch means out of such holding engagement, said latch means being held in such holding engagement by the pull on said web exerted by said spring suspension when said roller has been rotated manually by said handle means to increase the pull on said web beyond that exerted by the rewinding spring and said latch means has been shifted manually into holding engagement with said support.

4. In a picture screen, a screen web having a roller at one end thereof including a rewinding spring normally adapted to rotate said roller to wind the web thereon, a slat at the other end, a casing in which said roller is journaled, a standard having means for supporting said casing and slat in spaced relation to each other with said web extended between them, and a suspension spring for connecting said slat to said standard and having greater web pulling strength than that of the rewinding spring, a shaft fixed on one end of said roller, handle means fast on said shaft for rotating said roller manually, a latch arm rotatable with said shaft

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and slidable axially thereon, an annular series of keeper shoulders stationarily located on said casing in position for roller holding coaction with said latch arm when in one position on said shaft, a spring normally urging said latch arm along said shaft and away from such holding position, said latch arm and keeper shoulders being held in such holding engagement by the pull on said web exerted by said spring suspension when said roller has been rotated manually by said handle means to increase the pull on said web beyond that exerted by the rewinding spring, and said latch arm is in holding coaction in one of said keeper shoulders.

5. In a picture screen, a screen web having a roller at one end thereof including a rewinding spring normally adapted to rotate said roller to wind the web thereon, a slat at the other end, a casing in which said roller is journaled, a standard having means for supporting said casing and slat in spaced relation to each other with said web extended between them, and a suspension spring for connecting said slat to said standard and having greater web pulling strength than that of said rewinding spring, a shaft fixed on one end of said roller, a bearing spider for said shaft fixed in said casing and having thereon an annular series of keeper shoulders concentric with said shaft, a handle disc fast on said shaft for manually applying to said web a stress in excess of that imparted to it by the rewinding spring, a latch arm shiftable on said shaft between said spider and handle disc and shiftable into and out of engagement with said keeper shoulders, said latch arm being held in such holding engagement by the pull on said web exerted by said spring suspension when said roller has been rotated manually by said handle means to increase the pull on said web beyond that exerted by the rewinding spring and said latch arm is in holding coaction in one of said keeper shoulders, and a helical compression spring on said shaft normally urging said arm out of shoulder engaging position.

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