Sept. 15, 1936. F. J. BURNS 2,054,240

AUTOMATIC STOP DEVICE

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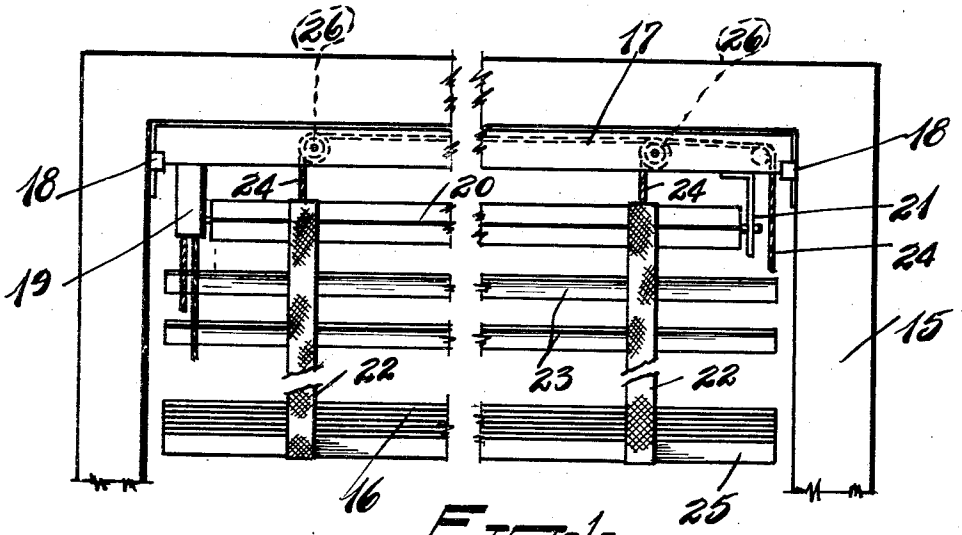


Fig. 1.

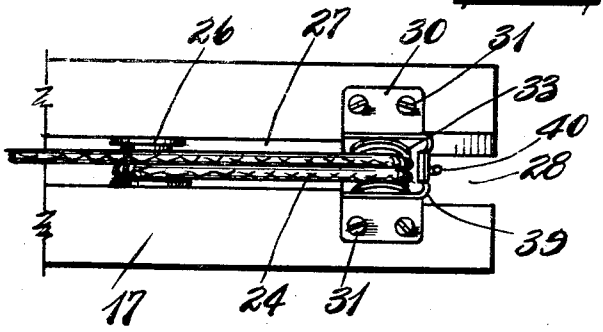


Fig. 2

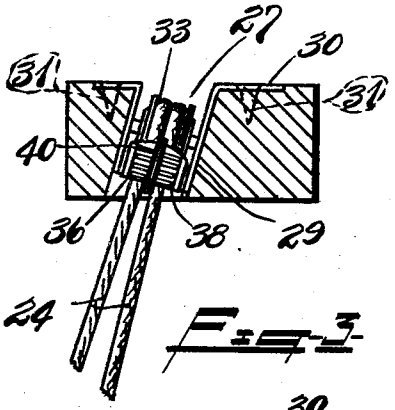


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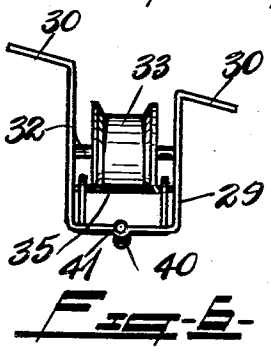


Fig. 6.

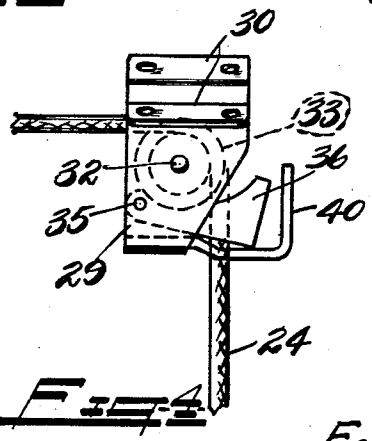


Fig. 4

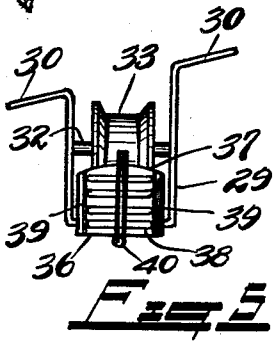


Fig. 5

INVENTOR.

Fred J. Burns.

BY

Frank C. Kearman.

ATTORNEY.

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AUTOMATIC STOP DEVICE

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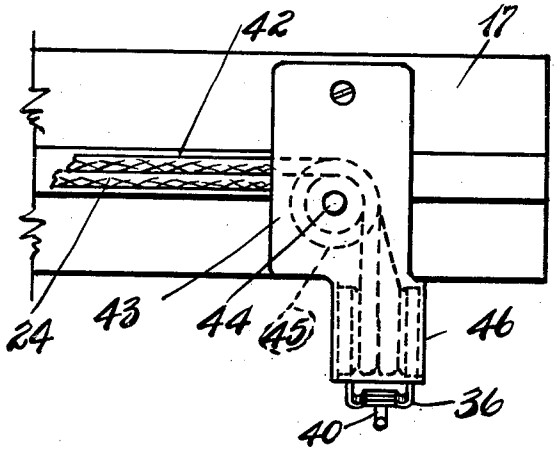


Fig. 7.

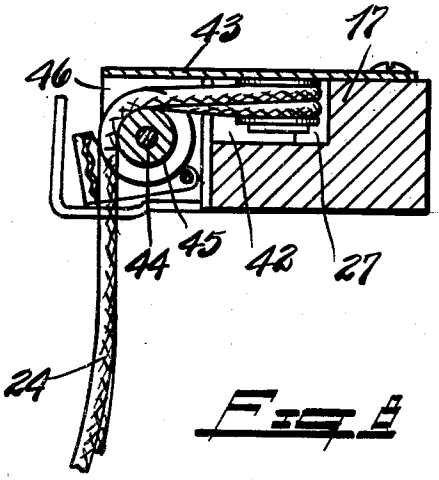


Fig. 8.

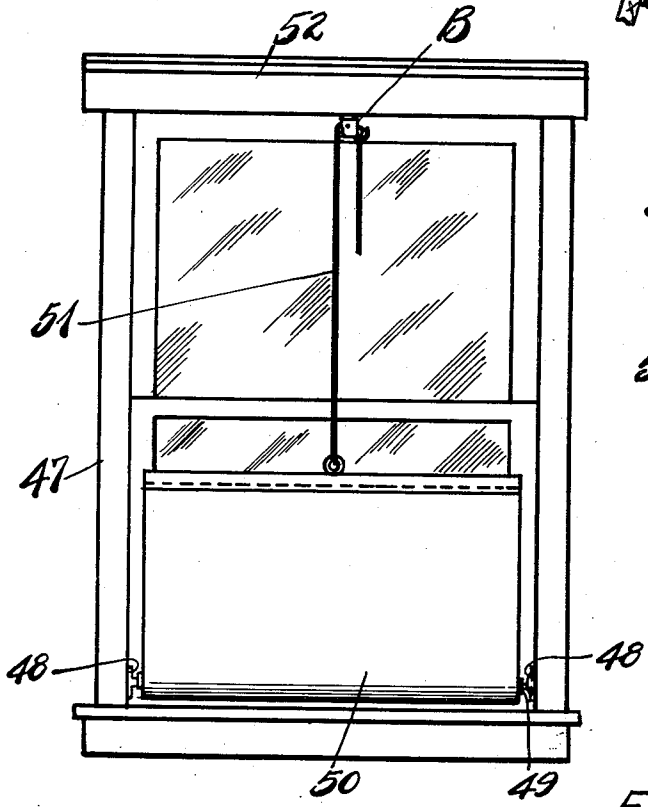


Fig. 9.

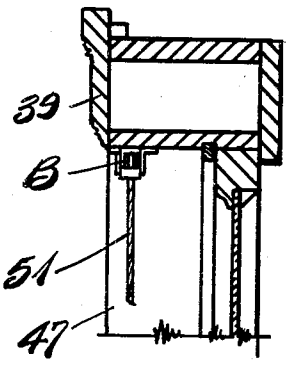


Fig. 10.

INVENTOR.

Fred J. Burns.

BY

Frank C. Fearman.

ATTORNEY.

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AUTOMATIC STOP DEVICE

Fred J. Burns, Saginaw, Mich., assignor to The Columbia Mills, Inc., Saginaw, Mich., a corporation of New York

Application December 14, 1934, Serial No. 757,491

4 Claims. (Cl. 156—17)

This invention relates to automatic stops for use in connection with Venetian blinds, bottom-up rollers, porch shades, blinds of large area, which usually require roller lifts, and in fact on any structure where a foolproof positive holding or locking device is required.

One of the prime objects of the invention is to design a very simple and practical mechanism which when used in connection with Venetian blinds, bottom-up rollers, or porch shades, will eliminate the necessity of tying or winding the lifting cords on a cord knob, and which when installed on end pull operated blinds can be completely concealed from view if desired.

Another object is to provide a locking device which is fully automatic in operation, and which is positive and dependable in action regardless of the size of the blind, and in any position within the range of movement of the blind.

Still another object is to provide an automatic stop which can be used in connection with either end or front pull operated blinds, which can be disposed at an angle with relation to the head rail, so that it conforms to the normal angle or direction of pull of the lifting cords, thus securing perfect alignment, and provide cord separating means which eliminates the possibility of the cords fouling and overriding each other, and insures the centering of the cords on the sheave so that a smooth even operation is secured.

A further object is to provide a very simple, practical, compact, and positive locking means which tightly grips the cords without undue wear or fraying, which eliminates slippage, which can be quickly and easily released when desired, and which is smooth and velvety in operation.

A still further object is to provide a cord locking means which is practically instantaneous in operation, which is composed of few parts, all of simple and rugged construction, which can be readily manufactured and assembled, and which can be quickly mounted on a head rail or other support.

With the above and other objects in view, this invention consists in the new and useful provision, formation, construction, combination, and inter-relation of parts, members and features, all as hereinafter disclosed, shown in the drawings, and finally pointed out in the claims.

In the drawings—

Fig. 1 is a front elevation of a Venetian blind, showing my improved locking device in place thereon.

Fig. 2 is an enlarged fragmentary top plan view.

Fig. 3 is a transverse sectional end view.

Fig. 4 is an enlarged detail front view of the locking device, the solid lines showing the locking member out of engagement with the cord, the broken lines showing it in locking position.

Fig. 5 is an end view with the lifting cords omitted.

Fig. 6 is an opposite end view.

Fig. 7 is a top plan view showing the device used in connection with a front pull operated blind.

Fig. 8 is a transverse sectional end view.

Fig. 9 is a front view illustrating the device being used in connection with bottom-up rollers.

Fig. 10 is an enlarged, transverse sectional view through the head jamb and casing.

For the purpose of illustration, I have shown the device in connection with a Venetian blind and a bottom-up roller respectively, it being understood that this is for explanatory purposes only, and that it can be used on other similar structures or devices which fall within the scope of the claims hereunto appended.

Referring more specifically to Fig. 1 of the drawings in which I have shown an end pull operated blind, the numeral **15** indicates a window casing or opening in which a Venetian blind **16** is mounted. This blind is of conventional design and comprises a head rail **17** supported on end brackets **18** as usual; a blind tilting mechanism **19** is secured to one end of the head rail, and a tilt bar **20** is secured thereto, the opposite end being supported in the bracket **21** which is hung from the head rail as usual.

Ladder tapes **22** are secured to the tilt bar in spaced relation, and a plurality of superimposed slats **23** are mounted therein, lifting cords **24** being anchored to the bottom rail **25** of the blind, thence being threaded through suitable openings (not shown) in the slats, and thence the cords lead upwardly and are trained over sheaves **26** which are mounted in the groove **27** of the head rail, and thence over the automatic stop "B" which is mounted in the recessed end **28** of said rail.

The locking device proper is preferably formed of stampings and comprises the U-shaped bracket **29**, the spaced apart legs of which are of unequal length, each leg terminating in a horizontally disposed flange **30**, which is provided with suitable openings to accommodate screws **31** for securing the device in position, the bracket being set at an angle with relation to the head rail and for a purpose to be presently described. A transversely disposed pin **32** is mounted in the bracket **29**, and a sheave member **33** is journaled thereon, bosses

34 being pressed in the legs of the bracket and serve to center the sheave on the pin, the lifting cords 24 leading over the sheave 33, and thence extending downwardly so that they are within easy reach for operating.

A horizontally disposed pin 35 is also mounted on the bracket legs, and a locking yoke 36 is pivotally connected thereto, the end wall 37 of the locking yoke being toothed or corrugated as shown at 38, so that it tightly grips the cord when it is swung up to position, the edges 39 of the end wall being shaped to accommodate and provide clearance for the rim of the sheave 33.

To prevent the overriding or twisting of the cords, I provide a separator member 40, and this is mounted in a groove 41 provided in the bottom wall of the bracket, and is preferably welded in position, the free end projecting outwardly and upwardly so that the cords are effectively separated.

In practice and when it is desired to raise the slats, the operator grasps the lifting cords and pulls the slats up to desired position; the cords are then either released or swung slightly in a direction towards the toothed surface of the locking yoke to bring them into engagement therewith. Frictional engagement of the cords with the yoke swings it upwardly to position as shown in dotted lines in Fig. 4 of the drawings, wedging the cords tightly between the face of the sheave and the toothed surface of said locking yoke, and the greater the pull or weight of the blind, the more firmly the locking yoke wedges and grips the cords; the locking action is almost instantaneous, and consequently there is no shock or jar, which is an important consideration.

When the blind is in locked position, the release is accomplished by merely exerting a normal downward pull on the cords; this swings the yoke down and out of engagement with the cords, and the blind can be raised or lowered as desired.

When the device is used in connection with end pull operated blinds, the position or angle of the sheave 33 with relation to the tilt rail is of particular importance, as it brings the cords in harmony with the line of pull, prevents overriding, insures smooth operation, and the device can be completely concealed from view.

In Figs. 7 and 8 of the drawings I have shown the device mounted on a front pull operated blind, the head rail 17 being provided with a transversely disposed groove 42 which opens into the groove 27, a plate or bracket 43 being mounted on the head rail, and a vertically disposed pin 44 is mounted in said plate, a sheave 45 being journaled on the pin, and the lifting cords are trained around said sheave. The front end of the plate overhangs the head rail, the edges 46 being bent downwardly and form a support for the sheave and locking yoke respectively, otherwise the construction is identical with that shown in Figs. 1 to 6 inclusive.

In Figs. 9 and 10 I have shown the device used in connection with a bottom-up roller, the numeral 47 indicating a conventional window casing, and brackets 48 are secured to the lower end thereof and accommodate a conventional bottom-up shade roller 49 on which the shade 50 is wound, an operating cord 51 being anchored to the one end of the shade, thence leading up and over the locking device "B" which is mounted on the head jamb 52, the end of the cord being free so that it can be readily grasped by the operator, the operation of the locking device being exactly the same as hereinbefore described.

From the foregoing description it will be clearly obvious that I have perfected a very simple and practical combination automatic stop device, which can be used on blinds, shades, bottom-up rollers, and similar structures, which is fully automatic, extremely smooth in operation, which can be locked from any position, and which is very economical to manufacture and install.

What I claim is:

1. An automatic stop device adapted to be mounted on the head rail of a Venetian blind, and comprising a U-shaped bracket having a sheave journaled therein and over which the blind lifting cords are trained, a locking yoke pivotally mounted on the bracket and formed with a toothed inner face, and a separator projecting outwardly from and secured to the lower edge of said bracket, to separate the cords and form a support for the free end of the locking yoke.

2. An automatic stop device comprising a U-shaped bracket, a sheave journaled in said bracket, a locking yoke pivotally mounted on said bracket at a point below and in the rear of the sheave shaft, and an outwardly projecting cord separator comprising a single rod secured to the lower edge of the bracket with the projecting end forming a support for the free end of the locking yoke.

3. An automatic stop device of the character described and comprising a U-shaped bracket having legs of unequal length, a sheave journaled between the legs of said bracket, a locking yoke pivotally mounted on said bracket and at a point in the rear of and below the sheave shaft, and an outwardly projecting cord separator mounted on the lower edge of said bracket for separating the cords and supporting the free end of the locking yoke.

4. An automatic stop device of the character described and comprising a U-shaped bracket formed with legs of unequal length, a sheave journaled between said legs and over which the blind cords are trained, a U-shaped locking yoke pivotally mounted on the bracket at a point below and in the rear of the sheave shaft, and formed with a toothed inner face, and a horizontally disposed cord separator comprising a single rod secured to the bottom of the bracket and projecting outwardly therefrom to separate said cords and form a support for the free end of the locking yoke.

FRED J. BURNS.