Dec. 6, 1966 H. KOZEL 3,289,737

SLAT LOCK ASSEMBLY FOR PORTABLE SCREENS

Filed Nov. 16, 1964 2 Sheets-Sheet 1

Fig. 1

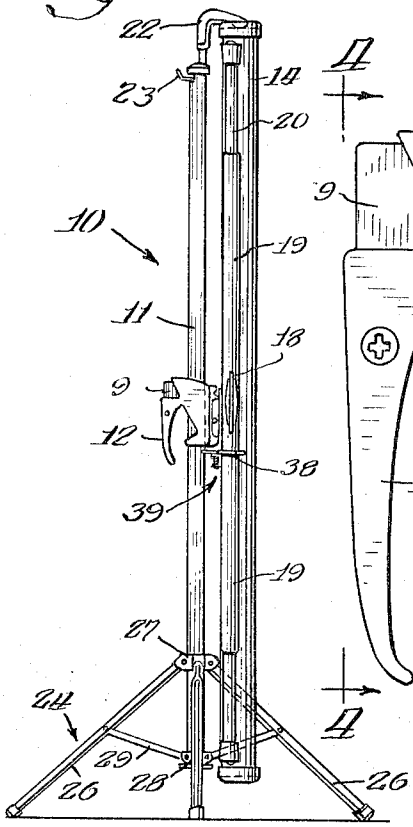
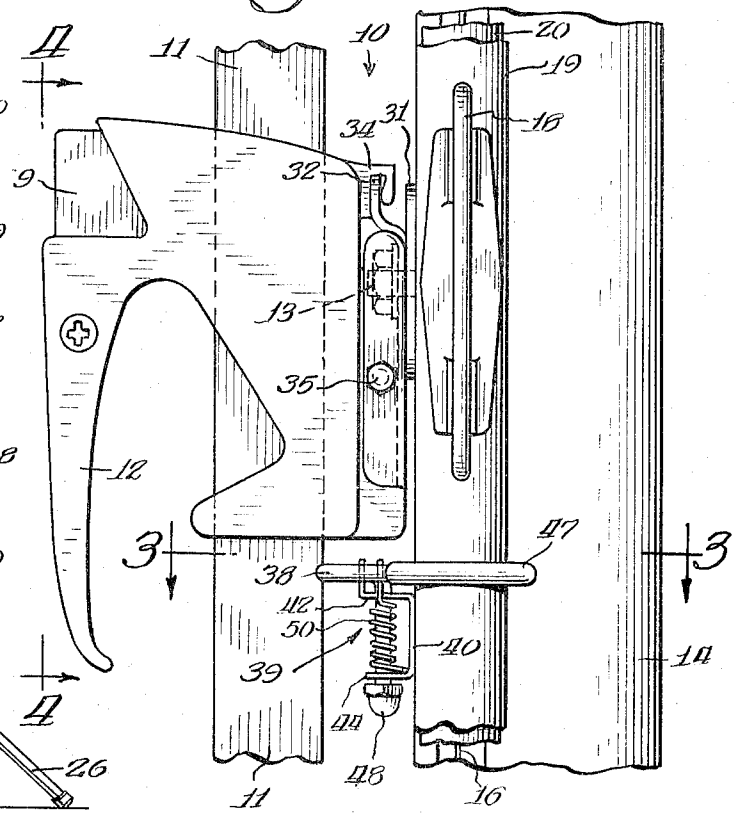


Fig. 2



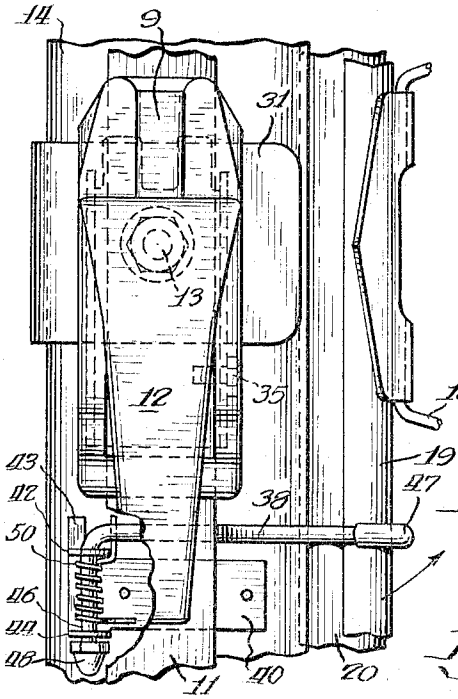
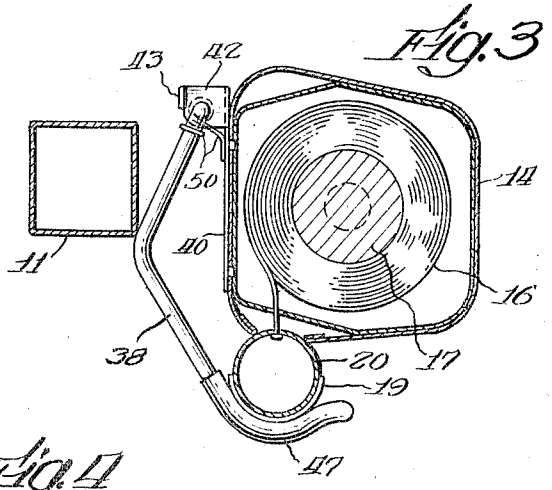


Fig. 4

Fig. 3



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SLAT LOCK ASSEMBLY FOR PORTABLE SCREENS

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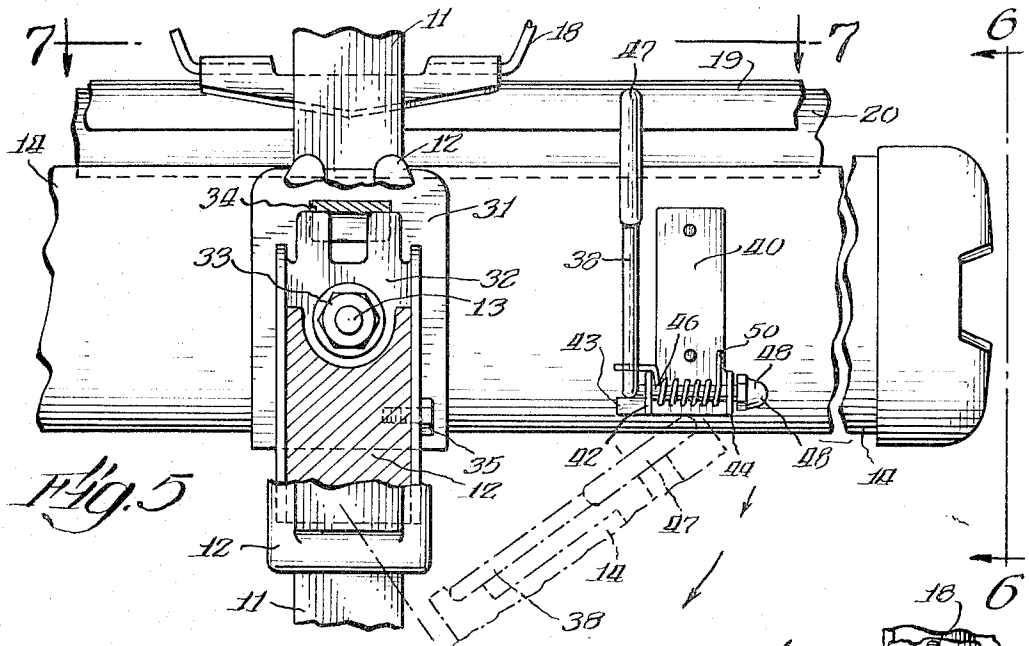


Fig. 5

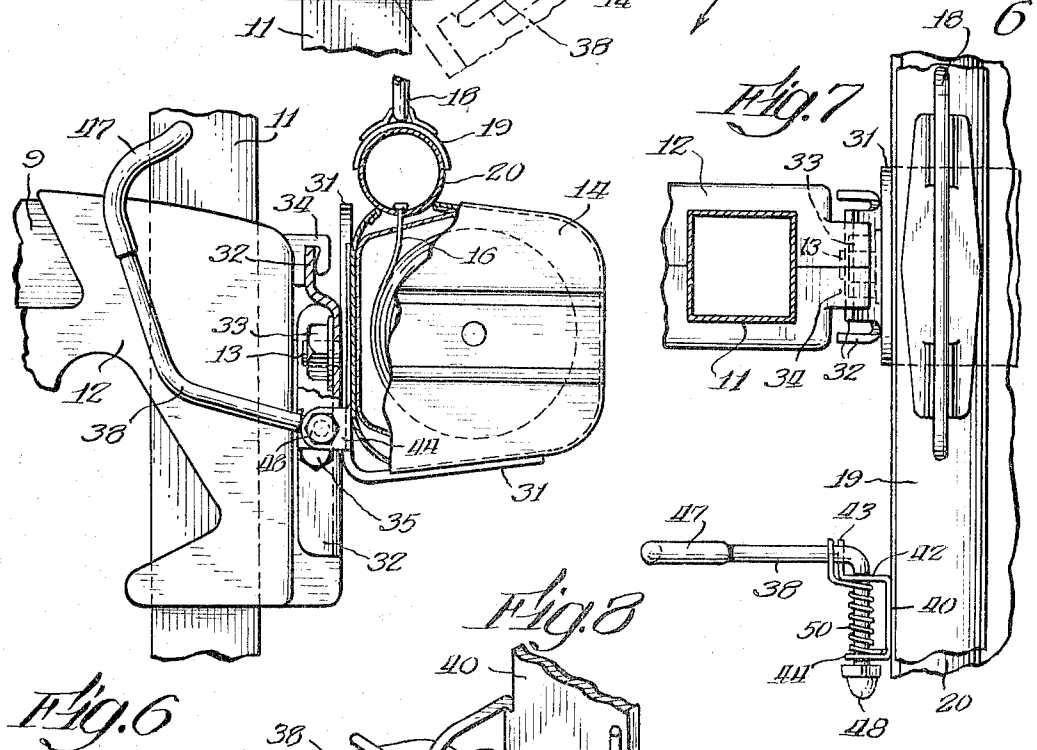


Fig. 6

Fig. 7

Fig. 8

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SLAT LOCK ASSEMBLY FOR PORTABLE SCREENS

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This invention relates to a portable projection screen and, more particularly, to an improved portable projection screen incorporating a slat lock for automatically engaging and retaining the supporting slat for the screen when the screen housing is moved from use position to storage position.

Heretofore, in portable projection screens and particularly in larger size portable projection screens, the weight of the supporting slat has been sufficient to overcome the tension of the roller tending to maintain the screen in the rolled position during transport or storage and has permitted the screen to become partially unrolled from the screen casing, thus rendering the screen susceptible to damage. It has been proposed that mechanical means be provided for securing the supporting slat to the screen housing. One such means is shown in Patent No. 2,530,878. Such means, however, were not actuated automatically each time the screen was moved from a use position to a storage position. Accordingly, the operator might neglect to apply the slat lock and the screen could unroll from the screen housing and be damaged.

An object of this invention is to provide an improved portable projection screen having novel slat lock means for automatically retaining the screen supporting slat when the screen housing is moved from horizontal use position to vertically disposed storage position, such slat lock means comprising an arm pivoted on the screen housing and cammed to locking engagement with the slat when the screen housing is moved into storage position.

Another object of this invention is to provide an improved portable projection screen having slat lock means supported on the screen housing which is pivoted on the upright column, said slat lock means comprising an arm pivotally carried on the screen housing and adapted to engage the supporting slat for retaining the supporting slat and the screen carried therewith during storage to prevent the screen from unrolling from the screen housing, such arm being normally biased away from engagement with the supporting slat. Further objects and advantages of this invention will become more apparent hereafter.

The specific structural details of a preferred embodiment of the invention and their mode of functioning will be made most manifest and particularly pointed out in clear, concise and exact terms in conjunction with the accompanying drawing, wherein:

FIGURE 1 is a side elevation of the portable projection screen of this invention, illustrating the slat lock means in engagement with the supporting slat for maintaining the screen rolled in the screen housing;

FIGURE 2 is an enlarged detail view of a portable projection screen embodying the present invention and illustrating the connection of the screen housing to the handle member;

FIGURE 3 is a cross-sectional view of the portable projection screen taken along the line 3—3 of FIGURE 2;

FIGURE 4 is a rear view of the portable projection screen taken generally along line 4—4 of FIGURE 2 and illustrating the slat lock means of the present invention in slat-engaging position;

FIGURE 5 is a rear view of the portable projection screen assembly illustrating the screen housing in the horizontally oriented use position with the slat lock means released from the supporting slat;

FIGURE 6 is a side view of the portable projection screen assembly taken generally along the line 6—6 of FIGURE 5;

FIGURE 7 is a cross-sectional view of the portable projection screen assembly taken generally along the line 7—7 of FIGURE 5; and

FIGURE 8 is a detail perspective view of a portion of the slat lock means of this invention.

Referring to FIGURE 1, there is illustrated a portable projection screen 10 embodying the present invention. The screen 10 comprises an elongated tubular upright or vertical column 11 which is commonly square or triangular in cross section.

Movably supported on the upright 11 is a handle 12 which is retained in suitable adjusted position on the upright 11 by means of a nipping lever 9 in a conventional manner. The screen housing or screen casing 14 is pivotally carried by the handle 12 and is adapted to be moved about pivot 13 from a storage position, wherein the axis of the screen casing 14 is parallel to the axis of the upright 11, to a generally horizontal use position, wherein the axis of the screen casing 14 is generally at right angles to the axis of the upright or column 11. Carried within the screen housing 14 is a biased roller 17 upon which the screen 16 is adapted to be carried. The screen 16 is affixed at one end to the roller and at the other end to supporting slat 20.

In use, the screen 16 is unrolled against the tension of the bias spring and the bail 18 (affixed to resilient member 19 on the supporting slat 20) is adapted to be engaged with and supported from the top of the extension rod 22. The rod 22 is telescopically received within the upright 11 and is adapted to be supported in selected adjusted position by means of a nipping lever 23 in a conventional manner.

Stand means 24 are provided at the lower end of column 11 to support the column in upright use position. The stand means 24 comprise a plurality of legs 26, generally three in number, which are pivoted at their upper ends to an upper leg bracket 27 slidably carried on the upright or tube 11. Fixed to the bottom of the upright 11 is a lower leg bracket 28. Links or braces 29 are each pivotally connected at one end to the lower bracket 28 and at the other end to the legs 26. The legs 26 may be folded together for transportation and storage purposes and when this is done, the bracket 27 slides upwardly on the upright or tube 11. Further explanation is considered to be unnecessary as the stand means are of known design and do not form part of the present invention.

The means 39 for automatically engaging the supporting slat and retaining the supporting slat so as to prevent unrolling of the screen during transportation comprises a slat lock arm 38 pivotally carried upon a slat lock bracket affixed to the screen housing and normally biased from engagement with the supporting slat by a spring member. The slat lock means is cammed into engagement with the supporting slat as well be set forth more fully hereafter.

Referring to FIGURES 2, 4, 5, 6 and 7, there is shown the construction for pivoting the screen housing 14 on the handle assembly 12. Affixed to the screen casing or housing 14 as by spot welding is a case bracket 31. Extending through aligned openings in the casing 14 and the bracket 31 is a bolt which defines the pivot means 13. A handle bracket 32 is affixed to the bracket 31 by suitable retaining means including a lock nut 33 which engages with the end of the pivot bolt 13 remote from casing 14. The top of handle bracket 32 engages below

a retaining lip 34 formed on handle 12 and the handle bracket 32 is maintained in fixed connection with handle 12 by retaining means 35, which conveniently takes the form of a machine screw which extends through an opening in bracket 32 into a tapped bore in handle 12.

The screen casing 14 can be pivoted about bolt 13 between a storage or transportation position in alignment with upright 11 (FIGURE 1) and a generally horizontal use position transverse to the upright (FIGURE 5).

Referring to FIGURES 2, 3, 4 and 8, it is seen that the spring lock bracket 40 includes a pair of outwardly extending aperture ears 42 and 44. Journaled in the openings in the ears 42 and 44 is a stub shaft 46 defined on one end of the slat lock arm or hook 38 generally transverse to hook 38. The slat lock arm member, comprised of the slat lock hook 38 and the stub shaft 46 is retained in operative engagement with the bracket 40 by means of a push-on type lock nut 48. A sleeve 47 may be affixed over the end of hook 38. The sleeve may be formed from plastic to minimize noise and scratching between the metallic hook 38 and slat 20.

The slat lock arm member is adapted to be biased away from engagement with the screen supporting slat by means of a slat lock spring 50 which in the illustrated form of the invention comprises a coil spring wound concentrically about the stub shaft 46. One end of the slat lock spring 50 is operatively fixed to the bracket 40 and the other end of the spring 50 is operatively engaged with the hook member 38 to bias the arm member from engagement with the supporting slat 20. An outwardly angled lug 43 formed on ear 42 serves as a stop to limit the pivotal movement of arm member 38 away from slat engaging position (clockwise as seen in FIGURE 3).

The slat lock arm is cammed into engagement with the supporting slat 20 on one end of the screen 16 when the screen housing 14 is pivoted from the horizontal use position toward the transportation or storage position, wherein the axis of housing 14 is in parallel relationship with the axis of upright 11. The rear of the arm 38 engages the front surface of the vertical column 11 (FIGURE 3) thus causing the hook 38 to move against the bias of the spring 50 into engagement with the supporting slat for retaining the supporting slat 20 and for preventing unrolling of the screen.

When it is desired to utilize the portable projection screen, the extension rod is released from engagement with the top of the screen housing, the screen housing 14 is pivoted from a vertically disposed storage position through an intermediate position indicated in dotted line in FIGURE 5, to a horizontal use position (FIGURES 5, 6, and 7). Spring 50 biases the slat arm or hook 38 from engagement with the supporting slat so that as the slat lock hook 38 moves from engagement with the vertical support column 11, the supporting slat is released. When the screen housing 14 is pivoted to a horizontal use position, the supporting slat may be moved outwardly from the screen housing, permitting unrolling and extension of the screen 16.

There has been provided by the present invention a unique slat lock assembly for automatically engaging the supporting slat on the screen when the screen housing is pivoted to the transportation position with respect to the upright support column. The slat lock means automatically release the supporting slat when the screen housing is pivoted from the storage position to the use position.

The slat lock means of the present invention is comprised of elements that are inexpensive, readily fabricated and relatively foolproof in operation. The novel slat lock means can be easily incorporated into medium and large size portable screen assemblies where it is necessary to retain the screen supporting slat during storage and/or transportation so as to prevent unrolling and possible damage to the screen.

While I have described a presently preferred embodiment of my invention, it will be understood that the invention is not limited thereto since it may be otherwise embodied within the scope of the following claims.

I claim:

1. In a portable projection screen assembly including a column having stand means at its lower end for supporting said column on a supporting surface, a screen casing carried on said column for movement from storage position to operating position, screen means carried in said screen casing and being biased to roll up the screen to rolled up position and permitting the screen to be unrolled to unrolled position, said screen means including a supporting slat at one end thereof, extensible means on said column for supporting said screen in unrolled position, the improvement comprising slat lock means for automatically engaging and retaining the supporting slat when the screen casing is in the storage position, said slat lock means including a hook member pivotally supported on the screen casing for releasably engaging said supporting slat, spring means on said screen casing normally biasing said hook member away from engagement with said supporting slat, said hook member engaging said vertical column and being cammed to locking engagement with said supporting slat when the screen casing is moved from operating position to storage position.

2. In a portable projection screen assembly including a column having stand means at its lower end for supporting said column on a supporting surface, a screen casing pivotally carried on said column for movement from storage position to operating position, screen means carried in said screen casing and being biased to roll up the screen to rolled up position and permitting the screen to be unrolled to unrolled position, said screen means including a supporting slat at one end of said screen, extensible means on said column for supporting said screen in unrolled position, the improvement comprising slat lock means for automatically engaging and retaining the supporting slat when the screen casing is in the storage position and for automatically releasing the screen slat when the screen casing is pivoted to the operating position, said slat lock means including an arm member supported on said screen casing for movement between supporting slat engaging position and a position releasing said supporting slat, a coil spring on said screen casing biasing said arm member to urge said arm member from engagement with said supporting slat, said arm member engaging said column for movement to supporting slat engaging and locking position when the screen casing is pivoted from operating position to storage position.

3. A portable projection screen assembly comprising a vertical column having stand means at its lower end, elongated housing means carried by said column for movement from storage position to operating position, a roller carried by and mounted at its ends in said housing means, a screen wound upon said roller and affixed to said roller at one end thereof, a supporting slat affixed to the other end of said screen, said roller being biased to roll up said screen to rolled up position but permitting said screen to be unrolled to unrolled position, extensible means for supporting said screen in unrolled position, and slat lock means movably carried on said housing means and biased from slat engaging position, said slat lock means being operative in response to movement of said housing means with respect to said vertical column for automatically engaging and holding said supporting slat and thereby preventing unrolling of said screen when said housing means are moved from operating position to storage position.

4. A portable projection screen assembly comprising a vertical column having stand means at its lower end, elongated housing means pivotally carried by said column for movement from storage position to opertaing position, a roller carried by and mounted at its ends in said housing means, a screen wound upon said roller and affixed to the roller at one end thereof, a supporting slat affixed to the other end of said screen, said roller being

biased to roll up said screen to rolled position but permitting said screen to be unrolled to unrolled positon, extensible means on said column for supporting said screen in unrolled position, and slat lock means for automatically retaining said supporting slat to prevent unrolling of said screen when said housing means are moved from operating position to storage position, said slat lock means comprising a hook member pivoted on said housing means, and spring means for biasing said hook member away from engagement with said supporting slat, said hook member being cammed into engagement with said supporting slat when said elongated housing means are pivoted from operating position to storage position.

5. A portable projection screen assembly as in claim 4 wherein said slat lock means comprises a slat lock bracket affixed to said elongated housing means, said

hook member being journaled on said slat lock bracket, said slat lock means being constructed and arranged such that the hook member will engage the vertical column when the elongated housing means are pivoted from operating position to storage position and be cammed from a position away from engagement with said supporting slat to a position engaging and retaining said supporting slat.

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