March 20, 1945. C. W. ZWIRN 2,371,666

PROJECTOR SLIDE EQUIPMENT

Filed Feb. 22, 1943

Fig. 1.

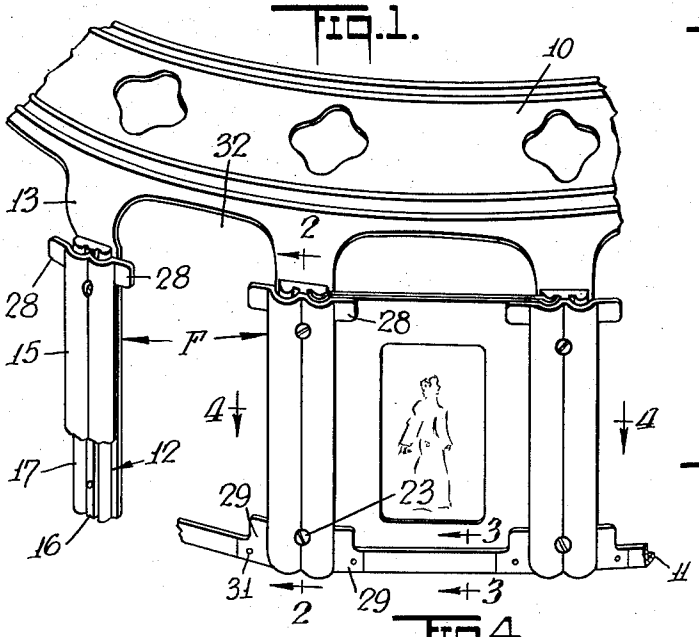


Fig. 2.

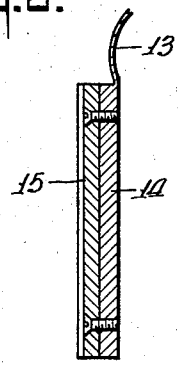


Fig. 3.



Fig. 4.

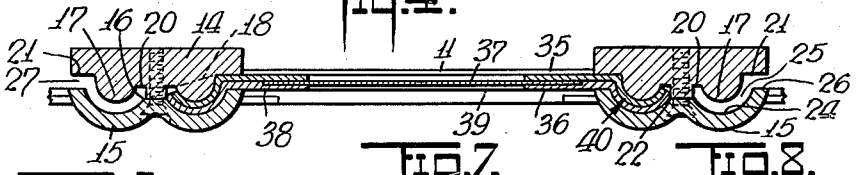


Fig. 5.

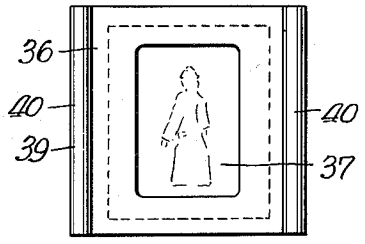


Fig. 7.

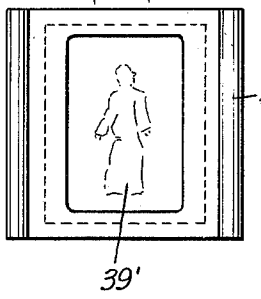


Fig. 8.

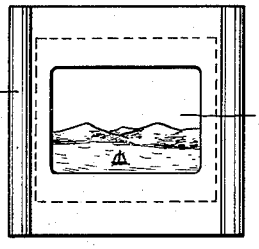


Fig. 9.

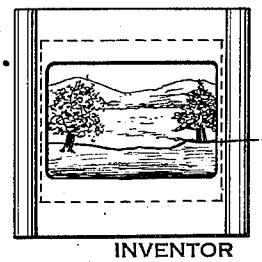
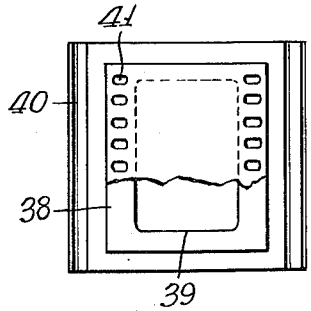


Fig. 6.



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PROJECTOR SLIDE EQUIPMENT

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Application February 22, 1943, Serial No. 476,669

14 Claims. (Cl. 88—26)

The present invention relates to projecting equipment and is more particularly concerned with the slide and the window holding frame therefor.

It is among the objects of the invention to provide a slide arrangement which may be readily and accurately made and in which the slide may be readily introduced and renewed and will be inherently positioned without displacement out of focus, though no affirmative clamping pressure is exerted thereon.

Another object is to provide equipment of the above type the slide elements of which are of low cost and yet have long life and remain, throughout their life, readily interchangeable.

In the accompanying drawing in which are shown one or more of various possible embodiments of the several features of the invention,

Fig. 1 is a fragmentary perspective view showing the carrier, a window frame and a slide in place therein,

Fig. 2 is a view in longitudinal cross-section taken on line 2—2 of Fig. 1,

Fig. 3 is a fragmentary detail sectional view taken on line 3—3 of Fig. 1,

Fig. 4 is a transverse sectional view on a somewhat larger scale taken on line 4—4 of Fig. 1,

Fig. 5 is a plan view of one embodiment of slide,

Fig. 6 is a view similar to Fig. 5 showing the reverse face of the slide of Fig. 5 with parts broken away, and

Figs. 7, 8 and 9 are views similar to Fig. 5 showing various arrangements of film installed in a frame of uniform outer dimensions.

Referring now to the drawing, there is shown a fragment of a carrier 10 which has a multiplicity of window frames F peripherally thereabout. Each frame includes a bottom or support ledge 11 and uprights 12 bounding the contiguous window frames. The uprights depend from spokes 13 at the edges of the carrier plate 10 to which they may be attached in any desired manner, or with which they may be formed in a unitary piece.

Each upright comprises a body or upright bar 14 having longitudinal ribs 17 semi-circular in cross-section, the bases 18 of which are inclined to the face of the body as shown. The ribs are laterally spaced as at 20 from a median ridge 16 and are spaced by lateral rims 21 from the lateral edges of the bar.

Superposed over the bar is a cap piece 15 which has a median longitudinal ledge 22 resting against the ridge 16 to which it is secured as by screws 23, rivets, welding, or in any other suitable manner. The cap member 15 has longitudinal troughs 24 laterally of said ledge, registering with the respective ribs 17 but spaced therefrom, as shown, to present open channels 25.

Thus the bar or body 14 and the associated cap 15 constitute a pair of jaws between which are the channels 25 each of which latter is shaped as the segment of a cylinder. The channels of each upright are closed off from each other by the intervening contacting ridge 16 and ledge 22. As shown, the lateral edge 26 of the cap piece is correspondingly spaced from the rim 21 of the body to define a straight open slot 27 at each edge of the upright.

The cap piece is provided with a pair of lateral wings 28 that extend inward from the upper end thereof and a similar pair of wings 29 extend inward from the lower end of the cap piece. These wings engage the corners of a slide when in place in the window frame. The lower lateral wings 29 are connected by the bottom ledge piece 11 which presents a front wall 30 the ends of which are riveted as at 31 to the respective wings 29.

Preferably, the spokes 13 are curved above the window frames F to present an opening 32 above the window frame for convenience of insertion and removal of the slides now to be described.

As best shown in Figs. 4, 5 and 6 each slide desirably comprises a base sheet 35 and a complementary cover sheet 36, both of suitable fiber board, metal or the like, between which the film 37 is interposed. Preferably the base sheet 35 is of uniform thickness. The cover sheet 36 is also of uniform thickness except for compression or thinning of the border 38 thereof about its rectangular opening 39 so as to accommodate therein the thickness of the film 37 which, when in place in the cover sheet, comes flush with the inner face thereof.

The lateral edges of both base and cover sheets have continuous grooves embossed thereinto at 40 that desirably extend to their very extremities, as shown. The base sheet is adhesively secured to the cover sheet about the film and at the nesting edge embossments thereof.

When the slide is in place, the troughs 24 of the cap member 15 straddle the convex face of the embossed groove 40 on the cover sheet 36, while the ribs 17 are straddled by the concavity of the embossed grooves in the base sheet 35.

The embossed grooves 40 are desirably circular in cross-section and extend through an arc less than a semi-circle so that, as shown, the plane connecting the outer edges of the two embossed

grooves 40 will coincide substantially with the exposed face of the cover sheet, that is, the face from which the convexities of the embossments rise.

The perforations 41 of the standard 35 mm. film 37 are beyond the window opening 39 in the slide. The film may be such as to be exposed through a window approximately 1½ inches long, as shown in Figs. 5 and 6, or, if desired, through the somewhat longer "bantam" frame about 1⅛ inches long, which is shown in Fig. 7 at 39'.

The slide also lends itself to the mounting of the film 37' transversely thereof as shown in Fig. 8 in which the window is of width of 1½ inches or, as shown at 37^2 in Fig. 9 in which the "bantam" width of film, 1⅛ inches long, is employed.

Each of the slides is made with the identical base sheet 35 with the window therein, as shown, and the cover sheet 36 has a depression 38 about the border of its window opening to correspond to the size and position of the film to be accommodated therein.

The embossed grooves 40 are preferably of substantially exactly the size and proportions of the channels 25 in the uprights of the window frames so that the slide may readily be slid in place, the lower edge of the slide resting upon the ledge 11.

The wings 28 assist in registering the slide with the channels 25 and all four wings 28 and 29 assist in steadying the slide when in place. The concavity of the embossed groove 40 snugly embraces the rib 17 and the convexity of the embossment is snugly embraced by the trough 24 in the cap piece 15. The lateral edges of the flat area of the slide fit in and protrude from the slots 27. Accordingly, the slide is easily introduced and easily removed from the window frame. While in place the slide is securely held at its embossed grooves 40 in the respective channels of the window frame, and although not affirmatively clamped in place it cannot shift laterally or tilt forward or backward, so that at all times during use, it will be properly in focus. There is no strain upon the slide while in use and since the slide is longitudinally stiffened by its lateral embossed grooves there is no danger of cracking, breaking or distortion thereof, for which reason the slides remain uniform and interchangeable in the window frames throughout their useful life.

It will be understood that while each upright presents jaws at both longitudinal edges for accommodating the adjacent lateral edges of consecutive slides, each window frame edge might have a separate upright with jaws at but one edge thereof.

The present application is an improvement upon the disclosure of my prior application Serial No. 410,035 filed September 8, 1941 upon which Patent No. 2,319,284 issued May 18, 1943.

As many changes could be made in the above construction, and many apparently widely different embodiments of this invention could be made without departing from the scope of the claims, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a projecting apparatus, a window frame member having lateral uprights, each upright having a cap member, said upright having a longitudinal rib, said cap member having a longitudinal trough spaced from said rib and affording a segmental cylindrical channel therebetween to permit insertion into said channels of the lateral edges of a slide having correspondingly shaped embossed grooves therealong, the edge of said cap extending parallel to and spaced from the face of said upright to define a straight slot therebetween for engaging the flat area immediately beyond the embossed groove of such slide.

2. A window frame for retaining a slide in a projecting apparatus comprising coacting metal jaws at each side of said frame, one of each pair of jaws having a longitudinal rib, the companion jaw having a trough registering with, but spaced from said rib and defining a segmental cylindrical channel therebetween, the coacting jaw portions closing the cylindrical channel at one longitudinal edge thereof and presenting a slot opening at the other edge to permit insertion into said channel of the lateral edge of a slide that has correspondingly embossed grooves therealong.

3. In a projecting apparatus, the combination of coacting lateral slide retaining holding jaws secured to each other and including a jaw member having a unitary upright rib spaced from one lateral rim thereof, a coacting jaw member presenting a cylindrical trough spaced from one lateral rim and registering with but spaced from said rib and defining a segmental cylindrical space therebetween, the lateral rims of said jaw members extending in parallel relation, thereby to define a curved channel with a straight lateral slot to permit insertion into said channel of the lateral edge of a slide provided with a corresponding generally cylindrical embossed groove adapted to embrace the rib of one jaw member and to be embraced by the trough of the other jaw member, the face of said slide adjacent said embossed groove to be accommodated in the slot between the outer lateral rims of the jaw members.

4. In a projector apparatus, the combination of a sequence of slide holding windows having bounding uprights, each having contiguous pairs of jaws opening toward the respective windows for accommodating the corresponding lateral edges of slides, said uprights each comprising a body member constituting a unitary part of the window structure and a superposed cap member directly attached thereto along its median line but spaced therefrom laterally of said median line to afford channels at opposite sides to permit insertion into each of said channels of a portion of a slide to be housed therein, said channels being longitudinally curved for accommodating corresponding embossed grooves near the lateral edge beyond said portion of such slides to be housed therein.

5. In a slide projecting apparatus a carrier having a sequence of slide holding windows, uprights bounding consecutive windows, each upright having a pair of spaced longitudinal ribs constituting unitary parts of the window structurs, a cap plate covering said upright and directly secured thereto between said ribs, said cap plate having upright troughs defining a pair of upright curved laterally open grooves closed at the midpoint between said ribs.

6. In a slide projecting apparatus a carrier having a sequence of slide supporting windows, uprights bounding consecutive windows, each upright having a pair of longitudinal ribs on the

outer face thereof, each upright having a cap piece overlying the same, directly attached thereto between said ribs and presenting inner troughs registering with but spaced from the corresponding ribs to afford an annular segmental channel to permit insertion thereinto of a correspondingly embossed grooves at the lateral edges of a slide to be positioned therein.

7. In a projecting apparatus, window frames with uprights each of which comprises a body member constituting a bar having a median longitudinal ridge and a pair of longitudinal ribs spaced from said ridge and from the respective lateral edges of said bar, a complementary cap member having a central ledge resting upon the ridge of said body member and directly secured thereto and having lateral troughs registering with the respective ribs but spaced therefrom to afford channels therebetween to permit insertion thereinto of the corresponding embossed grooves at the lateral edges of slide members to be positioned therein.

8. A generally rectangular window frame member for a projector comprising a bottom support ledge and lateral holding jaws, said jaws rising from said support ledge, each comprising a pair of spaced complementary jaw member defining a segmental cylindrical channel therebetween to permit insertion thereinto of corresponding embossed grooves at the lateral edges of a slide member to rest at its lower edge upon said support ledge.

9. In a slide projecting apparatus, a composite window frame member for retaining a slide, said member comprising lateral slide holders each comprising a pair of spaced upright jaws curved along their width for accommodating therebetween the correspondingly embossed lateral edges of a slide, each of said jaws including an inner body member and an outer cap member attached thereto, said cap member having lateral wings unitary therewith at the lower end thereof and a bottom ledge member presenting an upstanding outer wall intervening between said wings and attached thereto.

10. In a slide projecting apparatus, a carrier having parallel upright body members depending therefrom, each body member presenting a longitudinal rib, and a ridge parallel thereto, cap members superposed over the respective body members and attached thereto at said ridge, each cap member presenting an upright trough registering with and spaced from the associated rib, said cap members having wings extending laterally both from the upper and the lower ends thereof, and a bottom support ledge extending between the lower wings and presenting a front wall rigid with said wings.

11. In a slide projecting apparatus, a window frame member comprising lateral uprights, each comprising a body having a longitudinal rib and a ridge parallel thereto, a cap member secured to said ridge and having a trough registering with said rib but spaced therefrom to afford a segmental cylindrical channel therebetween, the edge of said cap and the lateral border of said body presenting a straight slot, a support ledge intervening between the lower ends of said uprights, and a slide removably fitting in said frame, said slide having lateral curved grooves presenting a concavity snugly to embrace the rib of the upright and a convexity at the opposite face snugly to be embraced by the trough of the associated cap member, the lateral plane edges of the slide intervening between said grooves being slidably lodged in the corresponding slots between body and cap member.

12. A projector slide comprising a pair of superposed open frame members secured together and having an interposed film therebetween, said frame having continuous embossed grooves at its extreme lateral edges to present stiffening and positioning ridges thereon, which are concave at one face and convex at the other.

13. A projector slide comprising a pair of superposed open frame members secured together and having an interposed film therebetween, said frame having continuous embossed grooves at its extreme lateral edges which are concave at one face and convex at the other, the respective grooves extending through an arc less than a semi-circle with the outer edges thereof in a common plane nearest that face of the frame from which the convexity of the grooves extends.

14. A projector slide comprising an open base frame of uniform thickness presenting continuous lateral embossed grooves, an open cover frame thinned about the border of the opening thereof to accommodate a film extending flush with the inner face of said cover frame and presenting continuous lateral embossed grooves nesting with those of the base frame and secured thereto.

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