May 10, 1927. 1,627,906

L. A. JONES

PORTABLE PROJECTION SCREEN

Filed May 23, 1923 2 Sheets-Sheet 1

FIG. 1.

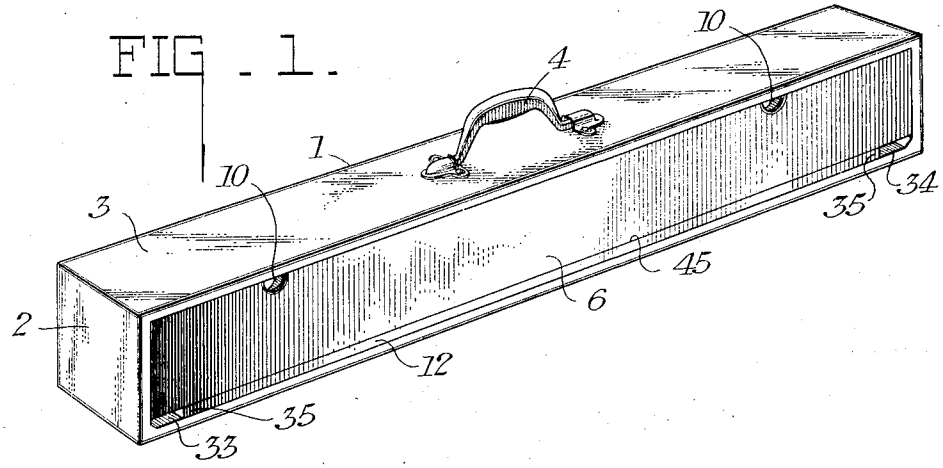


FIG. 2.

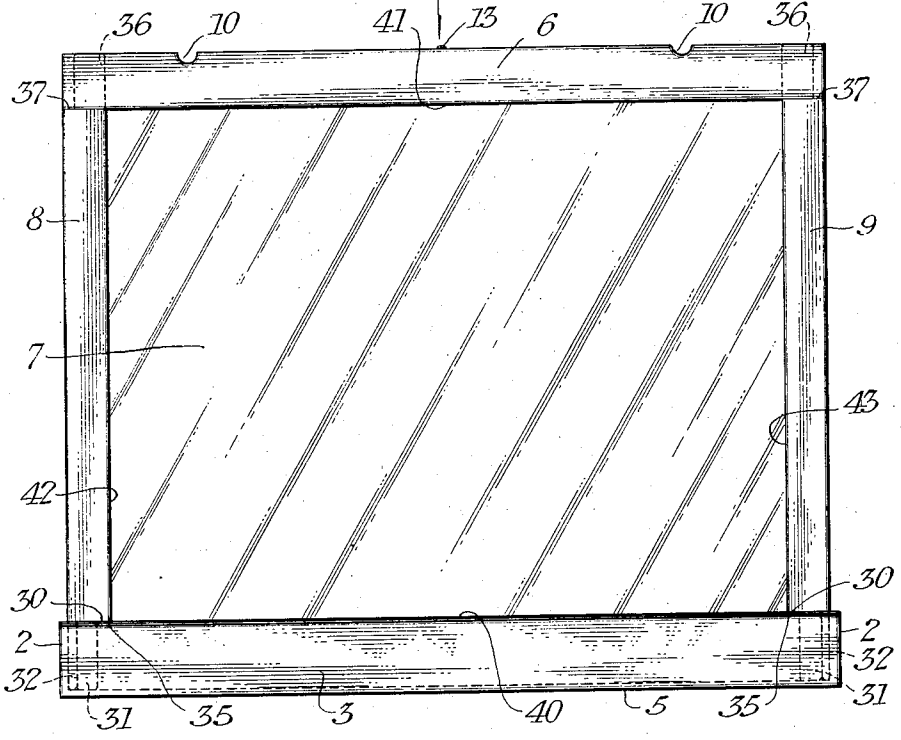
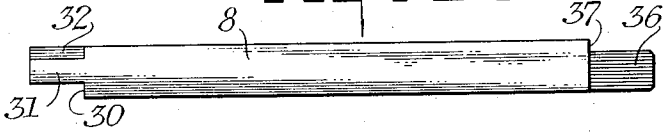


FIG. 3.



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FIG. 4.

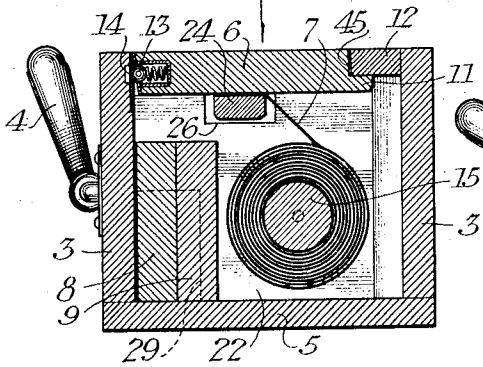
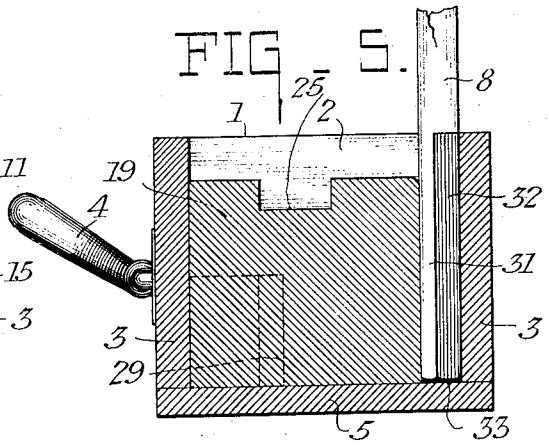


FIG. 5.



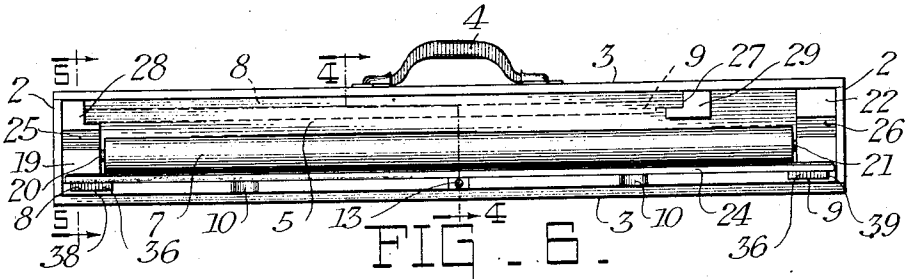


FIG. 6.

FIG. 7.

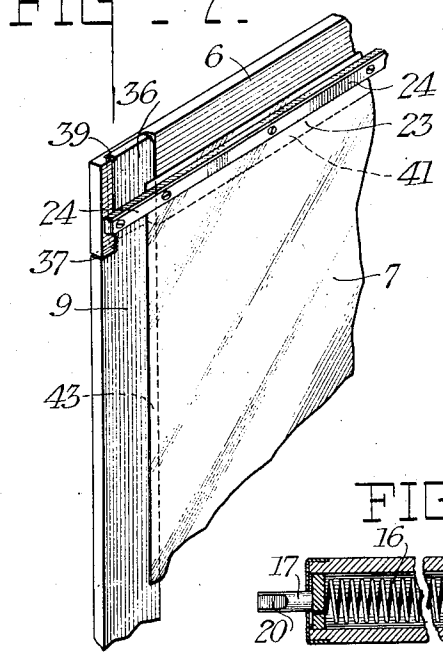


FIG. 8.

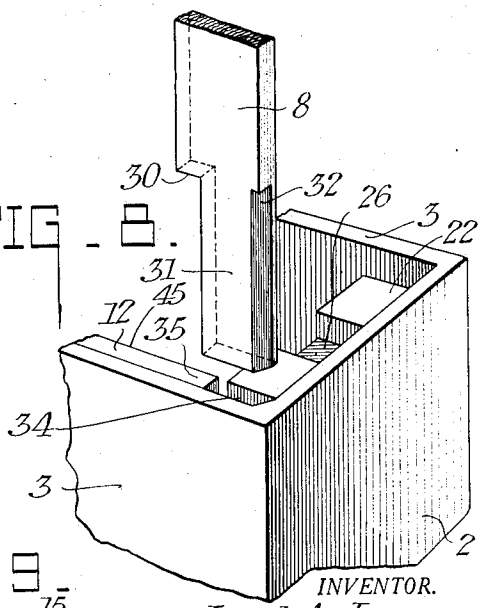


FIG. 9.

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UNITED STATES PATENT OFFICE.

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PORTABLE PROJECTION SCREEN.

Application filed May 23, 1923. Serial No. 640,992.

This invention relates to photography and more particularly to screens upon which motion pictures or lantern slide views are projected. One of the objects of my invention is to provide a folding portable screen which can be easily erected; another object is to provide a screen of light weight which will stand in an erected position in any desired place without special supports; another object is to provide a screen having a minimum number of parts, and one in which all parts are self-contained when the screen is in a folded position; another object is to provide a screen in which the screen is automatically held taut and free from wrinkles when erect; another object is to provide a screen container in which the screen can be carried without folding; another object is to provide a box in which the screen and support can be carried without obtruding parts; another object is to provide a frame for the screen which can be readily folded and set up; and other objects will appear from the following specification, and in the claim, where the novel features are particularly pointed out.

In the drawings, in which like reference characters denote like parts throughout:

Fig. 1 is a perspective view of a folded screen outfit constructed in accordance with and illustrating one form of my invention;

Fig. 2 is a front elevation of the same screen erected for receiving projected pictures;

Fig. 3 is a plan of a side support;

Fig. 4 is a section on line 4—4, Fig. 6;

Fig. 5 is a section on line 5—5, Fig. 6;

Fig. 6 is a top plan of my device with the screen erected;

Fig. 7 is an enlarged perspective detail of the top bar and side support connection;

Fig. 8 is a similar detail of the box and side support connection; and

Fig. 9 is a fragmentary detail of the screen roller.

I provide a base in the form of a box 1 having ends 2 and sides 3 on one of which there is a handle 4. As the box normally lies on a bottom 5 (when forming a screen support) and as there is a removable cover 6 opposite the bottom 5, (Figs. 1 and 4) these parts will be designated as the top and bottom even though they appear to form the sides when the carrying handle 4 is on top, as in Fig. 1.

The screen 7 is erected by turning the box over with the handle 4 to the rear and drawing up the cover 6, which forms a top screen-supporting rail when carried by the side-supporting members 8 and 9. Finger openings 10 facilitate removing cover 6 from the box 1.

The cover 6, Fig. 4, consists of a board having a flange 11 adapted to engage the strip 12 which is affixed to one side 3. A spring-pressed ball 13, by snapping into the aperture 14 forms a latch of well known construction to hold the cover closed. The screen 7 also helps to hold the cover closed as it is mounted on a roller 15, constantly tending to wind up through the action of spring 16. This spring, Fig. 9, acts between the roller 15 and a shaft 17, the latter being rigidly mounted so as not to turn on an end block 19 by means of the flattened shaft 20, while the opposite end of the roller is mounted to revolve on a shaft 21 which turns freely in end block 22, Fig. 6. The top of the screen 23 is fastened to cover 6 by a strip 24 which lies in the cut-out portions 25 and 26 of the end blocks 19 and 22 when folded into an inoperative position.

Side supports 8 and 9 lie in the position shown in Fig. 6 in dashed lines when not in use, being held against movement by the notches 27 and 28 in the cleats 19 and 29. As shown in Figs. 3 and 8, each support (differing only in one being right and one being left handed) has a shoulder 30, and an extension 31 preferably cut at 32 to form a non-symmetrical shaped end which cannot be reversed and thus insures the support being properly positioned in the socket 33 or 34, which are of a shape to closely engage the end 31. Shoulder 30, when assembled, rests on the top 35 of the end of strips 12 (Fig. 8).

The supports 8 and 9 are also shaped at their tops to fit into the upper support 6, as shown in Figs. 3 and 7. Narrow tongues 36 and shoulders 37 are cut from the arms, the latter forming a stop against which the top support rests when these tongues pass through the slots 38 and 39 cut in part 6, strip 24 serving to confine the tongues 36 in the grooves. As spring 16 constantly tends to wind up screen 7, the screen is drawn taut without wrinkles and is framed by the side 3 of the box, side supports 8 and 9 and the top support 6. This makes a neat border for the

picture, and when painted black, greatly improves the appearance of the projected picture. The inside of portions 40, 41, 42 and 43 of these strips lie in a single plane, thus assisting in holding the screen flat.

The position of the screen 7 is such when erected that it is held against the edge 45 of strips 12 by spring 16, so that all the edges of the screen will lie flat on its frame.

The operation of erecting the screen is as follows: Starting with the box 1, as shown in Fig. 1, it is turned over with the handle 4 away from the operator, who then, by means of finger grips 10 draws out cover 6 against its latch 13. Drawing the cover out a short distance the side supports 8 and 9 are withdrawn from the cleats which hold them in an inoperative position in the box and are placed with their ends 31 extending into the sockets 33 and 34 so that they extend up from the box 1. The cover member 6 is then drawn upwardly until the narrowed ends 36 can be passed into slots 38 and 39; and then member 6 moves down and rests upon the shoulders 37. The curtain or screen 7 is retained in a plane by the spring 16 acting on roller 15. The width of the bottom 5 forms a substantial base which can be laid on any flat table, chair or other support without danger of tipping over. To fold, the operations are reversed.

It is obvious that numerous modifications can be made from the embodiment of my invention illustrated in the drawings, and I contemplate as included in my invention all such modifications as fall within the terms of the appended claims.

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

1. A portable projection screen including a box, two sets of cleats mounted in the box, side arms adapted to be held in an inoperative position by one set of cleats and in an operative position by the other set of cleats, a movable top to the box forming, with the side arms and box, a frame for supporting a screen.

2. A portable projection screen including a box, two sets of notched cleats carried by the box, a cover removable from the box, and side arms removable from the box, the side arms being held in an operative position with respect to the box when in one set of cleats, in which position the box, side arms and cover may co-operate to form a screen frame, the side arms also being adapted to engage the other set of cleats and lie in an inoperative position in the box, in which the parts are self-contained.

3. In a projection screen, the combination with a base, of side arms supported by the base, a top bar supported by the side arms, a spring roller carried by the base, a screen carried by the roller, the base, top bar and side arms having an area lying in a common plane against which a screen is held flat by the action of the spring.

4. In a projection screen, the combination of a flexible screen member, of a collapsible frame therefor including a plurality of frame members, the flexible screen being movably mounted in one frame member, said frame member being of box shape and having a straight edge along one side thereof, an edge of the screen being attached to a top member adapted to be moved from the box shaped base, a pair of side supporting arms having portions adapted to co-operate with the box shaped base and the top bar for holding the top bar spaced from the base, said side supporting arms and top bar having an edge lying in a plane in which the straight edge of the base lies whereby the flexible screen may be supported in a flat condition, the four edges thereof lying in a plane defined by the base, side arms, and top member.

Signed at Rochester this 18th day of May 1923.

LOYD A. JONES.