Sept. 14, 1943. H. F. STIFFLER 2,329,228

LIGHT TRAP

Filed July 24, 1941

FIG. 1.

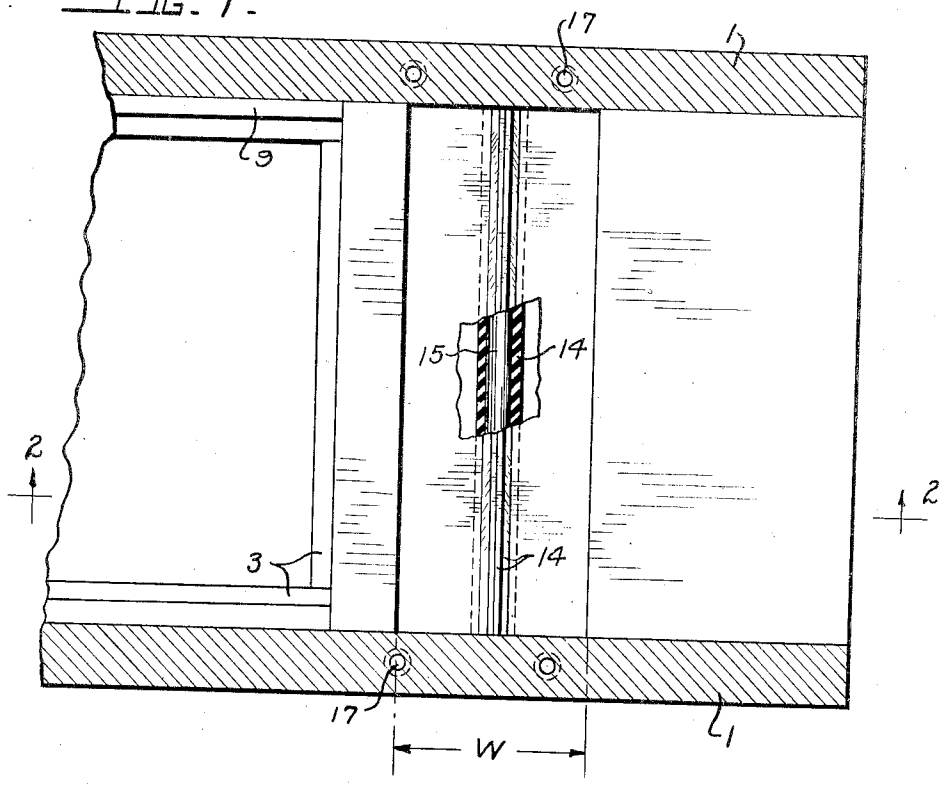


FIG. 2.

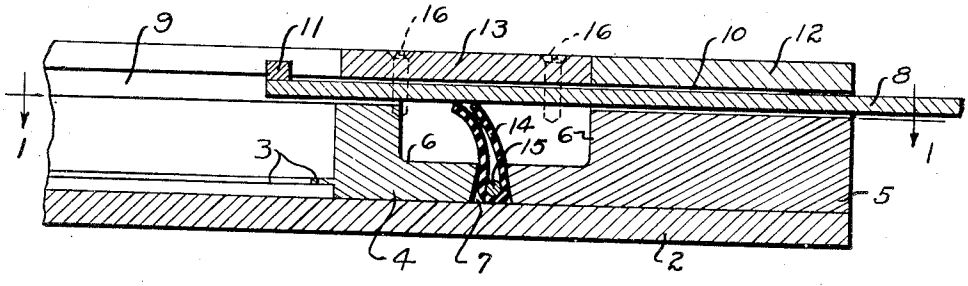
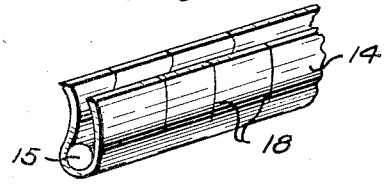


FIG. 3.



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LIGHT TRAP

Harold F. Stiffler, Medway, Ohio

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4 Claims. (Cl. 95—67)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

The invention described herein may be manufactured and used by or for Government for governmental purposes, without the payment to me of any royalty thereon.

My invention relates to improvements in light traps whereby the passage of light between any relatively moving parts used in conjunction with photographic equipment, is completely prevented.

There are, at the present time, a great variety of light traps used on photographic equipment, none of which, however, is as simple and easily constructed as the trap which forms the subject of my invention. My improved light trap embodies a sealing element made of a single flat strip of rubber which is folded around a retaining wire, and the strip and the wire then pressed down into a dovetailed groove provided in the body member of the apparatus.

This, at once, forms a sealing member which is simple and cheap and which, at the same time, is readily removable in case a new one becomes necessary.

Accordingly it is the object of my invention to provide a light trap which is of extremely simple nature and which is constructed of materials which are readily obtainable. This is accomplished by providing a sealing element in the form of an ordinary flat strip of rubber or other resilient material which is held in place by a short piece of wire

A further object of my invention is to provide a light trap in which the sealing element may be easily removed and a new one substituted in case this should become necessary. This result is obtained by holding the sealing element in place in a dovetailed groove by means of a round retaining wire which, together with the rubber, is merely pushed through the narrow opening of the upper part of the groove. To remove the element it is only necessary to pull it and the retaining member out of the groove whereupon a new strip of rubber may be substituted.

A further object of my invention is to provide a light trap formed of materials which are unaffected by moisture or by the chemicals used in the solution for developing and finishing of photographic film. By so constructing my device it is possible to submerge the equipment containing the light trap in photographic solutions without any injury to the light trap. The advantage of being able to thus subject the light trap to the solutions used in photographic processing will be pointed out more fully in the complete description of my invention to follow.

A preferred embodiment of the present invention will be hereinafter described with reference to the accompanying drawing given merely by way of example in which:

Figure 1 is a cross-sectional view taken on the line 1—1 of Figure 2. A fragmentary section is shown in this view illustrating the details of the retaining means for holding the sealing element in the dovetailed slot.

Figure 2 is a cross-sectional elevation taken on the line 2—2 of Figure 1 and shows in detail the action of the sealing element in preventing the passage of light between the slide and the body member.

Figure 3 shows a modified form of sealing element in which slits are cut in the strip so as to provide greater flexibility thereof.

In the drawing I have shown my invention as applied to a conventional photographic plate holder of the single plate type in which 1 represents the two side pieces of the holder, these pieces being made out of molded plastic or other suitable material which is unaffected by moisture or by photographic solutions. Another piece of similar material 2 having a width equal to the width of the holder and a length equal to the length thereof forms the bottom of said holder.

The upper end of the holder has provided therein two pieces of plastic material 4 and 5. These pieces extend across the top of the holder and are each provided with a recess or step 6 which, when the pieces are assembled as shown in Figure 2, form the recess within which the sealing element is contained. The abutting edges of pieces 4 and 5 are tapered so as to form a dovetailed groove 7 when these parts are assembled as shown in Figure 2. The various pieces going to make up the body of the holder may be fastened together in any suitable manner, one way being to weld the pieces together with any of the well-known plastic cements. By so welding the pieces together, the width of the groove 7 may be easily adjusted to the desired width before the cement takes a permanent set.

A plate or film retaining ledge 3 is provided along the sides 1 and the piece 4 in order to retain the film or plate, whichever may be used, in place within the holder Located above the film is a slide 8 for tightly closing the holder against the entrance of light, this slide being guided in grooves 9 formed in the sides 1 and extending through a throat 10 provided in the upper part of the holder. An abutment strip 11 is secured along the edge of the slide extending within the holder so as to prevent its being pulled

entirely out of the latter. It is to be understood, of course, that the strip 11 may be omitted in case it is found desirable to entirely remove the slide and that this feature has no bearing on my invention. The throat 10 is closed on the upper side by two strips or plates 12 and 13 (Figure 2), the latter plate being removable in order to facilitate inspection of the sealing element. This element consists of a flat strip of rubber, rubber substitute, or other suitable resilient material 14, having a width W which is equal to the width of the recess 6 and a length equal to the distance between the side pieces 1. A round retaining wire 15 of suitable diameter holds the element in place in the dovetailed groove 7 as shown in Figure 2. This wire should be of such a diameter that it, together with the rubber strip 14 folded around it, can just be pressed through the narrow opening of the upper edge of the groove 7. Hence the wire will serve to yieldingly retain the sealing element formed by the rubber strip 14 within the groove. By making 14 of a width equal to that of the recess 6 it is possible, when assembling the light trap, to lay the rubber flat along the bottom of the recess and then, after placing the retaining wire 15 on top of the rubber immediately over the dovetailed groove 7, to push down the rubber and the wire into the groove 7. In this manner the two upper edges of the rubber strip will automatically be evenly aligned. This greatly facilitates a quick replacement of a new strip 13 when for any reason this becomes necessary or desirable. It shoud be observed, however, that any slight misalignment of the upper edges of the strip will not defeat the double sealing effect performed by each of these two edges due to the fact that the rubber strips are bent over by contacting the under side of the slide 8 as shown in Figure 2. Hence any slight unevenness of the edges of the rubber will be compensated for by this bending of the strip. The making of the strip 14 of a width equal to the width of the groove 6 has another useful purpose in that it insures that the width of the sealing element will be such that the free edges thereof can never contact the sides of the recess and thereby become wedged in the space between the slide 8 and the top surfaces of the pieces 4 and 5. Should this occur, the slide would become tightly locked within the holder and it would be necessary to remove the inspection plate 13 in order to free the slide from this restriction.

The plate 13 is held in position above the light trap by means of four screws 16 which are received in the four tapped holes provided the side pieces 1. In order to remove the plate for inspection it is only necessary to remove the screws 16 whereupon the plate may be lifted off. The slide 8 is then pulled out of the holder until the strip 11 strikes against the edge of plate 12 thus exposing the sealing element to the view.

If desired, the sealing element 13 may be provided with staggered slits 18 along each edge as shown in Figure 3 to better take care of any unevenness on the surface of the slide 8. This should only be necessary, however, in cases where the rubber or the resilient material used in making the strip is of a relatively stiff nature, for with the ordinary flexible rubber strip an effective seal may be secured without so slitting the rubber.

By constructing the light trap as well as the plate holder out of materials which are unaffected by moisture or by the chemical solutions utilized in the development of photographic film, it is possible to use the holder as an individual developing tank for processing the film after the exposure has been made. It is only necessary to submerge the holder containing the exposed film in the developing solution with the slide removed from over the film. The other steps of the process such as rinsing, fixing and washing may be carried out with the film remaining in the holder thus facilitating the rapid and convenient developing of the film.

While for purposes of illustration I have disclosed my invention as applied to a photographic film holder, it is obvious that this light seal may be adapted for use wherever it is desirable to prevent the passage of light between any two relatively moving parts. It is therefore to be understood that the form of the invention shown is for purposes of illustration only and that I intend to be limited only by the prior art and the scope of the appended claims.

What I claim as new and desire to secure by Letters Patent is:

1. A light trap comprising a body member provided with a recessed portion and a dovetail grooved portion communicatively connected with the central part of the bottom of said recessed portion, a slide extending within said body member and above said recessed portion, a sealing member formed of a folded strip of resilient material, said member having its folded edge located in said grooved portion and its free edges extending into the range of action of said slide, and a retaining member for holding the folded edge of said member securely in said grooved portion.

2. A light trap comprising a body member provided with a recessed portion and a dovetail grooved portion communicatively connected with the central part of the bottom of said recessed portion, a slide extending within said body member and above said recessed portion, a sealing element formed of a folded strip of resilient material whose unfolded width is equal to that of the recessed portion, and an elongated retaining member for securing the folded edge of said strip within said dovetail grooved portion with the free edges of said strip extending upward into the range of action of said slide whereby a double edged sealing element is formed whose proportions are such that the free edges thereof can never come in contact with the juncture of said recessed portion and said slide.

3. A light trap comprising a body member provided with an elongated recessed portion and a dovetail groove portion communicatively connected with the central part of the bottom of said recessed portion, a slide extending within said body member and above said recessed portion, a sealing element formed of a strip of resilient material having a width equal to that of said recessed portion, and a cylindrically shaped retaining member whose diameter is approximately equal to the width of the throat of said dovetail grooved portion less twice the thickness of said strip whereby said strip may be folded and secured in said grooved portion with the edges of said strip evenly aligned by laying said strip on the bottom of said recessed portion, then placing said retaining member in the center of said strip above said grooved portion after which the wire and strip are together pushed down into said grooved portion.

4. A light trap comprising a body member provided with a recessed portion, a slide extending within said body member and above said recessed

portion, a sealing element formed of a folded strip of resilient material whose unfolded width is approximately equal to that of said recessed portion, and means for holding the folded edge of said strip centrally located in the bottom of said recessed portion with the free edges of said strip extending upwardly into the range of action of said slide, thereby forming a double-edged sealing element so proportioned that the free edges thereof can never come into contact with the juncture of said recessed portion and said slide.

HAROLD F. STIFFLER.