This invention relates to supports of various kinds including holders for sheet material to permit treatment of such sheet material in various ways for example so that it may be subjected to fluid treatment, or may be supported in a manner to cause it to dry quickly, may be readily inspected, and the like.

The invention is particularly useful in photography where holders or frames are used for the inspection and retention of film after it has been exposed in the taking of a picture and it is subjected to several baths during the developing, washing, and drying of the film, it being important that such film be engaged and supported only at its edges in order to avoid damage thereto.

A holder or frame of the general character now used is illustrated in United States Patent No. 1,583,708 to Antonius J. Viken, dated May 4, 1926. This patent discloses a frame having a film-receiving portion defined by bottom and side channel members and a spring-biased pivotally mounted top channel member whereby the film may be securely retained within the holder.

One of the objects of the present invention is to provide an improved holder of this general type having greater flexibility of use.

A further object of the invention is to provide a holder of this type for use with sheet material or film of different sizes.

A further object of the present invention is to provide an insert or adapter for a holder of this general type so that the frame portion may be reduced to accommodate sheet material or film of a lesser size than that for which the holder initially was intended.

Further objects and advantages of the invention will be apparent from the following description, taken in conjunction with the accompanying drawings, wherein:

Fig. 1 is a perspective of a conventional film holder suitable for present purposes and illustrating the novel insert positioned therein constructed in accordance with the present invention;

Fig. 2, a front elevation of said insert;

Fig. 3, a detail section taken on the line 3—3 of Fig. 2;

Fig. 4, a detail section taken on the line 4—4 of Fig. 2;

Fig. 5, a front elevation on a reduced scale of a modified form of the present invention; and

Fig. 6, a view similar to Fig. 5 of a further modification.

Briefly stated, the invention contemplates the provision of a novel insert, or a plurality of inserts, for use with suitable holders for sheet material, whereby the holder may be adapted for the reception and retention of sheet material of a lesser size than that originally contemplated, at the same time utilizing the major portions and functional characteristics of the holder.

As shown in the drawing, a film holder 10 is illustrated, including substantially parallel spaced side wall members 11 and 12, of channel configuration, united at their lower extremities by a bottom channel member 13. The side members 11 and 12 at their top portions have their outer flanges omitted and are secured to a top cross member 14 provided with slots 15 adjacent the extremities thereof whereby the holder may be supported upon the edges of a developing tank, or the like, while the film is being developed or otherwise processed, or upon suitable cross-wires W while the film is drying. Desirably, the base portions of the channels 11, 12 and 13 are provided with a plurality of relatively closely spaced apertures 16 to permit the passage of fluid during wet processing and for convenient drainage when drying is being accomplished.

A locking channel member 17 is provided, located just above the outer flanges of the side members 11 and 12, for engagement with the upper end of the film or sheet member to insure its retention within the holder. The locking member 17 includes lugs 18 for pivotal engagement with a bar 19 extending between the side members 11 and 12 whereby the locking member may be pivoted into and out of engagement with the upper edge of a sheet member. Spring fingers 20 carried by the locking member engage flattened portions 19' on the bar 19 providing a structural arrangement which biases the locking member selectively into closed or open position.

It will be understood that in prior art practices holders of the type described thus far provide a frame of predetermined dimensions to accommodate standard size film. For example, such holders are available to accommodate a 5" x 7" film and other holders of different sizes are required to accommodate films of different dimensions. The instant inventive concept contemplates a novel adapter in the form of an insert for use with a holder such as that described whereby film or other sheet material of lesser size than that for which the holder originally was intended may be securely retained therein.

As illustrated, more particularly in Fig. 2, one form of insert of the present invention comprises a relatively thin and rigid L-shaped sheet member 21 of a sufficient width to fit freely and securely between the spaced side members 11 and 12, the height of the insert 21 corresponding substantially to the height of the channel portions of said side members. Thus, as illustrated in Fig. 1, when the insert is positioned within the channel members of the holder 10 and the locking member 17 rotated to locking position, the insert will be retained effectively against displacement.

The insert 21 is provided with a cut-away portion defined by the edges 22 and 23, the size of this cut-away portion being slightly less than the size of the film or sheet material intended to be accommodated in the holder. If desired, and for purposes of reducing weight, the insert also may be provided with a plurality of apertures 24.

Flanges 25 and 26 are riveted or otherwise secured to the insert 21, opposite to the borders adjacent to the edges 22 and 23, and form channels therewith for the reception of a side and bottom edge of a piece of film or other sheet material, the opposite side edge of said sheet material being received within the channel 12 of the holder 10. The base portions of the flanges 25 and 26 may be provided with a plurality of spaced apertures 27 to facilitate drying of the film. Additionally, apertures 28 may be provided in the insert 21 immediately adjacent the edges 22 and 23.

From the foregoing it will be apparent that when the insert 21 is placed within the holder 10, the channels 25, 26 and 12 will be disposed in cooperating relationship whereby a piece of sheet material or film may be received therein for such fluid treatment and/or drying as may be desired. Suitable pivotal movement of the locking bar 17 will result in the engagement of the upper edge of the sheet material and insert. Thus, a holder of reduced size is provided within the larger holder 10, utilizing one channel portion of the original holder, the
locking mechanism thereof and all other structural functions.

In the field of photography, films used commercially to a great extent are 3" x 7" and 4" x 5". In the embodiment of the invention illustrated, the film holder has been provided with an insert whereby a 4" x 5" film may be retained therein. It will be apparent that other inserts may be provided, with either smaller or larger cut-away portions, and used selectively to provide any size frame desired within the confines or limitations of the base holder in connection with which such inserts are designed for use.

A modified form of the invention has been illustrated in Fig. 5 of the drawing where the insert requires but a single supporting flange or channel and two of the channel members of the base holder are employed to support the film or other sheet material. In this modification of the invention, illustrated on a slightly reduced scale, the insert 30 is provided with a cut-away portion defined by the edges 31 and 32. A flange 33 is secured to the insert immediately adjacent the vertical edge 31 and extends substantially the length of said vertical edge. Thus, when this insert is positioned within a suitable holder, the flange 33 will extend adjacent to the bottom flange of said holder. Such an arrangement permits the utilization of the flange 33 and the bottom and one side channel of the holder for the supporting and retention of the film or other piece of sheet material and in no manner interferes with the normal operating functions of the customary locking bar.

Fig. 6 illustrates a further modification in which a slot 35 is formed substantially centrally of the sides of the insert 36, the slot extending from the top edge thereof. In this U-shaped insert the side members 37, 38 are receivable between the side members 11 and 12 of the holder. Channels 39, or other suitable holding means are provided around the border of the slot for the retention of three sides of the film, the fourth side being engaged by the locking member 17.

It will be obvious to those skilled in the art that following the present inventive teachings will result in a simplification and standardization of equipment with accompanying economy. Any necessity for a multiplicity of relatively costly holders of different sizes is obviated and holders of a single size may be employed selectively with inserts having reduced frame portions in accordance with specific requirements.

It will be readily apparent that various changes may be made in the invention without departing from the spirit and scope thereof and therefore the invention is not limited by that which is shown in the drawing and described in the specification but only as indicated in the appended claims.

What is claimed is:

1. In combination with a holder for sheet material, said holder having side and bottom connected channel members and a top channel member movably mounted between the side channel members in spaced relation from the bottom channel member and having a first position in which it engages the top edge of sheet material inserted in said holder and cooperates with the side and bottom channel members to provide a frame of maximum size, said top channel member being movable from said first position to a second position in which insertion of a sheet member between the side channel members is permitted, an adapter receivable within the frame, said adapter comprising a sheet member having two major dimensions of a size to fit within the frame and having a corner portion omitted, said omitted corner providing a space having its two major dimensions smaller than that of the frame and having a side parallel to the side channel members and a bottom parallel to the bottom channel member, and means providing channels adjacent to the borders of said space, said top member when in said first position engaging the upper edge of said adapter and the top edge of sheet material inserted therein.

2. For use with a holder for a sheet member, said holder comprising side and bottom connected channel members, the side channel members being receivable between the side members and having a first position in which it engages the top edge of sheet material inserted in said holder and cooperates with said side and bottom channel members or to an alternate position in which it permits insertion of a sheet member having a length and width corresponding to the spacing between the side members and the shorter length of the L is of a dimension corresponding to the spacing between the side members and the shorter length of the L is of a dimension corresponding to that between the bottom and top members, and channel means on the inner borders of the legs of the L for engaging said sheet member of smaller size, said top member when in said first position engaging the upper edge of said adapter and the top edge of sheet material inserted therein.

3. For use with a holder for a sheet member, said holder comprising side and bottom connected channel members and a top channel member selectively moveable to a position in which it engages the top edge of sheet material inserted in said holder and cooperates with said side and bottom channel members or to an alternate position in which it permits insertion of a sheet member having a length and width corresponding to the spacing between the side members and the shorter length of the L is of a dimension corresponding to the spacing between the side members and the shorter length of the L is of a dimension corresponding to that between the bottom and top members respectively, and an adapter for holding a sheet of smaller size within the frame, said adapter comprising an L-shaped insert in which the longer leg of the L is of a dimension corresponding to the spacing between the side members and the shorter leg of the L is of a dimension corresponding to that between the bottom and top members, and channel means on the inner borders of one of the legs of the L for engaging said sheet member of smaller size, said top member when in said first position engaging the upper edge of said adapter and the top edge of sheet material inserted therein.

4. An insert for use with a holder as defined in claim 2 in which the insert is substantially U-shaped, the sides of the U being of a dimension corresponding to that included between the channels of the bottom and top members and the bottom of the U being of a dimension corresponding to that included between the channels of the side members, and means on the inner borders of the sides and bottom of the U-shaped member for engaging the edges of a sheet member.

5. For use with a holder for sheet material of predetermined size, said holder having side members and a bottom member connected together and a top member moveable from a first position in which it engages the top edge of sheet material inserted in said holder and cooperates with said side and bottom members for holding said sheet material to a second position in which it permits insertion of sheet material between the side members, said side, bottom and top members each having means for engaging an edge of sheet material, an adapter receivable by said side, top and bottom members, said adapter comprising a member having means for engaging an edge of sheet material, an adapter receivable by said side, top and bottom members, and having an area of reduced size bordered on at least one side by means for engaging sheet material in cooperation with at least one of said side and bottom members, said top member when in said first position engaging the upper edge of said adapter and the top edge of sheet material inserted therein having its two major dimensions smaller than that of the frame and having a side parallel to the side channel members and a bottom parallel to the bottom channel member, and means providing channels adjacent to the borders of said space, said top member when in said first position engaging the upper edge of said adapter and the top edge of sheet material inserted therein.

6. In combination with a sheet metal frame for holding film of predetermined size during fluid treatment and drying, said frame comprising fixed side and bottom channel members for supporting the side and bottom edges of a film inserted therein and a pivotally mounted
top locking member movable from an open position where film may be inserted or removed from said holder to a locking position engaging the top edge of said film, a sheet metal adapter selectively receivable within said side and bottom channel members and spanning the width thereof, said insert being provided with a cut-away portion extending downwardly from the top edge thereof and inwardly from one side edge thereof, and flanges on said insert defining the edges of said cut-away portion and cooperating with the adjacent side channel member to provide a film retaining frame of lesser size, said pivotally mounted top locking member engaging the top edge of said adapter and the top edge of a film inserted therein.

References Cited in the file of this patent

UNITED STATES PATENTS

<table>
<thead>
<tr>
<th>Patent Number</th>
<th>Inventor</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,038,171</td>
<td>McAdams</td>
<td>Sept. 10, 1912</td>
</tr>
<tr>
<td>1,583,708</td>
<td>Viken</td>
<td>May 4, 1926</td>
</tr>
<tr>
<td>1,629,285</td>
<td>Mabee</td>
<td>May 17, 1927</td>
</tr>
<tr>
<td>2,153,221</td>
<td>Wittel</td>
<td>Apr. 4, 1939</td>
</tr>
</tbody>
</table>