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2,058,128

SLIDE HOLDER

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FIG. 1.

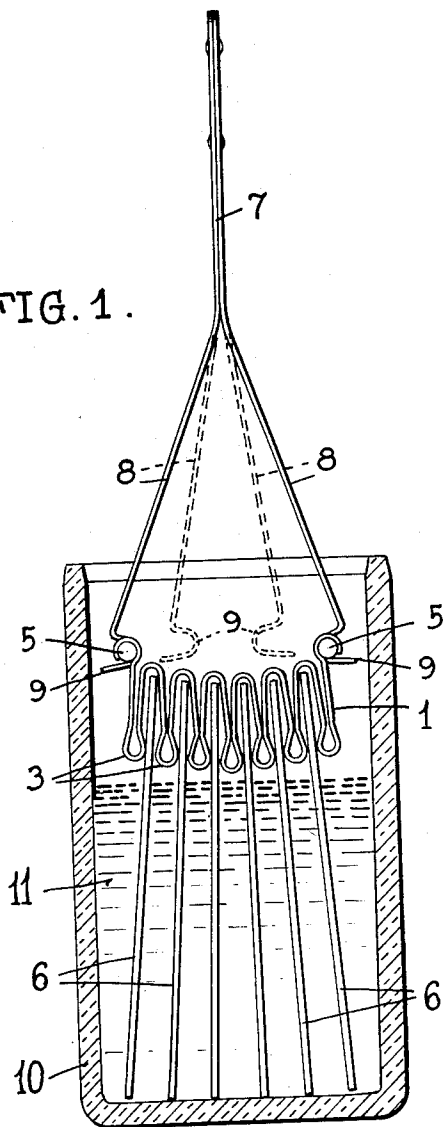


FIG. 2.

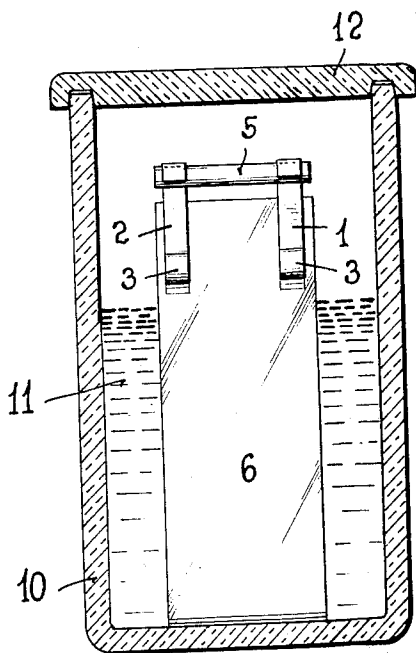
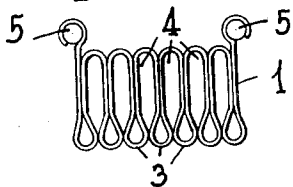


FIG. 3.



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SLIDE HOLDER

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7 Claims. (Cl. 211—120)

This invention relates to an improved device for holding a plurality of sheets or plates in spaced relation.

The device is a clip which is adapted to support simultaneously in substantially parallel relation a plurality of sheets of glass or similar material.

In the specific embodiment herein illustrated and described is shown a form of the invention which is particularly adaptable for supporting microscope slides. As is well known in the art, it is customary when mounting microtome sections on slides to dissolve the paraffin in which the sections are embedded. This is done by immersing the slide in a suitable solvent such as xylol. Also when sections are being stained, it is often desirable to suspend the slides with the sections thereon in the liquid stain.

In performing these operations, it is desirable to provide means for simultaneously treating a plurality of slides. It is essential that these slides be positioned in spaced relation so that there will be no danger of the slides coming in contact with each other or with the sides of the vessel in which they are to be located.

It is an object of this invention to provide a clip of this general class which is simple in construction and which will serve to grip the slides supported with a minimum danger of breakage.

Another object of the invention is to provide a means for opening the clip to receive the slides and release them therefrom which will involve a minimum handling of the slides and a simple and effective gripping action.

Yet another object of the invention is to provide detachable means for handling the clip as a whole to facilitate the placement thereof in the solution and the removal therefrom.

Still another object of the invention contemplates the provision of a clip which is of such shape that there will be only a line contact between the gripping members of the clip and the slide and such that the slide will be otherwise out of contact with the clip.

Other objects and advantages of the invention will become apparent from the following specification when considered in connection with the accompanying drawing forming a part thereof.

In the drawing:

Figure 1 is a vertical sectional view showing the clip with a plurality of slides mounted therein in a solution, the handling tongs being secured to the clip;

Figure 2 is a vertical sectional view of the clip

with slides therein in a solution, the handling tongs being detached; and

Figure 3 is a side elevation of the clip with no slides mounted therein.

With more particular reference to the drawing, 5 the improved clip comprises a pair of spring members 1 and 2 preferably made of metal. As is seen in Figure 3, each of these members is reversely bent at 4 a number of times to form a series of normally parallel convolutions. In Figure 3, the 10 element 2 is presumed to be immediately behind the clip 1. The forward ends of each convolution are bent to form loops 3 in order that U-shaped spaces will be formed between adjacent convolutions. It will be seen from this construction that 15 the adjacent loops 3 will, due to their form, contact the adjacent loops with substantially a line contact. It will be obvious that the spring members are of strips of metal or other spring material which are flat or ribbon like and which are 20 bent or folded into the desired shape. The metallic members 1 and 2 are so tensioned that in each the adjacent sides of each of the loops in the respective members engage each other firmly.

The extremities of the members 1 and 2 at opposite ends of the clip are carried rearwardly a 25 slight distance behind the rear ends 4 of the convolutions forming the body of the clip, being somewhat longer than the parallel convolutions, and are each carried around and secured to parallel cross bars 5 which serve to maintain the 30 members 1 and 2 in parallel spaced relation. The projecting ends of each member constitute levers, the fulcrum for which is the entire series of convolutions at the bends 4. 35

The crossbars 5 may be squeezed together thus opening substantial spaces between the loops 3. Slides 6 may then be inserted between the loops 40 and when the pressure on the crossbars 5 is released, the outer surfaces of the loops will grip the slides therebetween holding them firmly with a minimum of contact on the surface of each slide, the engagement of the loops with slides being in the nature of a line contact. 45

For handling the clip, a pair of spring tongs 7 50 are provided. These tongs comprise a pair of sections of spring metal secured together throughout a portion of their length and having diverging portions 8 with oppositely disposed hooks 9 at their ends. The tongs may be squeezed together and inserted between crossbars 5 and allowed to spring outwardly permitting the hooks 9 to engage the crossbars. 55

The clip, with a plurality of slides therein, may

be conveniently picked up by means of the tongs 7 and placed in a receptacle 10 containing the solution 11 with which it is desired to treat the slides. The slides which are square on their 5 ends and held rigidly by the clip serve to support the clip and thus maintain the slides out of contact with the walls of the receptacle.

The tongs then may be removed to permit the covering of the vessel by means of the cover 12. 10 One of the advantages of the slide holder and tongs combination is the manner of use in which it is possible to remove the slides from a vessel along with a minimum amount of liquid. For example, when the clip and slides are lifted by 15 the tongs upwardly from the jar illustrated in the drawing, the tongs may be tilted sideways, for example about 45°, thus permitting the liquid on the slides to run to the corners of the slides, from which corners it will run off much more freely 20 and completely than if the construction of tongs and the connection between the tongs and clip was such as to render tilting impossible. The tongs and clip with the slides held therein may be considered substantially a rigid unit in that 25 the whole assembly may be tilted as above indicated. This ease of draining off the excess liquid from the slides is advantageous over the effect which would be obtainable if the slides could not be tilted and liquid was permitted to collect along 30 the entire lower edge of the slide. It will be obvious also that this arrangement provides a material advantage over slide holders in which the lower ends of the slides rested in some sort of holder and it was necessary to lift the entire 35 holder from the jar or other vessel. In such a case, the slide holder, upon being lifted from the vessel, naturally carries with it not only the liquid which adheres to the holder, but also excess amounts collected around the lower ends of 40 the slides where they are seated in the holder.

It will be seen that the improved clip is certain and simple in operation and requires a minimum of space, that it may easily and conveniently be handled and may be manufactured 45 relatively cheaply.

I claim:

1. A clip for holding a plurality of sheets in spaced relation comprising a pair of spring members each bent into a similar series of similar 50 convolutions, the forward ends of each convolution being bent to form a loop, and crossbars maintaining said spring members in spaced parallel relation.

2. A clip for holding a plurality of microscope 55 slides comprising a pair of spring members bent to form a similar series of similar convolutions, the forward ends of each convolution being bent to form loops, the ends of said spring members being carried rearwardly beyond the general 60 contour of said loop portion and secured to a pair of crossbars to maintain said spring members in spaced parallel relation whereby when said crossbars are urged toward each other spaces will be opened between the looped forward 65 ends of each convolution.

3. A clip for holding a plurality of microscope slides comprising a pair of like spring members

bent into a series of similar convolutions, adjacent convolutions being adapted to receive slides therebetween, and a pair of crossbars secured to said spring members and serving to hold them in spaced parallel relation. 5

4. A clip for holding a plurality of microscope slides comprising a pair of like spring members bent into a series of similar convolutions, adjacent convolutions being adapted to receive 10 slides therebetween, a pair of crossbars secured to said spring members serving to hold them in spaced parallel relation, and a pair of spring tongs adapted to engage said crossbars between said like spring members for handling said clip. 15

5. A clip for holding a plurality of plates in spaced relation comprising a strip of metal re- 20 bent on itself in a series of adjacent runs each of substantially the same length, and lever arms spaced apart and extending beyond the length of said series whereby said series may be gripped to be distorted so as to open the spaces for the 25 reception of plates, each pair of the adjacent runs at the side of the device opposite to said lever arms being connected by a loop portion, and the looped portions of adjacent members 30 contacting each other with a line to line contact at the curve thereof, the intermediate portion of the runs leading from each of said loops extending first sharply toward each other, then 35 diverging adjacent the opposite end, the strip being formed of spring material and the adjacent loop portions being capable of resisting movement apart. 40

6. A clip for holding a plurality of plates in spaced relation comprising a strip of metal re- 45 bent on itself in a series of adjacent runs each of substantially the same length, each pair of the adjacent runs at one side of the device being connected by a looped portion, and the looped 50 portions of adjacent members contacting each other with a line to line contact at the curve thereof, the intermediate portion of the runs leading from each of said loops extending first 55 sharply toward each other and normally contacting then extending substantially parallel and then diverging adjacent the opposite end. 60

7. A clip for holding a plurality of plates in spaced relation comprising a strip of metal re- 65 bent on itself in a series of adjacent runs each of substantially the same length, each pair of the adjacent runs at one side of the device being connected by a looped portion, and the looped portions of adjacent members contacting each other with a line to line contact at the curve 70 thereof, the intermediate portion of the runs leading from each of said loops extending first sharply toward each other and normally contacting then extending substantially parallel, 75 and then diverging adjacent the opposite end, and the ends of said runs opposite to said first mentioned loop portions first diverging and then extending in recurved relation and continued as the next adjacent runs toward their respective 80 first mentioned looped portions. 85

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