A. DE KHOTINSKY.

MICROSCOPIC SLIDE DRIER.

APPLICATION FILED MAR. 17, 1915.

1,170,739. Patented Feb. 8, 1916.

Fig. 1.

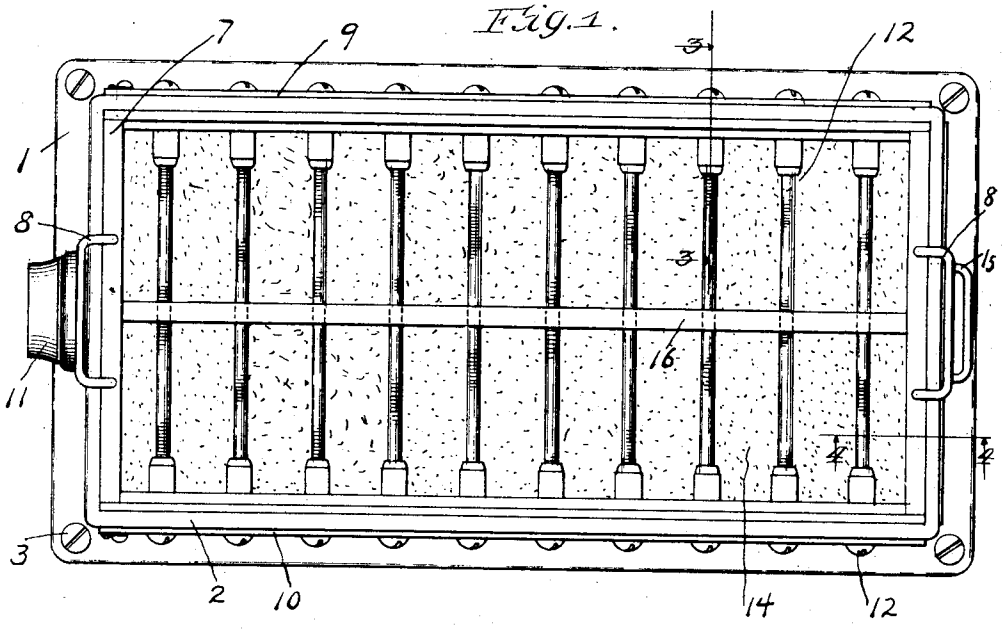


Fig. 2.

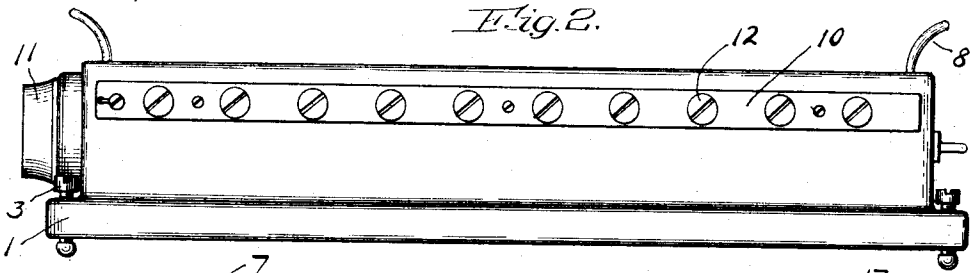


Fig. 3.

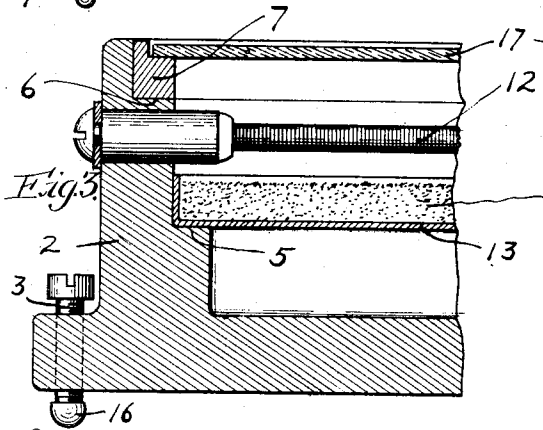
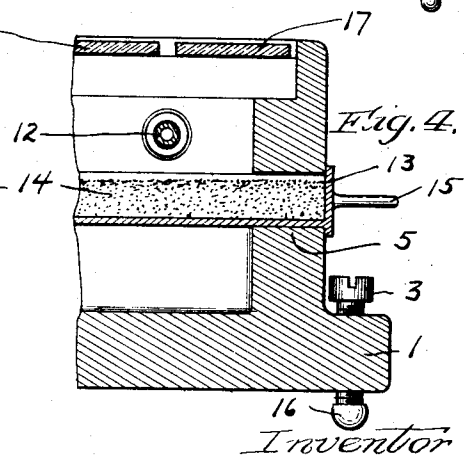


Fig. 4.



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MICROSCOPIC-SLIDE DRIER.

1,170,739. Specification of Letters Patent. Patented Feb. 8, 1916.

Application filed March 17, 1915. Serial No. 14,928.

To all whom it may concern:

Be it known that I, ACHILLES DE KHOTINSKY, citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Microscopic-Slide Driers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to means for drying microscopic slides, being particularly suited for drying slides moistened with sputum (both before and after staining them) and for drying slides after microtome specimens have been affixed to them.

While such a slide drier may be embodied in a variety of forms, I preferably construct the same with a movable slide-carrier, as shown in the accompanying drawings, in which—

Figure 1 is a plan view of a 20-slide drier. Fig. 2 is a side elevation of the same. Fig. 3 is an enlarged fragmentary transverse section along the line 3—3 of Fig. 1. Fig. 4 is an enlarged fragmentary longitudinal section along the line 4—4 of Fig. 1.

In the drawings, the appliance of my invention consists of a receptacle of insulating material (such as the socalled "asbestos wood"), open at the top and provided with a base 1 extending beyond the sides 2 of the receptacle. Threaded into the base 1 are screws 3, by adjusting which the receptacle may be leveled regardless of irregularities in the surface of the table or bench on which it is placed. The sides 2 of the receptacle are provided on the interior of the latter with ledges 5 and 6, the upper of which afford a support for a metal tray 7, which tray may be lifted out of its normal position by handles 8. Mounted on opposite sides of the receptacle are contact strips 9 and 10 electrically connected respectively with the terminals of a socket 11, which latter may be connected to any convenient source of a current through a suitable plug (not shown in the drawings). Extending transversely of the receptacle below the tray 7 are a plurality of electric heating elements 12 connected at their respective ends with the contact strips 9 and 10, these elements being preferably of the type shown in my copending application, filed Sept. 19th, 1914 as Serial No. 862511.

Mounted on the lower ledges 5 and extending through a suitable opening in one end of the receptacle or support is a metal tray 13 containing a suitable absorbent material 14, such as sand. This tray is fitted at its outer end with a handle 15 whereby the same may be drawn out of the receptacle for filling it with a supply of fresh absorbent material.

In the double-width form of the drawings, the upper tray or carrier 7 has a central rib 16 which cooperates with the sides of this carrier in affording supports for glass slides 17, which slides are not shown in Fig. 1 although the form there shown would support twenty of them, disposed in two rows with the adjacent ends of the respective rows supported on the central rib 16.

In operation, current is supplied to the heating elements 12 through the contact strips 9 and 10, thereby heating the chamber bounded on four sides by the ends and sides of the receptacle, and having as its top and bottom the slides and the surface of the sand 14. The heating units 12 are preferably so proportioned with respect to the size of the said chamber and the radiating surface of the slides that the resulting heat will warm the slides above 90 degrees but not quite up to 100 degrees centigrade when the appliance is used at normal room temperature. Consequently, any liquid which may be on the slides will be evaporated without the forming of bubbles.

By providing a number of slide-carriers 7 fitting the receptacle interchangeably, successive groups of slides may be substituted in rapid succession and after drying the sputum on each group, the needed stain may be applied to the slides and dried upon the latter without removing them from their carrier. Any stain spilled accidentally will be absorbed by the sand 14, which sand also acts as a heat reflector to aid in concentrating the heat radiated by the units 12 upon the glass slides. The heating elements are preferably disposed below the centers of the slides so that any spilled liquid will clear these heaters: although, if the latter are made in accordance with the disclosure of my copending application (*i. e.* with nichrome wire wound on porcelain rods) no harm would be done to them

by the stains or reagents now in common use.

It will be evident that by adjusting the feet 3, the apparatus can readily be tilted in any desired direction so as to level the slides, thereby preventing any liquid on the latter from running off the slides. To prevent a scratching of the table or desk on which the appliance may be used, the feet 3 may be equipped with soft rubber tips 16. However, I do not wish to be limited to this or other details of the construction herein disclosed, which might be modified in many ways without departing from the spirit of my invention.

While I have spoken of using my apparatus for use in connection with slides smeared with sputum (as in tuberculosis examinations), it will be obvious that it will serve equally well for use in other connections. Also, that its use will avoid the overheating of slides which often occurs when the drying is done over gas burners, and that instead of demanding careful manipulation my apparatus will permit dependable results to be obtained even by inexperienced operators. Moreover, by removing one or more of the heating units 12 the rise in temperature due to my apparatus may be decreased, while by substituting units of greater radiating capacity, the temperature of the slides might be increased to adapt my apparatus for use in connection with reagents other than those now commonly employed.

I claim as my invention:

1. A drier for microscopic slides including a receptacle, a support for slides carried thereby, a heating element mounted in the receptacle below said support, and means disposed within the receptacle below the heating element for concentrating the heat of the latter upon the slides.

2. A drier for microscopic slides including a heating element, a support for the same, and a removable carrier for the slides comprising a grid supporting opposite edge portions of the slides and exposing substantially the entire under surface of the latter, said carrier being normally mounted on said support and adapted to hold the slides at a predetermined distance from the heating element.

3. A drier for microscopic slides including a support for the slides, a heating element, and moisture absorbent heat-reflecting means carried by the support and disposed below the heating element.

4. A drier for microscopic slides including a receptacle having an opening at the top, means for supporting the slides across an opening, an absorbent medium disposed within the receptacle, and a heating element mounted in the chamber bounded by the sides of the receptacle and having the slides and the absorbent medium respectively as its top and bottom.

5. A drier for microscopic slides including a receptacle having an opening at the top, a grid for supporting the slides across the said opening, a tray removably disposed within the receptacle, and a heating element mounted in the chamber bounded by the sides of the receptacle and having the slides and the absorbent medium respectively as its top and bottom.

6. A drier for microscopic slides including a receptacle having an opening at the top, a grid engaged by edge portions of the slides for supporting the latter across the said opening, and an electric heating element mounted within said receptacle, and so proportioned to the surface of said slides as to heat the latter to a temperature of over 90 but less than 100 degrees C. with a room temperature of 22 degrees.

7. An electric drier for microscopic slides including a receptacle open at the top, current terminals mounted upon opposite sides of the receptacle, means for supporting the slides across the open top of the receptacle, and a plurality of electric heating elements disposed within the receptacle and bridged across said current terminals.

8. An electric drier for microscopic slides including a receptacle open at the top, current terminals mounted upon opposite sides of the receptacle, means for supporting the slides across the open top of the receptacle, and a plurality of electric heating elements disposed within the receptacle and bridged across said current terminals; said heating elements so proportioned to the voltage of the supply of current connected to said terminals, and to the surface of said slides, as to heat the latter to a temperature exceeding 90 degrees but not exceeding 100 degrees C. with a room temperature of 22 degrees.

In testimony whereof I have signed my name in presence of two subscribing witnesses.

ACHILLES DE KHOTINSKY.

Witnesses:
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."