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H. G. OTT

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MICROSCOPE SLIDE OR COUNTING CHAMBER

Filed Feb. 4, 1928

Fig. 1.

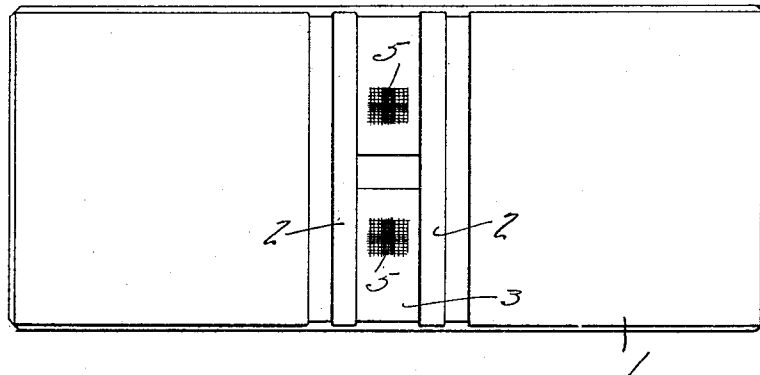


Fig. 2.

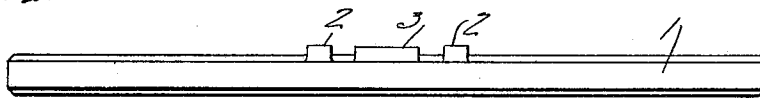


Fig. 3.

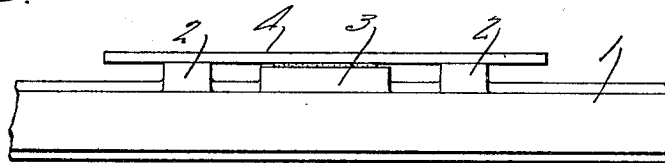
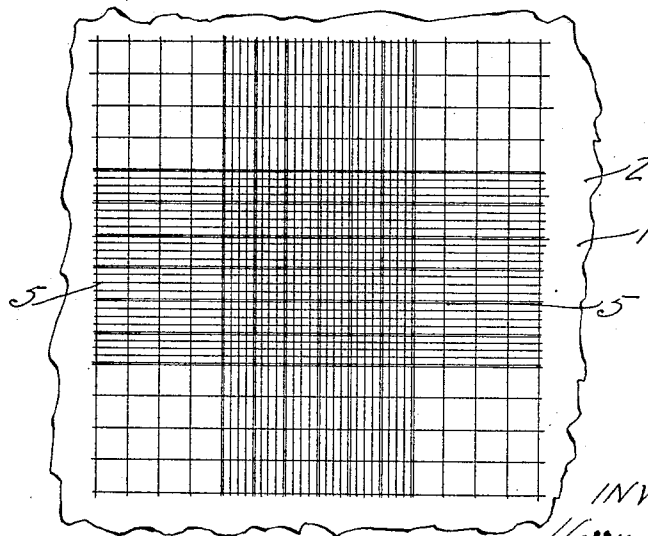


Fig. 4.



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MICROSCOPE SLIDE OR COUNTING CHAMBER

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This invention relates to slides for use with microscopes, and particularly to the type commonly called counting chambers.

Slides or counting chambers heretofore have been commonly formed of ordinary glass having crossed lines ruled or cut therein, so as to divide a selected area of the surface of the slide into a plurality of small areas upon which the particles or objects to be counted are placed. This ruled area is then magnified, and the objects in any area counted. The visibility of the ruled lines has been poor, with the result that accurate counting has been difficult.

An object of this invention is to improve slides or counting chambers of the type utilized for the counting of microscopically small particles or objects.

A further object of the invention is to improve slides or counting chambers for microscopically small particles or objects, which may be ruled in the usual manner, and with which the rulings or lines defining restricted areas will always be clearly and distinctly visible with various liquids in which the particles or objects to be counted or immersed are suspended.

A further object of the invention is to provide an improved slide or counting chamber for the counting of microscopically small particles or objects, upon which the liquids commonly employed for suspending or immersing the particles or objects to be counted will have a minimum corrosive or deteriorating effect; which will be less destructive to the cutting or ruling tool; and which will be relatively simple and inexpensive.

Various other objects and advantages will be apparent from the following description of an embodiment of the invention, and the novel features will be hereinafter pointed out in connection with the appended claims.

In the accompanying drawings:—

Fig. 1 is a plan of a slide or counting chamber constructed in accordance with this invention;

Fig. 2 is a side elevation of the same;

Fig. 3 is a similar side elevation with a cover glass applied thereto; and

Fig. 4 is a plan of a portion of the ruled

surface, magnified to show one type of ruling which may be employed.

In the illustrated embodiment of the invention, the slide or counting chamber may be in the form of a plate or strip 1 of transparent material, such as glass. This plate or strip upon one face thereof may be provided with elevated ribs 2 and 3, the rib 3 being usually disposed between the ribs 2 and of less height. The outer surfaces or faces of the ribs 2 are preferably ground or polished so as to lie in a common plane, and the outer surface or face of the rib 3 is similarly ground or polished to lie in a plane parallel to the plane of the faces of the ribs 2 but spaced therefrom an accurately known distance. When a cover glass 4 is placed against the finished faces of the ribs 2, the inner face of the cover glass will be everywhere a uniform and known distance from the face of the rib 3 so as to provide between the face of rib 3 and the cover glass a chamber or space in which the objects or particles to be counted are disposed, usually suspended or immersed in a liquid.

Upon one or more sections of the face of the rib 3 a plurality of lines 5 are ruled or cut as illustrated in a magnified manner in Fig. 4. These rulings divide the face of the rib 3 into a plurality of restricted areas of accurately known dimensions, so that if the average number of objects or particles within a given area or rectangle formed by the lines 5 be determined, and the distance between the cover glass and the surface 3 is known, the number of objects or particles in a given volume may be easily computed.

Such slides heretofore have been commonly formed of glass having a relatively low index of refraction ranging from approximately 1.505 to 1.530 and usually averaging around 1.52. Glass having such an average index of refraction is commonly known as crown glass, and the rulings are commonly cut therein by a diamond. Slides or counting chambers of this type are widely utilized in making counts of bacteria carrying liquids, or spinal fluids, and in making counts of the red and white corpuscles in blood, the liquids or fluids being usually diluted by a known amount. The cut lines or rulings heretofore have been in-

visible or barely visible even under magnification, and therefore great difficulty has been encountered in making accurate counts of the objects or particles within the limits of a given area because of the difficulty in observing the boundary lines of that area.

I have discovered that the poor visibility of the boundary lines is due to the fact that the index of refraction of the liquids commonly used for suspension or immersion purposes in such counting chambers is too near that of the crown glass, and that by forming the slide plates or strips of a transparent material, such as glass, having an index of refraction considerably different from that of crown glass, the visibility of the lines or rulings can be very greatly increased.

More particularly, I have discovered that by utilizing as the material of the slide or counting chamber a glass or other transparent material having an index of refraction greater than approximately 1.530, the rulings or lines cut therein will be clearly and distinctly visible with all of the liquids commonly examined or used for dilution purposes. For example, flint glass having an index of refraction averaging approximately 1.62 is very satisfactory for this purpose. I have further discovered that the liquids commonly examined or utilized for dilution purposes, when drying on the slides or counting chamber have less destructive or corrosive effect upon slides formed of glass having higher indexes of refraction, than upon the slides formed of glass with lower indexes of refraction. I have also found that by using glass with a higher index of refraction, such as flint glass, the destructive effect upon the ruling tool, such as the diamond, is decreased, and consequently the cost of ruling the slides is reduced.

It will be obvious that various changes in the details, which have been herein described and illustrated in order to explain the nature of the invention, may be made by those skilled in the art within the principle and scope of the invention as expressed in the appended claims.

I claim as my invention:

1. A microscope slide of the counting chamber type formed of glass having an index of refraction in excess of 1.57, with rulings upon a surface thereof.
2. A microscope slide of the counting chamber type bearing rulings cut into the surface of a transparent section having an index of refraction in excess of 1.57.
3. A microscope slide of the counting chamber type having rulings upon the surface of a transparent section thereof, said section having an index of refraction approximately in a range from 1.6 to 1.66.
4. A microscope slide having rulings upon a surface thereof and formed of transparent

material having a refractive index in excess of approximately 1.6.

5. A microscope slide of the counting chamber type having rulings upon the surface of a transparent section thereof, said section having an index of refraction of not less than approximately 1.62.

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