

Nov. 24, 1942.

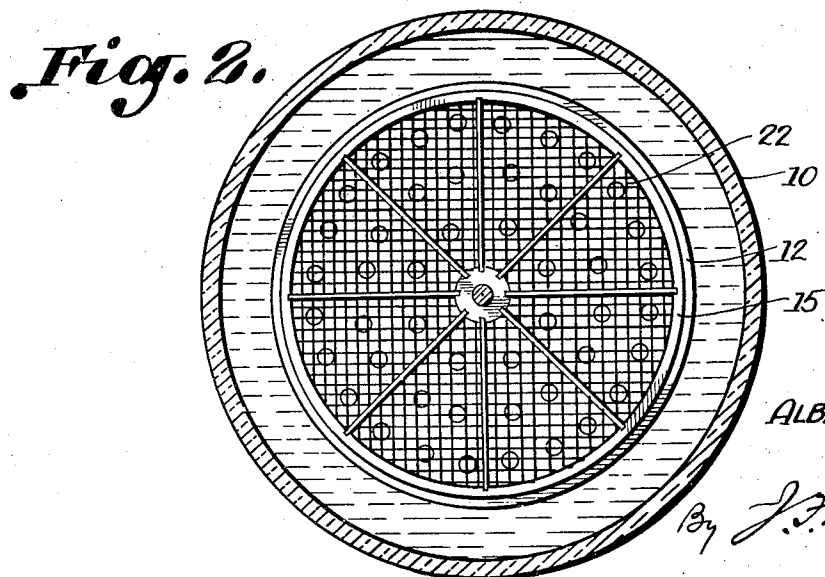
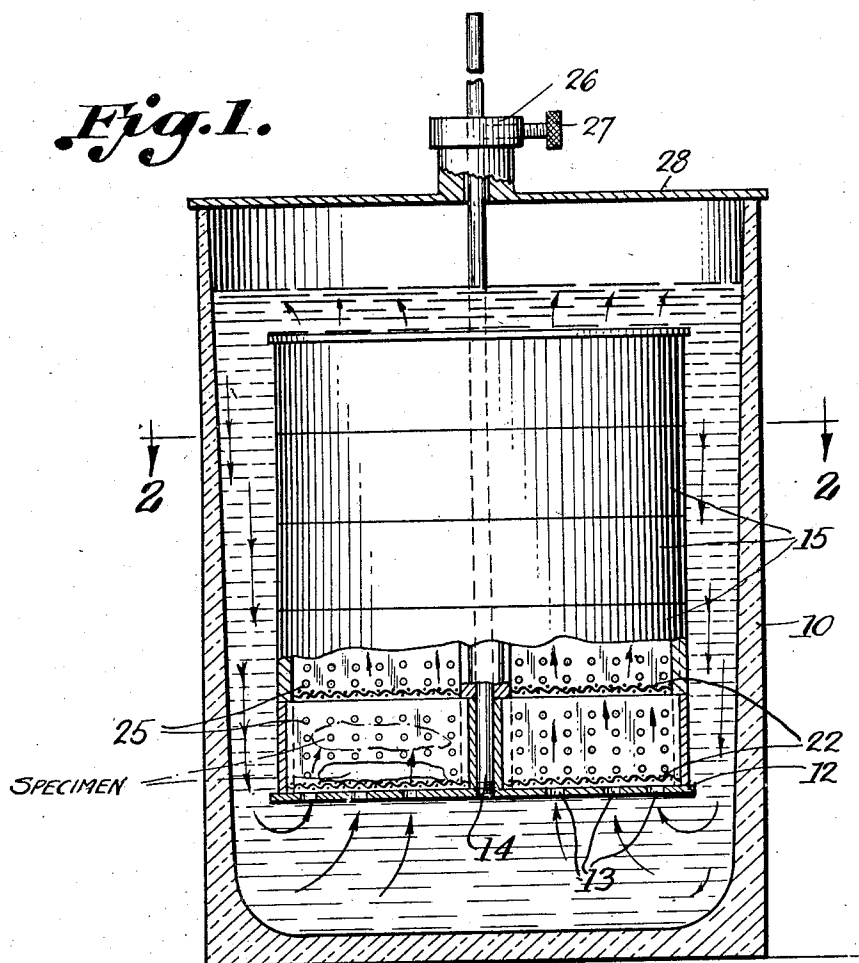
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2,302,698

MULTIPLE TISSUE CARRIER

Filed May 12, 1941

2 Sheets-Sheet 1



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Fig. 3.

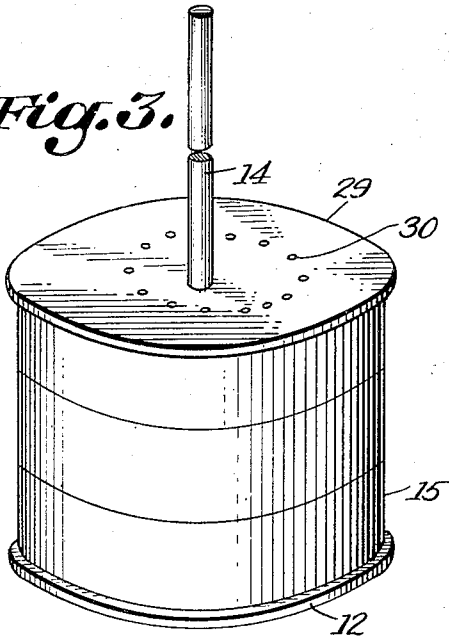


Fig. 5.

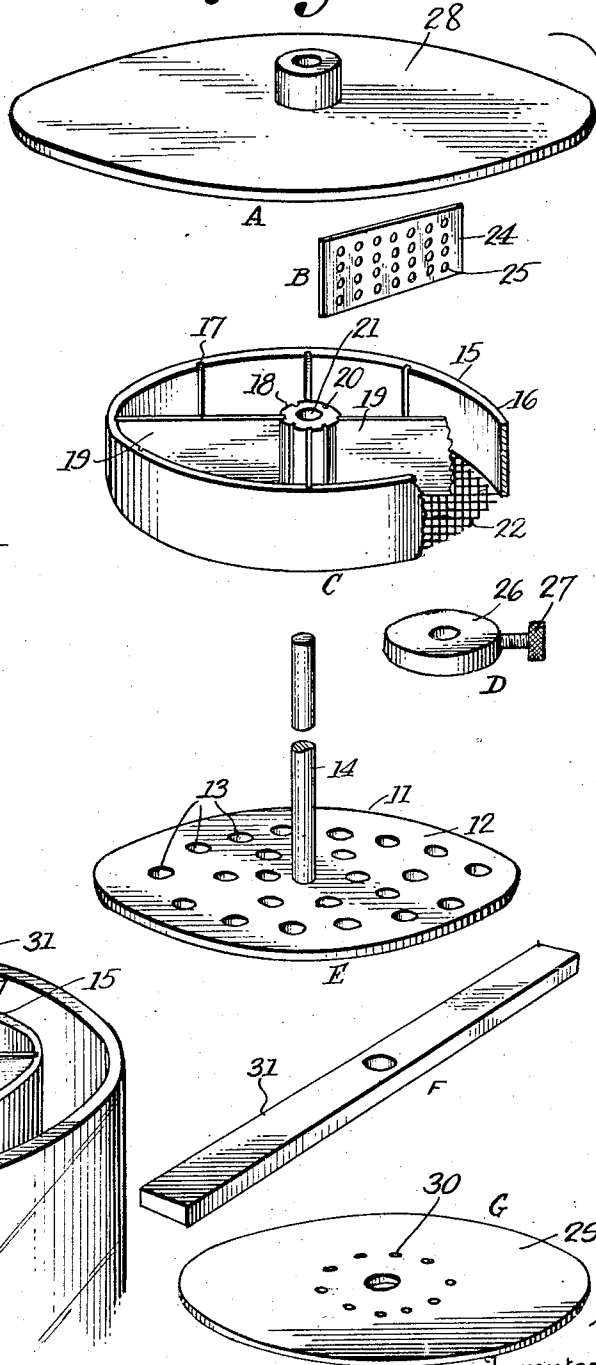
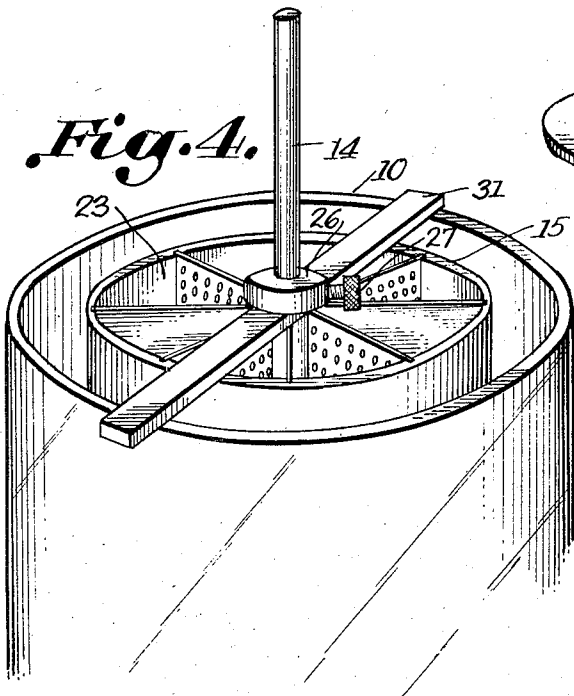


Fig. 4.



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UNITED STATES PATENT OFFICE

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MULTIPLE TISSUE CARRIER

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Application May 12, 1941, Serial No. 393,148

10 Claims. (Cl. 21—87)

(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 the Government of the United States for governmental purposes without the payment to me of any royalty thereon in accordance with the provisions of the act of April 30, 1928 (Ch. 460, 45 Stat. L. 467).

This invention pertains to a laboratory device for containing and retaining specimen and the like for treatment, preservation and examination.

Among the objects of the invention it is aimed to provide convenient and compact multiple carriers for tissues, curettings, samples, specimen, etc., for fixation, dehydration, impregnation, infiltration, clearing, etc., preparatory to analyses and diagnosis in laboratories of anatomy, botany, entomology, animal or plant life, pathology, histology, zoology, embryology, etc.

Heretofore in the treatment and preservation of specimen of the character enumerated preparatory to microscopic observation and analyses by pathologists, for example, the technician must employ a separate bottle, beaker, jar or other receptacle for each specimen or class of specimen which receptacles soon become extremely voluminous in number with the resultant difficulty of classification and finding of a desired specimen. Such types of containers are also inefficient since by their use the specimen must be constantly handled with forceps, i. e., for the change of treating fluids, removal for observation, and for severance for analyses. Such handling damages, if not destroys, the specimen.

Inefficiencies of such present methods are overcome according to the present invention by the provision of a carrier having a multiple of separate compartments, adjustable as to size, carried by a single support, removable in sections, adapted to be submerged as a unit or any portion thereof in a beaker for the immersion of specimen, or supported at desired depths therein, and of a construction as will permit the free flow or penetration of liquids into, through and from each compartment and interstices of specimen placed therein.

Further objects of the invention are to provide specimen trays which will permit the easy and nonflushing ingress and egress to specimen within the carrier thereby preventing damage to the specimen by the washing effect of treating liquid as it is poured into the specimen container or as it rushes over the side walls when submerged.

With the foregoing and other objects and aims in view, my invention resides in the combination of parts and in the details of construction hereinafter set forth in the following specification and

appended claims, certain embodiments thereof having the characteristics of my invention and by which the same may be practiced being illustrated in the accompanying drawings in which—

Figure 1 is an illustration of the assembly when in standing operation, the beaker and portions of the multiple compartment, separately removable trays being in section to illustrate interior constructions and arrangements;

Figure 2, a cross sectional view taking as at line 2—2 of Figure 1;

Figure 3, a perspective view of a plurality of trays assembled upon the tray carrier preparatory to positioning within a beaker;

Figure 4, a view in perspective illustrative of the assembly when in position for working with specimen carried in the tray compartments; and

Figure 5, perspective views (A—G) of various elements, not including the beaker of the assembly.

By reference to the illustrated embodiment, my invention is intended for use with a beaker or other suitable receptacle 10, and includes a tray carrier 11, such as shown separately in Figure 5E, which includes a base support 12 provided with apertures 13 mounted upon a suspension rod 14, and other elements presently described. The tray carrier 11 is adapted to cooperatively serve as an assembly rack and support for one or a plurality of superimposed trays 15 which may be of any desired area, depth and shape. Preferably, however, the trays are circular and relatively shallow as illustrated.

The trays 15 include, as illustrated particularly in Figure 5C, a surrounding wall 16 which is substantially upright in order that the walls of superimposed trays will register to present a substantially continuous surface. The walls 16 are provided with spaced grooves 17 on the inner face thereof. Centrally of the tray there is disposed a hub 18 by means of separating plates 19 extending from the side wall 16 into securement with the hub 18. The hub 18 is also provided with grooves 20 in substantially radial registry with the grooves 17 of the side wall 16 and is also provided with an axially disposed passageway 21 whereby the trays may be threaded onto the suspension rod 14 of the tray carrier 11. The trays are also provided with a bottom 22, for supporting specimen, of foraminous material in order that treating fluid may flow freely into and drain from the trays as they are submerged and withdrawn, and in order that the ingress and egress of the fluid may be easy and nonflushing.

In order that the trays may be separated into

a plurality of compartments 23 of desired size, dividing members 24, as shown in Fig. 5B, preferably provided with apertures 25 for the circulation of fluids, are provided for insertion in the respective pairs of grooves 17-20. These dividing members 24 may be readily removed or transferred to other grooves to provide larger or different sized compartments 23 depending upon the space required for particular specimen.

One or more of the trays 15 may be threaded onto the suspension rod 14 of the tray carrier in superimposed manner and supported one upon another by the base support 12 of the carrier and thereafter suspended in a beaker, in manners such as shown in Figures 1 and 4. For suspending the carrier in a beaker, a collar 26, which may be fixed at a desired position on the rod 14 by a set screw 27, is brought to rest upon the beaker cover 28 threaded onto the suspension rod 14 in advance of the collar. A lid 29, provided with apertures 30, may be provided for the unit of assembled trays 15, the carrier base 12 serving as the bottom of the unit. The specimen of intermediate trays are prevented from flowing out of their respective compartments during the submersion of the trays by the bottoms of the next-above trays which serve as lids for the trays upon which they are superimposed.

When it is desired to examine specimen contained in the tray compartments, the beaker lid 28 as well as the tray unit lid 29 is removed, after first loosening the collar set screw 27, and substituting a suspension bar 31. The assembled tray unit may be held in elevated position, such as shown in Figure 4, to present the uppermost tray in a most convenient position, at the mouth of the beaker, for the examination or removal of specimen. When the uppermost tray is no longer desired, or examinations completed with respect thereto, it may be removed and the remaining unit of trays elevated by a lowering of the suspension bar 31 to present the next tray in a readily accessible position at the top of the beaker.

Thus it will be seen that the present device will also receive the technician, pathologist, etc., of the time-consuming and disturbing process at present required for transferring tissue from one fluid or beaker to another; that the specimen may be removed from one bath to another or for blocking in paraffin without handling; that the number of ordinary operations are reduced; and above all that a considerable plurality of specimen may be contained in a single receptacle, removed in trays, or conveniently presented and retailed at the mouth of the receptacle for diagnosis or for the preparation of slides.

The adjustability of the sizes of the multiple compartments is particularly advantageous, and the capacity of the multiple compartment trays and the adaptability of trays to assembly as a unit is a feature which will tend to prevent errors in identification and classification such as in the collection of a plurality of specimen of a character or the collection of different specimen from a single subject as is customarily taken for an autopsy.

The assembly may be made of any suitable material but preferably of a character as will not be affected by nor affect the fluids into which it is intended to be immersed.

Having described my invention and illustrated an embodiment by which it may be practiced, what I claim is:

1. In a multiple specimen carrier adapted for

use with a receptacle for specimen treating substances, an assembly including a specimen tray provided with upright walls adapted to register with and present a continuous surface with a similar tray when superimposed one upon another, and further provided with a bottom of foraminous material to permit the easy and non-flushing ingress and egress of treating substances to specimen within the tray and those of trays superimposed thereon as they are immersed, a hub supported in spaced relation to said side walls within the area embraced thereby, radially registering pairs of means associated with said side walls and hub respectively for removably receiving and vertically retaining tray dividing plates whereby a plurality of variable sized specimen compartments may be provided, said assembly further including a tray rack provided with a tray supporting base having a suspension member extending therefrom adapted to engage the hubs of said trays and retain the trays superimposedly against lateral displacement with respect to their registering side walls, means adapted to bridge the mouth of a receptacle of the aforesaid character, and adjustable means whereby said suspension member may be brought into engagement with said receptacle bridging means, whereby a rack of one or more of the multiple compartment specimen trays may be removably suspended within a receptacle of the character at desired depths.

2. In a multiple specimen carrier adapted to be immersed in a receptacle of specimen treating substance, the combination of an assembly of superimposed separable trays interiorly in fluid communication with one another and having registering side walls presenting a continuous outer surface for the assembly, removable top and bottom members for said assembly, the bottoms of said trays cooperating to serve as covers for the trays upon which they are superimposed, means for removably holding said assembly and members in superimposed alignment, and means for adjustably suspending said carrier within a receptacle.

3. For use with a receptacle for a specimen treating substance, a specimen carrier comprising the combination of a tray rack, a specimen tray removably carried thereby, and means for adjustably suspending said rack within a receptacle.

4. In laboratory equipment, a multiple specimen tray for use with a receptacle for a specimen treating substance, said tray comprising side walls, a bottom of foraminous material to permit gentle ingress and egress of treating fluids to specimen within the tray as the tray is immersed, a centrally disposed hub, and removable divider plates extending between the hub and side walls of said tray, whereby the tray may be divided into a plurality of compartments adjustable as to size to meet the space requirements of specimen to be placed therein.

5. In laboratory equipment, a multiple specimen tray for use with a receptacle for a specimen treating substance, said tray comprising side walls embracing a predetermined area, a specimen support carried by said side walls and of foraminous material to permit gentle ingress and egress of treating fluids to specimen within the tray as the tray is immersed, a hub supported within the area embraced by said side walls and in spaced relation thereto, the inner and outer faces of said side walls and hub respectively being provided with radially registering pairs of

grooves, a plurality of apertured divider plates extending radially of said hub and removably supported vertically at their ends by said pairs of grooves.

6. In laboratory equipment, a multiple specimen support for use with a receptacle for a specimen treating substance, said support consisting of foraminous material to permit gentle ingress and egress of treating fluids to specimen carried thereby and having imperforate side walls provided with grooves in the inner face thereof, a hub spaced within the area embraced by said side walls and provided with grooves in the outer face thereof in substantially radial registry with the aforesaid grooves, and divider plates removably retained bridgily of said hub and side walls by said grooves to provide a plurality of specimen compartments adjustable as to size.

7. In laboratory equipment, a multiple specimen carrier for use with a receptacle for a specimen treating substance, said carrier comprising the combination of a tray including side walls, a bottom of foraminous material to permit the flow of treating fluids to specimen within the tray as it is immersed, and divider plates adjustably supported by said side walls whereby a plurality of specimen compartments adjustable as to size may be provided within said tray, and means for adjustably suspending said tray within a receptacle.

8. For use with a laboratory receptacle for a specimen treating substance, a specimen tray rack comprising a suspension member and means carried thereby for the support and retention of specimen trays, and adjustable means cooperating with said suspension member for suspending said rack within a receptacle from the mouth thereof.

9. In a multiple specimen carrier adapted for use with a receptacle for specimen treating substance, an assembly of separable specimen trays each having side walls registering to present a continuous surface when the trays are superimposed one upon another, a foraminous bottom

to provide fluid communication between the trays of a superimposed assembly, a centrally disposed hub supported by said side walls and having a passageway therethrough, and removable perforated divider plates extending radially of said hub and supported vertically at their ends by said hub and side walls to provide a plurality of compartments adjustable as to size and laterally in fluid communication, in combination with a rack having a perforated base adapted to serve as a support and bottom for an assembly of trays superimposed thereon, an aligning and suspending rod-like member extending from said base support and adapted to pass through the passageways of the tray hubs and retain the trays superimposedly threaded thereon against lateral displacement with respect to their registering side walls, a perforated plate-like member adapted to be threaded onto said rod-like member and serve as a cover for an assembly of trays, means adapted to bridge the mouth of said receptacle, and clamping means for adjustably gripping said rod-like member and engaging said bridging means to suspend the assembly within said receptacle at desired depths, said clamping means being also adapted to removably hold said cover and assembly of trays in superimposed abutting relation on said rod-like member and against said base support particularly when the assembly is removed from said receptacle.

10. In laboratory equipment, a multiple specimen tray for use with a receptacle for a specimen treating substance, said tray comprising side walls embracing a predetermined area, a specimen support carried by said side walls and of foraminous material to permit gentle ingress and egress of treating substances to specimen within the tray as the tray is immersed, and partitioning means adapted to be removably carried within said tray whereby a plurality of specimen compartments may be provided.

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