# United States Patent

**Bergquist et al.**

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[45] **Aug. 8, 1972**


[54] **TEST GLASS HOLDER**


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[52] **U.S. Cl.** .....**211/74,** 46/17, 46/29, 108/110, 248/165

[51] **Int. Cl.**.....**A47b 73/00,** B011 9/06

[58] **Field of Search**.....211/85, 74, 148 US, 69, 177; 108/56, 53, 110, 101, 111, 107; 46/27, 15, 17, 31, 29; 248/150, 165; 5/114



[56] **References Cited**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 2,293,098 | 8/1942 | Baer | 211/69 |
| 2,917,187 | 12/1959 | Bergkvist | 108/107 |
| 870,681 | 11/1907 | Karges | 211/74 UX |
| 1,088,642 | 2/1914 | Wilcox | 211/74 |
| 1,512,867 | 10/1924 | Sutter | 108/91 |
| 2,303,294 | 11/1942 | Wagner | 46/17 UX |
| 2,376,670 | 5/1945 | DiLieto | 211/74 X |
| 2,591,049 | 4/1952 | Butsch | 108/53 X |
| 2,676,420 | 4/1954 | Berg | 211/148 UX |
| 2,710,101 | 6/1955 | Rubin | 211/74 |
| 2,779,390 | 1/1957 | Freeman | 248/165 X |
| 2,863,568 | 12/1958 | Skubic | 211/148 X |
| 3,360,883 | 1/1968 | Glanzer | 46/29 |

FOREIGN PATENTS OR APPLICATIONS

| | | | |
|---|---|---|---|
| 1,291,175 | 5/1963 | France | 108/111 |
| 1,342,058 | 9/1963 | France | 46/29 |



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[57] **ABSTRACT**

This invention has for its purpose to provide a test glass holder which consists of parts which may be easily assembled to units of any desired height and which units may be stacked upon each other to form bigger units or blocks. The construction permits easy access to the individual test glasses even when the test glass holders are stacked upon each other. The holders are in their assembled condition rigid and sturdy and the parts of the same take a minimum of space when they are disassembled.


**1 Claim, 7 Drawing Figures**

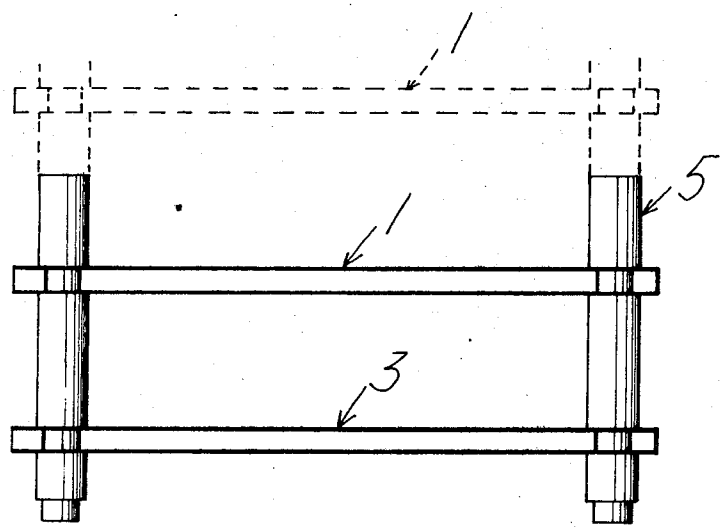

Fig. 1.

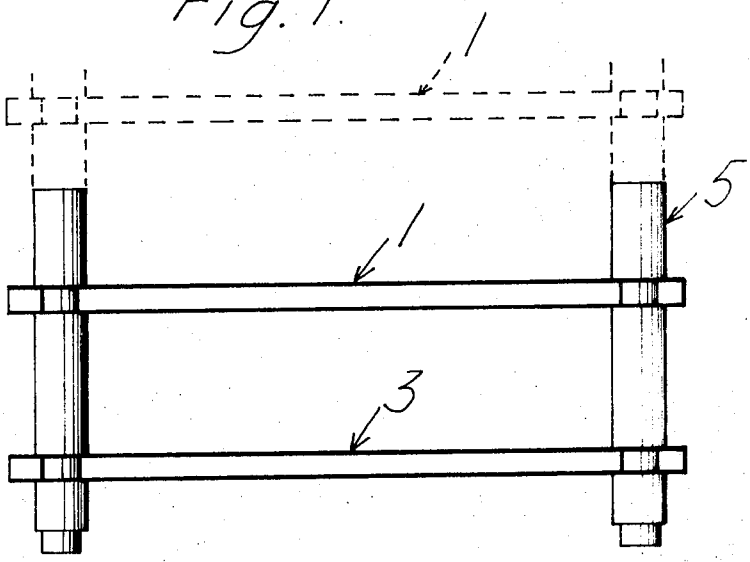


Fig. 2.

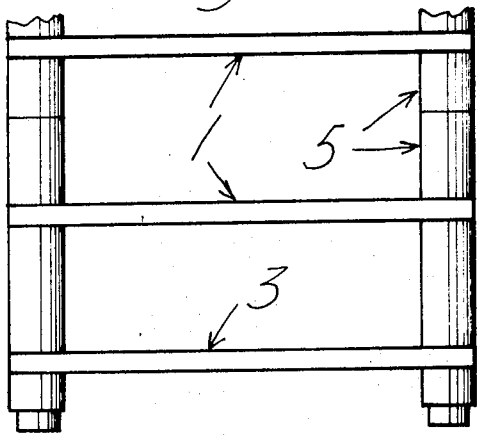


Fig. 3

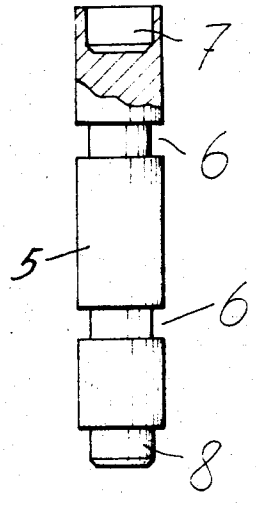


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Fig. 4

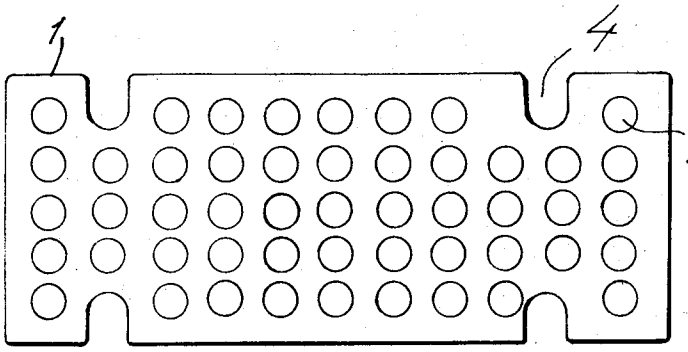



Fig. 5

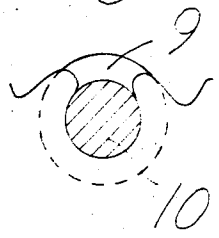



Fig. 6

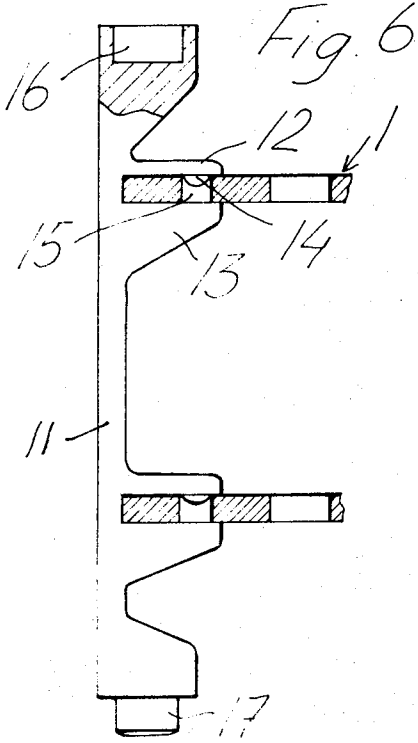
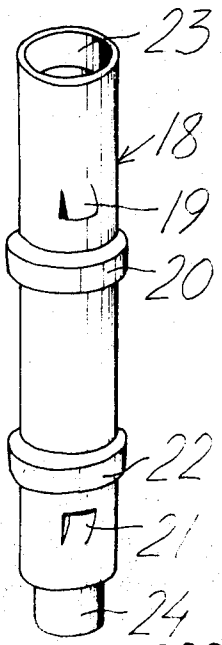



Fig. 7

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# TEST GLASS HOLDER

## BRIEF SUMMARY OF THE INVENTION

The present invention is concerned with holders for test glasses and has at least two plates of which the lowermost plate serves to support the test tube bottoms and the other plate has a plurality holes which serve to guide the test tubes, at least three rods each having intermediate axially spaced grooves, a bore in their uppermost end and a pin in their lowermost end, said plates and/or rods being resilient and each of said plates having holes in side portions thereof whereby said rod grooves can be brought into engagement with said plate holes.

## DESCRIPTION:

The accompanying drawings illustrate some preferred embodiments of the invention.

FIG. 1 is a side elevation of a test glass holder and also shows in dotted lines how holders may be stacked upon each other.

FIG. 2 is an end view of the test glass holder according to FIG. 1.

FIG. 3 is a side elevation, partly in section of a spacing element, forming part of the test glass holder according to FIGS. 1 and 2.

FIG. 4 is a plan view of one of the plates, which serve to guide the test glasses.

FIG. 5 is a fragmentary plan view of a modified securing means of a plate according to FIG. 4.

FIG. 6 is a section through a modified spacing element with attached plates.

FIG. 7 is a perspective view of another modified spacing element.

Referring to the drawings the numeral 1 designates plates, preferably made from transparent plastic material such as acrylic resin or the like, and having a plurality of holes 2 (FIG. 4) serving to guide the test glasses. The numeral 3 designates another plate which preferably is identical to plates 1 but which has no holes and serves as a support for the test glasses. In the sides of the plates 1 and 3 are provided cut out portions 4 (FIG. 4), which are intended to cooperate with spacing elements 5 to secure the plates in a parallel relationship. For this purpose the spacing elements 5 are provided with at least two annular grooves 6 each. The distance between said grooves determines the distance between the plates in the assembled test glass holder. The spacing elements are preferably made from a plastic material having resilient properties such that a rigid connection is obtained between the plates and said spacing elements when the latter are pressed against the plates with the grooves in alignment with the cut out portions. It is obvious from the foregoing that the assemblage is very simple and only consists of pressing the spacing elements against the sides of the plates. It will also be apparent that the test glass holder may be built up to any desired height owing to the fact that each spacing element has in its upper end portion a hole or recess 7 in which a downwardly directed pin 8 of the spacing element placed thereupon may be introduced. The lowermost pins 8 serve to rest against the shelf or the like upon which the test glass holder is placed. It may be noted that each spacing element according to FIG. 3 may be provided with three or more grooves 6 which makes it possible to place the plates on



any desired height and in any desired number. The distance between the ends of the spacing elements and the upper and lower plates gives easy access to the individual test glasses even when the test glass holders are stacked upon each other.

In order to obtain a better grip it is of course also possible to let the cut out portions have restricted areas 9 according to FIG. 5 such that the spacing elements are snapped in their cut out portions owing to the resiliency of the plate or the spacing element.

FIG. 6 illustrates another embodiment, using a modified spacing element 11. Said spacing element has horizontal flanges 12 and 13, intended to grasp the edge portion of the plates in question. The upper flanges 12 may preferably be somewhat resilient while the lower flanges 13 are rigid. Projecting downwardly from flange 12 is a projection 14, which is received in a recess or a hole 15, provided in the plate, when the spacing element is attached to the plate in proper position. By means of these projections the spacing elements remain properly secured to the plates 1,3. Also such spacing elements may be provided with upper recesses 16 and lower pins for the purpose previously described.

FIG. 7 illustrates another modification of the spacing element. The spacing element shown, which is generally designated 18 has tongues 19 and 21, the free ends of which face each other. Such tongues are easily produced at the same time as the element in its entirety is produced by injection molding by using interconnection coils. The tongues are resilient and are normally projecting over the surface of the element body. Below the upper tongue is provided a flange 20 and above the lower tongue is provided another flange 22 and the spacing element has also a recess 23 in its upper end and a pin in its lower end, said pin being designated 24. All these details of the spacing element are integral with each other and are formed in one single operation, the injection molding. The distance between the free end of the respective tongue and its adjacent flange is equal to the thickness of the plate in question.

When assembling a test glass holder using spacing elements according to FIG. 7 the spacing elements are simply pressed downwardly towards an underlying plate such that the lower portions of the same are introduced in corresponding holes. When the flange 22 comes into contact with the upper surface of the plate the tongue 21, which has been pressed inwardly by the plate, expands outwardly again and thus prevents any movement of the plate in vertical direction relative to the spacing element. The same function is obtained when a plate is lowered over the upper portion of said spacing elements but in this case the plate will come to rest against the upper flange 20.

Many other modifications are of course possible within the scope of the appended claims.

What we claim is:

1. A test tube rack comprising in combination at least two plates of which the lowermost plate serves to support the bottoms of the test tubes and the other plate has a plurality of holes of approximately the same diameter as the test tubes and serve to guide said test tubes, and at least three support posts detachably connected to the sides of said plates, each of said support posts being in the shape of a rod having a circular sec-

tion and being provided intermediate its ends with at least two axially spaced grooves the height of which are substantially equal to the thickness of the one of said plates with which it is to cooperate, each of said plates having in its side portions holes having restricted openings sideway of the holes, at least one of each of said plates and support posts having resilient properties enabling said posts to be sideways brought into engagement with said plates by pressing said posts with their grooved parts into engagement with the holes in said plates via said restricted openings thereby overcoming the resistance of the restricted entrance openings, said rods each being in its upper end provided with a bore and in its lower end with a pin thus enabling several test tube racks to be stacked upon each other while resting upon the downwardly projecting pins of the lowermost rack.

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