April 23, 1968 S. M. BROADWIN 3,379,315

TEST TUBE RACK

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Fig. 1.

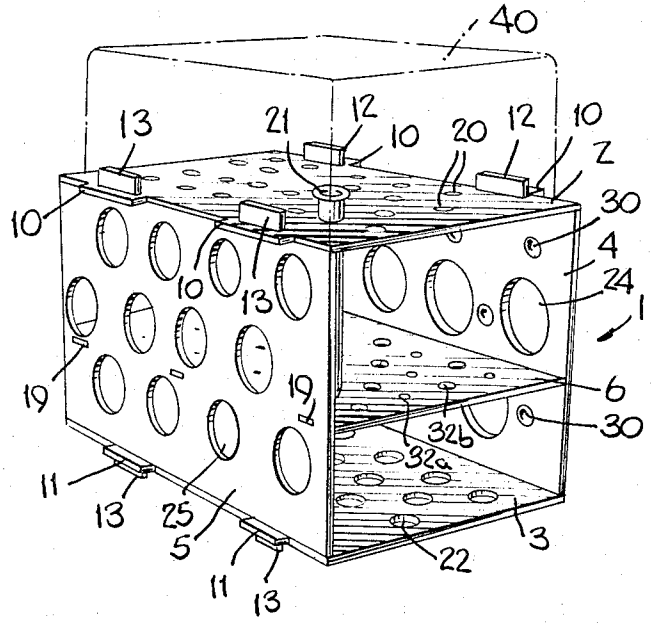
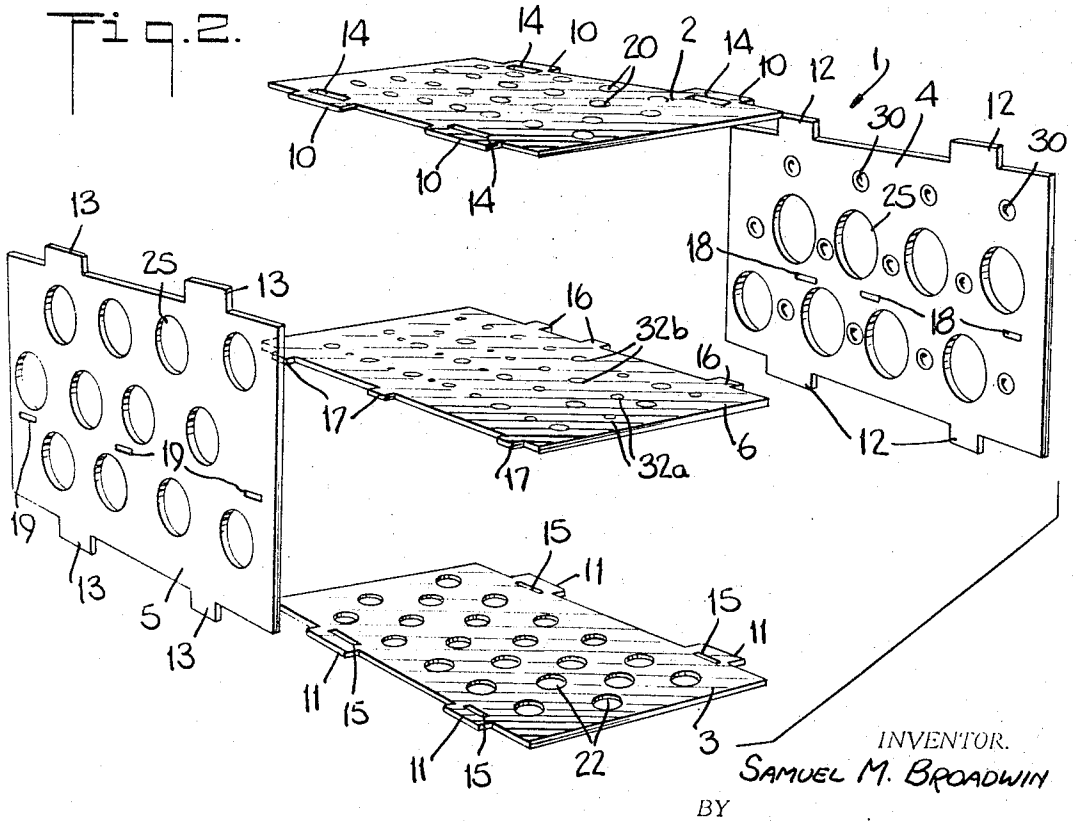


Fig. 2.



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Fig. 6.

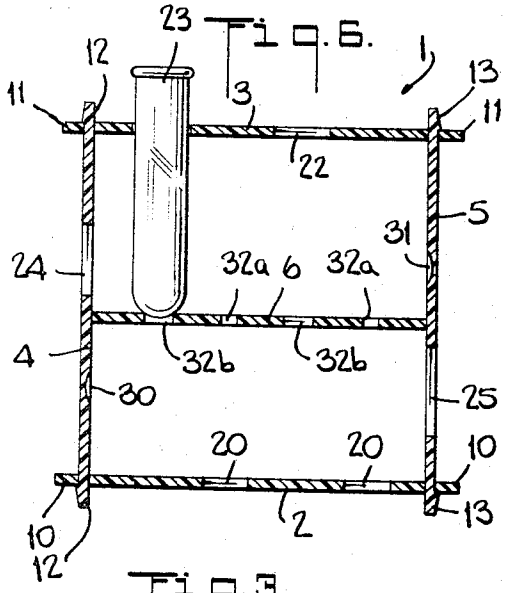


Fig. 5.

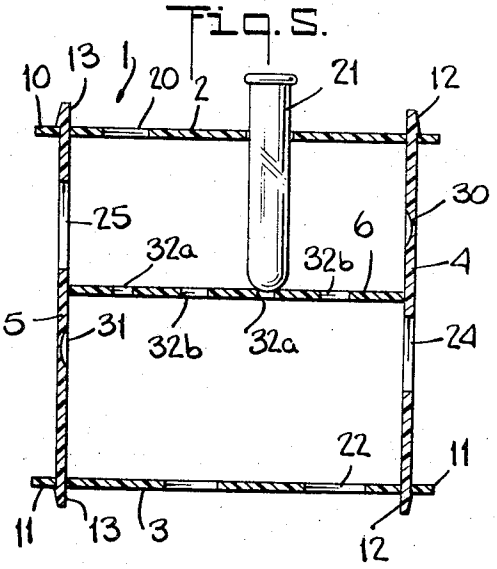
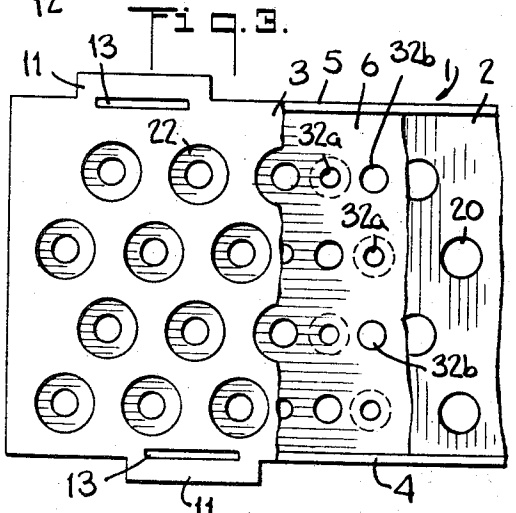


Fig. 3.



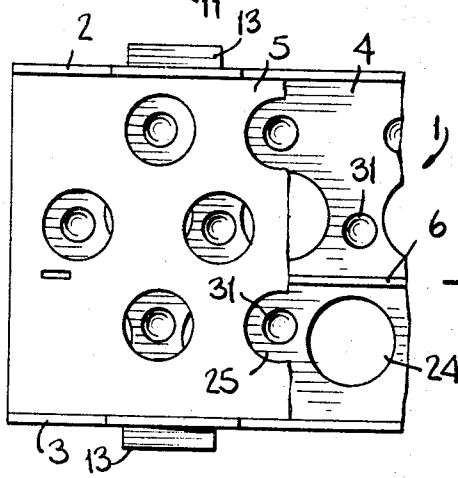


Fig. 4.

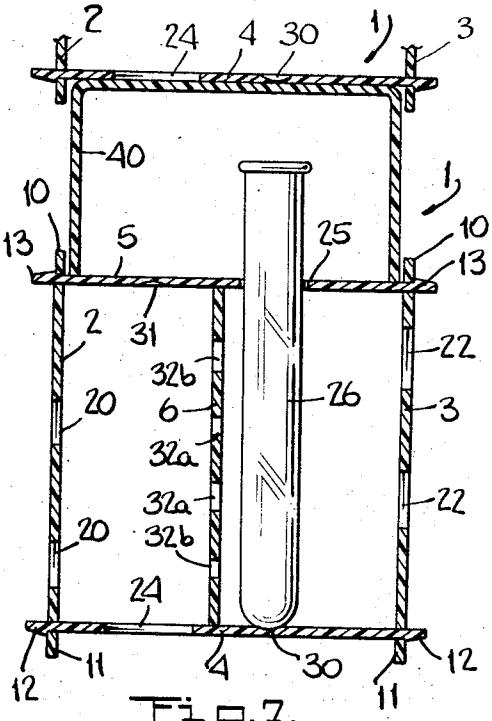


Fig. 7.

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TEST TUBE RACK

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6 Claims. (Cl. 211—72)

ABSTRACT OF THE DISCLOSURE

The present invention is directed to a collapsible test tube rack which comprises top, bottom and side walls. Each of these walls have test tube openings therein of different sizes. An intermediate support place is interposed between the top and the bottom wall. Support means, in the form of openings or depressions, are formed in said intermediate plate in order to act as a support for test tubes in the openings in the top and bottom walls. The openings in the opposite side walls are offset from each other and support means are provided on each side wall to support test tubes inserted into the openings in the opposite side wall.

The present invention relates to improved test tube racks and more particularly to an improved test tube rack which can receive test tubes of different sizes.

In the past test tube racks have been used to receive test tubes of one or two sizes. Hence a plurality of such test tube racks are required in order to hold the variety of test tube sizes which are generally used in laboratories. Such test tube racks do not lend themselves to stacking during storage and in addition take up a large amount of space in storage areas such as incubators and refrigerators. Furthermore, the test tubes which are presently in use tend to tip over easily and hence cause spillage.

The present invention avoids these drawbacks and has for one of its objects the provision of an improved rack for holding a number of test tubes of different sizes.

Another object of the present invention is the provision of an improved storage rack for test tubes which is adapted to permit the racks to be stored on top of each other.

Another object of the present invention is the provision of an improved test tube storage rack in which the possibility of tipping is minimized.

Another object of the present invention is the provision of an improved test tube storage rack whereby means are provided for preventing contamination of test tubes during storage.

Another object of the present invention is the provision of an improved test tube storage rack which can be manufactured from flat sheets and shipped or stored in "knock-down" manner so as to save storage and mailing costs.

Another object of the present invention is the provision of an improved test tube storage rack which is simple to manufacture.

Other and further objects of the present invention will be obvious upon an understanding of the illustrative embodiment about to be described, or will be indicated in the appended claims, and various advantages not referred to herein will occur to one skilled in the art upon employment of the invention in practice.

A preferred embodiment of the invention has been chosen for purposes of illustration and description and is shown in the accompanying drawings, forming a part of the specification wherein:

FIG. 1 is a perspective view of the test tube storage rack in assembled position;

FIG. 2 is an exploded view showing the parts used to form the test tube storage rack;

FIG. 3 is a fragmentary top view thereof broken away;

FIG. 4 is a fragmentary side view partly broken away;

FIG. 5 is a sectional view showing the test tube storage rack in position to accommodate a test tube of one size;

FIG. 6 is a sectional view showing the test tube storage rack in position to accommodate another size test tube; and

FIG. 7 is a sectional view showing the test tube storage rack in position to accommodate a test tube of still another size.

Referring to the drawings, the test tube storage rack **1** of the present invention comprises a top wall **2**, bottom wall **3**, side walls **4** and **5** and a support panel **6** interposed between the top and bottom walls **2** and **3**. It will be understood that the walls **2, 3, 4** and **5** are termed top, bottom and side walls herein is only with reference to the position of the test tube rack as shown in FIG. 1 of the drawings. In actual use the position of the walls will change depending on which side of the test tube storage rack is being used. The walls of the test tube storage rack may be formed from any suitable sheet material, such as a plastic.

The top, bottom and side walls **2, 3, 4** and **5** have ears **10, 11, 12** and **13**, respectively, extending therefrom. Slots **14** are provided adjacent the ears **10** of the top wall **2** adapted to receive upper ears **12** and **13** of the side walls **4** and **5** and slot **15** are provided adjacent the ears **11** of the bottom wall **3** adapted to receive lower ears **12** and **13** of side walls **4** and **5**. The central support panel **6** is provided with ears **16** and **17** adapted to fit into slots **18** and **19** in the side walls **4** and **5**, respectively.

Each of the top, bottom and side walls is provided with a plurality of openings of different sizes to accommodate test tubes of different sizes.

Hence the top wall **2** is provided with a plurality of openings **20** of a particular size to accommodate a test tube **21** of one size and the bottom wall **3** is provided with a plurality of openings **22** of a different size to receive test tubes **23** of different size. The side walls **4** and **5** are also provided with openings **24** and **25**, respectively, of different sizes so that a test tube **26** of one size can be inserted in opening **25** and a test tube (not shown) of a different size is inserted into the opening **24**.

The openings **24** and **25** of opposite side walls **4** and **5** are offset with respect to each other so that opposite walls act as a support for the test tubes. Immediately opposite the openings in the walls are a plurality of support means, such as indentations, grooves, openings or the like which support the bottoms of the test tubes.

Thus indentations **30** are positioned opposite openings **25** to support the bottom of test tube **26**. Similarly, opposite the openings **24** in the other side wall **4** there are also provided a plurality of supporting indentations **31**. The support panel **6** which is intermediate the top and bottom walls is provided with a plurality of support openings **32***a* and **32***b*. The support openings **32***a* are opposite the openings **20** in the top wall and the support openings **32***b* are opposite the openings **21** in the bottom wall.

It will be understood that while the support means **30, 31, 32***a* and **32***b* are shown in the form of grooves and/or openings it is within the purview of the present invention to utilize any other support means and to interchange the grooves and openings shown in the drawings.

With this structure, as shown in FIG. 5, by placing the top wall **2** uppermost, a test tube **21** of a particular size may be accommodated. However in FIG. 6 by placing the bottom wall **31** uppermost, a test tube **23** of another size may be accommodated. Furthermore, by placing one of the side walls uppermost, test tubes of still other sizes may be accommodated as shown in FIG. 7. Hence it will be

seen that the present test tube rack is versatile and can accommodate test tubes of different sizes by merely turning the particular side uppermost.

Furthermore, by using a cover 40 which may be made of a similar material, such as plastic, as shown in FIG .7, the test tubes are protected from contamination.

Furthermore, in view of the interlock relationship between the parts a plurality of these test tube racks may easily be stacked one on top of another as shown schematically in FIG. 7. In addition the side walls **2**, **3**, **4**, **5** and **6** may be made from flat sheets of material or they may be formed in a plastic machine as flat sheets with openings, grooves, slots and tongues therein. In this position they may be shipped to the laboratory and there, laboratories may assemble the sheets into the form shown in the drawings. Moreover, the rack can be easily stored in "knock-down" fashion until it is to be used.

When it is desired to use a particular size test tube then the particular side which has opening to accommodate that particular size test tube, is placed uppermost and a test tube inserted therein. If the bottom or top walls **2** and **3** is used then the inner panel **6** is used to support the bottom of the test tube as shown in FIGS. 5 and 6. If the side walls **4** or **5** is used then the support grooves **30** and **31** are used to support the bottom of the test tube.

It will thus be seen that the present invention provides an improved test tube storage rack which is very versatile, which can hold a number of test tubes of different sizes and which may easily be stacked on top of each other. The present invention also provides a rack in which typing is minimized and which can be stored or shipped in "knock-down" fashion to conserve space and save shipping costs.

It will be understood that the present invention is also adapted to accommodate items other than test tubes and the application has been described in connection with a test tube for convenience. However it will be understood that wherever the expression "test tube" is to be used, it is intended to cover items other than test tubes.

As various changes may be made in the form, construction and arrangement of the parts herein without departing from the spirit and scope of the invention and without sacrificing any of its advantages, it is to be understood that all matter herein is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim:

1. A test tube rack comprising opposed top and bottom walls and opposed side walls, an intermediate support plate interposed between said top and bottom walls, said support plate and said top, bottom and side walls having interfitting ears and slots to permit easily removable assembly thereof, said top wall having a plurality of test tube-receiving openings, said bottom wall having a plurality of test tube-receiving openings, support means on said intermediate support plate opposite the openings in the top and bottom walls and in alignment therewith in order to support the bottoms of the test tubes mounted in the openings in the top and bottom walls.

2. A test tube rack as claimed in claim **1** wherein the support means in said support plate are openings therein.

3. A test tube rack comprising opposed top and bottom walls and opposed side walls, said top, bottom and side walls having interfitting ears and slots to permit easily removable assembly thereof, test tube-receiving openings in said opposed side walls, the openings in one of said side walls being offset from the opening in the opposite side wall, support means in said first mentioned side wall in alignment with the openings in the opposite side wall to support test tubes mounted in openings in said opposite side walls, and support means in said opposite side wall in alignment with the openings in the first side wall adapted to support test tubes mounted in openings in said first side wall.

4. A test tube rack as claimed in claim **3** wherein the support means in said side walls comprise indentations therein.

5. A test tube rack comprising opposed top and bottom walls and opposed side walls, an intermediate support plate interposed between said top and bottom walls, said support plate and said top, bottom and side walls having interfitting ears and slots to permit assembly thereof, said top wall having a plurality of test tube-receiving openings, said bottom wall having a plurality of test tube-receiving openings, support means on said intermediate support plate opposite the openings in the top and bottom walls and in alignment therewith in order to support the bottoms of the test tubes mounted in the openings in the top and bottom walls, test tube-receiving openings in said opposed side walls, the openings in one of said side walls offset from the openings in the opposite side wall, support means in said first mentioned side wall in alignment with the openings in the opposite side wall to support test tubes mounted in said opposite side walls, and support means in said opposite side wall in alignment with the openings in the first side wall adapted to support test tubes mounted in said first side wall.

6. A test tube rack as claimed in claim **5** wherein the support means in said support plate are openings therein and the support means in said side walls comprise indentations therein.

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