

Aug. 31, 1965

C. J. KALT ETAL

3,203,540

TEST KIT

Filed Dec. 28, 1962

2 Sheets-Sheet 1

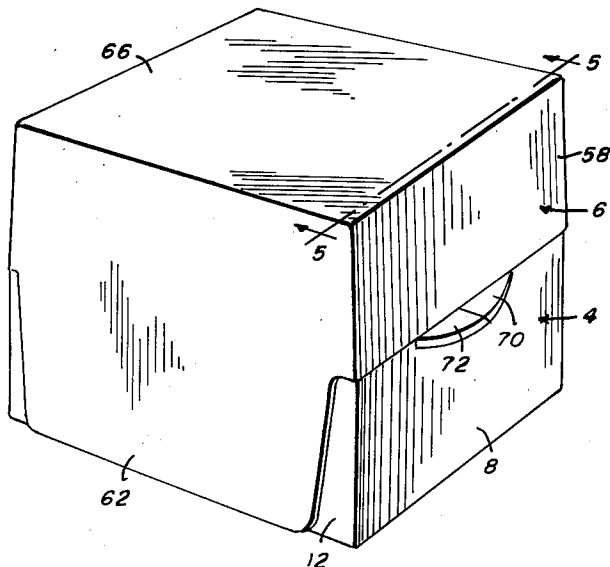


FIG. 1

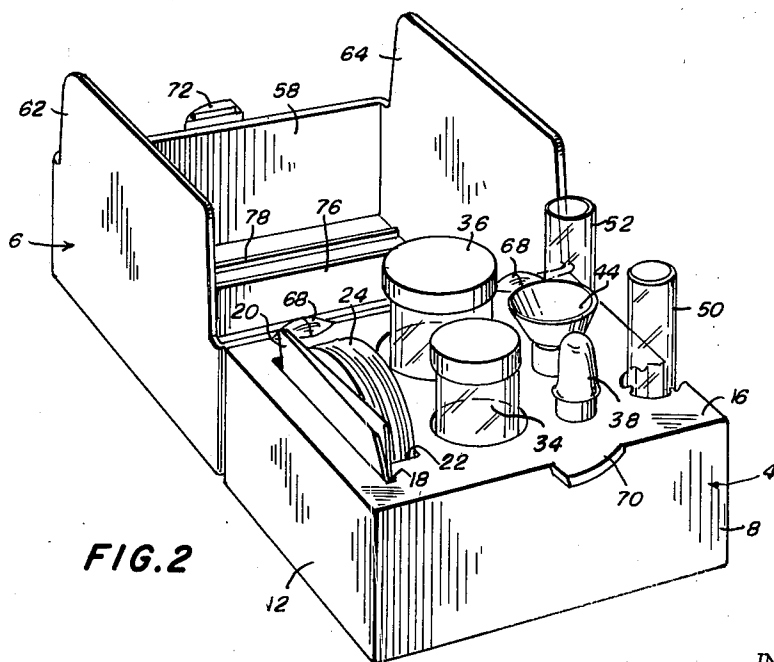


FIG. 2

INVENTOR

CHARLES J. KALT
PHILLIP J. MESI

BY *Joseph C. Schwalbach*

ATTORNEY

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2 Sheets-Sheet 2

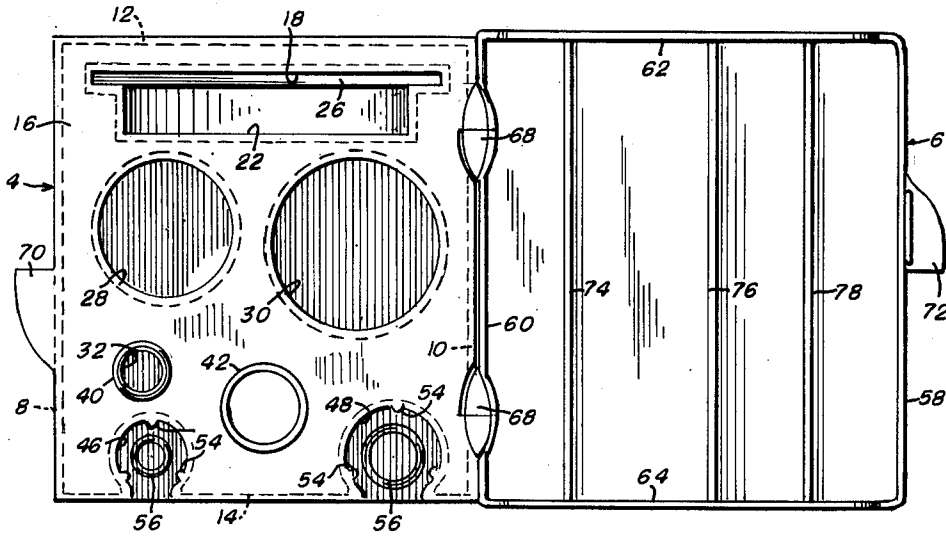


FIG. 3

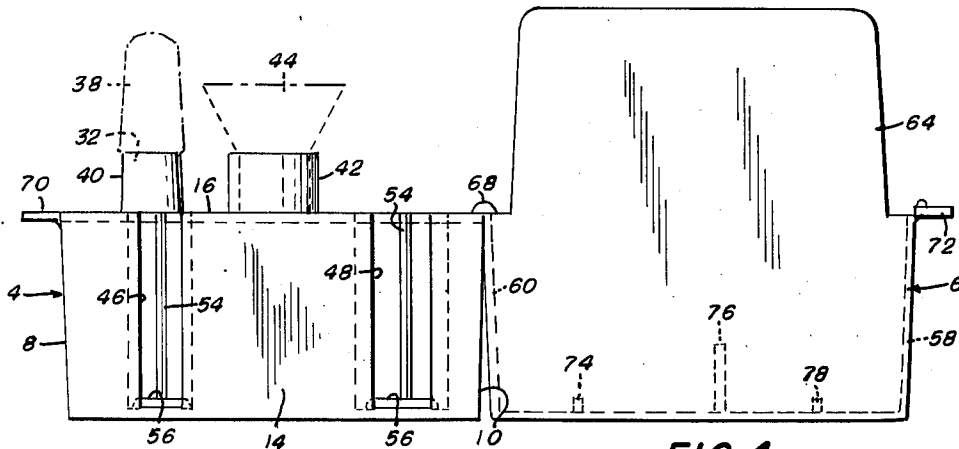


FIG. 4

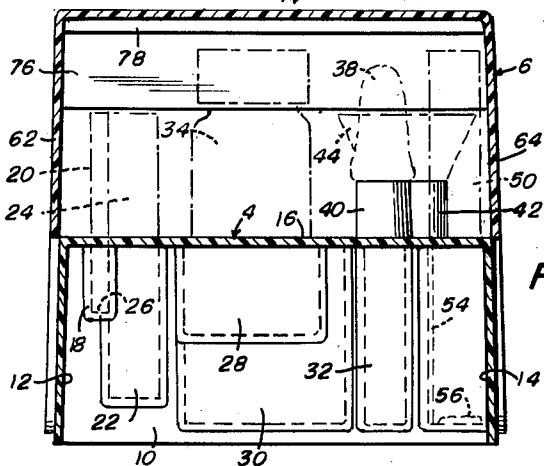


FIG. 5

INVENTOR
CHARLES J. KALT
PHILLIP J. MESI

BY *Joseph C. Schwalbach*
ATTORNEY

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TEST KIT

Charles J. Kalt, Elkhart, Ind., and Phillip J. Mesi, Elmwood Park, Ill., assignors to Miles Laboratories, Inc., Elkhart, Ind., a corporation of Indiana
Filed Dec. 28, 1962, Ser. No. 247,927
8 Claims. (Cl. 206-12)

The present invention relates to an improved diagnostic test kit container and, more particularly, the provision of a container for conveniently storing, handling and conducting diagnostic tests such as testing blood for the quantitative determination of blood sugar.

Physicians and clinical personnel often have need for a compact kit in which the reagents and equipment needed to conduct diagnostic tests are stored and may be conveniently transported, for example to location of the subject, said kit facilitating the rapid and efficient performance of the test wherever necessary, and as such being particularly useful in coping with emergency situations. While a number of containers have been proposed for such purposes, the known kits have not been satisfactory for a number of reasons, some of which are that they require work surfaces exterior to the container in order to carry out the test, they do not accommodate all of the implements required for the test, or they do not afford means for transporting their contents without risk of breakage.

In accordance with this invention, there is provided a compact case of a rigid construction comprising a base member having a cover member hinged thereto, said base member having a plurality of conveniently arranged sockets for accommodating reagent containers, compartments for filter papers, instruction sheets and color comparison charts, and holders for droppers and funnels as well as other testing implements. The cover member is provided with a plurality of fin or flange means arranged therein in such a manner so as to overlie the various reagent bottles and testing implements in a manner to hold these objects in place when the container is closed, thus substantially preventing displacement and breakage during transport. The construction of the cover member also offers the advantage of being used as a receptacle for holding specimens to be tested, waste, etc., when the diagnostic kit is in use.

Of particular advantage in the container of this invention is the provision of sockets for accommodation of test tubes which permit visual observation of the contents of the test tubes without removal of said tubes from the container. In the preferred embodiment, the container when closed is substantially cubical in shape, presenting a pleasing appearance as well as being readily adapted for convenient accommodation in the physician's bag, for shipping, or for storing on shelves.

These and other advantages and features of our invention will be more readily understood and appreciated from the following detailed description of a preferred embodiment thereof which is illustrated in the accompanying drawings. For illustrative purposes only, the diagnostic kit container will be described as it is made up for use in testing for blood sugar, but it will readily be appreciated that the container may be adapted to a wide variety of uses and other diagnostic tests.

Referring to the drawings:

FIGURE 1 is a perspective view of the improved diagnostic kit in closed position;

FIGURE 2 is a perspective view of the diagnostic kit in open position showing the testing implements and reagent bottles in place;

FIGURE 3 is a plan view of the open kit of FIGURE 2 with the contents removed;

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FIGURE 4 is a side elevation of the open container of FIGURES 2 and 3 with certain implements being shown in dot and dash lines; and

FIGURE 5 is a vertical sectional view of the kit in closed position, said view being taken substantially on line 5-5 of FIGURE 1, various implements, bottles and other contents being shown in dot and dash lines.

Referring now to the drawing in which like parts have been designated by the same numerals in all of the views, the container comprises a base member 4 and a cover member 6. Base member 4 comprises substantially parallel front and rear walls 8 and 10, and substantially parallel side walls 12 and 14, and a top wall 16. It is to be understood that the above and hereinafter discussed components of base member 4 are preferably molded as an integral unit.

Disposed in top wall 16 substantially normal to the front and rear walls 8 and 10 and adjacent but spaced apart from side wall 12 is a slot shaped compartment 18 for accommodation of testing directions and/or color comparison charts 20. Immediately adjacent to compartment 18 and parallel therewith is a compartment 22 having an arcuate bottom wall and adapted for accommodation of precut circular discs of filter paper 24. In the preferred embodiment and for simplicity of construction, the contiguous portions of compartments 18 and 22 are in communication, the bottom of slot compartment 18 forming a shelf 26 (best shown in dotted lines in FIGURE 5) in the portion which is open between compartment 18 and compartment 22.

Cylindrical socket members 28, 30 and 32 are formed in and depend from the top wall 16, said socket members being provided to hold reagent bottles 34 and 36 and dropper 38 respectively. The socket 32 is provided with an upstanding tubular boss 40 on which the bulb of an accommodated dropper 38 can rest. An upstanding tubular boss 42 is formed on the top wall 16 and has a bore which extends through said top wall to provide a holder for a funnel 44.

Formed in the top wall 16 and the side wall 14 are a pair of generally cylindrical socket members 46 and 48 which, in addition to opening at their upper ends through the top wall 16, each have one side thereof cut away through the wall 15 for substantially the full length thereof as best shown in FIGURES 3 and 4. The partially open sockets 46 and 48 provide a rack for accommodating test tubes 50 and 52 respectively, FIGURE 2, in which the diagnostic tests may be conducted without removal of the test tubes from the kit unless desired. As it may be appreciated, when the kit is open, the full length of the test tubes is fully visible even though said tubes are disposed in their respective sockets. The socket members 46 and 48 are constructed in such a manner that the width of the vertical opening therein is less than the diameter of the test tubes, accommodated therein, to the end that the test tubes are properly supported in the sockets and can be removed therefrom and replaced only through the top openings thereof.

In the preferred embodiment, a plurality of longitudinal ribs 54 are provided on the inner surfaces of test tube sockets 46 and 48. The purpose of ribs 54 is to maintain the test tubes out of surface contact with the walls of their respective sockets to prevent adherence of the test tube to the inner surface of the socket should the adjacent surfaces be wet. Further, it is desirable to prevent surface-to-surface contact between the test tube and socket wall for the reason that such contact might prevent accurate visual color determination and comparison with fixed standards. In addition to vertical ribs 54 the test tube socket members 46 and 48 are provided with annular

bosses 56 in the bottom thereof for centering engagement by the bottom of the accommodated test tubes.

In the illustrated embodiment, cover member 6 is shown to comprise substantially generally parallel front and rear walls 58 and 60, a pair of generally parallel side walls 62 and 64, and a substantially flat top wall 66. Cover member 6 is connected to the base member 4 by 180° movement hinge means 68. The dimensions of cover member 6 are such, and the hinge means 68 is so arranged, that when the kit container is fully open for use, the outer surface of the cover top wall 66 is substantially coplanar with the lower edges of the front, rear and side wall surfaces of the base member 4 and the cover member provides an open topped container in side-by-side relation with said base member. When the cover member is in the closed position, the lower edges of front and rear walls 58 and 60 rest solidly on the base top wall 16. The front wall 8 of the base member 4 is provided with a locking member 70 which has snap-type coaction with a cooperating locking member 72 formed on the front wall 58 of the cover 6. The extending side walls 62 and 64 of cover member 6 are adapted to overlay the respective side walls 12 and 14 of base member 4 as shown in FIGURES 1 and 5. The extended side walls 62 and 64 of the cover member not only provide strength and rigidity to the kit when closed, but they also serve to cover the laterally exposed test tube sockets 46 and 48 in the base member, protecting the test tubes accommodated therein.

Molded within cover member 6 are a plurality of spaced generally parallel, vertical fins or flanges 74, 76 and 78 extending between the side walls 62 and 64. The fins are of different vertical dimensions and are positioned to overlie the various sockets in the base 4 when the cover 6 is closed. The chief purpose of fins 74, 76 and 78 is to engage and hold the reagent bottles and implements in place within their respective sockets contained in base member 4 when the container is closed. It will be appreciated, however, that the fins are also well adapted for bracing slides, specimen collecting implements and the like in an upright position in the cover 6 when the test kit is open for use.

In the illustrated embodiment, sockets 28 and 32 and test tube socket 46 are arranged substantially in a row parallel with and adjacent to but spaced apart from the front wall 8 of the base member 4. The socket 30 and the test tube socket 48 are similarly aligned with respect to the rear wall 10 of the base member 4. The tubular boss 42 for holding funnel 44 is located between the aforementioned "rows." In the preferred embodiment of the invention, the tops of the bottles, implements, etc., in any "row" lie substantially in the same plane, hence, the depths of the various sockets and compartments and the heights of the upstanding tubular bosses in any "row" are determined by the heights of the bottles and implements to be contained therein.

It will be appreciated that the transverse fins 74, 76 and 78 in cover member 6 are adapted and placed in such a manner that when the container is closed, a fin will overlie and hold in place a "row" of bottles, implements, etc., as the case may be. In the illustrated embodiment, the fins 74, 76 and 78 are placed in such a manner that when the container is closed, fin 78 will overlie and hold in place bottle 36 and test tube 52; likewise, fin 76 will overlie and hold in place funnel 44, filter paper 24 and charts and/or directions 20; and in the same manner, fin 74 will hold in place bottle 34, dropper 38 and test tube 50.

In the preferred form of this invention, the container is molded of any suitable rigid, non-breakable, moisture, acid and base resistant, preferably white plastic. Numerous plastic materials are commercially available and suitable for the manufacture of the container of this invention, some of which are styrene, high impact polystyrene and polypropylene.

It will be apparent that changes in form, size and ar-

range ment of parts may be made in the hereindescribed invention, and that these and other modifications can be resorted to without departing from the spirit of this invention. Accordingly only such limitations should be imposed as are specifically set forth in the appended claims.

What is claimed is:

1. A diagnostic kit container comprising a base member having vertical front and rear wall surfaces, and a pair of vertical opposite side wall surfaces, said base being formed with means defining at least one socket containing a test tube, said socket being contiguous with one of said vertical wall surfaces and partially opening therethrough substantially the full length of said socket to afford visual access to the test tube positioned therein, and a cover member hinged to said base member and having a side wall portion adapted to closely overlie said one vertical wall surface and said visual access opening when said cover is in closed position on said base member.

2. A diagnostic kit container comprising a base member having vertical front and rear wall surfaces, and a pair of vertical opposite side wall surfaces, said base being formed with means defining at least one socket containing a test tube, said socket being contiguous with one of said vertical wall surfaces and partially opening therethrough substantially the full length of said socket to afford visual access to the test tube positioned therein, and a cover member for said base member having a side wall portion adapted to closely overlie said one vertical wall surface and said visual access opening when said cover is in closed position on said base member, said cover member also having at least one internal projection overlying said test tube socket and engaging the adjacent end of the test tube positioned within said socket when said cover is in said closed position.

3. The container of claim 1 in which said test tube socket is provided with internal longitudinal ribs arranged to hold the test tube out of surface contact with the wall thereof.

4. The container of claim 1 in which said test tube socket is provided at the bottom thereof with a boss means adapted for centering engagement with the bottom of a test tube positioned within said socket.

5. A diagnostic kit container comprising a base member and cover member formed of a moisture, acid and base resistant, rigid material, said base member having vertical front and rear wall surfaces, a pair of vertical opposite side wall surfaces and a top wall surface, said base member having means defining sockets and compartments containing therein reagent bottles and implements, at least two of said sockets containing test tubes, said test tube sockets each partially opening through one of said vertical wall surfaces substantially the full length of said sockets to allow visual access to the test tubes positioned therein, said cover member being hinged to said base member and having front and rear walls, a pair of opposite side walls and a substantially flat top wall, said cover member being of such dimensions that when it is in fully open position the outer surface of said top wall thereof is substantially coplanar with the lower edges of the front, rear and side wall surfaces of said base member and said cover affords an open-topped container in side-by-side relation with said base member, the side walls of said cover member being of such dimensions and shape as to substantially cover and closely overlie the vertical surfaces of said base member having said openings therein when said cover is in closed position, said cover being formed with a plurality of internal fins overlying said sockets and compartments in the base member and engaging the reagent bottles and implements disposed in the respective sockets and compartments when said cover is in closed position, and means for locking said cover member to said base member.

6. A diagnostic kit container comprising a base member having vertical front and rear walls, and a pair of

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vertical opposite side walls, said base being formed with means defining at least one socket containing a test tube, said socket being contiguous with one of said vertical walls and partially opening therethrough substantially the full length of said socket to afford visual access to the test tube positioned therein, and a cover member hinged to said base member, said cover having vertical front and rear walls, a pair of vertical opposite side walls and a top wall, the front and rear walls of said base member and said cover member being of substantially equal height and so arranged that when said cover member is in closed position on said base member the front and rear walls of said base member and said cover member are substantially coplanar.

7. A diagnostic kit container comprising a base member having vertical front and rear walls, and a pair of vertical opposite side walls, said base being formed with means defining at least one socket containing a test tube, said socket being contiguous with one of said vertical walls and partially opening therethrough substantially the full length of said socket to afford visual access to the test tube positioned therein, and a cover member for said base member, said cover having vertical front and rear walls, a pair of vertical opposite side walls and a top wall, the front and rear walls of said base member and said cover member being of substantially equal height and so arranged that when said cover member is in closed position on said base member the front and rear walls of said base member and said cover member are substantially coplanar, said cover member being hinged to said

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base member at the top of the rear wall of said base member and the bottom of the rear wall of said cover and said cover when closed having side walls closely overlying and extending to a position adjacent the bottom edge of the side walls of said base member.

8. The container of claim 2 in which the cover member is of such dimensions and so hinged to the base member that when the cover is fully open the outer surface of the top wall thereof is substantially coplanar with the lower edges of the front, rear and side wall surfaces of the base, the cover when fully open thus affording an open-topped container in side-by-side relation with said base member.

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30 THERON E. CONDON, *Primary Examiner*.

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,203,540

August 31, 1965

Charles J. Kalt et al.

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 2, line 44, for "15" read -- 14 --; line 54, for "opening" read -- openings --.

Signed and sealed this 3rd day of May 1966.

(SEAL)

Attest:

ERNEST W. SWIDER

Attesting Officer

EDWARD J. BRENNER

Commissioner of Patents