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J. C. ABROMAVAGE ET AL
CEILING ENTRANCE DOOR SYSTEM FOR MULTIPHASIC
MEDICAL EXAMINATION LABORATORY

3,623,283

Filed Nov. 19, 1969

2 Sheets-Sheet 1

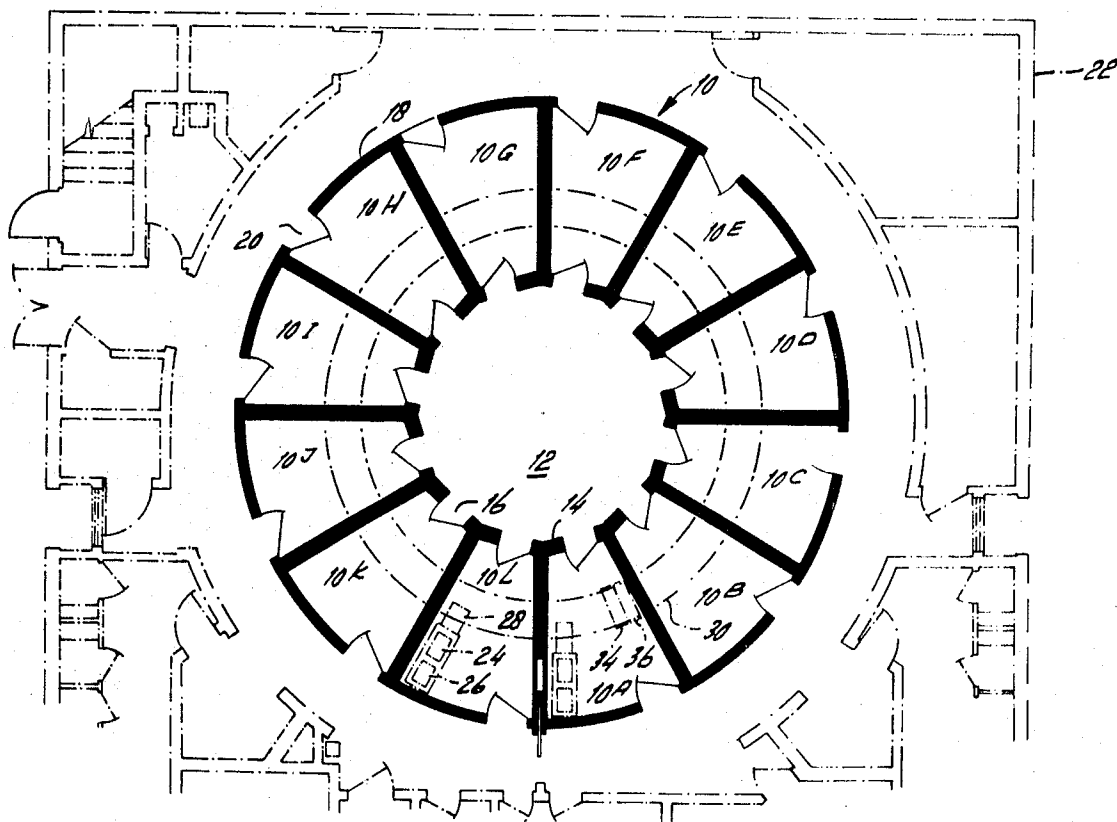


FIG. 1

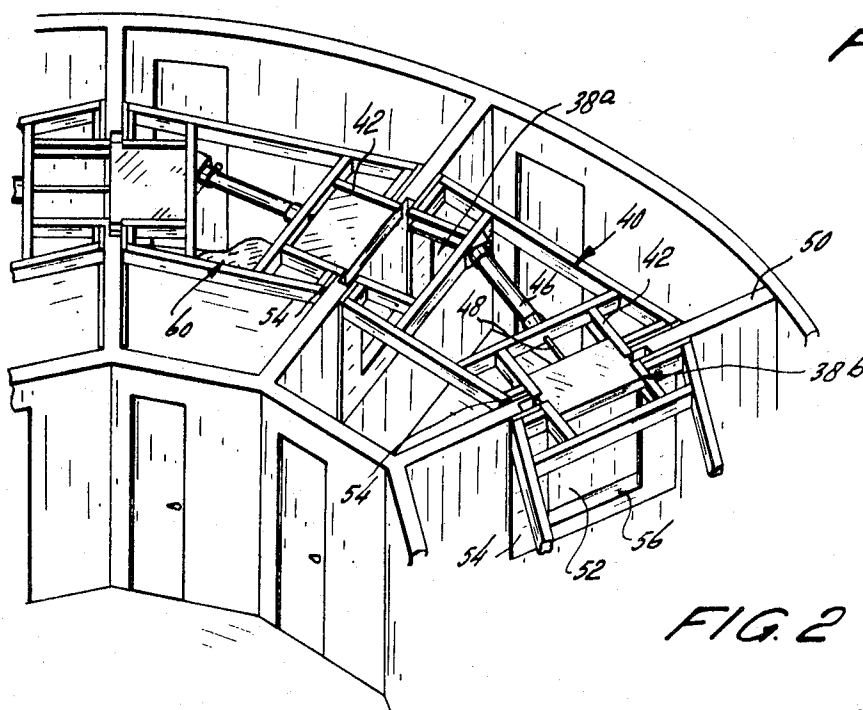


FIG. 2

INVENTORS
JOHN C. ABROMAVAGE
JAMES F. GEORGE
BY David H. Lemmes
ATTORNEY

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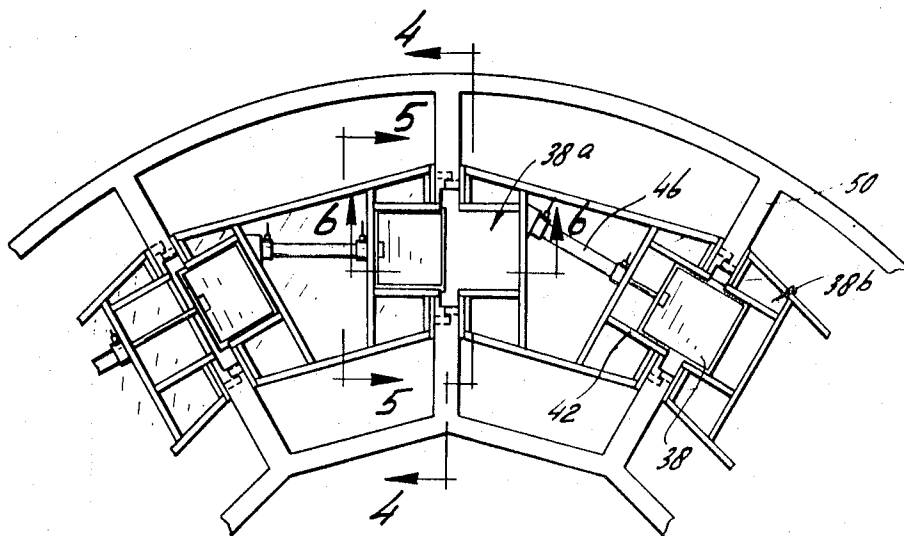


FIG. 3

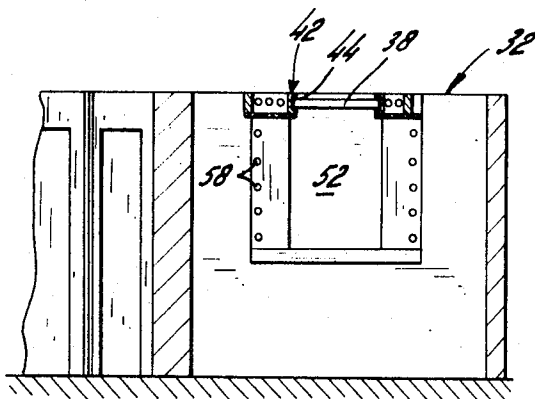


FIG. 4

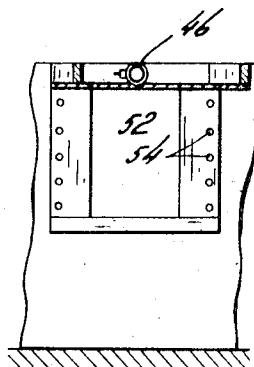


FIG. 5

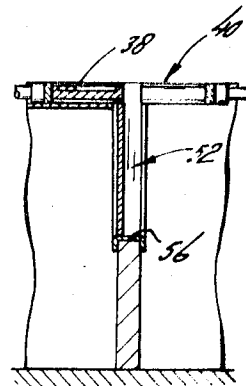


FIG. 6

INVENTORS
JOHN C. ABROMAVAGE
JAMES F. GEORGE

BY David H. Lemmus
ATTORNEY

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3,623,283

CEILING ENTRANCE DOOR SYSTEM FOR MULTIPHASIC MEDICAL EXAMINATION LABORATORY

John C. Abromavage, Tempe, and James F. George,
Phoenix, Ariz., assignors to Advanced Management
Engineering & Research Co., Phoenix, Ariz.

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U.S. Cl. 52-19

2 Claims

ABSTRACT OF THE DISCLOSURE

A ceiling entrance door construction and system for use in multiphasic medical examinations screening laboratories of a type where a test sequence phase is conducted in a plurality of juxtaposed wedge shaped test chambers surrounding a central core area wherein each test chamber is adapted to contain all instruments and leads to perform predetermined tests with inexpensive instruments located in each test chamber, expensive equipment being centrally located in the central core and inter-connected with each test chamber via a cable, with still further expensive equipment mounted on a track above the wedge shaped test chambers adapted for selective vertical placement in or removal from each chamber, the ceiling entrance door and system being sound proof in nature and adapted for electrohydraulic opening or closing in timed sequence with movement of test equipment along the overhead track.

BACKGROUND OF THE INVENTION

Multiphasic screening constructions and laboratories have been devised and one such improved arrangement is shown and described in preceding Pat. 3,470,871, dated Oct. 7, 1969, entitled Multiphasic Screening Laboratory for Conducting Medical Examinations, and assigned to a common assignee of the present application. The present application constitutes improvements over the construction and arrangements of the aforesaid patent.

The present invention incorporates the basic concepts of said prior patent and reference is made thereto for the general method of conducting the medical examinations. Our co-pending patent application, Ser. No. 878,094, entitled Multiphasic Medical Examination Screening Laboratory Construction, filed Nov. 19, 1969, and assigned to a common assignee herewith, discloses an improved type of construction and arrangement over the aforesaid patent. A construction and arrangement for ready insertion in or removal from a test chamber of the more expensive equipment is broadly referred to in the prior disclosures but such structures have not included a desired optimum of such a desirable feature.

SUMMARY OF THE INVENTION

The present invention constitutes an improvement in construction and arrangement in laboratories of the nature described primarily directed to a ceiling entrance door and system, preferably of an electrohydraulic type which opens and closes, in timed sequence, sliding doors in the ceilings of test chambers. Door alignment is provided by utilization of tracks, preferably consisting of a styrene plastic material, attached to ceiling housings which form frames holding the hydraulic operating cylinders and door pockets. The housings for the doors are attached to the overall structure in a sturdy, space saving manner and such as to ensure maximum reliability of operation. Opening and closing of the doors is effected through the hydraulic cylinders by actuation thereof by

solenoid valves which are actuated by automatic switching preset into a timing clock and phased into a pre-established medical examination time sequence pattern.

Additional objects and advantages of the invention will be more readily apparent from the following detailed description of an embodiment thereof taken together with the accompanying drawings in which:

FIG. 1 is a schematic floor plan illustrating a multiphasic screening laboratory with emphasis on a test sequence phase laboratory portion;

FIG. 2 is a fragmentary enlarged perspective view of a portion of a screening laboratory disclosing construction and arrangement of a ceiling entrance door therein;

FIG. 3 is a plan view of the structure shown in FIG. 2;

FIG. 4 is an elevational view, parts being in section, taken on line 4-4 of FIG. 3;

FIG. 5 is a fragmentary elevational view, parts being in section, taken on line 5-5 of FIG. 3; and

FIG. 6 is a sectional view in elevation taken on line 6-6 of FIG. 3.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now in more detail to the drawings, in FIG. 1 there is shown for a multiphasic screening laboratory a test sequence portion 10 consisting of a plurality of individual wedge shaped test chambers 10A-10L, twelve in number, in a circular array about a central core 12 and separated therefrom by an inner wall or partition 14 with a plurality of individual doors 16 intercommunicating the central core and the individual test chambers. An outer wall or partition 18 forms the outer extremities of the individual test chambers and doors 20 provide external access to a plurality of additional spaces or rooms suitable for additional functions such as test, clerical, storage space, etc. and this portion of the construction is indicated generally in broken lines at 22. This latter portion 22 can comprise a portion of the history phase of the examination laboratory, the details of which are not shown and reference is here made to the aforementioned patent and pending patent application disclosing overall laboratory arrangements.

Each of the individual test chambers associated with the central core contains all the instruments and connecting leads to perform all the pre-determined tests. Inexpensive instruments such as used in visual acuity or tonometry, for example, are provided in each test chamber such as indicated for example as consisting of a visual acuity test device 24 (Protect-O-Chart (AO) through mirror to screen), a tonometry test device 26 and a table or the like 28. The tonometry device can consist of a Schiotz tonometer and Ophthaine anesthetic arrangement and the table is usable for a patient for drop installation to dilate the pupil for the tonometry examination. Additional items can be included in the individual test chambers for convenience and preferably of an inexpensive nature.

In the overall laboratory as shown and described in detail in the above mentioned patent and patent application, expensive equipment is located within the central core 12 and while not shown can consist in, for example, an audiometer, electrocardiograph, blood pressure measuring device, pulse measuring device, temperature measuring device, respiration measuring device, etc. Each of these measuring devices in the central core is connected to each of the test chambers via a set of cables, not shown, for each of the test chambers.

Test devices or equipment defined as more expensive is mounted on a circular track, shown in broken lines at 30, which is located above the individual test chambers above the ceiling thereof generally indicated at 32 and preferably located in proximity to inner wall 14. Such more

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expensive equipment can for example consist of a spirometer indicated at 34 (Med-Science-Model 470) and a fundus camera as at 36 (Carl Zeiss). These more expensive items of equipment are adapted to be circularly moved by means of the overhead track 30 in juxtaposition over each of the individual test chambers in any desired sequence, phase or manner.

In operation, the more expensive equipment is lowered into a selected test chamber as required for a test sequence and to this end movement about the circular track and lowering and raising of the equipment into the individual chambers can be timed and automatically actuated. In order to permit this insertion within each test chamber, there is provided a ceiling door, generally designated 38. After the various tests on a patient from the inexpensive and expensive equipment have been effected and in proper phase with the test, the instruments carried by the track are when required lowered into an individual test chamber and subsequent to use elevated therefrom and cycled to a next succeeding desired test chamber.

The ceiling doors 38 are of the essence of the present invention and as will appear hereinafter are of such a structure and are so incorporated in the remaining laboratory structure as to provide accurate operation from a closed to an open position and vice versa in a manner readily controllable automatically in conjunction with the cycle of movement and operation of equipment carried on the track. At the same time it is desired to have the construction substantially sound and air proof and trouble free. To this end the doors are slidable and mounted in ceiling housings 40 fabricated in any desired manner and so positioned and arranged as to be below the circular track 30. Tracks 42 which can preferably consist of a styrene plastic or the like are incorporated in the housing with guideways as at 44 slidably containing the lateral edges of the doors 38. The use of plastic or a similar material ensures a self-lubricating sliding support of the door and enhances sound and air proof characteristics. The housings and tracks therefore constitute form frames in the nature of door pockets. Actuation of the doors between open and closed positions is effected by means of hydraulic cylinders 46, one for each door, mounted within the ceiling housings as shown for example in FIG. 2 and within the confines of the framework of the ceiling housing. The hydraulic cylinders have their rods 48 attached to the doors and the cylinders are adapted for actuation by solenoid valves or the like which can be actuated in proper timed sequence by an automatic switching pre-set into a timing clock to match or mate with the examining time sequence. Retraction of the hydraulic cylinders will open the ceiling doors and extension of these same hydraulic cylinders will close the doors. An open door position is indicated at 38A and a door in a partially closed position is indicated at 38B.

In accordance with the teachings of the invention as set forth in the aforesaid co-pending application the separating partition walls 50 can be hollow and provided with recesses at 52 which are vertically arranged in one face of the wall within each chamber. The recesses are framed by wall plates 54 and sill plates 54 secured to the walls in any desired manner. The housings are attached to the wall and sill plates by machine screws 58 or the

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like and the wall and sill plates can be attached to wall studs in any desired manner such as by wood screws or the like. In practice the more expensive test equipment is designed to be extended into the recesses in the individual chambers for orientation and alignment therein, depending upon the nature of the test equipment with means designed for this coacting arrangement.

Preferably the framework constituting the housings is filled with sound insulating foam such as indicated at 60 in FIG. 2 and this can also be applied to the upper surfaces of the doors.

The construction and operation of the doors and their use in the system will be readily apparent from the foregoing description and accompanying drawings. Manifestly minor changes in details can be effected without departing from the spirit and scope of the invention as defined in and limited solely by the appended claims.

We claim:

1. A medical examination room and the like, comprising:

- (A) walls;
- (B) a ceiling thereabove;
- (C) a ceiling entrance in said ceiling adapted for extension therethrough of test equipment into said room;
- (D) a ceiling entrance door slidably mounted in said ceiling entrance and adapted for opening and closing disposition in said ceiling entrance; and
- (E) a said wall having a vertically arranged recess therein framed by wall plates and sill plates secured to the wall structure, said recess being positioned beneath said ceiling entrance and adapted for containment of test equipment upon extension thereof through said ceiling entrance.

2. In a medical examination room and the like:

- (A) a ceiling and walls;
- (B) a ceiling opening in said ceiling;
- (C) a housing consisting of a framework incorporated in said ceiling and framing said ceiling opening;
- (D) tracks secured in said housing;
- (E) a ceiling door slidably mounted in said tracks and adapted for slidable alignment by said tracks in open and close said ceiling opening; and
- (F) a said wall having a vertically arranged recess therein framed by wall plates and sill plates secured to the wall structure, said recess being positioned beneath said ceiling entrance and adapted for containment of test equipment upon extension thereof through said ceiling entrance.

References Cited

UNITED STATES PATENTS

2,239,033	4/1941	Cartmill	52—19
3,277,619	10/1966	Miller et al.	52—72
3,386,206	6/1968	Loveless	49—360 X
3,470,871	10/1969	Shoen	52—173 X

PRICE C. FAW, JR., Primary Examiner

U.S. Cl. X.R.

52—29, 72, 173; 128—2 R