

Dec. 13, 1932.

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1,890,939

SUPPORTING RACK STRUCTURE

Filed March 4, 1932

3 Sheets-Sheet 1

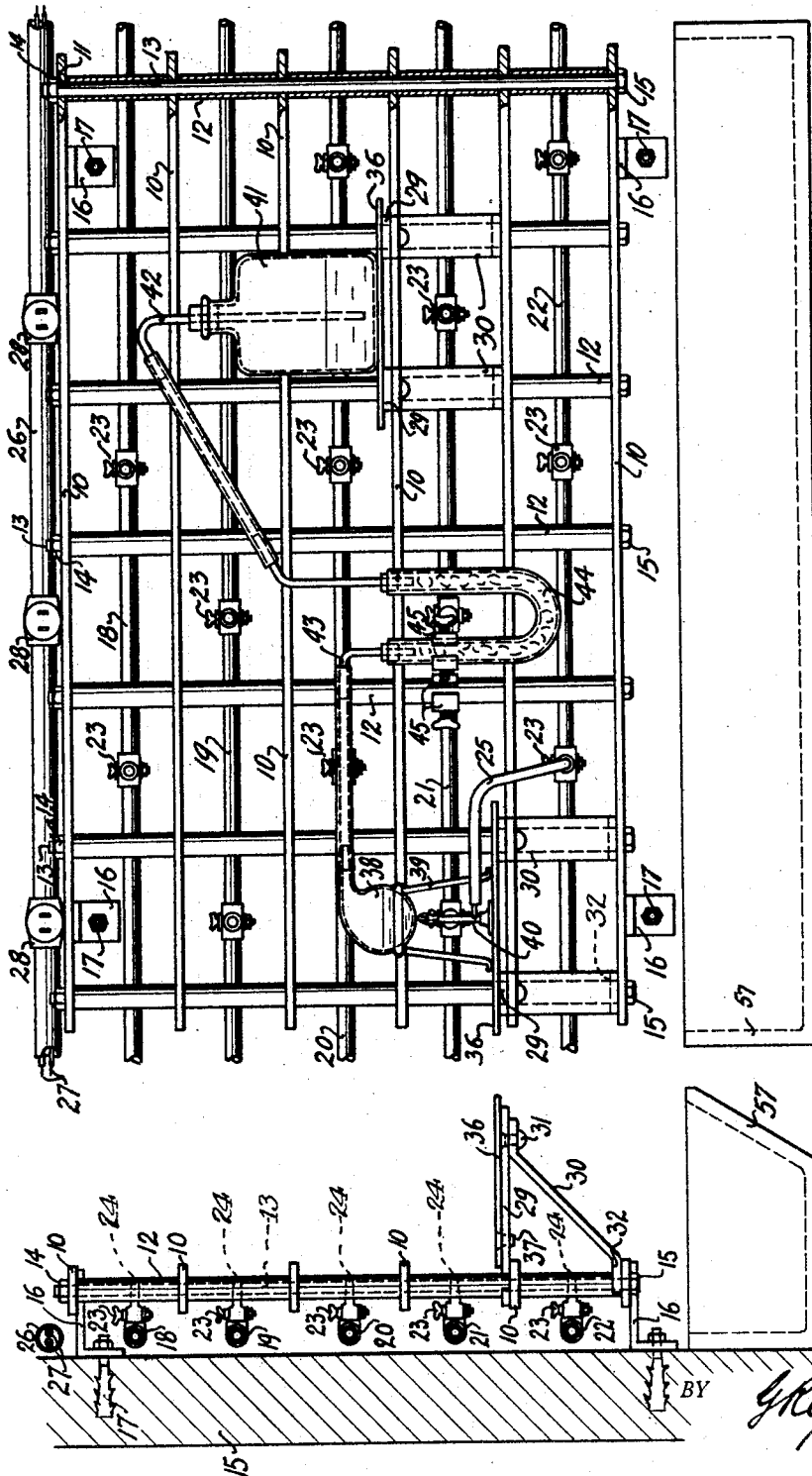


Fig. 1

Fig. 2

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3 Sheets-Sheet 2

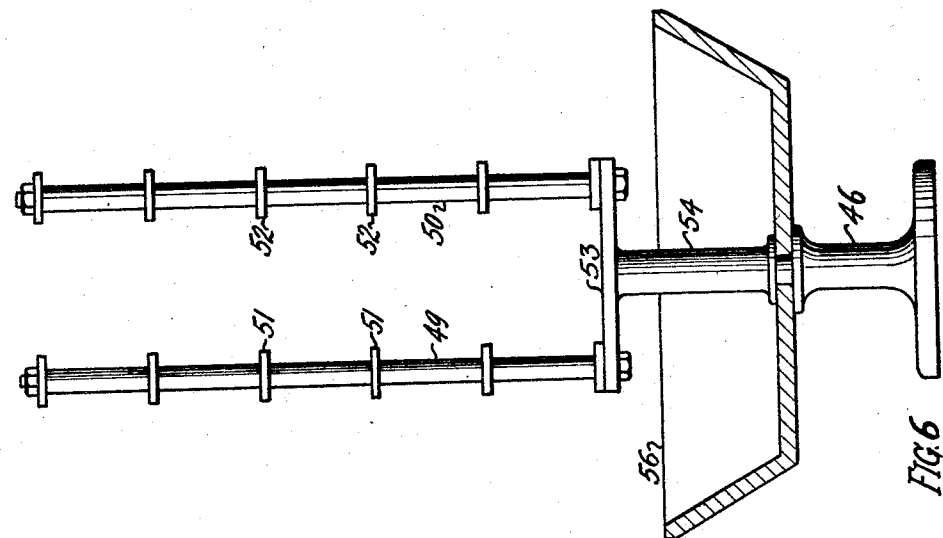


Fig. 6

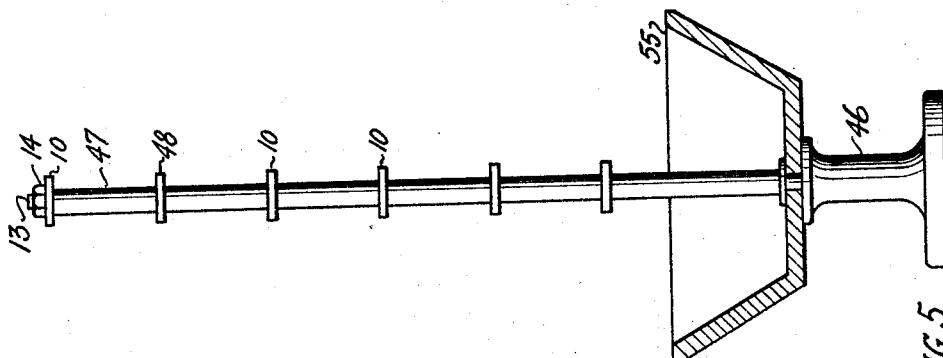


Fig. 5

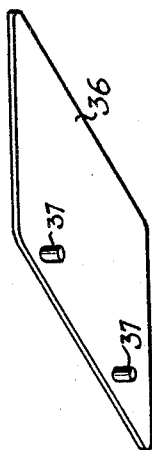


Fig. 3

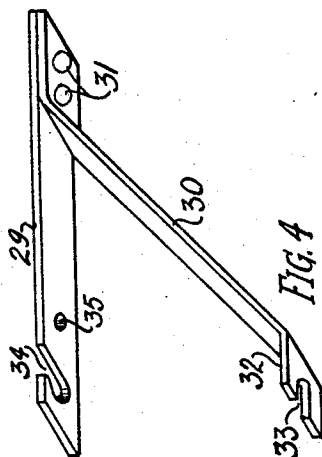


Fig. 4

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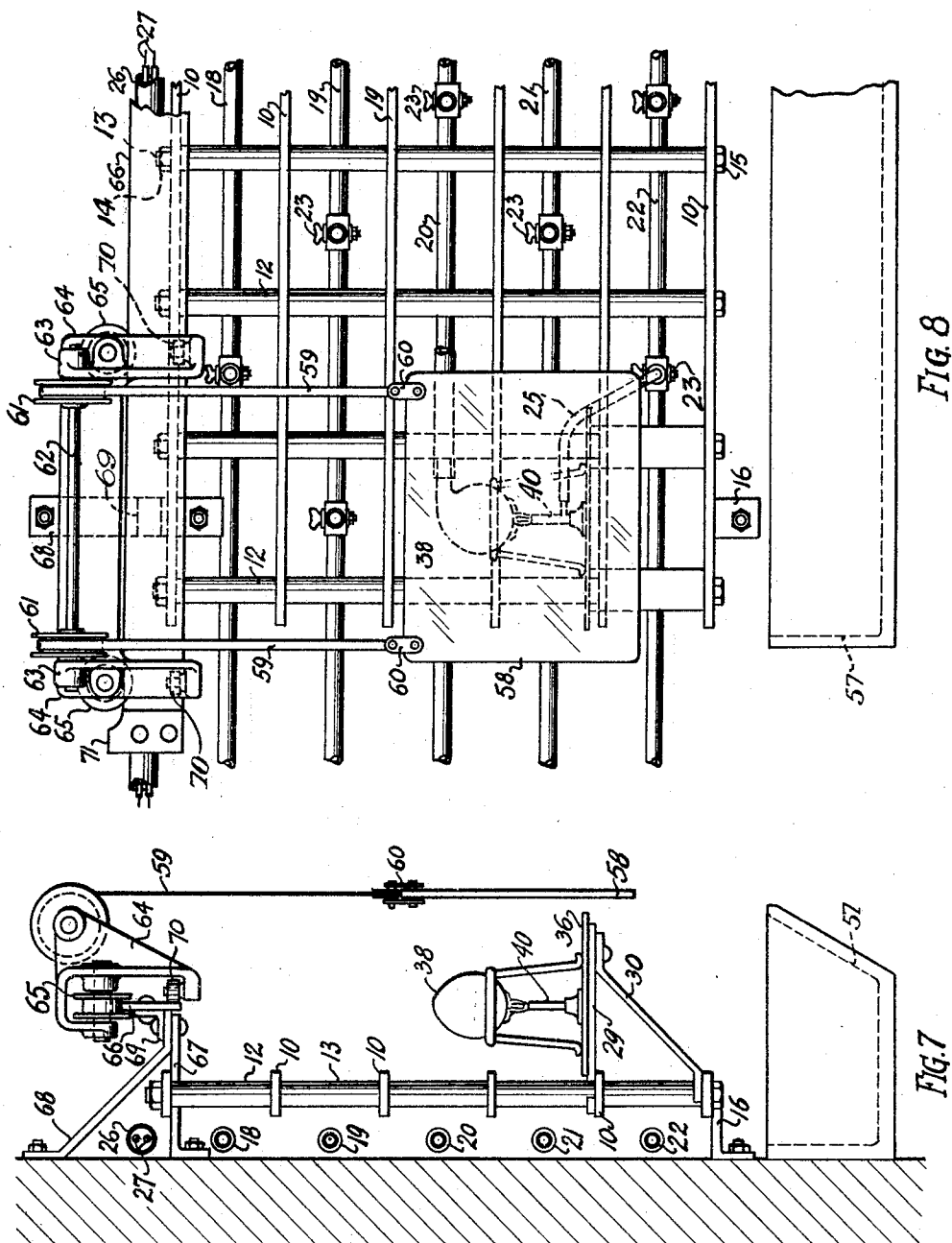
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SUPPORTING RACK STRUCTURE

Filed March 4, 1932

3 Sheets-Sheet 3



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SUPPORTING RACK STRUCTURE

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This invention relates to improvements in supporting rack structure particularly adapted, though not necessarily limited in its use, in experimental and research laboratories, for supporting various chemical and testing apparatus, and one of the objects of the invention is to provide an improved apparatus of this character embodying a main supporting body structure, and various brackets and supporting platforms or shelves are adapted to be readily attached to the supporting body structure in any desired or necessary position, for supporting the various parts of the apparatus or other articles to be supported, at the desired height, and in the desired position one with relation to the other.

A further object is to provide in connection with said rack construction various conduits, supply pipes, valves, junction boxes and the like, whereby the necessary heating or operating fluids or media may be supplied and connected in operative relation to the apparatus with which they are to be used, and in such position that the connection may be readily made, regardless of the position with respect to the rack, or the apparatus to which said fluid or medium is to be supplied.

A still further object is to provide in connection with said rack a screen for protecting the operator, and which screen is adjustable or shiftable into any suitable position and which may be readily moved into a position, out of the way.

To the attainment of these ends and the accomplishment of other new and useful objects as will appear, the invention consists in the features of novelty in substantially the construction, combination and arrangement of the several parts hereinafter more fully described and claimed and shown in the accompanying drawings illustrating this invention, and in which

Figure 1 is a front elevation of a supporting rack structure of this character constructed in accordance with the principles of this invention.

Figure 2 is a side elevation of Figure 1, with parts omitted.

Figure 3 is a perspective view of one of the supporting platforms or shelves.

Figure 4 is a perspective view of one of the supporting brackets.

Figure 5 is a view partly in section and partly in end elevation of a portable single rack embodying the principles of this invention.

Figure 6 is a view partly in section and partly in end elevation, showing a portable double rack structure embodying this invention.

Figure 7 is an end elevation of Figure 8.

Figure 8 is a front elevation of Figure 7 showing a shiftable screen or shield for protecting the operator.

Referring more particularly to the drawings the rack structure consists essentially of a body portion formed in any desired or suitable manner and embodying spaced superposed horizontal members 10 which are constructed of any suitable material and are preferably comparatively narrow with respect to their length. These members 10 are provided with suitable openings 11 throughout the length thereof. The members 10 are held spaced from each other for any desired distance preferably by means of tubular uprights 12, the openings of which register with the openings 11 in the members 10, and fastening bolts or rods 13 pass through the openings 11 and the tubular members 12, the bolts being provided with a head or nut 14 at one end, and a nut or collar 15 at the other end threaded upon the bolts for drawing the parts together. Any number of these fastening bolts 13 and tubular uprights 12 may be provided, but they are preferably spaced from each other for a considerable distance in directions lengthwise of the members 10.

The rack or body structure thus formed may be supported by means of any suitable upright preferably by a wall 15, through the medium of brackets 16, which in turn are secured by means of anchors 17 to the upright or wall 15. Any suitable number of these brackets may be provided, but they are preferably arranged so as to engage beneath the

upper and lower horizontal members 10 of the structure, and the supporting arms of the bracket are of such a length that the rack structure thus formed will be spaced for the
 5 desired distance from the adjacent surface of the wall or support 15, so that a plurality of supply pipes 18, 19, 20, 21 and 22 may be arranged intermediate the rack structure and the supporting wall. Each of the pipes 18
 10 to 22 is provided with control valves 23, any number of which may be arranged in each of the pipes and are suitably spaced from each other.

The valve casings are provided with tubular projecting portions or nozzles 24, to any
 15 of which a pipe or hose 25 may be connected by one end, for a purpose to be set forth. These valves and nozzles 24 are arranged adjacent the spaces between proximate up-
 20 right tubular members 12 and also within the spaces formed intermediate the horizontal members 10 so that they will be readily accessible.

If desired, a conduit 26 may be provided to
 25 extend along the upper portion of the rack structure although the same may be located in any desired position, and in which conduit is arranged conductors 27 for supplying electric current. Plug sockets 28 are arranged
 30 in the conduit so that when it is desired to employ electric current, the usual plug may be inserted into the socket.

Supporting brackets more clearly disclosed in Figure 4, are provided for use in connection
 35 with the supporting racks, and these brackets preferably comprise a supporting arm 29 and a brace 30, one end of the brace 30 being connected to the arm 29 as at 31 and the other end of the brace being provided
 40 with a flanged portion 32 having an opening 33 through the free edge thereof. The supporting arm 29 is also provided with an opening 34 extending preferably through one of the lateral edges of the arm, and an
 45 aperture 35 is also provided in the arm 29 in any convenient position.

A platform or shelf 36 constructed of any suitable material co-operates with the bracket and this platform is provided with spaced
 50 downwardly projecting lugs or pins 37 which are adapted to enter apertures 35 in adjacent bracket arms 29 for securing the shelf or platform in position and also for assisting in maintaining the brackets in position.

In use, the brackets are secured to the supporting rack structure in any desired position, by connecting the bracket arm 29 to one
 55 of the tubular uprights 12 by inserting the bracket arm around the upright by allowing the latter to pass into the opening 34. When the bracket is applied the lower face of the arm 29 rests upon one of the horizontal members 10, as shown more clearly in Figure 2, and the flanged portion 32 of the brace 30 will
 60 also rest upon one of the horizontal members

10 in such a position that one of the tubular uprights 12 will enter the recess 33. Two of these brackets are thus placed in position, after which the shelf or platform 36 is applied by passing the downwardly projecting
 70 pins 37 into the openings 35 of the respective bracket arms 29 and so that the platform or shelf will rest upon the arm 29.

When the shelf or platform is in position the brackets will be held against accidental
 75 displacement.

Obviously the shelves or platforms 36 may be of any desired length and the pins or projections 37 may be suitably spaced so as to
 80 compensate the positions of the supporting brackets with respect to each other.

It will be manifest that with this structure the supporting brackets and the shelves or
 85 platforms 36 may be arranged in any position with respect to the main body supporting rack structure and at any desired elevation so as to receive the apparatus or article to be supported thereby, and in the event apparatus is supported, to maintain or support the
 90 various parts of the apparatus in their proper relative positions and at any desired elevation which is convenient for the operator.

In Figure 1 of the drawings upon one of the brackets and supporting shelves is arranged a retort 38 mounted upon a supporting
 95 standard or rack 39, beneath which a burner 40 is arranged, and to this burner 40 is connected the free end of the pipe or hose 25 to supply gas or fuel to the burner.

Another platform or shelf 36 is supported
 100 by means of the supporting brackets at a different elevation and spaced from the retort 38. Upon this second supporting platform is arranged a container or receptacle 41 to which one end of a pipe 42 is connected, the
 105 other end 43 of the pipe being connected by means of suitable connection with the retort 38.

An ordinary U tube 44 is arranged intermediate the retort and container 41 and this
 110 tube is supported by means of the ordinary and well known clamps 45 which in turn are clamped or secured to the tubular uprights 12.

In the form of the invention shown in Figures 1 and 2, there is disclosed what is known
 115 as a wall structure, and in Figures 5 and 6, there is shown a modified form of the invention, constituting what is known as a base supporting structure. That is, the main supporting rack structure is mounted upon the
 120 supporting base or standards 46 and secured thereto in any suitable manner. In the form shown in Figure 5, a single series of uprights 47 and horizontal members 48 are provided, while in the form shown in Figure 6, a double
 125 series of uprights 49—50 and corresponding horizontal members 51 and 52 are provided, the double series being connected to the arms 53 of a supplemental support 54 secured to
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the supporting base or standard 46. At the lower portion of the rack members shown in Figures 5 and 6, tubs or sinks 55-56 are arranged, which are in turn supported by the base or standards 46.

In the forms of the invention shown in Figures 1 and 2, the tub or sink 57 is arranged beneath the supporting rack structure and is held in position in any suitable manner, either upon the supporting wall or surface 15 as shown, or by means of supporting legs (not shown).

As illustrated in Figures 7 and 8, there is provided a protecting screen or member 58, which may be constructed of any desired or suitable material, but is preferably transparent and formed of glass, and is adapted to be raised or lowered or shifted into any desired position so as to protect the operator against any accident which might happen by way of explosion or otherwise, resulting in or from the apparatus with which the operator is working.

This shield or screen is supported in any desired or suitable manner preferably by means of flexible elements 59 in the form of steel bands or the like, any number of which may be provided and which may be connected as at 60 by one end to the plate or shield. The other ends of these flexible elements are adapted to be wound upon drums or spools 61, the latter being connected together preferably by means of a shaft 62 journaled in suitable bearings 63 carried by a supporting carriage 64. The wheels or drums 61 are preferably of the well known type, in which there is embodied a spring and ratchet mechanism (not shown) which will counterbalance the weight of the screen and will operate to lock the screen in its adjusted position. At the same time the spring within the drums will raise the screen by winding the flexible members 59 upon the drums in the ordinary and well known manner and when the pawl and ratchet mechanism are rendered inactive with respect to each other.

The carriage 64 is supported by suitable rollers 65 any number of which may be provided and these rollers run upon a track 66, the latter being held in position or supported preferably by means of the bracket 67, corresponding to the brackets 16 in Figure 1, and which brackets support the uprights of the rack structure. A brace bar 68 may be provided for bracing the bracket 67 and the track 66 is secured to the bracket in any suitable manner such as by means of angle irons or members 69. The bracket 67 is of a length that the supporting track 66 will be so disposed that the screen or shield 58 when lowered will pass in front of the apparatus 38 supported upon one of the supporting platforms 36, and if desired and in order to maintain the parts in proper position one or more rollers 70 rotating about upright axes may

be connected with the carriage and so positioned as to engage and roll against the front face of the track 66.

With this construction it will be obvious that the screen or shield 58 may be raised or lowered at will with respect to the supporting carriage 64 and the latter may be moved along the track 66 to any desired position.

Any suitable means such as stops 71 may be provided to prevent the carriage 64 from running off of the track or roll 66.

While the preferred forms of the invention have been herein shown and described, it is to be understood that various changes may be made in the details of construction and in the combination and arrangement of the several parts, within the scope of the claims, without departing from the spirit of this invention.

What is claimed as new is:—

1. In combination, a supporting rack structure embodying spaced superposed horizontal members, laterally spaced uprights securing the horizontal members together, supply pipes running along said rack for supplying an operating medium, article supporting brackets detachably connected with the rack, and service outlets in the pipes for the connection thereto of a conduit for conducting the said medium to an article or apparatus supported upon said brackets.

2. In combination, a supporting rack structure embodying spaced superposed horizontal members, laterally spaced uprights securing the horizontal members together, means for supporting said rack structure upon an upright wall and spaced therefrom, supply pipes running along said rack and in the space between the rack and the adjacent wall face for supplying an operating medium, article supporting brackets detachably connected with the rack, and service outlets in the pipes for the connection thereto of a conduit for conducting the said medium to an article or apparatus supported upon said brackets.

3. In combination, a supporting rack structure embodying spaced superposed horizontal members, laterally spaced uprights securing the horizontal members together, supply pipes running along said rack for supplying an operating medium, article supporting brackets detachably connected with the rack, and service outlets in the pipes for the connection thereto of a conduit for conducting the said medium to an article or apparatus supported upon said brackets, said uprights embodying tubular members arranged intermediate adjacent horizontal members and a fastening rod or bolt passing through said horizontal members and said tubular uprights to tie them together.

4. In combination, a supporting rack structure embodying a rack comprising superposed horizontal members and laterally

spaced uprights securing the horizontal members together and in spaced relation, brackets having spaced portions, each portion having a recess opening through one of the edges thereof to facilitate engagement of said portions with the uprights of the rack, each of said spaced portions engaging and resting upon one of the said horizontal members adjacent the respective uprights, and a platform or shelf carried with said bracket.

5. In combination, a supporting rack structure embodying a rack comprising superposed horizontal members and laterally spaced uprights securing the horizontal members together and in spaced relation, brackets having spaced portions, each portion having a recess opening through one of the edges thereof to facilitate engagement of said portions with the uprights of the rack, each of said spaced portions engaging and resting upon one of the said horizontal members adjacent the respective uprights, and a platform or shelf adapted to engage and rest upon adjacent brackets.

6. In combination, a supporting rack structure embodying a rack comprising superposed horizontal members and laterally spaced uprights securing the horizontal members together and in spaced relation, brackets having spaced portions, each portion having a recess opening through one of the edges thereof to facilitate engagement of said portions with the uprights of the rack, each of said spaced portions engaging and resting upon one of the said horizontal members adjacent the respective uprights, a platform or shelf adapted to engage and rest upon adjacent brackets, and interengaging means between the shelf and the respective brackets for detachably securing the brackets and shelf together.

7. In combination, a supporting rack structure embodying a rack comprising superposed horizontal members and laterally spaced uprights securing the horizontal members together and in spaced relation, brackets having spaced portions, each portion having a recess opening through one of the edges thereof to facilitate engagement of said portions with the uprights of the rack, each of said spaced portions engaging and resting upon one of the said horizontal members adjacent the respective uprights, a platform or shelf adapted to engage and rest upon adjacent brackets and pin and aperture connections between the shelf and the respective brackets for detachably securing the parts together and the brackets against detachment from the rack structure.

8. In combination, a supporting rack structure embodying a rack comprising superposed horizontal members and laterally spaced uprights securing the horizontal members together and in spaced relation, brackets having spaced portions, each portion having

a recess opening through one of the edges thereof to facilitate engagement of said portions with the uprights of the rack, each of said spaced portions engaging and resting upon one of the said horizontal members adjacent the respective uprights, a platform or shelf carried with said brackets, conduits running along said rack structure for supplying an operating medium to apparatus or articles mounted upon said platform, and service connections in said conduits.

9. In combination, a supporting rack structure embodying a rack comprising superposed horizontal members and laterally spaced uprights securing the horizontal members together and in spaced relation, brackets having spaced portions, each portion having a recess opening through one of the edges thereof to facilitate engagement of said portions with the uprights of the rack, each of said spaced portions engaging and resting upon one of the said horizontal members adjacent the respective uprights, a platform or shelf carried with said brackets, conduits running along said rack structure for supplying an operating medium to apparatus or articles mounted upon said platform, service connections in said conduits, and an open receptacle supported below said rack structure.

10. A laboratory apparatus embodying a supporting rack of a latticed construction provided with vertical and horizontal members, means supporting the rack, brackets having spaced portions, each portion having a recess opening through an edge thereof to permit the entrance thereto of the upright of the lattice, said portions of the brackets resting upon the horizontal members of the rack, and a shelf resting upon the brackets and secured thereto for free detachment, said shelf tying the brackets together.

11. A laboratory apparatus embodying a supporting rack of a latticed construction provided with vertical and horizontal members, means supporting the rack, brackets having spaced portions, each portion having a recess opening through an edge thereof to permit the entrance thereto of the upright of the lattice, said portions of the brackets resting upon the horizontal members of the rack, a shelf resting upon the brackets and secured thereto for free detachment, said shelf tying the brackets together, service supply conductors arranged along the rack for conveying an operating medium adjacent the rack, and service connections arranged in said conductors.

12. A laboratory apparatus embodying a supporting rack of a latticed construction provided with vertical and horizontal members, means supporting the rack, brackets having spaced portions, each portion having a recess opening through an edge thereof to permit the entrance thereto of members of

the lattice, said portions resting upon other members of the rack, a shelf resting upon the brackets, and a screen movable into a position in front of the shelf.

5 13. A laboratory apparatus embodying a supporting rack of a latticed construction provided with vertical and horizontal members, means supporting the rack, brackets having spaced portions, each portion having
10 a recess opening through an edge thereof to permit the entrance therein of members of the lattice, said portions resting upon other members of the rack, a shelf resting upon the brackets, and a screen supported by the structure and freely movable into a position in
15 front of the shelf.

14. A laboratory apparatus embodying a supporting rack of a latticed construction provided with vertical and horizontal members, means supporting the rack, brackets having spaced portions, each portion having
20 a recess opening through an edge thereof to permit the entrance therein of members of the lattice, said portions resting upon other members of the rack, a shelf resting upon the brackets, a screen supported by the structure and freely movable to a position in front of
25 the shelf, means adapting said screen for raising and lowering movement, and means adapting the screen for free sidewise movement.
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15. A laboratory apparatus embodying a supporting rack of a latticed construction provided with upright and horizontal members, means supporting the rack, brackets having spaced portions provided with open
35 recesses through an edge thereof to permit the entrance therein of an upright of the lattice, said portions resting upon the horizontal member of the rack, a shelf resting upon the brackets, a track fixed with relation
40 to the rack, a carriage movable upon the track, and a screen supported by the carriage and adapted to be positioned in front of said shelf.
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16. A laboratory apparatus embodying a supporting rack of a latticed construction provided with upright and horizontal members, means supporting the rack, brackets having spaced portions provided with open
50 recesses through an edge thereof to permit the entrance therein of an upright of the lattice, said portions resting upon the horizontal members of the rack, a shelf resting upon the brackets, a track fixed with relation to the rack, a carriage movable upon the track, a screen supported by the carriage and adapted
55 to be positioned in front of said shelf, and means adapting said screen to be raised and lowered with respect to said carriage.
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17. A laboratory apparatus embodying a supporting rack structure, apparatus supporting brackets, means adapting said brackets to be secured at predetermined positions
65 upon the supporting rack, a carriage movable

along the rack, and a protecting screen supported by the carriage and adapted to be positioned in front of the apparatus supported by said bracket.

18. A laboratory apparatus embodying a supporting rack structure, apparatus supporting brackets, means adapting said brackets to be secured at predetermined positions upon the supporting rack, a carriage movable
70 along the rack, a protecting screen supported by the carriage and adapted to be positioned in front of the apparatus supported by said bracket, and means adapting said screen to be raised and lowered with respect to said carriage.
75 80

19. A laboratory apparatus embodying a supporting rack structure, apparatus supporting brackets, means adapting said brackets to be secured in predetermined positions upon the rack, a track arranged adjacent and
85 along the top of the rack, a carriage freely movable upon said track, a shield screen carried by the carriage and adapted to be positioned with respect to the brackets, and means adapting said screen for raising and lowering
90 movements with respect to the carriage.

In testimony whereof, I have signed my name to this specification, on this 29th day of February, 1932.

EMERY H. FAHRNEY. 95

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