June 29, 1926. **1,590,296**

L. KLEIN ET AL

ADJUSTABLE RACK

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Fig. 1.

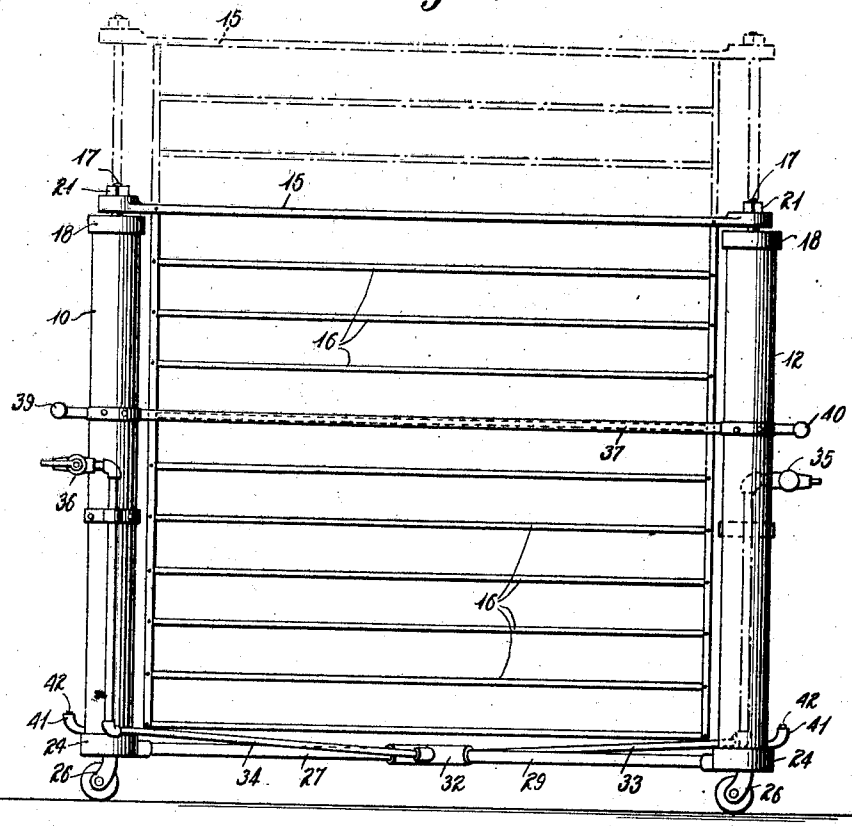

Fig. 2.

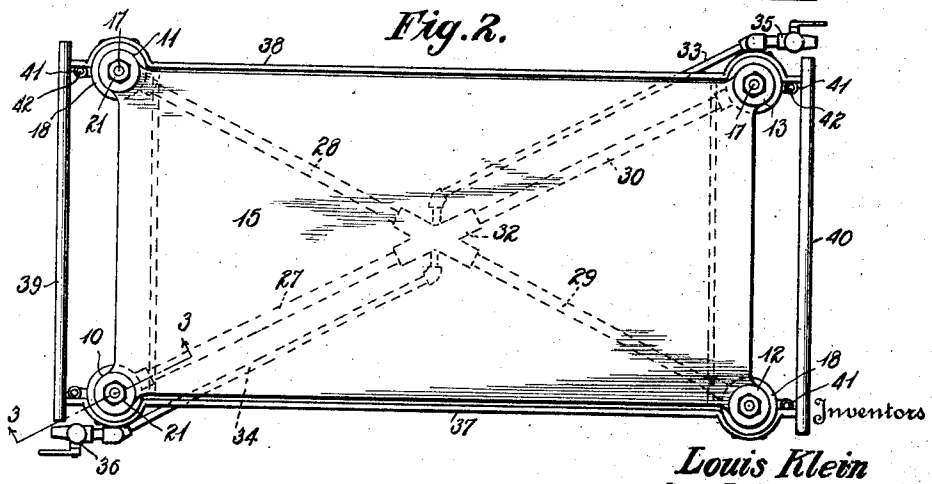

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Fig. 3.

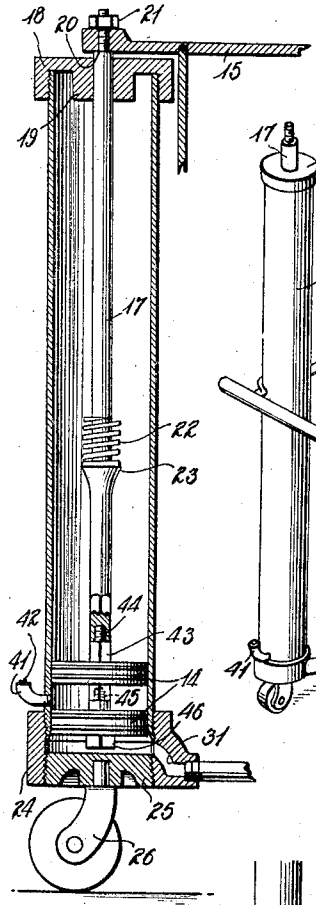


Fig. 4.

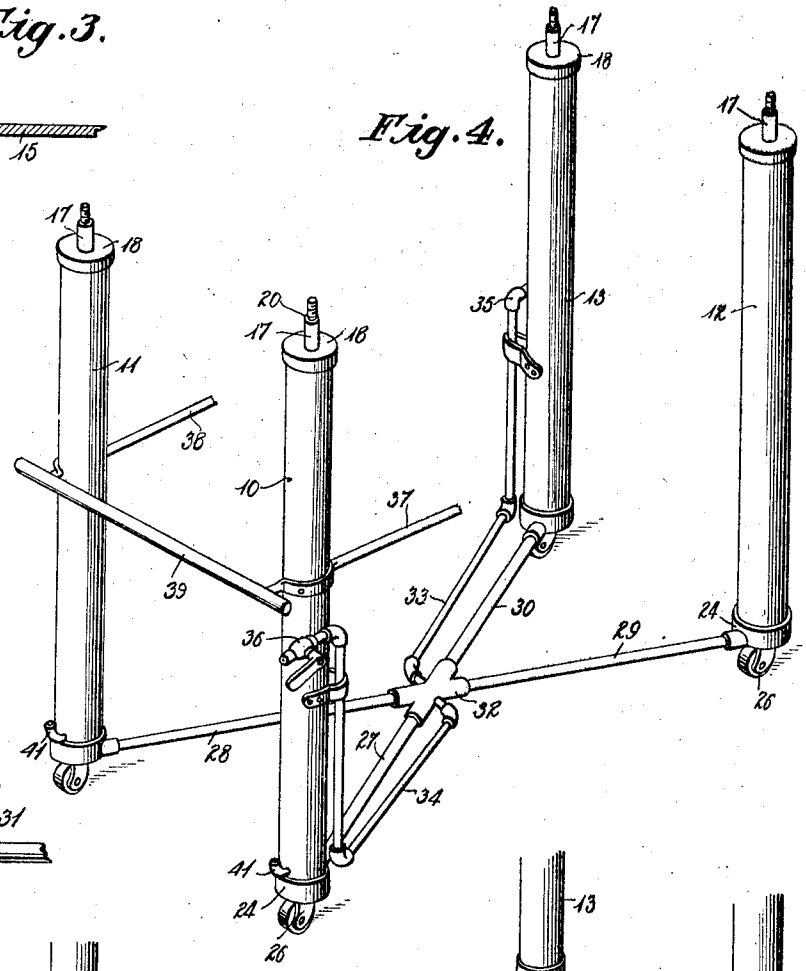
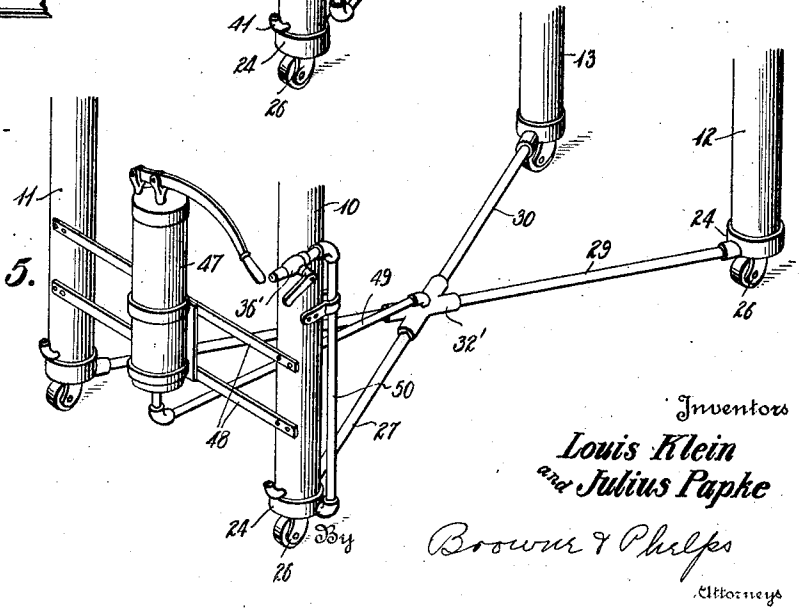


Fig. 5.



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UNITED STATES PATENT OFFICE.

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ADJUSTABLE RACK.

Application filed April 16, 1924. Serial No. 706,857.

This invention relates to racks, and has as an object the provision of a rack provided with a plurality of shelves, and having means to adjust the height of the shelves.

It is an object of the invention to provide a rack for use by bakers, and the like, where completed work is to be removed from an oven or a machine and placed on shelves of a rack.

By means of the present invention, the height of the shelves may be adjusted so as to be readily accessible without requiring the operator to stoop, or to lift the articles above the level of their delivery.

Other objects will appear from the following description when read in connection with the accompanying drawings showing the illustrative embodiment of the invention, and in which

Figure 1 is a side elevation;

Fig. 2 is a plan view;

Fig. 3 is a detail vertical section on the line 3—3, of Fig. 2, upon an enlarged scale;

Fig. 4 is a perspective view of the rack with the shelves removed; and

Fig. 5 is a detail perspective view of the modification.

As shown, the device comprises four corner posts 10, 11, 12 and 13 in the form of cylinders. To provide adjustability of the rack, there is provided in each cylinder a piston 14 shown in Fig. 3 as comprising separate disks provided with packing rings. To support the frame 15 from which the shelves 16 are suspended, there is shown the piston rod 17 secured to each piston and projecting through the cap 18 upon the upper end of the cylinders. As shown the caps 18 are provided with annular internally screw threaded recesses 19 co-acting with externally screw threaded ends of the cylinders 10, 11, 12 and 13.

The ends of the piston rods 17 are shown as reduced in diameter to provide a shoulder 20 to receive the corner of the frame 15, which are secured thereon by means of nuts 21.

To cushion the end of the upper stroke of the piston, there is shown a helical spring 22 abutting against the shoulder 23 carried by the piston rod 17. The lower end of each of the corner cylinders is shown as screw threaded and engaging an internally screw threaded annular casting 24. The lower side of the casting 24, as shown in Fig. 3, is formed open, internally screw threaded, and a plug 25 is provided to close the opening. To provide for movement of the rack upon the floor a castor 26 is shown pivoted in the plug 25.

To cause movement of the piston 14 and thereby of the shelves 16, pipes 27, 28, 29 and 30 are shown screwed into communication with a passage 31 leading into each of the castings 24. The pipes mentioned each connect with a central fitting 32 having a branch for each pipe, and also connections for fluid pressure supplying and exhausting pipes 33 and 34 in the form of the invention shown in Fig. 4. In this form of the invention, there is provided a connection at 35 which may be placed into communication with a source of fluid, as air, under pressure. By admitting fluid pressure to the pipes 33, and 27 to 30, inclusive, equal pressure will be admitted to the cylinders 10, 11, 12 and 13, thereby causing the pistons 14 to be forced upwardly in the cylinder, with the consequent adjustment of the height of the shelves.

To permit of the lowering of the shelves there is shown an exhaust cock 36, by the opening of which the attendant may allow pressure to escape whereupon the shelves are lowered by gravity. The connection 35 may be provided with a cock 36 and either cock may be used as either intake or exhaust.

To preserve the spacing and upright position of the cylinders 10, 11, 12 and 13, there are shown horizontal tie rods 37, 38 secured at their ends to each of the cylinders as by means of cap screws. As a convenient method of fastening a handle whereby the rack may be pushed about, the ends of the tie rods 37, 38 are shown as projecting and as carrying handles 39, 40.

Adjacent the lower end of each of the cylinders 10, 11, 12 and 13, there is shown an L 41 which is so located as to open into the cylinder between the disk 14 of the piston when the rack is in its lowest position. Each L is shown as closed by means of a screw plug 42. When the device is placed into operation, the screw plugs 42 are each removed and the space between the disks of the piston 14 is filled with a heavy lubricating oil whereupon the plugs are returned.

Should it be necessary to remove one of the pistons, the same may be readily ac-

complished by first removing the screw plug 42, turning the L downwardly to allow the oil to drain out, removing the plug 25, and thus gaining access to the pistons.

Upper disk 14 is shown as carried by a square rod 43 having a screw threaded stud 44 engaging a screw threaded opening in the piston rod 17, and at its opposite end a screw threaded socket 45. The lower disk is shown as carried by a pin having a screw threaded stud to engage the socket 45 and a flat sided head 46 adapted to be engaged by a wrench. By means of this structure the piston may be readily removed from the cylinder without disturbance of the general structure in case it is necessary to remove the packing rings from the pistons.

In the form of the invention shown in Fig. 5, a hand air pump 47 is shown as mounted upon a pair of rods 48, carried by the cylinders at one end of the device. The outlet of the pump is shown as connected by means of the pipe 49 to the fitting 32'. In this form of the device an exhaust pipe 50 is shown as connected to one of the castings 20, whereby each of the cylinders will be exhausted through the pipe 27 connected with the casting 24 in questhon upon the opening of the exhaust cock 36'.

It will be seen that the supply pipes 27, 28, 29 and 30 serve as efficient braces for the frame comprising the cylinders 10, 11, 12 and 13.

When the form of the device shown in Fig. 4 is used, a flexible means of supply of fluid pressure to the fitting 35 may be used, or a quick detachable connection which may be connected when the rack is in position to be loaded, and which may be disconnected either before or after the fluid pressure has been exhausted and the shelves brought to their lowest position.

The form of Fig. 5 is adapted for free use since it carries with itself the means for supplying fluid under pressure at will.

The form of Fig. 4 having a cock 36 at diagonally opposite corners, or at each corner if desired may be connected to a source of fluid pressure by means of the connection at either corner and the shelves in empty condition may be raised to the limit. The cocks may then be closed and the supply disconnected, when the rack may be transferred to a point of filling. The lower shelves may be filled first, and by means of either cock 36 the rack shelves may be gradually lowered until all are filled when the rack may be again moved to the place of discharge.

Minor changes may be made in the physical embodiment of the invention without departure from its spirit.

What we claim is:

1. An adjustable rack comprising in combination a plurality of cylinders connected together to form a frame, means in said cylinders and projecting therefrom to support a rack, pistons in said cylinders adapted to operate said means, said pistons comprising spaced disks providing lubricant chambers therebetween, means to admit lubricating oil to the space between said disks and means to admit fluid pressure to said cylinders below the pistons and to exhaust fluid pressure therefrom at will.

2. An adjustable rack comprising in combination a plurality of cylinders, closure caps at opposite ends of each cylinder, supply pipes radiating from a central fitting and communicating with each cylinder through its lower cap whereby to brace the frame and to admit fluid under pressure to the cylinders, means connected with said fitting to admit fluid under pressure to the cylinder, pistons in said cylinders adapted to be actuated by fluid under pressure, a rack supported upon said frame, and means actuated by said pistons to adjust the height of said rack.

3. An adjustable rack having in combination a rectangular frame, a cylinder at each corner thereof and forming an upright for said frame, a central fitting at the bottom of said frame, fluid pressure supply pipes connecting said fitting with each cylinder and serving to brace the frame, a rack mounted in said frame, pistons in said cylinder, means actuated by said pistons to adjust the height of said rack, and rollers under each cylinder to provide for ready movement of the rack and frame.

4. An adjustable rack comprising, in combination, a plurality of cylinders adapted to receive fluid under pressure, means located adjacent the bases thereof, holding said cylinders in spaced relation and constituting conduits for said fluid, pistons operable in said cylinders by the fluid under pressure, a rack supported by said pistons, and means operable to permit exhaust of fluid pressure from said cylinders.

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