May 4, 1943. J. R. KERRY 2,318,081

LAP STORAGE RACK

Filed Oct. 25, 1941

Fig. 1

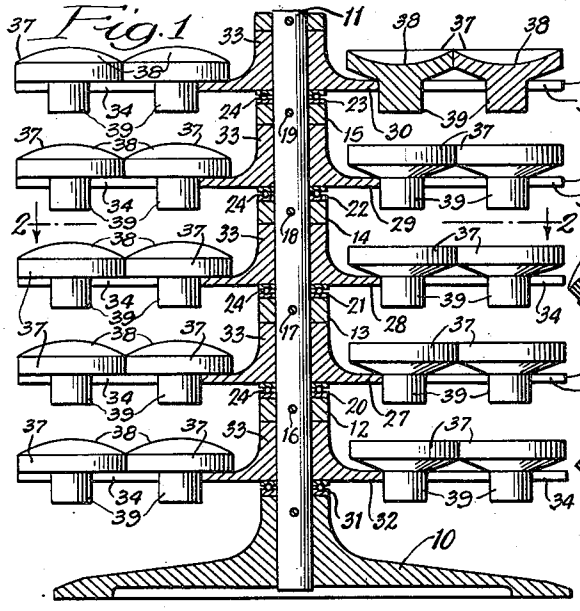


Fig. 4

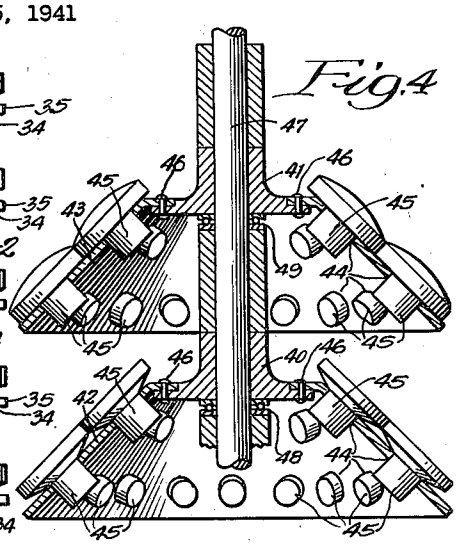


Fig. 2

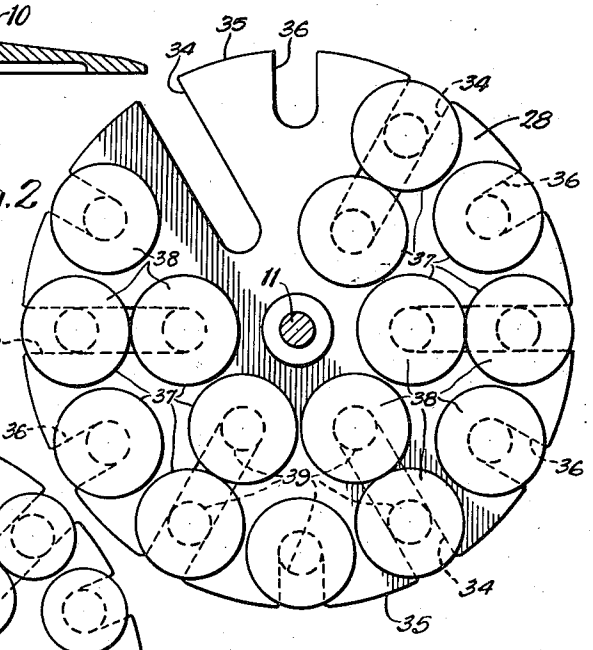
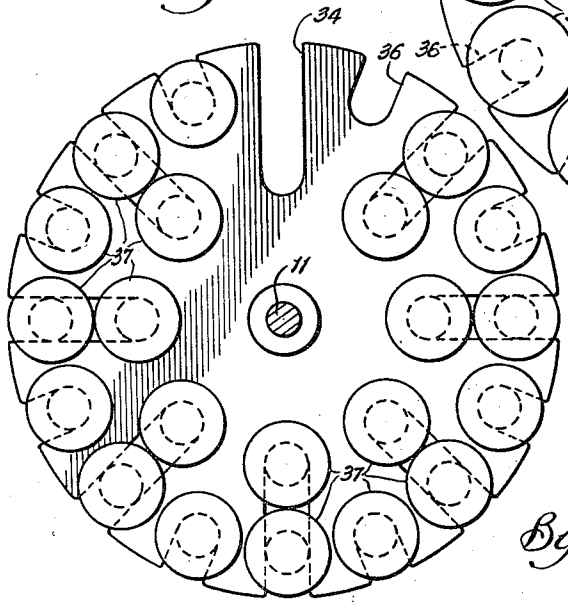


Fig. 3



Inventor:
John R. Kerry,
By Dawson, Orris & Booth,
Attorneys.

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UNITED STATES PATENT OFFICE

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LAP STORAGE RACK

John R. Kerry, Palatine, Ill., assignor to The House of Vision, Belgard-Spero, Inc., Chicago, Ill., a corporation of Delaware

Application October 25, 1941, Serial No. 416,436

5 Claims. (Cl. 211—13)

This invention relates to a lap storage rack and more particularly to a rack for supporting a plurality of grinding or polishing laps in a simple and convenient arrangement.

An object of the invention is to provide a simple and inexpensive form of rack for supporting a plurality of laps. Another object is to provide a rack which will accommodate a large number of laps of varying sizes and shapes and will maintain the laps in readily accessible position. Still another object is to provide a strong sturdy rack structure of simple construction. A further object is to provide a rack which will accommodate a maximum number of laps in a position in which all of the laps are readily accessible to the user.

Other features and advantages of the invention will appear from the following specification and drawing, in which—

Figure 1 is a vertical sectional view of the rack with the laps supported thereon; Fig. 2 is a view taken along the line 2—2 of Fig. 1, showing one of the shelves in plan; Fig. 3 is a similar view of another shelf; and Fig. 4 is a fragmentary vertical sectional view of a modification of the rack with laps supported thereon.

In prescription grinding optical shops and the like, circular iron laps are used to generate curved surfaces on glass or other materials. The laps are provided with vertical shanks which are secured to vertical driving spindles when the laps are in use. The laps may be of various curvatures, diameters and weights. In accordance with the present invention, a storage rack structure for supporting these laps is provided.

In the grinding of glass and other materials in optical shops and the like, there are many different stages of the grinding and polishing operations. Many different sets of laps are used for these different stages and most optical shops have the problem of storing extremely large numbers, often hundreds, of grinding and polishing laps. At the same time, the laps should be stored in such a manner that each lap is readily and promptly accessible. In the grinding operation, a particular lap is ordinarily used for only a few minutes at a time and then returned to storage, the lap usually being dripping wet with traces of grinding or polishing compounds clinging to it. In the present invention an improved rack for the orderly and efficient storage of such laps is provided.

In the embodiment of the invention shown in Figs. 1 to 3, an enlarged base 10 of metal or other suitable material provides a support for a vertical shaft 11. A plurality of collars 12, 13, 14 and 15 are secured to the vertical shaft 11 by set screws 16, 17, 18 and 19 respectively. The collars are arranged in spaced vertical relation and are fixed to the shaft 11.

Thrust bearings 20, 21, 22 and 23 are supported on the collars 12, 13, 14 and 15 respectively. The thrust bearings may be of any suitable construction and preferably are equipped with ball bearings 24 or other suitable anti-friction means.

Shelves 27, 28, 29 and 30 are supported on the bearings 20, 21, 22 and 23 respectively.

The base 10 also supports a thrust bearing 31 which carries a shelf 32.

Each of the shelves is provided with a hub 33 which is centrally apertured to receive the shaft 11 and which is supported by the thrust bearing beneath the same.

In each shelf a plurality of deep or long slots 34 extend radially inwardly from the periphery 35 of the shelf. The slots 34 preferably extend at least two-thirds of the radial distance between the periphery and the central axis of the shelf. Between each pair of slots 34 is a short or shallow slot 36 which also extends radially inwardly from the periphery of the shelf.

Laps 37 provided with grinding surfaces 38 and shanks 39 are received within the slots 34 and 36 with the shanks 39 extending downwardly through the slots and the head of each lap being supported by the shelf adjacent the slot.

The slots may be spaced apart in each shelf by any suitable distance. Preferably, the slots are so spaced that each short slot is adapted to receive only a single lap. With this arrangement, the peripheries of the circular laps may be immediately adjacent each other.

As seen in Fig. 3, the slots may be disposed in closely spaced relation when the laps which are to be supported are relatively small. On the other hand, when the laps which are to be received are larger in diameter the slots as seen in Fig. 2 may not be spaced so closely to each other.

The shelves may be of material such as steel or of any other suitable material and may be integrally secured to the hub as shown, or may be attached thereto in any other suitable manner. The hub of each shelf is freely rotatable about the shaft 11, being supported on the thrust bearing therebeneath. The enlarged heavy base 10 provides a substantial support for the rack.

The rack thus provides a plurality of vertically spaced parallel shelves which are adapted to support a plurality of laps thereon. The laps may be readily placed in the storage rack by inserting the shank 39 of the lap in the appropriate slot. When the rack is filled with laps the weight of the same is substantially increased since the larger laps often weigh between two and three pounds. Nevertheless, the structure is strong and sturdy and readily supports a large number of laps.

When it is desired to obtain any particular lap, it may be removed from the rack by rotating the

shelf on which it is carried to bring the particular lap into a position where it is readily accessible to the user. Since each of the shelves is independently rotatable about the shaft 11, it is necessary to rotate only the shelf which carries the lap which is to be removed.

Preferably the slots in the shelves which are intended to support concave laps are a trifle larger than the shank diameter of the lap to be supported. This permits the lap to be lowered into the slot a greater distance than would otherwise be possible and lowers the center of gravity of the lap with respect to the shelf, thus minimizing the tendency of the laps to tip within the slot. If desired, interchangeable and replaceable metal tabs (not shown) may be placed around the periphery of the shelves to indicate the laps which are to be found in the various slots.

With this rack construction, the laps which are stored in the rack are not only more readily accessible than they would otherwise be, but, in addition, the working parts of the rack are not as susceptible to deterioration from the water and abrasive which drips from the laps as they would be in a closed cabinet or rack. Moreover, since the rack structure is open to the atmosphere, drying is quicker, and less rusting of the laps and rack parts occurs than would be the case with a closed cabinet. The entire rack is readily movable and may be easily cleared for cleaning or other service operation. By reason of the circular construction the rack is particularly suitable for utilizing the space under machinery tables or benches and will support many more laps than can be accommodated on horizontal racks which might be placed under a table or bench.

Although the shelves as shown are provided with slots for receiving the shanks of the grinding laps, the shelves may, if desired, be equipped with circular holes or apertures within which the shanks of the grinding laps may be placed.

In the modification of the invention illustrated in Fig. 4, the rack includes a shaft 47, thrust bearings 48 and 49 and hubs 40 and 41 carried by the thrust bearings and disposed about the shaft for independent and rotatable movement with respect thereto. This portion of the construction corresponds to that in the embodiment of the invention shown in Figs. 1 to 3.

To the hubs 40 and 41 may be secured depending shelf portions 42 and 43 which extend outwardly and downwardly from the hubs, preferably at an angle of approximately 45° with respect thereto. The shelf portions 42 and 43 are thus preferably in the form of conical frustrums and may be provided with a plurality of apertures 44 for receiving the shanks 45 of grinding laps. The apertures may, if desired, be circular in shape. The shelves may be of sheet metal and may be secured to the hubs in any suitable way, for example, by means of the rivets 46.

When the rack shown in Fig. 4 is to be used, the laps are mounted on the rack by inserting the shanks 45 of the laps into the apertures 44 in the shelves. The laps may readily be withdrawn from the rack by merely lifting them from the shelves.

Although in the foregoing description certain details have been set forth as illustrative of the structure of the invention, it will be understood that modifications and changes in the structure may readily be made without departing from the spirit and scope of the invention.

I claim:

1. A rack of the character described comprising, a vertical support member, a plurality of vertically spaced shelves independently supported by said member and rotatably mounted thereon, one of said shelves being provided with a plurality of long radial slots and with a plurality of short radial slots extending inwardly from the outer periphery of the shelf, each of said short slots being disposed between a pair of long slots.

2. A rack of the character described comprising, a base, a vertical shaft extending upwardly from said base, a plurality of thrust bearings mounted in vertically spaced relation on said shaft, a plurality of circular shelves independently and rotatably mounted at the central portion thereof on said shaft with each shelf supported on one of said thrust bearings, each of said shelves being provided with a plurality of long radial slots and with a plurality of short radial slots extending inwardly from the outer periphery of the shelf, each of the short slots being disposed between a pair of long slots.

3. A rack of the character described comprising, a base, a vertical shaft extending upwardly from said base, a plurality of vertically spaced shelves independently supported on said shaft and rotatably mounted thereon, each of said shelves being provided with a plurality of long radial slots with a plurality of short radial slots extending inwardly from the outer periphery of the shelf, each of the short slots being disposed between a pair of long slots.

4. A rack of the character described for supporting grinding laps and the like comprising, a base, a vertical shaft supported by said base, a plurality of collars removably carried in vertically spaced relation by said shaft, a thrust bearing on each of said collars, a plurality of circular shelves mounted in vertically spaced relation on said shaft, each of said shelves being mounted at the central axis thereof on one of said thrust bearings for independent rotatable movement about said shaft, the shelves being provided with a plurality of long radial slots and with a plurality of short radial slots extending inwardly from the outer periphery of said shelves with each of the short slots disposed between a pair of the long slots, said slots being adapted to receive the shanks of grinding laps.

5. A rack of the character described for supporting grinding laps and the like comprising, a base, a vertical shaft supported by said base, a plurality of thrust bearings mounted in vertically spaced relation on said shaft, a plurality of circular shelves provided with long and short radial slots therein, each of said slots being open at the outer periphery of said shelf and extending inwardly therefrom, with each short slot being disposed between a pair of long slots, said slots being adapted to receive the shanks of grinding laps to support the same on the shelves, and a central hub in each shelf having a central aperture receiving said shaft, each of said hubs being supported on one of said thrust bearings whereby said shelves are independently and rotatably supported about said shaft in vertically spaced relation.

JOHN R. KERRY.