May 6, 1930. H. L. MYERS 1,757,679

CLAMPING DEVICE

Filed Jan. 26, 1928

Fig. 1.

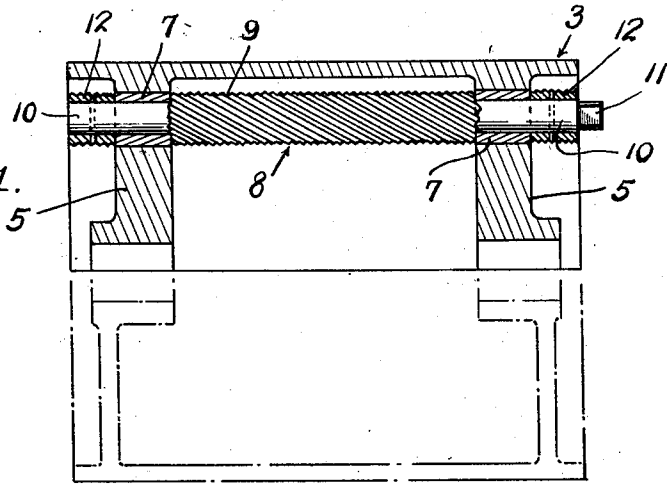
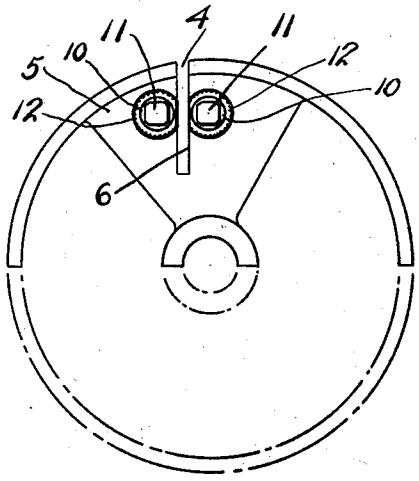


Fig. 2.



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UNITED STATES PATENT OFFICE

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CLAMPING DEVICE

Application filed January 26, 1928. Serial No. 249,649.

This invention relates to an improved sanding drum of the type employed upon a rotary abrading or sanding machine.

More precisely, the invention comprehends an improved drum and paper retainer which is expressly intended for use upon the machine shown and described in a co-pending application for patent, filed under date of January 12, 1928, and designated by Serial No. 246,198.

I am aware that it is now customary in structures of this class to have a cylindrical drum around which the abrading paper is wrapped, and to provide the drum with a longitudinal slot, through which the ends of the paper are turned in. Usually the inturned ends are bound or clamped in place by the drawing action of a pair of rotary clamping rods mounted upon the drum in close proximity to the slots.

Then too, it is customary to have the opposed surfaces of the rods flat, to enhance the clamping action.

The utilization of knurled bars with flat clamping faces, has been used for some time as sand paper clamping means in machines of this class. An objection arises however, from the use of rigidly or permanently mounted clamping rods. In rare instances where the bars are removable or replaceable difficulty is experienced in changing the bars or originally assembling them into place.

Bearing in mind, the manufacturing disadvantages accruing from the present conditions, and having in mind, the expense imposed upon the user in the event repair is necessary, I have evolved and produced a structural arrangement wherein the clamping bars are removably mounted in the heads at the ends of the drum in a manner to facilitate assembly, removal and replacement.

The specific details and their association and arrangement constituting the invention and novelty of the same, will become more readily apparent from the following description and drawings.

In the drawings:—

Figure 1 is a view in longitudinal section showing the improved drum and the means for mounting one of the clamping bars.

Fig. 2 is an end view, showing the relative positions of the bars with respect to the end heads and slots.

Referring now to the drawings by numerals, it will be seen that the numeral 3 designates generally the improved drum the shell of which is cylindrical in cross section and provided on one side with a longitudinal slot 4 extending through the opposite ends of the shell. It is understood that the sand paper or cloth backed abrasive is wrapped around the shell of the drum in the usual way and the ends tucked into the slot where they are engaged with the clamping means and held in place.

In the present instance, the drum is provided with end heads including web portions 5 disposed in inwardly spaced relation from the ends of the shell. The portions 5 are formed with radial slots 6 in communication with the aforesaid slot 4. With this arrangement, the extremities of the inturned edge portions of the abrasive paper can be accommodated throughout their length.

In other words, the slot which accommodates the inturned edges of the paper is commensurate with the width of the paper used. Formed in each web portion 5 on opposite sides of the slot 6, we find a pair of bearing holes or openings, which in the present instance, receive removable bushings 7 as shown in Fig. 1. The bushings are driven into place and held firmly by friction.

Cooperating with each pair of companion bushings is a clamping rod 8, having a central knurled surface 9 and here formed with a flat clamping face. The end portions of the rod are reduced and made into smooth surfaced journals, and extended through and beyond the bushings 7. The reduction in diameter simultaneously provides shoulders which abut the inner ends of the complemental bushings as shown in Fig. 1. The left hand end of the rod is flush with the corresponding end of the drum while the right hand end includes an extension 11 which is made polygonal and provides a wrench grip.

Fitted on the protruding end portions of each rod are externally knurled clamping sleeves 12 pinned or otherwise rigidly fas-

tened in place. These sleeves bear at their inner ends against the outer ends of the bushings.

The construction herein illustrated and specifically described possesses several prominent advantages. First, it makes it possible to use an abrasive with a paper back, instead of a cloth back in a small cylinder type machine. Obviously, this is of great economic value, the difference in cost being about one-third of the total cost of the abrasive.

It will be noted that the arrangement provides for the bushings to be placed inwardly from the end flanges of the drum, and that the knurled sleeves fitted onto the protruding portions, operate in such a manner as to clamp the outside edges of the paper as it is fed through the longitudinal and radial slots provided for the same. This thereby makes it possible to clamp the paper on the outside edges, as well as at the center, a very practical feature in an invention of this class.

There are no bushing plates or special retaining devices. The outstanding advantage from a manufacturing viewpoint is that the arrangement facilitates assembly and repair. It is evident for example, in originally assembling the clamping rod, the left hand bushing 7 for example is fitted into the complemental bearing opening in the head of the drum and the corresponding reduced or journal end portion of the rod is then slid through the opposite opening. The last-named opening of course is minus the bushing 7 at this time.

The rod is slid through the opening with the reduced end passed through and beyond the bushing, allowing it to protrude. The shoulder at the end portion of the knurled central part constitutes a stop. Next, the complemental bushing 7 at the right hand end is slipped over the reduced end portion 10 of the rod and pressed into its opening. Then the knurled sleeves are placed on the protruding end portions and pinned or otherwise secured in place. The time saved and the reduction in cost, makes this arrangement particularly desirable in a structure of this class.

Having thus described my invention, what I claim as new is:—

1. In a structure of the class described, a drum comprising a cylindrical shell provided with a longitudinal abrasive element slot extending through the opposite ends of said shell, end-heads carried by the shell and spaced inwardly from the ends of the shell and formed with radial slots communicating with the end portions of said longitudinal slot, a pair of bushing holes in each head on opposite sides of the complemental radial slot, bushings removably fitted in said holes, and abrasive element clamping means comprising a pair of spaced parallel abrasive clamping rods arranged within the shell and disposed in alinement with said bushings, the end portions of said rods being reduced in size and formed of cylindrical cross sectional shape and serving as journals, said journals being mounted for oscillation in said bushings, the end portions of the journals projecting beyond said bushings and the adjacent heads, and abrasive element clamping sleeves fastened to the projecting ends and cooperating with each other to grip the edge portions of said abrasive element.

2. As a new product of manufacture, a clamping rod for use in association with an abrasive clamping assembly of the class described, comprising a rod having a central substantially cylindrical portion provided with a flattened portion and a knurled anti-slipping abrasive gripping portion, the ends of said rod being cylindrical in cross section and reduced in diameter to simultaneously define shoulders and journals, said journals being smooth surfaced, a pair of bushings through which said journals extend, said bushings abutting said shoulders and being of a diameter substantially equal to the diameter of the central portion of the rod, and a pair of duplicate externally knurled abrasive element engaging sleeves fastened rigidly on the extending terminal ends of said journals, the intermediate portion of the rod being adapted to engage the corresponding portion of the abrasive element, and said sleeves being adapted to engage the edge portions of said abrasive element.

In testimony whereof I affix my signature.

HARRY L. MYERS.