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STONE HOLDER FOR HONING TOOLS

Filed Nov. 12, 1928

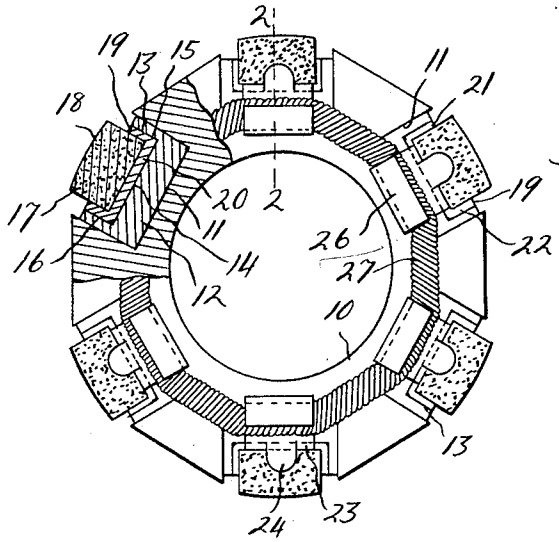


Fig. 1.

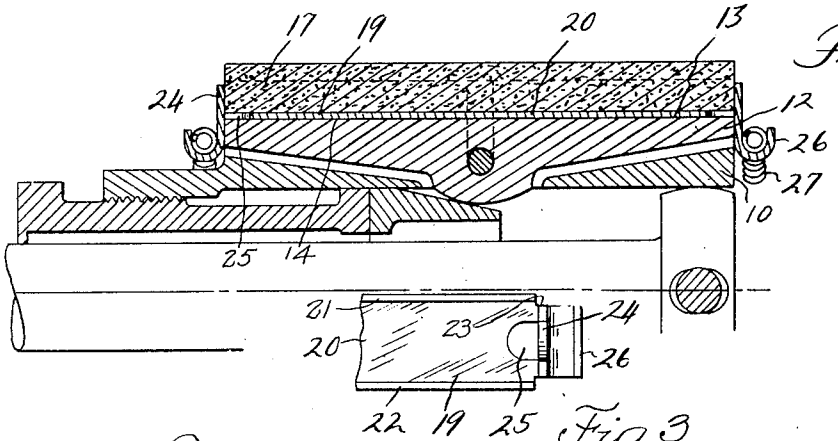


Fig. 2.

Fig. 3

Fig. 5.

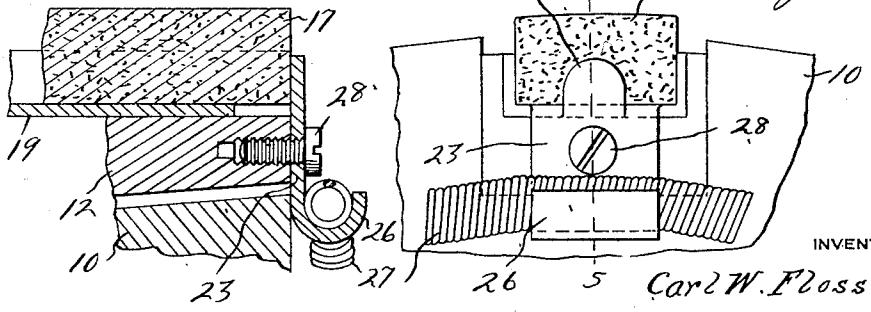


Fig. 4.

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STONE HOLDER FOR HONING TOOLS

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The invention relates to stone retaining devices for cylinder honing tools and similar apparatus.

One of the objects of the invention is to provide a construction for facilitating the removal and replacement of the stones from the honing tool. Another object is to provide an arrangement for mounting the stones on the holder which minimizes the breakage of the stones.

These and other objects are attained by the novel construction hereinafter more fully described and illustrated in the accompanying drawings, wherein

Figure 1 is an end elevation partly in section through a honing tool showing the arrangement of the improved stone retainer shell;

Figure 2 is a longitudinal section on the line 2—2 of Figure 1;

Figure 3 is a top plan view of a portion of a stone retainer shell;

Figure 4 is an end elevation of a modification;

Figure 5 is a section on the line 5—5 of Figure 4.

Referring to the construction illustrated in Figures 1 to 3, 10 represents the annular body of a cylinder honing tool or other similar device and is provided with a series of longitudinal slots 11 for receiving the stone holders 12. These holders are movable radially in the slots in order to adjust the tool to the desired diameter. The means for controlling this expansion and contraction of the working members forms no part of this invention and is not illustrated, but reference may be had to my co-pending application, Serial No. 231,739 filed November 7, 1927 for one form of lapping tool in which the adjustments are fully illustrated and described. The stone holders 12 are each provided with longitudinal channels 13, the bottom surfaces 14 of which are flat and the side surfaces 15 and 16 extend upwardly on opposite sides thereof. 17 represents the stones which are preferably of a rectangular cross section except that the top surface 18 is slightly rounded to more nearly conform to the curvature of the work. Each stone is mounted in a stone retainer shell 19, formed preferably of sheet metal with the bottom surface 20 and the upstanding sides 21 and 22 engageable with the sides of the stone. Both ends of the shell are turned transversely as indicated at 23 to form flanges engageable with the ends of the stone holder. There is also a struck up ear 24 at each end of the shell in alignment with the down-turned flange 23 for engaging the end of the stone. The metal for the ears is obtained by forming the apertures 25 in the bottom 20. The down-turned flanges 23 terminate in reversely bent portions forming hooks 26. The retainer shell is constructed to accurately fit the stone and the latter is securely fastened thereto in a suitable manner as for instance by cementing. The shell is secured to the stone holder by inserting the same into the channel 13 and allowing the down-turned flanges to engage the ends of the stone holder. For retaining the several shells on the bottom surfaces 14 of the channels resilient means is provided such as the two circular coiled springs 27 which are arranged over the hooks 26 at both ends of the stones.

With the construction as above described, it will be observed that replacement of stones in the lapping tool is a very simple matter for it is only necessary to release the circular springs from the hooks 26 and allow the stone and its retainer shell to be withdrawn from the stone holder. A new stone mounted in another similar retainer shell can then be substituted and quickly pressed into engagement with the stone holder and maintained in this position by replacing the circular spring and the hooks 26.

One of the advantages of the above described construction is that it enables a perfectly flat surface to be obtained along the bottom of the retaining shell which is necessary to prevent stone fracture. Another advantage is that the radially inward tension of the circular springs maintains the down-turned flanges 23 in contact with the ends of the stone holders, thereby prevent-

ing endwise movement of the shell and stone in the holder.

It will be observed that the construction as described accomplishes a secure mounting of the stones in a honing tool without the use of screws or other adjustable means.

The modified construction shown in Figures 4 and 5 is adapted particularly for the larger sizes of stones and tools. It differs from the one previously described in that screws 28 are provided to secure the down-turned flanges 23 to the stone holder. These screws however do not exert pressure on the stone and therefore do not tend to cause stone breakage as is the case with many constructions of the prior art.

What I claim as my invention is:

1. In a tool of the class described, an adjustable stone holder, a stone, a retainer shell secured to said stone and flanges upon said shell overlapping the ends of said stone holder and engageable therewith for positioning the shell upon the holder.

2. In a tool of the class described, an adjustable stone holder, a stone, a retainer shell secured to said stone and flanges overlapping the ends of said stone holder and engageable therewith for positioning the retainer shell upon said holder, and hooks formed at the ends of said flanges.

3. In a tool of the class described, a stone holder, a stone, a sheet metal retainer shell secured to said stone, flanges on said shell engageable with the ends of said stone holder for positioning the shell upon the holder and struck out ears in alignment with said flanges and engaging said stone to prevent movement of the latter relative to said shell.

4. In a tool of the class described, a stone holder having a longitudinal channel therein, a stone of less width than said channel, a sheet metal retainer shell having upturned sides and ends engaging said stone and having down-turned flanges in alignment with said upturned ends for engaging said stone holders.

5. In a tool of the class described, a stone holder, a stone, a retainer shell secured to said stone and flanges upon said shell engaging the ends of said stone holder for positioning the shell upon the holder.

6. In a tool of the class described, a body, a series of stone holders radially movable in said body, a retainer shell mounted on each stone holder, a stone secured in each retainer shell, flanges projecting from the ends of each shell and engaging the ends of said stone holders for securing the shell to the holders, said flanges having lateral projecting portions and a resilient circular spring engaging the projecting portions aforesaid of the flanges.

7. In a tool of the class described, a body, a series of stone holders radially movable in said body, a retainer shell detachably engageable with each stone holder, a stone secured to each shell, oppositely extending flanges on the ends of each shell engageable respectively with the stones for securing same from endwise movement and with the holders for positioning the retainer shells thereon, one set of said flanges terminating in hooked portions and a resilient circular coil spring engaging the hooked portions.

In testimony whereof I affix my signature.

CARL W. FLOSS.