

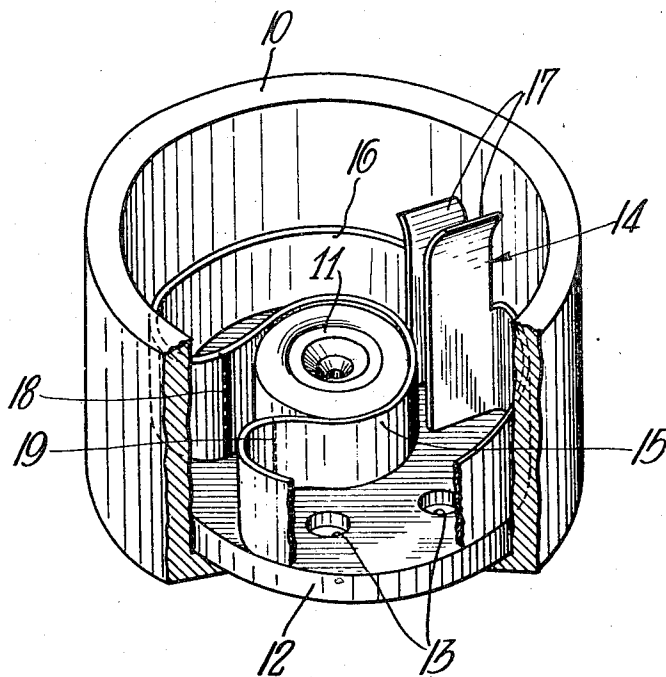
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DIE HOLDER

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DIE HOLDER

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8 Claims. (Cl. 51—217)

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This invention relates to die holders and particularly to holders for positioning wire drawing dies in grinding and lapping machines.

During grinding and lapping operations wire drawing dies commonly are positioned in an open-ended cylindrical cup where they are engaged by a rotating lapping pin while a liquid abrasive suspension flows thereover. The cup is supported for limited translational movement to position the die accurately with respect to the lapping pin and may either rotate in a direction opposite to the direction of rotation of the lapping pin or else remain stationary.

In previous mounting arrangements with which I am familiar, the die has been fixed in the cup as with set screws. Such arrangements have had the disadvantages that manipulation of set screws for inserting and removing dies from the cup is time consuming, and it has been necessary for the operator to insert his fingers into the cup and in contact with the abrasive suspension to lift out the die holder.

An object of the present invention is to provide improved holders for positioning dies for grinding or lapping which enable dies to be inserted or removed expeditiously from the cup and which eliminate the need for the operator's fingers to contact the abrasive suspension in lifting a die from the cup.

A further object of the invention is to provide die holders having the foregoing improved characteristics and being of simple and inexpensive construction.

In accomplishing these and other objects of the present invention I have provided improved details of structure, a preferred form of which is shown in the accompanying drawing wherein:

The single figure is a perspective view with parts broken away showing a wire drawing die positioned within a cup with an improved die holder embodying features of the present invention.

Referring more in detail to the drawing:

There is shown at 10 an open-ended cylindrical cup for supporting a wire drawing die 11 during grinding and lapping. The cup contains a base plate 12 having drain apertures 13. The bottom of the cup also has a drain aperture, not shown. Inasmuch as the cup and base plate are of standard construction, a more detailed description is deemed unnecessary.

Die 11 is positioned within the cup by means of an improved die holder 14 embodying features of the present invention. Holder 14 is formed of a flexible elastic material, preferably sheet

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steel, which includes a central, substantially circular, die encompassing convolution 15 and an outer, substantially circular, cup engaging convolution 16. The two convolutions are integral and the outer convolution substantially surrounds the inner. Upstanding from the extremities of the outer convolution are a pair of upstanding ears 17 adapted to be manually gripped for inserting and removing the die holder and die from the cup.

The diameter of central convolution 15 is preferably slightly less than the exterior diameter of die 11, whereby the die is gripped firmly in said convolution. The diameter of outer convolution 16 is preferably slightly greater than the interior diameter of cup 10, whereby the die holder is held firmly within said cup. Preferably the central convolution is of material that flexes less readily than the outer convolution. This construction is conveniently made by forming the central convolution of a fairly stiff spring steel and the outer convolution of sections of softer steel welded to the extremities of the central convolution, as indicated at 18 and 19.

The operation of an improved die holder constructed as described is as follows:

Die 11 to be ground or lapped is placed within central convolution 15 of the die holder and is firmly gripped therein by virtue of the slightly smaller diameter of said convolution and its less flexible construction. The die holder containing the die is inserted within cup 10, outer convolution 16 being contracted by manual pressure against ears 17. Accurate positioning of the die with respect to the lapping pin is accomplished in the usual way by shifting of cup 10 with respect to said pin.

After the die has been ground or lapped in the usual manner, the die holder and die are lifted from the cup by manually grasping ears 17 and thereby contracting outer convolution 16. It is seen that pressure against ears 17 likewise tends to expand central convolution 15, which would release the die. However, since outer convolution 16 is of material that flexes more readily than central convolution 15, the die holder may be lifted from the cup while still retaining the die in said central convolution. Inasmuch as the level of liquid abrasive suspension in the cup does not reach ears 17, it is unnecessary for the operator's fingers to contact said suspension in lifting the die from the cup.

It is thus seen that I have provided an improved die holder of simplified construction and

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yet overcoming the disadvantages I have observed in previous die holders.

While I have illustrated but a single embodiment of the present invention, it is apparent that modifications may arise without departing from the spirit of the invention. Therefore, I do not wish to be limited by the disclosure set forth, but only by the scope of the appended claims.

I claim:

1. A holder for positioning wire drawing dies in a cylindrical cup during grinding or lapping thereof comprising an elastic member having a die encompassing convolution, a cup engaging convolution, and means adapted to be manually gripped for inserting and removing the die holder and die from the cup.

2. A holder for positioning wire drawing dies in a cylindrical cup during grinding or lapping thereof comprising an elastic metal member having a central die encompassing convolution, an outer cup engaging convolution, and a pair of ears upstanding from the extremities of said outer convolution adapted to be manually gripped for inserting and removing the die holder and die from the cup.

3. A holder for positioning wire drawing dies in a cylindrical cup during grinding or lapping thereof comprising an elastic metal strip having a substantially circular central die encompassing convolution, a substantially circular outer cup engaging convolution substantially surrounding said die encompassing convolution and integral therewith, and means adapted to be manually gripped for inserting and removing the die holder and die from the cup.

4. A holder for positioning wire drawing dies in a cylindrical cup during grinding or lapping thereof comprising a flexible elastic sheet metal strip having a substantially circular central die encompassing convolution, a substantially circular outer cup engaging convolution substantially surrounding said die encompassing convolution and integral therewith, and a pair of ears upstanding from the extremities of said outer convolution adapted to be manually gripped for inserting and removing the die holder and die from the cup.

5. A holder for positioning wire drawing dies in a cylindrical cup during grinding or lapping thereof comprising a flexible elastic sheet metal strip having a substantially circular central die encompassing convolution, a substantially circular outer cup engaging convolution substantially

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surrounding said die encompassing convolution and integral therewith, said die encompassing convolution being less flexible than said cup engaging convolution, and means adapted to be manually gripped for inserting and removing the die holder and die from the cup.

6. A holder for positioning wire drawing dies in a cylindrical cup during grinding or lapping thereof comprising an elastic metal strip having a substantially circular central die encompassing convolution of slightly smaller diameter than the exterior diameter of a die it is adapted to encompass, a substantially circular outer cup engaging convolution substantially surrounding said die encompassing convolution and integral therewith and being of slightly larger diameter than the interior diameter of a cup into which it is adapted to fit, and means adapted to be manually gripped for inserting and removing the die holder and die from the cup.

7. A holder for positioning wire drawing dies in a cylindrical cup during grinding or lapping thereof comprising a flexible elastic metal member having an inner die encompassing convolution of slightly smaller diameter than the exterior diameter of a die it is adapted to encompass, an outer cup engaging convolution of slightly larger diameter than the interior diameter of a cup into which it is adapted to fit, said die encompassing convolution being less flexible than said cup engaging convolution, and means adapted to be manually gripped for inserting and removing the die and die holder from the cup.

8. A holder for positioning wire drawing dies in a cylindrical cup during grinding or lapping thereof comprising a flexible elastic sheet metal strip having a substantially circular central die encompassing convolution of slightly smaller diameter than the exterior diameter of a die it is adapted to encompass, a substantially circular outer cup engaging convolution substantially surrounding said die encompassing convolution and integral therewith and being of slightly larger diameter than the interior diameter of a cup in which it is adapted to fit, said die encompassing convolution being less flexible than said cup engaging convolution, and a pair of ears upstanding from the extremities of said outer convolution adapted to be manually gripped for inserting and removing the die holder and die from the cup.

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No references cited.