Dec. 7, 1943. C. F. STAPLES 2,336,043

MANDREL FOR HONING MACHINES

Filed Feb. 7, 1942

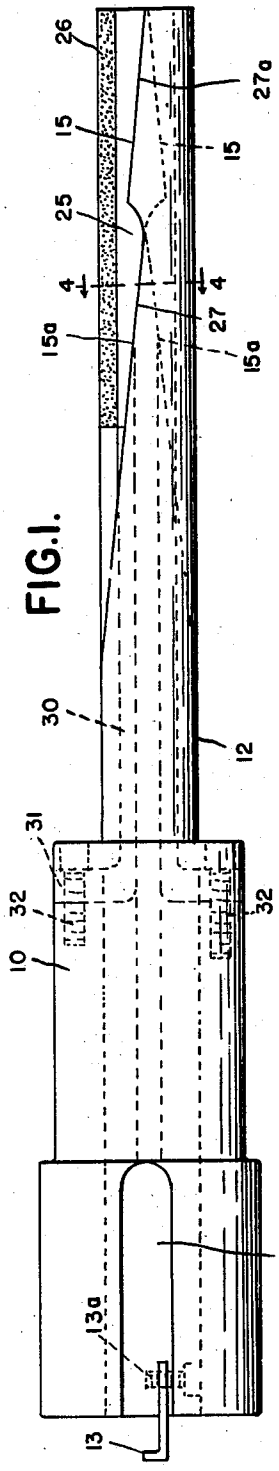


FIG. 1.

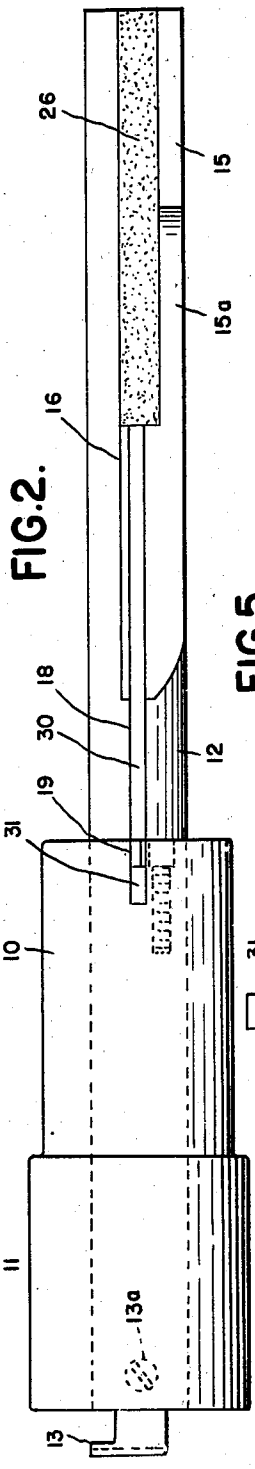


FIG. 2.

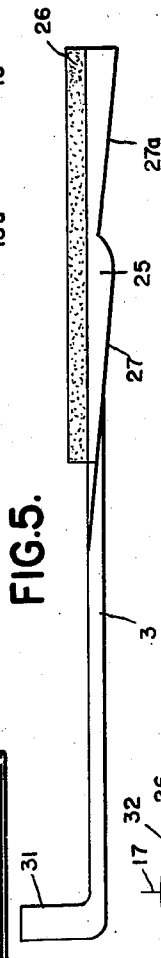


FIG. 5.

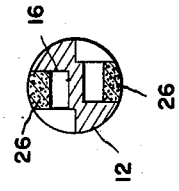


FIG. 4.

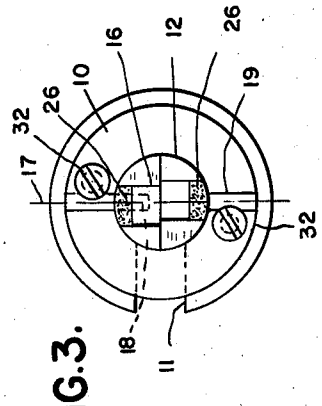


FIG. 3.

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Patented Dec. 7, 1943 2,336,043

UNITED STATES PATENT OFFICE

2,336,043

MANDREL FOR HONING MACHINES

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Application February 7, 1942, Serial No. 429,849

2 Claims. (Cl. 51—184.3)

The present invention relates to mandrels for grinding or honing machines and particularly for mandrels in which the abrasive stones are adjustable readily.

Among the objects of the invention is a mandrel which has a longer life than some of those now in use in that substantially all of the wear is confined to the abrasive stones.

Another object is a mandrel adaptable for small holes but which has relatively large abrasive surfaces.

Another object is a mandrel which shall be economical to produce and simple to operate, and one which will maintain its concentricity.

Still other objects and advantages will be apparent to those skilled in the art upon reference to the following description and the accompanying drawing in which

Figure 1 is a side elevation of the mandrel.

Figure 2 is a plan view thereof.

Figure 3 is an end elevation.

Figure 4 is a section on line 4—4 of Figure 1, and

Figure 5 is a view in elevation of a stone holder.

In the drawing, the mandrel is shown as made up of a sleeve 10 provided with a slot 11 at its rear by means of which the sleeve may be rotated in a suitable machine. The sleeve 10 serves to support in slidable relation a shaft or rod 12 forming the mandrel proper, the movement of the shaft being accomplished through the agency of suitable means, such as the hook 13, fixed in or to the rear end of the shaft as by a screw 13*a*, or by welding or riveting.

At its forward end, the shaft 12 is milled, as shown, in diagonally opposite quarters to provide parallel sloping cam surfaces 15 and 15*a* at the bottom of the cut, those in one quarter being arranged in opposed relation to those in the other, while the side 16 of the cut is somewhat beyond the vertical center line 17 and extends to the peripheral circle of the shaft, serving as a lateral and driving support for the abrasive stones. This permits the cutting in the rearward portion of the shaft of diametrically opposite grooves 18 extending rearwardly a suitable distance within the sleeve 10, the latter being provided with radial slots 19 of the same width as and adapted to register with said grooves.

Seated in the grooves 18 and upon the cams 15 and 15*a*, is a pair of stone holders, such as is shown in Figure 5, each consisting of a shoe portion 25 having cemented or otherwise secured to its upper surface an abrasive stone 26 and having its bottom face provided with sloping surfaces 27 and 27*a* conforming to and adapted to coact with the surfaces 15 and 15*a* on the shaft 12, to move the stones radially of the shaft when the latter and the stoneholders are moved relatively longitudinally.

Each of the stoneholders is provided with a rearward extension 30 slidably fitting in a groove 18 and having at its end an upwardly extending portion 31.

This portion 31 of the stoneholder is arranged to fit snugly within a slot 19 of the sleeve 10, and held therein against movement by means of a screw 32, thus serving to prevent relative rotation of sleeve 10 and shaft 12.

In the use of the device, relative longitudinal movement of the sleeve 10 and shaft 12 will of course produce radial movement of the stones 26.

I am aware that the invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and I therefore desire the present embodiment to be considered in all respects as illustrative and not restrictive; reference being had to the appended claims rather than to the foregoing description to indicate the scope of the invention.

I claim:

1. A honing mandrel for honing machines consisting of a sleeve, a shaft slidable longitudinally in said sleeve, said shaft having diametrically opposed quarters thereof cut out to provide notches each having one wall parallel to a radius of the shaft and having its other wall provided with a plurality of cam surfaces extending longitudinally thereof, and a pair of stone holders each provided with cam surfaces adapted to coact with the first mentioned cam surfaces, said holders having abrasive stones mounted thereon, means to fix the relative longitudinal position of said sleeve and holders.

2. A honing mandrel for honing machines consisting of a sleeve, a shaft slidable longitudinally in said sleeve, said shaft having diametrically opposed quarters thereof cut out to provide notches each having one wall parallel to a radius of the shaft and having its other wall provided with a plurality of cam surfaces extending longitudinally thereof, and a pair of abrasive carrying elements each provided with cam surfaces adapted to coact with the first mentioned cam surfaces, means to fix the relative longitudinal position of said sleeve elements.

CHARLES F. STAPLES.