Oct. 12, 1937. J. CONEY 2,095,379

DEVICE FOR POLISHING AND ABRADING

Original Filed April 5, 1934

Fig. 1.

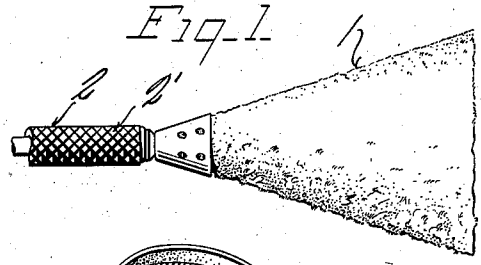


Fig. 2.

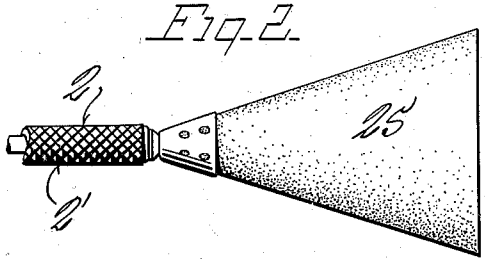


Fig. 8.

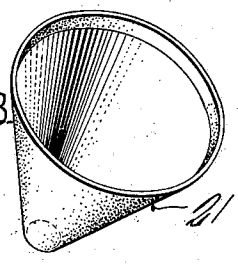


Fig. 3.

Fig. 4.

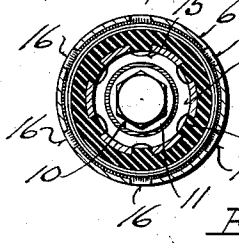


Fig. 5.

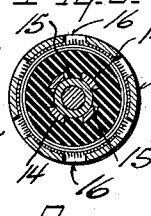


Fig. 7.

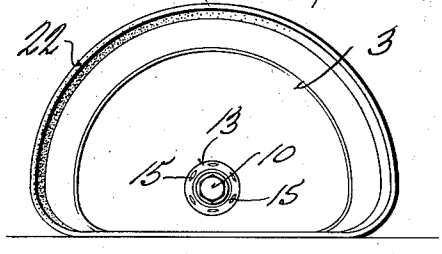
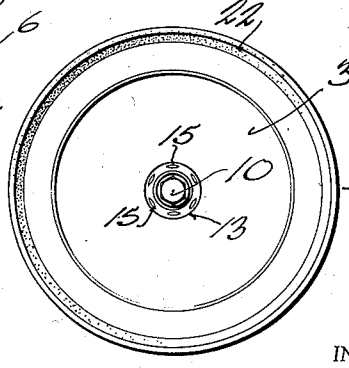


Fig. 6.



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UNITED STATES PATENT OFFICE

2,095,379

DEVICE FOR POLISHING AND ABRADING

John Coney, deceased, late of Kenosha, Wis., by Hertha Coney, administratrix, Kenosha, Wis.; said John Coney and said Hertha Coney, as administratrix, assignors of one-half to D. Harry Smith, Kenosha, Wis., and one-half to George W. Anderson

Refiled for abandoned application Serial No. 719,077, April 5, 1934. This application January 28, 1937, Serial No. 122,883

2 Claims. (Cl. 51—190)

This invention relates to a device for polishing or abrading or similarly smoothing down or treating surfaces.

One of the objects of the invention is to provide a device of this character of simple and compact construction, one which may be readily and economically manufactured from materials and by means of facilities ordinarily available and yet have the capacity of materially facilitating abrading, polishing or smoothing down operations. Usually, such operations are hard, slow and laborious, but with the present invention the necessity of expending any substantial amount of effort or labor is eliminated and the desired action is not only speeded up but is so efficiently carried out that materially improved results are had.

Another advantage of the present invention resides in the capability of the device to work efficiently in crowded quarters or on irregular or curved surfaces and this without danger of injuring or marring the object operated upon.

A further object of the invention resides in the provision of a device of this character and having these advantages and capacities and which is also readily portable and easy to manipulate and control.

Other objects and advantages reside in certain novel features of the construction, arrangement and combination of parts which will be hereinafter more fully described and particularly pointed out in the appended claims, reference being had to the accompanying drawing forming a part of this specification, and in which:

Figure 1 is a fragmentary view in elevation showing the device set up for a polishing operation;

Figure 2 is a view similar to Figure 1 but showing the device equipped for abrading;

Figure 3 is a fragmentary view in longitudinal vertical cross section further illustrating the construction of the device;

Figures 4 and 5 are views in transverse cross section taken on lines 4—4 and 5—5, respectively, of Figure 3;

Figure 6 is a view in end elevation looking toward the open end of the device;

Figure 7 is a similar view but showing how the periphery of the device flattens down in polishing or abrading one type of surface; and

Figure 8 is a detail perspective view showing the shape of the polishing or abrading elements employed with the device.

Referring to the drawing, it will be seen that the polishing and abrading device embodying the present invention is designated generally at 1 and is carried at one end of a flexible shaft designated generally at 2 and driven in any suitable way, for example, from a motor or the like (not shown) which may be sufficiently light to be carried by the operator.

The device 1 has a hollow frusto-conically shaped body or shell 3 which may be constituted of rubber or other suitable material. Preferably, the thickness of the body 3 decreases from its inner small end 4 to its outer open end 5. The small end 4 of the shell 3 is mounted on and driven from rotatable element of the flexible shaft 2.

The mounting and driving connection between the flexible shaft 2 and the device 1 preferably comprises a frusto-conically shaped metal cup 6 having an apertured end wall 7 through which a stud 8 constituting an extension of the rotatable element of the flexible shaft projects. Within the cup 6 a correspondingly shaped flanged nut 9 is disposed, the nut 9 being threaded on the stud 8 and clamping the cup 6 in position on the end of the flexible shaft. The sleeve-like body of the nut 9 is somewhat elongated and is open at both ends, one end engaging the stud 8 as just described and the other end receiving the threaded shank of a headed stud 10. The head of the stud 10 bears against a washer 11, which, in turn, engages the shoulder 12 of an inner clamping member 13. The sleeve-like body 14 of this inner clamping member is slidably fitted over the similarly shaped body portion of the nut 9, whereas the enlarged or flared end of this clamping member bears against the inside of the small end of the shell 3. Keying openings 15 may be provided in this clamping member and similar openings 16 are formed in the cup 6.

On the outside of the shell 3, a polishing or abrading covering or element is supported. Thus, as shown in Figures 1 and 3, a layer of canvas 20 may be placed against the outer surface of the shell 3 and covered by a polishing cloth 21. Preferably, the canvas and polishing cloth are cone-like in shape and extend beyond the outer end of the shell 3. The outer edge portion of the polishing cloth designated at 22 may be turned back under the canvas layer and stitched thereto. The inner edge portions of the polishing cloth and of the canvas layer are firmly clamped against the inner end portion of the shell by the coaction of the cup 6 and clamping member 13, these parts acting when the headed stud 10 is tightened up to hold the canvas 20 and polishing cloth 21 in position as well as to prop-

erly mount the shell 3 and afford the desirable driving connection between the entire abrading or polishing device and its drive shaft. If, instead of polishing, abrasive work is to be done the canvas 20 and polishing cloth 21 may be replaced by a correspondingly formed cone-like element 25 of sandpaper, emery cloth, or the like. For polishing or smoothing down, any suitable material may be employed, for example, sheep wool, flannel, or felt.

In operation, the outer surface of the device is applied directly to the work and the device being rapidly rotated will flatten out against the work in the manner indicated in Figure 7. In use, the operator grasps the stationary sheath or casing 2' of the flexible shaft and utilizes such as a handle. In this way surface contact over a substantial area is had, and thus the polishing or abrading action is speeded up with the consequence that less time is required to do any particular job. The portion of the device applied to the work is sufficiently flexible and is free of all metal parts likely to mar or scar the work. This is due to the fact that the fastening means which connects the device to the flexible driving shaft is confined to the smaller end of the shell and the fact that the shell extends axially outward from its connection with the shaft a considerable distance as compared to the relatively thin wall which closes the inner or smaller end of the shell where the connection is made. Also the shell is relatively light in weight for ease of portability with the shaft and is constructed of a flexible material which not only readily flexes when the shell is pressed against the work, but will return the shell to its normal shape when released from the work. With the connecting means confined to the smaller end of the shell as permitted by its relatively thin end wall, the greater portion of the shell extends axially forward of the shaft and the connecting means, and is available for use in the application of the shell to the work. The freedom and flexibility which the outer operative end portion of the device possesses enables the polishing or abrading action to be carried out conveniently and efficiently in crowded quarters. This same structural characteristic renders the device susceptible of easy control and manipulation.

While there has been shown and described one construction in which the invention may be advantageously embodied, it is to be understood that this construction has been selected merely for the purpose of illustration or example, and that various changes in the size, shape and arrangement of the parts may be made without departing from the spirit of the invention or the scope of the subjoined claims.

The invention claimed is:

1. A device of the character described, comprising a drive shaft, a substantially frusto-conically shaped hollow shell of resilient material having its larger end open and its smaller end closed by an end wall, means for securing the shell at its small end to the shaft for rotation thereby, said securing means comprising a cup-shaped element fitting about and engaged with the small end of the shell, a pair of clamping members, one secured to the shaft within the cup-shaped element for attaching the latter to the shaft, and the other clamping member being located within the shell against its end wall and having a tubular portion extending toward the shaft through an opening in said end wall, the first named clamping member having a sleeve extending into the tubular portion of the other clamping member beyond said shaft, and a fastening element extending into the sleeve from the clamping member in the shell, said fastening element cooperating with the sleeve for clamping the shell between the clamping members and the inside clamping member against the end wall of the shell, and a layer of surfacing material on the outside of the shell and secured to the shell at its small end through the cup-shaped element.

2. A device of the character described, comprising a drive shaft having a shoulder adjacent its inner end, a substantially frusto-conically shaped hollow shell of resilient material having its larger end open and its smaller end closed by an end wall, means for securing the shell at its small end to the said shaft for rotation thereby, said securing means comprising a cup-shaped element fitting about and engaged with the small end of the shell, a pair of clamping members, one having a screw threaded connection with the shaft within the cup-shaped element for clamping the latter against said shoulder, the other clamping member fitting within the shell against its end wall and having a tubular portion extending toward the shaft through an opening in said end wall, said first-named clamping member having a sleeve extending into the tubular portion of the other clamping member beyond said shaft, and a fastening element extending into the sleeve through the clamping member in the shell, said fastener having screw-threaded connection at one end with the sleeve beyond the shaft and bearing at its opposite end against the clamping member in the shell for clamping said clamping member in the shell and the shell in the cup-shaped element, and a layer of surfacing material on the outside of the shell and secured thereto at its small end.

HERTHA CONEY,
Administratrix of the Estate of John Coney, Deceased.