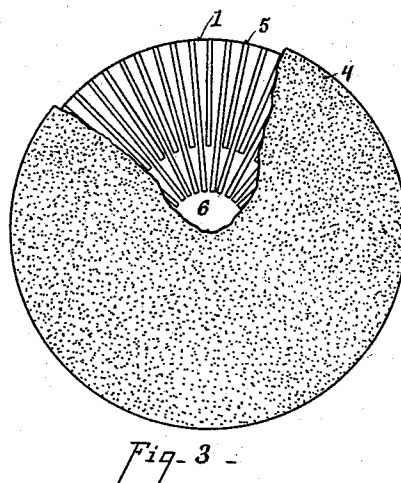
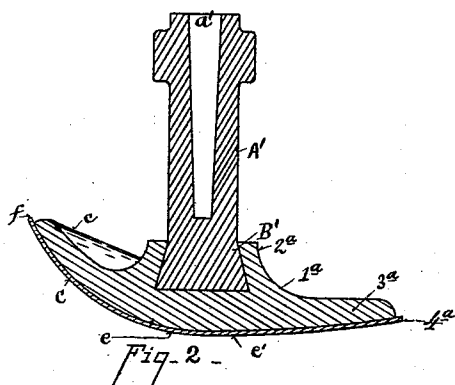
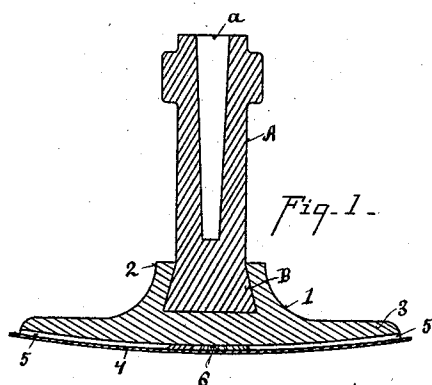


(No Model.)

S. ROSS, Jr.
ABRADING AND FINISHING TOOL.

No. 472,823.

Patented Apr. 12, 1892.



Witnesses

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UNITED STATES PATENT OFFICE.

SIMON ROSS, JR., OF CINCINNATI, OHIO.

ABRADING AND FINISHING TOOL.

SPECIFICATION forming part of Letters Patent No. 472,823, dated April 12, 1892.

Application filed June 6, 1891. Serial No. 395,349. (No model.)

To all whom it may concern:

Be it known that I, SIMON ROSS, JR., a citizen of the United States, and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Abrading and Finishing Tools, of which the following is a specification.

The object of my invention is, first, to provide means for buffing, abrading, or polishing plain and irregular surfaces by means of the yielding flexible disk to which the polishing or abrading disk is glued or cemented, which will yield under pressure to conform to the irregular shapes operated upon by the finishing-tool without detaching the abrading or polishing material cemented to the working surface. This has hitherto been accomplished by supporting a flexible disk—such as felt—with a backing of a stiffer material, and so connecting the abrading or buffing material that it will yield or crawl upon the face of the disk; but such devices have a limited capacity to conform to irregular shapes.

Another object of my invention is to provide a disk of such shape and material that the abrasive buffing or polishing material which is imposed directly upon one side, of paper or cloth, can be attached to the surface of the disk by glue or cement applied to the opposite surface and directly attached to the base of the india-rubber disk, which is sufficiently elastic to allow the lower surface of the disk to be retained in position by the glue or cement, the disk yielding above the surface and conforming to irregularities without loosening the material cemented thereto, all of which will be fully set forth in the description of the accompanying drawings, making a part of this specification, in which—

Figure 1 is a sectional elevation of my improved disk. Fig. 2 is a similar view of a modification, showing the position of the pad when working on concave surfaces. Fig. 3 is a bottom plan view showing a section of the finishing material applied to the disk.

My invention is adapted to be applied to a rotary spindle or shaft so constructed that the tool may be applied to the surface to be worked upon, such as doors, moldings, car-

riage-wheels, soles of boots and shoes, and various other articles or irregular shapes desired to be sandpapered, buffed, or polished.

A represents a shank, having the taper hole *a* formed in the center thereof and adapted to fit a taper spindle of the usual form.

B represents the foot of the shank, which is enlarged to form a head.

1 represents a flexible disk, which is preferably of rubber and provided with the socket-shaped boss 2, which will yield and allow the head B of the shank to be inserted therein, and its retractile force assists in holding it in position. Cement may be applied to more firmly attach the socket 2 to the head B. The working portion of the disk is indicated by the numeral 3, and this portion is made to project a sufficient distance beyond the boss or base 2 that it will yield under pressure and turn up, as indicated by the letters *c c*, Fig. 2.

In the construction exhibited by Figs. 1 and 3 the lower surface of the disk, when made of rubber, is formed with a series of radial ribs 5, having flat faces, to which the finishing material 4 is cemented. The center of the disk is provided with a recess 6.

In the modification, Fig. 2, the shank A', with its foot B' and tapering hole *a'* and the socketed boss or base 2^a and working portion 3^a of the disk 1^a, is constructed the same as described with reference to Fig. 1; but the lower surface of the disk is smooth or ribless and the finishing material 4^a is cemented to this smooth surface. The ribbed construction of the disk, however, as illustrated in Figs. 1 and 3, is desirable, in that the cemented material can be readily stripped off and a new piece applied without the necessity of cleaning, scraping, or soaking the disk. The construction of the disk with ribs 5, as in Figs. 1 and 3, is also desirable, in that the ribs form recesses or cavities through which air can pass to facilitate the setting of the cement.

By making the elastic disk thin and cementing the finishing material directly thereto the outer working portion when bent up has the same distance or length between the points *e f* as the unbent or unstrained portion between the points *e' f'*. The bending of the disk imposes no unequal strain upon any por-

tion of the finishing material; but this strain is distributed over the whole face of the disk. Consequently there is little or no liability of loosening the cemented material. As the disk is under rapid rotation, its entire surface is successively assuming the position indicated by the bent portion between the points *e f* when working in recesses, and the disk resumes its normal position, as indicated, between the lines *e' f'* as the disk leaves the work. If, therefore, there is any appreciable unequal strain upon the finishing material, it will rapidly loosen or become detached.

When the disk is made of india-rubber, it is both highly flexible and elastic. It is necessary in order to attach the finishing material to it to provide means for holding it under pressure and in a rigid position while under pressure until the cement or glue is set. The means for accomplishing this constitutes the subject-matter of a separate application for Letters Patent filed December 5, 1891, Serial No. 414,142.

Another advantage arising from the use of material glued directly to the face of the yielding disk is that the material is held firmly in position and lasts much longer than when fastening devices are employed to hold it on the disk, and it lasts much longer than material which crawls or moves upon the surface of the disk.

Having described my invention, what I claim is—

1. A buffing or finishing tool consisting of an elastic disk having its central base portion secured directly to a shank and provided on its working face with a covering of abrasive or finishing material cemented directly thereto, the radially-extended working portion of said disk being adapted to bend and yield to the irregularities of the surfaces to be buffed or finished without straining or loosening the abrasive covering, substantially as specified.

2. A buffing or finishing tool composed of a shank, a radially-projecting rubber disk having its central base portion secured directly to the shank and provided on its working side with a series of radial ribs having flat faces, and a covering of abrasive or finishing material cemented thereto, the radially-extended working portion of said disk and its covering being adapted to conform closely to the hollows and irregularities of the surface to be buffed or finished without straining or loosening the said covering, substantially as set forth.

In testimony whereof I have hereunto set my hand.

SIMON ROSS, JR.

Witnesses:

T. SIMMONS,
C. W. MILES.