MAKING A DISHED POLISHING BUFF

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Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

Fig. 6

Fig. 7

Fig. 8

Wool

Adhesive

Cotton Duck
This invention relates to making power driven buffing pads of the wood pile type and particularly to the formation of the peripheral portion thereof.

Such pads, while flexible, have usually been made in disc form and each backed with a flexible duck or canvas sheet having a relatively hard edge. In using the buff to come into contact with the work surface and instantaneously great care is taken, the rapidly rotating hard edge may come into contact with the work surface and instantaneously break away. FIG. 3 is a vertical sectional view of FIG. 2. FIG. 4 is a vertical sectional view of the pad and of the means by which the vacuum is applied to the pad during the initial or pre-drying operation. FIG. 5 is an elevational view of the assembled partly dried and still moist pad showing the trimming operation. FIG. 6 is a top plan view of FIG. 5. FIG. 7 is a vertical sectional view showing the trimmed pad being shaped at its edge portion while being subjected to vacuum, and the central portion dried oppositely. FIG. 8 is a fragmentary vertical sectional view of the finished dried and permanently set dished edge portion of the pad, and the similarly set central portion.

In the embodiment of the invention illustrated herein, the wood pile or tufts 10 are stitched to the initially oversize front flexible fabric sheet 11, of cotton duck, canvas or the like, leaving the peripheral part of said sheet bare of tufts (FIGS. 2 and 3). The similar rear backing sheet 12, of initially lesser diameter than the sheet 11, is adhesively secured to the sheet 11 by means of a suitable viscous adhesive 13 of the moisture carrying formulation which is flexible when dry and set and which is preferably, though not necessarily, resistant to dry cleaning solvents. No adhesive is applied to the excess margin 14 of the sheet 11. The reinforcing central washer 15 is adhesively secured to both sheets 11 and 12, both of the sheets and thew washer having registered perforations at central attaching hole 16 of the assembly and by means of which the pad is secured to the head of a polishing machine.

It is desirable, before trimming the sheets to size, to dry the adhesive between the sheets which have been made wet by the absorbed moisture in the adhesive. The preliminary drying is carried out under vacuum as best seen in FIG. 4 and has advantages which materially aid in the permanent shaping of the edge portion of the pad. The untrimmed pad is inserted into the plastic bag 18 of flexible air-tight material, through the normally open mouth 19 at one end 20 of the bag. The other end 21 is partially closed and communicates with the exhaust pipe 22 through which air is withdrawn from the bag by means of a suitable vacuum pump not shown. When the mouth 19 of the bag is temporarily closed as by the weight 23 and the air is withdrawn from the bag, much of the moisture is also withdrawn from the adhesive 13 to make it more viscous. Some of the moisture from the adhesive penetrates and is forced into and retained in the fibers of the sheet and maintains the sheets moist enough to permit the relatively easy shaping thereof later. At the same time, the adhesive is still wet and is forced by the atmospheric pressure on the bag, into the interstices of the fabric sheets to coat interior areas of the fibers thereof.

For long-drying adhesives which are highly resistant to dry cleaning solvents, the preliminary drying period may be as high as 45 minutes at room temperature. However, for adhesives of the latex type drying quickly but not resistant to such solvents, the preliminary vacuum drying step just described may be omitted and pressure applied to the sheets.

Before the adhesive has set and while it is still moist enough to permit manual sliding of the sheets to some extent over each other, the succeeding operations of trimming, adhesive-thickening and edge shaping are performed. As shown in FIGS. 5 and 6 the marginal portion of the sheet 11 as well as a small part of the sheet 12 margin, are simultaneously trimmed off as by means of the reciprocating blade 27, while the sheets are still flat. The diameter of the thus trimmed flat sheets is the same for both, but is greater than the final diameter of the finished dried sheets of the shaped pad.

The assembled and trimmed flat pad 28 is now ready for shaping. It is placed on the wooden form 29 with the rear sheet 12 in contact with the top of and overlapping
the form. The top edge portion 30 of the form has the desired convex and generally spherical curvature. The form and flat pad are inserted into the bag 18, the mouth of the bag then closed and air exhausted therefrom. Atmospheric pressure on the bag is transmitted to the pad and forces the projecting peripheral portion thereof downwardly and inwardly against the surface of the form to shape the pad into the desired dished form. Since at this point, the adhesive, though still wet, has approached the setting point, vacuum need be maintained only for a relatively short time, or about 15 minutes at room temperature for the solvent resistant adhesive, heat being objectionable because the damp wool pile would be unavoidably distorted were it heated. The adhesive remains moist but thick enough to adhere well to the fibers, to be retained in the interstices of the fabric and to hold the pad in its dished form outside of the vacuum until drying is complete and the adhesive hardens.

It may be noted that while the sheets 11 and 12 are of relatively heavy and thick fabric, no wrinkling occurs at the dished edge part of the pad with the above described method of forming. When the extreme free edge 31 of the rear sheet 12 has been forced back into its final position in the pad, said edge is considerably reduced in diameter as are all parts of the spherical or dished edge portion to a decreasing extent in the direction toward the flat part of the sheet. However, the interstices between the fibers of the sheet are decreased in extent by the crowding together of such fibers, to compensate for the decrease in overall diameter of the pad assembly. Wrinkling is thereby avoided especially as the fibers are still somewhat damp and absorb some of the still moist adhesive and are also coated therewith. The front wool-carrying sheet 11, initially or when flat, being of the same diameter as the sheet 12, is bent around a curve of greater radius than that of the curve of the sheet 12 while the central body portions of both sheets remain in fixed contact. Consequently, the moist dished portion of the front sheet at 32 slides on the moist adjacent dished portion of the rear sheet during the shaping operation. The extreme edge 33 in its final position no longer coincides with the edge 31, there being an exposed relatively narrow margin 34 on the sheet 12 adjacent said edge 31. Such margin is covered with adhesive. Some of the wool tufts projecting from the sheet 11 are forced against the adhesive and cover and adhere to the marginal portion 34 and prevent any possible contact thereof with the work. During the end part of the forming operation, the cross sectional shape of the fibers of the fabric may be changed from generally circular to generally oval because the assembly in the shaped form is made of fibers with no need for assistance in this respect, the moisture not evaporating fast enough under the vacuum to be completely extracted prior to the setting of the adhesive. The formed assembly is removed from the vacuum bag and thoroughly dried until the adhesive becomes hard and retains its uniform shape.
(a) stitching a wool pile to the front face of a fabric sheet,
(b) adhesively securing said sheet to another fabric sheet by means of moisture-carrying adhesive therebetween,
(c) extracting enough of the moisture from the adhesive to shorten the setting time thereof,
(d) and shaping the edge portions of both sheets into rearwardly dished shape on and in contact with a form inside of a flexible bag subjected to vacuum and to atmospheric pressure on the outside of the bag until the setting point of the adhesive is closely approached.  

6. The method of claim 5, removing the buff from the bag and completing the drying of the adhesive.

7. The method of making a polishing buff comprising
(a) adhesive attaching together a wool-carrying fabric sheet and a second fabric sheet in face to face relation throughout with moisture-carrying adhesive therebetween,
(b) placing the sheets inside of a flexible bag,
(c) and extracting moisture from the adhesive and simultaneously applying atmospheric pressure to the sheets by subjecting the inside of the bag to vacuum to force part of the adhesive into the interstices of the sheets.

8. The method of claim 7, bending the edge portions of the sheets laterally rearwardly to dish the sheets in one direction while the bag is subjected to vacuum and simultaneously shaping the central portion of the sheets by depressing said portion laterally rearwardly to dish said portion in the opposite direction.

9. The method of making a polishing buff comprising
(a) stitching wool to the front face of the central part of an oversize fabric sheet leaving a marginal portion of the sheet free of wool,
(b) coating the central part of the rear face of the sheet and the front face of a similar smaller sheet with moisture-carrying adhesive,
(c) arranging the sheets coaxially with the adhesive therebetween,
(d) subjecting the assembled sheets and wool to vacuum thereby to extract part of the moisture from the adhesive, to force the adhesive into the interstices of the sheets and to draw the sheets together,
(e) trimming the sheets while generally flat simultaneously to the same diameter,
(f) forming the periphery of the assembled sheets into a dished shape by vacuum and atmospheric pressure while extracting a substantial part of the remaining moisture from the adhesive to impart a set to said periphery,
(g) and completing the drying of the adhesive after the assembled parts have been released from the vacuum.

10. The method of claim 9, and again trimming the edges of the sheets to make said edges coplanar.
11. The method of claim 9, and heating the dished assembly to complete the drying of the adhesive.

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