A. E. PFEIFFER.

METHOD OF MANUFACTURING POLISHING PADS OR DEVICES.

APPLICATION FILED OCT. 30, 1916.

1,216,489. Patented Feb. 20, 1917.

Fig. 1.

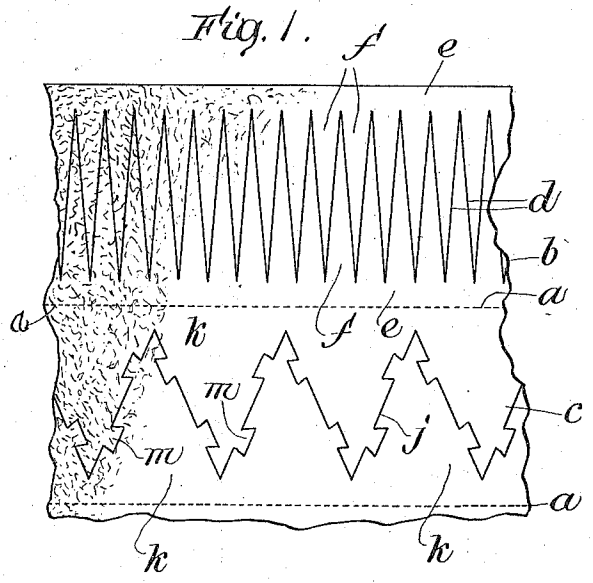


Fig. 2.

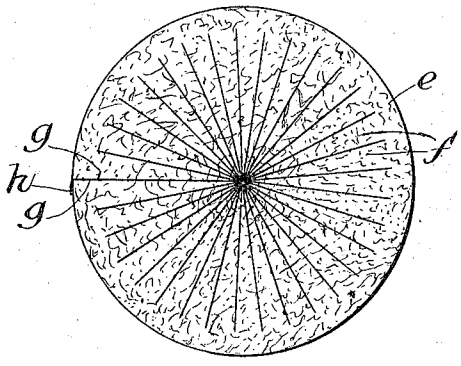


Fig. 3.

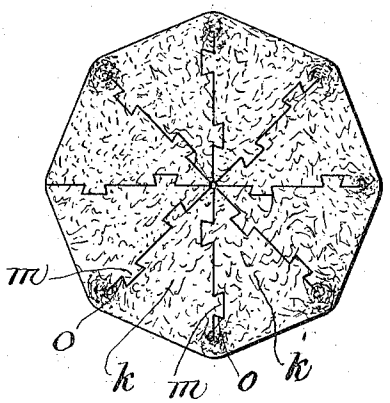
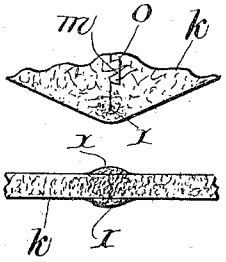


Fig. 4.



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METHOD OF MANUFACTURING POLISHING PADS OR DEVICES.

1,216,489. Specification of Letters Patent. Patented Feb. 20, 1917.

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To all whom it may concern:

Be it known that I, ALLEN E. PFEIFFER, a citizen of the United States, residing at Norwood, in the county of Norfolk and State of Massachusetts, have invented a new and Improved Method of Manufacturing Polishing Pads or Devices, of which the following is a specification, reference being had to the accompanying drawings, forming part thereof.

This invention has reference to an improved method of manufacturing polishing pads or devices.

As herein more specifically referred to the invention relates particularly to the manufacture of pads, adapted to be used for polishing, which are made from sheets or strips of material; one of the purposes of the invention being to avoid waste of such sheet material by so cutting and manipulating the same that substantially all of said material can be utilized.

Another object of the invention is to provide a pad manufactured from fibrous sheet material in which practically the entire periphery of the pad is constituted by continuous material and in which pad the relative arrangement of the fibers is changed from that of the sheet.

Another object of the invention is to improve the construction of pads made of felted material and particularly of polishing pads.

The invention consists in the improved method of manufacturing polishing pads as shall hereinafter be more fully described and pointed out in the claims.

Figure 1, represents a plan view of a piece of material to illustrate certain conditions and steps in the method of manufacture.

Fig. 2, represents a plan view of one of the improved pads made by this method.

Fig. 3, represents a similar view showing a pad of modified construction made by this method.

Fig. 4, represents respectively enlarged plan and edge views of fragments of a pad to illustrate one of the steps of manufacture.

Similar characters of reference designate corresponding parts throughout.

For the purpose of illustrating the present invention, and without thereby limiting the same, reference will be made to the invention as applied to a pad or pads made from a previously manufactured sheet of felt or felted material; said pad being adapted for use as a polishing device and particularly as a polishing pad or device for plate glass polishing machines in which the pads may be of considerable size, sometimes approximately a foot or more in diameter.

In the manner of manufacturing pads of this nature, previous to my invention, the fibrous material was manufactured in sheets or strips of considerable thickness by the ordinary felting processes and from these sheets or strips of material were cut circular disks to constitute the pads, the waste material between the circular outlines of the adjacent disks or pads, constituting a considerable proportion of the previously manufactured sheet or strip, was then returned as waste and was necessarily reworked, passing again through all stages of manufacture before it could again be utilized for the making of pads.

In carrying the present invention into practice to avoid waste of material and to provide an improved pad I take a sheet or strip of material of suitable dimensions and divide the same on lines indicated by lines *a*, *a* Fig. 1 into strips *b* and *c* the length of which is indeterminate but the width of which is preferably somewhat greater than one half the diameter of the proposed pad. I now take strip *b* and divide the same into two equal parts by the back and forth diagonal cut *d* spaced from the edges of said strip *b* whereby I provide two continuous longitudinal margin members *e*, *e* having projecting therefrom along one side the series of tapering members *f*, *f* having angularly extending edges. I next take one of said strips and form or shape the same into the disk shown in Fig. 2 the end edges of the strip being brought together as at *g*, *g* and secure them in that position by means of a tape *h* attached by adhesive to the peripheral edge of said disk.

In some cases the rearrangement or readjustment of the fibers at the junctures of the tapering members *f*, *f* when the strip is bent to form the disk shown in Fig. 2 results in the upsetting, buckling or thickening of the disk at these points of juncture somewhat as is shown in Fig. 4 at *x* and in such cases I apply pressure to such points to compress the upset material. In such bending of the strip from the straight to the curved

direction to constitute the disk or pad shown in Fig. 2 the fibers of all of the tapering members *f*, *f* are rearranged or changed as to their relative positions and said members *f*, *f* which, in the disk, extend radially toward a common axis, tend to effect an improved polishing action.

The modified form of pad shown in Figs. 3 and 4 is produced by taking one of the strips (*c*) into which the sheet of material is divided and dividing said strip *c* into two equal parts by the zigzag line *j* so that a series of oppositely extending tapering members *k*, *k* are provided on the continuous margins *l*, *l* and, at the same time, so directing said line of cutting *j* that the edges of said members *k*, *k* are furnished with complemental engagements *m*, *o*. When these strips of modified form are bent to form disks said complemental engagements *m*, *o*, of the respective members *k*, *k* are interlocked as shown in Fig. 3, and the material X at the juncture of the members *k*, *k* is compressed.

In both of said constructions the margins of the disks are continuous except for a single line of juncture which substantially continuous margin is thought to be a desirable feature.

By the method of cutting the material and arranging it in disk form as above described all of the material is utilized and the resulting pad is better adapted for polishing purposes in view of the presence of the radial members *f*, *f* or *k*, *k* combined with the continuous margins embracing said members which margins, in the movement of the pad relative to the surface of the material under operation, act against all parts of said surface.

While I have herein referred to pads made of felt or felted material it is obvious that this invention is not limited to the use of such material.

Having thus described my invention I claim as new and desire to secure by Letters Patent—

1. That method of manufacturing approximately circular pads which consists in taking a strip of material of less diameter than the proposed pad, dividing said strip longitudinally thereof into two similar parts having continuous margins and members projecting from said margins, and arranging said parts to constitute disks.

2. That method of manufacturing approximately circular pads which consists in taking a strip of material of less diameter than the proposed pad, dividing said strip longitudinally thereof into two similar parts having continuous margins and tapering members projecting from said parts, and arranging said members in radial relation with said margin constituting the periphery of said pad.

3. That method of manufacturing approximately circular pads which consists in taking a strip of material of less diameter than the proposed pad, dividing said strip longitudinally thereof into two similar parts having continuous margins and tapering members projecting from said parts, arranging said members in radial relation with said margin constituting the periphery of said pad, and reducing material raised above the surface of said pad in such operation to said surface.

4. That method of manufacturing pads which consists in taking a strip of material continuous along one margin, and shaping and consolidating portions of said strip to constitute a disk having substantially flat faces.

5. That method of manufacturing pads which consists in taking a strip of material continuous along one margin, and having members projecting from said margin and bringing said members into related position to constitute a substantially flat disk.

6. That method of manufacturing pads which consists in taking a strip of material continuous along one margin, winding said margin, and bringing together other portions of said strip in such winding to close substantially the entire area embraced by such margin.

ALLEN E. PFEIFFER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."