(No Model.) 2 Sheets—Sheet 1.

T. F. LEMASSENA.

POLISHING AND GRINDING WHEEL.

No. 341,925. Patented May 18, 1886.

Fig. 1.

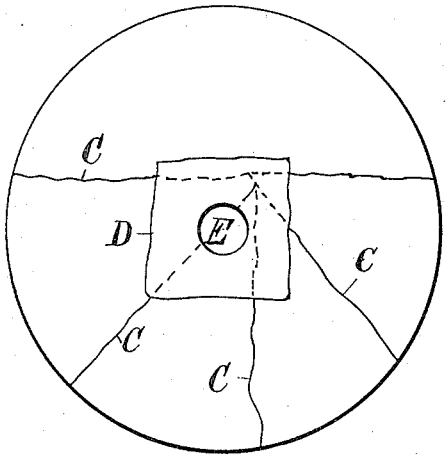
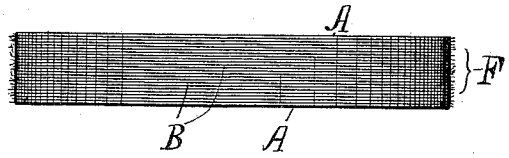


Fig. 2.



Attest:
N. C. Dean
Henry J. Theberath,

Inventor.
Theodor F. Lemassena, per
Crane & Mullen, Attys.

(No Model.) 2 Sheets—Sheet 2.

T. F. LEMASSENA.

POLISHING AND GRINDING WHEEL.

No. 341,925. Patented May 18, 1886.

Fig. 3.

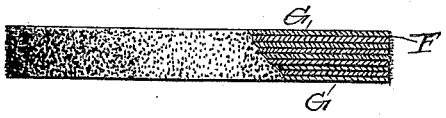
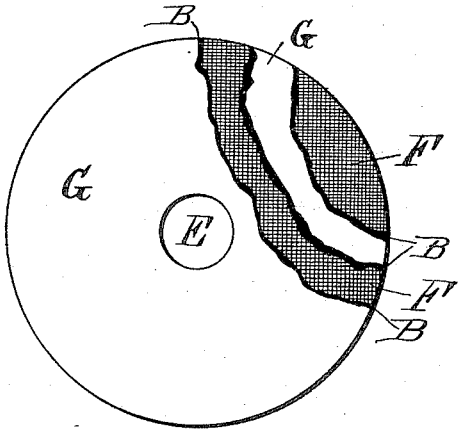


Fig 4.



Attest;
L. Lee.
Henry J. Theberath

Inventor.
T. F. Lemassena, per
Cranel Miller, attys

UNITED STATES PATENT OFFICE.

THEODORE F. LEMASSENA, OF NEWARK, NEW JERSEY, ASSIGNOR TO LILLIAN LEMASSENA, OF SAME PLACE.

POLISHING AND GRINDING WHEEL.

SPECIFICATION forming part of Letters Patent No. 341,925, dated May 18, 1886.

Application filed September 12, 1885. Serial No. 176,954. (No model.)

To all whom it may concern:

Be it known that I, THEODORE F. LEMASSENA, a citizen of the United States, residing in Newark, Essex county, New Jersey, have invented certain new and useful Improvements in Polishing and Grinding Wheels, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The object of this invention is to produce a polishing or grinding wheel which can be soaked in water without injury; and my construction consists in forming the substance of the wheel of flexible sheets of leather in the form of circular or segmental pieces, alternated with and secured together by layers of india-rubber in a pure or unvulcanized condition, the whole wheel being finally vulcanized, to harden the india-rubber and to unite the layers of leather very firmly together.

In the process of manufacture I subject the wheel to heavy pressure before vulcanizing, to bring the several layers of leather into the closest possible contact, and thus produce a texture resembling solid leather as closely as possible in the finished product.

In practice I form the wheel by first cutting out of a sheet of thin flexible split leather as many circular pieces or disks as can be obtained, of the diameter of the proposed wheel. These pieces are then laid upon one another alternately with layers of india-rubber moistened with naphtha or other suitable solvent to make the same adhere together, the remainder of the sheet of leather being cut into sectors and segments of various shapes and fitted together between the several disks, and cemented thereto by the moistened india-rubber, as just described. This method of construction will be understood by reference to the annexed drawings, in which—

Figure 1 is a plan of the wheel when partly laid up at the level of such joined pieces. Fig. 2 is a view of the periphery, showing the alternate layers of leather and india-rubber. Fig. 3 shows the periphery of a wheel having layers of cotton therein, the rim being partly broken away to exhibit the construction; and Fig. 4 is a side view of the same with a part of the side broken away in like manner.

I prefer to finish each outer flat face of the wheel with an entire disk of the thin leather, so as to bind the inner parts together securely when in use, although all the smaller pieces of leather may be lapped upon one another to be firmly joined at their respective edges.

In the drawings, A A are the flat outer surfaces of the wheel; B, the lines showing the several layers of india-rubber on its periphery, the segmental or divided pieces of leather, and D central pieces, shown of square shape, and applied to the center of the other divided pieces to form a more solid eye at the center, as E. Such pieces D may be made of leather or of paper, as hereinafter described. As the wheel is liable to considerable wear at this point by the application of the arbor and repeated removals of the same, I prefer to use pieces of hard paper at the center, as at D, interposing them among the layers of leather in any desired degree to form a harder and stronger eye than the leather alone would produce.

I have also devised a means of partly absorbing the india-rubber and making it less perceptible at the rim of the wheel, while improving its properties as a polishing-wheel, by inserting a disk of cotton fabric, as cheese-cloth, with certain layers of the india-rubber. The pressure to which the wheel is subjected before vulcanizing forces the rubber through the cheese-cloth into close contact with the adjacent faces of the leather, and thus cements them together effectually, while the fibers of the cloth wear off slowly when exposed at the periphery of the wheel, and serve to increase the polishing effect where they project, as shown at F in Fig. 2. Fig. 3 shows such a construction fully, G being the layers of leather, and F the layers of cheese-cloth or other suitable fabric, the layers of india-rubber in the drawings not appearing distinct from such fabric, because the substance of the india-rubber in such construction is forced through the cloth, and, so far as its location in the wheel is concerned, apparently occupies the same place. In applying such fibrous cloth between the layers of leather the india-rubber is considerably softened by suitable solvents, so as to be largely absorbed by the cloth; but such solvents are entirely dissipated in the drying and vulcanizing of the

wheel, and the rubber exercises the same functions as when the cloth is not present, by cementing the opposed layers of leather together and excluding moisture from between the same, so that the wheel can be immersed in water without injury. The view in Fig. 4 shows the same layers alternating with one another where the wheel is broken away to expose them.

The constitution of the wheel especially adapts it for use where it is necessary to attach emery or other polishing or grinding materials to the surface of the wheel by means of glue or other cement soluble in water, as a great difficulty has heretofore existed in removing such material from the surface of the wheel by soaking without injury to the body of the wheel itself.

Where the wheel is made of layers of wood or leather glued together, or of leather glued upon wood, the moisture applied to the rim of the wheel is obviously injurious to the other glue joints therein, while my wheel is so protected from moisture by the inclosure of all its layers, except the outer ones, between those of india-rubber that it is entirely impervious to moisture, and may be soaked for hours in water, to remove anything attached by glue to its surface, without being injuriously effected at any point. For appearance' sake, I finish the outer flat faces with a thin facing of leather, making the whole structure appear like solid leather, except where the layers of india-rubber appear in fine lines upon the periphery; but such outer facing is not affected by soaking in water, as the rubber which unites it to the body of the wheel is impervious to water. With such water-proof construction the durability and convenience of removing the emery from the wheel to renew the coating are very greatly increased, as the worn-out grinding material can be very quickly removed from the surface of the wheel by immersing it wholly in water, and the wheel can then be quickly dried, to glue a new coating thereon, as the substance of the wheel cannot be permeated with moisture, and only the surface requires to be dried to apply the new grinding-face thereto. The outer flat faces could obviously be coated with india-rubber in cases where only the periphery of the wheel is required to receive the glue and emery; but a part of my invention consists in devising a means of excluding moisture from the interior of the wheel, while the periphery, being formed of leather, retains the affinity for glue, which enables the emery or other abrading powder to adhere firmly thereto. It will be understood, therefore, that the leather surface is exposed where the emery is to be glued on, whether at the periphery or at either of the flat sides, and that the wheel can be made of conical form or with periphery of any required form, to receive the abrading material, and that the construction prevents all the damage inflicted upon a wheel when the spent coating is being picked off with pointed instruments, or when the body of the wheel is affected by moisture while soaking the glue and emery from the edge.

Having thus defined my invention, it will be readily distinguished from wheels made of leather disks united by glue and from the compositions formed by grinding or pulping the several ingredients together with cement or glue. I disclaim all such constructions, and limit my invention to the use of leather in such sheets as will yield readily to pressure, so as to fit closely together with the interlying rubber and form a compact mass of homogeneous character. As my wheel is especially adapted to have abrading material glued thereon, I claim its combination with such material as possessing new functions.

What I claim is—

1. A water-proof polishing and grinding wheel having layers of flexible leather and india-rubber united by vulcanizing, substantially as and for the purpose set forth.

2. A water-proof polishing and grinding wheel provided with layers of flexible leather and india-rubber, and having pieces of paper applied at the center, to strengthen and harden the eye of the wheel, the whole being united by vulcanizing, substantially as and for the purpose set forth.

3. A water-proof polishing and grinding wheel provided with layers of flexible leather and india-rubber, having the center hardened by the insertion of paper, and having layers of cotton fabric interposed in the structure, the whole being united by pressure and vulcanizing, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

THEODORE F. LEMASSENA.

Witnesses:
HENRY J. MILLER,
THOS. S. CRANE.