Nov. 26, 1935. L. K. HEINRICH 2,022,199

ABRASIVE PRODUCT

Filed July 2, 1934

Fig. 1.

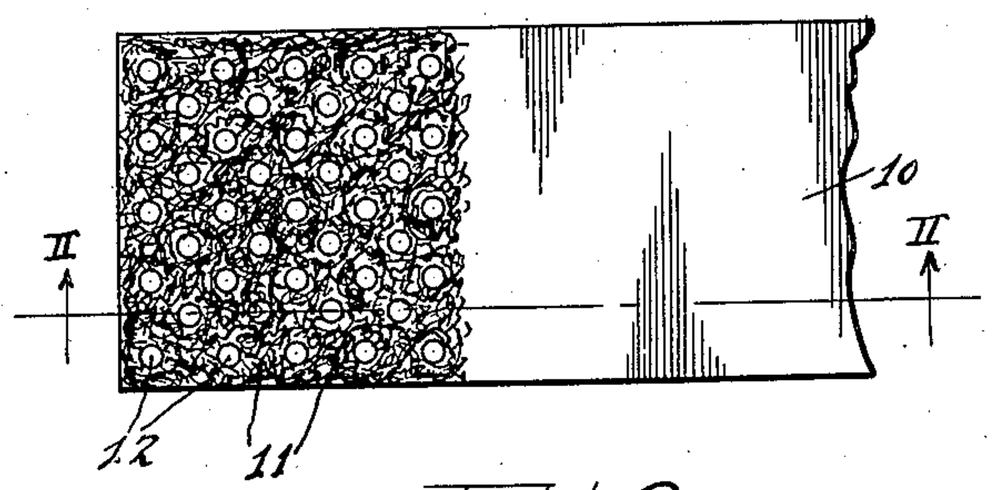

Fig. 2.

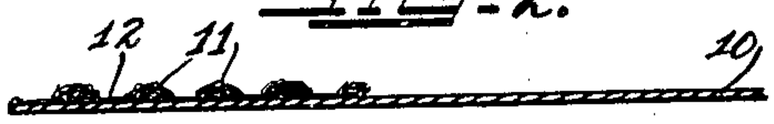

Fig. 3.

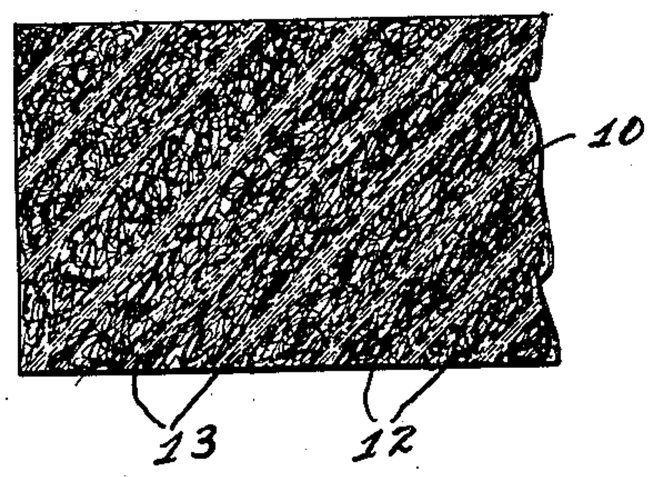

Fig. 4.

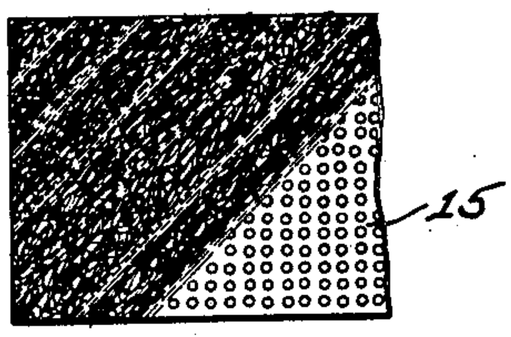

Fig. 5.

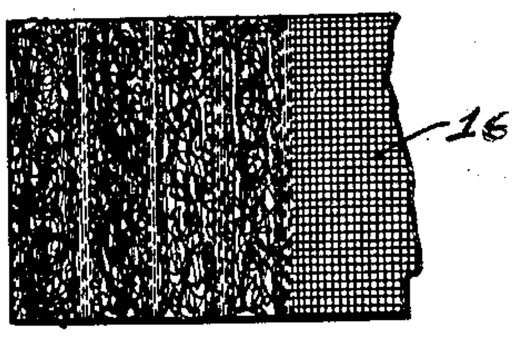

Fig. 6.

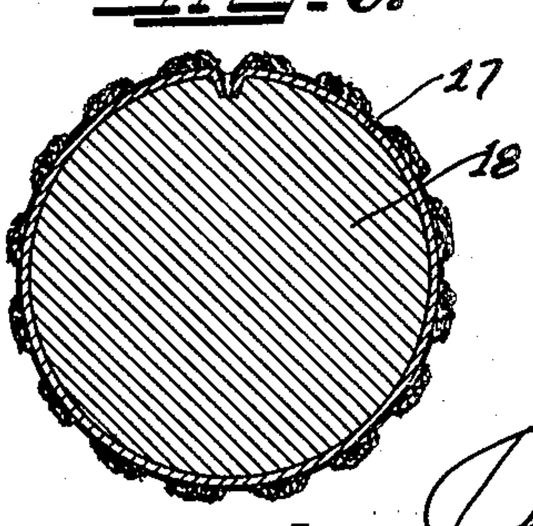

Fig. 7.

Inventor

Ludwig K. Heinrich.

by Charles O'Neill Attys.

Patented Nov. 26, 1935 2,022,199

UNITED STATES PATENT OFFICE

2,022,199

ABRASIVE PRODUCT

Ludwig K. Heinrich, Chicago, Ill., assignor of one-half to Edmund R. Aller, Gary, Ind.

Application July 2, 1934, Serial No. 733,379

4 Claims. (Cl. 15—209)

My invention relates to abrasive products involving particularly steel or other metal wool and the general object of the invention being to provide improved means for supporting such wool so that it may be more conveniently and efficiently applied for abrading purposes.

The prior art discloses the securing of the wool, by sewing or otherwise, to textile material such as cloth, or the riveting or stapling of the wool to sheet metal or other metallic backings. However such backing arrangements are not efficient nor economical.

I have found that steel wool or other metal wool can be accurately, uniformly, and economically secured to metal backing by welding, as for example by spot welding or by seam or line welding, and that the resulting product facilitates the application of the wool for abradant or cleaning purposes, and that there is less loss of wool, and that finer and more accurate work can be accomplished.

In accordance with my invention the wool can be readily and uniformly secured by welding to sheet metal backings of different forms and of different gauges, or can be welded to perforated sheet metal backings or to metal backing in the form of wire mesh fabric or gauze.

By securing the wool by means of welding, the back of the supporting sheet remains perfectly smooth so that the sheet may be readily applied for service in abrading machines as for example to the rollers of floor abrading machines. The product will be as flexible and as applicable as sandpaper or emery cloth and can be used with equal facility in the same manner that sandpaper or emery paper or emery cloth is applied and used.

Referring to the drawing,

Figure 1 is a plan view of a length of sheet metal to which steel wool is shown applied by means of spot welding;

Figure 2 is a section on plane II—II of Figure 1;

Figure 3 shows the wool applied to a sheet metal backing by line welding, with the welding lines extending diagonally;

Figure 4 shows the wool welded to a backing in the form of perforated sheet metal;

Figure 5 shows the wool applied to a backing in the form of wire mesh fabric or gauze;

Figure 6 shows a metal sheet with the wool welded thereto and with the sheet applied around the roller of an abrading machine; and

Figure 7 is a section showing a normally heavy layer of wool compressed to a thinner layer and with the superposed wool threads lightly welded together so as to form wool cloth or felt.

Referring to Figure 1 the wool may be secured to a continuous band or ribbon 10 of sheet metal such as steel and of the desired gauge. The wool 11 is spread over this sheet in a more or less fluffy condition and to uniform depth and then the plate with the wool thereon is fed through a welding machine for spot welding as indicated at 12, the wool at the welding spot being compressed against the backing sheet while the wool between welding spots remains more open and separated to form the abrading surface. The welding spots may be arranged as desired as to distance apart and figure. Under proper electrical manipulation the back of the sheet will remain smooth and there will be little or no burring or burning at the welding spots on the top face of the sheet so that the wool between spots may be worn down practically to the backing sheet without any loss of wool and without danger of scratching or marring the surface worked on.

In the arrangement of Figure 3 the welding is along lines 13 extending diagonally of the backing strip 10 with the wool between the welding lines arranged diagonally so that the abrading will resemble the operation of a file or rasp.

Figure 4 shows the wool applied to a perforated sheet metal band or sheet 15 with the wool line welded thereto.

Figure 5 shows the wool applied on a backing in the form of wire mesh fabric or gauze fabric 16, and the wool may be secured by welding lines extending at right angles transversely of the band or sheet.

Figure 6 shows a metal sheet 17 with the wool welded thereon and applied around a roller 18 for use in abrading machines as for example the well known floor abrading machines. The sheet metal sheet with the wool welded thereto can be as readily applied as sandpaper or abrasive cloth generally used on such abrading machines, as the back of the metal sheet is entirely smooth.

Figure 7 shows the formation of cloth or felt from steel or other metal wool. A uniform layer of the wool of comparatively large depth is compressed to form a thinner layer of the desired gauge and this thinner layer is passed between the terminals of a welding machine for just sufficient current flow to lightly weld the superposed threads in the strip together and the welding may be spot welding or line welding. When the wool or felt is thus welded, no backing is necessary, and the wool cloth or fabric resulting from the welding can be efficiently used for abrading or

cleaning purposes without a backing, or if desired, it could be tacked or otherwise secured to a backing, and could also be readily applied around the rollers of abrading machines, or could be applied as an abrading facing to rotary discs.

Having described my invention, I claim as follows:

1. An abradant structure adapted for use on the rollers of floor abrading machines, said structure consisting of a flexible metal sheet having an upper surface, and a layer of steel wool in a fluffy condition laid flat on said surface, fibers of the wool being fused to the upper surface of said sheet.

2. A flexible rasp-like abradant structure adapted for use on the rollers of floor abrading machines, or the like, said structure consisting of a flexible metal strip having an upper surface, and a layer of steel wool in a fluffy condition laid flat on said surface and pressed at intervals along lines extending crosswise between the longitudinal edges of said strip fibers of said wool being fused together and to the upper surface of said strip by welding on said crosswise extending lines.

3. An abradant structure adapted for use on the rollers of floor abrading machines, said structure consisting of a flexible metal sheet having an upper surface, and a layer of steel wool in a fluffy condition laid flat on said upper surface, said layer of steel wool being secured to said upper surface by fusing strands of the wool to the upper surface of the metal sheet in passing an electric current through strands in electrical circuit connection with the sheet.

4. A flexible steel wool felt or cloth for use on the rollers of floor abrading machines or the like, and without necessitating weaving or spinning of the fibers of said felt, said steel wool felt consisting of an elongated pad of steel wool compressed and having fibers thereof fused together at frequent intervals.

LUDWIG K. HEINRICH.