July 19, 1938. A. W. L'HOMMEDIEU 2,124,114

BUFFING OR POLISHING WHEEL

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Fig. 1.

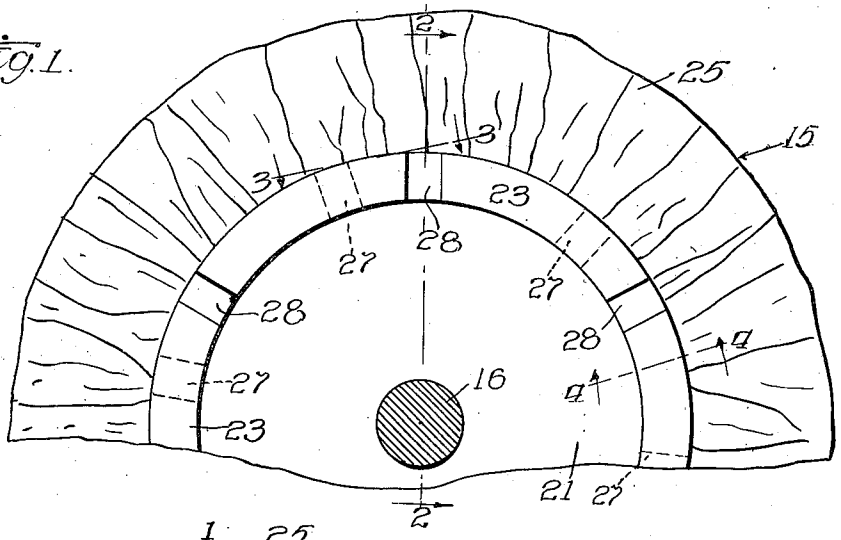


Fig. 2.

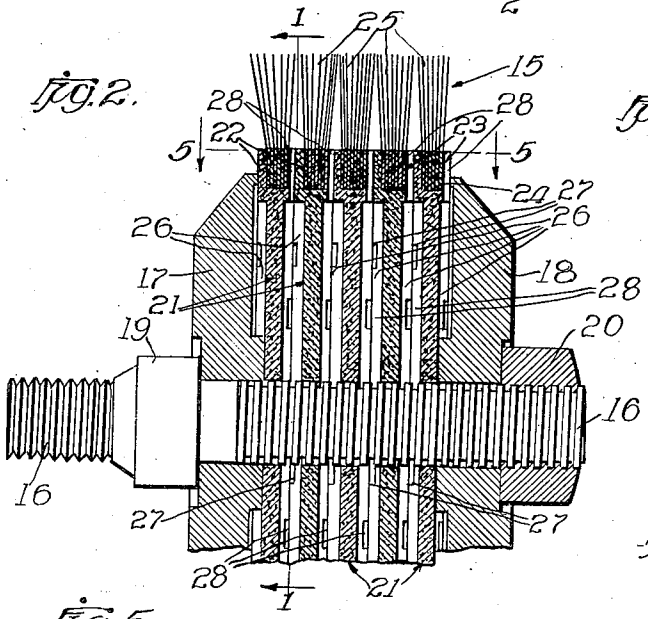


Fig. 3.

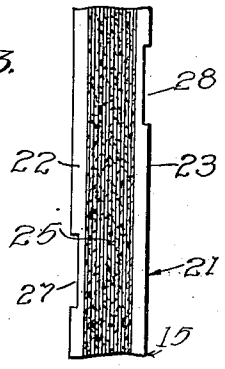


Fig. 4.

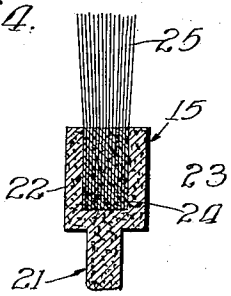
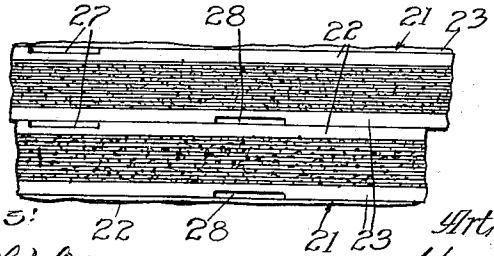


Fig. 5.



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Fig. 6

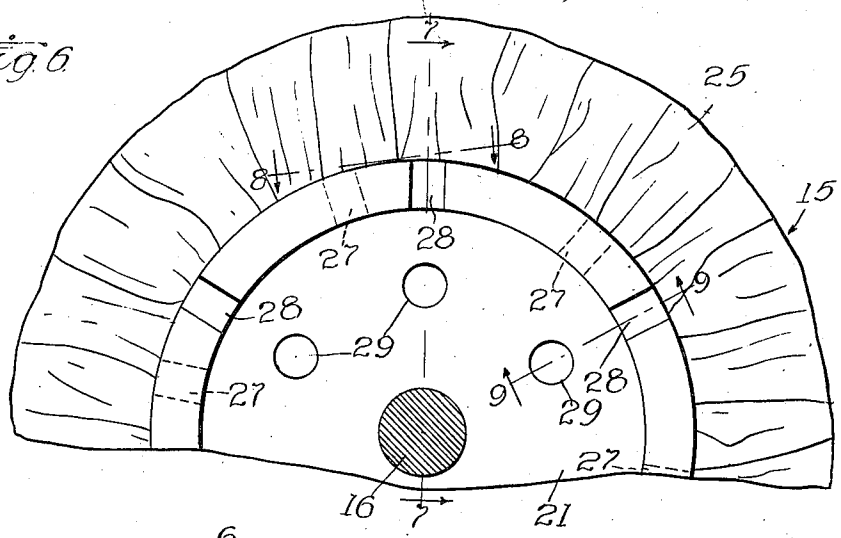


Fig. 7

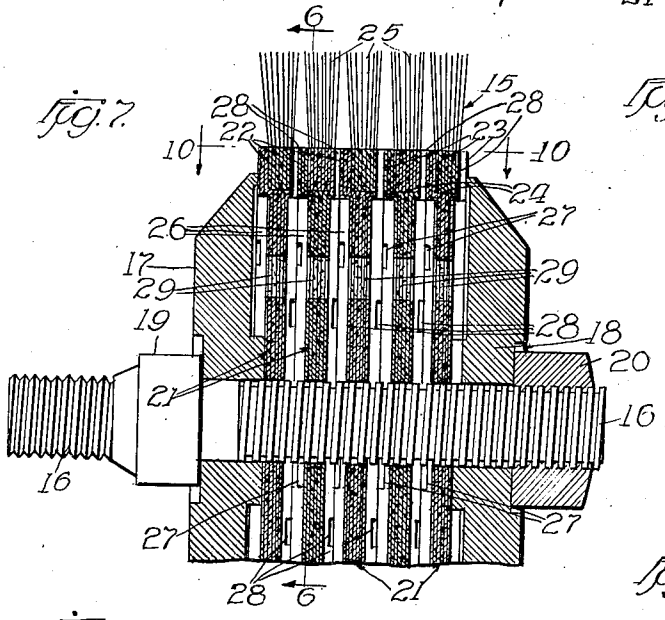


Fig. 8.

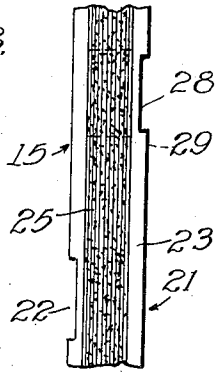


Fig. 9.

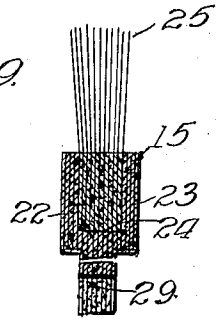
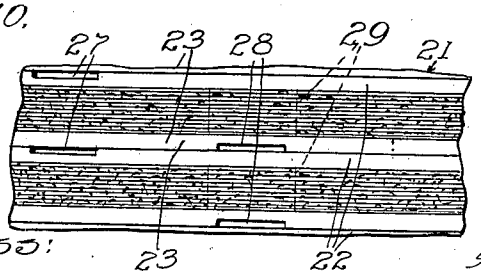


Fig. 10.



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Patented July 19, 1938 2,124,114

UNITED STATES PATENT OFFICE

2,124,114

BUFFING OR POLISHING WHEEL

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Application October 16, 1936, Serial No. 105,920

4 Claims. (Cl. 51—193)

The invention relates to a buffing or polishing wheel and particularly to a buffing wheel section which has a supporting center or hub which is a molded or cemented center or hub connected with the inner end portion of the buffing fabric or material in such a way that the outer peripheral portion of the center or hub and the inner portion of the fabric are mutually penetrated and impregnated by the molding material and form a unitary and integral body.

The prime object of the invention is to thoroughly impregnate the inner portion of the spiral strip of ruffled fabric used in making up the buffing or polishing wheel section so that the molding or plastic material used in connection with the making of the center piece or hub and flanges of the wheel section so thoroughly joins and cements the strip and the hub and its flanges together that they are a single and unitary structure, will adhere to each other and can not come apart or be separated in any way.

An important object of the invention is to form and join the entire center or hub of the buffing wheel section including the portion adjacent the shaft aperture with the outer peripheral portion thereof, which is impregnated with and forms a part of the inner portion of the fabric strip.

It is one of the objects of the invention to have the entire buffing wheel section with its center piece and the buffing fabric so joined together that the whole buffing wheel section is a single unit and the user does not have to be concerned with fitting the fabric to a separate center or hub to be placed on the wheel shaft.

It is a further object of the invention to construct the center portion or hub of the wheel section of such material that it can be molded and pressed in suitable dies and presses to make a firm and rigid center piece or hub which will be able to withstand the wear and tear and the strain to which it will be put to carry out the buffing or polishing operations.

Another object of the invention is to form the center piece or hub with air passages, some of the passages being radially arranged and others being co-axial with the wheel shaft by being extended through each of the hubs of the wheel sections of the buffing wheel.

It is another object of the invention to form, mold and cement the center piece or hub of the wheel section and the flanges of various materials as may be desired, such as cloth, duck, cardboard, fiber, wood, wool, canvas, leather or any other substance and that the cement or molding or plastic material which is used to penetrate and impregnate the various substances to make the center piece or hub and the flanges, may be made of soy bean, wood pulp, rubber, composition, bakelite, or other suitable substances and ingredients which materials are made, used and applied at suitable temperatures.

The invention will be further understood by reference to the accompanying drawings wherein the construction of the invention is shown and also a modification thereof, it being understood that I do not limit myself to the exact construction shown and illustrated, but in the claims hereinafter set forth, intend to cover all variations and modifications thereof.

In the drawings:—

Figure 1 is a side elevational view of a portion of the buffing or polishing wheel section of the invention on the line 1—1 of Figure 2.

Figure 2 is a vertical cross sectional view of a portion of the buffing or polishing wheel showing portions of wheel sections mounted on a shaft and held together with side plates or discs on the line 2—2 of Figure 1.

Figure 3 is a cross sectional view of a portion of the buffing wheel section on the line 3—3 of Figure 1.

Figure 4 is a vertical cross sectional view of a portion of the wheel section taken on the line 4—4 of Figure 1.

Figure 5 is a view partly in plan and partly in section of two wheel sections and small portions of adjoining sections on the line 5—5 of Figure 2.

Figure 6 is a side elevational view of a portion of a modified form of buffing or polishing wheel section showing co-axially arranged openings extending through the hub section of the wheel section on the line 6—6 of Figure 7.

Figure 7 is a vertical cross sectional view of portions of the modified buffing or polishing wheel sections held in place on a shaft on the line 7—7 of Figure 6.

Figure 8 is a cross sectional view of a portion of the modified wheel section on the line 8—8 of Figure 6.

Figure 9 is an enlarged detailed view of a portion of the modified wheel section on the line 9—9 of Figure 6.

Figure 10 is a view partly in elevation and partly in section of portions of two of the wheel sections with small portions of adjoining sections showing the modified wheel section on the line 10—10 of Figure 7.

Like reference characters in the various views of the drawings refer to similar parts in the structure.

The buffing or polishing wheel and its sections illustrated in Figures 1 to 5 of the drawings, show a plurality of buffing or polishing sections, generally designated 15, mounted on a shaft 16 and held closely together on the shaft by the supporting discs or plates 17 and 18, which in turn are held in place on the shaft by nuts 19 and 20. The shaft is preferably screw threaded and the discs 17 and 18 and the nuts 19 and 20 are screw threaded on the shaft 16.

Each of the wheel sections 15 is constructed with the center or hub portion 21, the bifurcated flange portions 22 and 23 and the buffing material 25. The flange portions 22 and 23 are molded and pressed in such a manner that they form the annular seat 24 between them.

The center portion or the hub 21 of the wheel section 15 and the flange portions 22 and 23 are integral. The flange portions 22 and 23 extend beyond the outer surfaces of the hub 21 so as to allow an annular air space 26 between each of the buffer sections and also between the outer buffer sections and the respective adjoining discs or plates 17 and 18. These annular air spaces 26 between the buffer sections are connected with the series of radial air passages 27 in the flange portion 22. The annular air spaces 26 are also connected with the series of radial air passages 28 radially arranged in the flange portion 23 but on the opposite side in the flange portion 22 containing the radial air passages 27.

These radial air passages 27 and 28, on opposite sides of the flange portions 22 and 23 are shown in the drawings as being set off from each other, that is, being out of radial alignment, but they could be arranged in radial alignment, if desired, but on opposite sides of the flanges.

The buffing or polishing material 25 may be of any suitable material such as cotton or wool cloth or leather, and is preferably one long strip of material suitably ruffled and joined together in sections, cut on the bias and spirally arranged in layers to the required thickness and secured within the flanges 22 and 23 and on the annular seat 24 formed between them.

It is essential in buffing or polishing wheels, to have a circulation of air between the buffing wheel sections and the fabric folds of the long spirally arranged strip. There is a circulation of air between the folds of the fabric strip 25 and also between the various sections in the annular air spaces 26 and in the radial flange passages 27 and 28 respectively, on each side of each of the flange portions 22 and 23 of the wheel sections 15.

The circulation of air set up in the air chambers 26, the radial passages 27 and 28 and the air passages in the folds of the buffing strip 25, cools the fabric portions of the wheel sections when the wheel is being rotated and is performing its work of buffing or polishing. It is well known that these buffing or polishing wheels are rotated at a high rate of speed and that unless there is some cooling arrangement, the buffing strip wears down rapidly and in fact may burn and become destroyed.

The center or hub portion 21 and the flange portions 22 and 23 may be of any preferred or desirable molding or plastic substance such as, soy bean, wood pulp, rubber, bakelite or other composition including a composition of rubber and cement in suitable percentages, which is molded and cemented in the form having the main body section 21 and the flange sections 22 and 23 and have the inner portions of the spiral buffing strip 25 laid within the two arms 22 and 23 of the flange.

The molding material may be supplied in sheet form, as powder, or a block of material, and is then prepared into a liquid or syrupy form or molten form and may be either a thin or heavy liquid or syrup. The molding or plastic material is poured into suitable molds or dies and is baked and cured at temperatures ranging from 200 degrees Fahrenheit up to 250 degrees Fahrenheit, and beyond in some cases, but the material is preferably baked at 240 degrees Fahrenheit and acts in the most satisfactory manner at that temperature. The material is used and applied in a warm condition. The molding and cementing material with the fabric or other material is put under pressure and pressed to the desired dimensions and thickness, thoroughly dried and prepared for use.

The molded main body section 21 and the flange sections 22 and 23 may be suitably strengthened and reenforced by various materials such as duck, cotton or wool threads, strips of cloth, paper or other material, and of suitable degrees of coarseness or fineness. The inner portion of the spiral strip 25 with its ruffled layers is molded with the arms of the flanges 22 and 23 so that the material of the inner portion of the strip becomes impregnated with and a unitary and integral part of the molded flange arms, thereby making the entire buffing wheel section a single structure composed of hub, flange and fabric section which can be handled and transported as a complete unitary structure and placed on the spindle or shaft upon which it is to be rotated and used.

In connection with the molding and cementing operation, it will be understood that in order to form the hub and the flanges and to cause the molding and plastic substance to penetrate and pass into the fabric or buffing material, it is necessary and essential that considerable pressure be exerted to cause the walls of the flange portions 22 and 23 to make a good connection and bond with the fabric, in other words, compressing the bonding material so that it penetrates into the cloth, passes between the fibers and material of the warp and the woof of the fabric, permeates them and makes a secure bond and binds the parts together.

Some of the structures used in connection with buffing or polishing wheels have separate hubs and separate elements. This is done away with by the invention by having the cloth held firmly and rigidly in the hub and flange sections by being a part thereof because of the molding operation.

The hub portion and the flange portions of the wheel section may also be made with sheets of material and layers or portions of material of suitable degrees of coarseness or fineness and also combining with them plastic materials susceptible of molding operations so as to effect a thorough bonding and cementing together of the hub and the flange portions and the inner portions of the fabric in the manner which has been described with relation to purely molding material and which need not be repeated here. A considerable pressure is also required in this form of structure, in order to cause the various portions, sheets or material which make up the center or hub, the flanges and the inner portions of the fabric, to make a good bond between them and supply a single, unitary, integral buffing wheel section.

In the wheel section shown in Figures 6 to 10 inclusive, there is disclosed a structure which is identical in all respects with that shown and disclosed in Figures 1 to 5 inclusive, of the drawings, except for the apertures extending through each of the wheel sections co-axial with the shaft of the wheel.

These co-axial or transverse apertures are numbered 29 and are preferably equally spaced in the center or hub section 21 and surround the shaft 16. The drawings do not show the complete number of these co-axial or transverse apertures because of lack of space, but they may be placed in position surrounding the shaft. It will also be understood that any desired number of these apertures may be placed in the hub section.

It will be seen that as the air circulates between the various wheel sections and passes in and out of the annular air chambers 26 and in and out through the radial air passageways 27 and 28 in the flanges 22 and 23 respectively, the air has a more free and unrestricted passage and circulation because of the apertures 29. Except, as the circulation of the air in the wheel of Figures 6 to 10 inclusive, is modified by the presence of the apertures 29 to cause a transverse flow of air through the various wheel sections, the flow of the air in both structures is identical through the chambers 26 and the various radial passageways 27 and 28 in the flanges 22 and 23 respectively. The air also flows through the folds of the fabric of the buffing material 25. Inasmuch as the construction and mode of operation of the modified structure is otherwise identical, a further detailed description is not considered to be essential and therefore will not be repeated.

What I claim and desire to secure by Letters Patent is:

1. In a buffing wheel section, the combination of a molded hub, an outwardly extending flange on said hub molded integrally therewith, an air space between said flange and the axis of said hub, buffing material, said hub and said flange being molded integrally with portions of said buffing material throughout the circumference of said flange, and radial air passages formed directly in the side surface of the flange connecting said air space with the exterior of said wheel section.

2. In a buffing wheel section, the combination of a molded hub, said hub being provided with two outwardly and laterally extending flanges molded therewith, said two outwardly and laterally extending flanges forming two air chambers between said hub and adjoining wheel sections, buffing material, said hub and said flanges being molded integrally with portions of said buffing material throughout the circumferential portions of said flanges and the inner circumferential portions of said buffing material, and radial air passages formed directly in the outer surfaces of said flanges and extending the entire radial distance of said flanges, and connecting said hub air chambers with the exterior of the wheel section.

3. In a buffing wheel section, the combination of a molded hub and buffing material, said hub being provided with two outwardly extending molded flanges, said hub, said flanges, and portions of said buffing material being molded to form one integral body throughout the circumferential portions of said flanges and the inner circumferential portions of said buffing material, each of said flanges forming end walls for depressed portions in said hub forming air spaces on both sides thereof, and each of said flanges having a series of radially extending passages which extend from said depressed portions outwardly to the outer edges of said flanges, the series of radially extending passages on the outer surface of one of said flanges being in staggered relation to the series of radially extending passages on the outer surface of the other of said flanges.

4. In a buffing wheel section, the combination of a molded hub, said hub being provided with two outwardly and laterally extending flanges molded therewith, said two outwardly and laterally extending flanges forming two air chambers between said hub and adjoining wheel sections, buffing material, said hub and said flanges being molded integrally with portions of said buffing material throughout the circumferential portions of said flanges and the inner circumferential portions of said buffing material, a plurality of co-axial apertures extending through said hub and connecting said air chambers with each other and radial air passages formed directly in the outer surfaces of said flanges and extending the entire radial distance of said flanges, permitting air to flow through said apertures, through said hub air chambers and through said radial passages in said flanges to the exterior of the wheel section.

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