April 23, 1940. E. W. HALL 2,198,283

BUFFING TOOL

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Fig. 1.

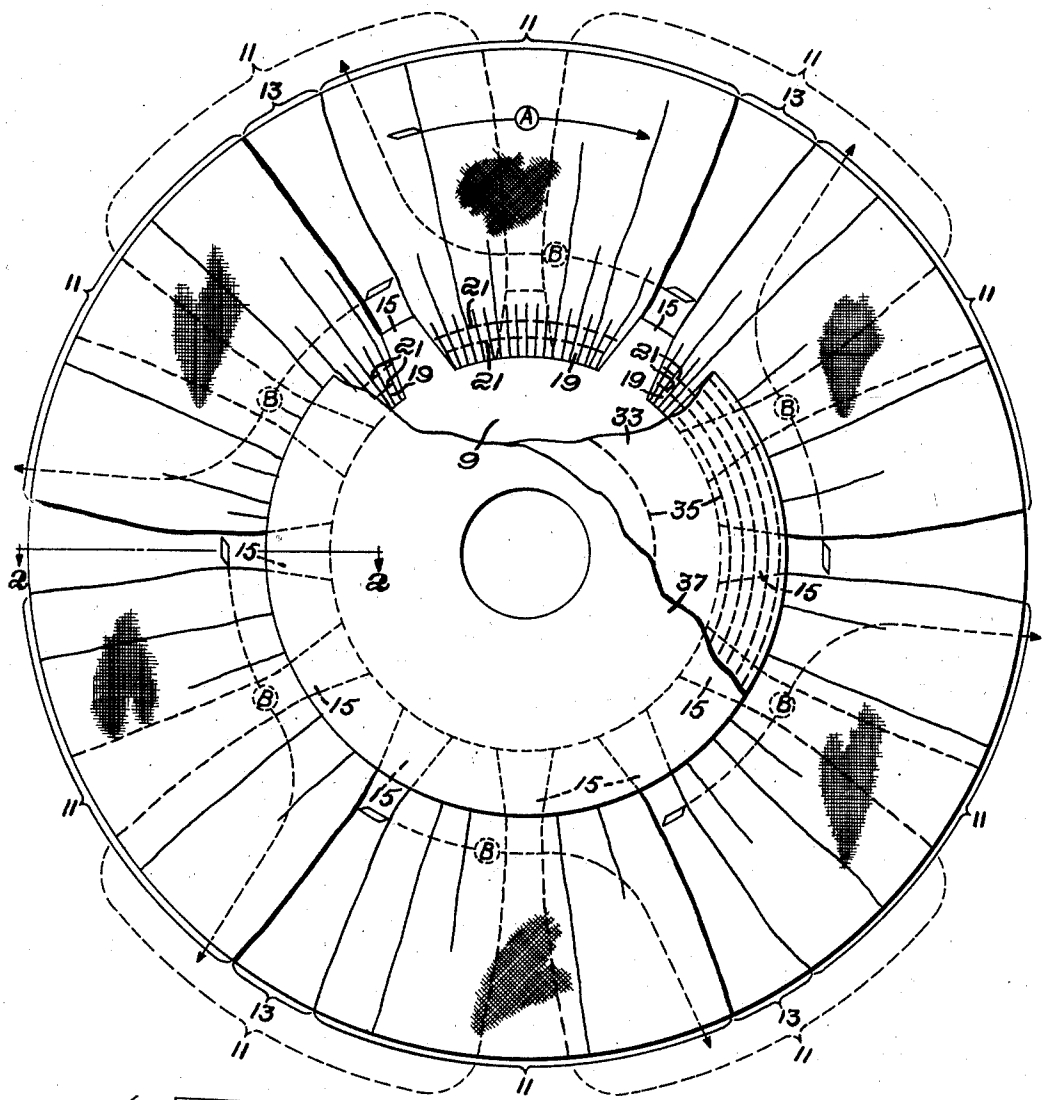

Fig. 2.

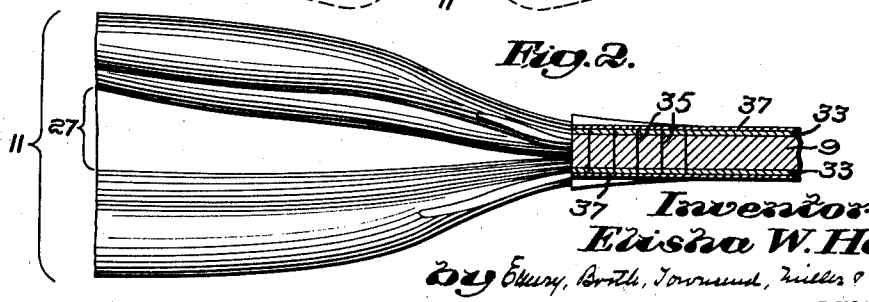

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Fig. 3.

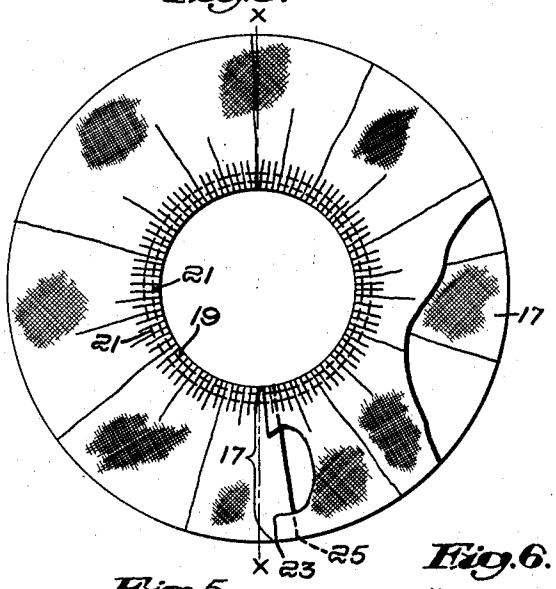


Fig. 4.

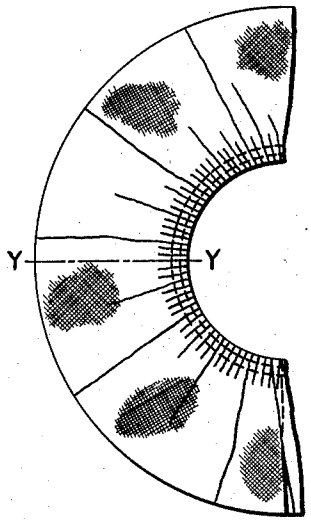


Fig. 5.

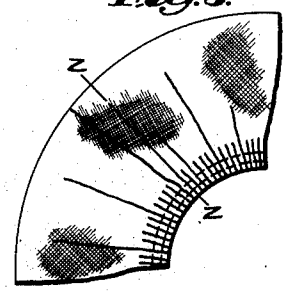


Fig. 6.

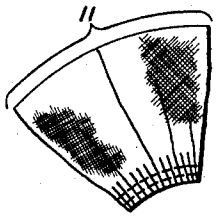
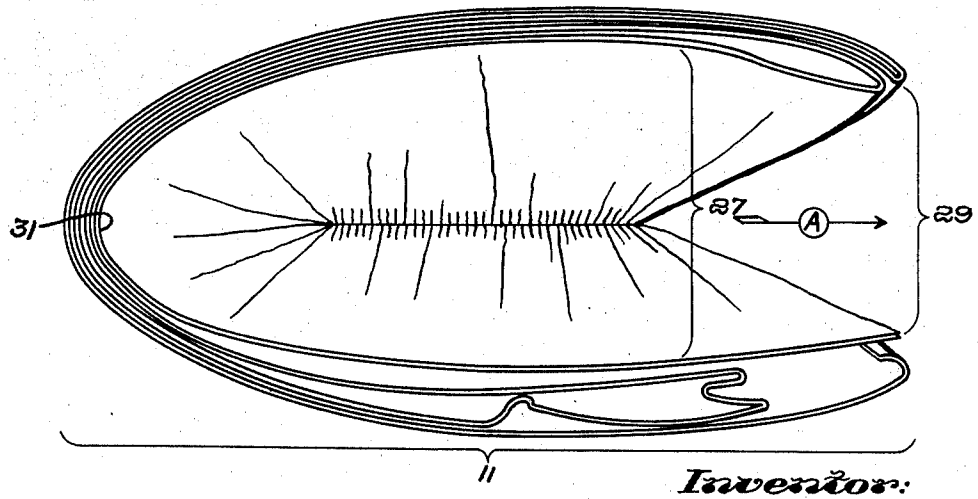


Fig. 7.



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BUFFING TOOL

Elisha W. Hall, Scituate, Mass.

Application September 1, 1938, Serial No. 227,935

3 Claims. (Cl. 51—193)

This invention relates to buffing and polishing wheels and wheel sections, and is concerned with a wheel section of novel form and arrangement possessing certain advantages, one of which is that it is well-ventilated and therefore cool-running. The invention will best be understood by reference to the following description when taken in connection with the accompanying drawings of one specific embodiment thereof, while its scope will be pointed out more particularly in the appended claims.

In the drawings:

Fig. 1 is an elevation of an assembly of two buffing wheel sections embodying the invention, certain elements being partly broken away, the better to illustrate the construction;

Fig. 2 is a sectional view of one of the sections on line 2—2 of Fig. 1;

Fig. 3 is an elevation illustrating a fabric strip ruffled to reduce its length along one edge and coiled into the form of a ring which is to be folded to produce an arm of the wheel section;

Fig. 4 is an elevation of the ring folded along a diameter to produce a half-ring;

Fig. 5 is an elevation of the half-ring folded along a radius to produce a quarter ring;

Fig. 6 is an elevation of the quarter ring folded along a radius to produce an eighth ring; and

Fig. 7 is a plan on an enlarged scale illustrating one of the completed arms as viewed from its outer end, or edgewise, and spread out somewhat, the better to illustrate its form.

Referring to the drawings and to the embodiment of the invention illustrated therein by way of example, there is shown in Figs. 1 and 2 a hub 9 of appropriate material such as chipboard, about which are arms 11 whose number may be varied, depending somewhat upon the diameter of the wheel section and somewhat upon the width of each of its arms and their spacing, there being six arms in the present example. The arms are separated by radial spaces 13 whose width may be made to suit the circumstances. In this example, the hub is provided with a circumferential series of spaced projections or teeth 15 extending into the spaces 13, or to put it differently, the circumferential series of arms extend into the spaces between the projections 15. In this example, moreover, the arms are of considerable width, and the width of each increases outwardly, that is to say, its edges diverge outwardly. This being so, each of the projections or teeth 15 is tapered correspondingly, i. e. its edges converge outwardly.

One convenient way of making the arms is illustrated in Figs. 3 to 6, inclusive. One or more, preferably two bias-cut strips 17 of woven fabric are superposed and their length is reduced along one edge as by being ruffled at 19 and provided with one or more, herein two rows of stitches 21, to retain the ruffles. This reduction of the length of one edge produces a tendency for the strip to coil as shown in Fig. 3, and the strip is severed to form a ring. In this example, the two ends 23 and 25 of the strip are overlapped somewhat as shown at the lower portion of Fig. 3.

The ring is first folded along a diameter X—X to produce a half-ring shown in Fig. 4, then the half-ring is folded along a radius Y—Y to produce a quarter-ring shown in Fig. 5, and finally the quarter-ring is folded along a radius Z—Z to produce an eighth-ring shown in Fig. 6. The resulting arrangement, as viewed from the outer end, or edgewise, is shown on an enlarged scale in Fig. 4, and is characterized by a generally U-shaped form presenting a channel 27 having an entrance 29 for the flow of air into and along the channel to its closed end 31, whence the air will escape at the periphery of the wheel. It should be understood, of course, that to produce this air flow the direction of motion of the arm should be in the direction of the arrow A in Figs. 1 and 7. The consequent air flow will be from each space 13 (see Fig. 1) in the direction of the arrow B.

Returning to the description of the construction of the wheel section, and to the folding illustrated in Figs. 4, 5 and 6, the folded condition is conveniently maintained by coating the ruffled margin of the fabric strip with adhesive such as latex, so that as the folding proceeds and as the layers are superposed, each layer will adhere to the next one. When the folding is complete as in Fig. 6, the resulting arm is subjected to pressure which reduces it to a thickness approximating the thickness of the hub to which it is to be applied. The pressure is maintained until the latex is dried.

The arms are then applied to the hub with all open ends 29 of the channels 27 facing in the same direction, and the arms are conveniently secured to the hub 9 as by applying fabric anchor disks 33 (see Fig. 2) to opposite faces of the hub, the disks being of sufficient diameter so that their margins will overlap the several arms 11. These disks are suitably secured in place as by the use of adhesive such as latex and preferably also by rows of through and through stitches 35. Finally, to protect the stitches from

wear, protective disks 37 of the same diameter as the anchor disks are adhesively secured as by latex to the outer faces of the anchor disks.

The resulting structure is characterized by the fact that, when rotated in the proper direction, a wheel embodying these sections is well-ventilated. A second characteristic is that the U-shaped channels in the arms constitute excellent pockets to retain rouge or other abrasive material. A third characteristic is that the interengagement of the teeth of the hub with the intervening arms contributes greatly to the strength of the wheel, particularly with reference to torsional stresses.

Several of the described sections may be assembled face to face on an arbor, and in such case I prefer to stagger them, that is to say, to arrange each arm of one section so that it registers with a space between two arms of the contiguous section as illustrated in Fig. 1.

Having thus described one embodiment of the invention but without limiting myself thereto, what I claim and desire by Letters Patent to secure is:

1. In a buffing wheel section, the combination of a circumferential series of arms separated by generally radial spaces, each arm comprising a strip of fabric folded upon itself to present an air channel which is U-shaped as viewed from the periphery of the section, and which has an entrance between said arm and an adjacent arm and means to support said arms, said means including two disks whose margins overlap said arms.

2. A buffing wheel section comprising, in combination, a hub, and a circumferential series of distinct arms secured to and projecting from said hub, said arms being separated throughout from said hub to the outer ends of the arms by radial spaces, each arm presenting a channel communicating directly with one of said spaces and leading to an exit at the outer end of such arm so that, upon rotation of the wheel section, air entering each space will flow from such space directly into the channel communicating with such space and will leave said channel to its exit at the outer end of the arm which presents such channel.

3. A buffing wheel section comprising, in combination, a hub, and a circumferential series of distinct arms secured to and projecting from said hub, said arms being separated throughout from said hub to the outer ends of the arms by radial spaces, each arm presenting a channel having an inlet relatively near said hub and communicating directly with one of said spaces and having an outlet relatively remote from said hub.

ELISHA W. HALL.