

Aug. 8, 1939.

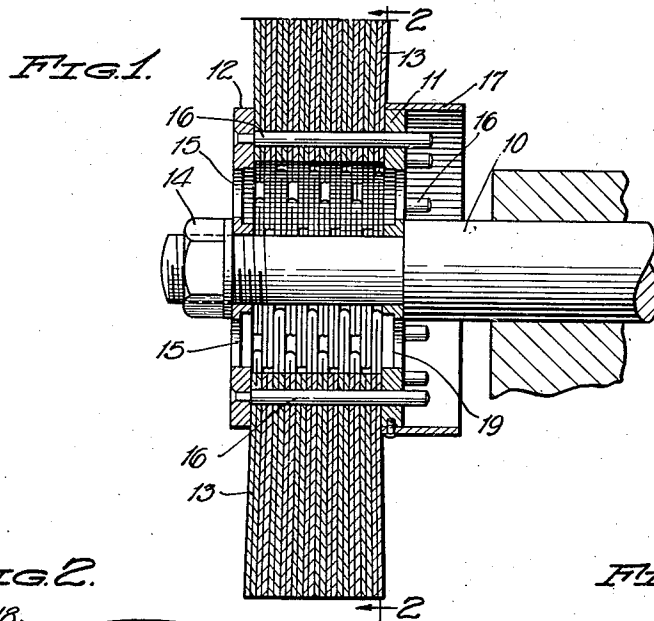
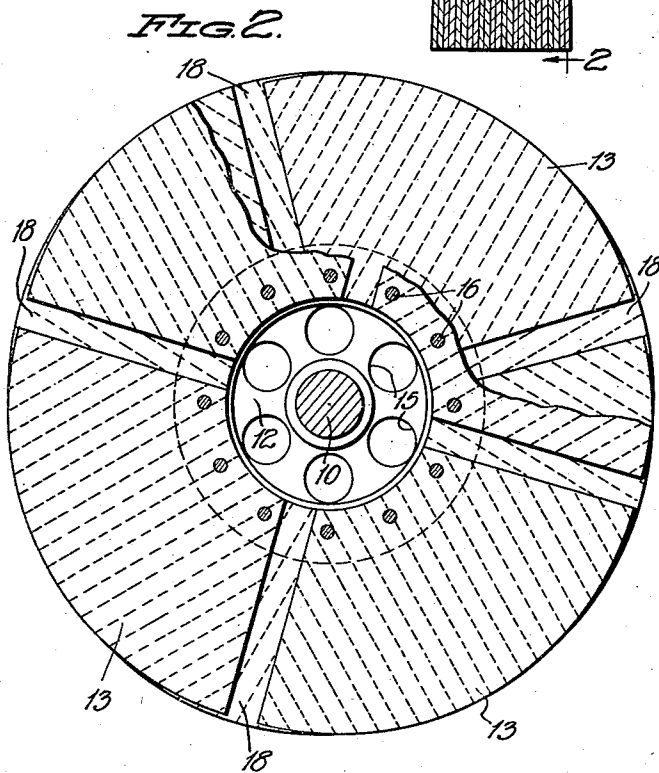
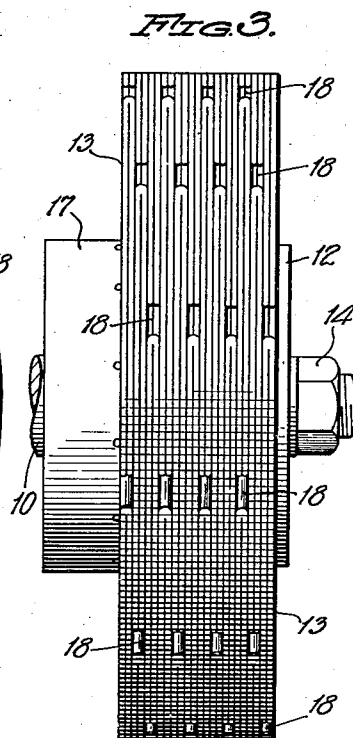
L. M. HAGUE

2,168,871

VENTILATED BUFF

Filed April 29, 1939

2 Sheets-Sheet 1



INVENTOR
Louis M. Hague
BY *Knights*
ATTORNEYS

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2 Sheets-Sheet 2

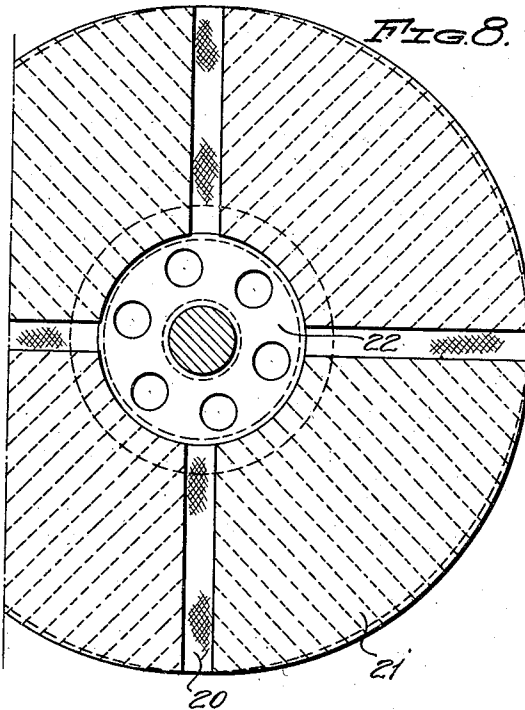


FIG. 8.

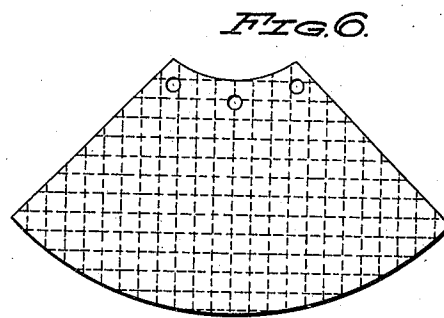


FIG. 6.

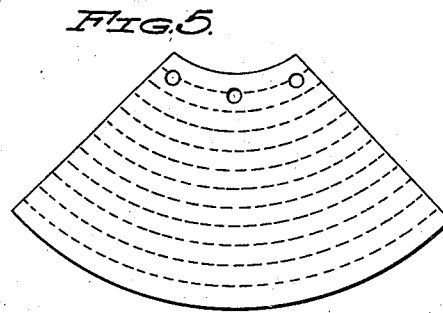


FIG. 5.

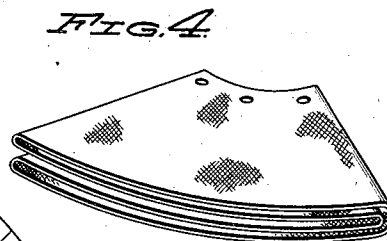


FIG. 4.

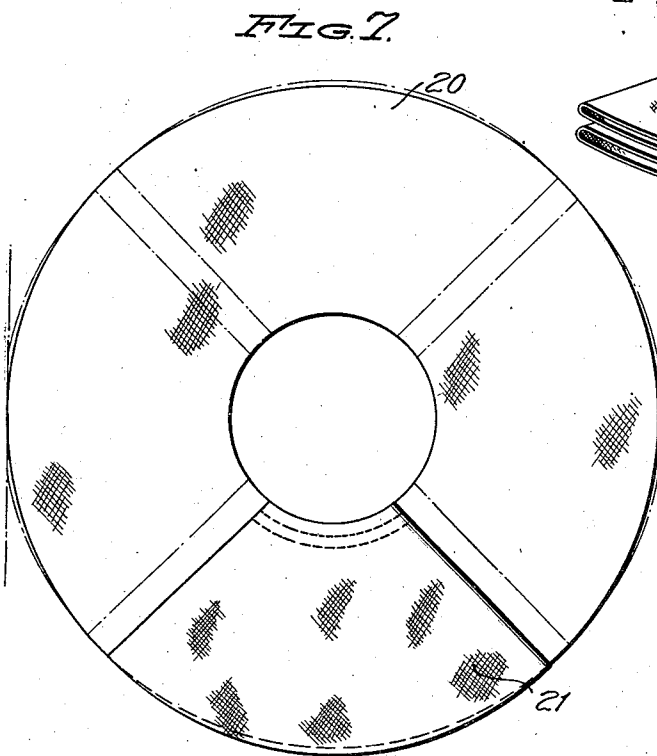


FIG. 7.

INVENTOR
Louis M. Hague
BY *Knigh*
ATTORNEYS

UNITED STATES PATENT OFFICE

2,168,871

VENTILATED BUFF

Louis M. Hague, Rumson, N. J., assignor to Hanson-Van Winkle-Munning Company, Matawan, N. J., a corporation of New Jersey

Application April 29, 1939, Serial No. 270,733

6 Claims. (Cl. 51—193)

This invention relates to ventilated buffs in which air passages are provided by which air is admitted into the center or interior of the buffing wheel and expelled radially outward through ventilating passages extending from the interior of the wheel through the body of the buffing wheel to the working periphery.

ments in a pair of wheel flanges mounted on the conventional buffing spindle.

Figure 2 is a sectional elevation taken transversely of the buffing spindle on the line 2—2 of Figure 1.

Figure 3 is an outside face view of the periphery of the buffing wheel assembly shown in Figures 1 and 2.

Figure 4 is a perspective view of one of the buff segments showing the formation of the segment by folding a complete or full disc of buffing cloth into a quadrant and having the inner corner cropped.

Figure 5 is a face view of a buff segment of similar shape to that illustrated in Figure 4 but which may be produced either in the manner shown in Figure 4 or by superposed quadrant plies stitched together on arcuate lines parallel to the periphery.

Figure 6 is a view of a construction similar to that shown in Figure 5 but illustrating the use of square cross-stitching.

Figure 7 is a face view of a somewhat different form of buff section comprising a complete circular or annular section on which are secured circumferentially spaced apart buff segments similar to those employed in the previous examples.

Figure 8 is a similar view of the embodiment shown in Figure 7 but mounted on one of several forms of ventilating hubs with which this type of composite section may be employed.

Referring now more specifically to Figures 1, 2 and 3, the usual buffing spindle 10 has mounted thereon an inner flange 11 and an outer flange 12 with the buffing segments 13 clamped between them by means of the nut 14. The outer wheel flange 12 has a series of orifices 15 through which air enters the wheel center or hub and a circular series of pins or rods 16, which are rigidly mounted and project from its inner face toward the inner flange 11. Inner flange 11 is perforated or otherwise adapted to receive the ends of the rods 16 so as to resist any tendency to their deflection radially outward or in any other direction under the forces developed in operating the buffing wheel. A guard ring or hood 17 is mounted on the inner wheel flange 11 to shield the projecting ends of the rods 16.

The segments 13, illustrated in Figures 1, 2 and 3, may be of any approved construction but preferably of some type such as shown in Figures 4, 5 and 6. Figure 2 illustrates the segments as having lines of stitching extending from the inner to the outer periphery in lines parallel to the median radius of the segment. Each segment, in the example shown, is provided with three perforations near its inner periphery, which perforations are spaced to register with any consecutive three rods 16, carried by the outer wheel flange 12. In assembling the sections, a typical

Various types of construction have been developed for enabling the centrifugal force developed during the rotation of the wheel to maintain a circulation of air through the wheel in order to prevent undue temperature rise from the friction occasioned by the application of the work to the buffing surface. These constructions generally embody some form of ventilating hub or wheel center and types of buff sections so constructed or arranged that their assembly on the ventilating center or hub provides the outward passages for air. The present invention embodies a ventilating hub or center, which may be constructed in various ways, and buffing material in the form of buff segments so arranged on the wheel center or hub that air passages are formed between the edges of the circumferentially successive segments. The preferred way of providing the buff segments and arranging them to form the radial air passages is to make the segments to a given radius and employ them to form a wheel of a somewhat increased radius so that the segments are displaced radially outward from their common center and define a wheel of somewhat increased diameter, thus giving rise to the spacing of the segments from each other in a circumferential direction. The spaces thus formed communicate with the air space in the ventilating hub or center and extend to the working periphery of the wheel. Preferably the inner corners of the segments are cropped or cut off to provide ample air space at the center. In this form the segments are thus annular segments instead of circular segments.

The construction according to the present invention does not involve any particular distinction between buffing and polishing as known in the trade, and I shall therefore employ the term "buff" or "buffing" as applying to either buffing or polishing. The various types of ventilating hubs or centers will be referred to generically as ventilating hubs, although in many cases the construction is not strictly in the nature of a hub but may simply be an enlarged spindle or a series of removable or false centers on which the annular segments are mounted, as well as the conventional type of hub member or unit.

Several embodiments of the invention are illustrated by way of example in the accompanying drawings, in which—

Figure 1 is a cross section taken longitudinally of the spindle showing an assembly of buff seg-

procedure is to build up one layer with four of the 90° segments mounted on the consecutive pins as shown in Figure 2, this mounting necessarily resulting in the formation of air passages 18 between the edges of the successive segments, these air passages extending radially outward from the ventilating hub to the working periphery of the buffing wheel. Four of these air passages 18 will be formed in each layer of segments. Having placed the four segments in the first layer, a second layer is formed by placing four more segments on the rods 16, the segments of this second layer being circumferentially displaced from registry with the segments of the first layer so as to provide another series of four ventilating passages 18 circumferentially as well as axially removed from those of the first layer. Similarly, successive layers are assembled so that the complete wheel will have as many outward air passages as there are segments, and these will be circumferentially and axially distributed throughout the body of the wheel. This arrangement is clearly evident from Figures 1 and 3 of the drawings.

The inner wheel flange 11 is preferably also apertured as at 19 to provide air inlets similar to the apertures 15 of the outer wheel flange 12. During the rotation of the buffing wheel, air is drawn in through the apertures 15 and 19 and expelled through the air passage 18 in obvious manner. It will be evident that the apertures 15 and 19 in the respective wheel flanges are merely illustrative of any form of open-work construction which permits the air to enter through the wheel flanges, whether this construction be in the form of a series of spokes, blades or simple perforated webs. The manner of building up the wheel by disposing the segments in layers circumferentially spaced apart is believed to be the best way to provide the air passages through the body of the wheel. It is, however, entirely feasible to arrange the four segments in four tiers or columns so that the air passages 18 extend continuously across the width of the wheel. Furthermore, the segments may be disposed spirally by displacing each segment from the preceding segment the distance of one rod and continuing in this fashion until the entire wheel has been built up. It should also be pointed out that instead of employing segments of circles defined by radial edges, and displacing these radially outward to provide the air passages 18, modified segments may be produced by reducing the included angle and mounting them about their common center at a radial distance corresponding with their radius of outer curvature so that the wheel face will be strictly circular instead of somewhat undulatory as results from the outward displacement of the normal segments previously described.

The segmental construction, whether normal or modified, may be employed in association with complete circular or annular sections, as for example by placing a complete circular or annular section at each side of the buffing wheel where it will cover the air passages 18 of the two outermost layers of segments. It is, of course, likewise optional to employ such complete circular or annular sections at intermediate positions between layers of segments in the wheel assembly. A special adaptation of this principle of association is illustrated in Figures 7 and 8, in which annular sections such as 20 have secured to them, as by stitching or otherwise, a layer of segments 21, circumferentially spaced apart as in the previ-

ous examples. Such a composite section being circumferentially continuous in the annular section is well adapted to use between apertured wheel flanges on the conventional ventilating hubs or spindles or on perforated false centers 22, as shown in Figure 8, without requiring the retaining means such as the rods 16 of the embodiment heretofore described. By building up a wheel of successive composite sections of this type, superposed one upon another, adequate ventilation may be obtained for many classes of work, even when using the same number of segments with consequently fewer ventilating passages in a wheel of the same size. By reducing the included angle of the segment to one half that of the quadrants illustrated, the same number of ventilating passages will, of course, be obtained since there will be twice the number of segments in each layer of segments.

It is believed that the foregoing illustrations will suggest many possible embodiments of the principle of the invention, so that those skilled in the art will be enabled to employ the invention in many different forms.

I claim:

1. A buffing wheel comprising in combination a ventilating hub for admitting air into the interior of the wheel, and a plurality of buff segments mounted on said hub and circumferentially spaced from each other to provide air outlets leading from the interior of the wheel.
2. A buffing wheel comprising in combination a ventilating hub for admitting air into the interior of the wheel, and a plurality of layers of buff segments mounted thereon in the plane of rotation, the segments of each layer being circumferentially spaced and those of one layer overlapping the spaces in an adjacent layer to provide circumferentially and axially distributed air outlets leading from the interior of the wheel.
3. A buffing wheel comprising in combination a ventilating hub for admitting air into the interior of the wheel, a layer of buff segments encircling said hub in a plane, with spaces between their edges to provide air outlets leading from the interior of the wheel, and a circumferentially continuous buff section disposed face to face with said buff segments and covering the sides of said air outlets.
4. A buffing wheel comprising in combination a ventilating hub for admitting air into the interior of the wheel, a pair of layers of buff segments, those of each layer disposed in a plane and encircling said hub, with spaces between their edges to provide air outlets leading from the interior of the wheel, and a circumferentially continuous buff section disposed between said layers of buff segments.
5. A composite buff section comprising a circumferentially continuous section and a layer of buff segments secured thereto in circumferentially spaced apart relation to provide radial passages between the segments.
6. A ventilated buffing wheel comprising in combination a pair of wheel flanges, one having rods projecting transversely from it toward the other, and the other adapted to receive said rods at least one of said wheel flanges being provided with an air passage leading into the interior space between said wheel flanges, and buff segments mounted on said rods and circumferentially spaced apart to provide air outlets leading from the interior space between said wheel flanges.