

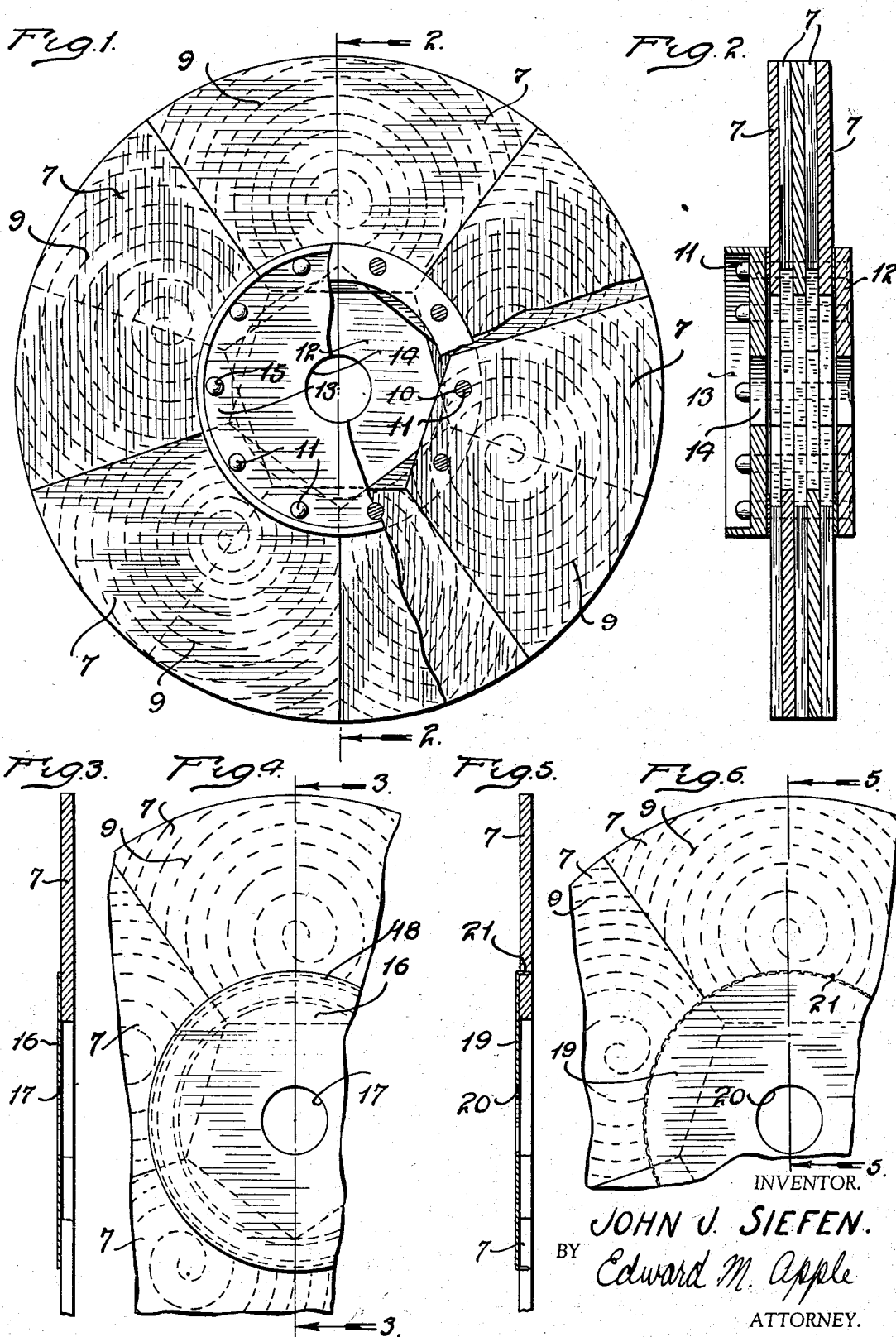
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BUFF WHEEL AND METHOD OF FORMING THE SAME

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BUFF WHEEL AND METHOD OF FORMING
THE SAME

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7 Claims. (Cl. 51-193)

This invention relates to improvements in buff wheels and the method of forming them. In present practice it has been customary to form buff wheels by sewing together a multiplicity of circularly cut plies of fabric. Wheels formed in such a manner present a comparatively hard and unbroken working edge which is easily burned against the wheel. Such wheels are comparatively expensive to use for the reason that they wear down very rapidly, and for the further reason that they are extremely wasteful of buffing compound, and that for the reason that when they are rotated at high speeds most of the buffing compound is thrown, by centrifugal force, from the periphery of the wheels and wasted.

I propose to construct a buff wheel in the manner hereinafter described which is much more efficient in operation and has a productive life of from two to six times longer than the productive life of the present known wheels.

Another object of the invention is the provision of a buff wheel which, when rotated at high speeds, develops air pockets between its sectors, which air pockets tend to lower the normal operating temperature of the wheel, thereby eliminating to a great extent the hazard of fire.

Another object of the invention is the provision of a buff wheel which will produce a cushioning effect when the work is applied to the wheel, thereby eliminating much of the physical shock experienced by the operator.

Another object of the invention is the provision of a buff wheel which will cut faster with the application of much less pressure than required with the use of conventional buffs.

Another object of the invention is the provision of a wheel, the use of which results in a considerable saving of buffing compound.

The foregoing objects of the invention and additional advantages will be more readily understood after careful consideration is given to the following description and to the accompanying drawing in which:

Fig. 1 is a side elevational view of my improved wheel with portions broken away to illustrate the relative position of the several parts.

Fig. 2 is a central vertical section taken on line 2-2 of Fig. 1.

Fig. 3 is a central vertical section taken on line 3-3 of Fig. 4.

Fig. 4 is a fragmentary side elevational view of my improved wheel illustrating a modified method of mounting.

Fig. 5 is a central vertical section taken on line 5-5 of Fig. 6.

Fig. 6 is a fragmentary side elevational view of another modified method of mounting the sectors comprising my improved wheel.

Now referring more particularly to the draw-

ing, it will be seen that I form my improved buff wheel by providing a plurality of individual sectors 7 which I arrange in layers about a common center, the sectors 7 of each layer being in staggered relation to the sectors of each adjacent layer, as shown in Fig. 1.

I prefer to make the individual sectors 7 by first securing together a predetermined number of plies of woven fabric such as canvas, duck, or cotton sheeting, which plies should, preferably, be in the form of discs having a diameter approximately one-half of the diameter of the buff wheel to be formed. The plies are preferably loosely stitched together by any desired type of stitching, such as spiral stitching, as indicated at 8 in Fig. 1. It will be understood, however, that I do not intend to limit myself in this invention to any particular type of stitching, although I have obtained very satisfactory results from the spiral and concentric types. Having properly stitched together the desired number of discs, I then proceed to cut one sector 7 from each stack of discs. The individual sectors 7 are of such predetermined size that when fitted together in the common planes comprising the layers, the arcs of the several sectors 7 will form the circumference of the completed buff wheel, as shown in Fig. 1. The finished wheel may consist of any number of layers. The wheel disclosed in Figs. 1 and 2 consists of five layers.

It will be understood that the sectors 7 may also be formed by stitching together a plurality of discs having a diameter equivalent to the diameter of the wheel to be formed and then radially dividing the discs into the desired number of sectors, but sectors formed in that manner are less effective because of the difficulty in obtaining a stitching which is angularly disposed with reference to the working edge, the advantage of which will hereinafter be shown. There are some types of work, however, wherein sectors made in such manner can be used. In fact, in some instances it may be desirable to eliminate the stitching entirely, all of which is within the contemplation of my invention.

In reducing my invention to practice, I have found that the individual sectors 7 can be secured in fixed relation to each other in the planes comprising the several layers in a variety of different ways. For example, in Figs. 1 and 2 I illustrate how the sectors 7 may be provided with holes 10 adapted to engage pins 11 positioned on a mounting hub 12, which is backed up by the plate 13 having a centrally disposed opening 14 and a plurality of equally spaced apart holes 15 adapted to engage the projecting ends of the pins 11. The hub 12 and the backing plate 13 are adapted to be mounted in the usual manner on the spindle (not shown) of a conventional buffing lathe.

In Figs. 3 and 4 I illustrate a modified form of

mounting which consists of a fabric disc 16 having a centrally disposed opening 17, which disc is sewed, as at 18, to the several sectors 7 comprising one layer of a wheel.

- 5 In Figs. 5 and 6 I illustrate a modified form of mounting which consists of a metallic disc 19 having a centrally disposed opening 20 and in-turned peripheral barbs 21 adapted to be forced into the sides of the sectors 7.
- 10 When my improved buff wheel is properly mounted on any one of the preferred forms of mounting and revolved rapidly, the sectors 7 as well as the layers comprising each sector, have a tendency to separate from one another, leaving
- 15 air gaps between the edges of the respective sectors and between the layers comprising each sector. This is due partly to the fact that the individual sectors expand or stretch radially. I have found that a 14-inch diameter buff wheel
- 20 constructed in the manner herein described expands as much as one-half inch when revolved at 2400 revolutions per minute. It is this tendency towards separation of the individual sectors
- 25 7, and the separation of the layers comprising the sectors, when in use, that contributes largely to the effective utility of my invention. In the first place, my improved wheel will accomplish more work with a much smaller amount of buffing compound. I account for that in this way: Each
- 30 sector 7 has a leading and a trailing edge. When the buffing compound is applied to the wheel, it is caught first by the leading edges of the sectors 7 and forced into the voids between the sectors and held there, and as the wheel is rotated in
- 35 use, the compound is slowly advanced to the working surface instead of being thrown free of the wheel and wasted, as is the case when a solid wheel is used. Tests which I have performed have shown that with the use of my improved
- 40 wheel a saving of as much as fifty per cent of buffing compound can be effected. Further, when the layers of fabric comprising the individual sectors are loosely stitched as shown at 9 in Figure 1, tangential pockets are formed along the
- 45 periphery of the wheel which serve also as reservoirs for the buffing compound.

It is further evident that the tendency of the individual sectors as well as the layers comprising each sector, to separate from one another

50 will result in air pockets being formed between the sectors and the individual layers, causing a very material cooling effect upon the entire wheel while it is in operation. The tendency of the layers comprising the sectors to separate from

55 one another and the tendency of the individual sectors to stretch radially as the wheel is rapidly rotated also gives rise to a condition of variable resiliency which materially reduces the physical shock experienced by the operator in contacting

60 the wheel with an article to be buffed.

I have also discovered in experimenting with this improved buff wheel that when being used on flat work it has a tendency to draw the work to it, with the result that very little, if any,

65 effort is necessary to hold the work against the wheel. Present known buffs on the other hand, have a tendency to repel the work from the wheel.

70 In addition to the foregoing results obtained in using my improved wheel, the fact must not be overlooked that I disclose a buffing wheel which has a more effective cutting edge than that presented by wheels made in the conventional

75 manner. The increased effectiveness of my wheel

is due, in part, to the fact that each sector 7 is so stitched that the threads comprising the stitching 9 are presented to the working edge at an angle instead of having the work ride on the side of the thread as is the case when wheels formed in the conventional manner are used. By the same token the buffing compound which collects in the pockets formed between the stitches is fed to the periphery of the wheel evenly and constantly, thereby causing the wheel

10 to do more effective work. Considerable variation in comparative hardness can be provided for each sector 7 of my improved wheel by varying the distances between the rows of stitches.

While the exemplary forms of my invention 15 are herein described and shown in the accompanying drawing, it is understood that this invention may embody various modifications in detail structure without departing from the spirit of the invention or the scope of the appended 20 claims.

I claim:

1. A buffing wheel comprising a plurality of individual sectors, each sector consisting of a multiplicity of layers of woven material loosely 25 secured to one another by spiral involute stitching.

2. A buffing wheel comprising a plurality of individual sectors, each sector comprising a multiplicity of layers of woven material loosely 30 secured to one another by stitches which define tangential involute pockets adapted to carry a buffing compound.

3. A buffing wheel comprising a plurality of individual sectors, each sector consisting of a 35 multiplicity of layers of woven material loosely secured to one another by stitches which define intercommunicating tangential involute pockets adapted to carry a buffing compound.

4. A buffing wheel comprising a plurality of 40 individual sectors, arranged concentrically about a common axis, so that the arcs of the sectors form the periphery of the wheel, each sector consisting of a multiplicity of layers of woven material loosely secured to one another by stitches 45 which define tangential involute pockets, adapted to carry a buffing compound.

5. A buffing wheel comprising a plurality of individual sectors, arranged in staggered relation 50 to one another and concentrically mounted about a common axis, so that the arcs of the sectors form the periphery of the wheel, each sector consisting of a multiplicity of layers of woven material loosely secured to one another by stitches, 55 which define tangential involute pockets adapted to carry a buffing compound.

6. A buffing wheel comprising a plurality of individual sectors, arranged about a common 60 axis so that the arcs of the sectors form the periphery of the wheel and the sides of the sectors define radial pockets, each sector consisting of a multiplicity of layers of woven material loosely secured to one another by stitches which 65 define tangential involute pockets adapted to carry a buffing compound.

7. A buffing wheel comprising a multiplicity of segments, each segment consisting of a plurality of layers of woven material, loosely stitched 70 together to form intercommunicating spiral pockets, and radial channels between said segments, which serve as cooling means for said wheel, and means for trapping a buffing compound.