July 5, 1938. F. E. HENDRICKSON 2,122,609

BUFFING WHEEL

Filed Oct. 12, 1936

Fig. 1.

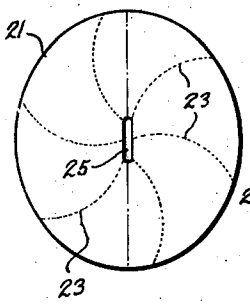


Fig. 2.

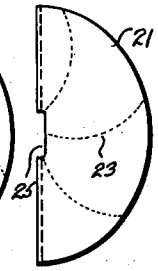


Fig. 3.

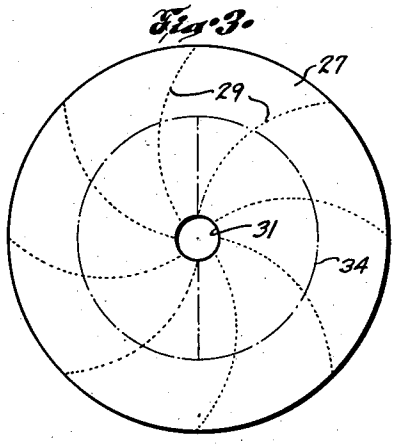


Fig. 4.

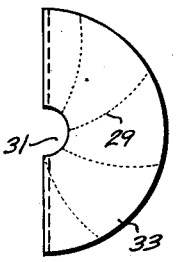


Fig. 5.

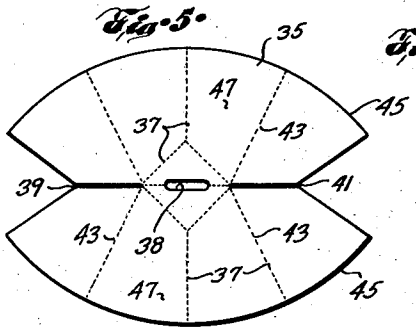


Fig. 6.

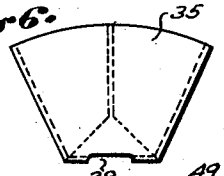


Fig. 7.

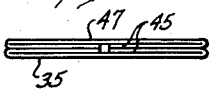


Fig. 13.

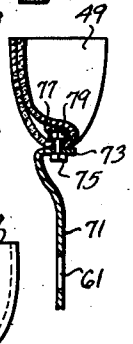


Fig. 12.

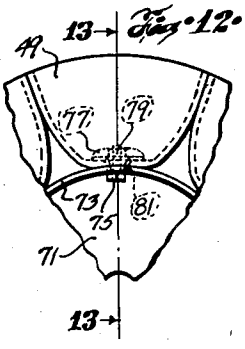


Fig. 8.

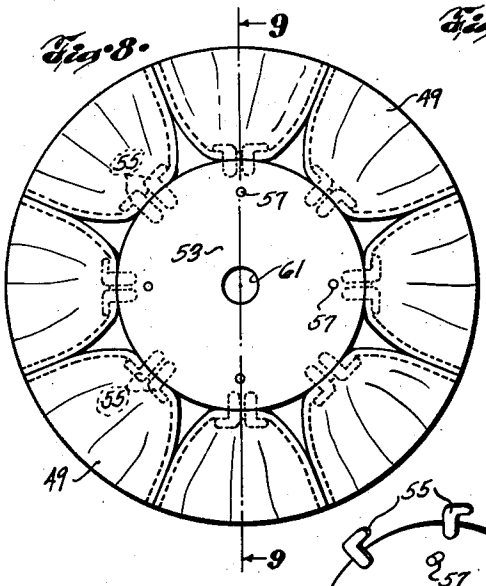


Fig. 9.

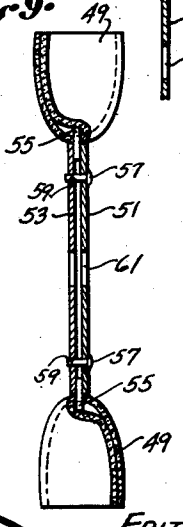
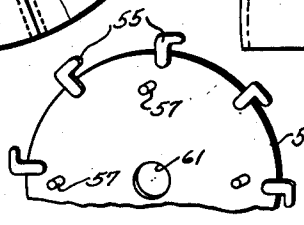


Fig. 10.



Fig. 11.



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UNITED STATES PATENT OFFICE

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BUFFING WHEEL

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Application October 12, 1936, Serial No. 105,156

8 Claims. (Cl. 51—190)

My invention relates to polishing and buffing means and more particularly to heavy duty composite buffing wheels.

An object of my invention is to provide a buffing wheel having a plurality of independent buffing units removably associated therewith.

Another object of my invention is to provide a buffing wheel that shall permit of using heretofore discarded buffing sections, with a minimum of change in such sections.

Another object of my invention is to provide a relatively simple composite buffing wheel using either used and discarded buffing sections or new and unused buffing sections.

Another object of my invention is to provide a relatively simple support for a plurality of buffing sections.

Another object of my invention is to provide a composite buffing wheel having a central supporting member with holding means to hold a plurality of folded buffing sections in closely adjacent peripheral positions thereon.

Another object of my invention is to provide an adapter to hold a plurality of buffing sections to constitute a heavy duty buffing wheel, the adapter being provided with buffing section holding or gripping means.

Another object of my invention is to provide a heavy duty composite plural element buffing wheel in which the respective elements are so formed as to provide ventilation therein and permit of using substantially all of the material of the elements in buffing work.

Other objects of my invention will either be apparent from a description of several forms of assemblies now preferred by me, or will be specifically pointed out during the course of such description.

In the single sheet of drawings,

Fig. 1 is a view in front elevation of a specific form of buffing section before its use and before folding the same,

Fig. 2 is a view of the buffing section shown in Fig. 1 after it has been folded once on its major axis,

Fig. 3 is a view in front elevation of a substantially circular buffing section as now in common use,

Fig. 4 is a view in front elevation of the section shown in Fig. 3 after its external diameter has been greatly reduced and the worn section has been folded once for mounting on my support,

Fig. 5 is a view in front elevation of a still further modification of new and unused buffing section before folding,

Fig. 6 is a view in front elevation of the section shown extended in Fig. 5, after the same has been folded several times and is ready for mounting,

Fig. 7 is an end view of the folded section of Fig. 6,

Fig. 8 is a view in front elevation of a composite plural-element buffing wheel embodying my invention,

Fig. 9 is a view in diametral section therethrough taken on the line 9—9 of Fig. 8,

Fig. 10 is an end view of a once-folded buffing section of Fig. 8, to show the ventilation therein,

Fig. 11 is a view of one of the discs constituting the central support for the buffing sections,

Fig. 12 is a fragmentary view, in front elevation, of a modified form of device embodying my invention, and

Fig. 13 is a view, in section therethrough, taken on the line 13—13 of Fig. 12.

It has heretofore been a relatively serious problem in buffing and plating establishments to obtain the maximum use from the buffing sections heretofore in use, which sections were built up of a number of closely adjacent layers of cloth or of other fibrous material and mounted in a suitable support on a rotatable shaft. There are certain limits as to the peripheral speed within which proper buffing action can be obtained on various materials which require buffing both before and after electroplating thereof and where the peripheral speed of the initial disc of a given, external diameter is made as large as is possible, the peripheral speed of the worn section will eventually not be sufficient to attain the proper or desired results and hence it has heretofore been necessary, in many cases, to discard worn sections of such buffing wheels.

Referring now to Figs. 1 and 2 of the drawing, I have there illustrated a buffing section 21 which may comprise any desired number of thicknesses of fibrous material, such as cotton cloth, and which I preferably cut so as to have a substantially oval shape, as is shown more particularly in Fig. 1 of the drawing. As stated above, any desired number of thicknesses of such cloth may be cut to the same overall dimensions and a plurality of seams 23 may be used thereon in order to provide a built-up buffing section of the kind now generally used, but heretofore usually of substantially circular outer periphery. I preferably provide an elongated inner opening 25 in the respective thickness or plies of cloth. One of the steps in the construction of my improved

composite buffing wheel is that each of these initially flat sections shall be folded on one diameter and as shown in Fig. 2 of the drawing, this diameter is preferably the larger one for a purpose to be hereinafter set forth in greater detail.

Referring to Figs. 3 and 4 of the drawing, I have there illustrated a buffing section 27 which is shown as having initially the outer periphery shown in the full line which for illustrative purposes may be assumed to be on a diameter approximating 16 to 17 inches. Any desired number of layers are sewed together by a plurality of seams 29 and they are each provided with a central aperture 31 to permit of mounting on a rotatable shaft in a manner now well known in the art. As has already been stated, the speed of the shaft is such as to give the maximum peripheral speed to the new section which it is possible to use and it is of course obvious that the outer diameter will decrease with wear and when this outer diameter has reached a value of say 10 inches, the section 33 will then have an outer periphery shown by the broken line circle 34, in Fig. 3 of the drawing, and its peripheral speed will therefore be approximately three-fifths of its initial speed which, in practice, has been found to be insufficient to give the desired buffing characteristics as well as the desired output.

According to my present invention I can use these heretofore discarded sections and the first step in their use is to fold them once on a diameter so that they will have the shape shown in Fig. 4 of the drawing.

Referring to Figs. 5 to 7, inclusive, I have shown a still further modification of new buffing section 35 which is also of generally oval contour in external shape and which may comprise any desired number of individual layers or thicknesses of cloth of any kind now used to make buffing sections and which may be provided with a plurality of seams 37, the number of such seams depending upon the degree of looseness or of tightness desired in the buffing wheel. That is, a smaller number of seams in the section will result in a looser buffing wheel, which is useful in certain operations on certain metals or alloys and a larger number of seams will result in a closer, tighter or harder buffing wheel and the same comments as to the number of seams made in connection with element 35 applies also to the other sections hereinbefore described. An elongated central aperture 38 is provided in the section 35.

The layers of material are cut at the radii 39 and 41 and the built up section is then folded on the lines 43, the outer end portions 45 being folded over against the inner portions 47, after which the section is folded on the diameter including the radii 39 and 41 so that the final shape of the double folded section is of sector shape as shown in Fig. 6 of the drawing. I have illustrated in Fig. 7 of the drawing the different folds as regards their relative position when the folded section is of the shape shown in Fig. 6 of the drawing.

Referring to Figs. 8 and 9 of the drawing, I have there illustrated one form of plural element or plural section composite buffing wheel embodying my invention. Two relatively thin discs 51 and 53, one of which is shown in Fig. 11, cooperate with each other to constitute a support for a plurality of buffing sections 49, each of the discs being provided with a similar number of hook members 55 suitably secured to it at one face thereof and adjacent its periphery, these hook members being of L-shape and so secured that one leg thereof extends substantially radially of the disc and the other leg extends substantially tangential thereto. One of the discs is provided with a plurality of small axially extending pins 57 while the other disc is provided with a plurality of cooperating openings 59 therein to receive the respective pins 57, as will be hereinafter more clearly set forth in detail. Both of the discs are provided with a central aperture 61 therethrough to permit of mounting them in face to face relation on a rotatable shaft.

The respective sections 49, which may be constituted either by a plurality of the sections 21, 33 or 35 folded as shown in Figs. 2, 4 or 6, are held in proper operative position adjacent to the outside periphery of the central support, as by interfitting engagement of the wall surrounding the central openings 25, 31 or 38 with the respective oppositely extending hook member 51 on the respective central supporting discs 51 and 53, the contour of each element being of sector shape.

The mounting of the respective buffing sections 49 in interfitting engagement with pairs of securing or holding members 55 may be effected by first locating the two discs in face to face relation with the hook members extending in opposite directions and in such relative peripheral positions that the hook members will overlap, thereby permitting of locating the walls of the central openings in the sections over the pairs of overlapping hook members, after which one disc is turned relatively to the other disc to effect a peripheral movement of the hook members away from each other and into substantially the positions shown in Fig. 8 of the drawing whereby the sections are properly held by the securing, gripping or holding means above set forth. The two discs are then held in these proper operative positions by interfitting engagement of the pins 57 on one disc with the respective and corresponding openings 59 in the other disc, after which it is only necessary to mount the composite buffing wheel on a rotatable shaft to cause it to rotate therewith. It is obvious that both hooks may be mounted on a single disc.

Figs. 12 and 13 show two views of another form of central supporting means, comprising a single disc 71 having a lateral flange 73 thereon at its periphery, which flange is provided with a plurality of holes spaced equidistantly from each other. Each buffing section 49 is held against the outer peripheral surface of the flange 73 by a bolt 75 extending through one of the holes in the flange, through a gripping or holding member 77, of elongated channel shape and a nut 79. The nut 79 fits closely between the walls of the channel member 77 to prevent its working loose during operation of the buffing wheel. The member 77 may also be provided with one or more struck-out tongue portions 81 interfitting with holes in the flange 77 to prevent turning of the holding member 77 relatively to the flange 73.

Let it be assumed that it is desired to make use of a plurality of initially discarded buffing wheel sections 33 which have been worn down to approximately two-thirds of their original diameter and which are therefore considered as unfit for further large capacity output on the part of an operator. The design and construction of the adapter comprising the central supporting means, and particularly the number of holding means for the respective buffing sections is such that they will in effect normally overlap each other, with

the result that the buffing sections which will then have the shape shown in Fig. 8 of the drawing will be located in closely adjacent peripheral positions relatively to each other and the end view of one of these sections will be substantially that shown in Fig. 10 of the drawing where an attempt is made to show the wavy or fluffy shape of the two parts of the folded buffing section whereby a highly effective ventilation is obtained within the section itself. It will be noted further that there is some ventilation between the inner ends or edges of the respective sections 49 closely adjacent to the outer periphery of the supporting discs.

The same general comments as to ventilation apply when a plurality of buffing wheel sections 35 are utilized except that a much greater ventilating action is obtained because of the larger number of folds which have been shown generally only in Fig. 7 of the drawing. It is one of the essential elements of my device that the adjacent buffing wheel sections 49 tend to overlap each other and are forced to occupy a predetermined proportional part of the total peripheral space around the central supporting discs whereby they are located in crowded positions adjacent to each other thereby causing them to assume a more or less open-wavy or corrugated shape tending to provide an efficient ventilation therein, each section being, in general, of sector shape.

I have found in actual practice that, because of this effective ventilation of a composite buffing wheel embodying my invention, I can operate these buffing wheels at a higher peripheral speed and can also obtain a much greater output because of the possibility of an operator pressing work to be buffed thereby against the wheel or buffing sections with greater pressure than can be ordinarily used where there is little or no ventilation, as is the case in relatively thick buffing wheel sections which have been provided with a relatively large number of seams whereby to make a tight or relatively solid buffing section.

Another important result of the use of my invention is that it is possible to use heretofore discarded buffing wheel sections until only a very small proportion of their original volume or weight remains so that it is possible not only to obtain greater output therefrom during normal use thereof, but also to use up substantially all of the material originally provided in the respective sections.

This latter characteristic is because of the use of relatively small holding or clamping means which engages a portion of the sections located substantially centrally thereof, with substantially all of the material extending radially outwardly from the support and holding means.

Referring now to the shapes shown in Figs. 1 and 5 particularly, I have found it possible to obtain sections which can be cut from bolts of cloth with less waste than would be the case if a substantially circular shape of individual thickness of cloth were used. I have also found it possible to obtain a somewhat greater amount of ventilation in the composite buffing wheel when sections of substantially oval shape as shown in Figs. 1 and 5 are used.

It will be noted that my invention provides not only novel forms of buffing sections and of central supports therefor, but also a novel form of heavy duty composite buffing wheels.

It may also be here pointed out that the inventive concept covers more particularly a central supporting means and a gripping, holding or securing means engaging a buffing section within the periphery thereof, the section being folded at least once, such a number of buffing sections being mounted on a supporting means as to crowd the sections and cause them to provide ventilating ducts within and between them.

While I have illustrated and described several forms of devices embodying my invention, I do not desire to be limited thereto but to include all other forms of my inventions as covered by the appended claims.

I claim as my invention:

1. A composite buffing wheel including a central metal disc adapted to be mounted on and rotate with a shaft, a plurality of holding means secured to the disc adjacent to the outer periphery thereof and a plurality of flexible buffing elements, each element being folded upon itself at least once to substantially sector shape, and the elements being held by the respective holding means in close peripherally-adjacent positions on the outer periphery of the central disc, the peripheral extent of each folded element when mounted on the disc being less than its initially-folded peripheral extent to cause each element to fluff and extend in substantially zigzag form peripherally of the disc.

2. A composite heavy-duty buffing wheel including a rotatable central disc, holding means at the outer periphery of the disc and a plurality of centrally-apertured buffing sections, diametrally folded on themselves at least once and held in crowded peripherally-adjacent positions beyond the outer periphery of the disc by interfitting engagement of the holding means with the walls of the central apertures of the respective sections, each folded section having an operating shape substantially that of a sector, the material of each section extending in substantially zigzag form peripherally of the disc.

3. A composite buffing wheel including a pair of discs located in face-to-face position, each disc being provided with hooks at its outer periphery, the hooks on one disc extending oppositely to those on the other disc and a plurality of centrally-apertured buffing sections diametrally folded upon themselves at least once and held in crowded peripherally-adjacent positions beyond the disc by interfitting engagement of oppositely-extending hooks, one on each disc with the walls of the respective central apertures of the sections.

4. A buffing wheel as set forth in claim 3 in which the discs are provided with cooperating interfitting locking means for holding them in predetermined peripheral positions relatively to each other.

5. A buffing wheel as set forth in claim 3 in which the discs are provided with cooperating recess and projection means for holding the discs so that each pair of oppositely-extending hooks overlaps the material of the section held thereby at the central aperture thereof.

6. A composite buffing wheel including a pair of discs for mounting in face-to-face position on a rotatable shaft, a plurality of rigid hooks of substantially L-shape on each disc, the hooks on a disc extending radially beyond the outer periphery of the disc and in the same direction peripherally thereof, a plurality of apertured disc-like buffing sections, each section being folded on itself once on a line passing through said aperture and being held in crowded peripherally-adjacent non-overlapping position with all of the material of the sections beyond the outer pe-

riphery of the discs, by overlapping engagement of the walls of an aperture with a pair of hooks, one on each disc, and means on the respective discs cooperating with each other to maintain said overlapping engagement of the hooks with the walls of the aperture.

7. A rotatable support for a plurality of individual disc-like buffing sections each having an aperture therein, said support comprising a pair of substantially similar discs adapted to be mounted in face-to-face position on a rotatable shaft, each disc having a plurality of peripherally spaced rigid hooks of substantially L-shape thereon extending outwardly beyond the disc, the hooks on one disc extending in the opposite peripheral direction than those on the other disc when the discs are in said face-to-face position, each pair of oppositely-extending hooks being adapted to interfit with and overhang the walls of an aperture of a buffing section and hold all of the section radially beyond the outer periphery of the discs.

8. A composite buffing wheel comprising a rotatable central supporting disc having a plurality of rigid hook means at its outer periphery and extending therebeyond and a plurality of disc-like flexible buffing sections, each section having an aperture therethrough and being folded on itself on a line extending through said aperture and held in closely adjacent peripherally non-overlapping position relatively to the other buffing sections by overlapping engagement of a hook means and the walls of an aperture, the material of each section extending in zig-zag form peripherally of the disc and making available for buffing action substantially all of the material of each section except that portion immediately adjacent to the aperture and the hook means.

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