July 5, 1966 B. G. JESKE 3,258,807

BUFFING WHEEL ADAPTED TO UTILIZE REUSED CLOTH

Filed Dec. 30, 1963 3 Sheets-Sheet 1

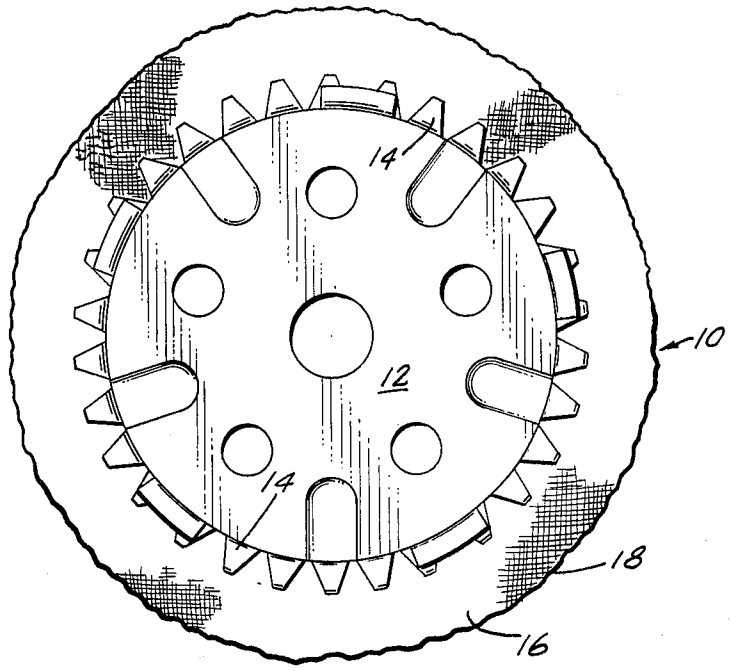


FIG. 1

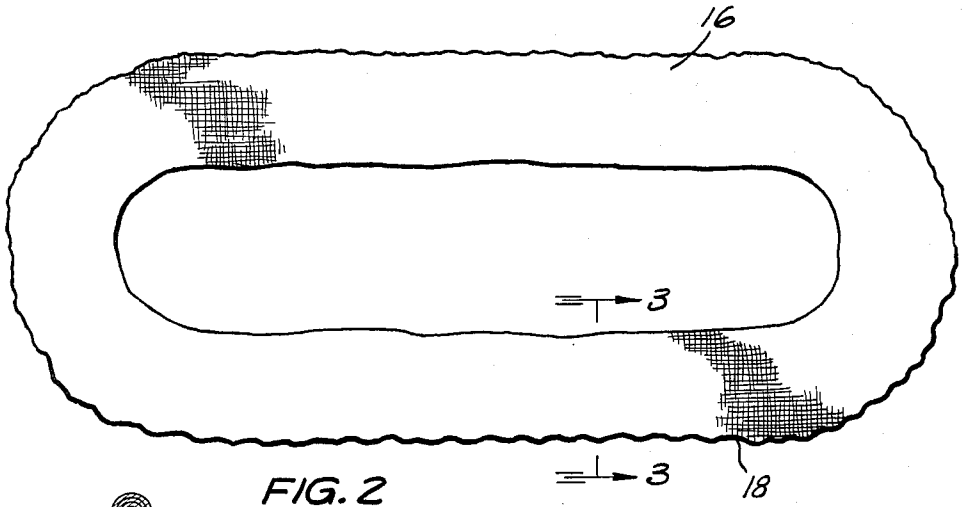


FIG. 2

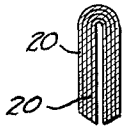


FIG. 3

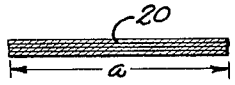


FIG. 3A

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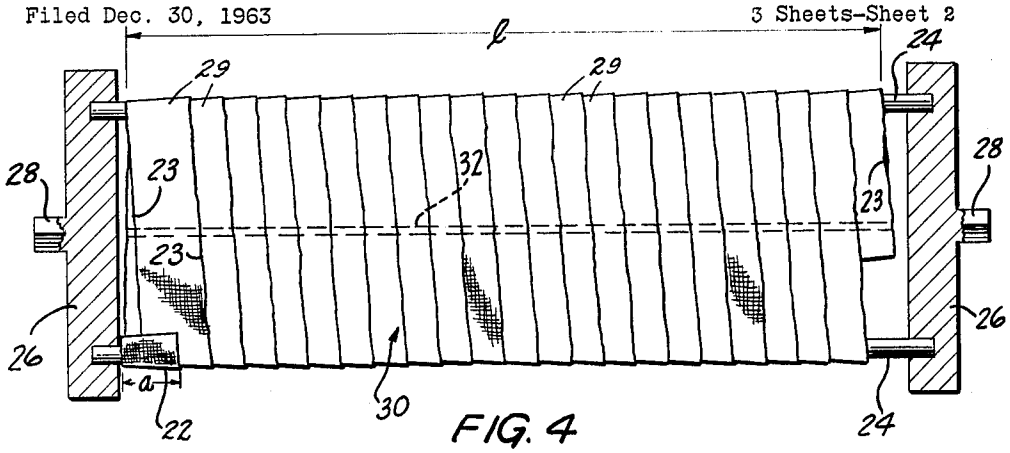


FIG. 4

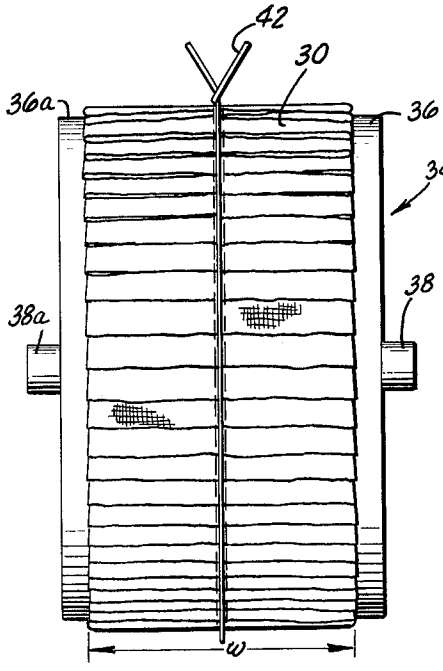


FIG. 5

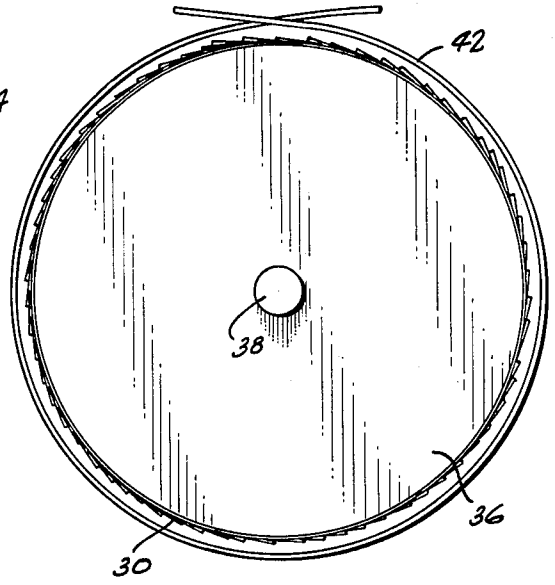


FIG. 6

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BUFFING WHEEL ADAPTED TO UTILIZE REUSED CLOTH

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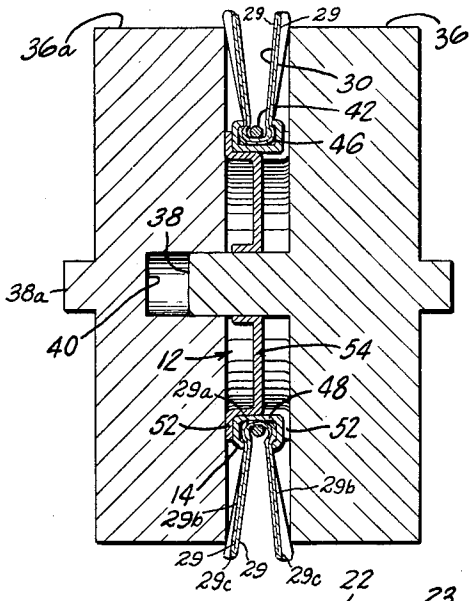


FIG. 7

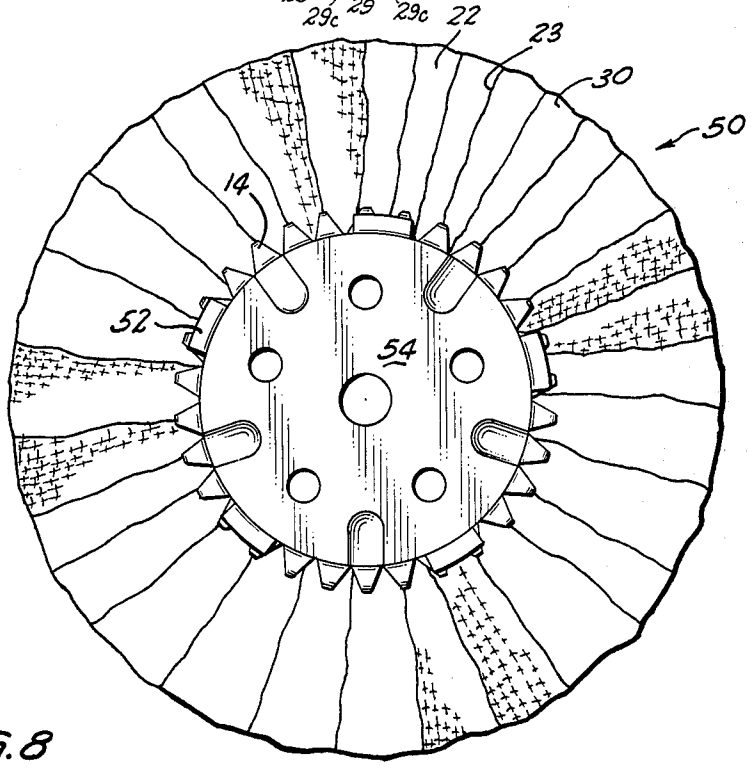


FIG. 8

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BUFFING WHEEL ADAPTED TO UTILIZE REUSED CLOTH

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2 Claims. (Cl. 15—230.13)

This invention relates generally to buffing wheels and more particularly to an improved buffing wheel utilizing cloth from a used wheel.

A buffing wheel is normally used only until the cloth on the wheel is worn to a distance spaced about 1" to 3" radially outwardly of the metal mounting hub or ring on which the cloth is mounted. A substantial amount of usuable cloth is thus available from such a used buffing wheel. For example, in the case of a bias cloth buffing wheel, a strip of cloth 3" to 6" wide is available from a used buffing wheel. However, the cost of the labor involved in assembling relatively narrow strips of cloth from a used buff in a new buffing wheel has heretofore made it somewhat expensive to manufacture buffing wheels utilizing used cloth. In the past, buffing wheels utilizing used cloth have been manufactured by manually winding the narrow strip of cloth from a used buff about a pair of concentric rings. The resulting annular ring of cloth was then slit to remove the rings and then sewn along an annular path, following which the cloth was attached to a mounting hub or ring. Such a procedure does not lend itself to an automated type of manufacture and the resulting buffing wheel includes a substantial cost for the manual labor involved. In addition, an equal distribution of cloth about the hub is dependent on the skill of the labor involved, so that the cloth may not be evenly distributed about the hub in many cases. Furthermore, the abrasive material which is present in many used buffing wheels causes damage to the sewing machines when the annular sew lines, which are required to hold the cloth on the hub, are made in the reclaimed cloth. Also the resulting buff cannot be cooled by a radially outward flow of air between adjacent buffs because air flow is blocked by the bulky cloth located at the circumference of the hub. Buffs constructed in this manner must also have a center opening which is large enough to pass the buff cloth through when winding the buff. Thus the center opening size may in some cases be larger than desired. It is an object of this invention, therefore, to provide an improved buffing wheel utilizing reclaimed cloth which does not require annular sew lines to hold it together, provides for a radially outward flow of cooling air between adjacent buffs, is constructed so that an even distribution of the cloth on the wheel is assured, is readily manufactured without excessive manual labor, is not limited as to center size, and which has a very flexible cloth body that is especially useful in buffing contoured metal articles. It is also an object of this invention to provide a buffing wheel utilizing reclaimed cloth which is readily adapted for an automated type procedure, and which provides a body of cloth of desired width from a strip of cloth of lesser width.

Further objects, features and advantages of this invention will become apparent from a consideration of the following description, the appended claims, and the accompanying drawing in which:

FIGURE 1 is a side elevational view of a worn bias cloth buff;

FIGURE 2 is a side elevational view of the cloth in the buff in FIG. 1 after removal from the mounting ring;

FIGURE 3 is a transverse sectional view looking along the line 3—3 in FIG. 2;

FIGURE 3A is a view of the cloth shown in FIG. 3 after it has been flattened out;

FIGURE 4 is an elevational view of rotatable frame apparatus used in the method of this invention, showing a strip of reclaimed cloth wound thereon;

FIGURE 5 is a front view of a drum fixture used in the method of this invention, showing a body of reclaimed cloth wound thereon;

FIGURE 6 is a side view of the assembly shown in FIG. 5;

FIGURE 7 is a transverse sectional view of the assembly shown in FIG. 5, after the cloth has been moved into a position for gripping by the mounting ring; and

FIGURE 8 is an elevational view of a buffing wheel of this invention manufactured according to the method of this invention.

With reference to the drawing, a used bias cloth buff, indicated generally at **10**, is illustrated in FIG. 1 as including a metal mounting hub or ring **12** having teeth or jaws **14** and an annular body **16**, formed of a cloth formed of soft or hard synthetic or natural fibers such as cotton, sisal, combinations of cotton and sisal, etc., which is gripped at its inner edge by the teeth **14**. As shown in FIG. 1, the cloth body **16** has been worn to a position in which its outer edge **18** is sufficiently close to the teeth **14** that further use of the buffing wheel **10** is impractical or uneconomical. When the cloth body **16** is removed, by releasing the body **16** from the jaws **14**, it is of the general shape shown in FIG. 2, and the outer edge **18** is usually irregular in shape and covered or impregnated with buffing compound. The body **16** consists of a plurality of layers **20** (FIG. 3) of cloth each of which is folded over upon itself, and the numbers of layers **20** depend upon the use for which the particular buff **10** was intended. As shown in FIG. 3A, the layers **20** can, although this is not usual, be laid out flat and in this position, they constitute a continuous coil of cloth of a width indicated at *"a"* which may be uncoiled so as to form a strip of material, indicated at **22** in FIG. 4, of the width *"a"* and of a length depending upon the amount of cloth in the buff **10**. The strip **22** may be lengthened by sewing the cloth from a plurality of used buffs together in an end-to-end relation.

In the method of this invention, the strip of cloth **22** is wound about a pair of rods **24** which are attached at their ends to a pair of rotatable frame members **26** that are shown provided with axially aligned supporting shafts **28** which can be rotated in any desired manner. The strip **22** is manipulated so that as the rods **24** are rotated about the axis of shafts **28**, the strip **22** is wound about the rods **24** as shown in FIG. 4 so that adjacent pieces **29** of the strip **22** are overlapped. The edges **23** of strip **22** formerly constituted the outer edge **18** of cloth **16** and are therefore somewhat ragged. The strip **22** is preferably wound on the rods **24** without first laying the cloth out flat, so that the strip is two-ply in cross section as shown in FIG. 3, having one folded edge and one ragged edge **23**. The strip **22** is then of a width equal to "½*a*" and is wound on the rods **24** so that the folded edge overlaps the ragged edges **23**, resulting in substantial concealment of the edges **23**.

When the strip **22** has been wound about the rods **24**, a flattened helical body **30** of cloth is formed, which is continuous, since adjacent flights or pieces **29** of cloth in the body are overlapped, and a seam **32** is formed in the body **30** either by sewing, or by the application of suitable adhesive material, so that the body **30** will retain its flattened helical shape when it is removed from the rods **24**. The body **30** is of a length *"l"* which is at least equal to the circumference of a drum fixture indicated generally at **34** in FIG. 5 for a reason to appear presently. The width of the body **30**, corresponding to the distance between the rods **24**, and indicated at W in FIG. 5, is in most

cases greater than the width "a" or "½a" of the cloth strip **22** and is determined by the desired radial length of the cloth body on the buff to be formed.

The cloth body **30** is removed from the rods **24** by withdrawing the rods **24** from one of the frames **26**. The body **30** is then placed on the peripheries of the two drums **36** and **36***a* which form the drum fixture **34**. The length "*l*" of the body **30** is sufficient to provide at least one complete loop of the body **30** about the drums **36**, **36***a*. If a heavier buff is desired, a plurality of complete loops of the body **30** are formed about the drums **36** and **36***a* but in any event, the length "*l*" of the body **30** is such that complete loops are formed. In other words, the length "*l*" is evenly divisible in all cases by the circumference of the drum fixture **34**. If desired, the body **30** can be wound in a coil shape and secured end to end with other bodies and stored for later use. At such time, a length "*l*" is cut from the coil. Also, one of the frame members **26** can be eliminated so that as strips **22** are wound on the rods **24**, a continuous body of cloth, of flattened helical shape is also being removed from rods **24** and coiled.

The drums **36** and **36***a* are mounted on shafts **38** and **38***a*, respectively, and are mounted so that they are movable toward each other. In the illustrated embodiment of the drum fixture **34**, the drum **36** has an axial shaft projection **38** which is slidably supported in a cavity **40** in the drum **36***a*. Suitable means is provided for contracting the cloth body **30** radially inwardly to a position between the drums **36** and **36***a*. In the illustrated embodiment of the invention, this contraction is accomplished by placing a wire **42**, of loop shape, about the external surface of the body **30** at a position midway between the edges thereof. The wire **42** is then manipulated so as to reduce the circumference of the loop formed thereby to in turn draw the cloth body **30** radially inwardly between the drums **36** and **36***a*.

The mounting hub **12** consists of an annular center plate **54** which is mounted at its center on the drum shaft projection **38** at a position between the drums **36**, **36***a*, as shown in FIG. 7. The center plate **54** is formed on its circumference with spaced clamping tabs **52**, and a metal clamping ring **48**, which is in the form of a radially outwardly opening channel as shown in FIG. 7, is formed with the teeth **14**. The ring **48** is concentrically positioned on the circumference of the center plate **54**, so that circumferentially adjacent tabs **52** are disposed on opposite sides of the ring **48**. The wire **42** is manipulated so as to contract the cloth body to a position in which a central portion **46** of the body **30** is positioned within the alligator teeth **14** formed on the ring **48**. The drums **36**, **36***a* are then moved toward each other so as to force tabs **52** into clamping engagement with ring **48** and force teeth **14** through the portions **46** of the cloth body **30** so as to clamp it within the teeth. The wire **42** is then removed, and the resulting buffing wheel **50** (FIG. 8) of this invention is removed by moving drums **36**, **36***a* far enough apart to allow removal of wheel **50** from projection **38**. Each cloth piece **29** is thus return folded upon itself in overlapped relation with adjacent pieces **29** and is in a position in which its center portion **29***a* is clamped within the ring **48** and its end portions **29***b* extending radially outwardly in overlapped relation so that the terminal edges **29***c* of the portions **29***b* are separated. It is obvious that any reduction in diameter of the wheel **50**, such as occurs with normal use, disrupts the continuity of the cloth strip **22** and provides completely individual pieces **29**.

As a result of the use of the clamping ring **48** with the reused cloth body **30**, when a plurality of buffing wheels **50** are stacked side by side on a shaft, a metal-to-metal contact of adjacent rings **48** takes place. Such contact permits a flow of air in a direction radially outwardly between adjacent wheels **50** to cool the buff bodies **30**. In a conventional buffing wheel made from reused cloth in the manner previously described, adjacent cloth bodies contact each other so as to block any such flow of air.

As shown in FIG. 8, the buff **50** of this invention includes the alligator-type mounting ring **48** and the cloth body **30**, with the edges of the reused strip **22** extending generally radially of the buffing wheel **50**. The strip of cloth **22** also extends generally radially of the buffing wheel **50**.

From the above description, it is seen that this invention provides a buffing wheel **50** which is constructed of a reclaimed strip of buff cloth **22** which is of a width less than the width of the cloth body **30** which is required to form the buff **50** of the necessary diameter. Consequently this invention provides an improved method for obtaining from a strip **22** of cloth, a cloth body **30**, which is of a width greater than the width of the cloth strip **22**. The improved buff **50** is obtainable without the necessity for excessive manual labor and is in some respects improved relative to a new buffing wheel, since the reclaimed cloth has some characteristics, such as yieldability, which are not present in new cloth. Furthermore, by virtue of the arrangement of the cloth in the buff of this invention, a large surface contact of flexible cloth with an article being buffed is obtainable, which is advantageous in certain commercial applications. Consequently, it is within the purview of this invention to utilize new cloth of any available or desired width relative to the width "W."

It will be understood that the buff utilizing reused cloth and the method of making such a buff which are herein disclosed and described are presented for purposes of explanation and illustration and are not intended to indicate limits of the invention, the scope of which is defined by the following claims.

What is claimed is:

1. A buff wheel comprising means forming a substantially circular supporting ring having a radially outwardly opening endless channel at the outer periphery thereof, alligator-type clamping teeth on opposite sides of said channel, an elongated cloth body consisting of overlapped pieces of cloth which extend generally transversely of said body, each of said pieces having a pair of raw edges which extend generally transversely of said body, said pieces being transversely unattached to adjacent pieces, said body being mounted on said ring so that said pieces are evenly distributed about the periphery thereof with each of said pieces being return folded upon itself so that it has a center portion and a pair of end portions which extend in overlapped relation from said center portion, with each of said end portions of each piece terminating in an edge separated from the edge of the other end portion of said piece, the center portion of each of said pieces being positioned in said channel so that the center portions of all of said pieces are disposed in the same plane, said teeth clampingly engaging the cloth body.

2. A buff wheel according to claim **1** in which said body is comprised of a substantially continuous strip of cloth wound to form a body of flattened helical shape, said body being of a width equal to the desired length of each of said pieces.

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