Dec. 14, 1937. J. C. BURKHARDT 2,102,193

BUFFER CORE

Filed Oct. 5, 1936

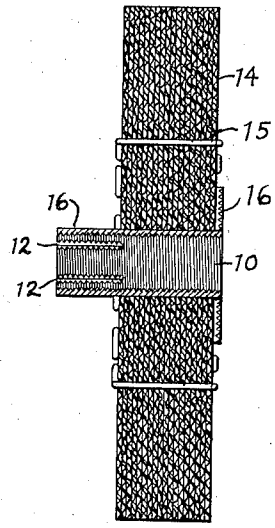


FIG. 1.

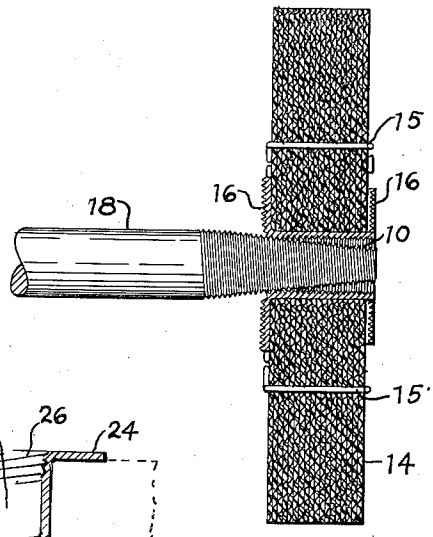


FIG. 2

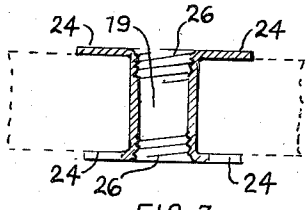


FIG. 7

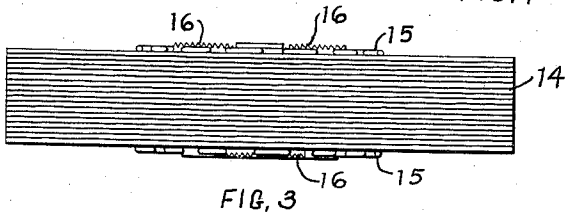


FIG. 3

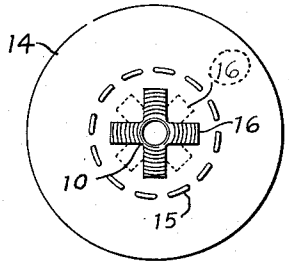


FIG. 4

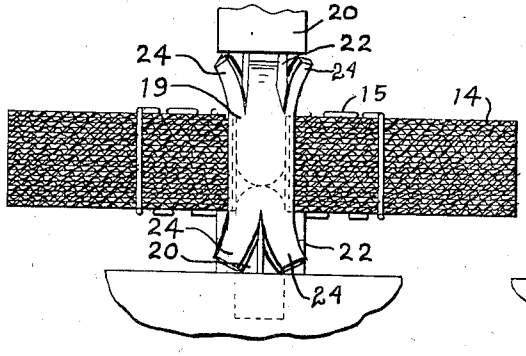


FIG. 5

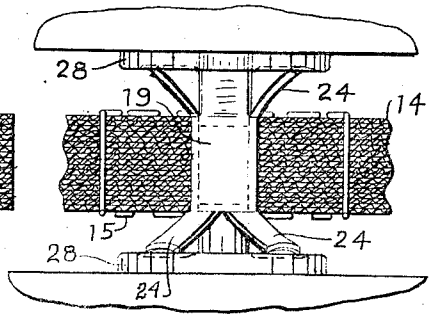


FIG. 6

INVENTOR.

JAMES C. BURKHARDT

BY

Henry G. Dybvig

ATTORNEY.

Patented Dec. 14, 1937 2,102,193

UNITED STATES PATENT OFFICE

2,102,193

BUFFER CORE

James C. Burkhardt, Dayton, Ohio

Application October 5, 1936, Serial No. 104,055

3 Claims. (Cl. 51—193)

This invention relates to buffers or polishing wheels made from laminated fabric, and in more particular to a reenforcing core or hub therefor.

Buffers used by dental laboratories and the like are usually made from a plurality of annular laminations of cotton, wool or other fibrous material. A hole is punched through the center which receives the mandrel of the polishing machine. This mandrel is generally tapered and provided with threads. The buffer is inserted on the ends of the mandrel, the inner edges of the fabric of the laminations being used to engage the mandrel and hold the buffer in position. There is a tendency on the part of the aperture in the buffer to stretch and enlarge as the buffer is used, thereby greatly enlarging the hole so that the inner portion of the material is destroyed in this manner, rather than from abrasion, thus greatly shortening the life of the buffer. Attempts have been made to reenforce the inner edges of the laminations by providing a metallic core made from lead or other suitable material having a low melting point, poured while molten into the aperture. The difficulty with the lead is that it stretches and fails, so that the inner edge of the fabric is mutilated much the same, whether the core of soft pliable metal is used or not.

An object of this invention is to provide a core or a sleeve for reenforcing the center of a buffer, which core or sleeve is easily formed from easily procured stock material, that is economical, efficient and dependable.

Other objects and advantages reside in the construction of parts, the combination thereof and the mode of operation, as will become more apparent from the following description.

Fig. 1 is a transverse sectional view of the buffer, having one end of the tubular sleeve flared into position.

Fig. 2 is a cross sectional view of the buffer mounted upon a mandrel in readiness for use.

Fig. 3 is a side view of the buffer.

Fig. 4 is a top plan view drawn to a smaller scale than Figs. 1, 2, and 3.

Fig. 5 is a cross sectional view of another modification, showing one step in the operation of assembly.

Fig. 6 is a fragmentary sectional view showing a succeeding step in the operation.

Fig. 7 is a fragmentary sectional view showing the tubular sleeve of the modification in section.

The buffer 14 is preferably made from a plurality of laminated sheets 14 sewed together by stitches 15.

A tubular sleeve 10, internally threaded, having both ends slotted at 12, extends through the aperture in the center of the laminations. Any suitable number of slots may be used. For convenience, four slots have been used. The slots in one end are arranged in staggered relation with respect to the slots in the opposite end, whereby the portions or lobes 16 on one end are arranged in staggered relation with respect to the lobes 16 on the opposite end. As the portions 16 are bent into engagement with the sides of the laminated fabric, the staggered relation prevents slippage between the tubular sleeve 10 and the laminations 14. This staggered relation causes the fabric to be flexed slightly, so as to simulate corrugations near the ends of the lobes 16.

As the mandrel 18 is usually tapered, only the internal threads near one end of the tubular sleeve are engaged by the mandrel. The mandrel 18 may taper to practically a point.

It has been found that buffers provided with the tubular sleeve 10 last much longer than those without a tubular sleeve, as the tubular sleeve and the lobes 16 grip the fabric, so as to hold it firmly without mutilation of the inner edges of the laminations.

Instead of using a slotted tubular member internally threaded, a tubular member 19 without slots may be used, as disclosed in the modifications shown in Figs. 5 to 7. When using a tubular sleeve 19 that does not have the ends slotted, it is preferable to use a pair of forming punches 20, shown in Fig. 5, each provided with cutting or chiseling edges 22, tending to sever or split the end of the tubular member into lobes 24. As the punches 20 are brought together, either by means of tongues or by a suitable punch press arrangement, the ends, in addition to being split into lobes, are flared. Again, the lobes 24 are preferably arranged in staggered relation with respect to the tongues of the opposite end, so as to more firmly grip the material.

The buffer supporting the tubular sleeve with the ends partly flared, may then be submitted to a final forming operation performed by a pair of forming tools 28 shown in Fig. 6. In some cases the forming tool and the punches may be combined. The forming tool 28 seats the lobes 24 in firm engagement with the laminations 14. After the tubular sleeve has been fixedly attached to the laminations, the opposite ends of the tubular sleeve may be provided with threads 26, as shown in Fig. 7, for engagement with the mandrel. It is not necessary to thread the entire

tubular sleeve, due to the tapered arrangement of the mandrel.

Copper has been found to produce excellent results when used as a material for the tubular sleeve 10 or 19. Instead of copper any other suitable material may be used, as for example, iron, steel, brass or the like.

When the buffer disclosed in either modification described above is placed upon a motor driven mandrel, the buffer is firmly seated when the mandrel accelerates or maintains a uniform speed. In some types of structure it is not necessary to stop the motor, as the mandrel is connected to the motor shaft through a suitable clutch which may be released manually. When this clutch is released, the mandrel is brought to rest very suddenly, thereby permitting the inertia of the buffer to unseat it from the mandrel.

Although the preferred modification of the device has been described, it will be understood that within the purview of this invention various changes may be made in the form, details, proportion and arrangement of parts which generally stated, consist in a device capable of carrying out the objects set forth, in the novel parts, combination of parts and mode of operation, as disclosed and defined in the appended claims.

Having thus described my invention, I claim:

1. In a buffer having a plurality of laminae provided with a centrally located aperture adapted for use with an externally threaded tapering mandrel, a tubular sleeve extending through the aperture and having a plurality of radial lobes extending outwardly from each end thereof into engagement with the sides of the laminae, the lobes of one end formed by splitting the end of the tubular sleeve being arranged in staggered relation with respect to the lobes of the opposite end so as to firmly grip the laminations, the aperture through the tubular member being adapted to be mounted upon the mandrel.

2. In a buffer having a plurality of laminae provided with a centrally located aperture adapted for use with an externally threaded tapering mandrel, an internally threaded tubular sleeve extending through the aperture and having a plurality of radially disposed lobes adjacent each end and extending outwardly into engagement with the sides of the laminae, the lobes of one end being arranged in staggered relation with respect to the lobes of the opposite end so as to firmly grip the laminations, the threads of the sleeve being adapted to engage a screw threaded tapering mandrel.

3. In a buffer having a plurality of laminae provided with a centrally located aperture adapted for use with an externally threaded tapering mandrel, a tubular sleeve extending through the aperture and having a plurality of radially disposed lobes adjacent each end thereof, said lobes being formed by splitting the ends of the sleeve and flaring outwardly into engagement with the sides of the laminations, the tubular sleeve being provided with screw threads extending inwardly from each end, which is adapted to threadedly engage the screw threaded tapering mandrel.

JAMES C. BURKHARDT.