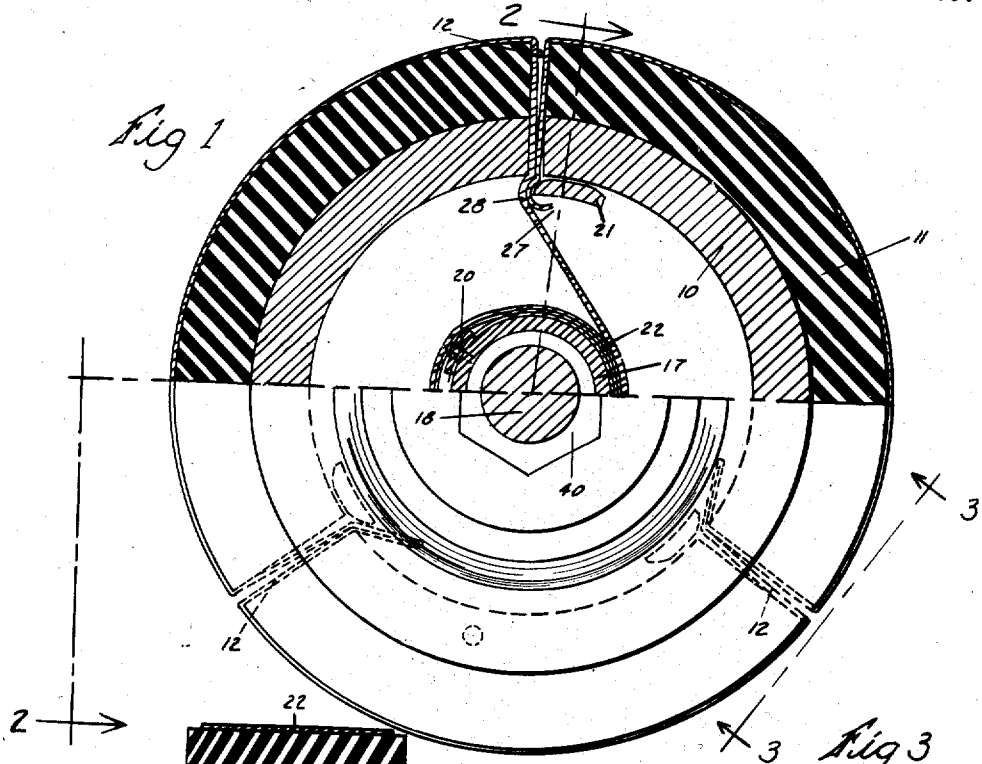
March 5, 1940. J. O. SCHULTE 2,192,804

SANDING DRUM

Filed July 5, 1938 2 Sheets-Sheet 1



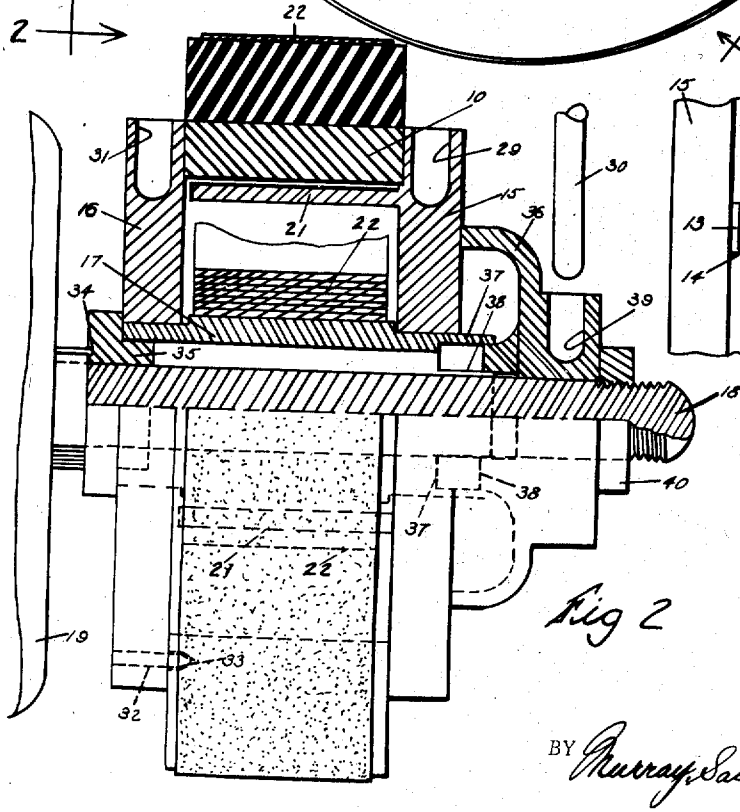
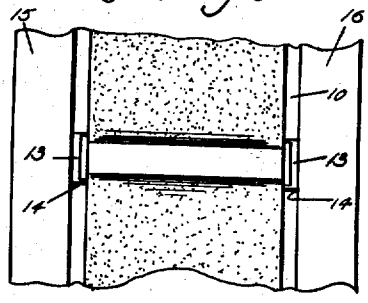


Fig 2



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Fig 4

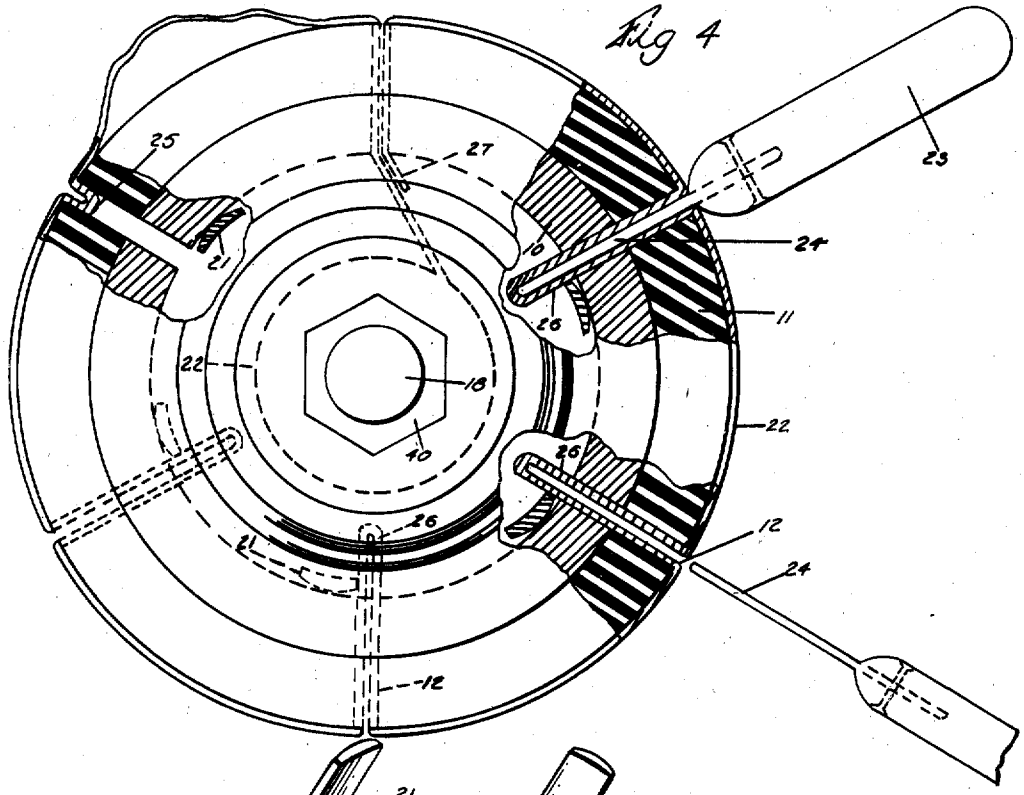
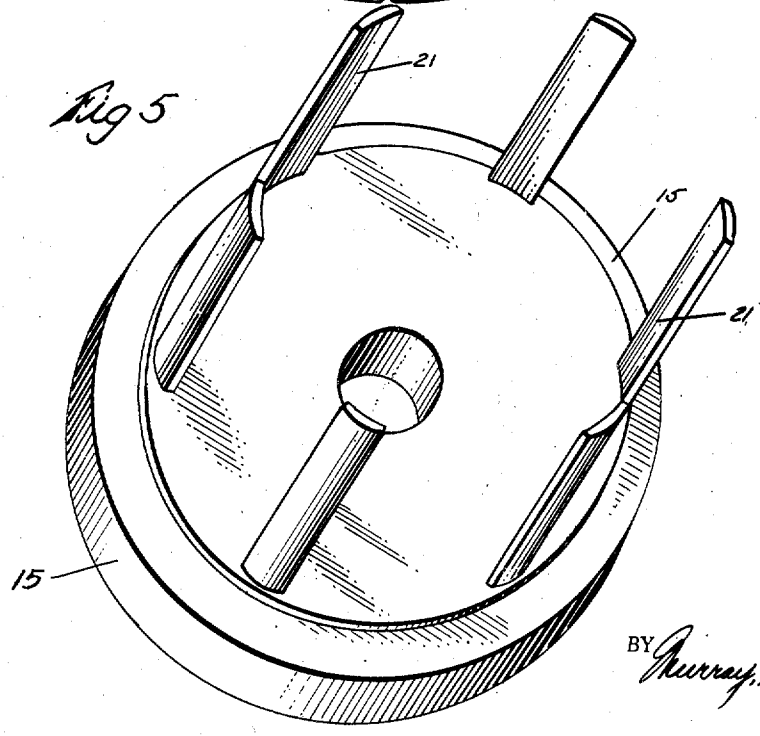


Fig 5



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Patented Mar. 5, 1940 2,192,804

UNITED STATES PATENT OFFICE

2,192,804

SANDING DRUM

John O. Schulte, Cincinnati, Ohio

Application July 5, 1938, Serial No. 217,331

3 Claims. (Cl. 51—194)

This invention relates to a sanding drum comprising generally a drum member having sanding material in strip form stretched over its working surface, the said material being renewed from time to time as it becomes ineffective from use.

An object of the invention is to provide a sanding drum of this kind having novel means for stretching and combining the sanding material on the working surface of the drum.

Another object is to provide a device of this kind which carries interiorly thereof a supply of the sanding material for immediately replenishing that which has been worn out on the surface of the drum.

Another object is to provide a sanding drum in which it is possible to utilize the complete length of sanding material, substantially eliminating waste of any portions of the said material.

Another object is to provide a sanding wheel or drum of simple and effective construction and use.

Another object is to provide a novel method of properly positioning sanding material on a drum of the character herein contemplated.

These and other objects are attained by the means described herein and illustrated in the accompanying drawings, in which:

Fig. 1 is a side view, half in cross-section and half in elevation, of a sanding drum comprising the means of the present invention.

Fig. 2 is a view taken substantially on the line 2—2 of Fig. 1, a portion of a tightening tool being shown in association with the figure.

Fig. 3 is a view taken substantially on the line 3—3 of Fig. 1, with parts omitted.

Fig. 4 is a side elevational view, with parts broken away, of a sanding drum of this invention, showing in association therewith a tool for positioning sanding material initially on the drum, parts of the drum being broken away to disclose the construction.

Fig. 5 is a perspective view of the wedge member forming a part of the present invention.

In devices such as sanding drums, polishing wheels and the like, with which the present invention is concerned, it is essential that the sanding material be maintained in tight and operative relationship with the working surface of the drum. Various means have been employed in the past in the endeavor to secure this essential relationship. In some instances, a plurality of slots are provided on the drum into which the sanding material is forced and bound by some type of wedge member. In other instances, it has been attempted to achieve the tightening action on the sanding material by spring or other pressure means on the interior of the drum and operating on the opposite ends of the sanding material. However, due to the constant pressure and friction exerted on a sanding wheel during its use, the means for holding the sanding material in operative position have proven ineffective to a greater or less degree.

The present invention provides means for positively binding the sanding material on the working surface of the drum by the use of slots provided in said surface and having portions of the sanding material doubled thereinto and a novel type of wedge member operating, not against the interior of the slots of the wheel, but against the interior surface or wall of the chamber provided in the drum of this invention, such wedge member binding the inwardly projecting ends of said doubled portions of the sanding material into a secure and non-slipping relation.

In addition to the foregoing, the present invention eliminates waste of the sanding material by providing for use of the doubled-in portions of the sanding strip on the surface of the drum, subsequent to use of these portions in the slots of the drum, for binding the material to the drum.

In greater detail and with reference to the drawings, a device of the invention comprises a rim 10 formed of suitable material, such as aluminum, and having secured to its surface a depth of material 11, such as rubber or like composition, adapted to resist slipping of the sanding material subsequently disposed thereon.

Slots 12 extend from the exterior surface of the material 11 through the rim 10 and communicate with a chamber formed in the interior of the drum. As seen in Fig. 3, the slots of the rim 10 may be closed at their ends, as indicated at 13, while the slots in the material 11 may be open at both ends, as indicated at 14.

The sides of the drum are formed by a pair of plates 15 and 16 which, together with the rim 10, form the interior chamber of the drum previously referred to. The plates 15 and 16, as seen in Fig. 2, may extend outwardly as far as the outer edge of the rim 10. The said plates are centrally apertured for rotatably receiving the core 17, said core being hollow or tubular for reception upon a drive shaft 18 normally associated with a motor, shown fragmentally at 19.

As seen in Fig. 1, the core 17 has a suitable clamping device 20 associated therewith for at-

taching the inner end of the sanding material to the core, as will be further described.

The plate 15 forms the exterior portion of a wedge member, said plate having secured thereto, or formed integrally therewith, the wedge bars 21 which project inwardly of the drum, transversely of the chamber thereof, and in proximity with the inner wall of the rim 10. The wedge member, including the plate 15 and wedge bars 21, is shown separately in Fig. 5. There it will be seen that the wedge bars 21 are preferably convex on their outer surfaces and tapered towards their vertical edges for performing the wedging action to be later described.

Figs. 1 and 2 show a supply of sanding material in strip form wound upon the core 17, the supply of material being indicated at 22. To operatively associate the material with the core, the normal method is to insert the core 17 through the center of the roll of material, thereafter introducing the outer end of the material 22 through one of the slots 12 of the drum, the plates 15 and 16 being thereafter positioned for closing the sides of the drum. A length of the material 22 is withdrawn through the slot and the material carried around the working surface of the drum. The process of lapping or doubling the sanding material into the slots is illustrated in Fig. 4. A tool 23 is utilized for this inserting process. The tool may comprise a blade or plate member 24, the blade being of such length as to project into the interior chamber of the drum member a substantial distance beyond the rim 10. The sanding material, having been carried to the next slot on the drum surface. is now doubled into this slot by means of the tool 23. An initial position in connection with this step is indicated at 25. The fully inserted end portions of the inwardly projecting sanding material are now in the position indicated in Fig. 4 at 26. In a similar manner, the sanding material is carried about the drum and inserted in the several slots 12. The outer end of the sanding material is inserted in the same slot through which it was originally brought out from the interior of the drum. This outer end is indicated at 27, Figs. 1 and 4.

For stretching the sanding material tightly against the working surface of the drum and locking it in this position, the wedge member, including the plate 15 and the wedge bars 21, is turned for shifting said bars towards the inner ends of the slots 12. The inwardly projecting portions 26 of the sanding strip, as well as the extreme outer end 27 of the sanding strip and the sanding material adjacent thereto (indicated at 28, Fig. 1), are all wedged by the bars 21 against the inner wall of the chamber, that is, against the inner surface of the rim 10. The plate 15, on its edge, may be provided with a socket 29 adapted to receive a rod or tool 30, used as a lever for turning the said plate. In order to preclude simultaneous turning of the remainder of the drum member, the plate 16 may be provided with a similar socket 31 into which a tool similar to the rod 30 is inserted for holding the plate 16 motionless during rotation of the opposite plate. The rim portions 10 and 11 of the drum member must likewise be kept from turning at this time and for this purpose a pin 32 on the plate 16, projecting into a recess 33 in the rim 10, may be utilized to obviate relative movement between these parts.

As already suggested, the sanding drum of this invention would normally be mounted upon a drive shaft 18. Such shaft may be provided with a shoulder 34 (Fig. 2). If the core 17 is not of such diameter as to properly fit the shaft 18, use may be made of journal or hub members 35, such as the one seen at the left in Fig. 2. Such hub members are likewise utilized for fitting the drum to shafts of various sizes. On the opposite side of the drum, as seen in Fig. 2, a cap 36 may be provided, which cap serves as the exterior means for tightening the core 17 in order to keep the supply of sanding material inside the drum in tightly wound position. For this purpose, the end of the core 17, which projects upwardly of the plate 15, may be formed with notch members 37 adapted to receive lugs or teeth 38 formed on the inner side of the cap 36. The cap is centrally apertured for reception on the shaft 18 and is likewise provided with a rim socket 39, similar to the sockets 29 and 31, whereby the cap, and consequently the core associated therewith, may be turned.

The whole unit is pushed on to the drive shaft as far as the shoulder 34 against which it may be firmly tightened by use of a nut 40 applied to the outer threaded end of the shaft 18.

When it is desired to renew the material on the working surface of the drum, the wedge member is loosened by reverse rotation of the plate 15 to permit withdrawal of the inserted portions of the sanding strip, and thereafter fresh sections of sanding material are placed in operative position on the drum.

In this connection, Fig. 4 clearly brings out an added advantage of this invention, namely, the means whereby the totality of the sanding strip, without any waste, may be utilized on the working surface of the drum. The portions of the sanding strip, projecting inwardly of the slots 12, are each substantially equal to the distance between two of the slots. Consequently, these inserted portions of the sanding strip may be withdrawn and placed against the operating surface of the drum, while the previously used sections of the materials may be inserted for performing the wedging or locking function. In this way, waste of the sanding material is substantially eliminated. The invention is composed of a small number of parts which may be readily produced and assembled, while the operation of positioning and removal of the sanding material from the drum may be effected in a minimum of time.

It is obvious that the distance between the wedge bars 21 and the inner wall of the rim 10 might vary in accordance with the thickness of the sanding or other material to be positioned on the drum, but, in any event, the wedging action is positive and as great a wedging pressure as desired may be placed upon the ends of the doubled-in portions of the strip material so that a positive locking of the material in stretched condition may be accomplished.

What is claimed is:

1. A sanding drum comprising a drum member formed with an interior chamber and a working surface provided with slots communicating with said chamber, a wedge member associated with the drum member and comprising wedge bars mounted for movement in said chamber in proximity with the slotted portions of the chamber wall, and means for moving the wedge member, a strip of flexible sanding material being adapted to be positioned about said working surface with portions thereof doubled into said slots and projecting into said chamber and said wedge member being adapted to be moved for wedging the

end sections of said inwardly doubled strip portions between said bars and the wall of said chamber whereby to bind the outer portions of the strip material against the working surface of the drum member.

2. A sanding drum comprising a drum member formed with an interior chamber and a working surface provided with aligned parallel slots communicating with said chamber, a core mounted in the chamber for axial rotation therein, means for rotating the core, a wedge member associated with the drum member and comprising wedge bars mounted for unitary rotation in said chamber in proximity with the slotted portions of the wall of said chamber, said wedge bars corresponding in number with said slots, and means for rotating the wedge member, a strip of sanding material being adapted to be wound on said core and the outer end thereof projected through one of said slots and passed about said working surface with portions of the strip material doubled into said slots and projecting into said chamber, and said wedge member being adapted to be rotated for causing said bars to wedge the ends of said inwardly doubled strip portions against the wall of said chamber whereby the strip material is securely bound against the working surface of the drum member.

3. A sanding drum comprising a drum member formed with an interior chamber and a working surface provided with slots communicating with said chamber, a wedge member associated with the drum member and comprising individual wedge portions mounted for movement in said chamber in proximity with the slotted portions of the chamber wall, and means for moving the wedge member, a strip of flexible sanding material being adapted to be positioned about said working surface with portions thereof doubled into said slots and projecting into said chamber and said wedge member being adapted to be moved for wedging the end sections of said inwardly doubled strip portions between said wedge portions and the wall of said chamber whereby to bind the outer portions of the strip material against the working surface of the drum member.

JOHN O. SCHULTE.