

Feb. 7, 1939.

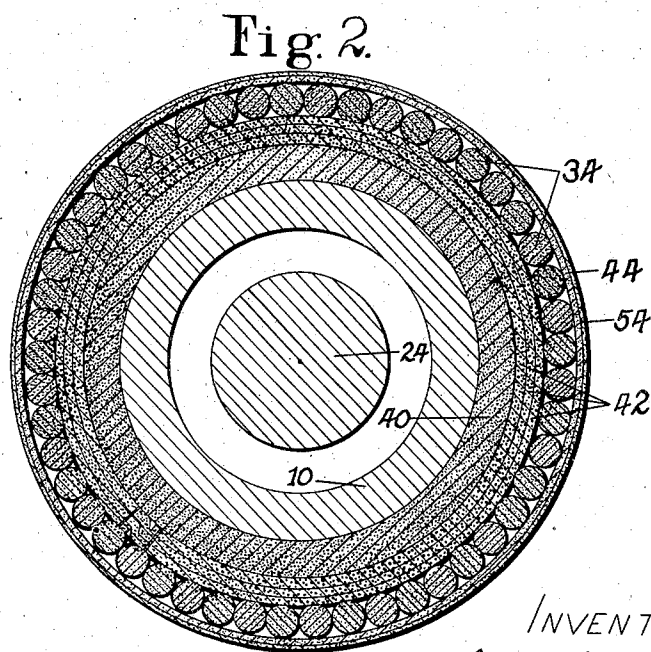
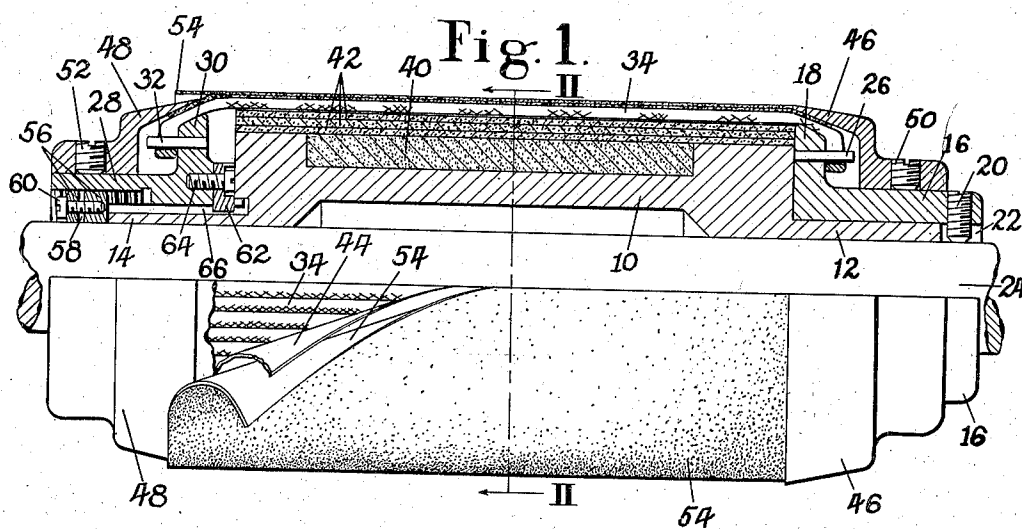
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2,146,302

ABRADING TOOL

Filed July 21, 1937

2 Sheets-Sheet 1



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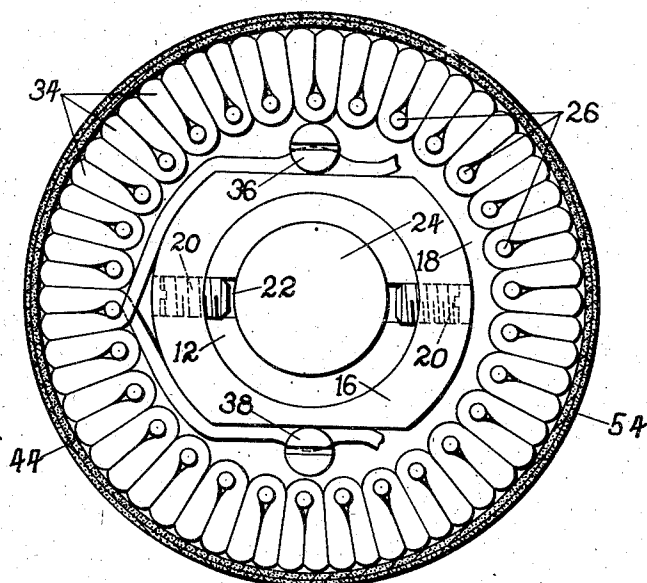
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Fig. 3.



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UNITED STATES PATENT OFFICE

2,146,302

ABRADING TOOL

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Application July 21, 1937, Serial No. 154,849

3 Claims. (Cl. 51—194)

This invention relates to abrading tools and is herein illustrated and described as embodied in a roll suitable for use in buffing shoe bottoms. Such buffing operations require a tool capable of exerting a soft, resilient action upon the work. In order to obtain the desirable resilience it has been proposed to employ cylinders of rubber which may be inflated with air. Such rolls, however, do not run in proper balance at high speed.

It is an object of the present invention to provide an improved buffing roll having the desirable characteristics of the inflated type of roll above mentioned and which at the same time will run in proper balance at high speed. In the illustrated construction a plurality of lengths of cord are arranged in the form of a cylinder about the axis of a roll body for supporting a fabric sleeve which, in turn, supports the abrasive sleeve. When the tool is rotating rapidly, the cord under the influence of centrifugal force exerts an outward pressure upon the fabric sleeve and thence against the interior of the abrasive sleeve thus supporting the abrasive sleeve with yielding pressure. The roll shown herein is provided with clamping means for securing the fabric sleeve in position, and the roll body is surrounded by a yieldable cover for cushioning the cord lengths under pressure of the work.

The invention further consists of various features of construction and combinations of parts herein disclosed and claimed.

In the drawings,

Fig. 1 is a view in longitudinal elevation, partly in section, of the improved roll;

Fig. 2 is an enlarged sectional view taken on the line II—II of Fig. 1, and

Fig. 3 is an end view of the improved roll.

As shown in the drawings, the supporting structure of the roll consists of an elongated metal core 10 having hubs 12 and 14, respectively. Mounted upon the hub 12 is a sleeve 16 having a radial flange 18. A set screw 20 which is threaded in the sleeve 16 extends through an opening 22 in the hub 12 to secure the core 10 to a shaft 24 upon which the roll is mounted. A plurality of pins 26 extending parallel to the axis of the roll project in a circle from the flange 18. A similar sleeve 28 is mounted on the hub 14. The sleeve 28 has a radial flange 30 in which are mounted a plurality of pins 32 arranged in a manner similar to that of the pins 26.

A cord 34 is looped about one of the pins 26 and then about one of the pins 32, then back about the adjoining pin 26 and so back and forth

lengthwise of the core 10 until the cord has been looped about all of the pins. The pins are spaced to bring each cord length substantially into contact with its neighbor. The ends of the cord are clamped by the heads of a pair of screws 36 and 38, respectively, against the flange 18. Thus there is provided a plurality of cord lengths extending longitudinally of the roll or parallel to the axis of the shaft 24 and together forming a substantially continuous cylindrical surface. A satisfactory material for the cord 34 is one-quarter inch braided wicking.

The periphery of the core 10 is recessed to accommodate an insert 40 of felt. Wrapped around the periphery of the core 10 and felt insert 40 are mounted a plurality of layers of flannel 42, the several layers being stitched together through their overlapping ends and the outermost layer being substantially in contact with the cord 34. Surrounding the lengths of cord 34 is a canvas sleeve 44 which preferably has been woven in tubular form. The ends of the sleeve 44, together with the underlying portions of the cord 34, are clamped against the flanges 18 and 30 by conical clamping collars 46 and 48, respectively. The collar 46 has a hub which is mounted on the sleeve 16 and secured thereto by a set screw 50. The collar 48 similarly has a hub which is mounted upon the sleeve 28 and is secured thereto by a set screw 52. A sleeve 54 of sand paper, emery cloth, or other like abrasive material is mounted upon the canvas sleeve 44. In order to facilitate mounting the abrasive sleeve over one end of the roll, the diameter of the large end of the clamping collar 48 is made less than the diameter of the abrasive sleeve. Thus, supposing the shaft 24 to be supported by a single bearing to the right (as seen in Fig. 1) of the roll, the abrasive sleeve 54 may be mounted upon the roll from the left. The clamping collar 46 has the diameter of its large end substantially equal to that of the abrasive sleeve 54 and thus constitutes a convenient stop or abutment for the right-hand end of the abrasive sleeve 54.

When the cord 34 is of lamp wicking, the initial tension need be slight and can easily be provided by the operator in securing the cord in position. However, in case it should be desired to use a less yieldable material, provision is made for adjusting the tension of the cord. To this end the sleeve 28 is provided with an axial recess into which is threaded a nut 56 which surrounds the shaft 24 and which abuts against the end of the hub 14. This nut is provided with re-

cesses on its outer face in order to be turned by a suitable wrench and portions of its periphery are in a plane normal to its axis, as indicated by the reference character 58, to enable binding screws 60 to secure it in adjusted position. A key 62 secured to the sleeve 28 by a screw 64 engages a key-way 66 formed in the hub 14 to prevent turning of the sleeve 28. It is evident that after the cord has been secured in position upon pins 26 and 32 and the ends of the cord have been secured under the heads of screws 36 and 38, the nut 56 may be turned to increase the distance between the flanges 30 and 18 to impart any degree of tension to the cord.

When the roll is in operation, the cord 34 will tend to fly outwardly under the influence of centrifugal force, being retained by the less yieldable canvas sleeve 44. The action of the cord 34 together with the sleeve 44 will thus press the abrasive sleeve 54 yieldingly and resiliently against the work in a manner similar to that of an air-inflated roll. If the operator should exert greater pressure than can be balanced by such centrifugal force, the flannel layers 42 and the felt sleeve 40 will nevertheless afford a backing equivalent to that of the best non-inflated rolls.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A buffing roll comprising a roll body, a yieldable cover surrounding said roll body, and a plurality of lengths of cord carried by said roll body and extending lengthwise of the roll body and arranged about said yieldable cover for

cushioning an abrasive sleeve, said yieldable cover serving as a backing to support said cord lengths against the pressure of the work.

2. A buffing roll comprising a support adapted to be mounted on a shaft, a plurality of lengths of cord carried by said support and arranged about the axis of said shaft and extending lengthwise of the shaft, a fabric sleeve surrounding said lengths of cord, an abrasive sleeve mounted on said fabric sleeve, and a clamping collar mounted on each end of said support for clamping an end of said fabric sleeve against said support, one of said collars having a diameter less than that of the abrasive sleeve to facilitate the placing of the abrasive sleeve in position upon said cord lengths.

3. A buffing roll comprising a support adapted to be mounted on a shaft and having a radial flange adjacent to each of its ends, a plurality of lengths of cord extending over said radial flanges and parallel to the axis of said shaft, a fabric sleeve mounted on and supported by said lengths of cord, an abrasive cover supported by said sleeve, a clamping collar adjacent to each of said radial flanges, each of said clamping collars having an internal conical clamping surface extending over the adjacent end portions of said cord lengths and of said fabric sleeve, and means for securing each of said clamping collars on said support in a position to maintain the adjacent end portions of the cord lengths and of the fabric sleeve clamped against the adjacent radial flange.

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