

Aug. 4, 1925.

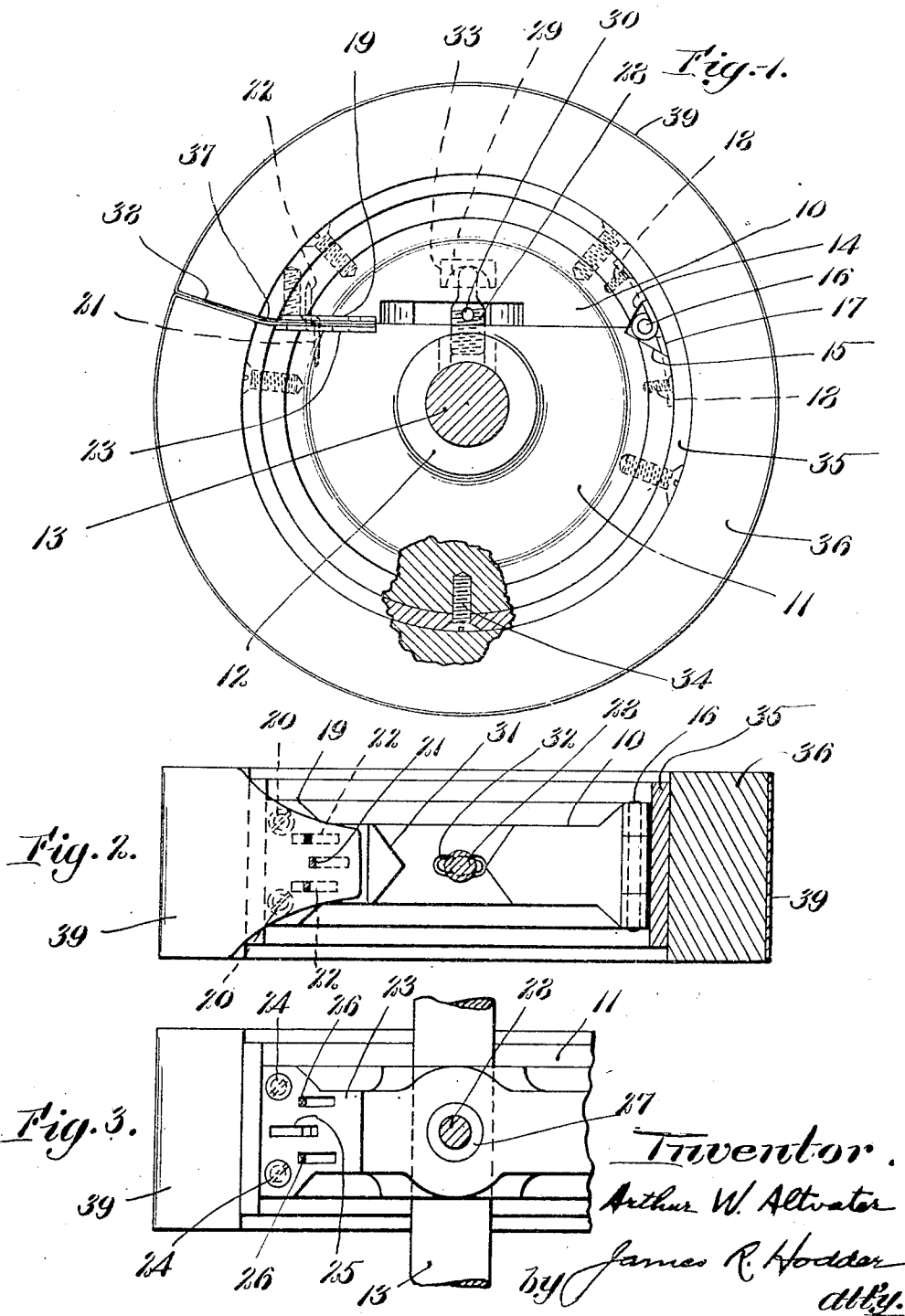
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A. W. ALTVATER

ABRADING AND SCOURING WHEEL

Filed Dec. 14, 1922

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Fig. 4.

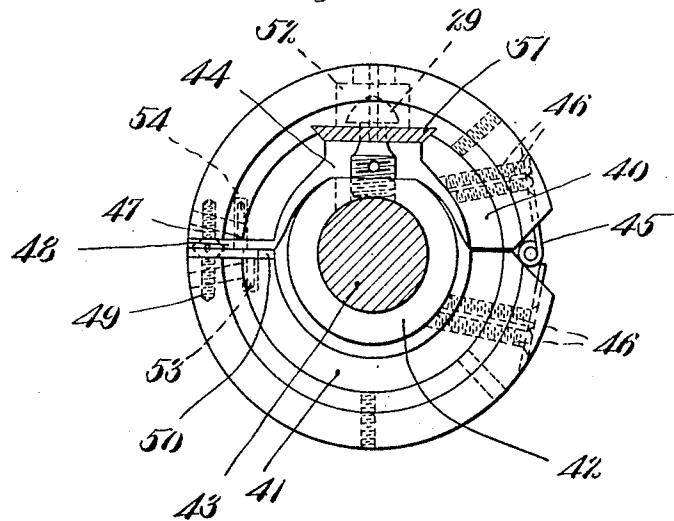
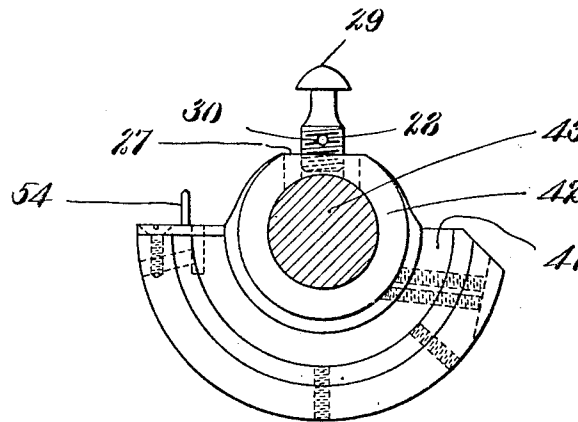


Fig. 5.

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UNITED STATES PATENT OFFICE.

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ABRADING AND SCOURING WHEEL.

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To all whom it may concern:

Be it known that I, ARTHUR W. ALTVATER, a citizen of the United States, and a resident of St. Louis, in the county of St. Louis and State of Missouri, have invented an Improvement in Abrading and Scouring Wheels, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My present invention relates to abrading wheels, and more particularly to an improved abrading and scouring wheel.

In the manufacture of boots and shoes a number of scouring operations take place, particularly on the sole and heel portions of the boots and shoes and for this purpose it has been customary to utilize an abrasive wheel, the abrasive portion of which is comprised of a sheet of emery paper or cloth, or sandpaper, or the like, which, when worn out, must be renewed. Difficulty has not only been experienced in devising an abrading wheel in which the abrasive periphery may be readily and easily renewed, but great difficulty has been experienced in making a scouring wheel in which the abrasive periphery may be replaced in such manner as to insure a smooth surface to the wheel; that is, a surface without humps or hollows as such humps or hollows result in the rapid deterioration of the abrasive periphery, the greater portion of the wear coming on the tops of the humps with the ultimate result that considerable time is lost in replacing the periphery abrasive as well as increasing the cost for materials needlessly destroyed.

The ordinary commercial form of abrasive or scouring wheels employed in the shoe industry at the present time consists of a combined hub and rim or metal split diagonally or in such manner as to divide the combined hub and rim into two portions which are hinged together, the wheel being surrounded by a covering of resilient material about which the strip of sandpaper or other abrasive material is wrapped, the ends of such abrasive material being caught between the segments of the wheel. Considerable difficulty has been experienced in eliminating the bulge or hump that occurs in the strip of abrasive material, particularly at the point where the ends are folded over to be clasped by the bringing together

of the segmental portions of the wheel about the hinge as a pivot, such segments being of such shape and so connected together by the hinge as to form a bulge or hump on each side of the joining line of the segments of the wheel. Various attempts have been made to obviate this difficulty, such as, for example, the driving of a wedge shaped member into a space formed in the periphery of the wheel and preferably at the joining portion of the segments thereof, such wedge shaped portion acting to pull on the abrasive material about the wheel and force the ends into the space between the segments, thus drawing the abrasive material closely against the periphery of the wheel at every point thereof. In the earlier forms of this particular means for obviating the before noted difficulty, another and more serious difficulty presented itself in that the portion of the wedge employed remained uncovered by abrasive material, thus breaking the continuity of the abrasive periphery of the wheel and placing in such periphery a depression or hollow which resulted in excessive wear on the strip of abrasive material at the angle formed by the folded over portion which again resulted in extremely short life for the strip of abrasive material. It is an object of my present invention to obviate the difficulties above pointed out, and to this end I have devised an improved scouring wheel in which the wheel is divided into segments, hinged together, and surrounded by a cylindrical rim of yieldable material such, for example, as felt or rubber, and have hinged such segments together and made the segments of such form that, in the act of swinging the two segments into locking position to grip a strip of abrasive material in position on the periphery of such wheel, there is practically a straight line motion of the outer ends of the abrasive strip which results in the elimination of the hump in such strip of abrasive material at the corner formed by the folding over of the ends of the material.

I have also provided locking means for the ends of the strip of abrasive material on each of the segments, which locking means prevents slipping movement of the ends of the strip of abrasive material thereby preventing any slacking being formed in that portion of the strip of abrasive material extending around the wheel and such

locking means on each of the segments further interlock with each other so that, in closed position, each of the locking means is not only a locking means for the end originally attached thereto, but a locking means for the other end, in this manner forming a double locking means for the ends of the strip of abrasive material.

A further feature of my invention is an improved form of scouring wheel in which the wheel is divided into segments and in one of which segments is formed the hub or bearing for the driving shaft of the wheel. This construction obviates the dangers and difficulties experienced with former constructions wherein the wheel was usually divided on a diameter.

Further features of the construction and arrangement of parts comprising my invention will appear as the description of the invention progresses.

In the accompanying drawings illustrating preferred embodiments of my invention, Fig. 1 is a side elevation;

Fig. 2 is a plan view of the top segment shown in Fig. 1;

Fig. 3 is a plan view of the bottom segment shown in Fig. 1;

Fig. 4 is a side elevation of a modification, and

Fig. 5 is an elevation of the lower segment of the wheel shown in Fig. 4.

Referring to the drawings, and particularly to Figs. 1, 2, and 3, there is shown a wheel, preferably of aluminum for the sake of lightness, divided into two segments, a top segment 10 and a bottom segment 11, these segments being of the shape and relative size shown; that is, the wheel has been divided by a cord so that the lower segment 11 contains within its limits a hub 12 adapted to receive, and be secured to, a driving shaft 13. The segments 10 and 11 are cut away at one corner, as shown at 14 and 15 respectively, of a sufficient depth to receive the hinge portion 16 of a hinge or butt 17, this hinge 17 being secured to the segments 10 and 11 by flathead screws 18, or in any other suitable manner, the outer surface of the hinge or butt 17 lying flush with the periphery of the wheel formed of the segments 10 and 11. At the end or edge of the segments 10 and 11 remote from the cut away portions 14 and 15 respectively, are attached plates, one of these plates, as 19, being secured to the segment 10 by screws 20, this plate 19 being provided with a downwardly projecting locking member or tooth 21 and with a pair of holes or slots 22, arranged one on each side of the locking tooth 21. The other plate 23 is secured to the segment 11 by screws 24 and this plate 23 is provided with a hole or slot 25 that is in alinement with the downwardly extending locking tooth or member 21 and into

which the tooth 21 enters when the segments 10 and 11 are in closed or operative position. Arranged on either side of slot 25 and upwardly extending from the plate 23 are locking pins 26 which are in alinement with, and are adapted to register with, the holes or slots 22 in the plate 19. Arranged in the upper face of the segment 11 is an internally threaded bushing 27 into which screws a locking stud or member 28, the upper end of which is provided with a semi-circular locking head 29, while intermediate the ends of such stud 28 is provided a transverse hole 30 through which may be extended a pin for moving the stud 28 to locking and unlocking position. The lower face of the segment 10 is cut away, as shown at 31, to provide space for the insertion and movement of the locking pin that passes through the hole 30, while the upper face of the cut away portion 31 is provided with an elongated hole 32 which connects with a chamber 33 within the segment 10, which chamber 33 is ample in size to receive and allow rotation of the semi-circular locking head 29. It is obvious from the above that, if the segment 10 is rotated about the hinge point 16 to bring the plates 19 and 23 into engagement with each other, the locking head 29 will pass upward through the elongated hole 32 and into the chamber 33 while, if any suitable pin is inserted in the hole 30 and the locking stud rotated, the locking head 29 will be rotated in the chamber into such a position with respect to the elongated slot 32 as to prevent movement of the locking head 29 out of the chamber 33, thus locking the segments 10 and 11 in position.

Secured to the periphery of the wheel formed by the segments 10 and 11 by means of the screws 34 is a strip 35, preferably of leather, such strip being of any suitable width. Secured to the outer face of the leather strip 35 by a suitable adhesive is a rim 36 of felt, rubber, or any other suitable, and preferably resilient, material, both the strip of leather 35 and the rim 36 being split, as shown at 37 and 38 respectively, at the joining point of the segments 10 and 11, the line of cut of the strip of leather 35 and rim 36 being in alinement with each other and such line lying at a slight angle to the cord or joining line between the segments 10 and 11. This construction results in giving to the periphery of the rim 36 practically a straight line, or slightly inwardly curved line, of movement when the ends of the rim are brought together.

About the periphery of the rim 36 is placed a strip of sandpaper, emery cloth, paper, or other suitable abrasive 39, one end of the strip 39, assuming the segments 10 and 11 to be separated from each other by swinging the end about the hinge point 16, is secured

to the segment 10 by impaling the end of the strip 39 on the downwardly extending locking pin 21. The strip is then brought closely into engagement with the periphery of the rim 36 and the now free end of the strip 39 is folded over and such free end impaled on the upwardly extending locking pins 22. The free ends of the rim 36 are now forced into engagement with each other, thus moving the segments 10 and 11 into engagement with each other, and while held in such position, any suitable pin is inserted through the hole 30, rotating the locking stud 28 through an angle of approximately 90° to move the locking head 29 into locking position with respect to the elongated hole 32.

Referring now to Figs. 4 and 5, 40 and 41 designate segments of a wheel, such wheel being divided practically on a diameter, but with the segment 41 containing the hub 42 having a hole 43 therethrough for the reception of a driving shaft, the segment 40 being cut away on its central, or web, portion sufficient to provide a receiving chamber 44 for such hub portion 42 of the segment 41. The segments 40 and 41 are hingedly mounted together at one end by a hinge 45 secured to the segments 40 and 41 by screws 46. On the segment 41 at the side remote from the hinge 45 is secured by screws 47 a plate 48, while secured to the like position on the segment 41 by screws 49 is a plate 50. The upper face of the segment 41 is provided, as in the structure shown in Figs. 1 and 3, with an internally threaded bushing 27 adapted to receive a dovetailed hard metal member 51 provided with an elongated orifice (not shown) connecting with a chamber 52 of sufficient size to receive the locking head 29 of the locking stud 28. The abrasive wheel formed of the segments 40 and 41 has attached thereto a leather

strip and a rim of resilient material, as has been described above with respect to Figs. 1, 2, and 3, and the operation of this modification of my invention is identical with that above described, it being understood, of course, that the plates 48 and 50 are provided with locking pins 53 and 54 respectively.

While I have necessarily shown and described the preferred embodiment of my invention somewhat in detail, it is to be understood that I may vary the size and arrangement of parts within wide limits without departing from the spirit of my invention. While I may construct the wheel of any suitable material, such, for example, as iron, brass, wood, or the like, I prefer to construct the same of aluminum or like light, strong material as I find that a perfectly balanced wheel free from internal strains may be readily constructed therefrom.

Having thus described my invention, what I claim as new is:

An improved scouring wheel comprising a wheel divided into segments of unequal size, a hub for said wheel formed in one of said segments, a hinge member securing the segments together at one end thereof, a leather strip secured to the periphery of said wheel, a rim of resilient material secured to the outer face of said leather strip, said rim and said leather strip being cut on a line connecting with, and extending at an angle to, the joining line of the segments, cooperating locking means on said segments for locking said segments together in closed or operative position, and an abrasive strip locked in position on the resilient rim by said locking means, whereby the abrasive strip is locked in operative position on the rim.

In testimony whereof, I have signed my name to this specification.

ARTHUR W. ALTVATER.