

W. A. REED.
 ABRADING TOOL.
 APPLICATION FILED OCT. 29, 1910.

1,014,094.

Patented Jan. 9, 1912.

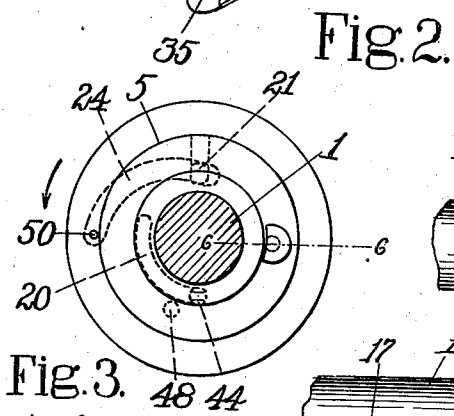
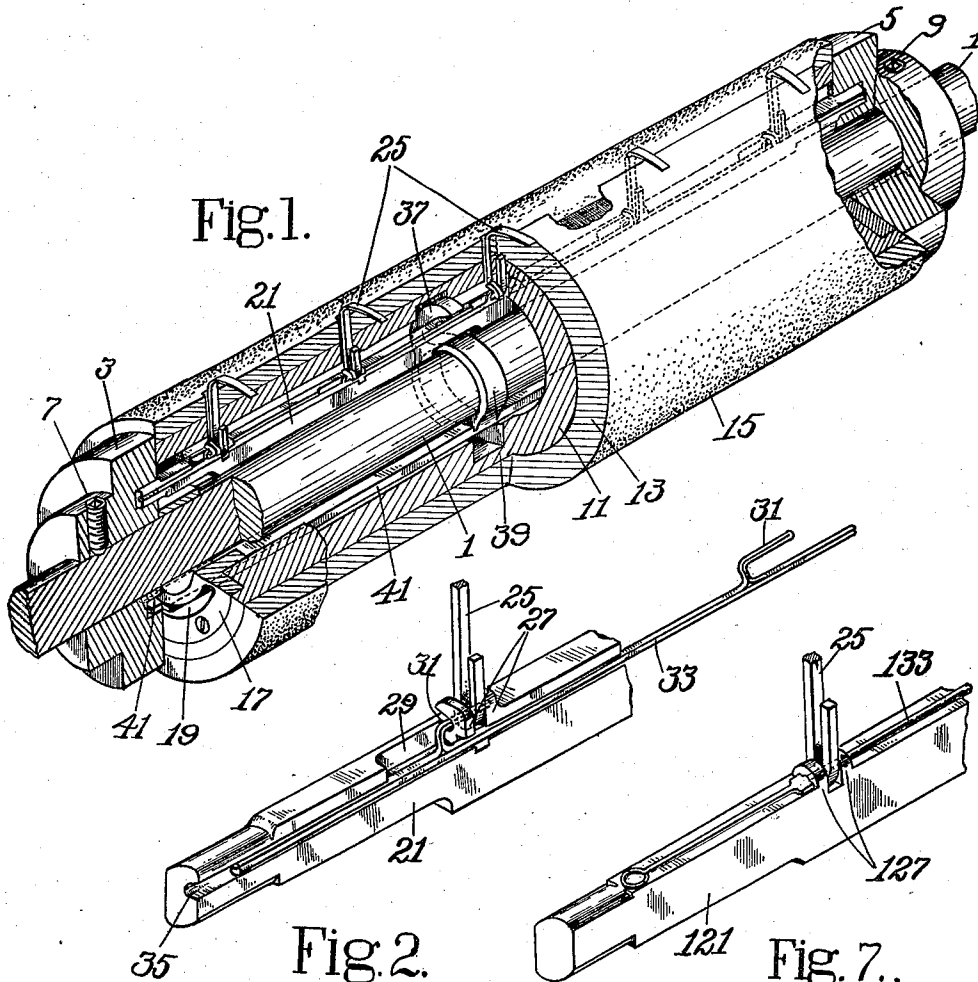


Fig. 3.
 WITNESSES:
 Elizabeth C. Conde
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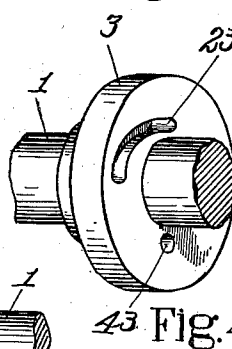
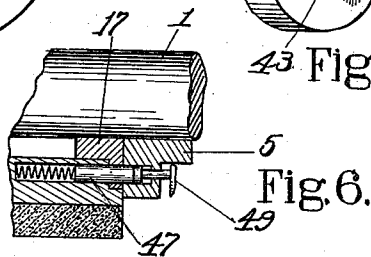


Fig. 4.
 Fig. 6.

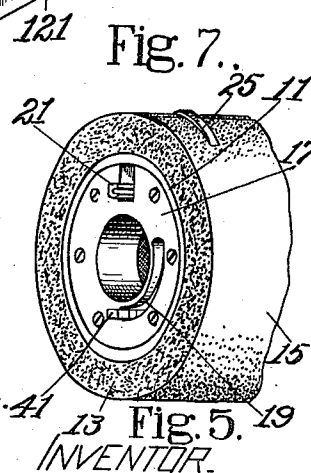


Fig. 5.
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UNITED STATES PATENT OFFICE.

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ABRADING-TOOL.

1,014,094.

Specification of Letters Patent.

Patented Jan. 9, 1912.

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To all whom it may concern:

Be it known that I, WILLIAM A. REED, a citizen of the United States, residing at Chelsea, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Abrading-Tools, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to abrading tools and is herein illustrated as embodied in a buffing roll for use in the manufacture of boots and shoes. In rolls of this type it has been customary to hold the cover of abrasive material such as sandpaper in place by means of hooks or similar clamping members which are drawn toward the center of the roll in order to force the abrasive cover against the layer of felt with which the roll is provided. In the course of use these hooks are often broken so that it becomes necessary to replace them. Hitherto such replacement has been difficult of accomplishment and has in some cases necessitated the dismantling of the roll.

Accordingly one feature of the present invention consists in the provision with an abrading tool adapted to support an abrasive cover, and a hook for holding said cover in place of an actuator for tightening and releasing said hook, and locking means for connecting said hook with said actuator and for disconnecting it therefrom. In the illustrated embodiment the actuator takes the form of a bar which may be moved toward and from the center of the roll; and a plurality of hooks are detachably connected with this bar by means of a locking member which may be moved in one direction to connect the hooks with the bar and in another direction to disconnect them therefrom. And preferably the construction is such that the hooks may be simultaneously connected with and disconnected from the actuating bar by a slight movement of the locking member. With this construction any one of the hooks may readily be replaced without disturbing those which remain.

The construction in the illustrated embodiment is such that relative movement between the roll and its driving shaft serves, by means of cam slots which engage the ends

of the actuating bar, to draw said bar toward the center of the roll. There is thus a tendency for the bar to spring and thereby permit the tension on the central hooks to be relieved.

Accordingly another feature of this invention consists in the provision of a cam to engage the bar intermediate its ends and thereby hold the central hooks firmly down upon the abrasive cover.

Another feature of the invention consists in a construction and arrangement of parts in a buffing roll of the present type whereby said roll is self-contained and may therefore be adjusted with respect to its driving shaft. In the illustrated embodiment the actuating bar is carried by the roll itself and the collars which hold the roll in place are adjustable with respect to the driving shaft.

These and other features of the invention including certain details of construction and combinations of parts will be described in connection with an illustrative device and will be pointed out in the claims.

Referring now to the accompanying drawing, Figure 1 is a perspective of a buffing roll in which the present invention is embodied, the roll having been sectioned in several places to permit views of the interior; Fig. 2 is a perspective of one end of the actuating bar and the locking rod, the base of one hook being shown connected with said bar by said rod; Fig. 3 is an end view of the roll from the right as shown in Fig. 1, the driving shaft being shown in section; Fig. 4 is a perspective of the left hand collar showing the cam groove and socket therein; Fig. 5 is a perspective of the left hand end of the roll; Fig. 6 is a section on the line 6-6 of Fig. 3; and Fig. 7 is a perspective of a modified form of actuating bar and locking rod.

The roll is loosely mounted on its driving shaft 1 being held from endwise movement by collars 3 and 5 which are adjustably fastened to the shaft by means of set screws 7 and 9. The roll comprises a cylinder 11 of wood or other suitable material which is surrounded by a layer 13 of felt or other yielding material; and about the felt layer is wrapped a sheet of sandpaper 15. The cylinder 11 is composed of two semi-circular sections held together by bearing members 17 which are provided with slots 19 and 20

for a purpose presently to be described. These bearings are also provided with slots to permit the passage therethrough of the ends of the actuating bar 21. The ends themselves are received in cam grooves 23 and 24 in the collars 3 and 5. As will be evident, these cam grooves are so shaped that angular movement of the roll with respect to the shaft in one direction will cause the actuating bar 21 to be moved toward the center of the roll, while movement in the opposite direction will cause said bar to be moved away from the center of the roll. The hooks 25 are formed with flat holding portions and at their bases have provision for receiving a locking member. The hooks shown are formed from stock rectangular in cross section by flattening one end and bending it approximately at right angles and then bending the opposite end to form a crook, but hooks having other forms and made in other ways may very evidently be used, if desired. The actuating bar 21 is formed with a plurality of pairs of ears 27 each pair forming a socket to receive the base of a hook. The upper portion of the actuating bar adjacent each socket is cut away as shown at 29 to receive a short key 31 which forms part of the locking device 33, said device, as clearly shown in Fig. 2, comprising a rod which is adapted to slide in a groove 35 in said bar. With this construction it will be evident that when the hooks are locked to the bar and the roll is turned in the proper direction with respect to the driving shaft 1, the hooks 25 will be drawn down toward the center of the roll thereby engaging the abrasive cover and holding it securely in place. Since, however, the actuating bar 21 might yield to some extent in its central portion there is provided a cam 37 to engage the bar intermediate its ends and pull it toward the center of the roll. This cam is mounted upon a ring 39 which fits loosely upon the shaft 1, and to this ring is attached an operating bar 41 the ends of which pass through the slots 19 and 20 and are received in sockets 43 and 44 in the collars 3 and 5.

In order to lock the roll in its two extreme positions the bearing 17 at the right hand, as seen in Fig. 1, is provided with two sockets containing spring pressed plungers 47 and 48, and the collar 5 is provided with a bore in which there is mounted a slidable push rod 49 which is held as shown from being entirely removed, but is permitted a certain amount of longitudinal movement. As shown in Fig. 1 the hooks are drawn down tightly upon the abrasive cover. If now it is desired to loosen the hooks, the push rod is moved to depress the plunger 47 whereupon the roll may be moved to loosen the hooks; and as soon as the roll reaches a position approximately

ninety degrees from the one shown, the plunger 48 will enter the bore of the push rod 49 and again lock the roll. With the roll thus firmly held from angular movement with respect to the shaft a sheet of sandpaper which has been forced over the hooks may be drawn tightly about the roll. In order to permit movement of the locking member without disturbing the collars 3 and 5, the collars are provided with small bores, one of which is shown at 50, through which a tool may be inserted; and these bores extend into the ends of the cam grooves 23 and 24 which are farthest from the center of the roll, the bores being so located that when the roll is locked in that position in which the hooks are loosened said bores are opposite the ends of the locking member 33.

In Fig. 7 there is shown a modified construction of actuating bar 121 in which the sockets for the hooks are formed by pairs of eyes 127 through which a straight locking device 133 passes; and when this construction is made use of the locking device 133 is preferably made in two pieces either one of which may be withdrawn according as the hook to be replaced is nearer one end or the other of the roll.

In use the roll is rotated in the direction indicated by the arrow in Fig. 3 until the plunger 48 becomes operative and the roll is locked in position with the hooks loosened. A sheet of sandpaper of the proper width and length is forced over the hooks and wrapped around the roll with its free end beneath the operative portions of said hooks. It should be noted that during this operation the roll is firmly held by the plunger 48 so that tension may be exerted upon the sandpaper. After the sandpaper has been placed in position as described above the push rod 49 is pressed to unlock the roll, and the roll is rotated in the opposite direction thereby drawing the actuating bar 21 and with it the hooks toward the center of the roll to the position shown whereupon the plunger 47 automatically locks the parts in this position with the sandpaper tightly held in place. It should be noted that the operating bar 41 is held stationary during these movements and that the movement of the roll forces the actuating bar 21 into engagement with the cam 37 thereby drawing the central portion of said bar toward the center of the roll. If now it becomes necessary to replace one or more of the hooks, the roll is unlocked by means of the push rod 49 and rotated in the direction indicated by the arrow in Fig. 3 until the plunger 48 becomes operative as has been described. The actuating bar 21 is now in the opposite end of the cam grooves from that shown, and the ends of the locking device are opposite the bores which extend through the collars. A

tool is then used to push the rod 33 in the proper direction to unlock the hooks from the bar. Any one of the hooks may now be removed by merely pulling it out and a new one may be inserted in its place, after which the locking bar 33 may be moved in the opposite direction. When the actuating bar illustrated in Fig. 7 is made use of, it will be necessary to pull out the locking bar 133 until the desired hook is unlocked, while in the preferred form the hooks are locked and unlocked simultaneously. In use two of these rolls are commonly mounted upon a shaft which is rotated so rapidly that it must be perfectly balanced. It should be noted that the present roll is self-contained and has no connection with the shaft except through the set screws 7 and 9. It is therefore possible to adjust the roll as a whole to any desired position with respect to the driving shaft; and where two or more rolls are used on one shaft the shaft can thus be balanced perfectly.

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

1. A tool for an abrading machine comprising a body portion provided with a bore to receive a shaft and adapted to support an abrasive cover, a hook for holding said cover in place, an actuator movable with respect to said shaft for tightening and releasing said hook, and a locking member for connecting said hook with said actuator and for disconnecting it therefrom.

2. A tool for an abrading machine comprising a body portion provided with a bore to receive a shaft and adapted to support an abrasive cover, a hook for holding said cover in place, said hook having provision at the base of its shank for receiving a locking member, an actuator movable with respect to said shaft for tightening and loosening said hook, said actuator being provided with a socket to receive said base, and a locking member connecting said base and actuator.

3. A roll for an abrading machine comprising a body portion provided with a bore to receive a shaft, a plurality of hooks for holding an abrasive cover on said roll, a member carried by said roll and movable with respect to said shaft, and means for detachably connecting said hooks with said member.

4. A roll for an abrading machine comprising a body portion provided with a bore to receive a shaft, a plurality of hooks for holding an abrasive cover on said roll, an actuating member, means for moving said member toward and from the shaft and a movable locking member for connecting said hooks with said actuating member and for disconnecting them therefrom.

5. A roll for an abrading machine com-

prising a body portion provided with a bore to receive a shaft, a plurality of hooks for holding an abrasive cover on said roll, a member movable toward and from the periphery of said roll and means movable in one direction for connecting said hooks with and in the opposite direction for disconnecting them from said member.

6. A roll for an abrading machine comprising a body portion provided with a bore to receive a shaft, a plurality of hooks for holding an abrasive cover on said roll, an actuating bar having sockets to receive the base of said hooks, a member movable with respect to said bar for connecting them therewith and for disconnecting them therefrom, and means for moving said bar toward and from the periphery of said roll.

7. A roll for an abrading machine comprising a body portion provided with a bore to receive a shaft, a plurality of hooks for holding an abrasive cover on said roll, an actuator for tightening and loosening said hooks, and means for simultaneously connecting said hooks with said actuator and for similarly disconnecting them therefrom.

8. A roll for an abrading machine comprising a body portion provided with a bore to receive a shaft, a plurality of hooks for holding an abrasive cover on said roll, an actuator for tightening and loosening said hooks and a locking member provided with a plurality of comparatively short keys for connecting said hooks with said actuator.

9. A roll for an abrading machine comprising a body portion provided with a bore to receive a shaft, a plurality of hooks for holding an abrasive cover on said roll, an actuating bar for tightening and loosening said hooks, said actuating bar being provided with a plurality of pairs of projections each pair forming a socket to receive the base of a hook, and a locking rod slidable with respect to said bar and provided with a plurality of short keys one for each socket whereby movement of said rod to an extent not greater than the length of a key serves to unlock all the hooks from the bar.

10. A roll for an abrading machine comprising a body portion provided with a bore to receive a shaft, a plurality of hooks for holding an abrasive cover on said roll, an actuating bar provided with pairs of projections each pair forming a socket to receive the base of a hook, a locking device comprising a rod movable with respect to said bar and a plurality of keys movable with said rod in one direction to lock said hooks to said bar and in the opposite direction to unlock said hooks therefrom, and means for moving said actuator toward and away from the periphery of said roll to tighten and loosen said hooks.

11. The combination of a shaft, two collars fast thereto, a buffing roll loosely

mounted thereon, said roll comprising a plurality of retaining hooks, an actuating member connected therewith, said member being connected at its ends with said collars whereby by relative movement between said roll and collars in one direction tightens said hooks and in the opposite direction loosens them, and separate means also connected with said collars for engaging said actuating member intermediate its ends.

12. The combination with a shaft of two collars having cam slots and holding sockets formed therein and means for adjustably fastening said collars to said shaft, of a buffing roll having its ends abutting said collars, said roll comprising a body portion, a plurality of hooks for holding an abrasive cover on said body portion, an actuator having its ends located in said slots, a cam for engaging said actuator intermediate its ends, said cam being provided with a bar having its ends located in said sockets, and means for detachably connecting said hooks with said actuator.

13. The combination of a shaft, two collars fastened thereto, a buffing roll loosely

mounted on said shaft and having its ends abutting said collars, a plurality of hooks for holding an abrasive cover on said roll, means operated by angular movement between said roll and shaft for moving said hooks to operative and inoperative positions, and means for locking said roll with respect to said shaft in the two relative angular positions which correspond to the operative and inoperative positions of the hooks.

14. The combination with a shaft of a roll loosely mounted thereon, a plurality of hooks and an actuating member carried by said roll, two collars one at each end of said roll, said collars having provision for engaging said actuating member, and means for adjustably fastening said collars to said shaft.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM A. REED.

Witnesses:

CHESTER E. ROGERS,
LAURA M. GOODRIDGE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."