Sept. 18, 1923. 1,468,403

W. E. ROSS

CLOTH SURFACING DEVICE

Filed July 2, 1923

Fig. 1.

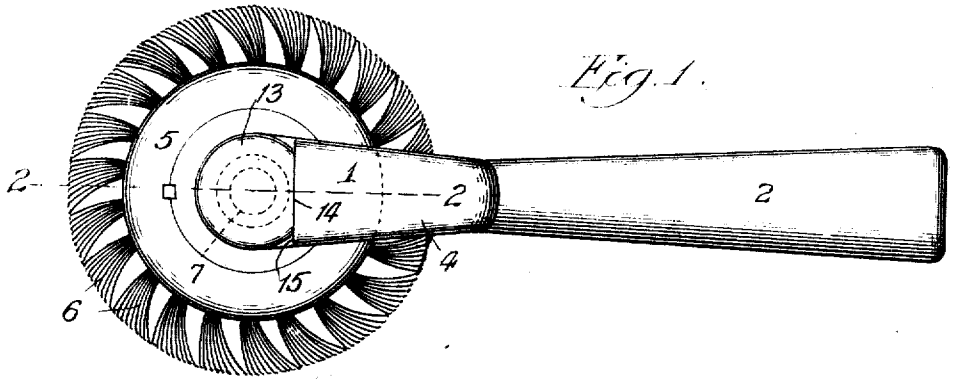


Fig. 2.

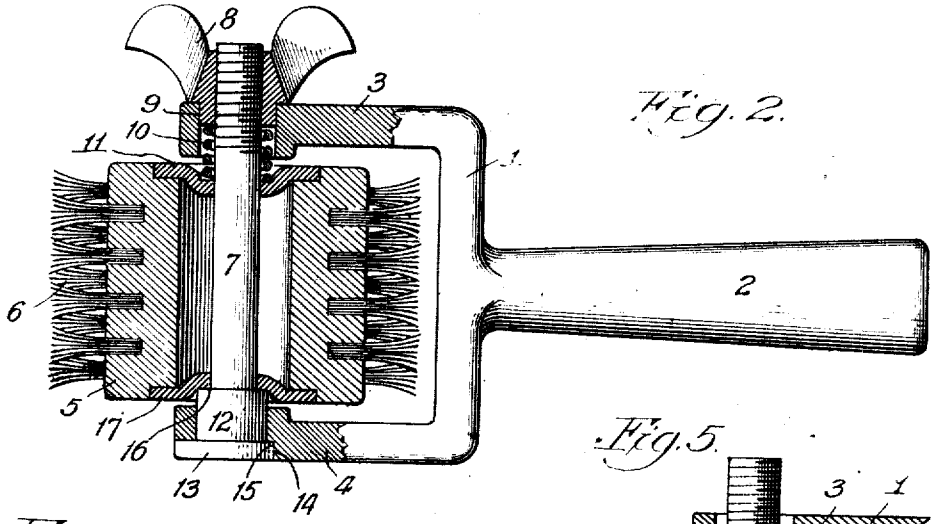


Fig. 3.

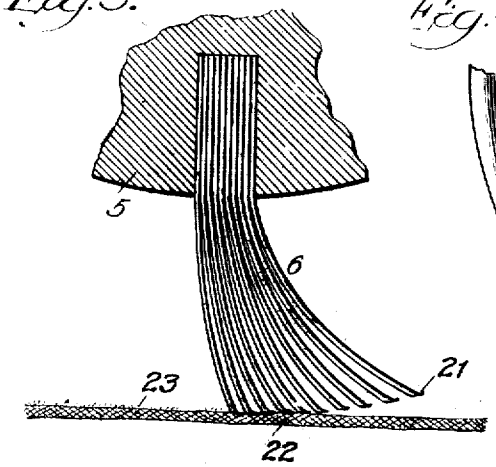


Fig. 4.

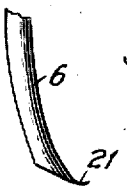
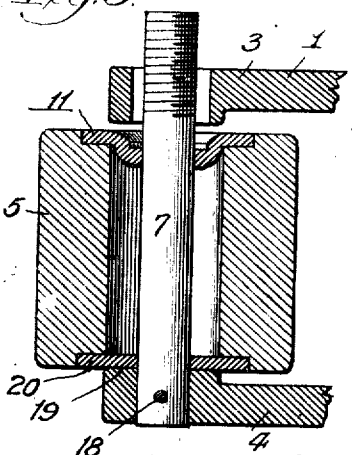


Fig. 5.



Inventor:
William E. Ross,
by Wallace R. Lane
Atty.

Patented Sept. 18, 1923. 1,468,403

UNITED STATES PATENT OFFICE.

WILLIAM E. ROSS, OF CHICAGO, ILLINOIS.

CLOTH-SURFACING DEVICE.

Application filed July 2, 1923. Serial No. 648,905.

To all whom it may concern:

Be it known that I, WILLIAM E. ROSS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Cloth-Surfacing Devices, of which the following is a specification.

The present invention relates to devices for surfacing materials, such as cloth, and has particular reference to the raising of a nap upon the surface of the cloth.

Among the objects of the invention are to provide an improved method and device for rasing a nap upon the surface of cloth or the like; to provide the device with angularly projected burred bristles or bristles with burrs at the free ends thereof capable of entering into the cloth a substantial distance and then leaving the cloth while raising a nap so as to leave a raised or lifted nap on the surface thereof; to provide a device so that the bristles will have a rolling and dragging action of a character which will cause the entry of the burrs into the cloth as a relative motion is effected between the cloth and the bristles, the bristles having such resiliency that as they are caused to leave the cloth, the burrs will raise a nap and readily disengage themselves from said nap; to provide for adjustably varying the resistance to the rotary action of the bristles, preferably by an adjustable resilient frictional brake or the like whereby the drag on the bristles during peripheral movement of the bristles in a direction opposite to the direction of projection of the burrs, will cause the burred ends of the bristles to enter the cloth and also to travel along the cloth; to provide a device combining the features of nap raising burrs capable of entering the cloth, pressure for causing such entry, and a frictional drag which, with the pressure applied and the relative movement of the cloth and the device, will effect the desired raising of the nap on the surface of the cloth; and to provide such other and further objects, advantages and capabilities as will later more fully appear and are inherently possessed by the invention.

Referring to the drawings, Fig. 1 is a side view of a device constructed in accordance with the invention; Fig. 2 is a view partially in section on the line 2—2 of Fig. 1; Fig. 3 is a fragmentary detailed view in section of part of the device; Fig. 4 is a fragmentary detailed view of a portion of a bristle; and Fig. 5 is a horizontal sectional view of part of the device somewhat modified from that shown in the other figures.

Referring more particularly to the drawings, the invention is illustrated by a preferred and modified embodiment comprising a supporting frame 1 having a handle 2 and a pair of spaced arms 3 and 4 between which is rotatably mounted or journaled a roller 5 carrying upon its periphery an annular set of bristles 6, as clearly shown in Figs. 1 and 2 of the drawing.

The roller 5 is rotatably mounted upon a shaft or pin 7 having means at one end for connection to the arm 4 and being threaded at the other end to receive a thumb nut 8 having a hub portion 9 bearing against an end of a helical spring 10 bearing at its other end against a friction or drag plate or disk 11 fastened to one side of the roller 5. At the other end of the shaft 7, in the form shown in Fig. 2 of the drawing, is formed a head 12 having a flange 13, the latter being cut secantally to form a shoulder 14 abutting against a corresponding shoulder 15 formed in the arm 4. The cooperation of these shoulders prevents the turning of the shaft 7 about its axis. The arm 4 has an opening or aperature within which the enlargement 12 fits, as clearly shown in Fig. 2 of the drawing. The enlargement 12 has a shoulder portion 16 having frictional engagement with a frictional or drag plate or disk 17 secured to the other side of the roller from that to which the plate 11 is secured.

In the form of device shown in Fig. 5, the mode of connection between the shaft 7 and the arm 4 is by way of a cross pin 18 extending through the apertured end of the arm 4 and the end of the shaft passing therethrough. In this way the pin 18 prevents a relative rotation of the shaft 7 with respect to the arm 4. The end of the arm 4 is provided with a frictional surface 19 bearing against the outer face of a flat frictional or drag disk 20 secured to a side of the roller, and corresponding to the plate 17 in the form shown in Fig. 2 of the drawing.

The bristles are connected, preferably, in groups, and in circular series about the periphery of the roller, to form a substantially uniform operating surface, their inner ends being fastened into the roller and their

outer ends extending outwardly but not radially, although curved in a general direction more or less tangentially about the roller. The outer or free ends of the bristles are suitably formed, as by grinding while under pressure, upon an emery wheel or like or similar abrasive device, with angularly projected burrs 21 extending in the same general direction as clearly shown in Figs. 3 and 4 of the drawing. The bristles are preferably of metal and resilient, such as steel wire, and are so treated that they are not corrodible. As shown in Fig. 3 of the drawing, the bristles are curved or inclined toward the direction in which the device is to be moved or drawn over the surface of cloth or material to be treated.

It is to be understood that while a hand-operated device is chosen to illustrate the invention, the invention also comprehends the idea of supporting the bristles in any manner desired so long as there is relative movement between the cloth or material to be treated and the bristles, in the direction above indicated, irrespective of whether or not the cloth be moved and the bristles held for rotation about a stationary axis or the bristle carrying device be moved as a whole relative to the cloth, the latter being in stationary relation.

In operation the device is used so as to cause a rolling of the roller 5 together with the bristles carried thereby over the surface of cloth such as the cloth piece 22 shown in Fig. 3 of the drawing. In order that the same will not ride idly over the cloth without producing the desired effect, a drag or frictional resistance is applied to the roll 5 by a suitable turning of the thumb nut 8 so as to compress the spring 10 to the extent of obtaining the desired frictional engagement between an end of the spring and the friction disk 11 as well as the shoulder 16 and the friction disk 17. With the proper amount of frictional drag, should the device be drawn over the cloth in a direction corresponding to the direction of projection of the burrs 21, the roller and the bristles carried thereby will be rotated, thereby causing the burrs to penetrate the material a substantial distance. The bristles will be bent or flexed somewhat as the burred ends thereof enter the cloth, and as the rolling continues, and the trailing bristles which are lifted from the cloth will resiliently act in such a direction as to cause the burrs 21 to lift a nap out of the cloth so as to leave upon the cloth a nap 23 as shown in Fig. 3 of the drawing, the burrs leaving the cloth at such an angle as to readily disengage themselves from the nap. This effect results from the travel of the device, together with the frictional drag upon the roll, which cause the roll to rotate as well as to force the burred ends 21 to yieldably enter the cloth, resulting in a reflex action of the bristles as they leave the cloth so as to cause the burrs to lift the nap.

While I have herein described and upon the drawings shown a preferred and modified embodiment illustrating the invention, it is to be understood that the invention is not limited to the particular construction, details and arrangement of parts shown and described, but that other constructions, details and arrangements of parts are comprehended by the invention without departing from the spirit thereof.

Having now described my invention, I claim:

1. A cloth-surfacing device comprising a rotatably supported member, bristles mounted in said member and having angularly projected burrs on their free ends, said member being rotated by contact of the bristles with the cloth, and means for applying a frictional drag upon the rotatable member to cause the burrs to penetrate the material a substantial distance during peripheral movement of said member in a direction opposite to the direction of projection of said burrs.

2. A cloth-surfacing device comprising a rotatably supported member, bristles mounted in said member, said bristles being circumferentially offset in a general direction opposite to the normal direction of operative rotation of said roller and provided with angularly projected burrs on their free ends, said member being rotated by contact of the bristles with the cloth, and frictional means for applying a drag upon the rotatable member to cause the burrs to penetrate the material a substantial distance during peripheral movement of the member in a direction opposite to the direction of projection of said burrs.

3. A cloth-surfacing device comprising a support, a shaft carried thereby, a member rotatably mounted on said shaft, bristles mounted in said member and having angularly projected burrs on their free ends, said member being rotated by contact of the bristles with the cloth, and means for applying a frictional drag upon the rotatable member to cause the burrs to penetrate the material a substantial distance during peripheral movement of said member in a direction opposite to the direction of projection of said burrs.

4. A cloth-surfacing device comprising a frame provided with spaced apart supporting arms, a shaft mounted in said arms, means for preventing rotation of said shaft, a member rotatably mounted on said shaft, bristles mounted in said member and having angularly projected burrs on their free ends, said member being rotated by contact of the bristles with the cloth, and means on one end of said shaft for applying a frictional

drag upon the rotatable member to cause the burrs to penetrate the material a substantial distance during peripheral movement of said member in a direction opposite to the direction of projection of said burrs.

5. A cloth-surfacing device comprising a support, a shaft mounted in said support, a member rotatably mounted on said shaft, bristles mounted in said member and having angularly projected burrs on their free ends, said member being rotated by contact of the bristles with the cloth, a spring encircling said shaft and bearing against one end of said member, and means for applying a frictional tension upon said spring whereby the burrs are caused to penetrate the material a substantial distance during peripheral movement of said member in a direction opposite to the direction of projection of said burrs.

6. A cloth-surfacing device comprising a support, a shaft mounted in said support and having a flange at one end cooperating with a complemental portion of the support to prevent rotation of the shaft, a member rotatably supported by said shaft, bristles mounted in said member and having angularly projected burrs on their free ends, said member being rotated by contact of the bristles with the cloth, a spring encircling said shaft and bearing against one end of said member, and a nut engaging the end of the shaft contiguous to said spring, whereby a frictional drag is applied to the rotatable member to cause said burrs to penetrate the material a substantial distance during peripheral movement of said member in a direction opposite to the direction of projection of said burrs.

In witness whereof, I hereunto subscribe my name to this specification.

WILLIAM E. ROSS.