To all whom it may concern:

Be it known that I, Chester E. Rogers, a citizen of the United States, residing at Beverly, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Sole-Leveling Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an improvement in sole leveling machines, and more particularly to cleaning devices for sole leveling machine rolls.

In the ordinary type of sole leveling machine, the machine is provided with a sole leveling roll having a corrugated, or recessed, surface which is passed repeatedly over the sole in the leveling process. A roll of this type is shown in United States Letters Patent to Rigby No. 916,021, dated March 28, 1909. When the sole is being leveled, the leather is in a moist condition to facilitate the leveling operation. For this reason the recesses on the surface of the roll become filled with small pieces of leather and with slime which is squeezed from the leather by the action of the leveling roll.

These impurities, if thrown or wiped off the roll onto the sole interfere with the leveling thereof and seriously disfigure the leather in the finished shoe. On this account, therefore, the machine has to be repeatedly thrown out of operation to permit the operator to clean the leveling roll, which operation consumes considerable time.

As is well known to those skilled in the art, leveling rolls of various shapes are employed in sole leveling machines. It has been found in practice that a cleaning device which effectively cleans leveling rolls of one form is not effective in cleaning rolls of another form. This has made it necessary heretofore to construct a special form of cleaning device for each of the different forms of leveling rolls to be used.

The primary object of the present invention is to provide a cleaning device for the leveling roll of a sole leveling machine which is capable of ready hand-manipulation to clean all portions of the roll, whatever its configuration.

Another object of the invention is to provide as an attachment for a sole leveling machine, a leveling roll cleaning device that can be quickly and easily attached to any type of sole leveling machine employing a roll without necessitating radical changes in the structure of said machine.

A further object of the invention is to provide a leveling roll cleaning device attachment for sole leveling machines in which a single form of cleaning device is adapted to clean any of the various types of leveling rolls that may be employed.

With these objects in view, a feature of the invention comprises a cleaning brush, the length of which is considerably less than that of the leveling roll, mounted upon an independent brush frame that is adapted readily to be attached to the frame of a sole leveling machine adjacent the leveling roll.

Another feature of the invention comprises a cleaning brush frame having a universal joint connection with the frame of the machine, providing for movement of the cleaning brush to and from the roll, lengthwise of the roll, and angularly to follow the surface of the roll, if such surface is other than cylindrical.

The invention, in its preferred form, is illustrated in the accompanying drawing, in which.

Figure 1 is a plan view of a portion of a sole leveling machine showing one type of sole leveling roll, with the cleaning brush which forms the subject of the present invention attached to the frame which supports the roll; Fig. 2 is a side elevation of the parts shown in Fig. 1; Fig. 3 is a section taken on the line 3—3 of Fig. 2, looking in the direction of the arrows; and Fig. 4 is a side elevation of a modified form of the cleaning brush carrying frame.

In the embodiment of the invention illustrated in the drawing, referring first more particularly to Figs. 1, 2 and 3, 1 indicates a leveling roll, as illustrated, similar to the roll of the Rigby patent hereinafter referred to, mounted in the frame 2, and driven by a belt passing around the pulley 3. All of these elements form parts of a sole leveling machine of well-known construction.

The cleaning brush 4 is mounted adjacent the leveling roll on a hanger, or frame, which is connected by a universal joint with the roll carrying frame 2. In the construction illustrated in the drawing the two arms
5 and 6 of the frame 2, in which the leveling roll is journaled, are spanned by a tie plate 7, each end of which is rigidly bolted to one of said arms. The plate 7 is provided at its central portion with an enlargement 9, having a smooth upper bearing surface 10. Resting on the surface 10 is a swiveled yoke having a base plate 11, which is provided with a bearing surface 12 to co-act with the bearing surface 10. The base plate of the yoke is provided with a pivot stem 13 having a bearing in the plate 7 and exteriorly threaded to receive a nut to hold the yoke in place. This construction provides a pivot on which the yoke may be turned. The arms 15 and 16 of the yoke extend upwardly and forwardly from the base plate 11, their outer extremities being perforated to receive a stud 17 which extends at right angles to the pivot stem 13. Journaled on the stud 17 is a hanger 18, the lower part of which is formed as a sleeve 20 extending at right angles to the axis of the stud. A shaft 21 is journaled in the sleeve 20 and projects a short distance from each end thereof, longitudinal movement in one direction being prevented by a flange or collar 22. Secured to the forward extremity of said shaft is a cleaning brush carrying frame 24, the rear portion of this frame being bored centrally to receive the forward extremity of the shaft 21 to which it is pinned. The frame 24 is yoke-shaped, its arms 25 and 26 extending forwardly over the leveling roll 1 and carrying the shaft 29 of the cleaning brush 4.

In order that the brush may more readily follow closely the surface of the leveling roll whatever its shape, and thus better perform its cleaning function, its length is considerably less than that of the leveling roll, as clearly shown in Fig. 1. Upon the rear portion of the shaft 21 a split collar 30 is adjustably mounted, being held in place by a clamping bolt 31. A coil spring 32 is attached at one extremity to said collar and at its other to a finger 33 extending rearwardly from the plate 7. The purpose of the spring 32 is to yieldingly hold the brush 4 normally out of contact with the leveling roll. The said spring also holds the brush centrally over the leveling roll and parallel to the axis thereof. A forwardly extending projection 34 carries a handle 35 by which the cleaning roll may be conveniently manipulated.

From the above description, it will be seen that the cleaning brush is mounted on three axes at right angles to each other; namely, stem 13, stud 17 and shaft 21. The stem 13 permits movement of the brush lengthwise of the leveling roll; the stud 17 provides for movement of the brush to and from the roll, and the shaft 21 allows the brush to turn angularly to follow the surface of the roll. The above structure is, however, merely illustrative of a simple and convenient form of universal joint connection between the frame and the cleaning brush and any other form of universal coupling between said parts is included within the scope of the invention, as defined by the appended claims. As is obvious, the brush attachment may readily be attached to any type of sole leveling machine employing a leveling roll.

In the embodiment of the invention shown in Fig. 4, the main frame 50 in which the leveling roll is journaled is provided with a pair of outwardly extending arms, one of which is shown at 51, which are connected by a cross plate 52. A pin 53 is journaled in a bearing 54 in a sleeve 55 which sleeve is fitted in a perforation in the center of the cross plate. The pin is held from downward movement by means of a shoulder 56 thereon. The lower end of the pin is threaded to receive a nut 57. At the outer extremity of the pin, a ball 58 is formed, which constitutes one member of a ball and socket joint connecting the cleaning brush with the frame. The frame 59 which carries the cleaning brush, is provided with a socket 60 fitting over and partially inclosing the ball 58. The portion of the frame 59 in which the socket is formed is split diametrically through the socket, the two parts 61 and 62 thus formed being held together by bolts 63. The frame 59 is provided with a rearwardly extending portion 61 which is perforated to receive an eye bolt 64, a nut 66 holding the eye bolt from withdrawal. A spring 67 is attached at one extremity to the eye of eye bolt 65 and at its other to a finger 68 on the sleeve 55 to yieldingly hold the cleaning brush normally out of contact with the leveling roll and centrally over the said roll and parallel to the axis thereof. The frame 59 is manipulated by means of a handle 69.

The cleaning brush may be constructed of any suitable material such as steel or coarse fiber bristles. In operation, the brush is rotated by contact with the revolving leveling roll.

The operation of the mechanism above described is as follows:—As above stated, the cleaning brush is yieldingly held normally out of contact with the leveling roll. When the recesses in the leveling roll become filled with dirt and slime, and it is desired to clean the same, the operator, without stopping the machine, and while the leveling roll continues to rotate, grasps the handle of the brush carrying frame and forces the cleaning brush downwardly into contact with the leveling roll. The bristles on the cleaning brush will project into the recesses of the leveling roll and remove the foreign matter that has collected therein.
By moving the brush lengthwise of the leveling roll, all portions of said roll may be thoroughly cleaned, the shaft 21 permitting the brush to turn angularly and follow the surface of the roll. Upon the release of the handle, the spring will return the brush to its normal position out of contact with and over the central portion of the leveling roll.

It will be evident that the brush may be easily manipulated manually to clean all portions of the leveling roll. The universal joint connection between the brush and the main frame of the machine permits the brush to be moved to and from the roll longitudinally of the roll, and angularly to follow the surface of a concaved roll. To better adapt the brush for cleaning the different forms of rolls, the brush is made relatively short with respect to the leveling roll.

While it is preferred to employ the specific construction and arrangement of parts shown and described, it will be understood that this construction and arrangement is not essential except so far as specified in the claims.

Having fully described the construction and operation of the invention, what is claimed as new is:

1. A sole leveling machine comprising a leveling roll, a frame in which said leveling roll is journaled, a cleaning brush mounted adjacent said roll, and a universal joint connection between said frame and said brush.

2. A sole leveling machine comprising a leveling roll, a frame in which said leveling roll is journaled, a cleaning brush mounted adjacent said roll, and a universal joint connection between said frame and said brush, and means to hold said brush normally out of contact with said roll.

3. A sole leveling machine comprising a leveling roll, a cleaning brush mounted adjacent said roll, and a universal joint connection between said frame and said roll whereby the brush may be moved to and from the roll, longitudinally of the roll and turned angularly to follow the surface of the roll.

4. A sole leveling machine comprising a leveling roll, a frame in which said leveling roll is journaled, a cleaning brush mounted adjacent said roll, a universal joint connection between said frame and said brush, and yielding means to hold said brush normally out of contact with said roll, centrally of said roll and parallel with the axis thereof.

5. A sole leveling machine comprising a leveling roll, a frame in which said leveling roll is journaled, a plate secured to said frame, a member pivoted to said plate, a hanger journaled in said member on an axis perpendicular to the axis of said member, a frame pivotally mounted on said hanger on an axis perpendicular to the axis of said hanger, and a brush secured to said frame and positioned adjacent the leveling roll.

6. A sole leveling machine comprising a leveling roll, a frame in which said leveling roll is journaled, means to clean said roll, and means to connect said cleaning means with said frame, said connecting means permitting universal movement of said cleaning means with respect to said roll.

7. A sole leveling machine comprising a leveling roll, a cleaning brush of less length than said roll, supported adjacent said roll, and means to support said brush constructed and arranged to permit movement of said brush longitudinally of said roll.

8. A sole leveling machine comprising a leveling roll, a cleaning brush of less length than said roll, supported adjacent said roll, and means to support said brush constructed and arranged to permit movement of said brush toward and from said roll and longitudinally of said roll.

9. A sole leveling machine comprising a leveling roll, a cleaning brush of less length than said roll, supported adjacent said roll, and means to support said brush constructed and arranged to permit said brush to move longitudinally of said roll and to turn angularly to follow the surface of said roll.

10. A sole leveling machine comprising a leveling roll, a cleaning brush of less length than said roll, supported adjacent said roll and normally out of contact therewith, and means to support said brush constructed and arranged to permit said brush to move toward and from the roll, longitudinally of the roll and to turn angularly to follow the surface of the roll.

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