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ABRADING MACHINE

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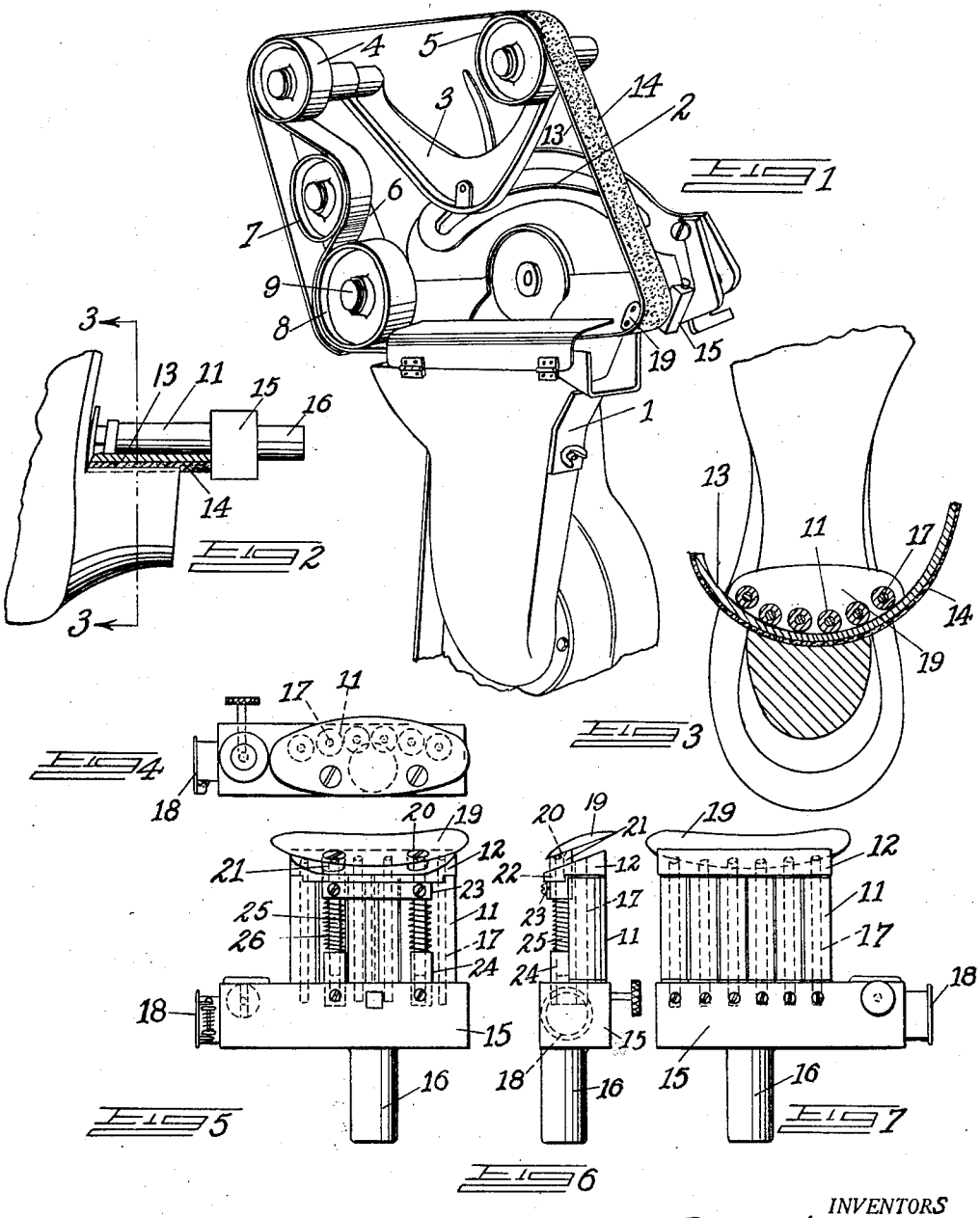


FIG 1

FIG 2

FIG 3

FIG 4

FIG 5

FIG 6

FIG 7

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ABRADING MACHINE

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Our invention relates to abrading, buffing and scouring machines and guards therefor of the belt type, in which the article to be abraded is moved into contact with an abrading web carried on a belt, and which type of machine has been particularly developed for use in shoe manufacture for heel breast scouring.

In the art there has been developed an abrading machine in which there are a series of guiding rollers over which an abrading belt passes. Strips of abrading material such as emery cloth or sandpaper are supported by a sub-belt and the article to be abraded is held in contact with the abrading web. In the instance where the operator of the machine desires, for example, to abrade the heel breast of a shoe, the shoe is brought into contact with the abrading belt in the position on the machine in which the belt passes over a guiding fixture shaped or arranged to give the desired curvature. Such a machine is fully described in the Louis G. Freeman Patent No. 1,244,310 of October 23, 1917.

It often happens in abrading shoe heel breasts that the shoe contacts with the edge of the abrasive belt or sub-belt and the surface of the shank of the shoe is marred. While injury may result from the abrading belt edge, it also frequently happens that the edge of the sub-belt or carrying belt either seems to make an oily mark on the leather, or seems to burn the leather by frictional contact so that the subsequent removal of the marks is very difficult and needs an added operation.

It is one object of our invention to provide a guard for an abrading machine which will be particularly useful in the shoe industry for preventing the marring of parts of the shoe other than those which it is designed to abrade. Another object is the provision of a guard which, being resiliently mounted, will properly locate itself with reference to the sub-belt and abrading belt and the shoe bottom. A further object is the provision of a guard which enables the operator to perform the abrading operation more neatly and with less effort, and which also enables him to greatly increase the quantity of work which he can perform on the machine, as he can exert the necessary pressure of the shoe against the belt without fear of injury to the shoe.

The above and other objects to which reference will be made in the ensuing disclosure we accomplish by that certain combination and arrangement of parts of which we have shown a preferred modification.

Referring to the drawing:

Figure 1 is a perspective view of the head of the machine.

Figure 2 is a detail view, with the abrading belt shown in section, in which one manner of application of the heel breast of a shoe to the belt is indicated.

Figure 3 is a sectional view of the detail figure shown in Figure 2 taken along the lines 3—3.

Figure 4 is an end elevation of the guard detached from the machine.

Figure 5 is a rear elevation from one side of the guard.

Figure 6 is a side elevation of the guard.

Figure 7 is a front elevation of the guard shown from the side opposite that from which the view in Figure 5 was made.

Mounted on the frame supporting members 1 there is an arcuately slotted portion 2 on which a bracket 3 is adjustably mounted. On the bracket there are journaled the pulleys 4 and 5, which ordinarily are not driven. Also mounted on a bracket 6 we have shown the idler pulley 7 which is also adjustably mounted. The drive for the pulleys may be provided in any desired way. The pulley 8, for example, may be mounted on a shaft 9 which has another driving pulley on the side of the machine not illustrated, driven by a belt from a suitable source of power such as an electric motor.

Passing over the pulleys and over the guiding fixture comprising a series of small rollers 11 and the end support 12, we have shown the sub-belt 13 on the outer surface of which there is supported the abrasive belt 14. By adjusting the position of the idler pulley 7 the carrying belt may be tensioned as desired so as to support the abrasive belt in a proper state of tension. We have not described the construction of the

machine in any great detail as the type of machine which is equipped with our guard is only illustrative of the type of machine with which our invention is adapted to be used.

The fixture has a body 15 having a shank 16 by which the body may be supported in the machine frame. The body and shank, in the particular modification described, are shown as the mounting for the rollers 11, end support 12 and for the guard, although it will be apparent that the guard might have an independent mounting. The rollers 11 are mounted on spindles 17 which extend from the body 15 to the end support 12. An oil well 18 is also shown which lubricates the bearings of the rollers.

Referring particularly to Figure 5, we have shown the flexible or resilient plate 19 which is mounted with screws 20 on a pair of rods 21. The mounting for the plate allows for longitudinal movement and the plate is preferably constructed of material which will allow it to give to adjust itself to the varying thicknesses of the belts. The rods pass through openings 22 in the end support and a support 23 extends across below the end support and limits the outward travel of the guard plate 19. Tubular supports 24 extend up from the base plate 15 and slidably retain the ends of piston rods 25 which are tensioned to spring outwardly by means of the springs 26.

In use, in former practice the abrading belt was of such width as to usually extend over a portion of the rollers and the end support 12. No provision was made, however, to prevent the over-running of the sub-belt in handling the shoe so that the side edge of the sub-belt would often come into contact with the shank of the shoe. The guard plate, it will be noted, extends out beyond the edge of the end support so that in our novel guard it is substantially impossible for the carrying belt to come into contact with the shank of the shoe and causing stain like marks thereon. Further, when the shoe is held against the abrading belt to scour the heel breast, as indicated in Figures 2 and 3, the guard plate will enable the operator to exert the proper pressure on the shoe without danger of marring the shank by a mark made by the carrying belt, and since the simplicity of the operation is increased, the volume of work he can do is also greatly increased. It will further be observed that the guard plate, being resilient itself, will give sufficiently to accommodate itself for varying thicknesses of belts. It can at the same time allow for sufficient distortion to permit the abrading belt normally about one sixteenth inch thick to be worked clear down into the heel breast line.

While we have only shown one specific embodiment of our invention, there are many modifications which incorporate the principle involved, such as fixedly mounting the resilient guard plate or providing a non-flexible guard, and which thus come within the scope of our invention.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent, is:—

1. In combination for use in an abrading machine having an abrading belt and a carrying belt therefor, a guard constructed and arranged to extend over the edge of said carrying belt and substantially to the plane of the rear surface of the abrading belt and to thereby provide a guard to prevent inadvertent injury to the work by contact with an edge of said carrying belt.

2. In combination for use in an abrading machine having an abrading belt and a carrying belt therefor, a guard having an edge extending out substantially to the plane of the abrading surface of the abrading belt and thereby providing a guard to prevent inadvertent injury to the work by contact with an edge of said carrying belt, said guard comprising a flexible plate and the edge thereof contoured to correspond to the curve of said belts.

3. In combination for use in an abrading machine having an abrading belt and a carrying belt therefor, a guard constructed and arranged to extend out substantially to the plane of the abrading surface of the abrading belt and to thereby provide a guard to prevent inadvertent injury to the work by contact with an edge of said carrying belt, said guard comprising a plate mounted for resilient movement in the plane of said belts.

4. In combination for use in an abrading machine having an abrading belt and a carrying belt therefor, a guard constructed and arranged with an edge extending out substantially to the plane of the abrading surface of the abrading belt and to thereby provide a guard to prevent inadvertent injury to the work by contact with an edge of said carrying belt, said guard comprising a flexible plate mounted for movement in the plane of said belts.

5. An abrading machine having an abrading belt, and means for guarding an edge of said belt to prevent inadvertent injury to work by substantial contact with said edge, said guarding means extending over an edge of the belt and substantially to the plane of the abrading surface and being shaped so as to protect the shank of a shoe during a heel breast scouring operation.

6. An abrading machine having an abrading belt and means for guarding an edge of said belt to prevent inadvertent injury to work by substantial contact with said edge, and means for resiliently mounting said edge guarding means for movement in the plane of said belt.

7. An abrading machine having an abrading belt and means for guarding an edge of said belt to prevent inadvertent injury to work by substantial contact with said edge, said guarding means comprising a flexible plate mounted for movement in the plane of said belt.

8. An abrading machine having an abrading belt and means for guarding an edge of said belt to prevent inadvertent injury to work by substantial contact with said edge, said guarding means comprising a flexible plate, said plate having a resilent mounting sufficiently removed from the portion thereof guarding said belt edge as to allow distortion of said plate with the pressure of work thereagainst.

9. In combination for use in an abrading machine having an abrading belt, a fixture comprising a series of rollers arranged so as to have their peripheral surfaces prescribe an arc over which said belt is guided, an end support having an arcuate surface aligned with the arc of the peripheries of the rollers, and guarding means resiliently mounted on said support and having a contoured edge at least partially overlapping an edge of said belt thereby to prevent contact between the rear portion of the belt and the work.

10. In combination for use in an abrading machine having an abrading belt, a fixture comprising a series of rollers arranged so as to have their peripheral surfaces prescribe an arc over which said belt is guided, an end support having an arcuate surface aligned with the arc of the peripheries of the rollers, and guarding means extending substantially to the plane of the peripheral surface of said belt, said means comprising a flexible plate.

11. In combination for use in an abrading machine having an abrading belt, a fixture comprising a series of rollers arranged so as to have their peripheral surfaces prescribe an arc over which said belt is guided, an end support having an arcuate surface aligned with the arc of the peripheries of the rollers, and guarding means mounted so as to overhang said support, said means comprising a resiliently supported flexible plate.

12. In combination in an abrading machine having a continuous abrading belt, a series of rollers arranged so as to have their peripheral surfaces prescribe an arc over which said belt passes, an end support having an arcuate surface aligned with the arc of the peripheries of the rollers, and resiliently mounted guarding means mounted so as to overhang said guide and spaced from the edge of said support.

13. In combination in an abrading machine having a continuous abrading belt, a series of rollers arranged so as to have their peripheral surfaces prescribe an arc over which said belt passes, an end support having an arcuate surface aligned with the arc of the peripheries of the rollers, and guarding means mounted so as to cooperate with said support, said guarding means comprising a thin resiliently mounted plate shaped so as to conform to the heel breast line of a shoe.

14. A heel breast scouring machine having an abrading belt, said belt having an outer undercut edge, means over which said belt passes to control the arc of movement of said belt, and guarding means spaced from said means and extending out in alignment with and partially over said undercut edge of the belt, said guarding means being of thin cross sectional dimensions so as to permit access of said abrading belt close to the position occupied by said guarding means.

15. In combination for use with a heel breast scouring machine having an abrading belt, a fixture over which said belt passes to control the arc of movement of said belt, said belt having an outer undercut edge, guarding means extending out in alignment with and partially over said undercut edge of the belt, said guarding means composing a part of said fixture and being shaped so as to fit down closely into the groove at the base of a heel so as to permit the thorough abrading of the entire surface of the heel breast during an abrading operation.

16. In combination for use with a heel breast scouring machine having an abrading belt, a fixture over which said belt passes to control the arc of movement of said belt, guarding means spaced form and overhanging an edge of said belt, and resilient means for mounting said guarding means.

17. A heel breast scouring machine having an abrading belt, means over which said belt passes to control the arc of movement of said belt, guarding means overhanging an edge of said belt, and resilient means for mounting said guarding means, said guarding means spaced from an edge of said belt, and comprising a flexible plate extended at an obtuse angle to the plane of the belt.

18. A fixture for controlling the arc of movement of a heel breast scouring belt comprising a base, an end support spaced from said base, and rollers mounted between the base and support, said rollers being mounted in an arcuate plane, and a flexible plate mounted on said base and extending in spaced over-depending position at an obtuse angle to the surfaces of said end support, said plate providing an edge guard for a scouring belt passing over said device.

19. A fixture for controlling the arc of movement of a heel breast scouring belt comprising a base, an end support spaced from said base, and rollers mounted between the base and support, said rollers being mounted in an arcuate plane, and a plate mounted on said base and extending in

spaced over-depending position at an obtuse angle to the surface of said end support, said plate providing an edge guard for a scouring belt passing over said device, said plate having a resilient mounting.

20. A fixture for controlling the arc of movement of a heel breast scouring belt comprising a base, an end support spaced from said base, and rollers mounted between the base and support, said rollers being mounted in an arcuate plane, and a flexible plate mounted on said base and extending in spaced over-depending position at an obtuse angle to the surface of said end support, said plate providing an edge guard for a scouring belt passing over said device, said plate having a periphery shaped to follow the heel breast line of a shoe.

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