

Jan. 15, 1924.

1,480,601

S. A. DOBYNE

SHOE FINISHING MACHINE

Filed Jan. 20, 1922

Fig. 1.

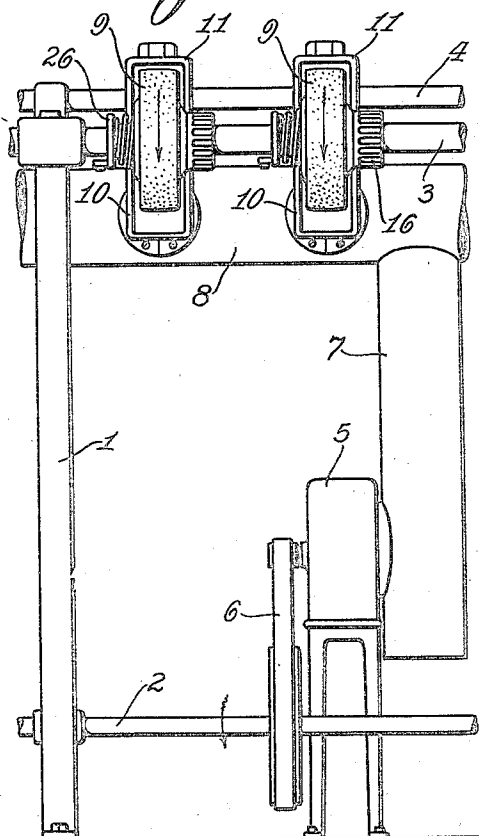


Fig. 2.

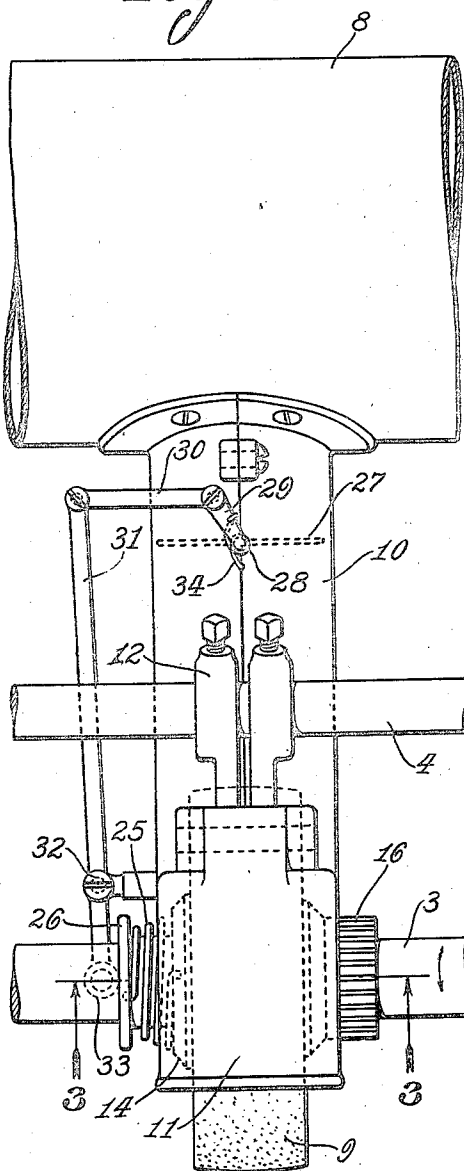
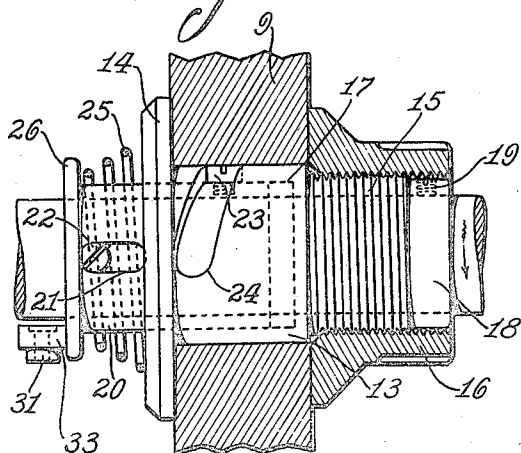


Fig. 3.



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UNITED STATES PATENT OFFICE.

STEPHEN A. DOBYNE, OF ST. LOUIS, MISSOURI, ASSIGNOR TO CHAMPION SHOE MACHINERY COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

SHOE-FINISHING MACHINE.

Application filed January 20, 1922. Serial No. 530,550.

To all whom it may concern:

Be it known that I, STEPHEN A. DOBYNE, a citizen of the United States, and residing at St. Louis, Missouri, have invented the new and useful Improvement in Shoe-Finishing Machines, of which the following is a specification.

This invention relates to shoe finishing machines of the kind employing rotating finishing elements, such as sanding wheels, and the like.

According to the present practice, in machines of this kind the dust produced by the finishing operation is carried off by means of air suction devices. To this end a suction fan is usually provided which produces suction in a suitable conduit, such conduit having branch conduits leading therefrom to the various finishing elements. The suction in each conduit draws the dust produced by the finishing operation into the conduit from which it is discharged into a suitable receiver. According to the usual practice, the conduits are open at each finishing element so that the suction is continually drawing air through such openings with the result that when there are a number of finishing elements, as is usually the case, the exhaust fan must be large enough to supply adequate suction at all of the openings at once.

One of the objects of this invention, therefore, is to provide means for closing the conduits except when work is actually being performed, and then opening only the conduit to that element which is in use, so that the capacity of the exhaust fan may be reduced to that necessary to establish the required suction at one opening only.

Another object of this invention is to provide means for closing the conduit and means whereby the act of presenting the work to the finishing element may be effective to open the appropriate conduit and establish the suction necessary to carry off the dust.

Further objects will appear from the detail description taken in connection with the accompanying drawing, in which:

Figure 1 is a partial view in elevation of the finishing machine embodying this invention;

Figure 2 is an enlarged plan view of one of the finishing elements and the conduit leading thereto; and

Figure 3 is a section on line 3—3, Figure 2.

Referring to the accompanying drawing, the machine comprises one or more standards 1 carrying in suitable bearings a driving shaft 2 and a driven shaft 3. The usual driving connections (not shown) between the shafts 2 and 3 may be had. A suction fan 5 may be mounted on or adjacent to the frame 1 and driven by means of a belt 6 from the shaft 2 or by other suitable means. The fan 5 exhausts the air from the conduit 7 connecting with the cross conduit 8 running along the machine opposite the various finishing elements 9. At each finishing element 9, a conduit 10 is tapped into the cross conduit 8 and extends to the finishing element, being provided with a hood 11 partially surrounding the finishing element adapted to catch the dust produced by the finishing element. Each hood 11 may be suitably supported upon the cross member 4 by means of a bracket 12. The construction thus far described is all of the usual type met with in this kind of a machine and may be of any suitable construction. The finishing elements 9 are mounted at intervals upon the shaft 3. Each element 9 is mounted upon a hub 13 which is loose upon the shaft 3. This hub is provided at one end with a flange 14 and is provided at the other end with a threaded portion 15, the portion between being of suitable shape, usually cylindrical, to properly support the finishing element 9. A nut 16 engaging the threaded portion 15 is adapted to clamp the element 9 between it and the flange 14 so as to secure the same upon the hub 13. The bore of the hub 13 has an enlarged portion 17 at one end thereof, the remaining portion of said bore being adapted to fit loosely on the shaft 3 so as to permit relative movement between the element 9 and said shaft. A collar 18 fixed to the shaft 3 by means of a set screw 19 limits the movement of the hub 13 along the shaft in that direction.

A sleeve 20 is adapted to fit loosely on the shaft 3 and the outside thereof is adapted to fit loosely within the enlarged portion 17 of the bore of the hub so that this sleeve 20 may be able to slide upon the shaft. The sleeve 20 is provided with a longitudinal slot 21 adapted to engage the head of the screw 22 in the shaft so as to guide and limit such longitudinal movement. The sleeve 20 is further provided with a screw 23 adapted to engage a cam groove 24 in the hub 13. A

torsion spring 25 is fixed at one end to a flange 26 on the sleeve 20 and at the other end to the flange 14 on the hub 13. This spring tends to turn the hub 13 and there-
 5 with the element 9 with respect to the sleeve 20 and, therefore, with respect to the shaft 3 in such a way as to move the screw head 23 in the cam groove 24 to one end of said groove. It will be seen that the movement
 10 of the element 9 relative to the shaft 3 will result in a movement of the screw 23 along the cam groove 24, where by the sleeve 20 will be moved longitudinally of the shaft 3, the screw head 22 sliding in the slot 21.

15 Each conduit 10 is provided with a damper 27 mounted on a shaft 28 provided with an arm 29 connected by a link 30 to one end of a lever 31 pivoted at 32 on the frame and carrying at its other end a cam roller
 20 33 adapted to engage the outer face of the flange 26. A spring 34 attached at one end to the arm 29 and at the other to the conduit 10 tends to hold the damper 27 in closed position and at the same time through the
 25 connections 30, 31 to maintain the cam roller 33 in engagement with the flange 26.

In operation the shaft 3 rotates in the direction of the arrows shown in Figure 1 and by means of the screw 22 engaging the sleeve
 30 20 and the spring 25 engaging the hub 13, carries the element 9 with it. Upon engagement of the work with the element 9, said element will necessarily be retarded. This will have the effect of retarding the hub 13
 35 with respect to the shaft 3 whereupon, the sleeve 20 being carried with the shaft, the screw 23 will be moved along the cam groove 24. By this action the sleeve 20 will be forced to the left, Figure 3, thereby moving
 40 the cam roller 33 to the left, Figures 2 and 3, and consequently moving the long arm of the lever 31, the connected link 30 and the arm 29 to the right, Figure 2, whereby the damper 27 will be turned in the conduit
 45 10 so as to open that conduit and establish suction in the hood 11 to carry off the dust.

It will be seen, therefore, that means are provided whereby the simple engagement of the work with the finishing element will operate to open the damper in the corresponding conduit 10 so as to provide the necessary suction to carry off the dust. In this way all of the conduits 10 will remain closed except the one leading to the finishing element in immediate use and that one
 55 will remain open only so long as the work remains in engagement with said element being closed automatically as soon as the work is disengaged.

It is obvious that various changes may be made in details of construction without departing from the spirit of this invention; it is, therefore, to be understood that this invention is not to be limited to the specific
 60 details shown and described.

Having thus described the invention, what is claimed is:

1. In a shoe finishing machine, the combination with a rotary finishing tool, its dust hood and an outlet connection therefrom, of a damper in said connection, a drive shaft on which said tool is loosely mounted,
 70 an endwise movable grooved cam sleeve between said tool and said shaft, a roll on said tool engaging the groove in said cam, and an operating connection from said sleeve to said damper.

2. In a shoe finishing machine, the combination with a rotary finishing tool, its dust hood and an outlet connection therefrom, of a damper in said connection, a drive shaft on which said tool is loosely mounted,
 80 an endwise movable grooved cam sleeve between said tool and said shaft, a roll on said tool engaging the groove in said cam, and an operating lever for said damper, pivoted on said connection and leading to said sleeve for operation thereby.

In testimony whereof I affix my signature this 7th day of December, 1921.

STEPHEN A. DOBYNE.