

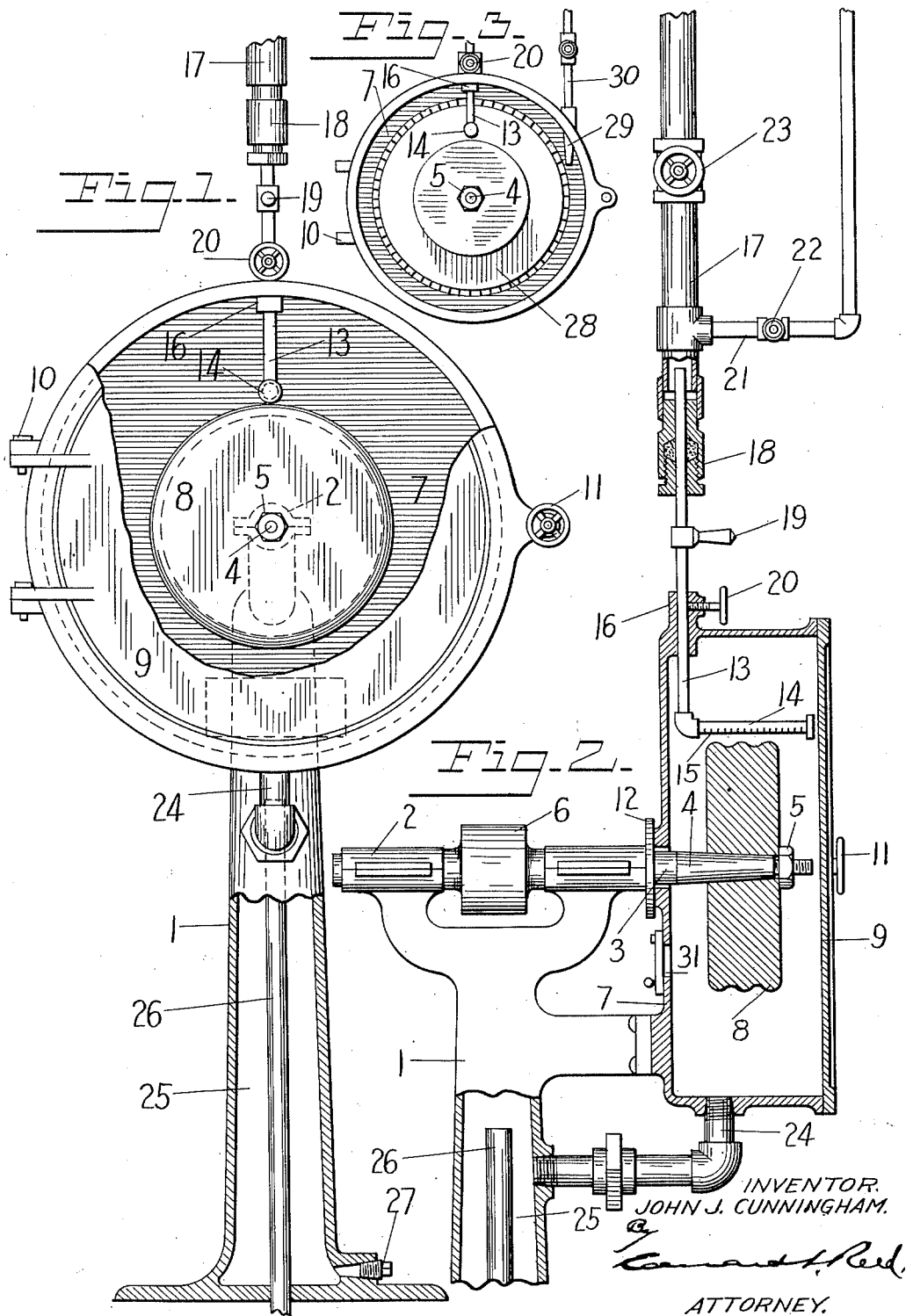
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METHOD FOR CLEANING POLISHING WHEELS AND THE LIKE

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METHOD FOR CLEANING POLISHING WHEELS AND THE LIKE.

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This invention relates to a method for cleaning polishing wheels and the like and is a division of the application for patent filed by me September 19, 1922, Serial No. 589,267.

5 Polishing wheels as ordinarily used comprise a disk, or body, provided with an abrasive polishing surface which is usually applied to the periphery of the body of the wheel. The disks, or bodies, of the wheels are
10 made from different materials, such as felt, wood, or wood with a leather facing, and the periphery of the body is given a coat of glue and the abrasive material, such as fine emery, is then applied to the glue and the glue is
15 allowed to harden. In use the polishing surface lasts but a comparatively short time, the abrasive wearing smooth, or otherwise becoming unfit for further use. It is customary to provide the wheel with a new polishing surface by applying glue and new abrasive to the worn out surface. This operation can be repeated several times, but when several layers
20 of glue and abrasive material have been applied to the wheel the glue has a tendency to break out in relatively large pieces and it is difficult to properly balance the wheel. It is then necessary either to discard the entire wheel or to clean the wheel by removing the accumulated glue and abrasive material from
30 the body portion thereof. This cleaning operation is usually accomplished by mounting the wheel on a lathe or the like and applying a tool to the polishing surface, thereby cutting away the glue and abrasive material. This
35 not only is a very tedious and dirty operation but almost invariably more or less of the surface of the body of the wheel will be cut away and after having been cleaned in this manner a few times the diameter of the body
40 of the wheel is so reduced that it can no longer be used. Further, some polishing wheels are used with oil and this will penetrate into the wheel and it is necessary that the wheel be turned down sufficiently to get rid of all the oil or the glue will not adhere thereto. Also,
45 many polishing wheels are used for special work and have their polishing surfaces shaped to accommodate them to the work. When these wheels are cleaned by the old method the shaped surface of the body of the wheel is usually destroyed or so distorted that it is necessary to reform the same, thus greatly adding to the expense of refinishing the wheel.

The object of the present invention is to

provide a method whereby the accumulated 55 glue and abrasive material, or other substances forming the polishing surface, may be quickly and easily removed and which will leave the body of the wheel with a smooth dry surface of the original contour and which will
60 not reduce the diameter of the body of the wheel.

Other objects of the invention may appear as the invention is described in detail.

In the accompanying drawings Fig. 1 is a 65 front elevation of an apparatus embodying the invention, partly broken away; Fig. 2 is a side elevation of the same, partly in section; and Fig. 3 is a front elevation of the casing with the front cover removed, showing a
70 slight modification of the apparatus.

In carrying out my method of cleaning polishing wheels and the like I first treat the wheel to soften the glue and loosen the abrasive and then rotate the wheel at a speed 75 sufficient to throw off the glue and the abrasive by centrifugal force. The glue may be softened by the application of heat or fluid but I prefer to use a heated fluid, such as steam. In the present instance, I mount the wheel 80 which is to be cleaned within a closed casing and rotate the same at a relative high speed, preferably approximately the speed at which it is rotated for polishing purposes. During the rotation of the wheel it is subjected to the
85 action of steam, or other suitable fluid, which may be directed against the polishing surface of the wheel in the form of one or more jets. The action of the steam serves to soften the glue and the centrifugal action of the wheel
90 throws the softened glue and the abrasive material from the wheel, the glue, products of condensation and the abrasive being retained within the casing. The glue will usually be
95 entirely dissolved and will float from the casing with the water of condensation through a suitable pipe, carrying with it the greater part of the abrasive material. In the cleaning of some wheels I have found it desirable to slightly modify the method by adding to
100 the steam a small quantity of water, this being particularly desirable in the case of leather faced wheels, as it prevents the leather from becoming too dry. A very brief application of the steam to the wheel will result in the
105 complete cleaning of the wheel and after the steam is shut off the wheel will rotate for a brief interval which will be sufficient to thor-

oughly dry the surface thereof so that when the wheel is removed from the casing the surface is smooth and dry and ready for the application of a new polishing surface.

When a wheel has been used with oil the steam will entirely remove the oil which may have penetrated the surface of the wheel. Further, the steam will itself so act on the surface of the wheel that together with the centrifugal force it will loosen the fibers thereof and cause the same to straighten out to such an extent that when the glue is applied thereto it will enter the body of the wheel to a greater extent than it otherwise would and will, therefore, adhere much more firmly to the body of the wheel. Further, the steam will preserve the natural moisture in the body of the wheel, thereby maintaining the same in a condition to properly receive the glue, but at the same time the centrifugal force will free the surface of the wheel from all free moisture which might interfere with the adherence of the glue. The heat which is imparted to the wheel during the cleaning operation provides a warm surface to which the glue may be applied, so that the glue will not be chilled and will penetrate the body of the wheel to a relatively great extent, and will remain in a soft condition for a period of time ample for the application of the abrasive to the glue covered surface. It has been found in practise that a wheel which has been cleaned in this manner and provided with a new polishing surface will wear twice as long as a new wheel.

Any suitable apparatus may be employed for carrying out the method and in the present drawings I have, for the purpose of illustration, shown one form of apparatus which in practise has been found to operate very satisfactorily.

In that form here shown the apparatus consists of a standard 1, similar to the standard of the ordinary polishing machine and having at its upper end bearings 2 in which is journaled a spindle 3 having one end tapered, as shown at 4, to receive the polishing wheel, which is provided with a tapered opening to fit upon the spindle and which may, if desired, be retained thereon by means of a nut 5. The spindle may be rotated in any suitable manner, but I have here shown it as provided with a belt pulley 6 which is mounted thereon between the bearings 2.

The tapered end 4 of the spindle 3 projects into a casing 7 so that the wheel, which is shown at 8, will be rotatably supported within that casing, and preferably the casing is mounted upon the standard 1 so that it will be supported in a fixed relation to the spindle. The casing is provided with a suitable opening to permit the insertion and removal of the wheels which are to be cleaned and this opening is closed by a door, or closure 9. In the present instance, the entire

front side of the casing may be opened and the closure or door constitutes the front wall of the casing. The closure is here shown as hinged to the peripheral wall of the casing at 10 and as having a fastening device, such as a clamping screw 11, for securing it in its closed position. When closed the casing is substantially fluid tight. To prevent the fluid from escaping about the spindle 3, and entering the bearing, a disk, or washer, 12 is pressed on to the spindle and bears against the rear wall of the casing about the opening through which the spindle extends and this disk rotating with the spindle will throw the water off by centrifugal force, thus preventing the water and abrasive from entering the bearing. As has been stated, the spindle may be rotated at any suitable speed but I have found that 2200 R. P. M. gives very satisfactory results with the average wheel, and will cause the disk to throw off the water and sediment.

A fluid pipe 13 extends into the casing and is provided at its inner end with one or more discharge openings through which the fluid may escape. In the present instance the inner portion of the pipe extends parallel with the axis of the spindle 3, as shown at 14, and is provided with a series of openings, or kerfs, 15 through which the fluid would be discharged in jets against the periphery of the wheel. The fluid pipe 13 is connected with a suitable source of supply for fluid under pressure, the fluid used being preferably steam. In order that the discharge portion, or nozzle 14, of the fluid pipe may be adjusted to accommodate it to wheels of different diameters, the pipe 13 is slidably mounted in a bearing 16 in the peripheral wall of the casing and its outer end extends into the adjacent end of the supply pipe 17, which is provided with a stuffing box 18 to form a tight joint between the same and the fluid pipe 13. A handle 19 is applied to the pipe 13 on the outside of the casing to facilitate the adjustment thereof and a clamping screw 20 is mounted in the bearing 16 to hold the pipe in adjusted positions. In order to permit a quantity of water to be added to the steam when this is desirable I have connected a water pipe 21 with the supply pipe 17. The water pipe is provided with a valve 22 and is connected with the supply pipe on the inner side of the valve 23 which controls the flow of fluid through that pipe.

The steam will condense within the casing and the products of condensation will escape from the casing through a drain pipe 24, carrying with them the melted glue and the abrasive material. This drain pipe may lead directly to a waste pipe, or other point of discharge, but I prefer to provide in connection with the drain pipe means for recovering the abrasive material which is carried from the casing along with the water, and which when

thus recovered may be again used. To accomplish this I connect the drain pipe with a fluid trap, which, as here shown, consists of a receptacle 25 formed in the standard 1, although it will be apparent that the receptacle may be of any suitable character and located at any suitable point. The drain pipe 24 enters this receptacle at a point well above the bottom thereof and the water escapes from the receptacle through an outlet pipe 26, the upper end of which is spaced a considerable distance above the bottom of the receptacle. Consequently, the abrasive material will settle to the bottom of the receptacle while the water which rises above the level of the outlet pipe will escape through that pipe. The receptacle may be provided with a suitable opening, as shown at 27, for the removal of the accumulated abrasive material and the casing 7 may be provided with a normally closed opening 31 in the inner wall thereof to permit an implement to be inserted for the purpose of driving the wheel from the spindle.

The device so far described has been designed for operation from an external source of power, such as a belt pulley, motor or the like, but, if desired, means may be provided for rotating the wheel by the action of steam or fluid which is derived from the same source as that which is used for cleaning purposes. To this end I have, in Fig. 3, shown the spindle 3 as having secured thereto a turbine 28 which may be of any suitable construction and against the blades of which fluid is discharged through a nozzle 29 which is connected by a pipe 30 with the source of supply for steam, or other fluid. In this manner the device is rendered self contained and may be operated independently of any source of power other than the steam supply which is utilized for the cleaning purposes.

While I have illustrated and described in

detail my method and one form of apparatus for carrying out the method I wish it to be understood that I do not wish to be limited to the details of either the method or apparatus as various modifications may occur to a person skilled in the art.

Having now fully described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. The method of cleaning polishing wheels comprising an abrasive material bound together by glue consisting in treating the wheel to soften the glue and loosen the abrasive and rotating the wheel to cause the glue and abrasive to be thrown off by centrifugal force.

2. The method of cleaning polishing wheels comprising an abrasive material bound together by glue consisting in subjecting the wheel to the action of a fluid to soften the glue and loosen the abrasive and rotating the wheel to cause the glue and the abrasive to be thrown off by centrifugal force.

3. The method of treating polishing wheels comprising an abrasive material held by a binder to remove the abrasive material and the binder therefrom, consisting in rotating the wheel at a relatively high speed and subjecting the same while rotating to the action of steam to cause the binder to be softened and thrown off by centrifugal force.

4. The method of treating polishing wheels comprising an abrasive material held by a binder to remove the abrasive material and the binder therefrom, consisting in rotating the wheel at a relatively high speed and directing a jet of steam onto the surface to be cleaned, thereby causing the binder and the abrasive material to be loosened and thrown off by centrifugal force.

In testimony whereof, I affix my signature hereto.

JOHN J. CUNNINGHAM.