

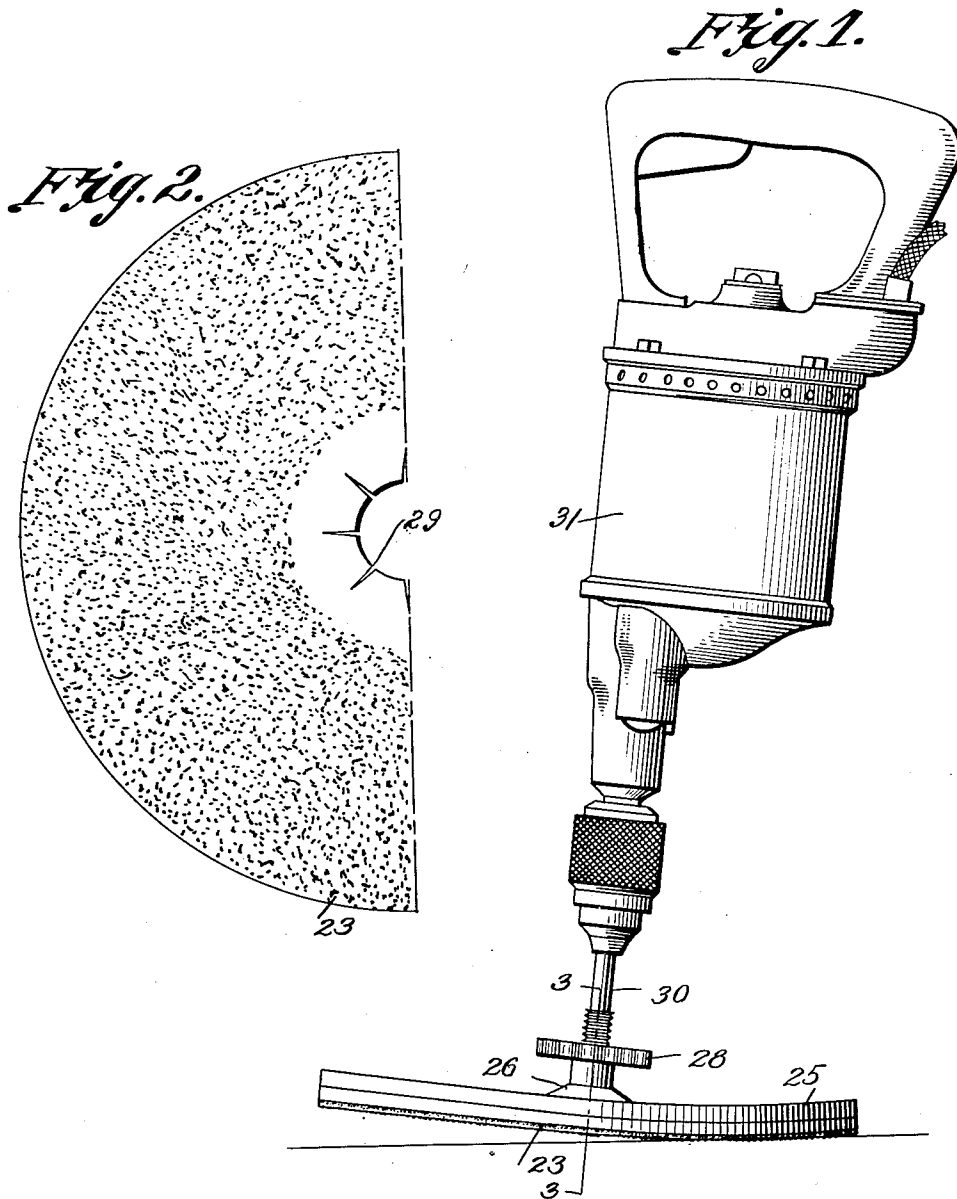
March 4, 1930.

H. A. LOVELAND
SANDPAPERING MACHINE

1,749,709

Filed Jan. 7, 1929

2 Sheets-Sheet 1



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WITNESS:

March 4, 1930.

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SANDPAPERING MACHINE

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2 Sheets-Sheet 2

Fig. 4.

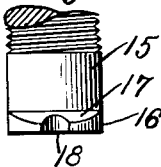


Fig. 5.

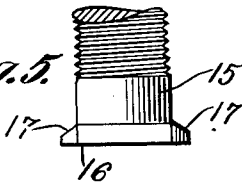


Fig. 6.



Fig. 7.

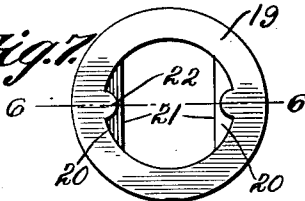


Fig. 14.

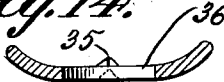
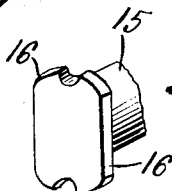


Fig. 13.



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WITNESS:

Fig. 3.

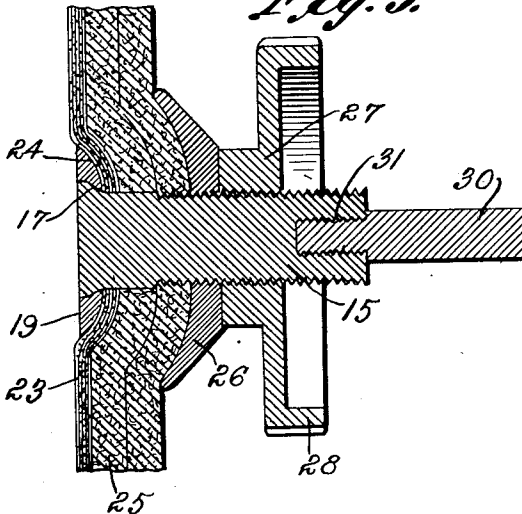


Fig. 11.

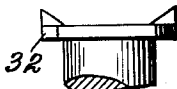
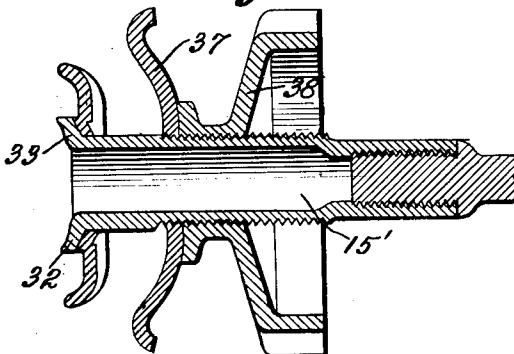


Fig. 12.

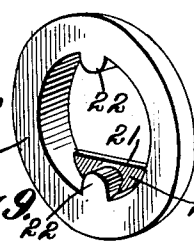
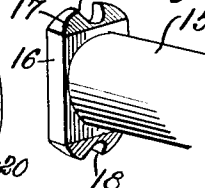


Fig. 8. Fig. 9.

Fig. 10.



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SANDPAPERING MACHINE

Application filed January 7, 1929. Serial No. 331,974.

This invention relates to smoothing and polishing machines, an object being to provide a device which may be removably attached to a hand drill, flexible shaft, or other rotary driving means, so as to increase the uses of such driving means and provide an efficient smoothing and polishing machine at a small additional expense, which is capable of use upon convex or concave surfaces, as well as upon plane surfaces.

Another object of the invention is the provision of an attachment of the above character whose construction permits of the convenient removal and renewal of the abrasive or polishing elements, so that a single attachment may be used for various characters of work.

Another object of the invention is the provision of novel means to mount the abrading or polishing element and to yieldingly reinforce the same so as to regulate the degree of contact in accordance with the work.

With the above and other objects in view, the invention further includes the following novel features and details of construction, to be hereinafter more fully described, illustrated in the accompanying drawings and pointed out in the appended claims.

In the drawings:—

Figure 1 is an elevation illustrating the use of the invention.

Figure 2 is a fragmentary plan view showing the abrading or polishing element.

Figure 3 is an enlarged fragmentary sectional view taken substantially on the line 3—3 of Figure 1.

Figure 4 is a fragmentary elevation showing the outer end of the head.

Figure 5 is a similar view taken at right angles to Figure 4.

Figure 6 is a sectional view on the line 6—6 of Figure 7.

Figure 7 is a plan view of the removable locking ring.

Figure 8 is a detail perspective view of the outer end of the head.

Figure 9 is a perspective view of the locking ring.

Figure 10 is a detail perspective view of the outer end of the head looking in a di-

rection opposite to that shown in Figure 8.

Figure 11 is a sectional view showing a modified form of the invention with the abrasive element and yieldable reinforcing members removed.

Figure 12 is a fragmentary elevation of the outer end of a modified form of head.

Figure 13 is a similar view looking in a direction at right angles to that shown in Figure 12.

Figure 14 is an edge view of the locking ring shown in Figure 11.

Referring to the drawings in detail wherein like characters of reference denote corresponding parts, the invention as shown comprises a head 15 whose outer end is provided with oppositely extending shoulders 16, the inner faces of which are inclined as shown at 17. These shoulders 16 are further notched as shown at 18.

Removably mounted upon the outer end of the head and adapted to bear upon the inclined faces 17 of the shoulders 16 is a locking ring 19. The outer face of this locking ring is flat so that it will be flush with the outer end of the head when the parts are in position for use, as shown in Figure 3 of the drawings. The inner face of this ring is convex and its inner periphery is of a diameter to be freely movable upon the head 15. Extending into the ring 19 are opposed inclined webs 20 whose opposed edges are parallel as shown at 21. The space between these parallel edges 21 is regulated so as to permit the ring to be slipped over the outer end of the head 15 with the flange 16 passing through the bore of the ring. The ring may then be given a quarter turn so as to bring the inclined webs 20 in contact with the inclined faces of the shoulders 16, whereupon the outer face of the ring and the end of the head 15 will be flush as previously explained. In order to prevent accidental rotation of the ring upon the head, the ring is provided with inwardly extending lugs 22 which are received within the notches 18 provided in the shoulder 16.

Mounted upon the head 15 are one or more layers 23 of abrasive material such as sand paper, emery cloth, or other smoothing or

polishing material. The abrasive material 23 is preferably formed of disks having central openings for receiving the head 15 and surrounding these openings are concaved recesses 24 which receive the locking ring 19. The depth of the concaved portions 24 is such that the disks of abrasive material will extend beyond the end of the head and outer face of the locking ring so that the latter will not come in contact with the work.

The abrasive disks 23 are backed up and yieldingly supported by disks 25 formed of suitable flexible springy material, such as felt, paper, leather, rubber or cloth, but felt disks are preferably used. These disks provide tension pads and one or more may be used to back up the abrasive disks so that when the invention is in use, the abrasive disk will be yieldingly held in contact with the work. The number of disks employed depends upon the character of the work performed. Where it is desired to quickly remove a roughened surface preparatory to finishing the same, a relatively coarse abrasive disk may be used and this disk may be backed up with two, three, four or more tension pads. Where the surface is to be finely finished or polished, a fine type of abrasive disk or polishing disk may be used backed up by a single tension pad.

The disks 23 and pads 25 are clamped in position by means of a compression ring 26 whose outer diameter exceeds the diameter of the locking ring 19 and whose inner face is concaved so that the working face of the abrasive disk 23 will be forced and held outward beyond the end of the head 15. Threadedly mounted upon the head 15 is a compression nut 27 which is provided with a corrugated flange 28 by means of which the nut may be conveniently gripped and forced against the compression ring to hold the parts in proper position.

When it is desired to remove or replace an abrasive disk or tension pad, the nut 27 may be rotated to release the compression ring, whereupon, the locking ring 19 may be rotated and removed from the head 15. The disks 23 or pads 25, or both, may then be removed. The disks 23 are preferably provided with radially disposed slits 29 to facilitate shaping them over the convex face of the ring 19.

Where a number of abrasive disks are used upon a piece of work, a number of disks may be clamped upon the head and when one of the disks is worn or useless, it may be torn from the head without requiring the removal of the locking ring 19.

Any suitable means may be provided for rotating the device and for this purpose, the head is provided with a shank 30 which is removably mounted within a threaded bore 31 provided in the head. This shank may have means for connection with a drill chuck or

other rotating means and a number of shanks may be supplied with the attachment so as to permit of its use with various tools or devices. In Figure 1 of the drawings the invention is shown in connection with a hand drill 31.

If desired, the head may be hollow as shown at 15' in Figure 11 of the drawings and the outer end of the head may be flared as indicated at 32 to provide a beveled shoulder 33 which is similar to the beveled shoulder 16. This shoulder extends diametrically and is provided with notches 34 which receive lugs or projections 35 provided upon a locking collar 36. This locking collar 36 is attached to and removed from the head in the same manner as that described in connection with the form of the invention shown in Figure 3.

The head 15' is provided with a compression ring 37 which is adapted to bear upon the tension pads and which is forced against the pads by means of a compression nut 38.

The invention is susceptible of various changes in its form, proportions and minor details of construction and the right is herein reserved to make such changes as properly fall within the scope of the appended claims.

Having described the invention what is claimed is:—

1. In a machine of the character described, a head, a flexible abrasive disk of relatively large diameter mounted thereon and having its abrasive surface disposed beyond the transverse plane of the outer end of the head, a tension pad mounted upon the head behind the disk to yieldingly force the latter into engagement with the work, a locking ring removably mounted upon the outer end of the head for engagement by the disk, a compression ring mounted upon the head and bearing upon the tension pad to force the disk beyond the outer face of the locking ring, and means to force the compression ring into position.

2. In a machine of the character described, a head, a flexible abrasive disk of relatively large diameter mounted thereon and having its abrasive surface disposed beyond the transverse plane of the outer end of the head, a tension pad mounted upon the head behind the disk to yieldingly force the latter into engagement with the work, a locking ring removably mounted upon the outer end of the head for engagement by the disk and having an inner convex face for contact by the central portion of the abrasive disk, a compression ring mounted upon the head and having a concaved face bearing upon the tension pad with the outer edge of the compression ring disposed beyond the outer periphery of the locking ring to force the working face of the abrasive disk outward, and means to adjust the compression ring.

In testimony whereof I affix my signature.
HAROLD A. LOVELAND.