Oct. 26, 1948. W. W. WICKMAN 2,452,409

ROTARY ABRADING DEVICE

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Fig. 1

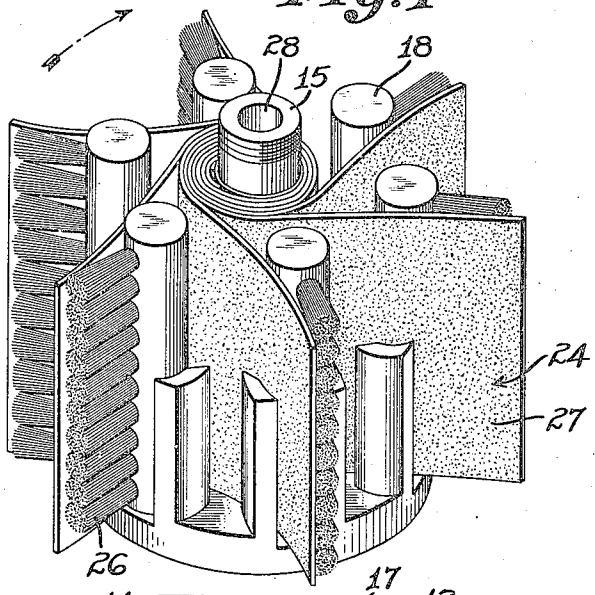


Fig. 3

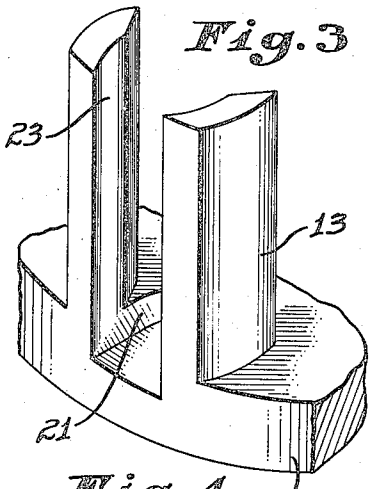


Fig. 4

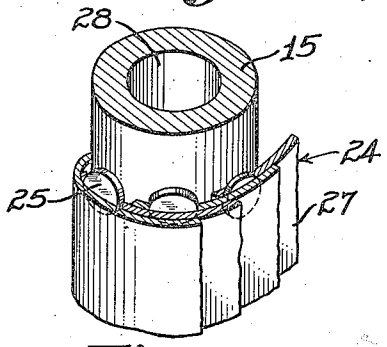
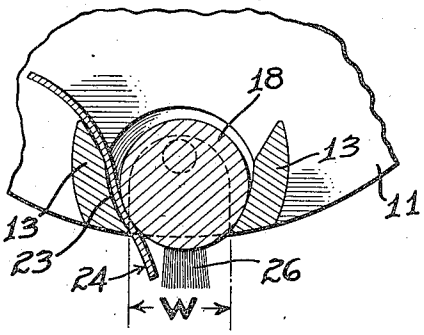


Fig. 5



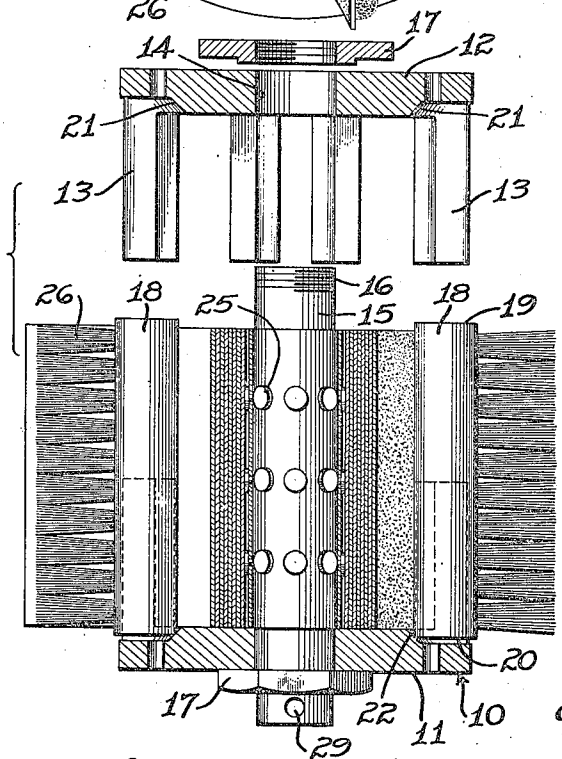


Fig. 2

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ROTARY ABRADING DEVICE

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8 Claims. (Cl. 51—194)

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This invention relates to a rotary abrading device and is particularly directed to improvements in sanding drum construction of the type employing a plurality of abrasive strips extending outwardly from a housing.

In conventional sanding drum constructions a central element is provided for regulating the length of abrasive strips which extend outwardly in contact with resilient elements, such as brushes. Such conventional feed regulating devices are cumbersome, complicated, expensive to manufacture and difficult to keep in adjustment.

It is the principal object of this invention to avoid such difficulties and to provide a rotary abrasive device having simplified and improved means for clamping the abrasive strips against outward movement.

Another object of this invention is to provide a plurality of spacers positioned at intervals around a central rotary member and having end members separated by the spacers, the end members being provided with inclined surfaces so that upon axially clamping the end members toward each other, the spacers are moved outwardly to clamp abrasive strips against abutments which are provided on the end members.

Another object is to provide such spacers in the form of brush holders which may be individually turned to a selected position prior to clamping between the end members.

Various other objects and advantageous features of this invention may be had from the following description, and one embodiment thereof may be seen in the accompanying drawings wherein similar characters of reference designate corresponding parts, and wherein:

Figure 1 is a perspective view of a preferred embodiment of my invention, the top half of the housing being omitted for clarity of illustration;

Figure 2 is a sectional elevation thereof, the upper half of the housing and the clamping nut being shown spaced away from the remainder of the assembly prior to installation;

Figure 3 is a fragmentary perspective view of a portion of the housing illustrated on an enlarged scale;

Figure 4 is a fragmentary perspective view illustrating the manner of attaching the abrasive strips to the central member; and

Figure 5 is a fragmentary sectional plan view illustrating the clamping action for holding each abrasive strip between a brush holder and a cooperating abutment.

Referring to the drawings, a housing generally designated 10 comprises a pair of duplicate

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halves 11 and 12. Each of these halves comprises an end member on which a plurality of axially extending fingers 13 is provided. A central opening 14 extends axially through each of the end members for reception of a central sleeve member 15. Threads 16 are provided on opposite ends of the central sleeve member 15 and nuts 17 are adapted to be received on the threads 16.

The fingers 13 on the opposed members 11 and 12 do not meet in end to end contact upon assembly of the members with relation to the central sleeve member 15, but on the contrary are spaced by the axially extending spacers or brush holders 18. These brush holders 18 may be cylindrical in shape and are preferably provided with square ends 19 and 20. These ends 19 and 20 do not rest upon corresponding flat surfaces, but are engaged by inclined cam surfaces 21 and 22 formed on the end members 12 and 11, respectively.

The fingers 13 partially encircle each of the brush holders 18 and provide an abutment surface 23 on one side, as shown in Figure 3. A plurality of abrasive strips 24 are wound around the central sleeve member 15 and each of these strips extends outwardly between a brush holder 18 and its corresponding abutment surface 23. A plurality of buttons 25 are mounted on the central sleeve member 15 and are adapted to receive slots (not shown) in the individual abrasive strips for securing the strips relative to the central sleeve 15.

When the end members are assembled into operative relationship and the nuts 17 are tightened, the end members are urged to move axially in a direction toward each other and this action causes the inclined cam surfaces 21 to move each of the brush holders 18 outwardly. The outward movement of the brush holders is arrested by the fingers 13 since the width of the opening W, as shown in Figure 5, is less than the diameter of the brush holders 18. Tightening of the nuts therefore serves to clamp the abrasive strips 24 between one of the brush holders 18 and the corresponding abutment surface 23 on the fingers 13.

Each of the brush holders 18 is provided with tufts of brushes 26 which are preferably arranged in a straight line and which extend outwardly through the opening W between adjacent fingers 13. Since the brush holders are not rigidly attached to either of the end members 11 and 12, upon relaxing one of the nuts 17 the brush holders can be turned about their respective

longitudinal axis to orient the brushes in any desired position within the limits defined by the opening W. The active side 27 of the abrasive strips contacts the abutment surface 23 and the relatively smooth, inactive side lies adjacent the brushes 26.

In operation, the abrasive strips are extended to the desired extent adjacent each of the brush assemblies and the nuts 17 are then tightened, thereby forcing the brush holders 18 radially outwardly to clamp the abrasive strips in the selected position. If desired, the abrasive strips may then be trimmed by means of shears for uniform extension. The entire device is then mounted as a unit for rotation. The central opening 26 in the sleeve member 15 is adapted to receive a driving shaft (not shown) and the pin 29 may be used to connect the shaft and sleeve in driving relation. The device is rotated in the direction shown by the arrow in Figure 1. The clamping arrangement provided insures that the abrasive strips remain in the selected position until the nuts 17 are laxed to permit the abrasive strips to be drawn outwardly to present a new surface.

Having fully described my invention, it is to be understood that I do not wish to be limited to the details herein set forth, but my invention is of the full scope of the appended claims.

I claim:

1. In a rotary abrading device, the combination of: spaced end members connected by a central axial member, a plurality of spacers positioned at intervals around the central member and extending between the end members, abutments provided on at least one of the end members extending adjacent said spacers, a plurality of abrasive strips encircling the central member and each having an end thereof extending outwardly between one of the spacers and the adjacent abutment, and means on the end members for moving the spacers radially outwardly to clamp the abrasive strips between the spacers and the abutments.

2. In a rotary abrading device, the combination of: spaced end members connected by a central axial member, a plurality of spacers positioned at intervals around the central member and extending axially between the end members, inclined surfaces on the end members adapted to contact opposed ends of the spacers to move the spacers radially outwardly upon endwise movement of the end member, means to limit outward movement of the spacers including abutments provided on at least one of the end members, a plurality of abrasive strips encircling the central member and each having an end thereof extending outwardly between a spacer and an adjacent abutment, and clamping means cooperating with the central member adapted to move the end members axially toward each other, whereby each abrasive strip may be clamped between a spacer and one of the abutments.

3. In a device of the class described, the combination of: a rotatable housing having axially movable ends, a brush holder extending axially of the housing, brushes on the brush holder extending outwardly from the housing, means on the housing forming an axially extending socket for reception of the brush holder, an abrasive strip extending outwardly through the socket adjacent the brushes, cam surfaces on the ends of the housing adapted to contact opposed ends of the brush holder, and axially movable clamping means associated with said housing adapted to move the brush holder outwardly in its socket to clamp the abrasive strip against a wall of the socket.

4. In a device of the class described, the combination of: a rotatable housing having axially movable ends, a plurality of spacers extending axially between the housing ends, means on the housing forming axially extending sockets for reception of the spacers, an abrasive strip associated with each of said spacers extending outwardly through the socket therefor, cam surfaces on the housing ends adapted to contact opposed ends of the spacers, and axially movable clamping means associated with said housing ends adapted to move the spacers radially outwardly in their respective sockets to clamp each abrasive strip between a spacer and a wall of its socket.

5. In a device of the class described, the combination of: a rotatable housing, a plurality of cylindrical brush holders extending axially of the housing, brushes on the brush holders extending outwardly from the housing, means on the housing forming axially extending sockets for reception of the brush holders, an abrasive strip associated with each of said brush holders and extending outwardly through the socket therefor, cam surfaces on the housing adapted to contact opposed ends of the brush holders, and axially movable clamping means associated with said cam surfaces adapted to move the brush holders radially outwardly in their respective sockets to clamp each abrasive strip between a brush holder and a wall of its socket.

6. In a device of the class described, the combination of: a rotatable housing, a plurality of brush holders extending axially of the housing, brushes on the brush holders extending outwardly from the housing, axially extending fingers on the housing forming sockets for reception of the brush holders, an abrasive strip associated with each of said brush holders and each extending outwardly through one of said sockets, cam surfaces on the housing adapted to contact opposed ends of the brush holders, and axially movable clamping means associated with said cam surfaces adapted to move the brush holders in their respective sockets to clamp each abrasive strip between a brush holder and a wall of its socket.

7. In a device of the class described, the combination of: a rotatable housing having axially movable ends, a plurality of cylindrical brush holders extending axially of the housing, brushes on the brush holders extending outwardly from the housing, axially extending fingers on the housing forming sockets for reception of the brush holders, an abrasive strip associated with each of said brush holders and each extending outwardly through one of said sockets adjacent the brushes, cam surfaces on the ends of the housing adapted to contact opposed ends of the brush holders, and axially movable clamping means associated with said housing adapted to move the brush holders outwardly in their respective sockets to clamp each abrasive strip against a wall of its socket.

8. In a rotary abrading device, the combination of: a rotatable housing, said housing comprising two duplicate halves, means to maintain the halves of the housing in operative relationship including a central member extending axially of said halves of the housing, a plurality of brush holders extending axially of the housing, means on the housing halves forming axially extending sockets for reception of the brush holders, a plurality of abrasive strips encircling

the central member and each having an end thereof extending outwardly through one of the sockets, cam surfaces on the housing halves adapted to contact opposed ends of the brush holders, and clamping means cooperating with the central member adapted to move the housing halves axially toward each other, whereby the brush holders may be moved outwardly in their respective sockets to clamp each abrasive strip between a brush holder and a wall of its socket.

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