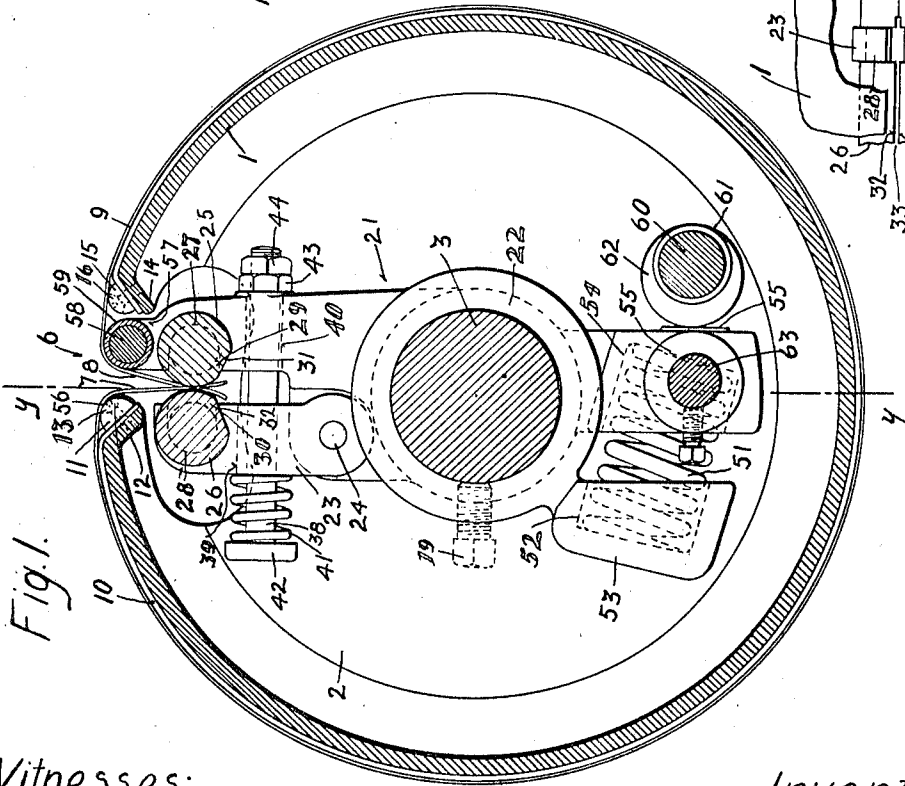
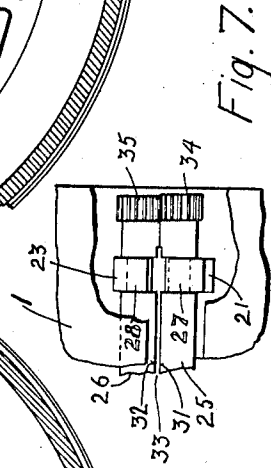
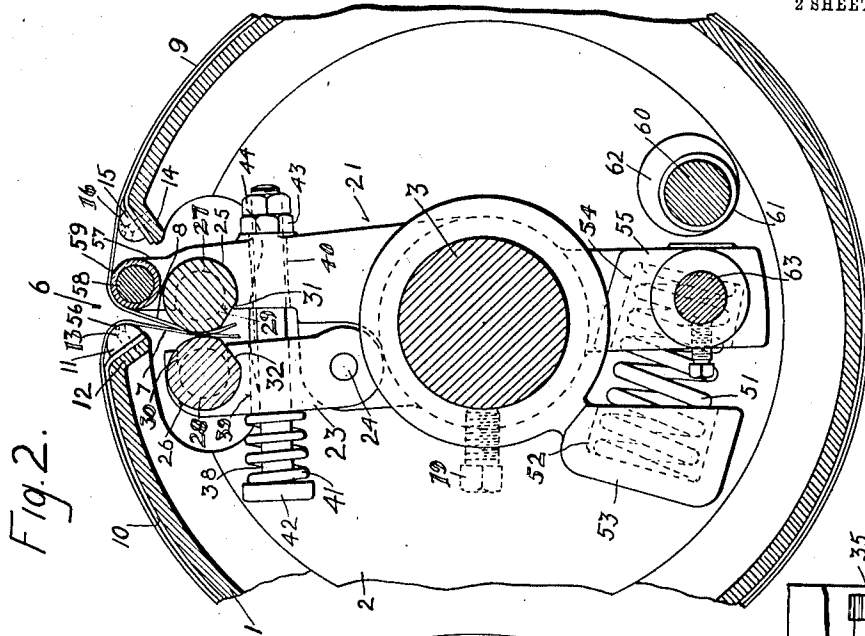


J. R. THOMAS.
 ABRADING CYLINDER.
 APPLICATION FILED SEPT. 7, 1909.

949,249.

Patented Feb. 15, 1910.

2 SHEETS—SHEET 1.



Witnesses:
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 by R. D. Webster, His Attorney.

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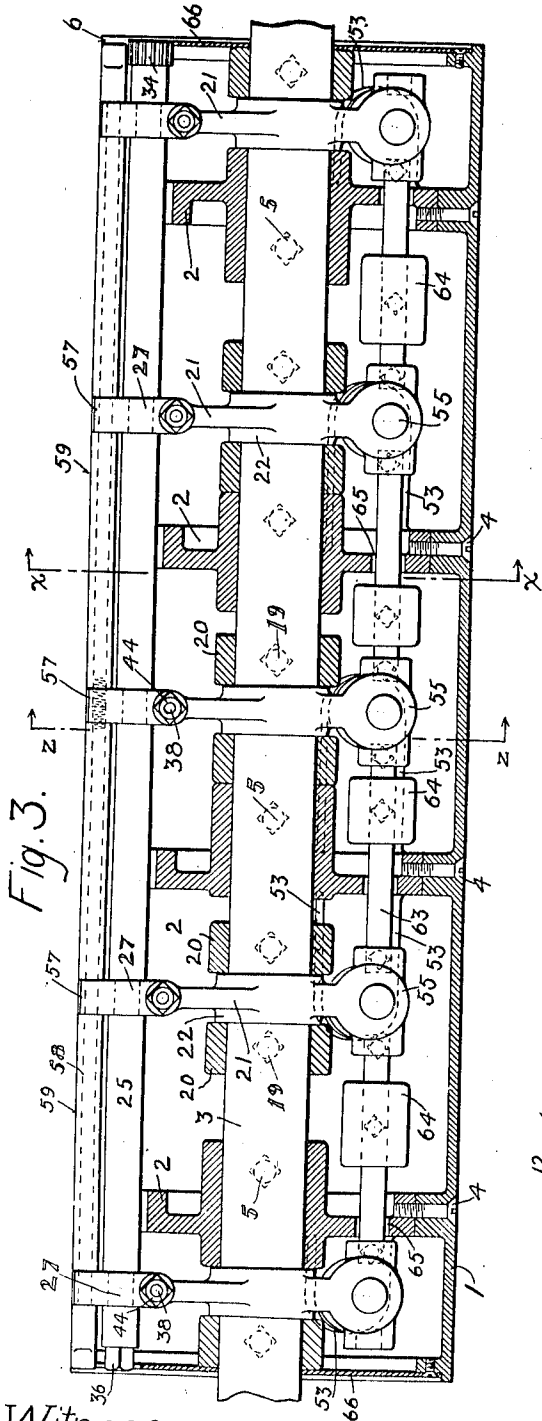


Fig. 3.

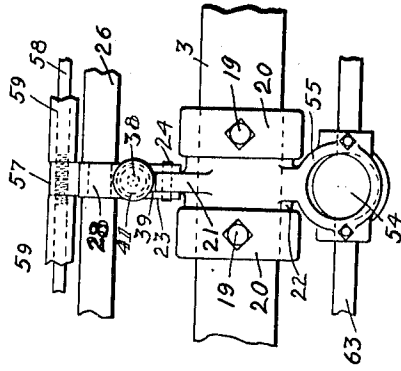


Fig. 6.

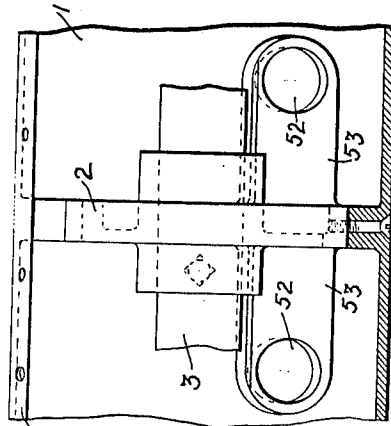


Fig. 5.

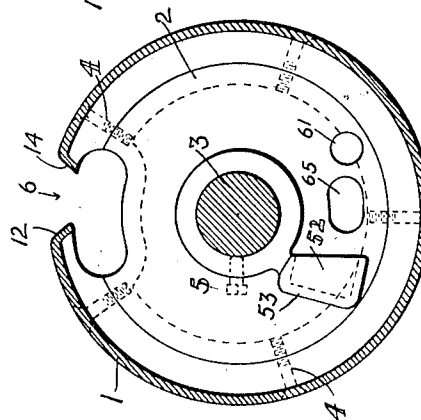


Fig. 4.

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UNITED STATES PATENT OFFICE.

JOHN R. THOMAS, OF CINCINNATI, OHIO, ASSIGNOR TO J. A. FAY & EGAN COMPANY,
OF CINCINNATI, OHIO, A CORPORATION OF WEST VIRGINIA.

ABRADING-CYLINDER.

949,249.

Specification of Letters Patent.

Patented Feb. 15, 1910.

Application filed September 7, 1909. Serial No. 516,476.

To all whom it may concern:

Be it known that I, JOHN R. THOMAS, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Abrading-Cylinders, of which the following is a specification.

My invention relates to abrading cylinders, especially adapted for use in sanding or polishing machines for wood working purposes, although the same may be employed in other or different relations.

The invention has for its object the provision of novel and improved means whereby the abrading material, such as sand paper, may be secured to or stretched about the cylinder and maintained in stretched condition during operation of the machine.

My invention consists in providing novel means whereby the abrading material is initially clamped or stretched about the cylinder and slack in the abrading material which occurs during operation of the machine is taken up automatically for maintaining proper tension upon the abrading material received about the cylinder.

The invention will be further readily understood from the following description and claims, and from the drawings in which latter:

Figure 1 is a cross-section of my improved device taken on the line $z-z$ of Fig. 3, showing the rockable arms in relation for initially stretching the abrading material. Fig. 2 is a similar view showing the parts in relation for automatically stretching the abrading material. Fig. 3 is a longitudinal section of my improved device taken on the line $y-y$ of Fig. 1 and showing the rockable arms in edge elevation. Fig. 4 is a cross-section of my improved device on the line $x-x$ of Fig. 3, with the rockable arm removed for exposing the construction of one of the supporting webs for the shell. Fig. 5 is an edge elevation of one of the supporting webs for the shell, having the shell thereon partly broken away. Fig. 6 is a detail in edge elevation showing the rockable arm with the clamping arm thereon; and, Fig. 7 is a detail in plan view, partly broken away, showing the gear connection between the clamping rollers, the longitudinal directing bar being omitted.

1 represents the shell of the abrading cylinder and 2 are supporting webs therefor which are rigidly secured to a central shaft

3, the ends of which may serve as journals for the cylinder. The shell is secured in suitable manner to the supporting webs, as by means of screws 4, and the supporting webs are suitably secured to the shaft, as by means of bolts 5. The shell is provided with a peripheral slot 6, which extends longitudinally thereof and serves the purpose of providing an opening through which the ends 7 8 of the abrading material 9, such as sand paper, are received. A cushion-covering 10 may also be employed, if desired. The cushion 10 when employed is adapted to be stretched about the shell, one end thereof being received under a strip 11 secured at suitable points to the lip 12 of the slot 6 by screws 13, the other end of the cushion being secured to the lip 14 of said slot by a strip 15 clamped in place by bolts 16.

The means by which I prefer to initially clamp or stretch the abrading material about the shell may be described as follows: 21 are rockable arms which are journaled about the central shaft on bearings 22 held against endwise movement by collars 20 secured to the shaft by bolts 19. Clamping arms 23 are pivoted to the rockable arms on pivots 24. Clamping rollers 25 26 for the ends of the abrading material are journaled on the respective arms 21 23, as by having reduced journals 27 28 thereon received in recesses 29 30 in said respective arms. The said rollers respectively preferably have flat faces 31 32 extending longitudinally thereof at one point in their respective peripheries, the said flat faces however being interrupted at the ends of said rollers for preventing the flat faces meeting each other when they become opposed in position. A space 33 is thus provided between the rollers into which the ends of the abrading material are introduced. The rollers may if desired be geared together as shown by the gears 34 35 at one of the ends of said respective rollers 25 26, the rollers having wrench-receiving ends 36 for a suitable turning wrench. When the abrading material has been introduced between said rollers and preliminarily positioned about the cylinder, the rollers are turned, thus causing the ends of the abrading material to be clamped between the peripheral faces of said rollers for drawing the abrading material inwardly and initially stretching the same about the cylinder. For causing relative approach between said rollers

ers and proper contact thereby of the abrading material, I provide yielding pressure means for the same, instanced as bolts 38 received through apertures 39 in the arms 23 and apertures 40 in the arms 21, springs 41 being interposed between the arms 23 and the heads 42 of the bolts, and positioning nuts 43 and clamping nuts 44 being provided for the other ends of said bolts for regulating the pressure between said rollers and securing the parts in adjusted pressure relations.

The construction just described permits the abrading material to be stretched taut initially about the cylinder. Means are also provided whereby slack in the abrading material after the initial stretching may be taken up. It has been found for instance, in practice, that the heat and abrasion caused during the sanding operation will cause the sand paper to stretch, and that subsequent slack will be occasioned in the abrading material due to other causes, and I have provided novel means for automatically maintaining the abrading material in stretched condition.

For maintaining the abrading material in stretched condition about the abrading cylinder I preferably cause both ends of the abrading material to automatically move transversely with relation to the slot in the cylinder, preferably by means of springs 51 received in sockets 52 located in brackets 53 extending from the webs 2 and in sockets 54 located in lugs 55 extending from the rockable arms.

One end of the abrading material is directed to the stretching means on the rockable arms across one of the walls of the cylinder-slot for drawing said end across said wall as a fulcrum when the rockable arms move laterally with relation to said slot, the other end of the abrading material being received across a directing extension adjacent the other wall of said slot for pulling the abrading material toward said first-named wall of said slot when said stretching means move laterally with relation to said slot. For accomplishing this preferably the strip 11 is provided with a curved face 56 across which the end 7 of the abrading material passes to the clamping means. The rockable arms are provided with extensions 57 in which rods 58 are secured, thimbles 59 being received about said rods between said extensions for forming a longitudinal directing bar between the walls of said slot adjacent the peripheral plane of the cylinder.

The action of the springs 51 is to draw one end of the abrading material across the face of one of the walls of the slot, instanced as the curved face 56, for stretching the abrading material from that end, and to draw the other end of the abrading material past the other wall of said slot toward said first-named wall for stretching said other end.

When initially stretching the abrading material the springs 51 are preferably rendered inoperative as by providing a shaft 60 journaled in bearings 61 of the webs 2 and having eccentrics 62 thereon arranged to engage the lugs 55 on the rockable arms. The relation stated is indicated in Fig. 1, which is the preferable arrangement of the parts when initially stretching the abrading material and shows the stretching rollers in the radial plane of the slot of the cylinder. After the abrading material has been initially stretched, the shaft 60 is turned for turning the eccentrics out of operative range of the rockable arms, the springs thereby becoming effective for maintaining the abrading material in stretched condition, the parts being permitted to move laterally of the radial plane of the slot of the cylinder to assume a relation such as shown in Fig. 2 for stretching the abrading material from both ends thereof. The lugs 55 of the rockable arms are preferably connected by rods 63 having counterweights 64 for the rockable arms mounted thereon, the rod being received through openings 65 in the web. The ends of the cylinder may be closed by plates 66.

It is of course obvious that changes may be made in the construction I have preferred to show without departing from the spirit of my invention.

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

1. In combination, an abrading cylinder provided with a longitudinal slot, and means which automatically act upon the abrading material received about said cylinder during rotation of said cylinder, and for automatically drawing said abrading material across and under one of the walls of said slot as a fulcrum for automatically stretching said abrading material about said cylinder.

2. In combination, an abrading cylinder provided with a longitudinal slot one wall of which forms a fulcrum across which one end of the abrading material received about said cylinder is drawn in stretching the same, and means which automatically act upon said abrading material during operation of said cylinder for automatically drawing said end of said abrading material across said wall and for automatically drawing the other end of said abrading material toward said wall for automatically stretching said abrading material about said cylinder.

3. In combination, an abrading cylinder provided with a longitudinal slot, stretching means adjacent said slot for both ends of the abrading material received about said cylinder, and spring-pressure means for automatically moving said stretching means

and both ends of said abrading material crosswise of said slot for automatically maintaining said abrading material in stretched condition about said cylinder.

5 4. In combination, an abrading cylinder provided with a longitudinal peripheral slot one wall of which forms a fulcrum across which one end of the abrading material received about said cylinder is drawn
10 in stretching the same, clamping means for both ends of said abrading material acting adjacent to said wall, said clamping means having an extension received between the
15 walls of said slot for supporting the other end of said abrading material between the walls of said slot, and means for automatically moving said clamping means laterally of the radial plane of said first-named wall
20 for automatically stretching said abrading material about said cylinder.

5 5. In combination, an abrading cylinder having a longitudinal peripheral slot, clamping means in said cylinder into which
25 both ends of the abrading material received about said cylinder are received through said slot, means for initially stretching said abrading material by said clamping means, means for maintaining the contact-points
30 of said clamping means which are in engagement with said abrading material in the radial plane of said slot during said initial stretching, and means for automatically
35 moving said contact-points laterally across the radial plane of one of the walls of said slot for automatically maintaining said
abrading material in stretched condition.

6. In an abrading cylinder, the combination of a shell, rockable arms pivoted with
40 relation to said shell, pressure-arms pivoted to said rockable arms, initial stretching means for the abrading material received about said shell mounted on said arms, and
45 means for automatically urging said arms about the pivots of said rockable arms for automatically maintaining said abrading material in stretched condition.

7. In an abrading cylinder, the combination of a shell, a rockable frame pivoted
50 with relation to said shell, initial stretching means for abrading material received about said shell mounted on said rockable frame, means for automatically swinging said rockable frame for maintaining said abrading material in stretched condition, and means
55 for neutralizing the action of said last-named means during operation of said initial stretching means.

8. In an abrading cylinder, the combination of a shell having a longitudinal slot in
60 its periphery, a shaft therefor, rockable arms pivoted about said shaft, clamping rollers on said arms for receiving and initially stretching abrading material received about said cylinder through said slot, said
65 clamping rollers being located in said cylinder

adjacent to said slot, and springs acting on said arms for normally urging the same about said shaft and thereby maintaining said abrading material in stretched condition.

9. In an abrading cylinder, the combination of a shell, a shaft therefor, rockable arms pivoted about said shaft, clamping arms pivoted to said rockable arms, clamping rollers
70 mounted on said respective arms for receiving and initially stretching abrading material received about said cylinder, said cylinder having a longitudinal slot at its periphery and said rollers being located in said cylinder adjacent to said slot, and springs
75 acting on said arms for normally urging the same about the pivotal axes of said rockable arms, and thereby maintaining said abrading material in stretched condition, and means acting on said rockable arms for rendering said springs inoperative, substantially
80 as described.

10. In an abrading cylinder, the combination of a shell having a longitudinal peripheral slot, rockable arms, clamping arms pivoted to said rockable arms, clamping rollers
85 journaled on said respective arms adjacent said slot for receiving abrading material passed about said cylinder through said slot, means for urging said clamping rollers toward each other, one of said character of
90 arms having radial extensions thereon, a longitudinal supporting member for said abrading material on said extensions in said slot adjacent to the circumferential plane of
95 said cylinder, and spring pressure means normally urging said rockable arms about their axes for continuously stretching the said abrading material about said cylinder, substantially as described.

11. In an abrading cylinder, the combination of a shell having a longitudinal peripheral slot, a rockable member, a clamping member, pivoted to said rockable member,
100 clamping rollers receiving both ends of abrading material received about said cylinder journaled in said respective members adjacent to said slot, means for urging said clamping rollers toward each other, one of
105 said character of members provided with a radially extended longitudinal directing member for one end of said abrading material, said longitudinal directing member being located adjacent one of the walls of said slot, a longitudinal directing member for the
110 other end of said abrading material at the other wall of said slot, said last-named directing member having a curved wall across which the other end of said abrading material is received in stretching the same, and
115 means for automatically urging said clamping rollers about the pivot of said rockable member for automatically urging a stretching of both ends of said abrading material, substantially as described.

12. In an abrading cylinder, the combination of a shell provided with a longitudinal peripheral slot, a shaft therefor, a rockable member pivoted about said shaft, spring-positioning means adjustable about said shaft, 5 springs operatively disposed between the latter and said rockable member, movable positioning means for said rockable member, clamping rollers mounted on said rockable member adjacent to said slot arranged for 10 initially stretching abrading material received about said cylinder through said slot while said rockable member is controlled by said positioning means, and constructed and 15 arranged for automatically maintaining said abrading material in stretched relation when said positioning means are out of operative position, substantially as described.

13. In an abrading cylinder, the combina-

tion of a shell having a longitudinal peripheral slot, rockable clamping means located 20 in said shell and into which both ends of the abrading material received about said shell are received through said slot, and automatic resilient means for automatically 25 moving said clamping means laterally with relation to the radial plane of said slot for drawing that end of the abrading material which passes over that lip of said slot toward which said movement takes place under 30 said lip.

In testimony whereof, I have signed my name hereto in the presence of two subscribing witnesses.

JOHN R. THOMAS.

Witnesses:

RICHARD D. COAN,
HARPER G. ROSS.