

SANDING MACHINE.

Patented June 10, 1913.

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2 SHEETS—SHEET 2.

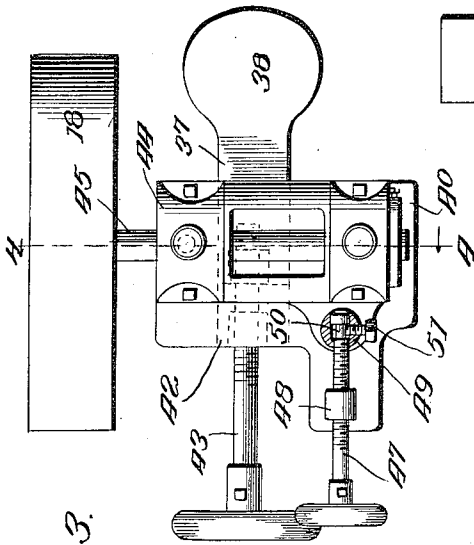


Fig. 3.

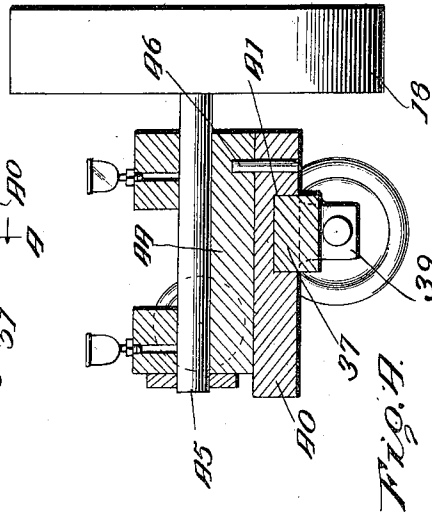


Fig. 4.

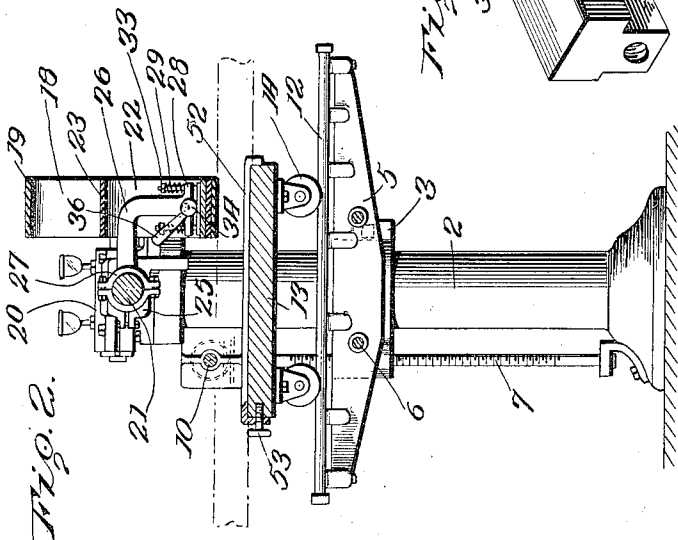


Fig. 5.

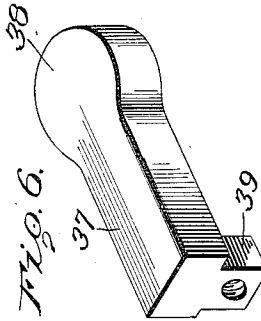


Fig. 6.

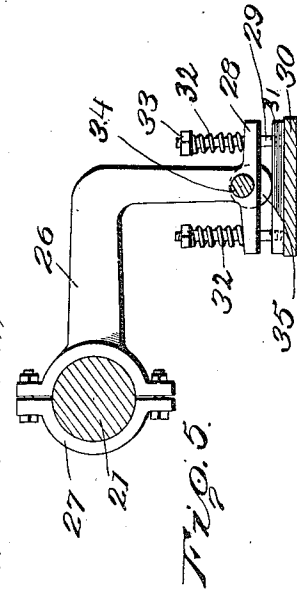


Fig. 7.

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SANDING-MACHINE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GEORGE D. TROGDON, citizen of the United States, residing at Toccoa, in the county of Stephens and State of Georgia, have invented certain new and useful Improvements in Sanding-Machines, of which the following is a specification.

My invention relates to sand papering machines and particularly to machines of that type in which an endless band is used, this band being covered with sand or other abrading material.

The primary object of my invention is to provide a very simple, easily operated, easily adjusted and effective machine of this character adapted to work of different varieties.

A further object of the invention is to provide a machine of this character in which the tension of the abrading band may be readily regulated and to provide means also whereby the oppositely disposed pulleys over which the band passes may be adjusted so as to be brought into alinement with each other.

A further object of the invention is to provide for a cushioning band disposed behind the abrading band so that the abrading band may be yieldingly forced into contact with the work and may yet have a sufficient backing so as to abrade the work properly.

Another object of the invention is to provide means whereby the band may be adjustably forced against the work, thus securing differences in pressure according to the character of the work to be performed.

The objects above referred to are attained by the mechanism illustrated in the accompanying drawings.

In these drawings Figure 1 is a side elevation of a sand papering or sand abrading machine of the character described; Fig. 2 is a transverse section of the machine on the line 2—2 of Fig. 1; Fig. 3 is a plan view of the bearing for one of the band carrying pulleys; Fig. 4 is a section on the line 4—4 of Fig. 1; Fig. 5 is a side elevation of one of the brackets supporting the pressure plates for the band, the shaft upon which the bracket is mounted being shown in section; Fig. 6 is a perspective detail view of a cap which adjustably supports the bearing shown in Fig. 3 upon the adjacent post or standard of the machine; Fig. 7 is a perspective detail view of the cam shaft for actuating the band pressure device; Fig. 8 is

a fragmentary perspective view of the band pressure plate.

Referring now particularly to Fig. 1 it will be seen that the machine is supported by oppositely disposed standards designated 2, 2^a and extending up to any suitable height. Mounted upon these standards for vertical adjustment are the split collars 3 and 4. Each of these collars is formed with a transversely extending track member designated 5 and shown most clearly in Fig. 2. The opposed track members are connected to each other by longitudinally extending rods 6 which pass through openings in the track members as shown in Fig. 2 and are provided with nuts and bolts whereby the track members may be held in proper relation to each other.

For the purpose of raising and lowering the members 3 and track members supported thereon there is provided for each of the collars 3 and 4, the feed screw 7 mounted in any suitable bearing upon the base of the corresponding post and supported at its upper end in any suitable bearing. Each feed screw is provided at its upper end with a beveled gear wheel 8, and these beveled gear wheels mesh with beveled gear wheels 9 mounted upon a shaft 10 which extends longitudinally of the machine. This shaft 10 is mounted in suitable bearings and is provided at its extremity with a handle 11 whereby it may be rotated. By rotating this shaft the feed screw 7 will be rotated and the collars 3 and 4 moved up or down as the necessities of work demand.

Mounted upon the tracks 5, and specifically upon rails 12 forming part of said tracks, is a work carriage 13 provided with rollers 14 engaging with the tracks. It will be seen that the work carriage may be shifted transversely upon the rails 12 to any desired position relative to the abrading band and that the carriage may be raised or lowered by rotating the shaft 10, thus rotating the feed screw. It will, of course, be understood that the work is placed upon the carriage when it is in an outward position and that the carriage is then shifted laterally to bring the work in place beneath the abrading band.

Mounted in suitable bearings upon the upper end of the post 2 is a shaft 15 which carries upon it the driving pulley 16 and the band wheel or pulley 17. It will be under-

stood that there is both a fast and a loose pulley mounted upon the shaft 16 and that the fast pulley is the one indicated at 16 and indicated in the drawings.

5 Opposed to the band wheel 17 is a band wheel 18, the movement of which will be later described, and passing over these band wheels 17 and 18 is an abrading belt or band 19 of any suitable character. The band
10 wheels 17 and 18 are of such width as to permit of a relatively wide abrading band or a narrow abrading band, as may be desired.

The upper ends of each of the standards 2 and 2^a is provided with a cap 20 within
15 which is mounted a fixed shaft 21 which extends the full length between the posts and provides a support for the band pressing devices, and also a means for supporting the oppositely disposed band wheels designated
20 22 over which passes a band 23 of felt or other relative yielding and flexible material. It will be seen that these band wheels 22 are so placed that the lower stretch of the band 23 registers with and is in contact with the
25 lower stretch of the band 19 for nearly the whole of the length of the lower stretch. These wheels 22 are each mounted upon a slotted bracket 24 carried by a split collar 25 which is clamped upon the rod or shaft 21.
30 By loosening the collars 25 it is possible to adjust the collars longitudinally along the shaft 21 so as to secure any desired tightness of the belt or band 23, and by slotting the brackets 24 it is possible to adjust each
35 of the band wheels 24 vertically so as to bring the band 23 into greater or less immediate contact with the inner face of the lower stretch of the band 19. I do not wish to be limited to any particular means of
40 mounting this band 23, as there are various ways in which it may be adjusted. Also mounted upon the shaft or rod 21 are a plurality of arms designated 26, these arms terminating at their inner ends in split collars
45 27 embracing and clamping the shaft 21. The arms 26 extend outward and then downward, and each arm terminates in a transversely extending bar 28 which is perforated for the passage of the oppositely disposed
50 pins 29. These pins project upward from a pressure bar 30, which pressure bar extends along nearly the entire lower stretch of the band 23. Preferably the pressure bar, as illustrated in Fig. 8, is provided upon its
55 upper face with a series of transversely extending cleats 31, and certain of these cleats are provided with the pins 29 before referred to. Springs 32 are disposed around the pins 29 and bear at their upper ends against nuts
60 33 and at their lower ends against the cross piece 28, so that these springs urge the pressure bar 30 upward or away from contact with the inner face of the lower stretch of the band 23. Passing through the lower
65 ends of the brackets 26 is a cam shaft 34

which carries upon it cams 35. This shaft is provided with an outwardly projecting handle 36 whereby the shaft may be rotated. It will be obvious that when the shaft is turned in one direction with its cams
70 extending upward the spring 32 will cause the pressure bar to be lifted but that when the shaft is turned in the opposite direction and the cams are in a downward position the pressure bars will be forced down against
75 the inner face of the band 23, forcing this band against the abrading band, and forcing the abrading band against the work.

It will be noted in this connection that the eccentric cam-like portion of the shaft 34 extends entirely along the whole length of the pressure bar so that the pressure bar is subjected along its whole length to a uniform pressure, and this pressure is not put upon the plate at intervals.
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In order to adjust the band wheel 18 toward or from the band wheel 17 so as to keep a proper tension upon the abrading band, I mount upon the upper end of the standard 2^a a bracket 37, shown in detail
90 in Fig. 6. This bracket has at one end an enlarged extremity 38 which fits over the upper end of the standard 2, and has at its other end a downwardly turned lug 39 perforated for the passage of a feed screw.
95 Disposed upon the bracket 37 and slidably supported thereon is a plate 40, this plate being formed with a groove 41 to receive the body or shank of the member 37 and being slidably guided thereon. This plate is also
100 provided with a downwardly turned lug 42 screw-threaded for engagement with the feed screw 43 which extends into screw-threaded engagement with the lug 39. It
105 will be obvious that by rotating the feed screw in one direction or the other the plate 40 will be shifted longitudinally. Mounted upon the plate 40 is a journal box 44 within which is rotatably supported the shaft 45
110 carrying the band wheel 18. It will be obvious now that by rotating the feed screw in one direction or the other the wheel 18 will be caused to move toward or from the wheel 17 and that thus the tension of the band or belt 19 may be easily and accurately regu-
115 lated.

Provision must be made whereby the band wheel 18 may be adjusted into parallelism with the band wheel 17, as otherwise, if the band wheel 18 is out of such parallelism,
120 the band will not run evenly and is liable to run off the band wheels. For the purpose of securing this adjustment I pivot the inner end of the box 44 to the plate 40 so that the other end of the journal box may be moved
125 in the arc of a circle, and thus rotate the shaft 45 and the wheel 18. As a means for accurately adjusting the amount of this rotative movement of the journal box 44 there is provided a pin, upwardly projecting from
130

the plate 40, and which forms the pivot pin for the journal box. I also provide a feed screw 47 which passes through a lug 48 extending upward from an extension of the plate 40, this feed screw having swiveled engagement with a rotatable post 49 extending upward from a lug projecting from the journal box. The screw 47 at its inner end is formed with an annular groove 50 and passing into the rotatable post 49 is a set screw 51. The post 48 is also rotatably mounted. It will therefore be seen that by rotating the screw 47 in one direction or the other, the free end of the journal bearing may be shifted outward or inward to secure the results desired and that the posts 48 and 49 will rotate in accordance with the arcuate movement of the end of the journaled box.

The operation of my invention will be plain from what has gone before. The tension of the band being properly adjusted and the band wheels 17 and 18 being brought into parallelism, the work is placed upon the table 13 and is guided in a proper position upon the table by means of a slidably arranged guide designated 52 held in place by a set screw 53, the work being disposed upon the table when the latter is in its outward position. The table is then shifted in position beneath the abrading band and then the handle 36 of the shaft 34 is turned so as to cause the cams or eccentrics 35 to bear downwardly upon the pressure bar 30 and force the pressure bar against the felt band 23, and this in turn forces the abrading band 19 against the work. It is of particular advantage to have the felt band 23 disposed between the pressure bar and the work to be accomplished. The pressure bar itself has no padding or cushion to wear out and cause bad sanding, but this felt belt disposed between the sand belt and the pressure bar comes in contact with the sand belt and is driven thereby. This felt belt gives the desired cushion, and this makes it possible for the operator to do much better work than where no cushion is used. It will be seen that the pressure bar is controlled by the eccentric shaft and handle and that the pressure is even along the entire extent of the stock that is being sanded. Any desired pressure can be secured by properly operating the hand lever. The two wheels 17 and 18 in the practical operation of my invention are sixteen inches in diameter and each have an eight-inch face. This enables the operator to use any width of sand belt from one inch to 8 inches wide.

The sand belt is capable of having a length of 22½ feet and thereby produces more work and requires less change of belts than is the case where a shorter belt is used. The table is large enough to accommodate relatively large stock, and inasmuch as it will drop

something over two feet, relatively thick stock may be sanded if desired.

The invention is simple, easily operated, secures yielding backing for the sand belt, and inasmuch as the felt belt is constantly moving with the sand belt, there is no frictional engagement between the sand belt and the felt belt which will tend to wear the latter. There is no frictional engagement between the sand belt and the pressure bar except when the pressure bar is in actual use and forces down against the felt belt. This may occupy only a relatively short space of time.

While I have illustrated what I believe to be the best form of my invention, I can modify my invention in many ways without departing from the spirit thereof.

Having described my invention, what is claimed as new is:

1. In an abrading machine of the character described, an endless abrading band, a pressure bar mounted behind the band of relatively soft material, and a cushioning band, one flight of which extends between the pressure bar and the abrading band.

2. In an abrading machine of the character described, an endless abrading band, a pressure bar disposed behind one portion of the band and movable toward or from the band, and an endless cushioning band one flight of which extends between the pressure bar and the abrading band, said cushioning band being driven by its engagement with the abrading band.

3. In an abrading machine of the character described, a supporting frame, oppositely disposed band wheels mounted on the frame, an abrading band passing over said wheels, a supporting member disposed between the upper and lower flights of the abrading bands, a pressure bar operatively supported upon the supporting member and movable toward, to or from the abrading band, oppositely disposed freely running band wheels mounted upon the said supporting member and disposed at each end of the pressure bar, and a cushioning band passing from said last-named band wheels between said pressure bar and the adjacent flight of the abrading band.

4. In an abrading machine of the character described, a supporting frame including oppositely disposed vertical posts, oppositely disposed band wheels supported on said posts, a carriage supported on said posts, an endless abrading band passing over said band wheels and above the carriage, a supporting member extending between said posts and disposed between the upper and lower flights of the endless abrading band, brackets mounted on said supporting member, a pressure bar yieldingly supported upon said brackets and disposed above the lower flight of the abrading band, a shaft

mounted upon said brackets and having cams engaging said pressure bar whereby to force the pressure bar toward or from the abrading band, band wheels supported on
 5 said supporting member at each end of the pressure bar, and an endless cushioning band extending over said last-named band wheels and having its lower flight disposed in contact with the lower flight of the abrading
 10 band and between said abrading band and the pressure bar, said band being driven by contact with the lower flight of the abrading band.

5. An abrading machine of the character
 15 described including oppositely disposed standards, collars supported on said standards and vertically slidable with relation thereto, transversely extending rails supported on said collars, feed screws passing
 20 through the collars whereby they may be vertically adjusted, means for operating both of said feed screws simultaneously, a carriage slidably supported upon said rails, oppositely disposed band wheels carried by
 25 said standards, an abrading band passing over said band wheels, a pressure bar disposed above the lower flight of the band, means for raising and depressing the pressure bar, oppositely disposed freely running
 30 band wheels supported at the ends of the pressure bar, and an endless cushioning band passing over said last-named band wheels and the pressure bar and the lower flight of the abrading band, and driven by contact
 35 with the abrading band.

6. In a mechanism of the character described, opposed band wheels, an endless band passing thereover, a supporting bracket
 40 for one of said band wheels, a member slidably mounted on said bracket for movement toward or from the other band wheel, an ad-

justable screw for adjusting said member, a journal box pivoted at one end to said sliding member and forming the journal bearing for the adjacent band wheel, and an ad- 45 justing screw operatively engaging the free end of the journal box whereby the journal box may be rotated upon its pivot to bring the band wheel into or out of parallelism with the opposed band wheel. 50

7. In a mechanism of the character described, a supporting standard, a bracket mounted upon said standard, a plate supported on the bracket for sliding movement, a journal box resting on said plate and pivoted at one end thereto for movement in a horizontal plane, and adjusting the screw engaging the free end of the journal box and rotatably mounted upon the plate whereby to adjust the journal box in the arc of a circle, a shaft mounted in the journal box, and a band wheel carried on the shaft. 55 60

8. In an abrading mechanism of the character described, an endless abrading band, a supporting bar disposed between the flights of said band and having brackets projecting therefrom, a pressure bar having pins slidably mounted in the extremities of said brackets, springs surrounding said pins and urging the pressure bar toward the brackets, and a shaft mounted in said brackets and having cams engaging the pressure bar along its whole extent whereby upon a rotation of the shaft in one direction the pressure bar may be forced against the endless abrading band. 70 75

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE D. TROGDON. [L. S.]

Witnesses:

W. C. EDWARDS,
 S. O. KESLET.