

March 16, 1954

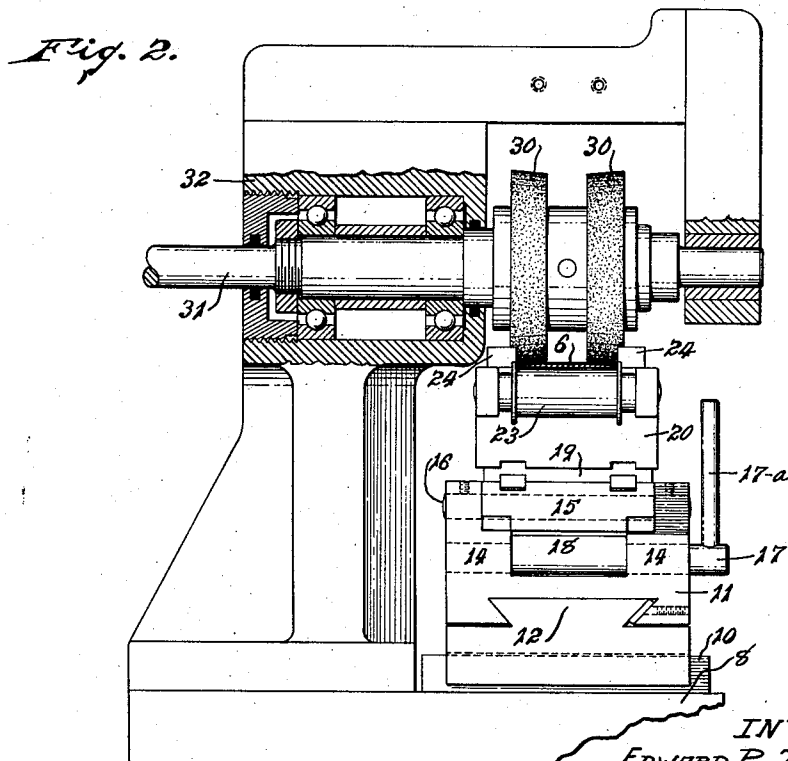
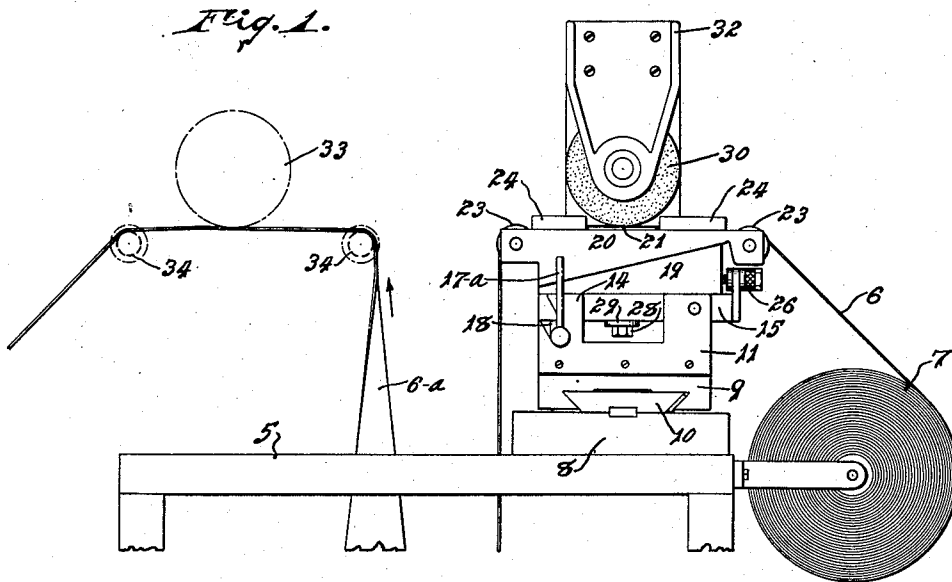
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2,671,991

APPARATUS FOR MANUFACTURING WALLBOARD JOINT TAPE

Filed Nov. 10, 1951

3 Sheets-Sheet 1



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Fig. 3.

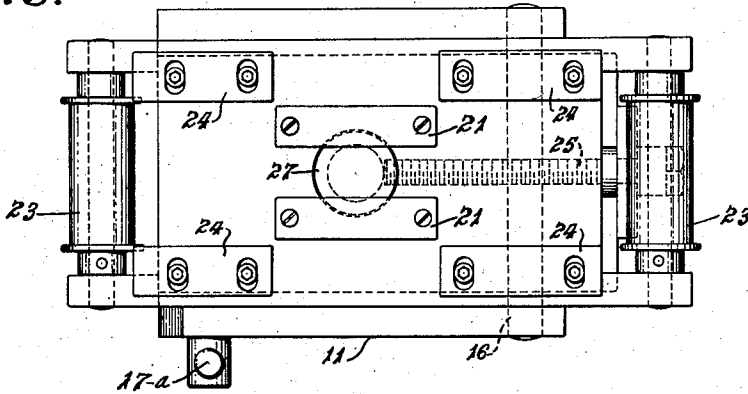


Fig. 4.

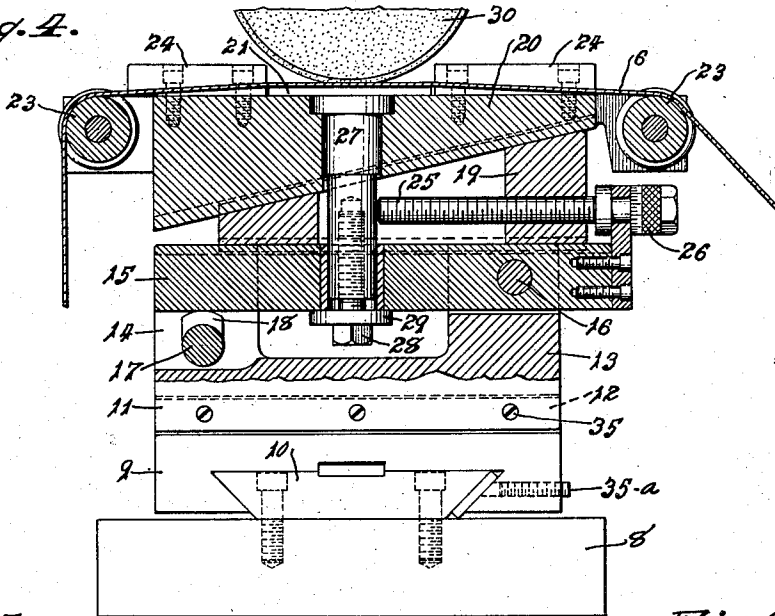


Fig. 5.

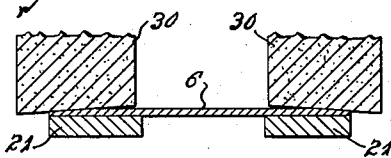


Fig. 6.

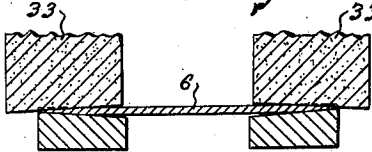


Fig. 7.



Fig. 8.



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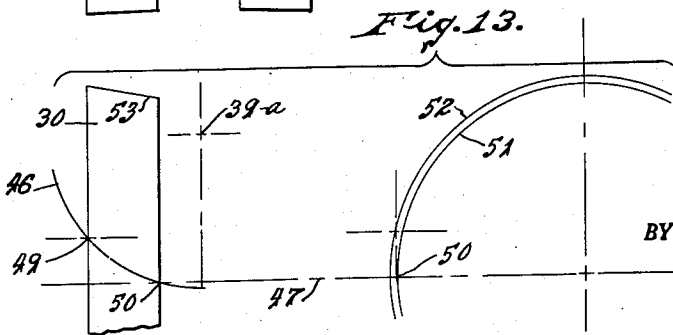
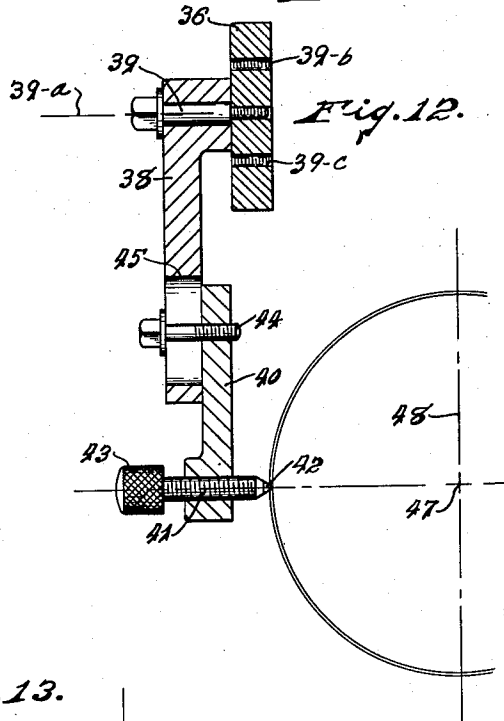
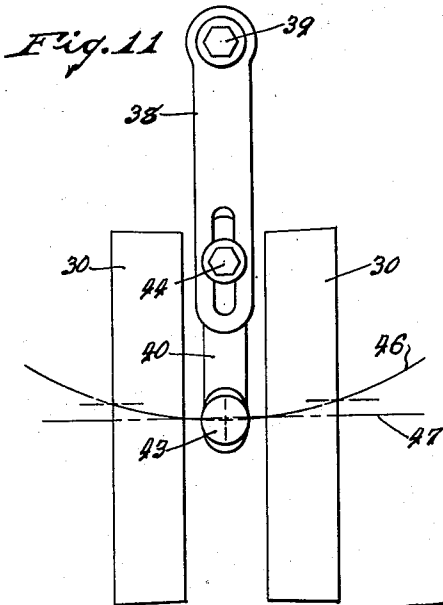
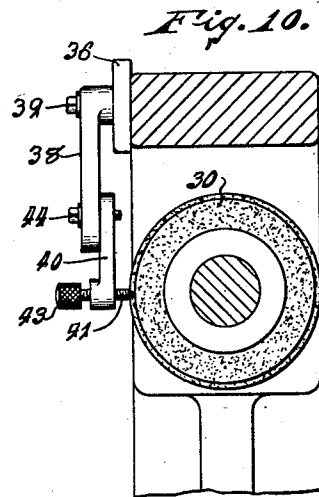
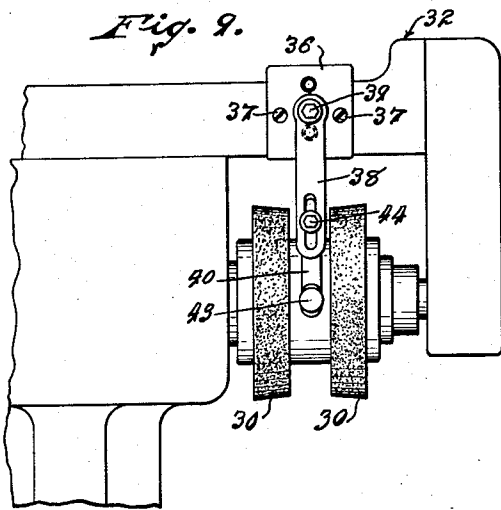
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# UNITED STATES PATENT OFFICE

2,671,991

## APPARATUS FOR MANUFACTURING WALLBOARD JOINT TAPE

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Application November 10, 1951, Serial No. 255,859

4 Claims. (Cl. 51-75)

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This invention relates to an apparatus for manufacturing wall board joint tape such as described in the co-pending application of Lou C. Reed, Serial No. 159,165, filed May 1, 1950.

It is an object of the present invention to provide an improved apparatus for more efficiently and accurately grinding wall board tapes and which will greatly facilitate the threading of the tape through the apparatus and the adjustment of said tape with relation to the grinding wheels.

It is a further object of this invention to provide improved means for dressing the grinding wheels of the apparatus in such a manner as to automatically provide a predetermined degree of taper on said wheels.

Further objects and advantages of the invention will be more clearly understood from the following description and from the accompanying drawings in which:

Fig. 1 is a side view of a portion of the apparatus embodying my invention.

Fig. 2 is an enlarged rear view of the grinding head and tape supporting mechanism.

Fig. 3 is a plan view of the tape supporting mechanism.

Fig. 4 is a side view of said mechanism, partly in central vertical section.

Fig. 5 is an enlarged diagrammatic view illustrating the tape grinding operation by one set of grinding wheels.

Fig. 6 is a similar view illustrating the operation by the succeeding set of grinding wheels.

Fig. 7 is a similar view on a further enlarged scale.

Fig. 8 is a cross-sectional view of the completed tape.

Fig. 9 is a side view of the grinding head showing my improved means for dressing the grinding wheels of said apparatus.

Fig. 10 is a sectional front view thereof.

Fig. 11 is an enlarged front view illustrating the operation of the wheel dressing device.

Fig. 12 is a sectional front view thereof.

Fig. 13 is a diagrammatic view illustrating, in an exaggerated manner, the principle of said wheel dressing device.

In the embodiment illustrated in the accompanying drawings, the numeral 5 denotes a suitable support or table upon which there is mounted a pair of grinding units for grinding the opposite sides of the tape 6 which is fed through the apparatus from a roll 7.

Each of the grinding units comprises a stationary base 8 which is secured to the table 5 and carries thereon a movable base 9 that is slidable

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on said stationary base in a direction parallel to the axis of rotation of the grinding unit; the said movable base being slidably secured to the stationary base by means of a dove-tailed connection as indicated at 10.

A carrier base 11 is slidably mounted upon the movable base 9, also by means of a dove-tailed connection, shown at 12, and is movable in a direction perpendicular to the axis of rotation of said grinding wheels. The said carrier base has pairs of opposed upright projections 13 and 14 at its opposite ends. A supporting plate 15 is pivotally mounted between the upright projections 13 at one end by means of a shaft 16, and the opposite end of the said supporting plate rests upon a positioning bar 17 which is rotatable by means of a handle 17-a and has a cam portion 18 for supporting the plate 15 in a predetermined position.

Upon the supporting plate 15 there is slidably mounted a wedge-shaped adjusting member 19 which supports a tape supporting table 20 having a pair of shoes 21-21 upon which the tape rests as it is passed over the said tape supporting table during a grinding operation; the said table being provided with suitable rollers 23-23, at the opposite ends thereof, for leading the tape onto and off of the said table and pairs of opposed guide bars 24-24 which are adjustably mounted on the table so as to guide the tape and retain it upon the shoes 21-21 as it passes through the apparatus.

The adjusting member 19 is moved longitudinally by means of an adjusting screw 25 which is threaded to said member and has a graduated head 26 by means of which the screw may be rotated. The supporting table 20 is secured against longitudinal movement, relatively to the supporting plate 15, by means of a post 27 which fits snugly in the table 20 and the said supporting plate and has a clamping screw 28 threaded thereto that cooperates with a washer 29 to rigidly clamp the work table 20 in adjusted position upon the supporting plate.

Each of the grinding units includes a pair of grinding wheels 30-30 which are carried on a spindle 31 that is rotatably mounted in a grinding head 32 that is rigidly mounted upon the base 8 and the said grinding wheels may be driven in any conventional manner.

In the illustration of Fig. 1, the numeral 33 indicates the position of the grinding wheel of the second grinding unit which includes the rollers indicated at 34-34; the tape 6 being reversed, as indicated at 6-a, as it moves into the

said second grinding unit so that the opposite side of the tape will be ground in said unit.

The operation of the above described apparatus is as follows:

When it is desired to thread the tape 6 through the apparatus, the positioning bar 17 of each grinding unit is first rotated by its handle 17-a so as to remove the cam portion 18 from under the pivoted supporting plate 15 and cause the said plate to be lowered and thereby lower the work supporting table 20 away from the grinding wheels 30-30. The tape is then threaded over the first roller 23, between the guide bars 24-24 and over the supporting shoes 21-21, then over the second roller 23 and downwardly therefrom around an idler roller, not shown. After the said idler roller, the tape is turned so that it is reversed, as indicated at 6-a, and then threaded through the second grinding unit of the apparatus in the same manner as above described.

When the tape has been thus threaded through the grinding units and the grinding wheels are in rotation, the tape is brought into contact with the grinding surfaces of the wheels by simply rotating the supporting bar 17 of each unit so that the cam portion 18 thereof will swing the supporting plate 15 upwardly about its pivot and thereby move the work table 20 upwardly and bring the tape thereon into contact with the grinding surfaces of the wheels.

As the tape moves through the apparatus, the marginal edge portions of one side thereof will be ground to a taper by the tapered grinding wheels 30-30, as illustrated in Figs. 5 and 7, so that the said edge portions will be bevelled as illustrated in Fig. 5. As the said tape travels through the second grinding unit the opposite side thereof will be ground so as to produce a tape with marginal edge portions which are bevelled on both sides to provide thin free edges.

When it is desired to raise or lower the table 20 so as to adjust its relation to the surfaces of the grinding wheels in order to vary the degree to which the tape is ground and thereby increase or decrease the thickness of the free edges of the tape, the clamping screw 28 is first loosened and the adjusting screw 25 is then rotated by its head 26 so as to slide the wedge-shaped cam member 19 in the proper direction for the adjustment which is to be made. When the desired adjustment has been made, the clamping screw 28 is again tightened so as to retain the table in the adjustment position.

It will be understood from the above description that the improved tape grinding units provided by my invention greatly facilitates the adjustment of the tape with relation to the grinding wheels and permits withdrawal of the work supporting table from its normal operating position with relation to the grinding wheels, and its return thereinto, without requiring disturbance of the adjustment that was previously made for said table.

Each of the grinding units may be further adjusted longitudinally by loosening the set screws 35 and moving the carrier 13 on the movable base 9, and laterally by loosening the set screws 35-a and moving the said movable base with the unit thereon upon the base 8.

My invention also includes the provision of suitable means for easily dressing the grinding wheels of my improved apparatus and forming a predetermined degree of taper thereon in accordance with the degree of taper that it is desired to obtain through the grinding operation.

on the bevelled marginal edge portions of the tape.

As illustrated in Figs. 9 to 13, the said dressing means is incorporated in a device which includes a base 36 that is secured upon the side of the grinding head 32 by means of screws 37-37. A carrier arm 38 is pivotally mounted upon the said base 36 by means of a shouldered stud 39 and the said arm carries a holder 40 upon which is mounted a dressing tool having a shank 41 which is threaded to and extends through the holder 40. The said dressing tool has a suitable cutting tool, such as a diamond point 42, or the like, mounted in the end thereof and a head 43 by means of which the said shank may be rotated for the adjustment of the cutting tool relatively to the grinding wheels. The arm 40 is adjustably secured to the carrier arm 38 by means of a screw 44 which extends through a slot 45 in said carrier arm.

In its normal position, the said dressing device may be as shown in Fig. 9 wherein the carrier arm 38, with the dressing tool thereon, hangs downwardly between the grinding wheels 30-30 without interfering with the grinding operation of the apparatus. When it is desired to dress the grinding wheels, the operator merely grasps the head 43 and swings the cutting tool about the axis 39-a of the pivot screw 39 on an arc 46 which has its center upon said axis and lies in a plane that is parallel to the axis 47 of the grinding wheels.

As the cutting tool is swung across the faces of the grinding wheels on the arc 46, the said cutting tool will be carried farther away from the axis 47, in a plane parallel to the vertical plane 48, as it moves towards the far sides of the wheels and thereby dress each of said wheels to a diameter which increases towards the far side thereof and thus provide the predetermined taper which is required on said wheels for beveling the marginal portions of the tape during a grinding operation.

It will be clearly seen from Fig. 13 of the drawings that the point 49, where the arc 46 intersects the plane of the far side of the wheel, is farther from the axis 47 of the wheel than the point 49 where the said arc intersects the plane of the near side of the wheel. This dresses the wheel with the smaller diameter 51 at its near side and the larger diameter 52 at its far side and thereby provides the taper on said wheel on a straight line as indicated at 53.

It will be noted that the dressing device may be adjusted for dressing the wheels at any desired taper by changing the radius of the arc 46. This may be done by means of the adjusting screw 44 or by inserting the stud 39 into either of the threaded holes 39-b or 39-c to thereby change the radius of the arc 46 and the movement of the cutting tool 42 relatively to the faces of the grinding wheels. The said threaded holes will also permit adaptation of the dressing device to grinding wheels of different diameters.

I claim:

1. Apparatus for reducing marginal portions of a tape including a pair of co-axial spaced grinding wheels, a mechanism for supporting the tape relatively to said grinding wheels; the said supporting mechanism comprising a stationary base positioned under the said grinding wheels, a carrier base mounted on said stationary base and adjustable longitudinally and transversely thereof, a supporting member pivotally mounted on said carrier base, a supporting table mounted on

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said supporting member for supporting the tape in contact with the grinding wheels, a wedge-shaped adjusting member positioned between said table and supporting member, an adjusting screw anchored on said supporting member for moving said wedge-shaped member to vary the position of the supporting table relatively to the supporting member and to the grinding wheels to thereby vary the degree to which the said tape is ground, a stud securing the table to the supporting member against displacement relatively thereto and permitting adjustment by said wedge-shaped member, and a bar rotatably mounted on said carrier base and having a cam-shaped portion for positioning the said table relatively to the grinding wheels; the said cam-shaped portion permitting withdrawing and returning movement of the tape supporting table relatively to the grinding wheels without disturbing the adjustment of said table with relation to said wheels.

2. In an apparatus for reducing the marginal edge portions of a tape including a pair of coaxial spaced grinding wheels, a supporting mechanism for supporting the tape with the marginal portions thereof in contact with said grinding wheels for a grinding operation; the said supporting mechanism comprising a stationary base positioned under said wheels, a carrier base mounted on said stationary base and adjustable thereon transversely and longitudinally, a supporting member pivotally mounted on said carrier base, a supporting table carried on said supporting member, a wedge-shaped member interposed between said table and supporting member, an adjustment screw carried on said supporting member and engaging said wedge-shaped member for moving said wedge-shaped member relatively to said supporting member and table to thereby vary the position of the supporting table relatively to the grinding wheels for controlling the degree to which the said tape is ground by the wheels, clamping means between said supporting member and table for securing the supporting table to the said supporting member in adjusted position, and a rotatable bar carried by said carrier base and having a cam portion for supporting the said supporting member, the said bar being rotatable to permit pivotal movement of the said supporting member and said table carried thereby in a direction away from the grinding wheels without disturbing the position of the table relatively to the supporting member.

3. In an apparatus for reducing the marginal edge portion of a tape including a pair of coaxial spaced grinding wheels, a supporting mechanism for supporting said tape in contact with said grinding wheels for a grinding operation; the said supporting mechanism comprising a stationary base positioned under said wheels, a sub-base mounted on said stationary base and adjustable thereon in the direction of the axis of the wheels, a carrier base mounted on said sub-base and adjustable thereon in a direction transverse of said axis, a supporting member pivotally mounted at one end to said carrier base and having a cam portion engaging the opposite end of the supporting member for retaining said supporting member in operative position, the said cam portion being movable upon rotation of the bar to permit pivotal movement of the supporting member, a wedge-shaped member slidable on said supporting member, a supporting table mounted upon said wedge-shaped member, a stud

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fixed to said supporting table and slidably secured to the supporting member to permit adjustment of the table relatively to said supporting member in a vertical direction and to prevent movement of the table relatively to the supporting member in a lateral direction, and a clamping screw threaded to said stud for clamping the table to the supporting member in adjusted position.

4. In an apparatus for grinding the marginal edge portions of tape including a pair of co-axial spaced grinding wheels, a mechanism for supporting the said tape in contact with the grinding wheels during a grinding operation; the said supporting mechanism comprising a base member fixed in a stationary position under the said grinding wheels, a carrier base mounted on said base member and adjustable thereon longitudinally and transversely with relation to the axis of the said grinding wheels, a supporting member pivotally mounted on said carrier base, positioning means on said carrier base for operatively positioning the supporting member relatively to the grinding wheels and permitting retraction of said supporting member from its operative position, a supporting table mounted upon said supporting member for supporting the tape in contact with the grinding wheels, a wedge-shaped member between said supporting table and supporting member for vertically adjusting the table on the supporting member to vary the distance of the supporting table from the grinding wheels for the control of the degree to which the tape is ground, a stud rigidly secured to said table and extending therefrom into an opening in the supporting member, the said stud fitting snugly in said opening and being vertically slidable therein to prevent lateral displacement and permit vertical adjustment of the said table relatively to said supporting member, and a clamping screw threaded to said stud for clamping the table in adjusted position upon the supporting member whereby the said table may be withdrawn from the grinding wheels by the retraction of the supporting member without the disturbance of the adjustment of the said supporting table relatively to the said supporting member.

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