Aug. 20, 1957 J. ROBERT ET AL 2,803,040

APPARATUS FOR GRAINING FLAT ASPHALTIC PRESET MATERIALS AND THE LIKE

Filed April 3, 1950 5 Sheets-Sheet 1

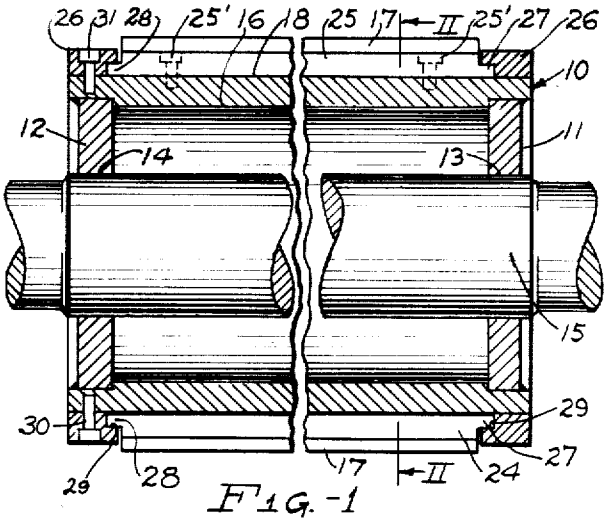


FIG. -1

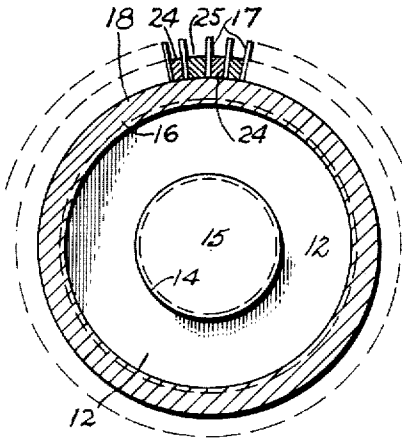


FIG.-2

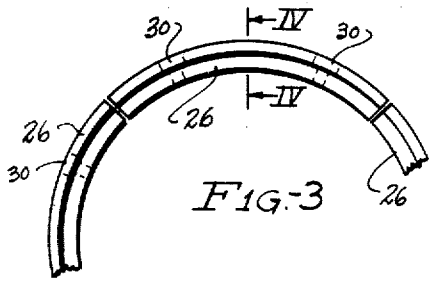


FIG.-3

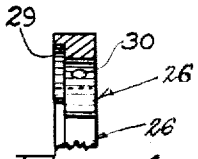


FIG.-4

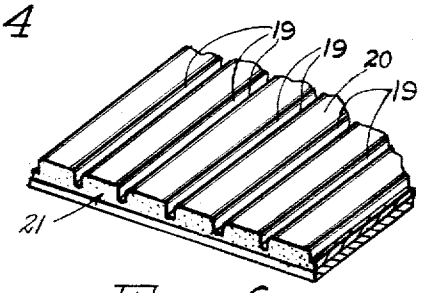


FIG.-6

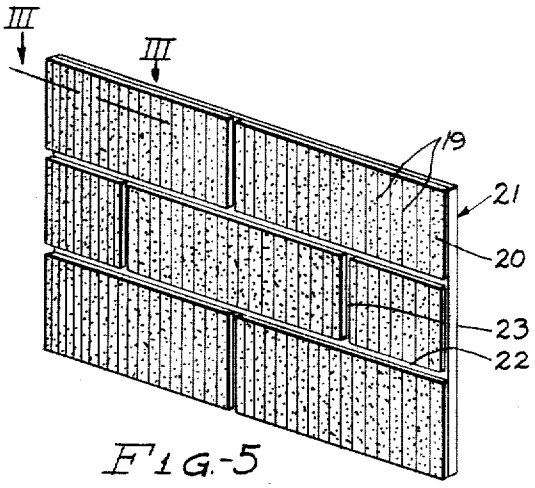


FIG.-5

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APPARATUS FOR GRAINING FLAT ASPHALTIC PRESET MATERIALS AND THE LIKE

Filed April 3, 1950 5 Sheets-Sheet 2

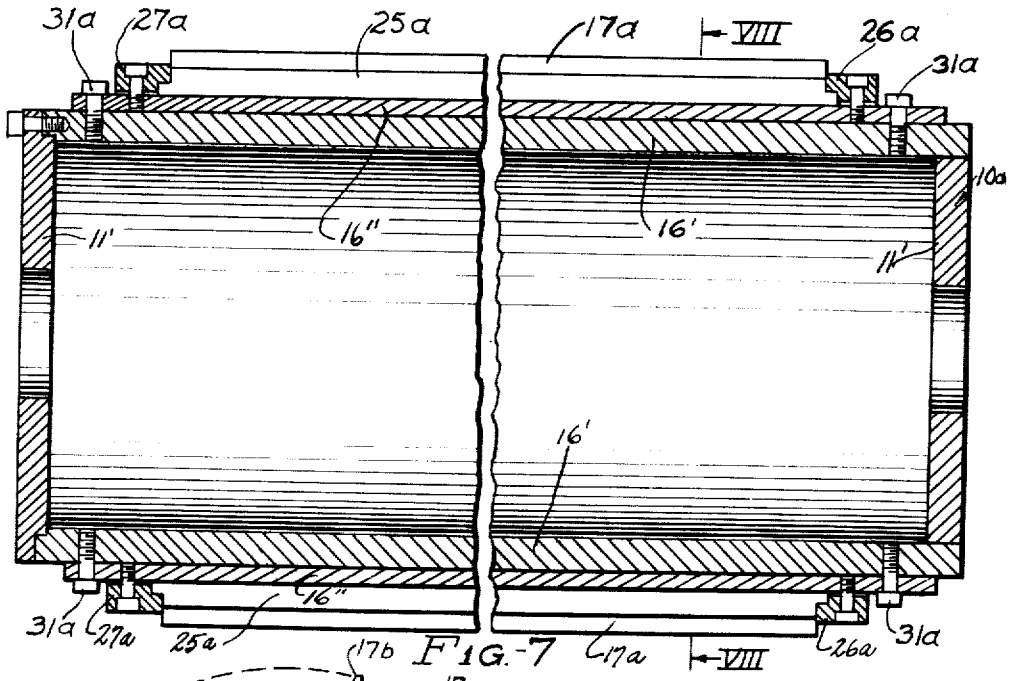


FIG.-7

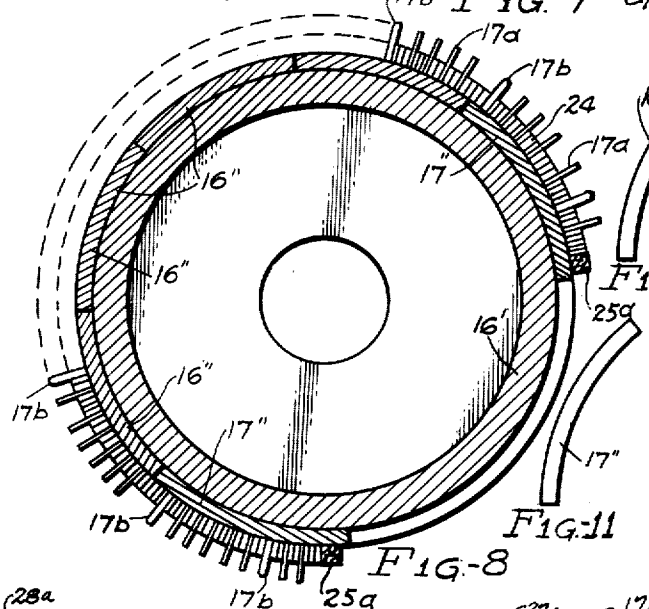


FIG.-8

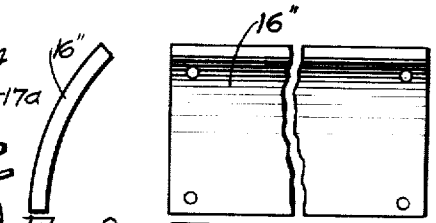


FIG.-9

FIG.-10

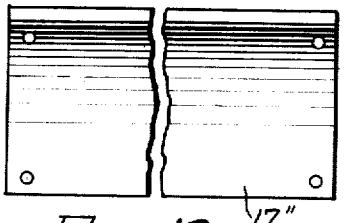


FIG.-11

FIG.-12

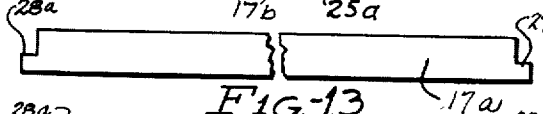


FIG.-13

FIG.-14

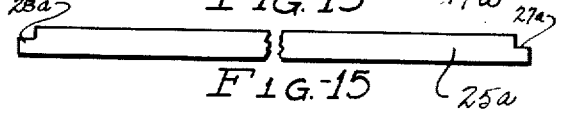


FIG.-15

FIG.-16

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APPARATUS FOR GRAINING FLAT ASPHALTIC PRESET MATERIALS AND THE LIKE

Filed April 3, 1950 5 Sheets-Sheet 3

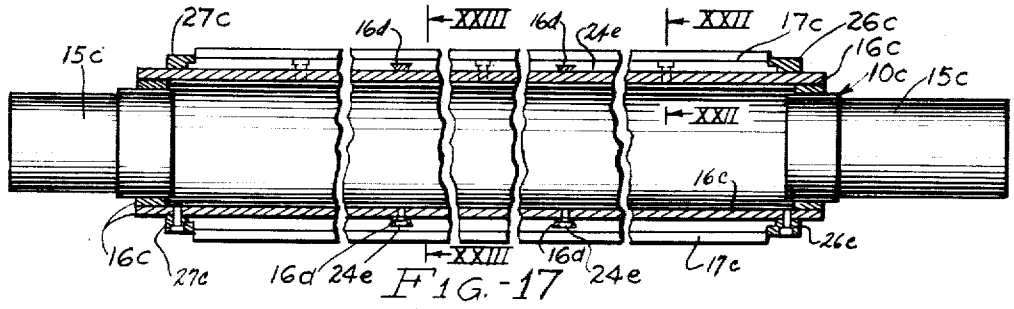


FIG.-17



FIG.-18 FIG.-19



FIG.-20 FIG.21

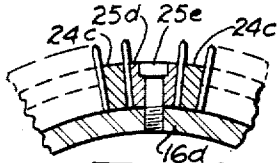


FIG.-22

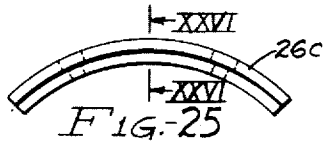


FIG.-25



FIG.26

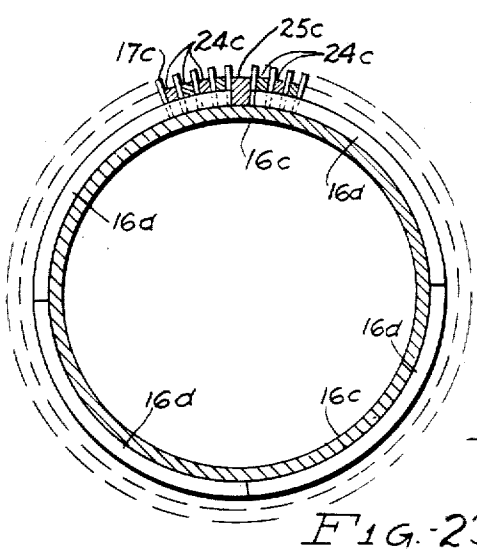


FIG.-23

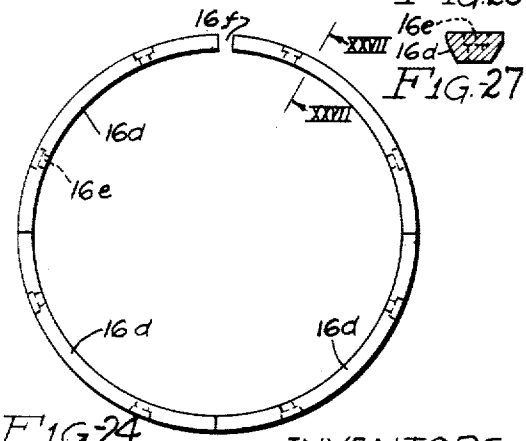


FIG.-24 FIG.27

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APPARATUS FOR GRAINING FLAT ASPHALTIC PRESET MATERIALS AND THE LIKE

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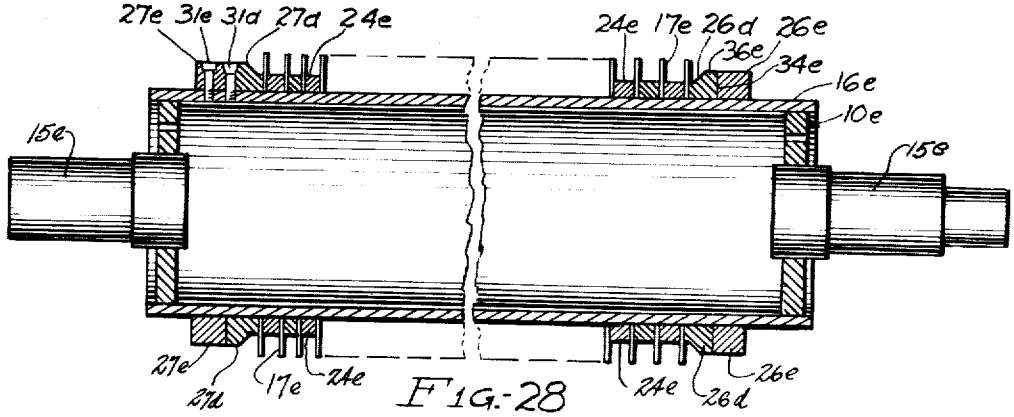


FIG.-28

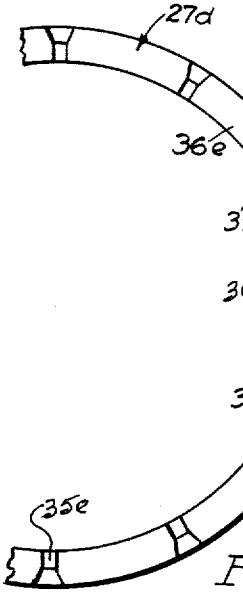


FIG.-29

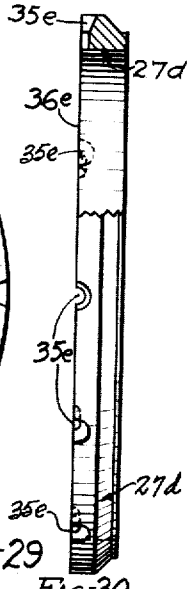


FIG.-30

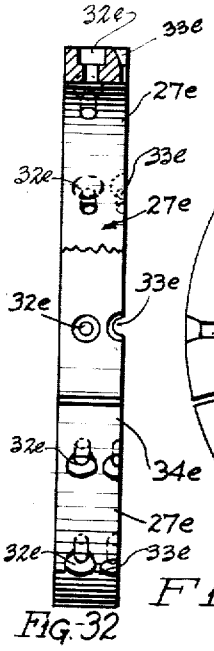


FIG.-32

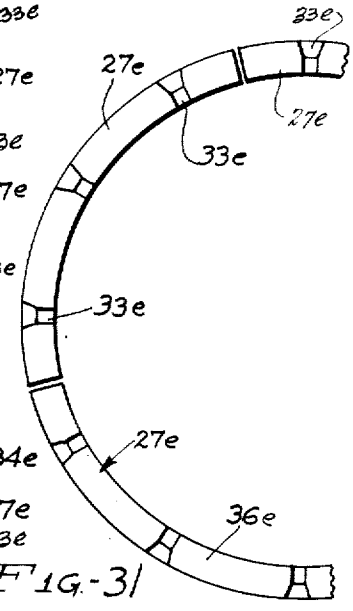


FIG.-31

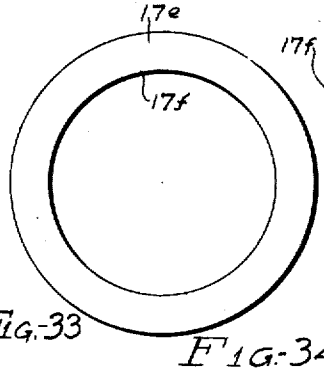


FIG.-33

FIG.-34

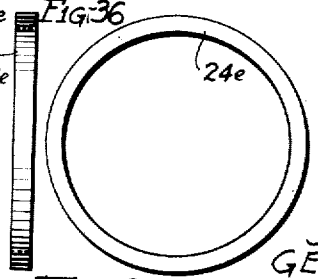


FIG.-35

FIG.-36

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APPARATUS FOR GRAINING FLAT ASPHALTIC PRESET MATERIALS AND THE LIKE

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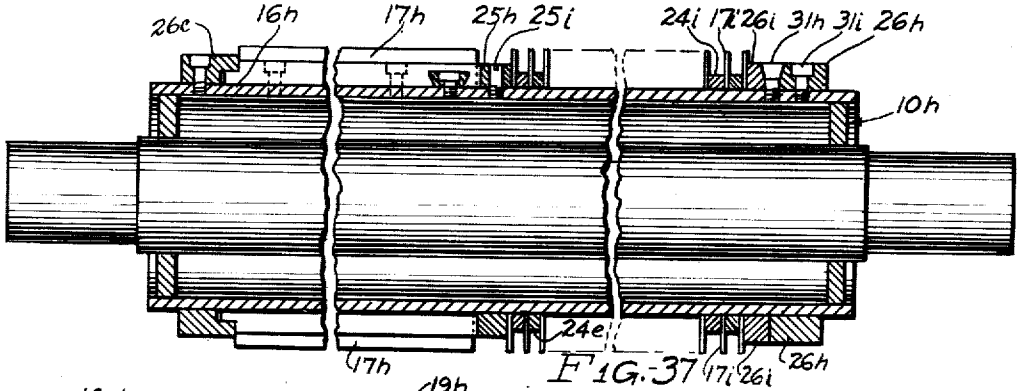


FIG.-37

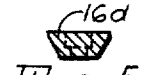


FIG.-56

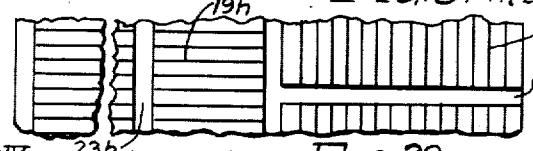


FIG.-38

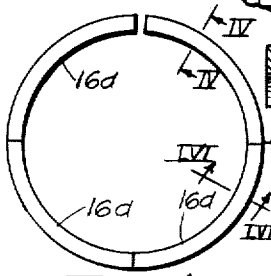


FIG.-41



FIG.-43 FIG.-42

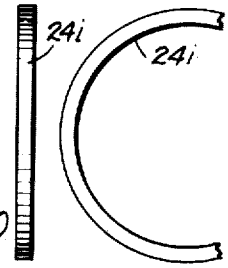
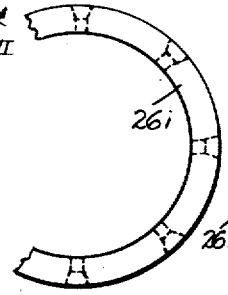
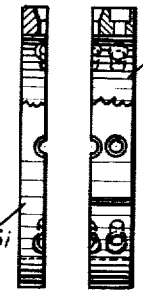


FIG.-40 FIG.-39





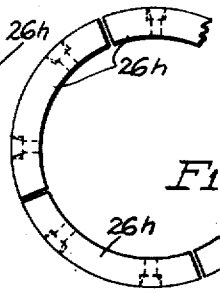


FIG.-46 FIG.-47 FIG.-49 FIG.-48

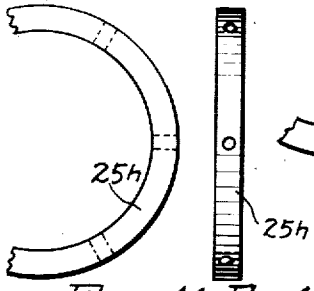


FIG.-44 FIG.-45

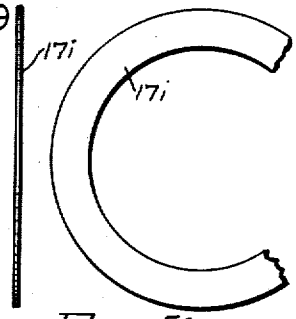


FIG.-51 FIG.-50

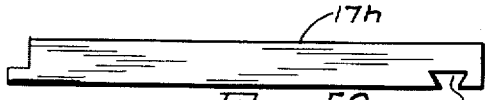


FIG.-52 FIG.-53

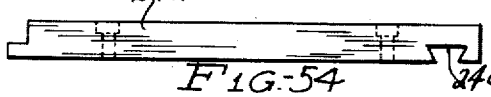


FIG.-54 FIG.-55

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United States Patent Office 2,803,040 Patented Aug. 20, 1957

2,803,040

APPARATUS FOR GRAINING FLAT ASPHALTIC PRESET MATERIALS AND THE LIKE

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Application April 3, 1950, Serial No. 153,738

6 Claims. (Cl. 18—10)

This invention relates to prepared roofing, siding, and similar flat surfaced asphaltic materials and the like and more particularly to the apparatus for graining such preset materials in order to impart thereto an improved appearance and variations in design that are appealing to the purchasing public or users of such material.

It contemplates more especially the provision of improved means for impressing fine closely associated grooves or line impressions in flat surfaces preset from yieldable materials utilized in large volume for roofing, siding, and other building needs.

Common varieties of prepared roofing and siding comprise a base sheet of roofing felt saturated with a waterproofing compound and coated with a layer of high melting point asphalt and having an upper surfacing of granular mineral material, such as crushed slate, embedded or partly submerged in the asphalt coating. Such roofing may be applied either in sheet form (usually called roll roofing) or as shingle units of various designs and shapes cut from the sheet roofing and laid in overlapping courses to form a shingled surface. In the case of insulating siding, the base sheet consists of pressed board that is considerably more rigid than the roofing felt base, but the covering layers thereof are more or less similar in composition and construction to the roofing material. In any event, the method of and apparatus for graining this general type of prepared materials are the same as an equally adapted to the various forms of such composition materials that are of a preset yieldable character providing a granular surface with different color combinations and geometric designs that are impressed therein. These geometric designs and finishing materials may take a large variety of forms and need not vary the external contour of the individual unit of this material whether or not such is for roofing or siding purposes. Nevertheless, the shingle or siding units or other form of building material may advantageously be superficially provided with grooves extending down or longitudinally or sideways which is transversely of the roof or building side. Among other advantages, the grooves prevent leakage by resisting the travel of rain transversely of the roof under the action of wind and otherwise prevent the development of extensive or large cracks in and through the asphalt coating of the roofing, prevent blisters in the roofing or limit them to small areas, relieve monotony of appearance, and assist in blending contrasting color effects produced by the use of differently colored mineral surfacing material.

Attempts have been made to groove roofing and siding materials, but these have required deformations in the surface to an appreciable extent which created pronounced convexities or concavities that are deemed undesirable but could not be avoided with known structures and designs for this purpose. The problem of arranging comparatively thin blades on cylindrical rollers or other geometric body member forms or frames to create the desired fine line grooving without any appreciable deformation, has been the subject of much inquiry and research. The

cylindrical rollers normally utilized for this purpose are of comparatively large size, often having a length of three feet or more, and a diameter of one or more feet, and this presents the problem of associating fine knife-like blades therewith so that precision in the attachment and uniformity of design can be effected with the minimum deformation to the overall surface.

The accentuated deformation of the surface of such prepared materials presents many objections in flat packaging, storage, and the exposure to the elements in its installed relation to building structures. The pressure upon the relatively soft ridges or irregularities created by known grooving methods and devices when such prepared materials are stacked in bundles or rolls after manufacture for storage, shipment, or delivery, presents highly vulnerable areas which are injured and rendered unfit for acceptance by the dealers and users. These problems have resulted in the desirability of providing fine line graining grooves which have no appreciable deformations at their surface edges and thus leave the surface substantially flat and unimpaired from the standpoint of stacking, bundling and storage purposes.

This fine line groove grain is also advantageous from the standpoint that an improved design and appearance effect is created. This has all been made possible by improving the structural features of grooving devices or rolls which provide for the precision arrangement and retention of knife-like blades of comparative thinness in projecting relation to the roll. An example of a fine line knife-like blade consists of a two point printer's rule which is approximately .028 inch thick and may or may not be bevel ground along the projecting or impression edges thereof. It should be noted that this particular printer's rule is not to be construed as a limitation upon but as a mere basis for determining the limits of blade thicknesses coming within the purview of the term, comparatively thin knife blades or cutters. For that matter, the blades may vary within a considerable degree so long as they are not thick enough to enable casting into a series of such impression edges upon a drum or a sleeve for application to a drum.

The thickness or thinness within this definition involves the use of preformed printers' rules which vary in thicknesses from very thin to more or less rigid blades that are separate and apart from any attaching expedient comprising part of a body member or frame.

One object of the present invention is to simplify the construction and improve the operation of devices of the character mentioned.

Another object is to provide an improved blade construction for rolls or other frame members to impart fine line grooving impressions to prepared materials such as roofing and siding to enhance the appearance and design thereof.

Still another object is to provide improved means for a precision arrangement and retention of printer rules of variable thicknesses in association with a roll or drum for fine line graining of prepared materials such as but not limited to roofing and siding.

A further object is to provide improved means for retaining an elongated printer's rule or similar blade on a drum or other frame member without requiring any precision roller surface slotting or machine work which entails appreciable labor and expense.

A still further object is to provide improved means for attaching comparatively thin knife-like blades to a roller or other body member in a prearranged parallel spaced series without requiring appreciable machining, labor, or expense.

Still a further object is to provide an improved means for associating knife-like blades in a pre-arranged parallel

or other series or combination or different arrangement on the same roll or body member to impart different graining designs and effects.

Other objects and advantages will appear from the following description of an illustrative embodiment of the present invention.

In the drawings:

Figure 1 is a front sectional view in elevation of a graining roll embodying features of the present invention.

Figure 2 is an end sectional view in elevation of the graining roll taken substantially along line II—II of Figure 1.

Figure 3 is a side view in elevation of a sectional clamping ring utilized in retaining the knife-like blade members in detachable association with the roll or other body member shown in Figure 1.

Figure 4 is an end view in elevation of the clamp segment in Figure 3, parts thereof being shown in sections to clarify the illustration.

Figure 5 is a fragmentary perspective view of a prepared siding unit which is grained with the device embodying features of the present invention.

Figure 6 is an enlarged fragmentary perspective view of the grained siding material shown in Figure 5.

Figure 7 is a fragmentary sectional front view in elevation of a modified graining roll that embodies features of the present invention and which utilizes a sectional liner with which the blades are associated in connection with a roller or drum.

Figure 8 is a fragmentary sectional view in elevation taken substantially along lines VIII—VIII of Figure 7.

Figure 9 is an end view in elevation of a roller liner segment shown in Figure 8.

Figure 10 is a fragmentary front view in elevation of the segment liner shown in Figure 9.

Figure 11 is an end view of a somewhat larger segment liner which is utilized along with the smaller segment liner shown in Figure 9 and shown assembled in Figure 8 therewith.

Figure 12 is a fragmentary front view in elevation of the segment liner shown in Figure 11.

Figure 13 is a fragmentary side view in elevation of a knife-like blade member embodying features of the present invention.

Figure 14 is an end view in elevation of the knife-like blade member shown in Figure 13.

Figure 15 is a fragmentary side view in elevation of a spacer stop bar member assembled in the graining roll illustrated in Figures 7 and 8.

Figure 16 is an end view in elevation of the spacer stop bar in Figure 15

Figure 17 is a fragmentary front sectional view in elevation of a substantially longer grain roll embodying features of the present invention and comprising a modified embodiment thereof.

Figure 18 is a fragmentary side view in elevation of a blade of the type utilized in the graining roll shown in Figure 17.

Figure 19 is an end view in elevation of the blade member shown in Figure 18.

Figure 20 is a side view in elevation of a spacer element utilized in assembling the knife-like blade member illustrated in Figure 22.

Figure 21 is an end view in elevation of the spacer bar shown in Figure 20.

Figure 22 is a fragmentary sectional end view of the blade structure taken substantially along line XXII—XXII of Figure 17 and illustrating the starting spacer bar shown in Figure 21.

Figure 23 is a sectional view in elevation taken substantially along line XXIII—XXIII of Figure 17.

Figure 24 is an end view of the sectional liner members shown in Figures 17 and 23.

Figure 25 is an end view in elevation of a sectional clamping ring involving features of the present invention.

Figure 26 is a sectional view taken substantially along line XXVI—XXVI of Figure 25.

Figure 27 is a sectional view taken substantially along line XXVII—XXVII of Figure 24.

Figure 28 is a modified roll showing transverse discs serving as groove impression elements and in a manner embodying features of the present invention.

Figure 29 is a fragmentary side view in elevation of a clamping ring element utilized in conjunction with the graining roll shown in Figure 28.

Figure 30 is an end view in elevation of a clamping ring element shown in Figure 29, part thereof being broken away to clarify the showing.

Figure 31 is a fragmentary side view in elevation of a complemental and segmental clamping ring member utilized in conjunction with the clamping ring shown in Figure 29 to retain the discs on the graining roll illustrated in Figure 28.

Figure 32 is an end view in elevation of the complemental and segmental clamping ring shown in Figure 31.

Figure 33 is a side view in elevation of a circular disc type blade member assembled in Figure 28.

Figure 34 is an end view in elevation of the disc blade member shown in Figure 33.

Figure 35 is a side view in elevation of a spacer ring assembled between the blade discs as assembled in Figure 28.

Figure 36 is an end view in elevation of the spacer ring shown in Figure 35.

Figure 37 is a front view in elevation of a still further modified graining roll embodying a combination of longitudinal and transverse graining blades in a manner embodying the features of the present invention.

Figure 38 is a fragmentary top plan view of a siding or roofing unit grained with a roll of the type illustrated in Figure 37.

Figure 39 is a fragmentary side view in elevation of a spacer ring assembled on the graining roll shown in Figure 37.

Figure 40 is an end view in elevation of the spacer ring shown in Figure 39.

Figure 41 is a side view in elevation of a segmental spacer ring utilized in the graining roll illustrated in Figure 37.

Figure 42 is a side view in elevation of a clamping segment assembled in the graining roll illustrated in Figure 37.

Figure 43 is a sectional view taken substantially along line XLIII—XLIII of Figure 42.

Figure 44 is a fragmentary side view in elevation of the central spacer ring assembled in Figure 36 constituting the starting ring for assembly of the remaining elements.

Figure 45 is an end view in elevation of the ring shown in Figure 44.

Figure 46 is a fragmentary side view in elevation of a clamping ring shown in Figure 37.

Figure 47 is an end view in elevation of the clamping ring shown in Figure 46.

Figure 48 is a fragmentary sectional view of a complemental and segmental clamping ring utilized in conjunction with the clamping ring shown in Figure 46.

Figure 49 is an end view in elevation of the complemental and segmental clamping ring shown in Figure 48.

Figure 50 is a fragmentary side view in elevation of a disc type blade member assembled in Figure 37.

Figure 51 is an end view in elevation of the disc like blade member shown in Figure 50.

Figure 52 is a side view in elevation of a lineal type blade member embodied in Figure 37.

Figure 53 is an end view in elevation of the blade shown in Figure 52.

Figure 54 is a side view in elevation of a spacer bar of the type assembled in the graining roll illustrated in Figure 37.

Figure 55 is an end view in elevation of the spacer bar shown in Figure 54.

Figure 56 is a sectional view taken along line LVI—LVI of Figure 41.

The structure selected for illustration is not intended to serve as a limitation upon the scope or teachings of the invention, but is merely illustrative thereof. There may be considerable variations and adaptations of all or part of the teachings depending upon the dictates of commercial practice.

The present embodiment comprises a body member **10** which, in this instance, is of cylindrical configuration and includes circular end plates **11—12** having axial aligned bores **13—14** to receive a suitably sized rotating driving shaft **15**. A cylindrical shell **16** bridges the end circular plates **11—12** for attachment thereto to comprise a cylindrical unitary roll or body member **10** of any desirable diameter and length depending upon the processing machine upon which it is to be installed to accomplish the graining operation as will appear more fully hereinafter.

A plurality of knife-like blades preferably, though not essentially, consisting in this instance of comparatively thin printers' rules **17** are regularly disposed for contact with the periphery **18** of the cylindrical sleeve **16** to project outwardly throughout the circumference of the cylindrical shell **16**. The printers' rules **17** may have ground edges depending upon the type and the extent of the grooves **19** that collectively comprise the graining impression upon the prepared surface **20** of building insulating siding **21** (Figure 5) or of a shingle unit or any other flat surface that has previously been prepared in the customary manner from preset material such as an asphaltic base having slate or other colored granules imbedded therein and adhering to the surface thereof to provide attractive colors thereon and resistance to the elements.

The insulating siding **21** or other building material may first be impressed with mortar lines **22—23** that are disposed normally to each other to provide a brick simulation or other design depending upon the dictates of commercial practice.

These designs and granular colored surfacing materials are first impressed in the preset prepared material in a manner well known in the art, and the graining **19** is thereafter impressed therein according to and with the teachings of the present invention.

In order to maintain the knife-like blades **17** in the desired radial spaced relation on the periphery **18** of the cylindrical shell **16**, a plurality of spacer bars **24** are interposed therebetween and these extend for the length of the blades **17** but are appreciably narrower in depth to provide a pronounced projecting edge along each of the blades **17**. The spacer bars **24** are alternated with each of the blades **17**, and the first spacer bar **25** is attached to the periphery **18** of the cylindrical shell **16** by being bolted thereto as at **25'**. After this first spacer bar **25** has been bolted to the periphery **18** of the cylindrical shell **16**, the blades **17** are applied thereagainst and additional spacer bars **24** are alternated therewith until the entire periphery is covered with the properly spaced and radially disposed series of projecting plates **17** that are held in position by the truncated shape of the spacer bars **24—25**. This wedges the blades **17** into rather tightly contacting relation, and this assembly of blades **17** and spacer bars **24—25** are held against any accidental movement or variation by means of sectional end clamping rings **26** disposed at both ends of the shell **16** and bolted thereto as will be presently described.

To this end, the blades **17** and the spacer bars **24—25** terminate at their extremities in shoulders **27—28** provided alike on the blades **17** and the truncated spacer bars **24—25**. The shoulders **27—28** on the blades **17** and the truncated spacer bars **24—25** are complemental

to an angular peripheral seat **29—30** provided in each of the sections of the clamping rings **26** that, in this instance, consist of four complemental circular quadrants having countersunk radial holes **30** provided therein for the attachment to the cylindrical shell **16** by means of suitable fasteners such as threaded studs **31**. This enables the tight frictional clamping of the angular seat **29** in the quadrants of the clamping ring **26** against the end shoulders **27—28** provided on the blades **17** and spacer bars **24—25**, thereby retaining the latter in assembled relation against displacement relative to the cylindrical shell **16** to impress prepared materials such as siding, roofing, and the like with thin linear grooves **19** to impart a decided graining aspect thereto over the granular colored surface **20** of the material to be impressed in a continuity of production operation on processing machines fitted with rolls or body members **10** described herein. This will provide a graining effect **19** without any appreciable deformation to the surface **20** intermediate the graining grooves **19** and thus render the prepared materials equally fit for superposed stacking, packaging and storage without impairment to the surface thereof while giving the desired visual graining effect that substantially enhances the appearance of all such products.

In the modified embodiment of the invention illustrated in Figures 7 to 16 inclusive the body member or roll **10*a*** is substantially the same as the roll **10** in the previous embodiment. The blade members **17*a*** and intermediate bar spacer members **24*a*—25*a*** are similarly applied and disposed relative to each other, but the attachment of the stop bars **25*a*** and the association of the blade members **17*a*** are directly with arcuate shell liner sectors **16''—17''** that are of two different sizes for bolted attachment to the cylindrical shell **16'**. With this arrangement, the shell sectors **16''—17''** can be removed with blades **17*a*** and spacer and stop bars **24*a*—25*a*** intact to the extent that each segment can be removed as a unit with the assembled elements thereof. This enables the roll to be rapidly changed as to the arrangement and spacing of the blades **17*a*** or substituted assembled segments attached in place without entailing individual blades **17*a*** and spacer bars **24*a*—25*a*** to be assembled for each change that may be necessary or desired for different prepared building materials being processed.

In this particular embodiment, the clamping sectors **26*a*—27*a*** are attached to the liner sectors **16''—17''**, and the latter in turn are attached to the cylindrical shell **16'** through the medium of fasteners such as the threaded studs **31*a*** which permits the liner sectors **16''—17''** to be removed individually.

With this arrangement, it is apparent that the liner sectors **16'—17'** need not encircle the entire cylindrical shell **16'** in that this would be a factor of the length or width of the prepared material that is to be impressed therewith; however, this can be varied from a total encirclement to a partial circumferential extent of the shell **16'** depending upon the speed of travel and length or width of the prepared materials to be grained therewith. Obviously the graining along the length or width of the prepared materials will depend upon the manner in which the insulated siding or shingle unit is delineated from the continuous length of prepared building material that is being moved through the processing equipment in confronting relation with the rolls or body members **10*a***.

In this particular embodiment there are a plurality of spacer bars **24*a*** between each of the blades **17*a*** rather than single units thereof as this is a matter of the desired spacing between blades for any particular graining effect, and preferably, though not essentially, every fifth or multiple number of blades **17*a*** may be interspersed with a somewhat wider blade **17*b*** which is immediately termed a nail groove impressing blade to provide a somewhat wider groove at every predetermined number of spaces in order to index the building unit with reference

to similar units such as preformed shingles and to designate the line of nailing to the roofer who applies the building material.

In the still further modified embodiment shown in Figures 17 to 24 inclusive, the structure concerns itself with an unusually long roll having blades **17***c* that are provided with one or more truncated notches **17***d* along the bottom edge **17***e* thereof to provide for the anchored attachment of the blades **17***c* at spaced points along the entire length thereof. This notched structure is also provided in the spacer bars **24***c* (Figure 20) wherein one or more truncated notches **24***d* are provided. With this arrangement, threaded studs **24***e* project through the countersunk apertures **16***e* in the truncated anchoring ring sections **16***d* complemental to the correspondingly shaped notches **17***d* and **24***d* in the blades **17***c* and spacer bar **24***c* to enable their attachment. The cylindrical shell **16***c* is attached in any suitable manner to the stub shafts **15***c* constituting a rotary support therefor. With the provision of truncated notches **17***d* and **24***d* in the blades **17***c* and spacer bars **24***c*, unusually long and flexible blades **17***c* and spacer bars **24***c* can be properly aligned with precision and held fast to the cylindrical shell **16***c* through the medium of the truncated anchoring ring sectors **16***d*, in this instance four, that are attached to the cylindrical shell **16***c* by means of the fastener studs **24***e*. The truncated anchoring ring sectors **16***d* are provided with countersunk apertures **16***e* through which fasteners such as threaded studs **24***e* extend for attachment to the cylinder shell **16***c*. It should be noted that the truncated anchoring ring sectors **16***d* extend for the entire circumference of the shell **16***c* except for a comparatively small space **16***f* that is utilized to insert the last spacer bar **25***c* therethrough (Figures 23 and 24) to wedge all of the alternately spaced blades **17***c* and spacer bars **24***c* into one assembled tightly fitting unit with the clamping sectors **26***c*—**27***c* as anchoring end clamps therefor. With this arrangement, an initial spacer bar **25***d* is provided with countersunk apertures therethrough to enable fasteners such as threaded studs **25***e* to be utilized for anchoring the first spacer bar **25***d* to the truncated anchoring ring sectors **16***d* (Figure 22). Thus the starting spacer bar **25***d* is first anchored to the truncated anchoring ring sectors **16***d* and the last spacer bar **25***c* serves as a wedging element that is inserted in the opening **16***f* that is left between the truncated anchoring ring sectors **16***d* for contact between the wedging bar **25***c* and the cylindrical shell **16***c* (Figure 23).

It should be noted that the truncated anchoring ring sectors **16***d* are complemental to the correspondingly shaped notches **17***d*—**24***d* and in the blades **17***c* and spacer bars **24***c* and these are circumferentially movable therealong so that the spacer bars **24***c*—**25***c* will effectively position the blades **17***c* and hold them in tight assembled association while the truncated anchoring sectors **16***d* retain them against outward movement while the roll members **10***c* revolve. However, this depends upon the dictates of commercial practice.

For that matter, the spacer bar **24***c* need not be notched as at **24***d* if commercial practices decide otherwise and it is important to first align the blades **17***c* and the spacer bars **24***c* could be inserted therebetween without attachment. These structural features provide a simple method of attaching and assembling with precision, exceedingly long and comparatively thin knife-like blades **17***c* to the cylinder roll or body member **10***c*.

In the still further modified embodiment shown in Figures 28 to 35 inclusive, a body member in the form of a cylindrical roll **10***e* is provided with circular disc-shaped knife-like blades **17***e* which are disposed transversely over the cylindrical shell **16***e* in parallel spaced relation. The spacing of these circular blades which have an axial bore **17***f* (Figure 33) sufficiently large to freely slide over the cylindrical shell **16***e*, is accomplished by means of axially bored circular spacer rings **24***e* that are alternated with the circular blade **17***e* for the entire longitudinal extent of the cylindrical shell **16***e* or so much thereof as is necessary to impart transverse rather than longitudinal graining grooves to the prepared building material that is passed thereunder. The circular blades **17***c* and the spacer bars **24***e* are maintained in tight assembled relation by means of split sectional clamping rings **26***e*—**27***e* and cooperating split solid wedging rings **26***d*—**27***d*. These complemental split clamping rings **26***d*—**26***e* and **27***d*—**27***e* are attached to the cylindrical shell **16***e* by means of fasteners such as threaded studs **31***d*—**31***e*.

It should be noted that the split complemental rings **26***d*—**26***e* and **27***d*—**27***e* have a row of countersunk stud openings **32***e* provided entirely within the body of the clamping ring **26***e*—**27***e*, while another row of semi-cylindrical countersunk apertures **33***e* are provided along and in communication with a circumferential face on each surface **34***e* thereof to serve as a complement of semi-circular countersunk apertures **35***e* provided in the circumferential adjacent faces **36***e* of the solid split wedging rings **26***d*—**27***d* (Figures 28, 30, and 32). With this arrangement, the threaded studs **31***e* project through the apertures **32***e* in the clamping ring sections **26***e*—**27***e* to attach their respective clamping sections **26***e*—**27***e* to the cylindrical shell **16***e* proximate to its ends. The solid split clamping rings **26***d*—**27***d* are already disposed on the cylinder shell **16***e* against the outside circular blades **17***e* and inside of the anchored clamping ring sections **26***e*—**27***e*, so that the insertion of the threaded studs **31***d* will wedge the solid split clamping rings **26***d*—**27***d* tightly against the blades **17***e* and their intermediate spacer rings **24***e*, thereby maintaining these elements in tight rigid relation against movement relative to the cylindrical shell **16***e*.

With this construction and arrangement of blades, the graining grooves can be impressed longitudinally of the direction of travel of the prepared flat materials rather than transversely as in the case of the preceding embodiment.

In the still further modified embodiment illustrated in Figures 37 to 56 inclusive, there is shown a combination of longitudinally extending blades **17***h* that extend for substantially half of the length of the roll or body member **10***h* for attachment to the cylindrical shell **16***h* thereof in the manner set forth and specifically described in connection with Figures 1, 7, and 17. In this embodiment, the interior edges of the linear blades **17***h* are held against a circular ring stop **25***h* through which threaded studs **25***i* extend. The other half of the roll or body member **10***h* is provided with a series of circular knife blades **17***i* that are similar to and spaced by alternately disposed spacer rings **24***i* for fixed association with the cylindrical shell **16***h* in the manner specifically described in connection with Figures 28 to 35 inclusive. With this arrangement a combination graining roll that simultaneously impresses flat prepared surfaces with normally disposed grooved graining lines **19***h*—**19***i* (Figure 38) is provided. This permits a variation in graining designs without increasing the cost, and graining can be impressed before or after the mortar lines **22***h*—**23***h* are provided in the granular surfaced asphaltic or other material in the manner heretofore described in connection with Figure 5.

It should be noted that the circular knife-like blades **17***i* are held tightly against the central stop **25***h* by means of split ring clamping members **26***h*—**26***i* having fasteners **31***h*—**31***i* extending therethrough for effective clamping in the manner described in connection with Figures 28 to 35 inclusive.

It will be apparent, therefore, from the foregoing that a very accurate, flexible and comparatively inexpensive structure has been provided for accurately aligning blades and effecting their attachment to a cylindrical roll or rolls or other body member in order to more effectively and advantageously provide graining grooves in flat surfaces

for ornamental as well as functional purposes without impairing the surfaces in any manner from a standpoint of stacking, packing, and use.

While we have illustrated and described a preferred embodiment of this invention, it must be understood that the invention is capable of considerable variation and modification without departing from the spirit of the invention. We therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail ourselves of such variations and modifications as come within the scope of the appended claims.

We claim:

1. In a surface graining device for prepared preset asphaltic building materials and the like, the combination with a cylindrical body member comprising a tubular cylindrical shell, of a plurality of spaced circular ring members detachably fixed along said cylindrical body member for anchored connection thereto, a plurality of elongated comparatively thin closely spaced knife-like blade members radially disposed on said body member, there being complemental fitting means on said blade members and said ring members to establish a circumferential sliding connection between said blade members and said cylindrical body member through the medium of said ring members, spacer bar members of relatively greater thickness than said comparatively thin blade members between said blade members to maintain the latter in predetermined spaced relation, and circumferentially sectional end clamping means detachably mounted to said cylindrical shell, said sectional clamping means having peripheral angular seats to extend over portions of said blades and spacer members for clamping said blade and spacer bar members in tight assembled relation on said cylindrical body member.

2. In a surface graining device for prepared preset asphaltic building materials and the like, the combination with a cylindrical body member comprising a tubular cylindrical shell, of a plurality of spaced circular sectional ring members detachably fixed along said cylindrical body member for anchored connection thereto, a plurality of elongated comparatively thin closely spaced knife-like blade members radially disposed on said body member, there being complemental truncated notches in an edge of said blade members for association with said ring members to establish a circumferential sliding connection between said blade members and said cylindrical body member of relatively greater thickness than said comparatively thin blade members through the medium of said ring members, spacer bar members between said blade members to maintain the latter in predetermined spaced relation, and circumferentially sectional end clamping means detachably mounted to said cylindrical shell, said sectional clamping means having complemental peripheral angular seats to extend over portions of said blades and spacer members for clamping said blade and spacer bar members in tight assembled relation on said cylindrical body member.

3. In a surface graining device for prepared building materials and the like, the combination with a cylindrical body member, of a plurality of spaced circular sectional ring members detachably fixed along said cylindrical body member for anchored connection thereto, said sectional ring members extending partially around said cylindrical body member to provide a space between the confronting ends thereof, a plurality of knife-like blade members radially disposed on said body member through the space in said sectional ring members, there being complemental fitting means on said blade members and said ring members to establish a circumferential sliding connection between said blade members and said cylindrical body member through the medium of said ring members, spacer bar members between said blade members and over said ring members, a wedge bar inserted between said space between the confronting ends of said ring members to wedge said blade and spacer members tightly together to maintain the latter in predetermined spaced relation, and means for clamping said blade and spacer bar members in tight assembled relation on said cylindrical body member.

4. In a surface graining device for prepared building materials and the like, the combination with a cylindrical body member, of a plurality of spaced circular truncated ring members detachably fixed along said cylindrical body member for anchored connection thereto, said sectional ring members extending partially around said cylindrical body member to provide a space between the confronting ends thereof, a plurality of knife-like blade members radially disposed on said body member through the space in said sectional ring members, there being complemental truncated notches in an edge of said blade members for association with said ring members to establish a circumferential sliding connection between said blade members and said cylindrical body member through the medium of said ring members, spacer bar members between said blade members and over said ring members, a wedge bar inserted between said space between the confronting ends of said ring members to wedge said blade and spacer members tightly together to maintain the latter in predetermined spaced relation, and means for clamping said blade and spacer bar members in tight assembled relation on said cylindrical body member.

5. In a surface graining device for flat prepared preset asphaltic material and the like, the combination with a cylindrical body member, of a plurality of uniformly and closely spaced sharp thin blade members detachably associated with the surface of said cylindrical body member, spacer members of relatively greater thickness than said sharp thin blade members and disposed between said sharp blade members for contact with the surface of said cylindrical body member, said blade members projecting radially outward beyond said spacer members to provide closely spaced fine grain lines with convex ridges therebetween in preset asphaltic material, circumferentially sectional end clamping means on said cylindrical body member to retain said spacers and sharp blade members in rigid assembled relation with said cylindrical body member, and means for detachably fastening each of said sectional end clamping means to said cylindrical body member.

6. In a surface graining device for flat prepared preset asphaltic material and the like, the combination with a cylindrical body member, of a plurality of uniformly and closely spaced sharp thin blade members detachably associated with the surface of said cylindrical body member, spacer members of relatively greater thickness than said sharp thin blade members and disposed between said thin blade members, said blade members projecting radially beyond said spacer members to provide closely spaced fine grain lines with convex ridges therebetween in preset asphaltic material, said blade members having the inner edges thereof in contact with the surface of said cylindrical body member, circumferential sections of arcuate end clamping quadrants detachably associated with said cylindrical body member, there being countersunk apertures in each of said quadrants, and threaded fasteners extending through said countersunk apertures to threadedly engage said cylindrical body member to detachably anchor said end clamping quadrants to said cylindrical body member for retaining said spacer and blade members in rigid association with said cylindrical body member.

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