

[54] **TEMPLE ROLL**  
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[51] Int. Cl. .... **B21b 27/02**  
[58] Field of Search..... 29/121 R, 121 A, 121 H; 139/294, 296, 304

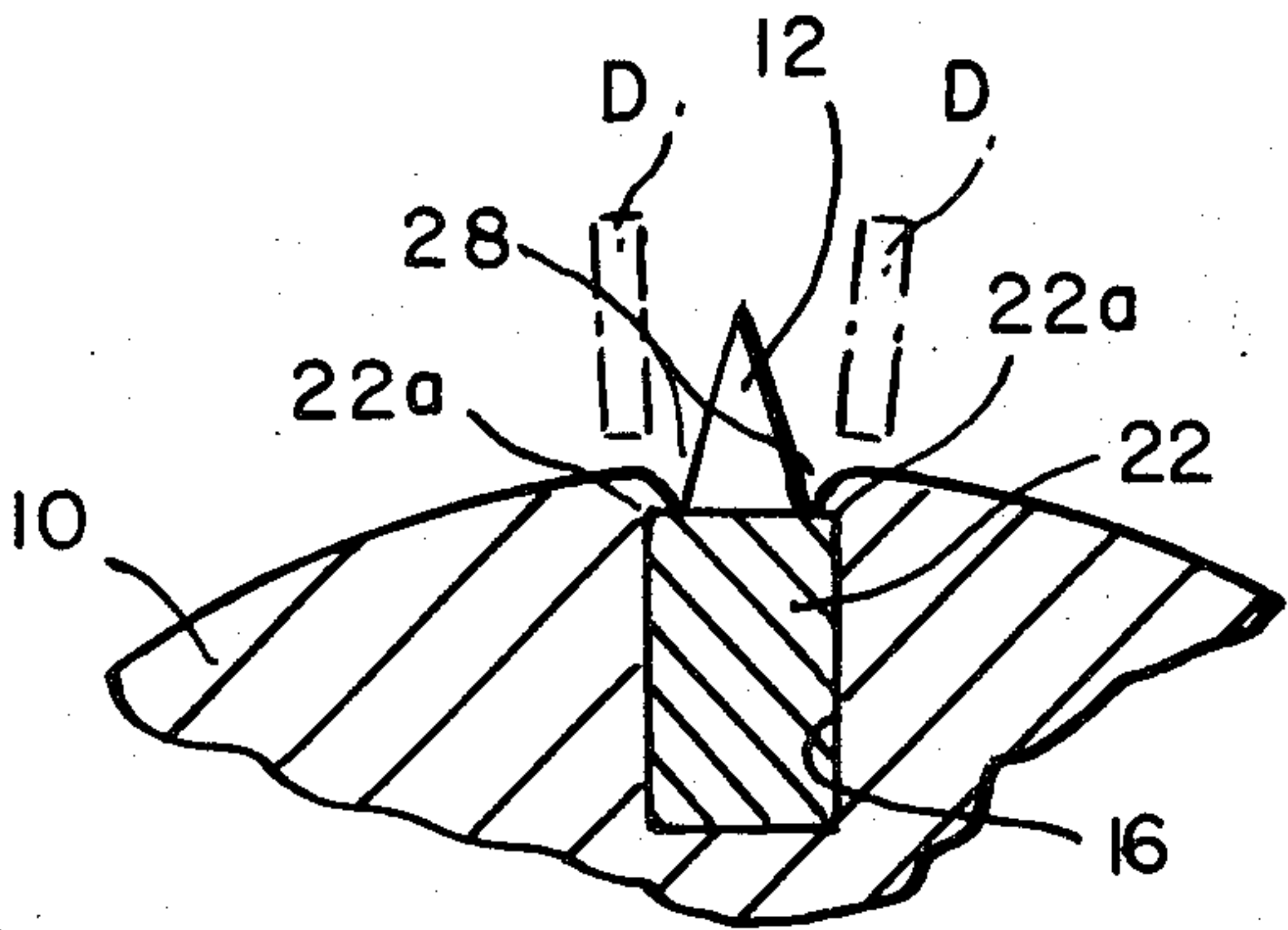
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[57] **ABSTRACT**  
A temple roll comprising a cylinder having a cylindrical surface in which there are a plurality of spaced parallel, longitudinally extending grooves, each groove containing an elongate toothed member rigidly fixed therein with the teeth projecting from the cylindrical surface and with the teeth in adjacent grooves offset half the distance between teeth. There are longitudinally extending depressions in the cylindrical surface of the cylinder at opposite sides of each toothed member.

8 Claims, 11 Drawing Figures



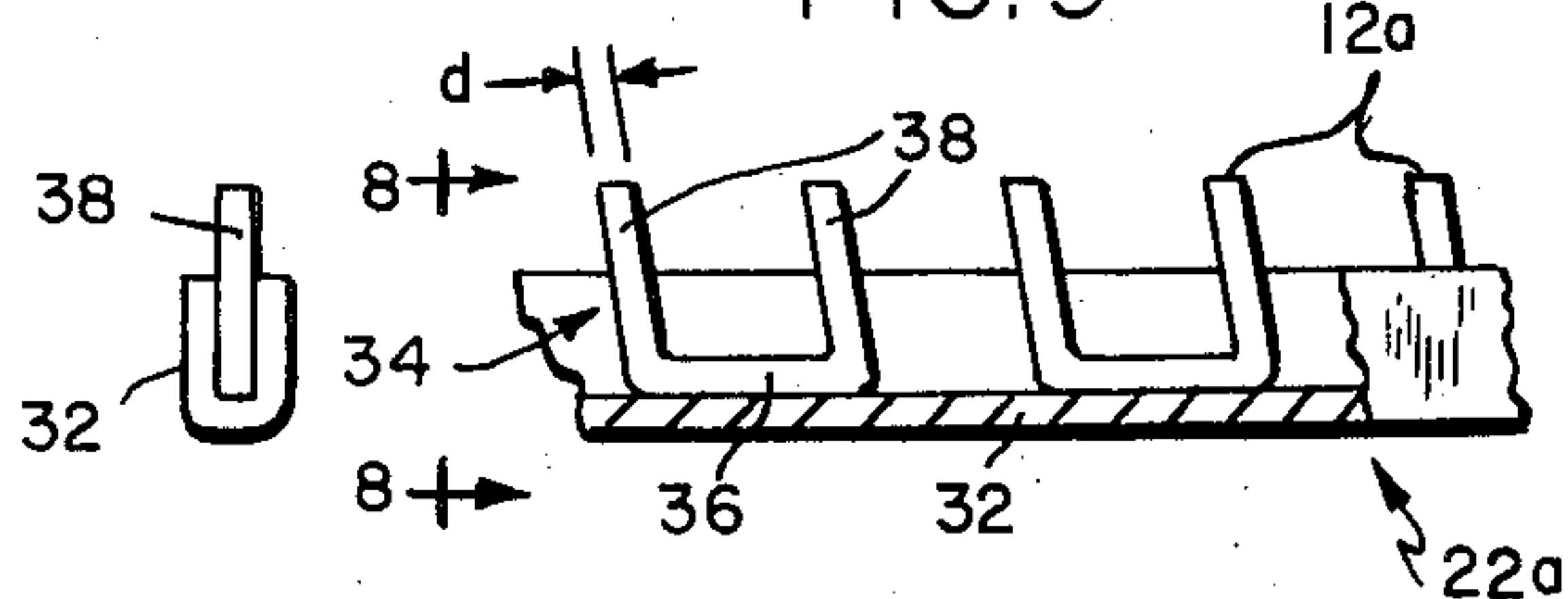
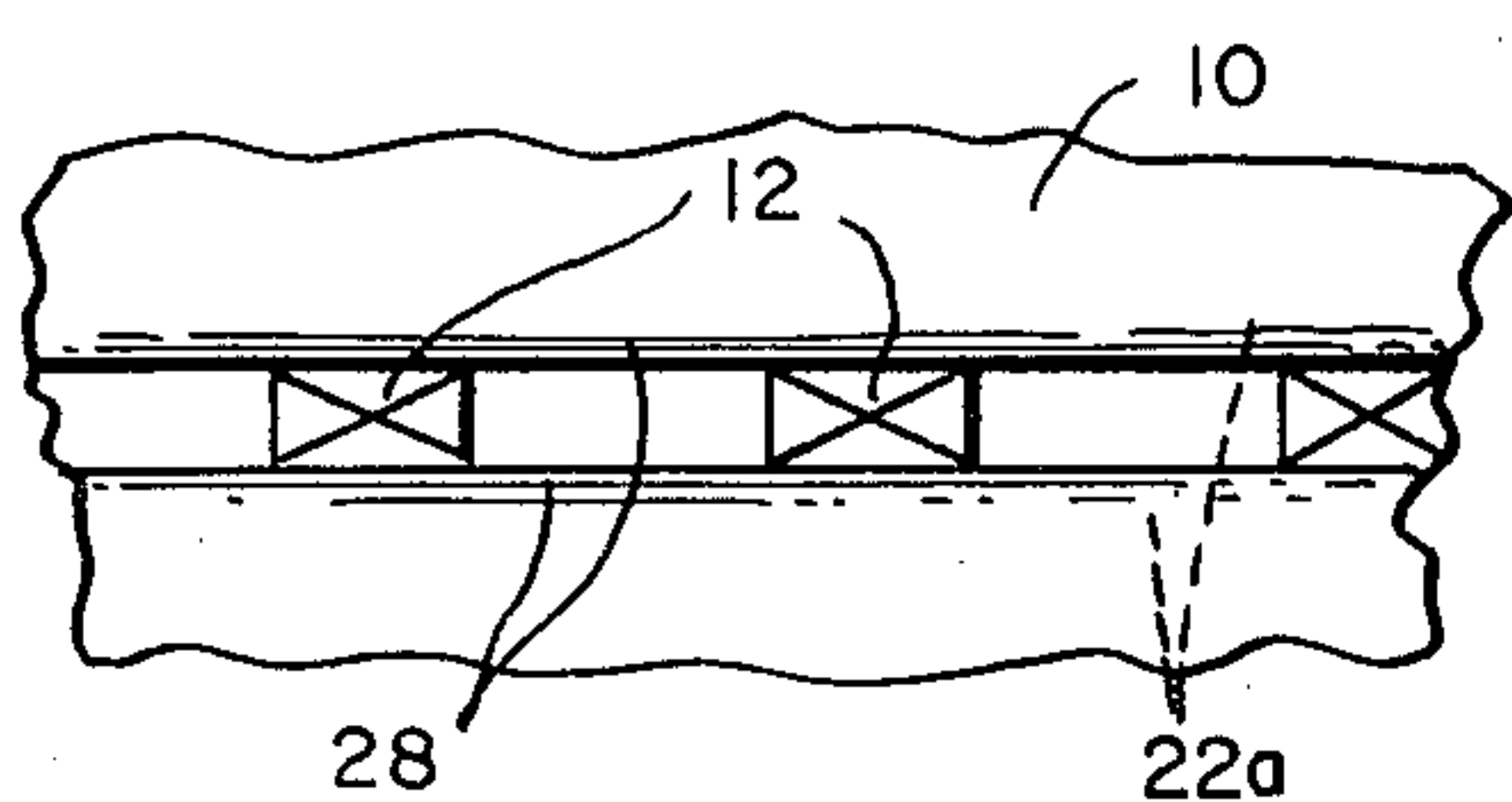
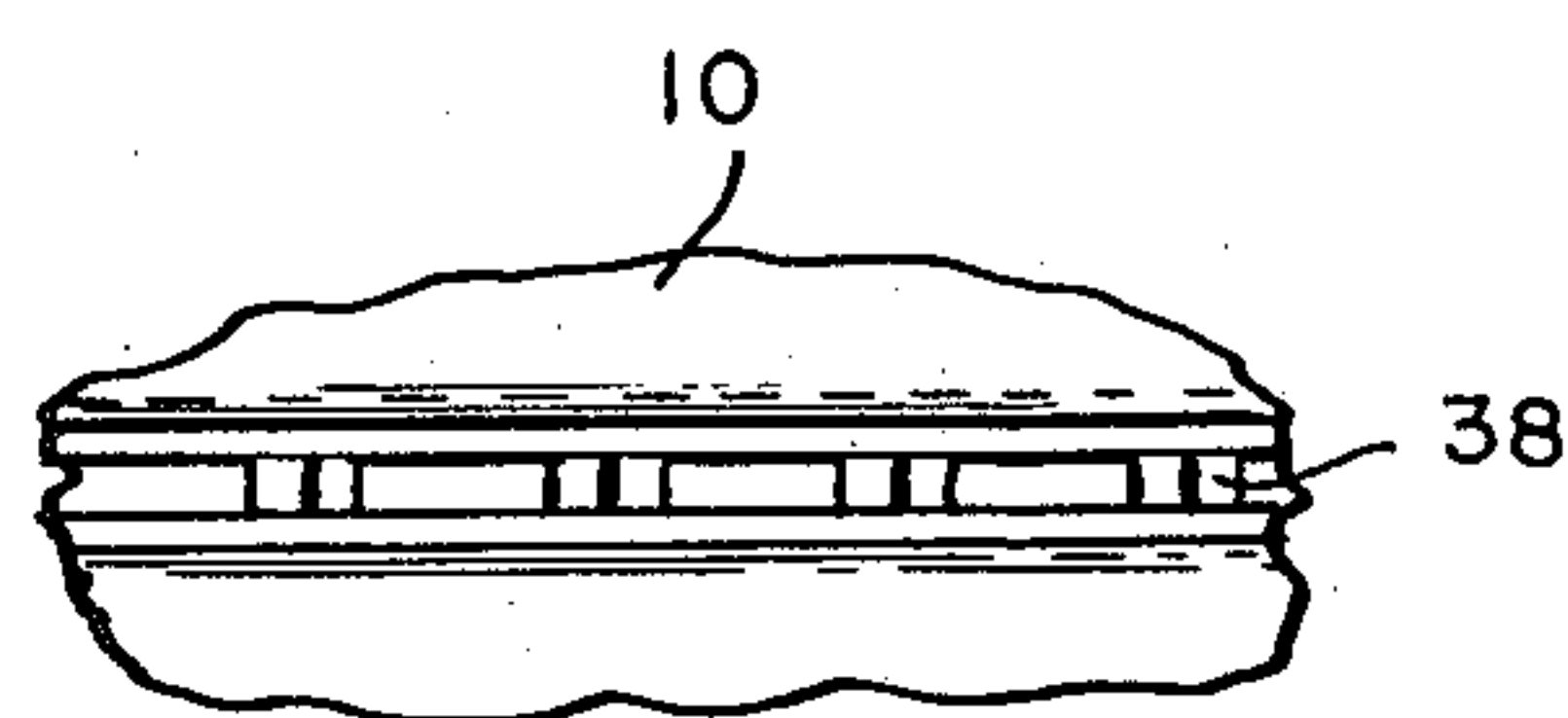
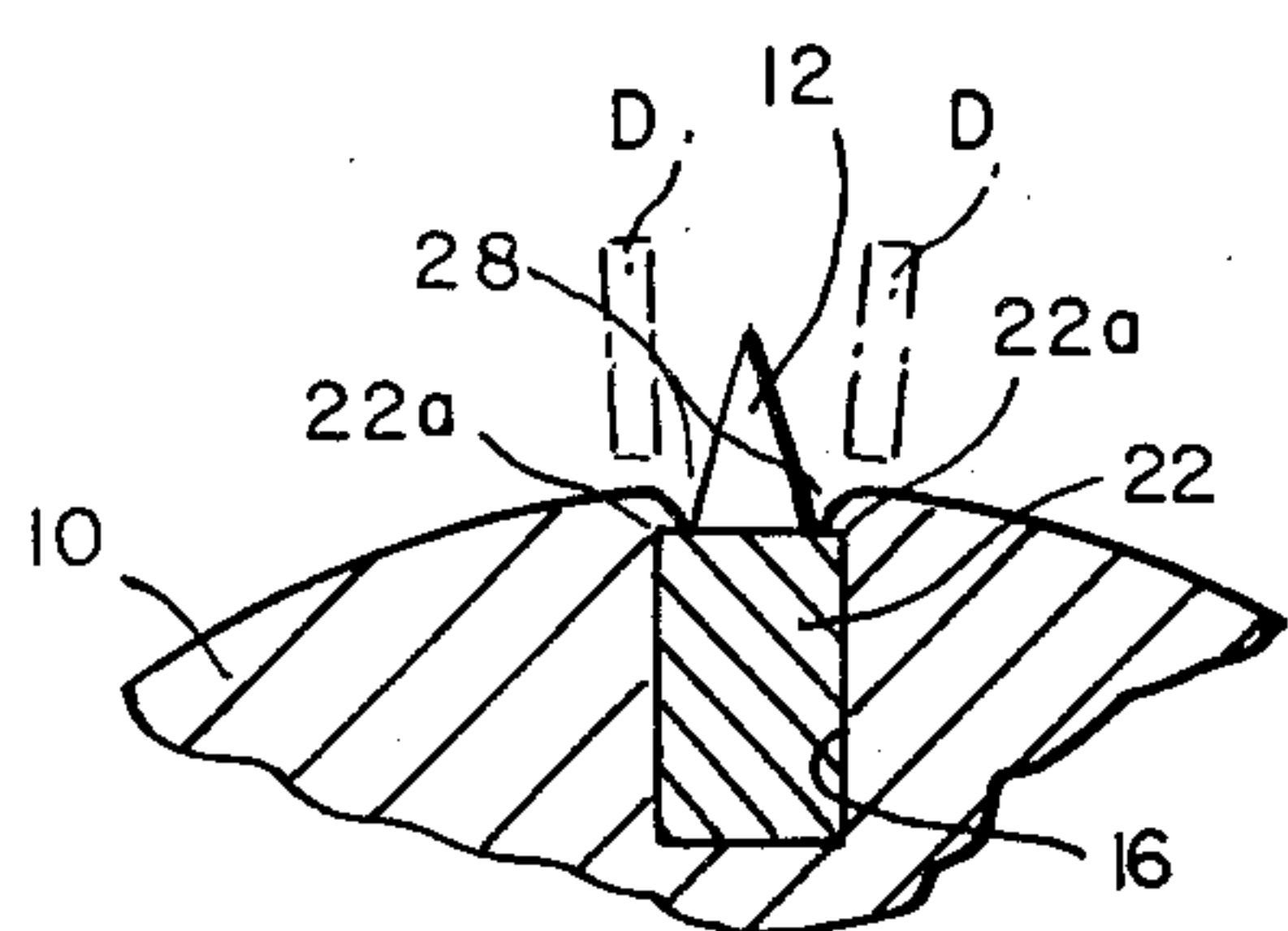
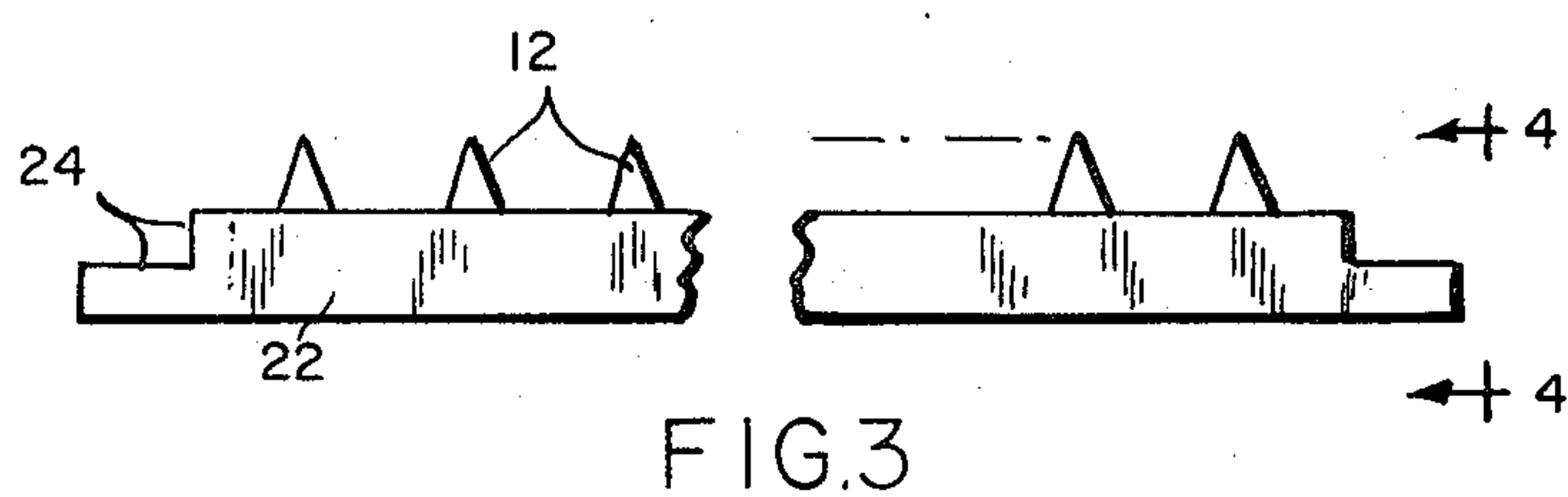
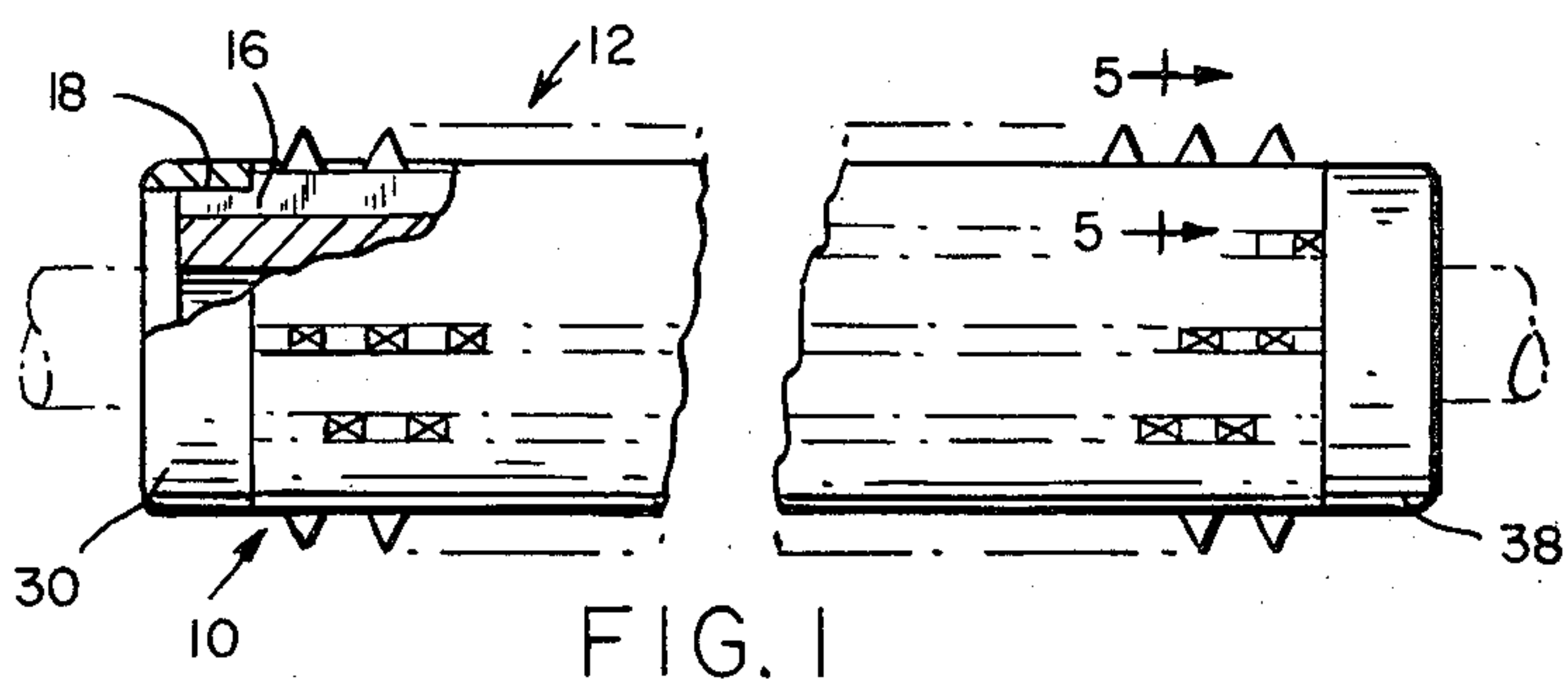


FIG. 6

FIG. 8

FIG. 7

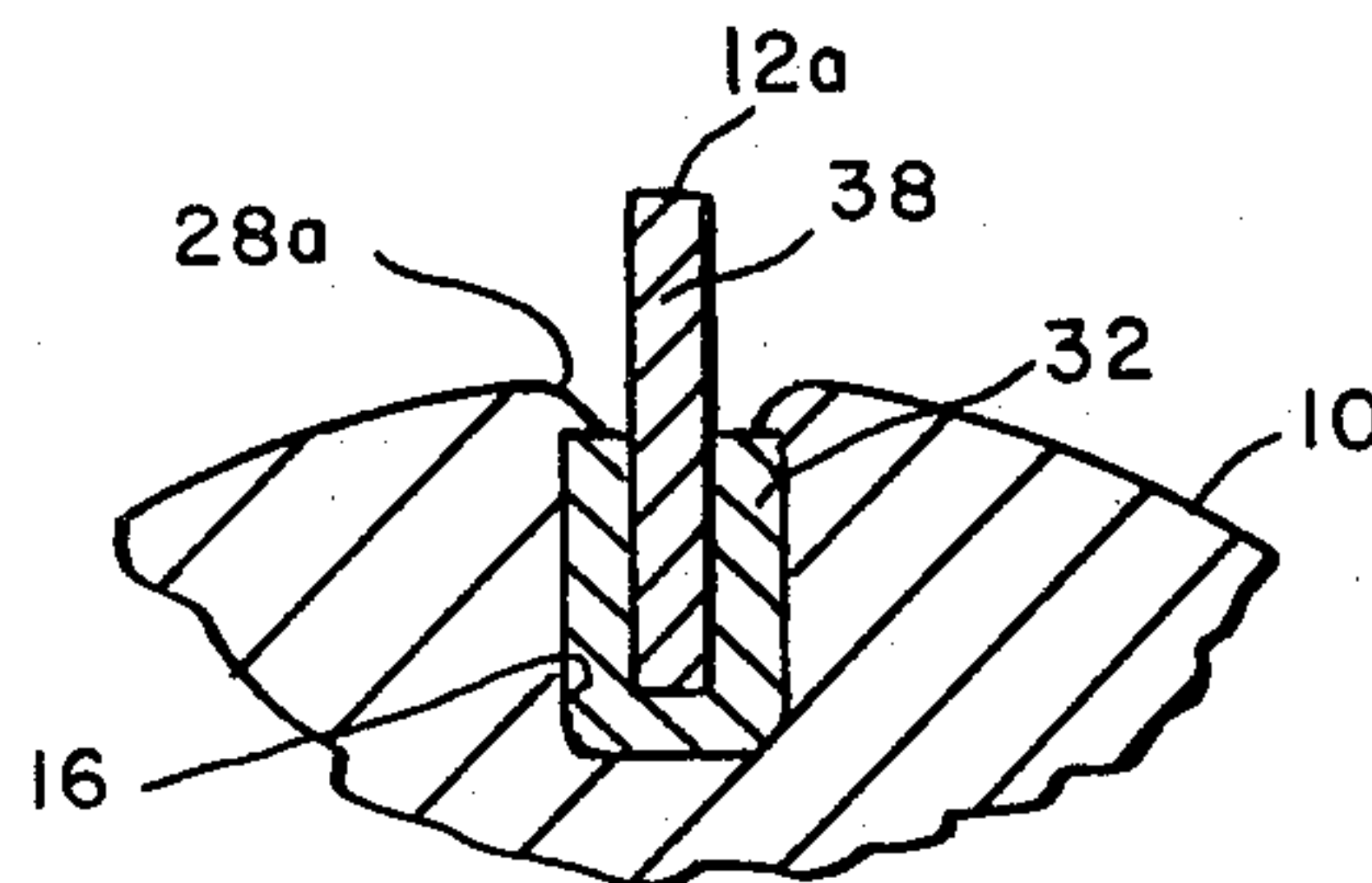
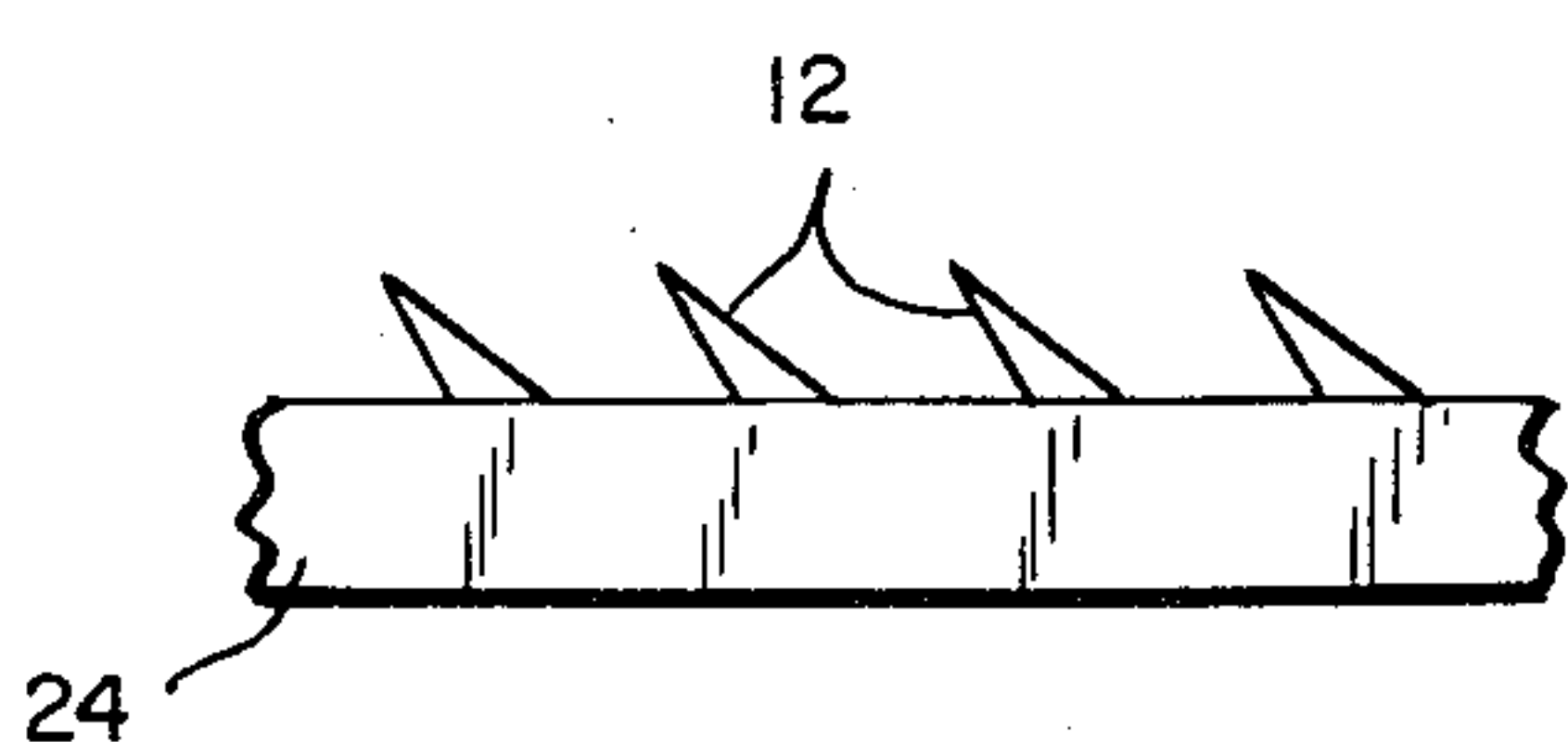


FIG. 4A

FIG. 10



# 1

## TEMPLE ROLL

### BACKGROUND OF THE INVENTION

Temple rolls comprised of cylinders provided with sharp pointed teeth projecting from their cylindrical surfaces are well-known in the art and these are made by drilling holes along spaced parallel lines longitudinally of the cylindrical surface of a slender roll comprised of wood with the holes in adjacent lines offset half the distance between holes and then inserting a pin sharpened at one end into each hole so that the sharpened end extends from the surface of the cylinder. Inserting the sharpened pins into the individual holes is time consuming and requires the use of special machinery for this purpose. This invention has for its objects to provide a temple roll of improved construction which will not require drilling individual holes in the cylindrical surface of the roll for receiving pins nor will it require the use of special machinery for inserting the pins.

### SUMMARY

The temple roll according to this invention comprises a cylinder having a cylindrical surface containing a plurality of spaced parallel grooves extending longitudinally thereof in its cylindrical surface and elongate toothed members rigidly fixed in said grooves with the teeth projecting from the cylindrical surface and with the teeth in adjacent grooves offset half the distance between teeth. The toothed members comprise rigid back parts from which project teeth, the back parts corresponding substantially in width to the width of the grooves but being of lesser depth so that when disposed in the grooves the edges from which the teeth project lie below the cylindrical surface of the cylinder. The cylindrical surface of the cylinder marginally of the grooves at opposite sides are depressed into engagement with the edges of the back parts to fix the toothed members in the grooves and to provide longitudinally extending depressions in the cylindrical surface at opposite sides of the toothed members. Portions of the roll at the opposite ends are of smaller outside diameter and collars are mounted on these end portions about the ends of the toothed members. The toothed members may be a rigid bar with which the teeth are integral or channel members in which teeth are clinched at uniformly spaced intervals.

According to the method of making the aforesaid temple roll a cylinder of suitable size, length and diameter is obtained whereupon spaced parallel grooves are formed in the cylindrical surface longitudinally thereof. Elongate toothed members having rigid backs from which extend teeth are then inserted into the grooves with the backs in adjacent grooves offset half the distance between teeth relative to each other such that the teeth of adjacent grooves are offset half a distance between teeth whereupon the cylindrical surface of the cylinder marginally of the grooves at each side of the elements is deformed against the backs situated in the grooves.

The invention will now be described in greater detail with reference to the accompanying drawings wherein:

FIG. 1 is a plan view of the temple roll as disclosed herein;

FIG. 2 is an end view of the temple roll shown in FIG. 1;

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FIG. 3 is a fragmentary plan view of a toothed member comprising a back from which extend integral teeth;

FIG. 4 is a plan view taken on the line 4—4 of FIG. 3;

FIG. 4a is a fragmentary plan view of a toothed member in which the teeth are slanted from the vertical;

FIG. 5 is a fragmentary diametrical section to very much larger scale showing a toothed member inserted into a groove in the surface of the roll and with the surface of the roll marginally of the groove at opposite sides depressed into engagement with the back between teeth and also in phantom swaging rolls for effecting depression;

FIG. 6 is a fragmentary plan view of FIG. 5 showing the swaging and depressions produced thereby;

FIG. 7 is a fragmentary elevation, partly in section, of an alternative form of toothed element;

FIG. 8 is a view taken on the line 7—7 of FIG. 8;

FIG. 9 is a fragmentary plan view of FIG. 7 showing the swaging and depressions along the opposite sides of the teeth; and

FIG. 10 is a fragmentary diametrical section, to very much larger scale, showing a toothed member of the kind illustrated in FIGS. 7, 8 and 9 inserted into a groove in the surface of the roll with the surface of the roll marginally of the grooves at opposite sides depressed into engagement with the back of the toothed member.

Referring to the drawings (FIGS. 1 and 2), the temple roll comprises a long slender cylindrical roll which has peripherally spaced, longitudinally extending rows of sharp pointed teeth 12, the teeth in adjacent rows being longitudinally offset half the distance between teeth.

The roll 10 is comprised of metal and peripherally spaced, longitudinally extending parallel grooves 16 are milled into its peripheral surface for receiving the teeth 12. The grooves 16 are of rectangular cross-section and radially disposed with respect to the central axis of the roll. The ends of the roll are turned down to provide cylindrical portions 18—18 at the ends of a diameter intermediate that of the roll between the end portions and the diameter of a circle drawn through the bottoms of the grooves.

In one form the teeth 12, as shown in FIGS. 3 and 4, are formed at uniformly spaced intervals along one edge of a rigid bar 22 and are four-sided, that is, pyramidal in configuration. Each bar 22 corresponds in width  $W$  to the width of the grooves 16 but in height  $H$  is less than the depth of the grooves and at its ends is notched at 24—24 so as to correspond in height  $h$  to the depth of the grooves in the reduced portion 18—18 at the ends of the roll and there are shoulders 22a—22a at opposite sides of the rows of teeth. The teeth 12, as shown in FIGS. 1 to 5, are symmetrical with respect to lines perpendicular to their bases and passing through their apices. Alternatively, the teeth may be slanted, that is, asymmetrical with respect to lines perpendicular to their bases and passing through their apices as shown in FIG. 4a.

Having prepared the grooved roll 10 and the toothed bars 22, the bars are pressed into the grooves and then the marginal portions of the cylindrical surface of the roll along the edges of the grooves at opposite sides are rolled inwardly and downwardly, as shown in FIG. 5, against the shoulders 22a—22a at the outer edges of



the bars 22 to clinch the bars in the grooves. The deformation or swaging of the marginal portions of the cylindrical surface of the roll at opposite sides of the bars forms, as shown in FIGS. 5 and 6, shallow grooves 28—28 at opposite sides of the rows of teeth and depressions between teeth which simulate the depressions formed at the bases of the teeth set into conventionally made wooden temple rolls. After inserting the bars into the grooves collars 30—30 are applied over the reduced end portions to confine the ends of the toothed members within the grooves. These collars may be pressed-fitted and/or soldered or welded to the ends.

The teeth 12, as shown in FIGS. 3 and 4, are formed integral with the bar 22; however, the toothed members may be formed in other ways. For example, as shown in FIGS. 7 and 8, strips 22a of carding wire which is used on carding cylinders comprising U-shaped backs 32 in which are clinched at spaced intervals staples 34 may be used. The staples 34 are comprised of wire stock of circular cross-section, bent to provide a back 36 and two legs 38—38 and these staples are clinched in the back 32 with the legs 38—38 bent to slant in one direction, — the legs comprising teeth 12a. The ends of the legs are ground parallel to the back. The carding wire is fine, in the order of 0.010 inches in diameter.

The strips 22a are pressed into the grooves 16, as shown in FIG. 10, and the marginal portions of the surface of the roll adjacent the grooves are swaged inwardly over the upper edges of the backs 32 to clinch the strips in the grooves. As related above swaging rolls may be used for this purpose and the swaging forms continuous grooves 28a—28a along opposite sides of each row of teeth which produce the same effect as the grooves 28—28.

As described above the roll 10 is comprised of metal which may be of any suitable kind, for example stainless steel, brass, bronze, aluminum and alloys thereof. However, it is within the scope of the invention to make the roll of a plastic material and to embed the toothed members in grooves formed therein; for example, by melting or fusing the material along the edges of the grooves to seal the toothed members in the grooves.

According to the method of making the temple roll a cylindrical roll of the desired length and diameter is provided; the grooves are milled longitudinally thereof at the proper peripheral spacing; the end portions turned down; toothed members in the form shown in either FIGS. 3 and 4 or 7 and 8 pressed into or slid lengthwise into the grooves; the marginal edges of the grooves swaged or otherwise deformed into engagement with the outer edges of the toothed members to clinch or secure them in place; and the collars pressed-fitted over the end portions and secured by welding or soldering. The swaging or deforming operation may be carried out with discs D—D supported at angles to the edges of the grooves such that when rolled along the length of the grooves under pressure will deform the

marginal edges. Clinching the toothed members in the grooves and forming the dimples or grooves at opposite sides of the rows of teeth depending upon whether the toothed members are those illustrated in FIGS. 3 and 4 or 7 and 8.

It should be understood that the present disclosure is for the purpose of illustration only and that this invention includes all modifications and equivalents falling within the scope of the appended claims.

I claim:

1. A temple roll comprising a cylinder having a peripheral surface containing a plurality of spaced parallel grooves extending lengthwise of its cylindrical surface and elongate toothed members rigidly fixed in said grooves with the teeth projecting from said cylindrical surface and with the teeth in adjacent grooves offset half distance between teeth, each toothed member comprising a rigid back part from which projects teeth, said back part corresponding substantially in width to the width of the groove but being of lesser depth such that when disposed in a groove the edge from which the teeth project lies below the cylindrical surface of the cylinder and wherein the cylindrical surface of the cylinder marginally of the groove at opposite sides is depressed into engagement with said edge.

2. A temple roll comprising a cylinder having a peripheral surface containing a plurality of spaced parallel grooves extending lengthwise of the cylindrical surface and elongate toothed members fixed rigidly in said grooves with the teeth projecting from said cylindrical surface and with the teeth in adjacent grooves offset half distance between teeth, said toothed members comprising channels corresponding in length to the grooves in which are clinched at uniformly spaced intervals teeth, said teeth being of cylindrical cross section and having beveled ends.

3. A temple roll according to claim 1, wherein there are depressions in the cylindrical surface of the roll between teeth.

4. A temple roll according to claim 1, wherein there are longitudinal depressions in the cylindrical surface of the cylinder at opposite sides of each toothed member.

5. A temple roll according to claim 1, wherein the teeth are integral with the back part and are of pyramidal configuration.

6. A temple roll according to claim 1, wherein the teeth are clinched into the back part and are cylindrical in cross-section.

7. A temple roll according to claim 1, wherein the ends of the roll have end portions of smaller outside diameter and collars are mounted on said end portions about the ends of the toothed members.

8. A temple roll according to claim 1, wherein the teeth slant in one direction with respect to the axis of the roll.

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