Nov. 6, 1934. L. O. GRANGE 1,980,134

RETREADER

Filed June 15, 1933 4 Sheets-Sheet 1

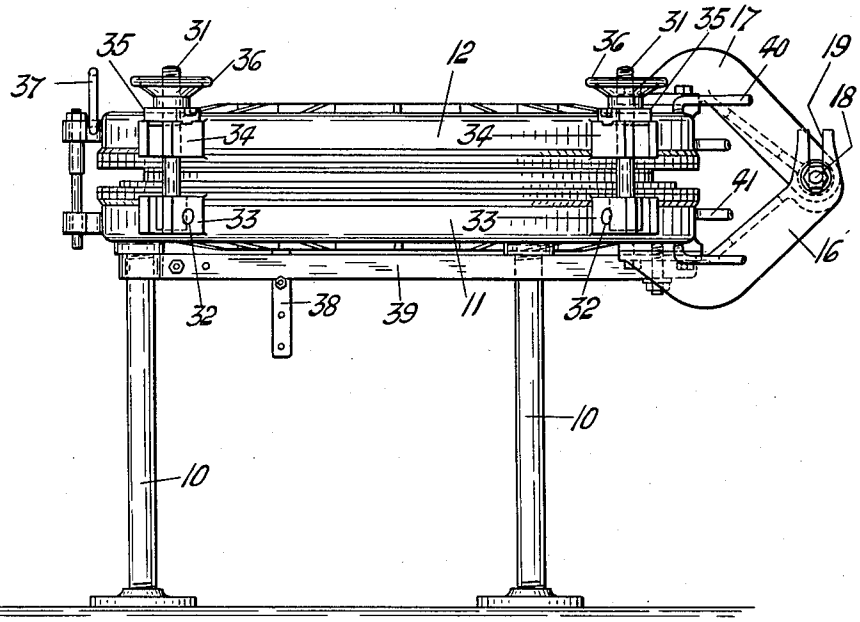


FIG-1

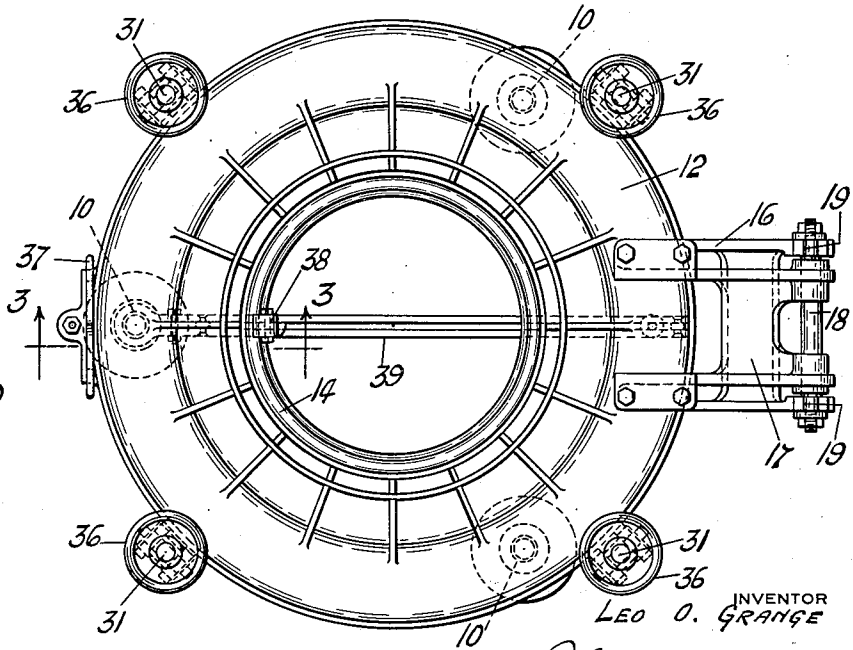


FIG-2

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RETREADER

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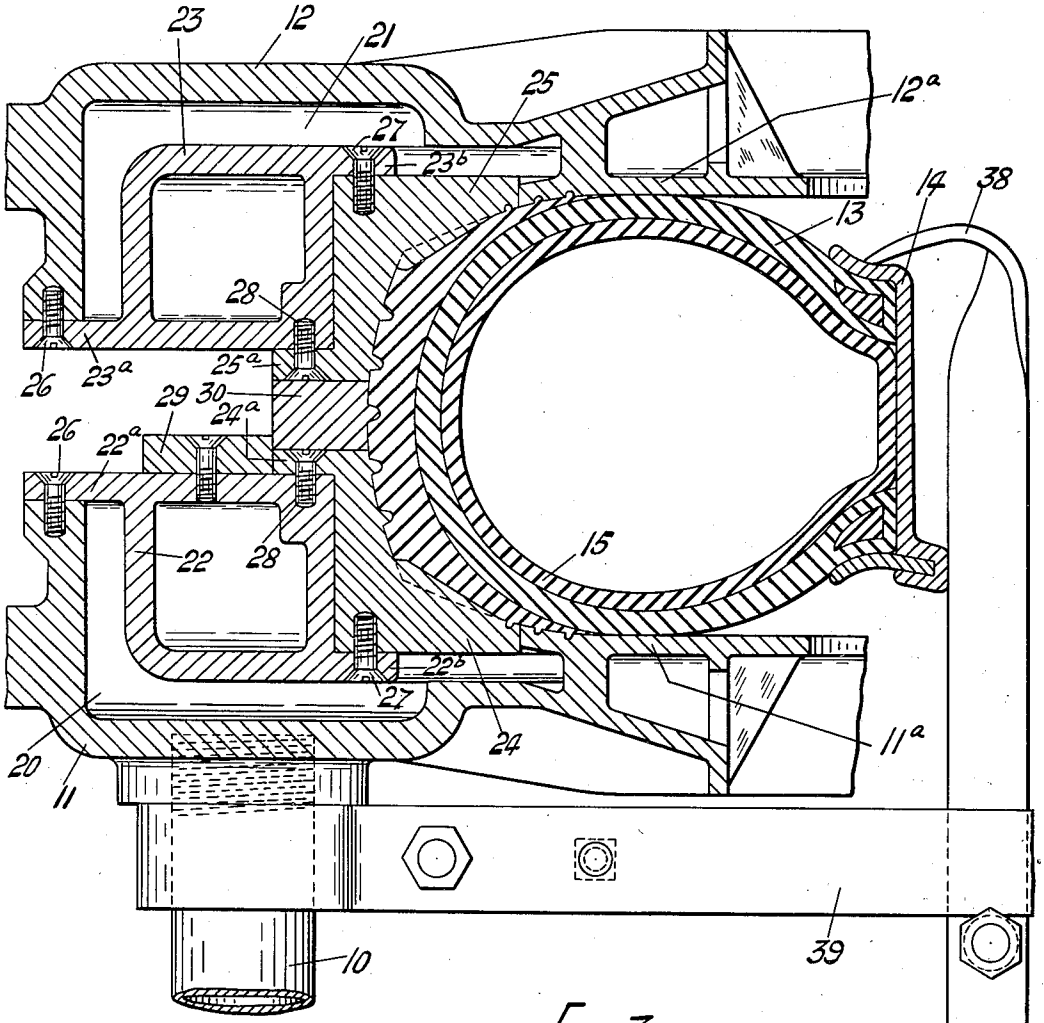


FIG. 3

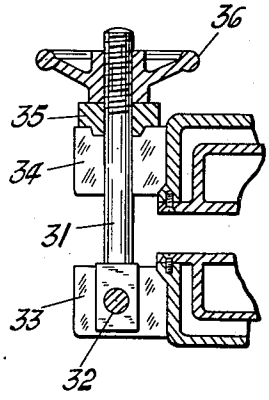


FIG. 4

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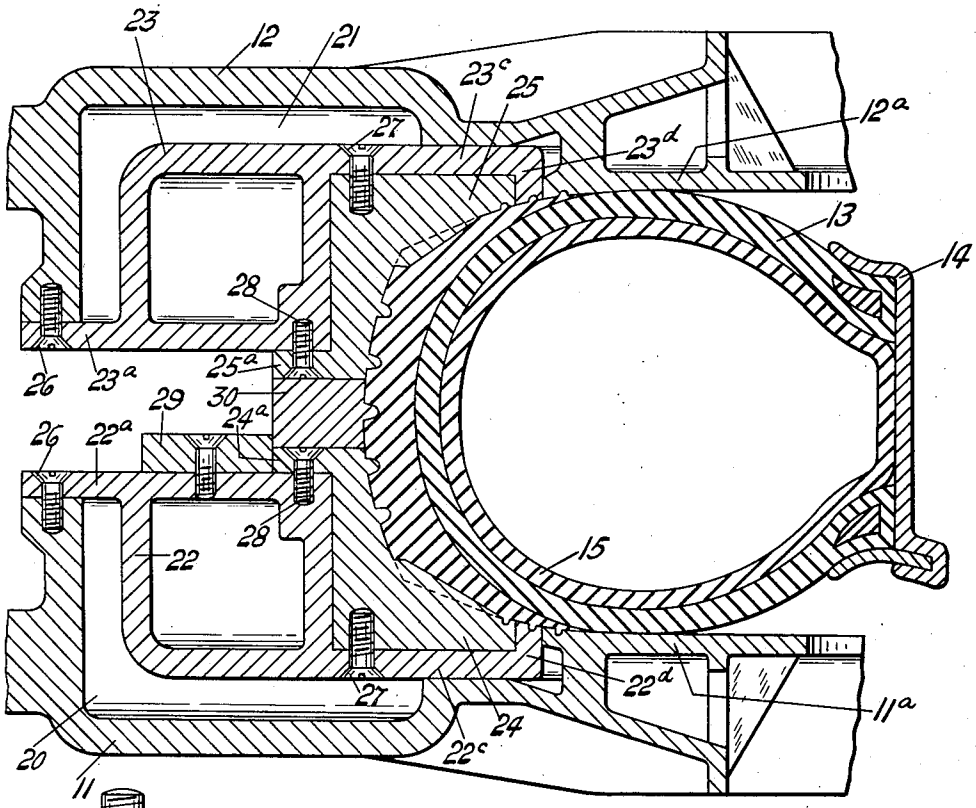


FIG. - 5

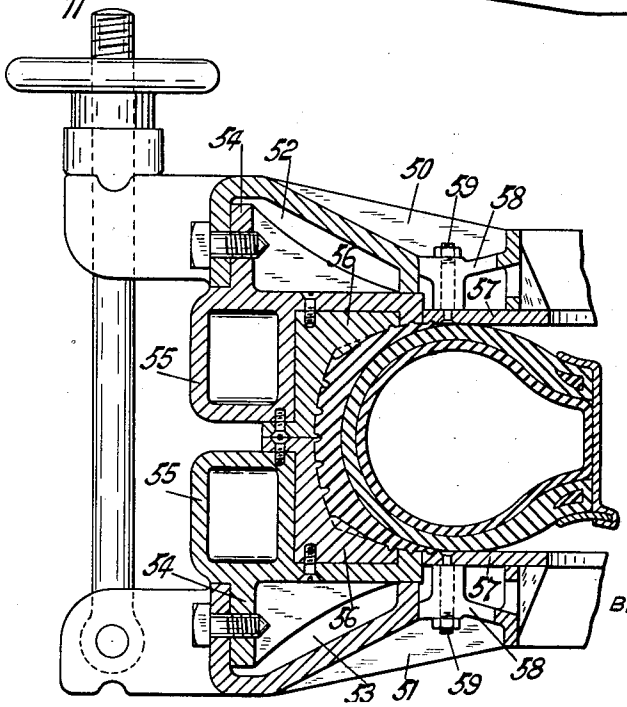


FIG. - 6

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RETREADER

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FIG.-8

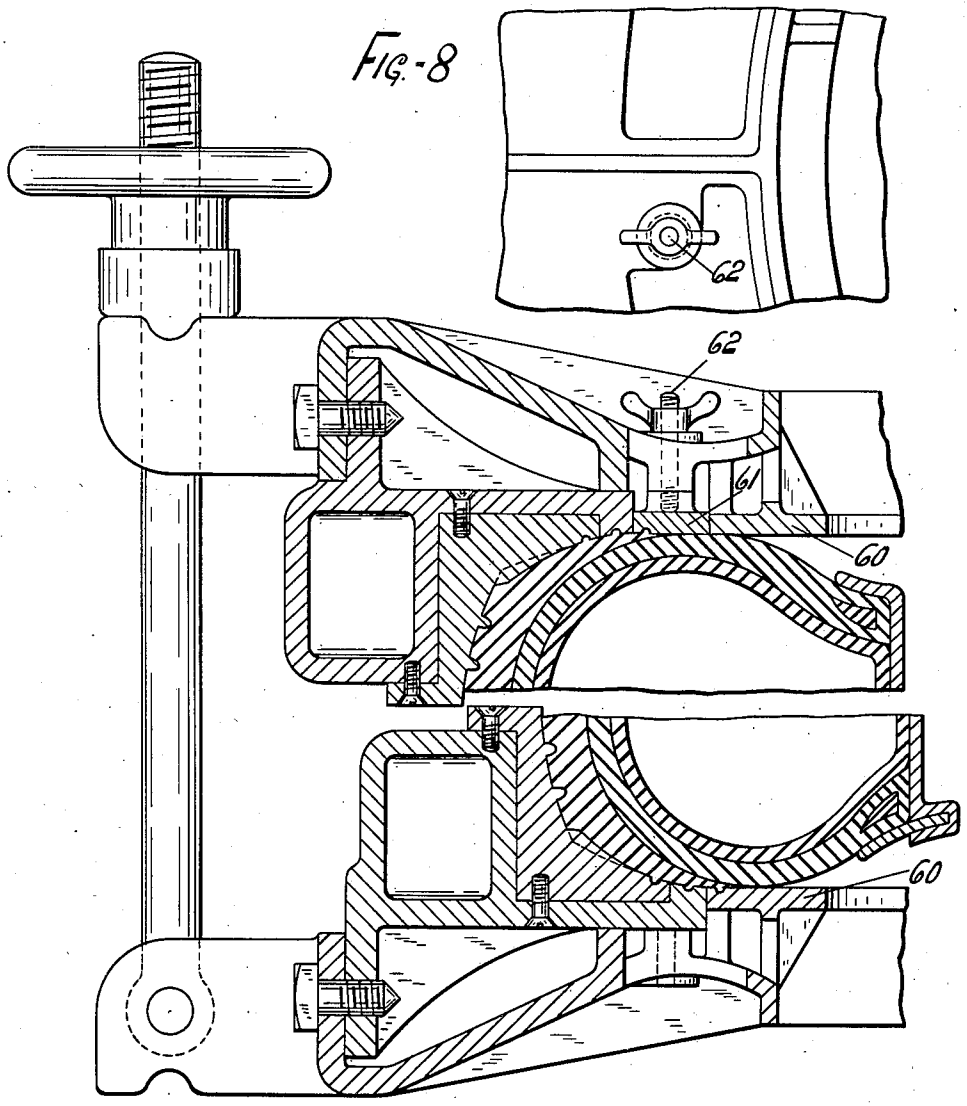


FIG.-7

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Patented Nov. 6, 1934 1,980,134

UNITED STATES PATENT OFFICE

1,980,134

RETREADER

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Application June 15, 1933, Serial No. 675,916

11 Claims. (Cl. 18—18)

This invention relates to vulcanizers and particularly to vulcanizers for use in the retreading of tires.

Heretofore, various types of full-circle retreaders have been provided for use by tire repairmen, and it has been suggested to provide retreaders of this type including circumferentially split two part molds for producing a retreaded tire without transverse markings and more nearly of the appearance of a new tire. Such retread vulcanizers of this type which have heretofore been produced have not been entirely satisfactory because of their excessive weight and cost, inefficient heating, lack of ease and flexibility in using the equipment for different sizes of tires etc.

The general purpose of the present invention is to provide a light economically constructed retreading unit including a two part circumferentially split matrix member capable of being quickly raised to a vulcanizing temperature and efficiently heated during vulcanization and adapted for easy replacement or adjustment for retreading tires of different sizes.

The foregoing and other purposes of the invention are attained in the vulcanizer illustrated in the accompanying drawings and described below. It is to be understood that the invention is not limited to the specific form thereof shown and described.

Of the accompanying drawings,

Figure 1 is an elevation of a retreader embodying the invention;

Figure 2 is a plan thereof;

Figure 3 is an enlarged radial section through the retreader on line 3—3 of Figure 2;

Figure 4 is a section through the vulcanizer at one of the clamping bolts;

Figure 5 is a view similar to Figure 3 of a modified form of the invention;

Figure 6 is a view similar to those of Figures 3 and 5 of another form of the invention;

Figure 7 is a view similar to Figure 6 of another embodiment of the invention, the view being two half-sectional showings of a structure with and without a skirt spacer ring; and

Figure 8 is a fragmentary top plan view of the device shown in Figure 7.

Referring to the drawings, the numerals 10, 10 designate suitable supports for one annular vulcanizer section 11 with which the other annular vulcanizer section 12 is adapted to mate to enclose the tread and side walls of a tire 13 mounted on a rim 14 with an enclosed inflated pressure tube or bag 15. The section 11 may have arm 16 on which an arm 17 connected to section 12 may be pivoted as at 18, the pivot 18 preferably being adjustable in slots at 19 to adapt the retreader sections with different matrices, spacers, etc., to be swung into proper mating cooperation.

The skirt portions 11^a and 12^a of the vulcanizer sections may be constructed similarly to those of the retread vulcanizer described and claimed in Patent No. 1,834,899, issued December 1, 1931, and which will not be further described herein but the body portions of the vulcanizer sections instead of being arranged to fit in the central opening of an annular vulcanizer chamber are formed with annular chambers respectively at 20 and 21 outwardly of the skirt portions 11^a and 12^a to receive hollow annular vulcanizer heating rings 22 and 23 therein on which rings the tread matrix members 24 and 25 are directly mounted to receive the heat therefrom. The rings 22 and 23 may have outer peripheral flanges 22^a and 23^a thereon by which they may be suitably secured to the edges of the vulcanizer sections to be removably mounted therein as by means of screws 26, 26 and the rings may have inner peripheral flanges 22^b and 23^b thereon to which the matrix members 24 and 25 may respectively be secured removably as by screws 27, 27. The matrix members 24 and 25 may have outer peripheral flanges 24^a and 25^a by which they may be secured to the inner faces of the heating rings 22 and 23 as by screws 28, 28. A mold registering ring 29 may be secured to the face of one heating ring (for example ring 22) to guide one matrix by engagement with the flange portion (such as 24^a) into registry with the other or to hold a tread matrix spacing ring 30 in proper registry in the matrix as shown.

The vulcanizer sections may be clamped together during vulcanization of a tire by clamp bolts 31, 31 pivoted at 32 on lugs 33 on one vulcanizer member and adapted to be swung into cooperation with bifurcated lugs 34 on the other mold section and having thereon clamp plates 35 adapted to engage with lugs 34 and clamp wheels 36 threaded on the bolts for drawing the vulcanizer sections tightly together.

To facilitate opening the vulcanizer the section 12 may have a loop 37 thereon which may be engaged by a chain block hook (not shown) to pull the section 12 off the section 11. In order that the tire shall be retained in the vulcanizer section 11 upon opening of the vulcanizer from which section it is most effectively removed after the vulcanizer is opened, a hook member 38

may be arranged to engage over the rim 14, said hook member being adjustable along a diametral track 39 to be engaged at will over different sizes of rims and to be moved centrally of the vulcanizer to permit insertion and removal of the tires being retreaded.

A heating medium may be introduced to the heating rings 22 and 23 through suitable piping as at 40 and 41.

In Figure 5, a modified form of the invention is shown with parts similar to the form of the invention previously described and having the same reference characters with the exception of the inner flanges of the heating rings 22 and 23 which are shown at 22^c and 23^c and are extended inwardly and formed with axial flanges 22^d and 23^d for embracing and protecting from injury the inner edges of the aluminum matrix members 24 and 25.

The mode of using the retreader will be readily understood by the skilled artisan. Heating rings and associated matrices of the desired sizes, either with or without the matrix spacer ring, may be assembled with the vulcanizer sections as shown. A tire on a rim is placed on one vulcanizer section and the vulcanizer is enclosed about the tire as shown. The tire may then be inflated under considerable pressure while heat is supplied to the heating rings. The tire tread is thus vulcanized under heat and pressure for the required period. The vulcanizer is then opened, the hook being employed to hold the tire on the lower section from which it is thereupon removed.

In the form of the invention shown in Figure 6, the vulcanizer sections 50 and 51 are formed with circumferential grooves at 52 and 53 on their mating faces arranged to receive vertical circumferential flanges 54, 54 on heating rings 55, 55. These heating rings may have matrix sections 56, 56 secured thereto similar to the construction in Figure 5. In this form of the invention much less metal is used in the vulcanizer sections, the grooves in which receive only the single attaching flanges of the heating rings.

As shown in Figure 6, the skirt portions 57, 57 of the vulcanizer sections may be removably and replaceably secured to the vulcanizer skirts 58, 58 as by bolts 59 whereby skirt portions of different widths may be employed for different sizes or shapes of tires.

The embodiment in Figures 7 and 8 is similar to that of Figure 6 with the exception that instead of using replaceable vulcanizer skirt members, the skirts are formed with fixed inner peripheral wall portions 60, 60, the outer peripheral edges of which the matrix-heating ring unit may directly abut as shown in the lower vulcanizer section in Figure 7, or the matrix-heating ring unit of another size may be mounted in the vulcanizer and the gap between the matrix-heating ring unit filled by a spacer ring 61 secured in place by bolts 62.

It will be apparent from the foregoing that applicant has provided a comparatively light, flexible, economical and highly efficient vulcanizer unit. The heating rings are directly connected with the matrix members to supply the heat where it is required with a minimum waste. The spaces about the heating ring serve to insulate to a degree from the atmosphere, and the heat tapers off in the separate matrix skirts in the effective manner disclosed and claimed in said Patent No. 1,834,899. Obviously modifications of the invention may be resorted to without departing from the spirit thereof or the scope of the appended claims.

What is claimed is:

1. A tire retread vulcanizer comprising mating annular sections having inner peripheral matrix skirt portions and annular chambers radially outwardly thereof in the mating faces of the vulcanizer sections, and units removably mounted in said chambers comprising annular heating rings receivable in said chambers in spaced relation to the walls thereof and having means for securing them in supporting engagement with the walls of said chambers, and matrix members removably secured directly to the inner peripheries of said heating rings and adapted to mate and to form a tire tread mold in cooperation with said matrix skirt portions.

2. A tire retread vulcanizer comprising mating annular sections having inner peripheral matrix skirt portions and annular chambers radially outwardly thereof in the mating faces of the vulcanizer sections, and units removably mounted in said chambers comprising annular heating rings receivable in said chambers and having means for securing them in supporting engagement with the walls of said chambers, and matrix members removably secured directly to the inner peripheries of said heating rings and adapted to mate and to form a tire tread mold in cooperation with said matrix skirt portions.

3. A tire retreading vulcanizer including cooperating annular vulcanizer sections having inwardly extending skirts and units each comprising an annular heating unit, and an annular matrix member removably mounted on each of said vulcanizer sections radially outwardly of said skirts, said skirts having portions forming continuations inwardly of said matrix.

4. A tire retreading vulcanizer including cooperating annular vulcanizer sections having inwardly extending skirts, a heating ring removably mounted on each section outwardly of said skirts, a matrix section for each vulcanizer section, and means for securing a matrix section in direct contact with said heating ring, said skirts providing inward continuations of said matrix section.

5. A tire retreading vulcanizer as set forth in claim 3, said skirt portions contacting with and extending radially inwardly from said units, said skirt portions being removably and replaceably mounted on the skirts of the vulcanizer sections.

6. A tire retreading vulcanizer including annular vulcanizer sections and annular matrix sections removably and replaceably carried thereby, said vulcanizer sections having skirt portions forming continuations of said matrix radially inwardly of the vulcanizer, said skirt portions being removably and replaceably supported on said vulcanizer sections whereby the skirt portions may be changed to cooperate with different matrix sections to retread tires of different sizes or shapes.

7. A tire retreading vulcanizer as set forth in claim 3, in which are skirt portions for contacting with and extending inwardly from said units of a certain size, and removable skirt spacer rings for filling the gaps between said skirt portions and said units of a different size.

8. A tire retread vulcanizer including annular vulcanizer sections and annular matrix sections removably and replaceably carried thereby, said vulcanizer having skirt portions for forming continuations of said matrix sections inwardly of the vulcanizer, said skirt portions comprising a fixed portion for cooperating with a matrix of one size,

and replaceable skirt spacer rings adapted to be secured between said fixed skirt portions and a matrix of another size.

9. A tire retread vulcanizer comprising mating annular sections having inner peripheral matrix skirt portions and annular chambers radially outwardly thereof in the mating faces of the vulcanizer sections, and units removably mounted in said chambers comprising annular heating rings receivable in said chambers in spaced relation to the walls thereof and having means for securing them in supporting engagement with the walls of said chambers, and matrix members on the inner peripheries of said heating rings and adapted to mate and to form a tire tread mold in cooperation with said matrix skirt portions.

10. A tire retread vulcanizer comprising mating annular sections having inner peripheral matrix skirt portions and annular chambers radially outwardly thereof in the mating faces of the vulcanizer sections, and units removably mounted in said chambers comprising annular heating rings receivable in said chambers and having means for securing them in supporting engagement with the walls of said chambers, and matrix members on the inner peripheries of said heating rings and adapted to mate and to form a tire tread mold in cooperation with said matrix skirt portions.

11. A tire retreading vulcanizer including annular vulcanizer sections and annular matrix sections removably and replaceably carried thereby, said vulcanizer sections having skirt portions forming continuations of said matrix radially inwardly of the vulcanizer, said skirt portions being removably and replaceably supported on said vulcanizer sections.

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