

June 19, 1928.

H. J. STEAD

1,674,575

APPARATUS FOR STRETCHING AND SHAPING RIMS

Filed Dec. 8, 1924

2 Sheets-Sheet 1

FIG. 1.

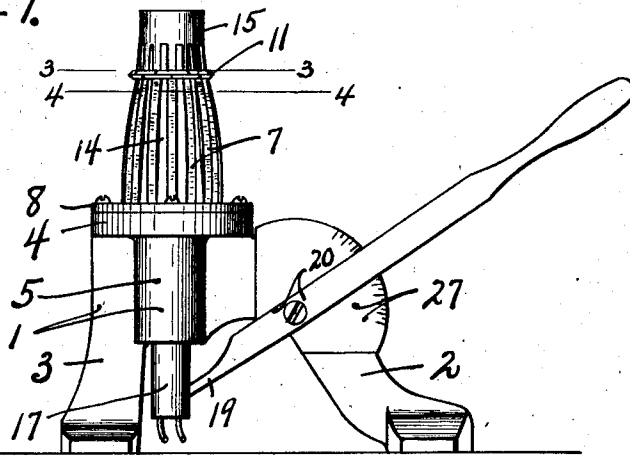
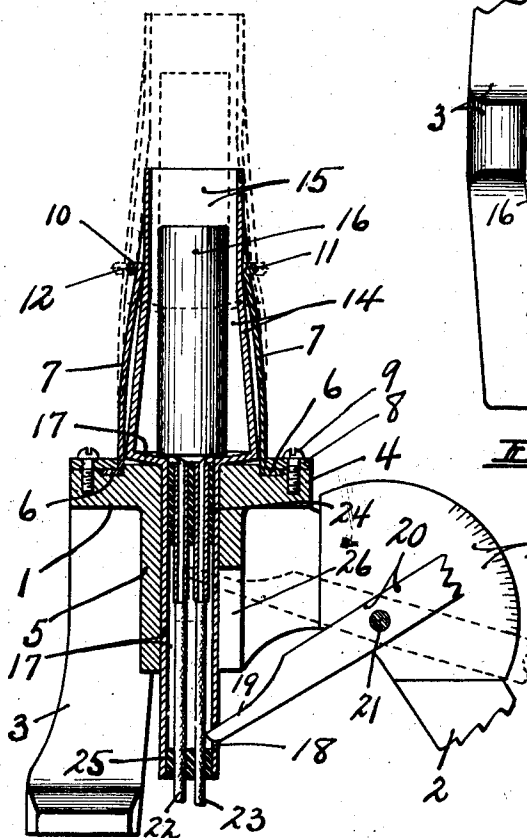


FIG. 2.



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FIG. 3.

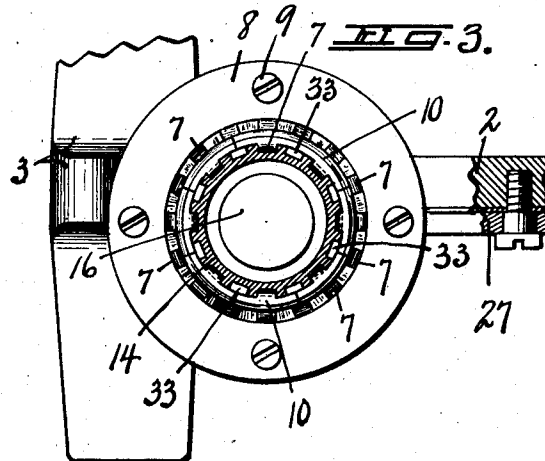
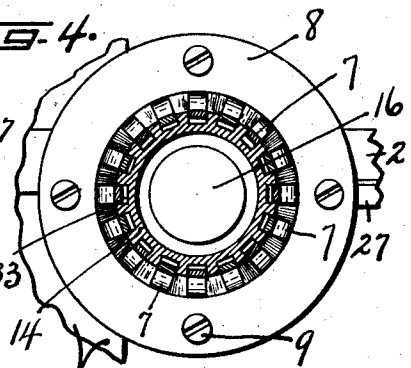


FIG. 4.



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2 Sheets-Sheet 2

FIG. 6.

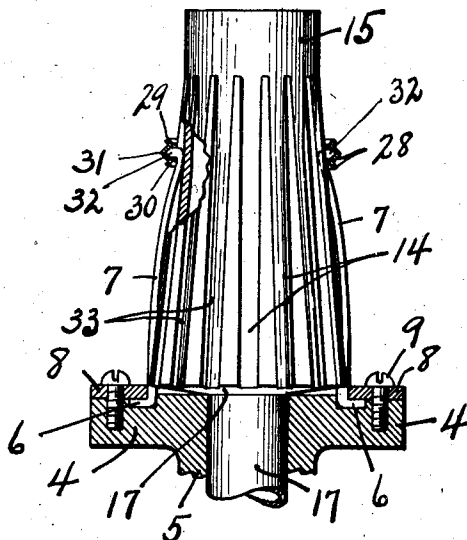


FIG. 7.

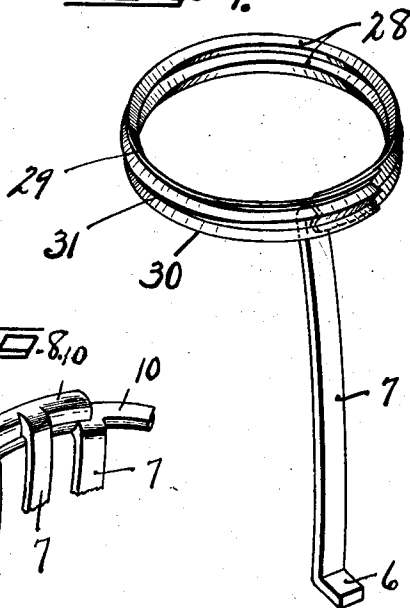


FIG. 5.

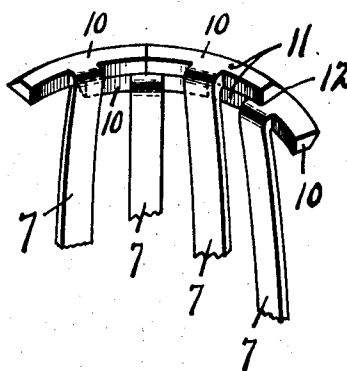
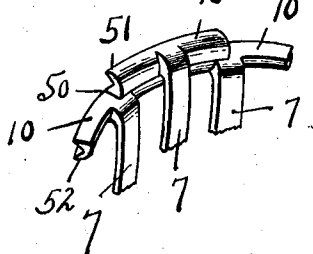


FIG. 8, 10.



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APPARATUS FOR STRETCHING AND SHAPING RIMS.

Application filed December 8, 1924. Serial No. 754,648.

This invention relates to a certain new apparatus for stretching and shaping rims for receiving lenses, altho adapted for shaping and stretching rings for any purpose when they are formed of suitable material, such as celluloid, xylonite, tortoise shell, rubber, etc.

The main object of the invention is the production of an apparatus by means of which celluloid or other rims for lenses formed of suitable material, as above described, may be rapidly and efficiently shaped and stretched to proper size and form, accompanied by preliminary heating of the rim, rendering it readily susceptible to shaping and stretching; and all with a minimum of ease and labor.

Other objects and advantages relate to the details of the structure, all as will more fully appear from the following description, taken in connection with the accompanying drawings, in which:—

Figure 1 is an elevation of an apparatus of this invention.

Figure 2 is a vertical sectional view of the same.

Figure 3 is a section on line 3—3, Figure 1.

Figure 4 is a section on line 4—4, Figure 1.

Figure 5 is a view of a portion of the expansible ring and the flexible fingers supporting the same, looking at the interior of the ring.

Figure 6 is a view of a slightly modified form of expansible ring.

Figure 7 is a perspective view of the ring of Figure 6 with the finger that is rigidly secured to the ring.

Figure 8 shows a slightly modified form of the sectional expansible ring.

The apparatus as shown comprises a base —1— having a front leg or standard —2— and a rear leg or standard —3—, the former being preferably inclined forwardly and having its foot portion disposed some distance in front of the table or head —4— constituting a portion of the base, and preferably of circular form, and disposed above the rear standard —3—. The base also includes a hollow vertically disposed cylindrical part —5— coaxial with the table —4— and opening upwardly through the table, the lower end of the cylinder being disposed some distance above the bottom of the legs —2— and —3—. The table or head —4— is formed with a circular recess or depression

concentric with the opening through the cylinder —5—, and the flanges or feet —6—, of a plurality of similarly formed and shaped resilient fingers —7— arranged in this recess, and of a thickness substantially equal to the depth of the recess, and are confined therein by means of a ring —8— that extends across the feet —6— of the fingers, and is secured in any suitable manner, as by screws —9— to the table —4—. The spring fingers —7— are preferably as shown, slightly bowed outwardly at their central portions and preferably incline inwardly toward their upper portions so that the circle determined by the upper portion of the spring fingers is of somewhat less diameter than the circle determined by the spring fingers at their bases.

Each spring finger at its upper end carries, as perhaps best shown in Figure 5, a segmental portion —10— of a sectional ring —11—, which ring is adapted to receive the celluloid lens rim, and for this purpose the outer edge of the sectional ring in the completed form is substantially V-shaped, or oppositely beveled for receiving the inner grooved surface of the lens-rim as usually formed.

As here illustrated, and in order to maintain at all times the continuity of the sectional rim, each of the segmental portions —10— constitute a symmetrical one-half of its portion of the rim, one being placed upon the other vertically so as to constitute a complete vertical rim section. As illustrated, the segmental sections are of trapezoidal form, having their two horizontal surfaces substantially parallel, their interior surface disposed at substantially right angles to the two horizontal surfaces and the outer surface inclined at an angle to the horizontal surface, the cooperating outer surfaces of the segmental sections which unite to form a complete ring portion, being inclined in opposite directions so as to produce a beveled edge —12— described.

Preferably, as illustrated, alternate spring fingers —7— support the lower segmental ring sections and the other alternate spring fingers —7— support the upper segmental sections —10—, and in that relation the upper and lower segmental sections break joints, the central portion of an upper section being directly over a joint between two lower sections, and the central portion of

a lower section being directly under the joint between two upper sections —10—. The sectional ring so formed is normally small enough to receive any desired lens rim.

For the purpose of spreading the segmental sections —10— so as to enlarge the sectional ring —11— formed as described, there is a conical or tapered member —14— arranged within the resilient fingers —7— and of circular form and horizontal cross-section as here illustrated, and gradually increasing in diameter toward its lower end so that when pushed upwardly through the spring fingers —7— it will spread the segmental sections —10— and increase the diameter of the sectional ring —11—, thereby spreading and shaping the lens-rim mounted on the segmental ring. The tapered member —14— may have a substantially cylindrical upper portion —15— that normally projects above the sectional ring for the purpose of increasing the ease of operation of the structure, and for constituting with the tapered member —14— a housing for an electrical heating element —16— of ordinary and well-known construction. The tapered member —14— has an annular base —17— adapted to normally rest upon the table —4—, the base being integral with or connected at its inner end to a depending tube or tubular part —17— extending through the cylinder —5—, and having an opening —18— in its periphery for the reception of the end —19— of a lever —20— pivoted at —21— on the base —1—. The insulated conductors —22— and —23— constituting a portion of the electric circuit for the heating element —16— may pass through cylindrical blocks —24— and —25— arranged in the upper and lower portions respectively of the tube —17—. The cylinder —5— may, as perhaps best shown in Figure 2, be formed with a vertical recess —26— in line with the end —19— of the lever —20— and into which the end —19— may move for effecting the desired elevation of the tube —17—, and thereby the tapered member —14— to spread the sectional ring —11— to an extent desired.

A dial or graduated scale member —27— may be secured to or formed in connection with the base —1— as illustrated so that a lens-rim mounted on the sectional ring —11— may be spread a predetermined amount as indicated by the position of the lever —20— with respect to the graduations on the dial —27—.

It will be obvious that the spreading of the ring —11— is effected by pressing down upon the handle of the lever —20— whereby the member —14— is elevated within the ring.

Preferably the lens-rim should first be placed upon the ring —11—, the heating element turned on to properly heat the lens

rim and then the tapered member —14— may be elevated to stretch the rim a desired extent, as indicated by the dial. In Figure 8 there is illustrated a modified form of sectional ring in that each section has its outer edge formed with a substantially V-shaped groove so that when the sections are assembled vertically, they form a central beveled portion —50— for receiving the lens-rim and opposite shoulders —51— and —52— for supporting the rim on the central beveled edge.

In Figs. 6 and 7, I have illustrated a perhaps preferred embodiment of the invention in that in the form there illustrated, the ring —28— forms at all times a continuous uniform support for the interior of the lens-rim, and at the same time has opposite flanges —29— and —30— for engaging the opposite edges of the lens-rim to properly and uniformly support the lens-rim upon the intermediate V-shaped or beveled portion —31—. In this structure, the expansible ring is preferably formed of a single strip of very thin spring steel rolled or otherwise shaped into substantially W-form in vertical section, and with the ends of the ring overlapped a sufficient distance so that any expansion of the ring that can be effected by the enclosed tapered member —14— will not separate the over-lapping portions so as to leave a space between them.

In this construction, in order to permit expansion of the vertically W-shaped horizontally disposed ring, but one end of the ring is rigidly connected to a resilient finger —7—, the remaining portions of the ring being free to slide with respect to the upper ends of the enclosed fingers, and as here illustrated, preferably the upper ends of all of the fingers are formed with outwardly extending flanges —32— that fit within the beveled portion —31— of the ring, and support the same, but are unconnected to the ring so that the ring may slide over them as it expands under the section of the tapered member —14—.

Preferably, as illustrated in all of the figures, the tapered member —14— is formed with vertical grooves —33— in which the upper ends of the flexible fingers —7— are positioned so that the fingers are at all times guided in their expanding movement and are maintained in properly spaced relation.

In the construction of Figures 5 and 6, the single resilient finger shown in Figure 6 is sufficient to constitute a support for the ring, and all or a portion of the remaining resilient supporting finger may be omitted, if desired, altho it is preferable to retain a plurality of fingers so that the ring does not contact directly with the member —14—, which would tend to move the ring axially.

It will be obvious that altho the expansible rings —11— and —28— here shown are of

circular form, they may be of oval, elliptical or any desired form for use in expanding or shaping lens-rims of desired form, with the understanding that the tapered member —14— should be of an oval, elliptical, or other shape, conforming with the shape of the expansible ring, whether sectional or continuous that is to be spread or expanded by a tapered member of predetermined form.

Altho I have shown and described specific constructions as illustrative of perhaps preferred embodiments of my invention, I do not desire to restrict myself to the details of the same, as various changes and modifications may be made within the scope of the appended claims.

I claim:

1. In an apparatus of the class described, a base including a table at the upper portion of the base, a flexible finger mounted on the table, an expansible lens-rim expanding ring in connection with the flexible finger, a tapered member mounted on the base and movable axially through the ring, a lever pivoted on the base and engaged with a portion of the tapered member for effecting such axial movement.

2. In an apparatus of the class described, a base including a table at the upper portion of the base, a flexible finger mounted on the table, an expansible lens-rim expanding ring in connection with the flexible finger, a tapered member mounted on the

base and movable axially through the ring, a lever pivoted on the base and engaged with a portion of the tapered member for effecting such axial movement, and a heating element disposed within the tapered member for heating the expansible ring.

3. An apparatus for stretching lens rims comprising a ring formed of over-lapping sections adapted to receive a lens rim, and means for sliding the sections one upon another to increase the size of the ring without removing them from overlapping relation.

4. An apparatus for stretching lens rims comprising a ring formed of over-lapping sections adapted to receive a lens rim, a flexible finger for each ring section and secured to its respective ring section, and means for flexing said fingers to expand the ring by sliding movement of the sections one upon another without breaking the continuity of the rim-expanding edge.

5. An apparatus for stretching lens rims comprising a ring formed of over-lapping sections adapted to receive a lens-rim, a flexible finger for each ring section and secured to its respective ring section, means for flexing said fingers to expand the ring by sliding movement of the sections one upon another without breaking the continuity of the rim-expanding edge, and a heating element within the expanding means.

In witness whereof I have hereunto set my hand this 4th day of December, 1924.

HAROLD J. STEAD.