Feb. 12 , 1924. 1,483,509

L. W. BUGBEE

PROCESS OF MAKING FUSED BIFOCAL LENSES

Filed May 5, 1921

FIG. 1

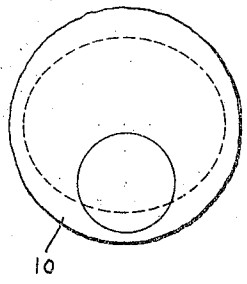


FIG. 2

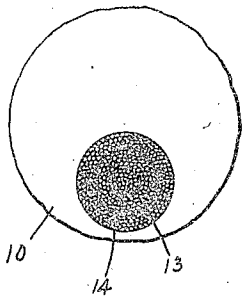


FIG. 3

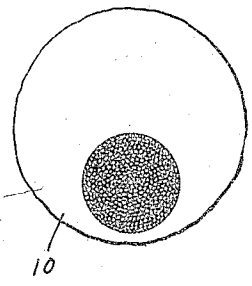


FIG. 4

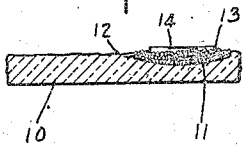


FIG. 5

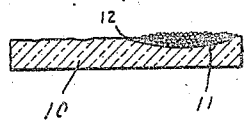


FIG. 6

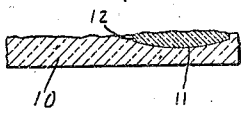
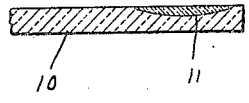


FIG. 7



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UNITED STATES PATENT OFFICE.

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PROCESS OF MAKING FUSED BIFOCAL LENSES.

Application filed May 5, 1921. Serial No. 467,141.

To all whom it may concern:

Be it known that I, LUCIAN W. BUGBEE, a citizen of the United States, and a resident of Indianapolis, county of Marion and State of Indiana, have invented a certain new and useful Process of Making Fused Bifocal Lenses; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings in which like numerals refer to like parts.

The object of this invention is to make a fused bifocal or Kryptok lens or blank in which the reading segment varies in character from its center to its circumference. This variation may be in the index of the glass so that there will be zones of varying focal power, or in graduating the color of said segment from center to circumference so as to make the same gradual. This invention enables one to make a fused bifocal lens having more than two portions of different indices, and with the indices graduated from the center of the reading segment to the margin of the lens, so as to be easy to the eye of the user of the lens, or with the colors of the various portions of the lens graduated so as to make the lens look well and be easy to the eye of the user.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims:

In the drawings, Fig. 1 is a plan view of a fused bifocal blank with the outline of the finished lens indicated by a dotted line. Fig. 2 is a plan view of such a blank with the flint glass insert in the recess of the main portion of the lens shown in its position and condition when first placed in said recess. Fig. 3 is the same after the partitions have been removed from the recess. Fig. 4 is a central section of Fig. 2. Fig. 5 is a central section of Fig. 3. Fig. 6 is the same as Fig. 3 after fusing. Fig. 7 shows a lens after it is ground and polished.

The process consists in providing the usual crown glass main portion 10 of a lens of this type with a recess 11 made in any desired way, but preferably with a wall or shoulder 12 at the margin of said recess. Then there is placed in said recess a plurality of annular or ring-like partition bands 13 and 14 concentric to said recess As here shown there are two of said rings used which divide the space in said recess into three concentric zones and of substantially the same width.

Then different varieties or qualities of flint glass or glass of a higher index of refraction than the main portion of the lens are made or obtained. The selection of this flint glass should vary gradually in index of refraction from a relatively low index to as high an index as desired. The different qualities of flint glass are separately broken into small particles and each quantity of particles is separately formed in the nodules, preferably by revolving them in a container in which they grind the sharp edges away and leave rounded nodules. Then the dust and small irregular particles are sifted out from among the nodules.

The nodules of the flint glass having the highest index of refraction are placed in the center band or ring and those of the glass having the next lower index of refraction are placed in the middle band or ring, and those of a still lower index are placed in the recess surrounding the outer ring or band. This forms three zones instead of two and the nodules are heaped up to a level higher than the main body of the lens, as shown in Fig. 4.

The next step in the process is to remove the rings or bands, which, by the way, are made of metal or any suitable material, and that leaves a mass of nodules substantially as shown in Figs. 3 and 5. The same then is subjected to sufficient heat to fuse the nodules of flint glass together and fill the recess and secure the same to the crown glass portion of the lens, as shown in Fig. 6. After that the lens is ground and polished, as shown in Fig. 7. While plano lens blanks are shown in the drawings, the invention is not limited to any particular form of lens.

The invention claimed is:

1. In the process of making fused bifocal lenses, placing upon the main portion of the lens glass particles arranged in concentric zones differing in their indices of refraction, and then fusing the same to the main portion of the lens.

2. The process of making fused bifocal lenses, which process consists in forming the main portion of the lens with a recess for the reading segment, placing in said recess concentric zones of nodules of glass having different indices of refraction, sub-

jecting the same to heat for fusing the nodules of glass together and to the main portion of the lens, and grinding and polishing the same.

3. The process of making fused bifocal lenses, which process consists in forming the main portion of the lens with a recess to receive the reading segment, placing in said recess concentric partition bands, leaving annular chambers in and surrounding said bands, filling said chambers with nodules of glass of different indices of refraction, removing said partition bands, fusing said nodules of glass together and to the main portion of the lens, and grinding and polishing the lens.

4. The process of making fused bifocal lenses, which process consists in forming the main portion of the lens with a recess to receive a reading segment, placing in said reading segment concentric partition bands which leave chambers in and around said bands, filling said chambers with nodules of glass of a higher index of refraction than the main portion of the lens and with the indices of said groups of nodules diminishing from the center to the main portion of the lens, removing said partition bands, fusing said glass nodules together into the main portion of the lens, and grinding and polishing the lens.

5. The process of making fused bifocal lenses, which process consists in forming the main portion of the lens with a recess to receive the reading segment, placing in said recess concentric partition bands, leaving chambers in and around said bands, crushing different bodies of glass having a higher index of refraction than the main portion of the lens into particles, treating said particles to round them into nodules, placing in each of said chambers nodules of a single index and with the indices of the series of chambers diminishing from the center to the main portion of the lens, removing said partition bands, fusing said nodules together and to the main portion of the lens, and grinding and polishing the same.

In witness whereof, I have hereunto affixed my signature.

LUCIAN W. BUGBEE.