Sept. 22, 1925. 1,554,933

J. C. WELLS

LENS

Original Filed April 18, 1922

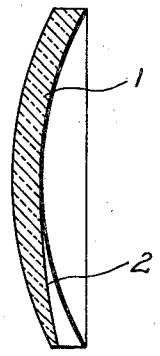



Fig. 1

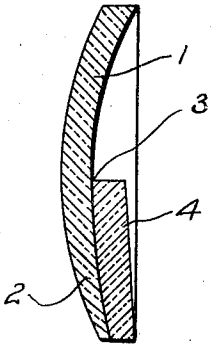



Fig. 2

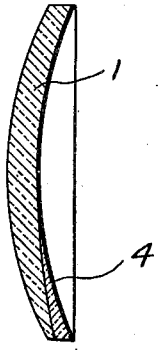



Fig. 3

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# UNITED STATES PATENT OFFICE.

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## LENS.

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*To all whom it may concern:*

Be it known that I, JOEL C. WELLS, a citizen of the United States, residing at Southbridge, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Lenses, of which the following is a specification.

This invention relates to new and useful improvements in lenses and more particularly to bifocal lens, the main object of the present invention being the provision of a lens of this character which can be produced more nearly achromatic than at the present time and also obtain better color correction.

Another object of the invention is the provision of a lens of the above type wherein the main body blank of the lens is of a high refractive index with a low refractive index button put on the concave side of the blank so that when the two parts are fused and ground down to the proper curve it will eliminate the usual prismatic effect between the reading and distance portion of the lens.

With the above and other objects in view the invention consists in the novel features of construction, the combination and arrangement of parts hereinafter more fully set forth, pointed out in the claims and shown in the accompanying drawings, in which—

Figure 1 is a longitudinal sectional view taken thru a lens blank minus the reading portion.

Figure 2 is a similar view showing the button or reading portion in position ready to be ground down, and

Figure 3 is a similar view showing the lens with the reading portion ground down to the concave surface of the main lens blank producing a substantially finished lens.

In the accompanying drawings I have illustrated various steps in producing a lens in accordance with my invention and attention is first directed to Figure 1 which illustrates a longitudinal sectional view of the main lens blank generally indicated at 1, said blank being provided with the recess 2 at its lower edge for receiving the button which constitutes the reading portion of the lens.

The recess 2 which is formed in the main lens blank is larger at the lower edge of the lens and tends to taper toward the concave surface of the lens blank 1 as it extends toward the center of the lens so that the termination of the recess which is indicated at 3 is disposed below the central portion of the lens blank 1. The lens blank 1 is preferably of barium crown or flint glass while the button 4 which constitutes the reading portion of the lens is preferably of a relatively light glass and is fitted into the recess 2 as shown in Figure 2, said button being secured within the recess in any manner well known in the art of lens manufacture.

After the button 4 has been fitted into the recess 2 the lens is ground down from the state illustrated in Figure 2 to a substantially finished lens as shown in Figure 3 wherein it will be noted that the upper curved edge of the button or reading portion tapers directly into the concave surface of the main lens blank 1 thereby forming a finished lens in this manner and wherein the blank 1 is of a high refractive index and the reading portion of a low refractive index attached to the concave surface of the high index blank. A lens is produced which will be more nearly achromatic and provide for better color correction than the lens produced in a similar manner at the present time.

In the present method of producing bifocal lenses it is the practice to form the recess 2 with the tapering portion 3 terminating to the edge of the lens with the thicker portion of the button disposed at a point removed from the center of the lens, but the objectionable feature in a lens of this character is the fact that a certain amount of achromatic condition is present at the junction between the reading and distance portion, and it is therefore one of the main objects of my invention to provide a lens wherein the extreme tapering portion of the button terminates directly into the concave curve of the lens so as to reduce to a minimum the prismatic effect generally noted when the vision of the eye passes from the reading portion to the distance portion and vice versa.

It will be obvious to those skilled in the art, that because of the reading portion being of a lower refractive index than the distance portion, the curvature of the recess 2 will have to be of a greater radius than that of the main blank surface, and it is most preferable that the recess be tangent to the curvature of the main blank as clearly shown in the drawings.

What I claim is:

1. A multifocal lens, comprising a major blank of glass of high index of refraction, having a concave inner surface and a con-

vex outer surface, said inner surface having a wedge shaped recess disposed below the center of the blank, the apex of the wedge pointing upwards and the widest portion of the wedge being located at the bottom, a wedge of glass of low index of refraction secured in the recess, the outer surface of the wedge insert being finished to the same curvature as the inner surface of the major blank, and the inner surface of the wedge insert being finished to the same curvature as the inner surface of the recess, as and for the purpose described.

2. A multifocal lens, comprising a major blank of barium glass, having a concave inner surface and a convex outer surface, said inner surface having a wedge shaped recess disposed below the center of the blank, the apex of the wedge pointing upwards, the widest portion of the wedge being located at the bottom, and a wedge of glass of low index of refraction secured in the recess, the outer surface of the wedge insert being finished to the same curvature as the inner surface of the major blank, and the inner surface of the wedge insert being finished to the same curvature as the inner surface of the recess, as and for the purpose described.

3. A multifocal lens comprising a major blank of glass of high index of refraction, a wedge shaped recess disposed below the center of the blank, the apex of the wedge pointing upwards and the widest portion of the wedge being located at the bottom, a wedge of glass of low index of refraction secured in the recess, the outer surface of the wedge insert being finished to the same curvature as the non-recessed portion of the major blank on the recessed side and the inner surface of the wedge insert being finished to the same curvature as the face surface of the recess.

JOEL C. WELLS.