

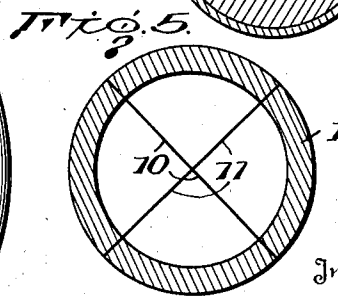
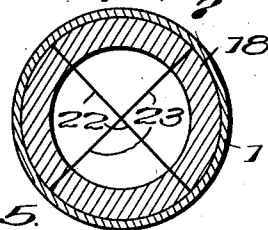
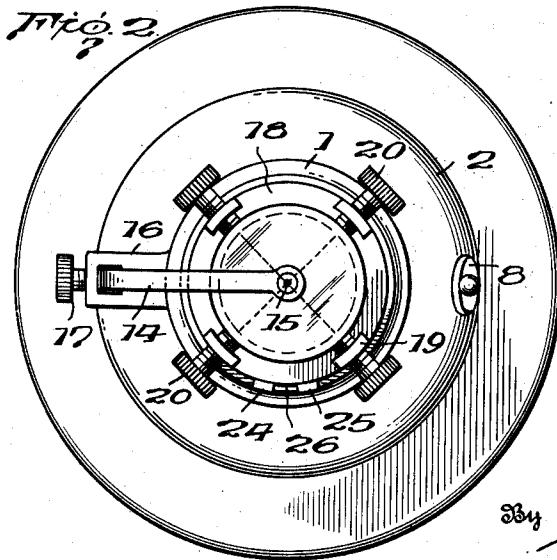
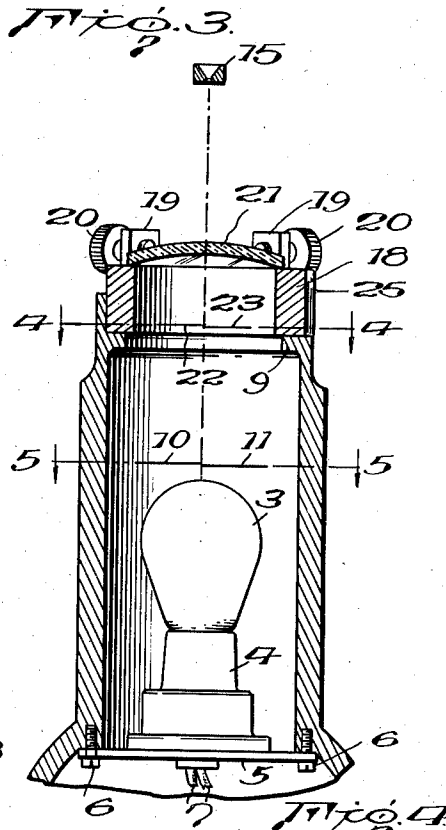
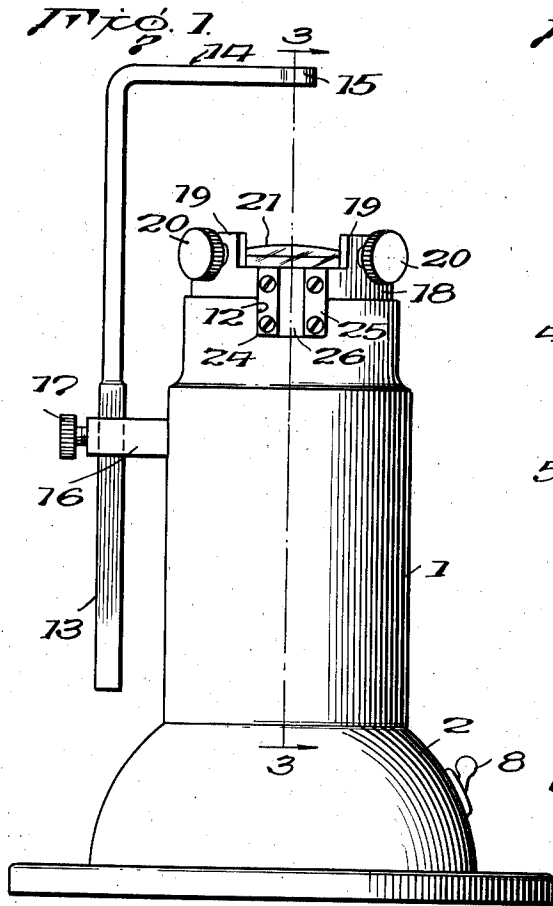
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A. GOLDERER
LENS BLOCKING DEVICE

2,301,035

Filed July 27, 1942

2 Sheets-Sheet 1



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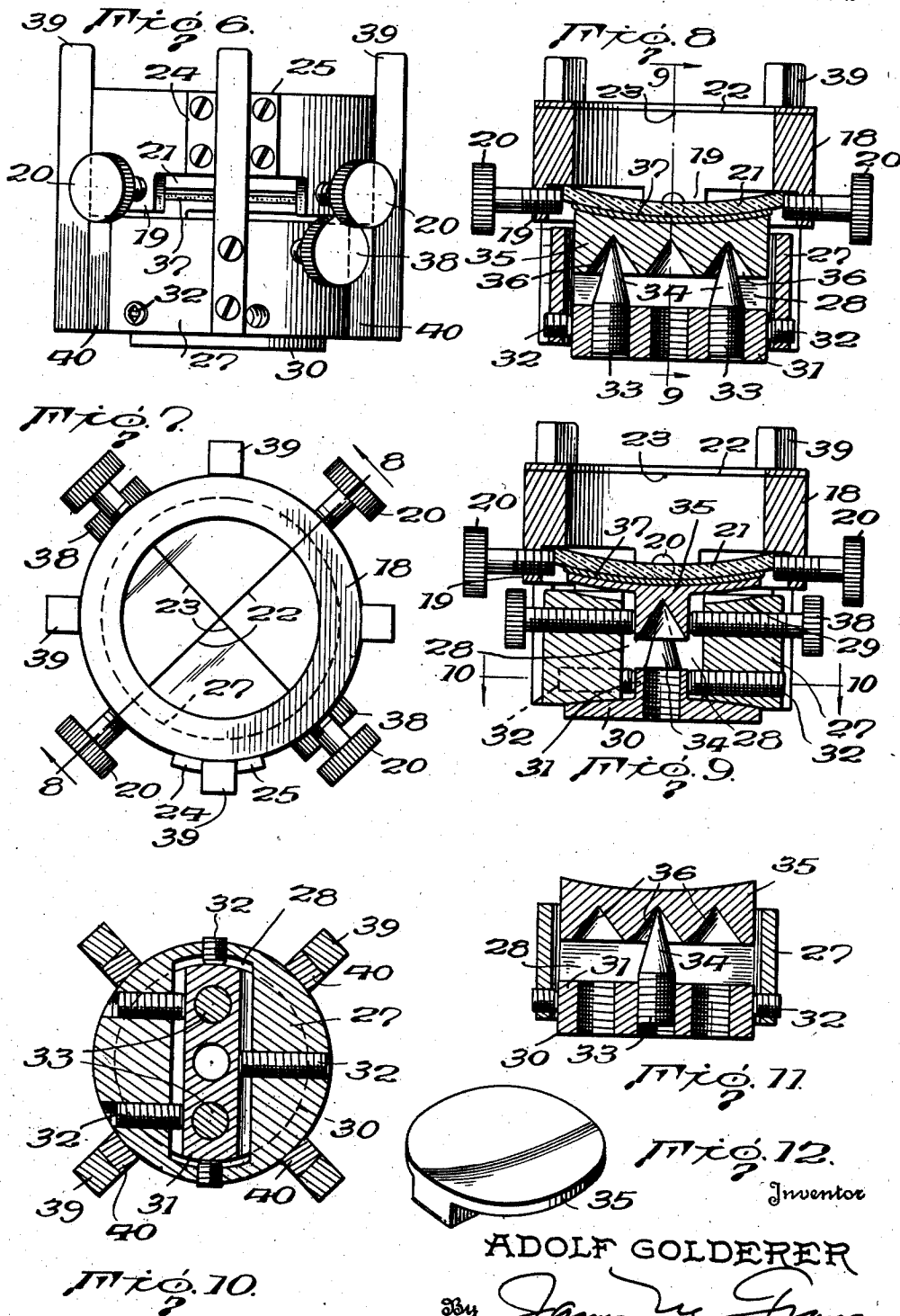
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,301,035

LENS BLOCKING DEVICE

Adolf Golderer, New York, N. Y.

Application July 27, 1942, Serial No. 452,558

5 Claims. (Cl. 51-277)

This invention relates to improvements in lens blocking apparatus and is more particularly concerned with improved means and method of blocking optical lenses.

One of the principal objects of the invention is to provide a lens blocking device which will serve effectively to remove "guesswork" in lens blocking procedure. Another object is to provide novel means for holding or gripping a lens blank in a proper, predetermined position, whereby the lens blank may be transferred into accurate alignment with, and secured to, a lens block while firmly held in said position.

Other objects and advantages of the invention will become apparent from the following description.

Referring now to the drawings wherein like reference characters refer to like parts throughout:

Figure 1 is a side elevation of the sighting and aligning device constituting a part of the present invention;

Figure 2 is a top plan view of the sighting and aligning device;

Figure 3 is a sectional view taken on line 3-3 of Figure 1;

Figure 4 is a sectional view taken on line 4-4 of Figure 3;

Figure 5 is a sectional view taken on line 5-5 of Figure 3;

Figure 6 is a side elevation of the assembled lens blocking device of the present invention;

Figure 7 is a top plan view of the assembled lens blocking device;

Figure 8 is a sectional view taken on line 8-8 of Figure 7;

Figure 9 is a sectional view taken on line 9-9 of Figure 8;

Figure 10 is a sectional view taken on line 10-10 of Figure 9;

Figure 11 is a detail showing a modification of the block holding device in unassembled position; and

Figure 12 is a detailed perspective view of a lens block.

Referring now to Figures 1, 2 and 3, the sighting and aligning device consists of a hollow, tubular standard 1 having an integral base 2. Within the walls of the standard 1 is a conventional incandescent lighting system consisting of an electric bulb 3 mounted in socket 4, the assembled bulb and socket resting on a supporting member 5 suitably affixed to the walls of standard 1 as by screws 6. Current is supplied to the system through leads 7 and is controlled by switch 8. The upper portion of the standard is provided with a circular, internally disposed collar 9 which serves as a support for the lens holding device, to be described in more detail hereinafter. Intermediate collar 9 and bulb 3 are mounted cross

hairs 10 and 11. These cross hairs are preferably of piano wire arranged in a horizontal plane and at right angles one to the other in such a manner that their intersection corresponds exactly to the center of the circle defined by the walls of standard 1. For proper alignment of the lens holding device the upper rim of standard 1 is recessed as at 12 to provide a slot to a depth corresponding to the upper surface of collar 9. Recess 12 is positioned and aligned, as shown, in the center of a quadrant formed by cross hairs 10 and 11.

The sighting mechanism comprises a vertically disposed arm 13 having an integral, horizontally disposed portion 14 fitted with a suitable eyepiece 15. Vertical arm 13 is adjustable in projection 16 by set screw 17. The described mechanism is so arranged, of course, that the eyepiece 15 rests directly over the intersection of cross hairs 10 and 11.

The lens holding device, in accordance with the present invention, consists of a ring member 18 having four upstanding lugs 19 spaced equidistant one from the other around the circle defined by the ring member 18. Lugs 19 are threaded to receive set screws 20 which serve to clamp lens blank 21 in properly aligned position. The positioning and aligning of the lens blank are to be described more particularly hereinafter. Within ring member 18 are positioned cross hairs 22 and 23, as shown, and upon the exterior surface of the ring member are mounted two lugs 24 and 25 defining therebetween a keyway 26. Lugs 24 and 25, which are spaced on the ring in the center of a quadrant formed by cross hairs 22 and 23, serve as a key for reception and alignment of the lens holding device in recess 12 of standard 1.

Referring now to Figures 6, 7, 8, 9 and 10, the block holding device consists of a circular base portion 27 hollowed out to form therein a rectangular-shaped recess 28. The upper surface of the base portion is hollowed out as at 29. Fitted at the bottom of the base portion 27 is a circular plug 30 having an integral, rectangular-shaped projection 31 extending up into recess 28. Projection 31 and depending plug 30 are adjustably held in position by means of a plurality of key-actuated screws 32. Projection 31 is also provided with two or more threaded block-supporting, key adjustable screws 33, conically tapered as at 34. In the case of the conventional cylinder lens two screws of the type illustrated are sufficient.

In practice, tapered members 34 support the conventional block 35 with its two or more conical depressions 36. As is known, the block 35 is usually coated with pitch, or other cementitious material, indicated at 37. The block may be held firmly in its supported position by means of set screws 38, but in most cases, this is unnecessary.

As a matter of fact, it has been found advantageous to allow for a certain rocking movement of block 35 about the pivots 34.

Exteriorly of the circular base portion are mounted four vertically disposed standards 39 arranged around the circumference of the circular base portion and spaced equidistant one from the other. Such an arrangement provides a structure wherein the center of a circle drawn through the centers of each of the standards represents, and is coincident with, the center of the circular base portion. It will be understood also, of course, that this center will coincide with the center of the block when mounted on tapered members 34. As shown in the drawings, the standards 39 are spaced from the circular base portion by means of shims 40. It is to be understood, however, that these standards could be made integral with the circular base portion. In the structure shown, the shims could be of different sizes so that the spacing of the standards could be adjustable to accommodate larger or smaller lens holding devices.

In Figure 11 there is shown an alternative construction found useful in the blocking of spherical lenses. In this modification, an additional block-supporting member 33 is provided and in practice this member is raised slightly above the level of the two members shown in Figures 8 and 9.

The lens blocking operation, in accordance with the present invention, is carried out as follows: First, the lens blank to be blocked is placed upon a conventional protractor to ascertain the focal center and the corresponding axes. The axis lines are then drawn on the lens blank through the optical center. The lens blank is then placed in the lens holder as shown in Figures 1, 2 and 3 and, through manipulation of set screws 20, the axis lines marked on the lens blank are roughly aligned with cross hairs 22 and 23 of the lens holding device. After the lens blank has thus been roughly centered in the lens holding device, the latter is transferred to the sighting and aligning device. This is done by permitting the key formed by lugs 24 and 25 to rest in depression 12. The bulb 3 is then illuminated by turning on switch 8 and the vertical arm 13 is adjusted to the proper horizontal level. The operator then looks through the eyepiece 13 and lines up the axis lines on the lens blank with cross hairs 22 and 23 of the lens holding device and cross hairs 10 and 11 of the sighting and aligning device. When the axis lines on the lens blank are so lined up, the set screws 20 hold the lens blank in the proper alignment. The lens holding device, along with the properly aligned lens blank, is then removed from the sighting and aligning device.

The conventional lens block is then placed on conical members 34. As pointed out, the construction of the parts is such that the center of the lens block will be the same as the center of a circle drawn through the center of standards 39. The pitch on the lens block 35 is then heated to a semi-fluid state and the lens blank is likewise heated to prevent cracking thereof. At this point, the lens holding device, with the lens blank properly aligned, is inverted and allowed to slip down onto the lens block through the medium of keyway 26 and a standard 39. In this way it will be seen that the optical center of the lens blank will rest upon, and coincide with, the center of the lens block. When the cementitious material on the lens block has become hardened and the

lens blank thoroughly adhered thereto, set screws 20 are loosened, the lens holding device removed and the lens blank properly centered on the block removed for conventional grinding operations.

What is claimed is:

1. A lens blocking device comprising a ring-like lens holder, means for adjustably holding a lens blank within the inner periphery of said ring-like lens holder, cross hairs mounted in said ring-like holder for alignment with predetermined optical center and axes indicia on the lens blank, a block holder, a block on said holder and means on said ring-like lens holder and on said block holder cooperating to mount the lens blank on said block in predetermined, desired position.

2. A lens blocking device comprising a ring-like lens holder, means for adjustably holding a lens blank within the inner periphery of said ring-like lens holder, cross hairs mounted in said ring-like holder in a horizontal plane and at right angles one to the other, the intersection of the cross hairs corresponding to the center of the circle defined by said inner periphery, a block holder, a block on said holder and means on said ring-like lens holder and on said block cooperating to mount the lens blank on said block in predetermined, desired position.

3. A lens blocking device comprising a ring-like lens holder, means for adjustably holding a lens blank within the inner periphery of said ring-like lens holder, cross hairs mounted in said ring-like holder in a horizontal plane and at right angles one to the other, the intersection of the cross hairs corresponding to the center of the circle defined by said inner periphery, a block holder, a block in said holder, a keyway on said ring-like lens holder, upright standards on said block holder, one of the standards cooperating with said keyway to mount the lens blank on said block in predetermined, desired position.

4. A lens blocking device comprising a ring-like lens holder, means for adjustably holding a lens blank within the inner periphery of said ring-like lens holder, cross hairs mounted in said ring-like holder in a horizontal plane and at right angles one to the other, the intersection of the cross hairs corresponding to the center of the circle defined by said inner periphery, a block holder including at least two vertically disposed posts for supporting a block in predetermined position, a block adapted to rest on said posts, a keyway on said ring-like lens holder, upright standards on said block holder, one of the standards cooperating with said keyway to mount the lens blank on said block in predetermined, desired position.

5. A lens blocking device comprising a ring-like lens holder, means for adjustably holding a lens blank within the inner periphery of said ring-like lens holder, cross hairs mounted in said ring-like holder in a horizontal plane and at right angles one to the other, the intersection of the cross hairs corresponding to the center of the circle defined by said inner periphery, a block holder including at least two vertically disposed, adjustable posts for supporting a block in predetermined position, a block adapted to rest on said posts, a keyway on said ring-like lens holder, upright standards on said block holder, one of the standards cooperating with said keyway to mount the lens blank on said block in predetermined, desired position.

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