

Doc Tillyer listing of his 157 AO Patents / inventions from Tim Tillyer Book				Dick Whitney	Updated 2-June-11	
	Date of Application	Final Patent Number	Title of Patent	Names	Summary	Date of Final Issue
1	6-Sep-16	1308820	Process of Molding Lenses	E.D.Tillyer/H.H.Styll	Heating and polishing lenses to form mold	8-Jul-19
2	29-Nov-16	1406782	Lens	E.D.Tillyer	Improved Constructiton of Bifocal one piece, elimanates Image jump	14-Feb-22
3	27-Dec-16	1340189	Lens	E.D.Tillyer	Cement used to fuse glass	18-May-20
4	2-Jan-17	1315667	Ophthalmic Lens	E.D.Tillyer/H.W.Hill/H.H.Styll	Off Axis Correctiton via Base Curve	9-Sep-19
5	2-Jan-17	1346172	Illuminattion	E.D.Tillyer/L.W.Bugbee	Cooler Filament Light Bulb	13-Jul-20
6	27-Mar-17	1385162	Motion Picture Projection Apparatus	E.D.Tillyer	Prism to project/keep film cool	19-Jul-21
7	5-May-17	1287793	Gold Film	E.D.Tillyer/M.Bishop	Less expensive way to apply gold film	17-Dec-18
8	26-Oct-17	1404668	Eye Protector	E.D.Tillyer	Lens mounting of Acetate to improve Impact Resistance	24-Jan-22
9	30-Nov-17	1347766	Lens Grinder	E.D.Tillyer/L.W.Bugbee	One piece bifocal grinding, auto tuning	27-Jul-20
10	24-Jun-19	1356670	Lens	E.D.Tillyer	Eye rotation, aperture and the effect on lens design calculations	26-Oct-20
11	24-Jun-19	1393853	Lens	E.D.Tillyer	Equalized Obligue Prism	18-Oct-21
12	8-Jul-19	1442015	Gun Sight	E.D.Tillyer	Binocular Gun Sight	9-Jan-23
13	8-Jul-19	1474803	Test lens	E.D.Tillyer	Improved method of constructing test lens for Neutralizing Lens power	20-Nov-23
14	17-Jul-19	1454774	Eye Testing Instrument	E.D.Tillyer	Eye chart instrument design for reduced target distance from 20-30 feet	8-May-23
15	5-Sep-19	1455457	Trial Lens	E.D.Tillyer	Additive Power Lens sets	15-May-23
16	4-Dec-19	1434268	Illuminating and Projecting Aparatus	E.D.Tillyer	Screen in projector to reduce heat	31-Oct-22
17	27-Dec-19	1526944	Lens	E.D.Tillyer	Heat sagging of lenses to produce deep curve or meniscus lens	17-Feb-25
18	23-Aug-20	1395311	Lens Attachment	E.D.Tillyer	Securing device for attaching lens to rimless frames	1-Nov-21
19	25-Sep-20	1383678	Lens Testing Instrument	E.D.Tillyer/C.M.Kerr	The Lensometer!!!	5-Jul-21
20	15-Dec-20	1426513	Ophthalmic Lens	E.D.Tillyer/C.Sheard	Pupil diameter calc/use caused redesign of Bifocal optical centers for improved image jump	22-Aug-22
21	10-Jan-21	1436217	Process of making multifocal lenses	E.D.Tillyer	Improved bifocal mfg process	21-Nov-22
22	22-Apr-21	1471368	Ophthalmic Lens	E.D.Tillyer/H.K.Parsons	Reduced prism jump by starting mfg of RP before DP	23-Oct-1923
23	31-May-21	1556550	Lens Testing Instrument	E.D.Tillyer	The Jr. Lensometer	6-Oct-25
24	27-Dec-21	1566050	Neutralizing Set	E.D.Tillyer	Method to keep additive lenses a fixed distance apart	15-Dec-25
25	6-Feb-22	1460148	Transposition Scale	E.D.Tillyer	3 disc display permitting easy translation from + to - cyl	6-Feb-22
26	22-Feb-22	1544612	Ophthalmic Lens	E.D.Tillyer	Moved axis in reading zone	7-Jul-25
27	10-Apr-22	1494648	Lens Measure	E.D.Tillyer	Improved lens watch hand held gauge	20-May-24
28	10-Apr-22	1542112	Lens Testing Instrument	E.D.Tillyer	Bigger Lensometer	16-Jul-25

	29	14-Apr-22	1449343	Process of making two part lenses	E.D.Tillyer/H.R.Moulton	Process to eliminate blue tinge from Sodium vapors in glassmaking	20-Mar-23
	30	17-Apr-22	1520617	Lens	E.D.Tillyer/A.E.Glancy	Toric Countersink Bifocal for improved process to aid in correction for Astig and Myopia, hyperopia	23-Dec-24
	31	18-Apr-22	1513813	Lens Grinding Apparatus	E.D.Tillyer/ K.V.Hill	Thermostatic control of coolant water	4_nov-1924
	32	18-Apr-22	1515630	Lens	E.D.Tillyer/ H.H.Styll	Monocentric fused bifocal	18-Nov-24
Mar	33	5-May-22	1557631	Ophthalmic Lens	E.D.Tillyer	Breath Mark Glass with Phosphoric Acid	20-Oct-25
Impa	34	13-May-22	1454200	Antaeus Glass	E.D.Tillyer / J.C.Wells	Annealing of Glass goggles for strengthening	8-May-23
Reta	35	2-Aug-22	1554308	Ophthalmic Lens	E.D.Tillyer	Factory Produced buttons and Lenses to distribute to retailer to make their own bifocals	22-Sep-25
Proc	36	2-Aug-22	1566051	Process of making lenses	E.D.Tillyer/ H.W.Hill	Tiny holes in lenses used to control grinding of finished lens thickness	15-Dec-25
	37	16-Oct-22	1608725	Lens Testing equipment	E.D.Tillyer/ B.P.Currier	Improvement to Lensometer target and Light source	30-Nov-26
Med	38	7-May-23	1659965	Ear Trumpet	E.D.Tillyer	Hearing Aid improvement, Dr. Glancy was his guinea pig as she was severely hearing impaired	21-Feb-26
	39	12-May-23	1659176	Picture projecting film	E.D.Tillyer	Improved film developing to help with fire problems during projection	14-Feb-28
	40	19-May-23	1671912	Lens Measure	E.D.Tillyer/N.M.Baker	Improved mechanism	29-May-28
	41	5-Nov-23	1664953	Diagnostic Instr. For throwing beam of light into the eye	E.D.Tillyer	Improved Retinoscope	3-Apr-28
	42	31-Mar-24	1672566	Lens Measure Instrument	E.D.Tillyer/A.E.Glancy	Improved heads on depth Gauges	5-Jun-28
	43	28-May-24	1588559	Ophthalmic Lens	E.D.Tillyer	"The Tillyer Lens"- Minimal marginal errors	15-Jun-26
	44	7-Aug-24	1607580	Lens	E.D.Tillyer	Same as 1593199 Filed in 1925	16-Nov-26
	45	29-Oct-24	1641790	Multifocal lens	E.D.Tillyer	Trifocal with RP on Concave side	1-Jun-26
	46	29-Oct-24	1700656	Automatically Operated Screen for Projection Apparatus	E.D.Tillyer	Automatic heat shield screen when film slowed or stopped	29-Jan-29
	47	6-Nov-24	1593196	Ophthalmic Lens	E.D.Tillyer	Toric DP to offset RP Astig	20-Jul-26
	48	3-Dec-24	1639012	Surfacing Machine	E.D.Tillyer	Improved grinding accuracy for either concave or convex surfaces	31-May-27
	49	30-Mar-25	1630724	Apparatus and Process for producing ophthalmic lenses	E.D.Tillyer	Improved process to create toric curves via sagging one meridian	31-May-27
	50	6-Jul-25	1563806	Ophthalmic Lens	E.D.Tillyer	Sagged curve in one meridian	1-Dec-25
	51	26-Aug-25	1644798	Ophthalmic Lens	E.D.Tillyer	Stannous Chloride and Stannous Oxide to improve lens ID marks invisible after washing	11-Oct-27
	52	12-Oct-25	1630281	Eye Testing Cabinet	E.D.Tillyer	Cabinet with new charts and lighting	31-May-27
	53	21-Nov-25	1593199	Lens	E.D.Tillyer	Fused bifocal button in countersink the toric curve in bifocal	20-Jul-26
	54	1-Feb-26	1671911	Schematic Eye	E.D.Tillyer	Model eye including viscous inner material for students	1-Feb-26
	55	1-Feb-26	1587131	Ophthalmic Lens	E.D.Tillyer	Goggle type mounting frame for temporary holding of lenses	1-Jun-26
	56	12-Apr-26	1659966	Bifocal Lens	E.D.Tillyer	Bifocal with Toric corrections in Distance and near	21-Feb-28
	57	8-Nov-26	1873675	Diagnostic Instrument	E.D.Tillyer	Adjustable sight socket to optimize filament light illumination in retinoscope	23-Aug-32

58	8-Nov-26	1721194	Ophthalmic Lens	E.D.Tillyer	Transparent lens retention rings to better hold beveled lenses in frame in proper position without slippage	16-Jul-11
59	9-Mar-27	1697030	Ophthalmic Lens (Goggles)	E.D.Tillyer	Prismatic correction for wrap!!! Goggle lenses of plastic!	1-Jan-29
60	2-Jun-27	1794571	Trial Frame	E.D.Tillyer/W.J.Wrighton	<i>Trial frame to fit lenses at fix distance and orientations to accurately measure and refract for vertex distacnes in effective power</i>	3-Mar-31
61	20-Jun-27	1722602	Goggles	E.D.Tillyer/E.L.Godfrey	Safety Goggles with Vent System to filter out chemical splashes	20-Jun-27
62	5-Jul-27	1686113	Goggles	E.D.Tillyer	Avaiatot goggles with wind vents to alleviate fogging	2-Oct-28
63	31-Oct-27	1887049	Device for Testing the eye	E.D.Tillyer/ E.A.Forshey/I.S.Nott	The Phoropter (Measures Rx in eye)	8-Nov-32
64	5-Jan-28	1889456	Diagnostic Instrument	E.D.Tillyer	Improved image,. Lighting, for retinoscope	29-Nov-32
65	8-Mar-28	1866734	Ophthalmic Lens	E.D.Tillyer	Trifocal with narrowere RP for improved image jump	8-Mar-28
66	2-Apr-28	1797254	Process of plating	E.D.Tillyer	Improved metal plating process	24-Mar-31
67	2-May-28	1806318	Diagnostic Instrument	E.D.Tillyer	Improved eye safety of ophthalmoscope, better illumination	19-May-31
68	15-May-28	1873676	Ophthalmic Lens	E.D.Tillyer	Trifocal to view obstacle near feet when walking	15-May-28
69	15-May-28	1910483	Lens	E.D.Tillyer	Another Trifocal Design	23-May-33
70	25-Mar-29	1859756	Eye examining Instrument	E.D.Tillyer	Improved Retinoscope	24-May-32
71	1-Aug-29	1809534	Glass Treatment	E.D.Tillyer/H.R.Moulton	Annealing conveyor process for Glass hardening/stabilization	9-Jun-31
72	18-Sep-29	1865714	Ophthalmic Lens	E.D.Tillyer	Prescription lens in goggles	5-Jul-32
73	25-Oct-29	1865715	Ophthalmic Lens	E.D.Tillyer	UV absorbing pink crown glass	5-Jul-32
74	25-Oct-29	1942850	Eye Testing Device	E.D.Tillyer	Perimeter Field of View device	5-Jul-32
75	4-Nov-29	1880029	Ophthalmic Lens	E.D.Tillyer	Glass bifocal with Crown major and flint segment to improve seg line	27-Sep-32
76	16-Nov-29	1925576	Eye Testing Instrument and method	E.D.Tillyer	Color mapping fields and testing	5-Sep-33
77	16-Nov-29	1973966	Eye Testing Device	E.D.Tillyer	Color deficiency testing using illumination/contrast to improve results	18-Sep-34
78	13-Jan-30	1853710	Eye Testing Instruments	E.D.Tillyer	Binocular Fixation testing device	12-Apr-32
79	21-Jan-30	1813213	Eye Protector	E.D.Tillyer	Ventilation system improvements to goggles	7-Jul-31
80	25-Jan-30	1879833	Eye Testing Device	E.D.Tillyer / H.Pond	Letters Rounded in eye chart instead of squared corners for optical considerations	27-Sep-32
81	1-Feb-30	1854724	Eye Testing Instrument	E.D.Tillyer	Simplified, economical and compact Field of View device	19-Apr-32
82	17-Mar-30	1838781	Glass Treatment	E.D.Tillyer	Sandwiched Glass using metal loop for improving annealing process	29-Dec-31
83	29-Mar-30	1936736	Eye Protector	E.D.Tillyer/ E.A. Teason	Flap added to air vent system in Goggles for ventilation	28-Nov-33
84	26-Jun-30	1840064	Radio Telephony Receiving Apparatus	E.D.Tillyer	Radio receivng reducing wide band interference	5-Jan-32
85	9-Jul-30	1836735	Crystal Oscillator	E.D.Tillyer	Vaccum tube to stabilize Crystal used in radios	15-Dec-31
86	4-Aug-30	1949848	Radio Reciever	E.D.Tillyer	Battery powered booster to help with signal fade	6-Mar-34

87	17-Oct-30	1925577	Oscillating Crystal	E.D.Tillyer	Improperly cut short crystals salvaged for use in low frequency applications	5-Sep-33
88	12-Dec-30	2048304	Ophthalmic Lens	E.D.Tillyer	Improved bifocal process for improving bifocal ledge	21-Jun-36
89	24-Dec-30	1911154	Ophthalmic Lens	E.D.Tillyer	Improved bifocal process using protrusion in seg later used in positioning of lens	23-May-33
90	2-Feb-31	1910576	Sound Reproduction	E.D.Tillyer	Process for sound from film markings, ultimately adopted by RCA	23-May-33
91	13-Feb-31	1910577	Sound Reproduction	E.D.Tillyer	Mechanism for focus light slit used to read sound signal encoded on film	23-May-33
92	27-Feb-31	1910578	Sound Reproduction	E.D.Tillyer	Improved sound production from film via bar streak method - RCA assigned patent	23-May-33
93	4-Jun-31	1977813	Instrument	E.D.Tillyer	Lens to compensate for dispersion in eye for retinoscope	23-Oct-34
94	30-Jul-32	1948636	Lens	E.D.Tillyer	Improved method to produce a bitoric lens	27-Feb-34
95	27-Mar-32	1952394	Lens	E.D.Tillyer	Isekonic lens for size magification imbalance	27-Mar-34
96	15-Sep-32	1952395	Screw Setting Device	E.D.Tillyer/ E.L.Schumaker (later Pres of AO)	Screwdriver which widened screw after connecting frame, keeping screw from falling out	27-Ma-1934
97	31-Dec-32	2023907	Ophthalmic Lens	E.D.Tillyer	Isekonic lens improvments	10-Dec-35
98	23-Jan-33	2024552	Ophthalmic Lens	E.D.Tillyer	Fusing 2 corrective lenses to produce a finished 1 lens	17-Dec-35
99	19-Jun-33	1957116	Ophthalmic Lens	E.D.Tillyer	Crown glass composition cheaper and less color, more white appearance	1-May-34
100	13-Oct-33	2033101	Ophthalmic Lens	E.D.Tillyer/H.R.Moulton	Lens edge seal and bevel	3-Mar-38
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