US 20240385415A1

(19) United States

(12) Patent Application Publication

(10) Pub. No.: US 2024/0385415 A1

(43) Pub. Date: Nov. 21, 2024

YEH et al.

(54) **PHOTOGRAPHING LENS ASSEMBLY, IMAGE CAPTURING UNIT AND ELECTRONIC DEVICE**

(71) Applicant: **LARGAN PRECISION CO., LTD.**, Taichung City (TW)

(72) Inventors: **Kuan-Ting YEH**, Taichung City (TW); **Cheng-Yu TSAI**, Taichung City (TW)

(73) Assignee: **LARGAN PRECISION CO., LTD.**, Taichung City (TW)

(21) Appl. No.: **18/208,723**

(22) Filed: **Jun. 12, 2023**

(30) **Foreign Application Priority Data**

May 5, 2023 (TW) 112116801

Publication Classification

(51) **Int. Cl.**

G02B 13/00 (2006.01)

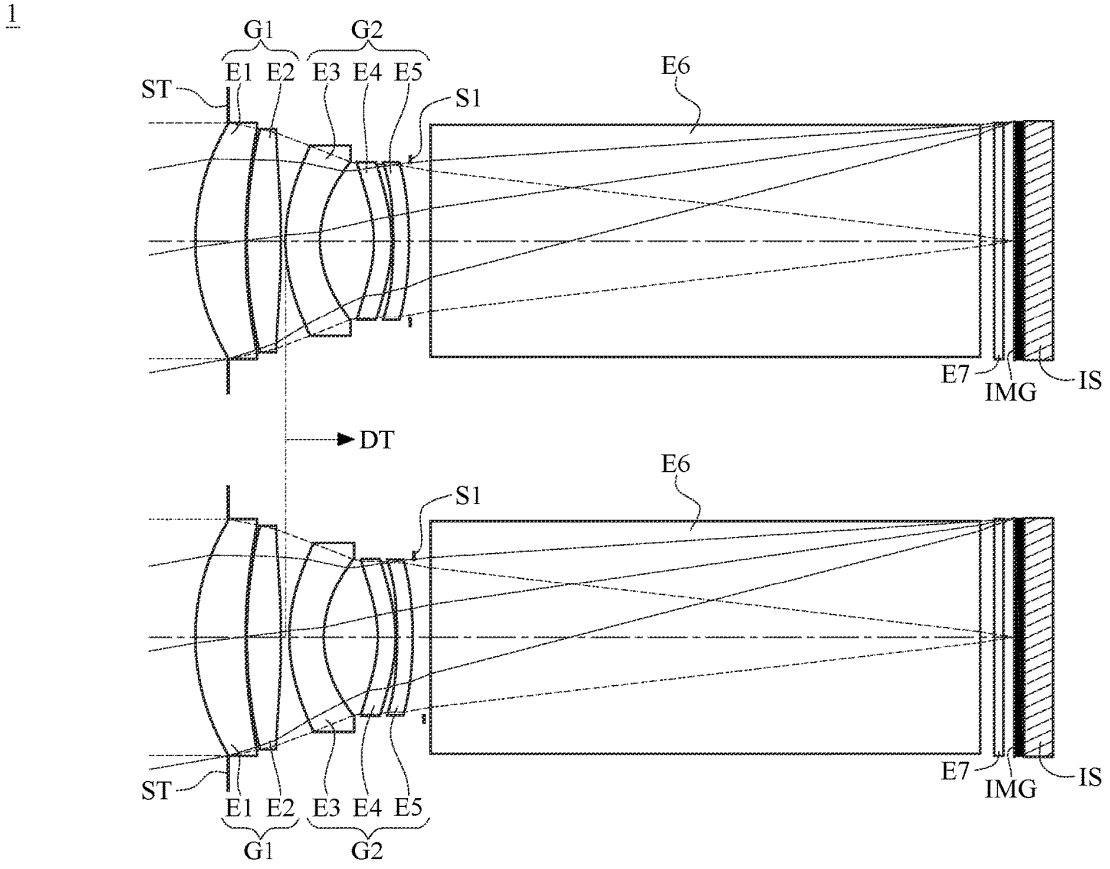
G02B 13/02 (2006.01)

(52) **U.S. Cl.**

CPC ***G02B 13/0045*** (2013.01); ***G02B 13/02*** (2013.01); *G02B 13/009* (2013.01)

(57) **ABSTRACT**

A photographing lens assembly includes five lens elements which are, in order from an object side to an image side along an optical path, a first lens element, a second lens element, a third lens element, a fourth lens element and a fifth lens element. Each of the five lens elements has an object-side surface facing toward the object side and an image-side surface facing toward the image side. The first lens element has positive refractive power. The third lens element has negative refractive power, the object-side surface of the third lens element is convex in a paraxial region thereof, and the image-side surface of the third lens element is concave in a paraxial region thereof. At least one of the object-side surface and the image-side surface of at least one lens element of the photographing lens assembly is aspheric.



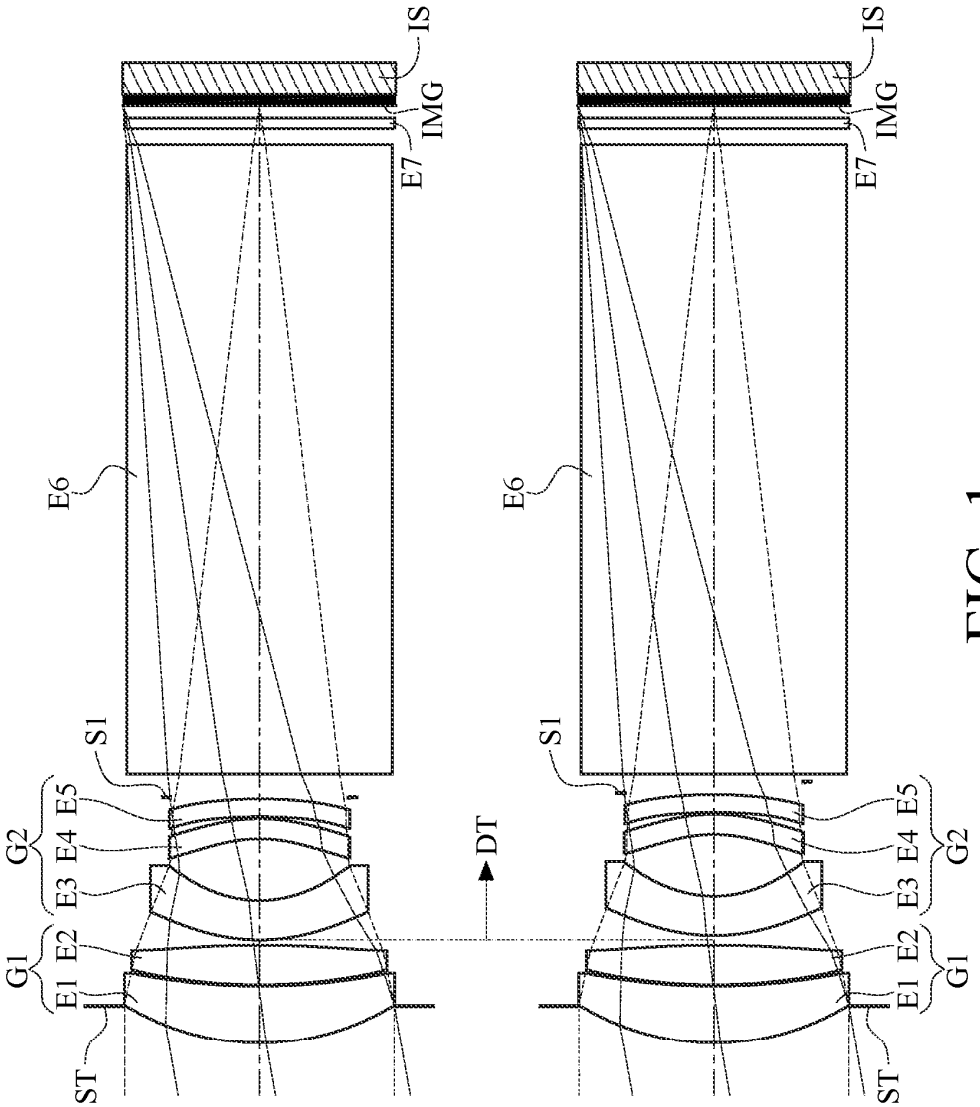


FIG. 1

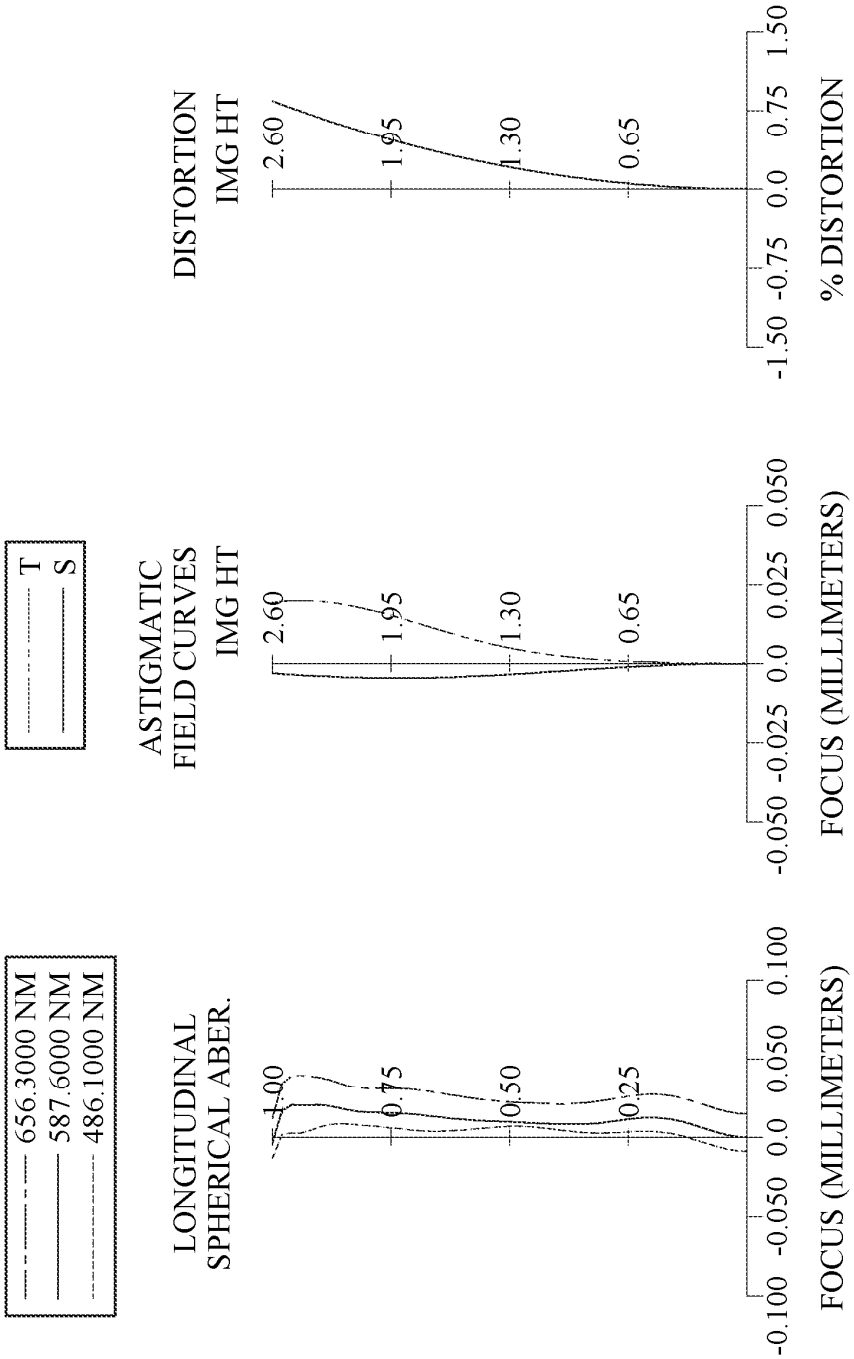

656.3000 NM
587.6000 NM
486.1000 NM
LONGITUDINAL SPHERICAL ABER.
1.00
0.75
0.50
0.25
-0.100 -0.050 0.0 0.050 0.100
FOCUS (MILLIMETERS)
T
S
ASTIGMATIC FIELD CURVES
IMG HT
2.60
1.95
1.30
0.65
-0.050 -0.025 0.0 0.025 0.050
FOCUS (MILLIMETERS)
DISTORTION
IMG HT
2.60
1.95
1.30
0.65
-1.50 -0.75 0.0 0.75 1.50
% DISTORTION

FIG. 2

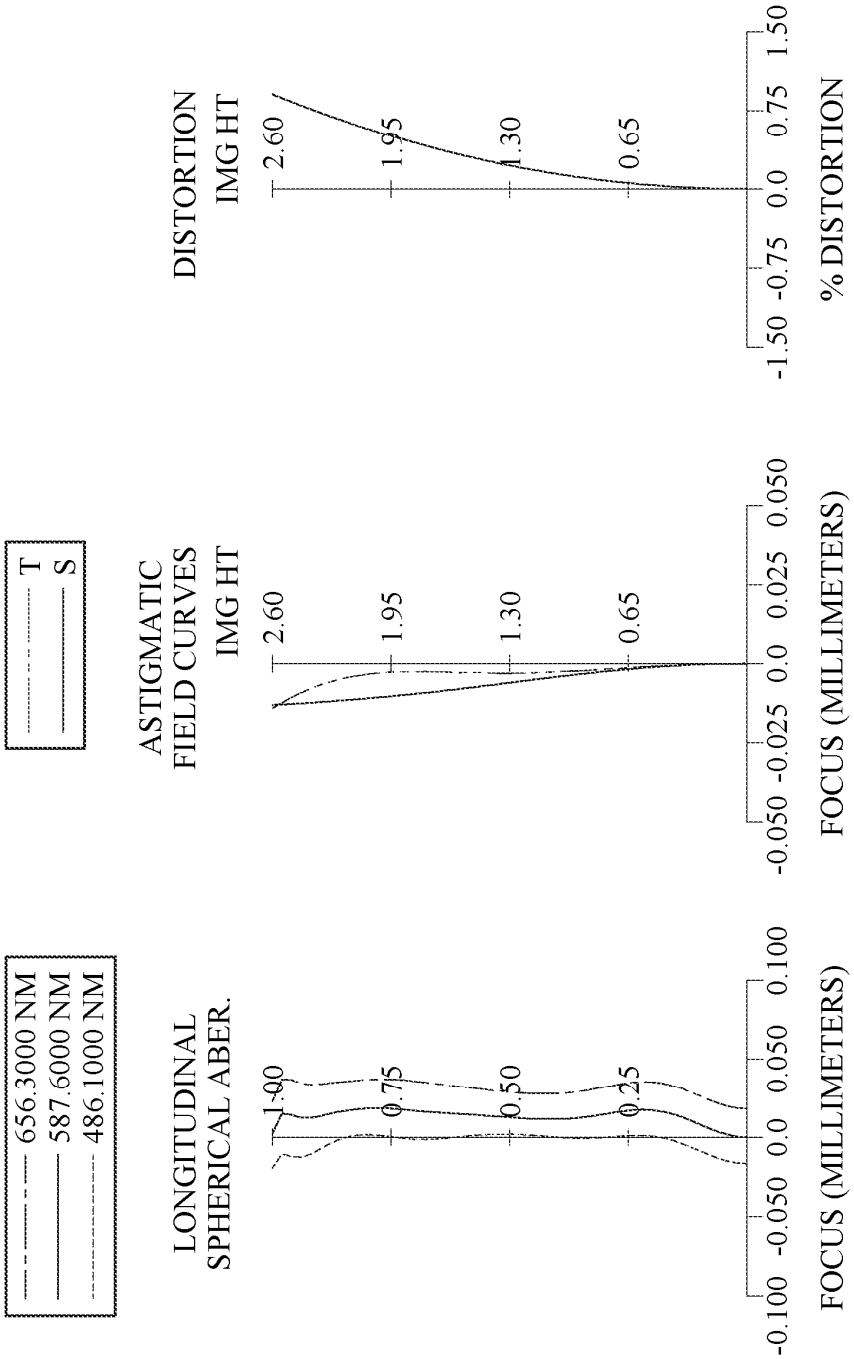

656.3000 NM
587.6000 NM
486.1000 NM
LONGITUDINAL SPHERICAL ABER.
1.00
0.75
0.50
0.25
-0.100 -0.050 0.0 0.050 0.100
FOCUS (MILLIMETERS)
T
S
ASTIGMATIC FIELD CURVES
IMG HT
2.60
1.95
1.30
0.65
-0.050 -0.025 0.0 0.025 0.050
FOCUS (MILLIMETERS)
DISTORTION
IMG HT
2.60
1.95
1.30
0.65
-1.50 -0.75 0.0 0.75 1.50
% DISTORTION

FIG. 3

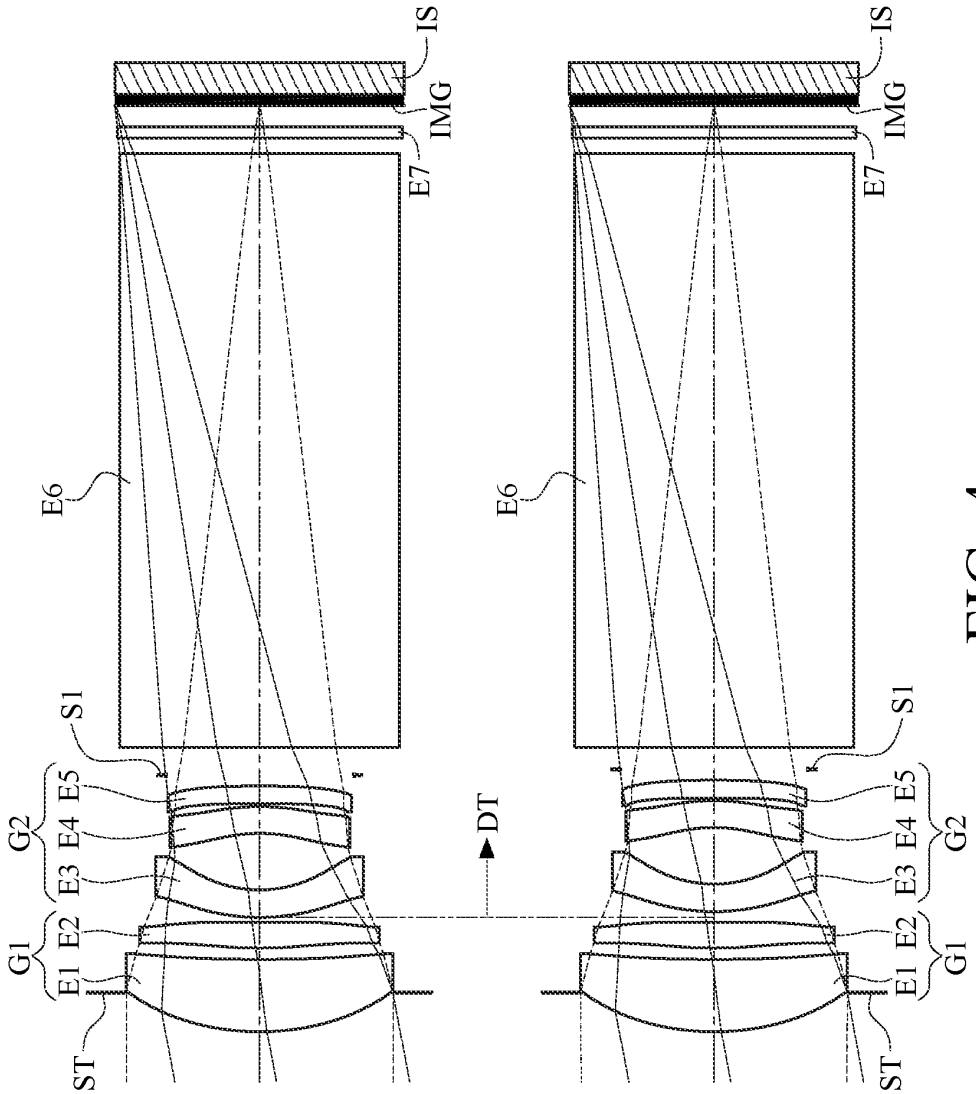

IS
IMG
E7
E6
S1
G2
E5
E4
E3
G1
E2
E1
ST
DT
IS
IMG
E7
E6
S1
G2
E5
E4
E3
G1
E2
E1
ST

FIG. 4

2