



Figure 1

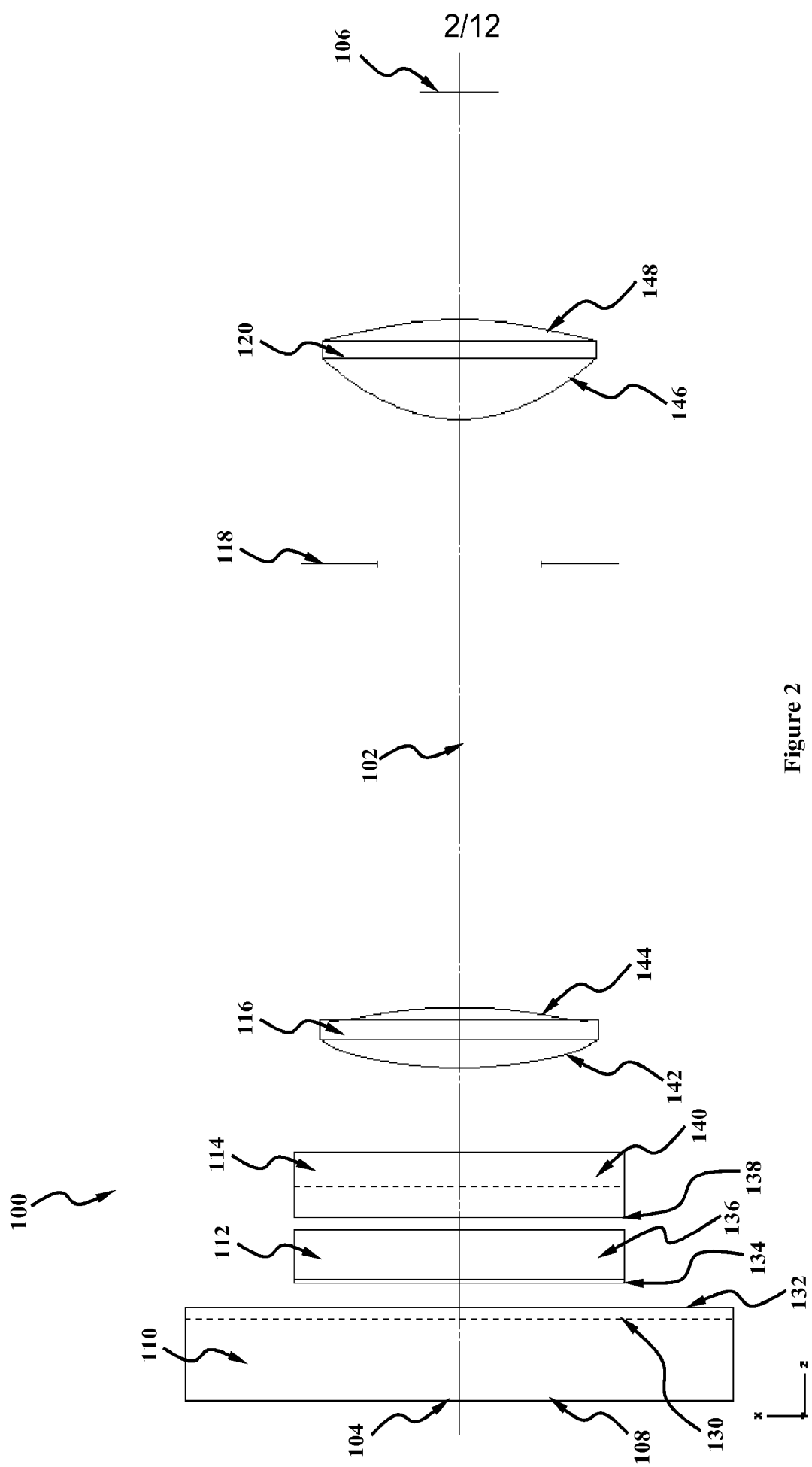


Figure 2

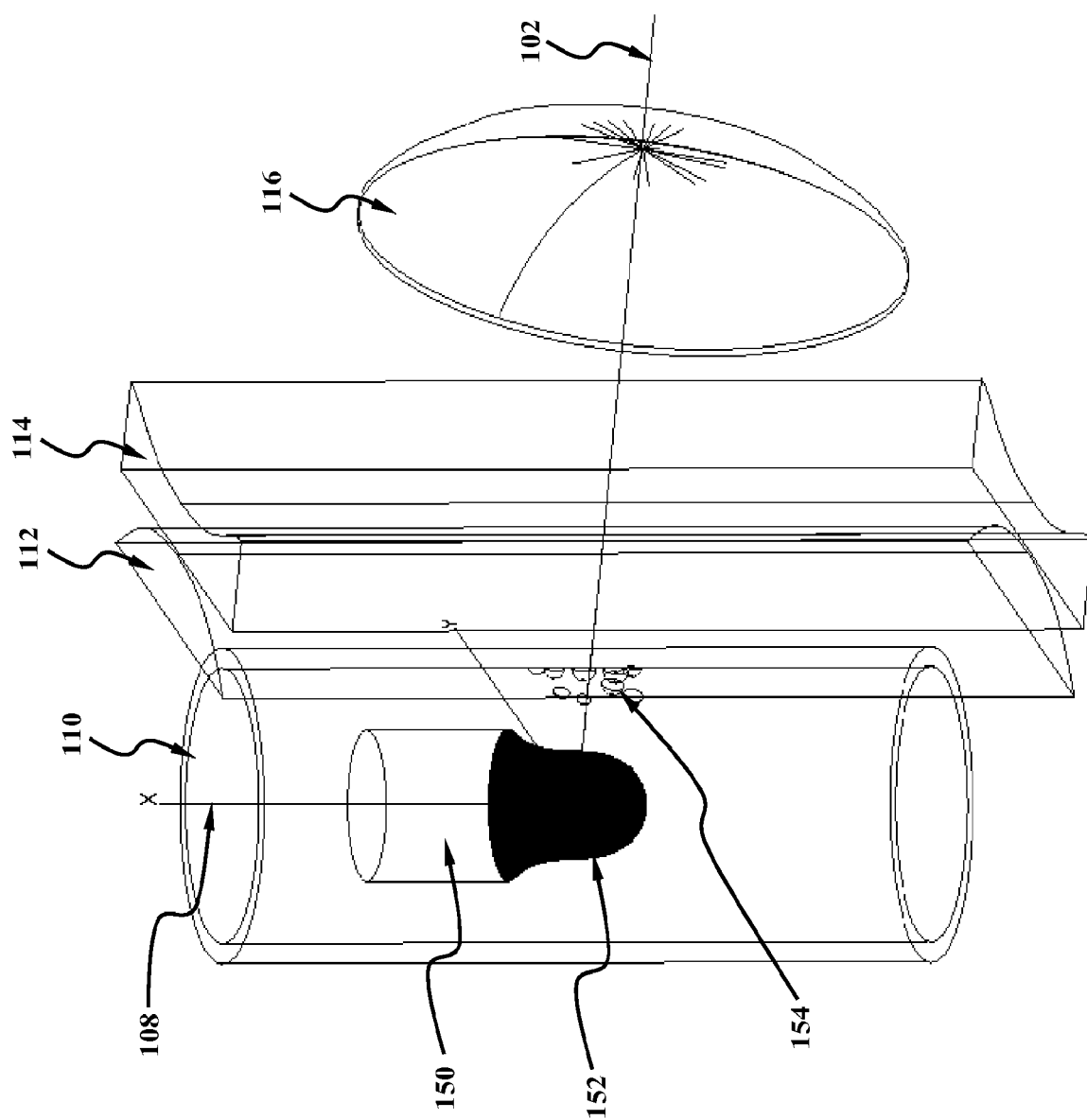


Figure 3

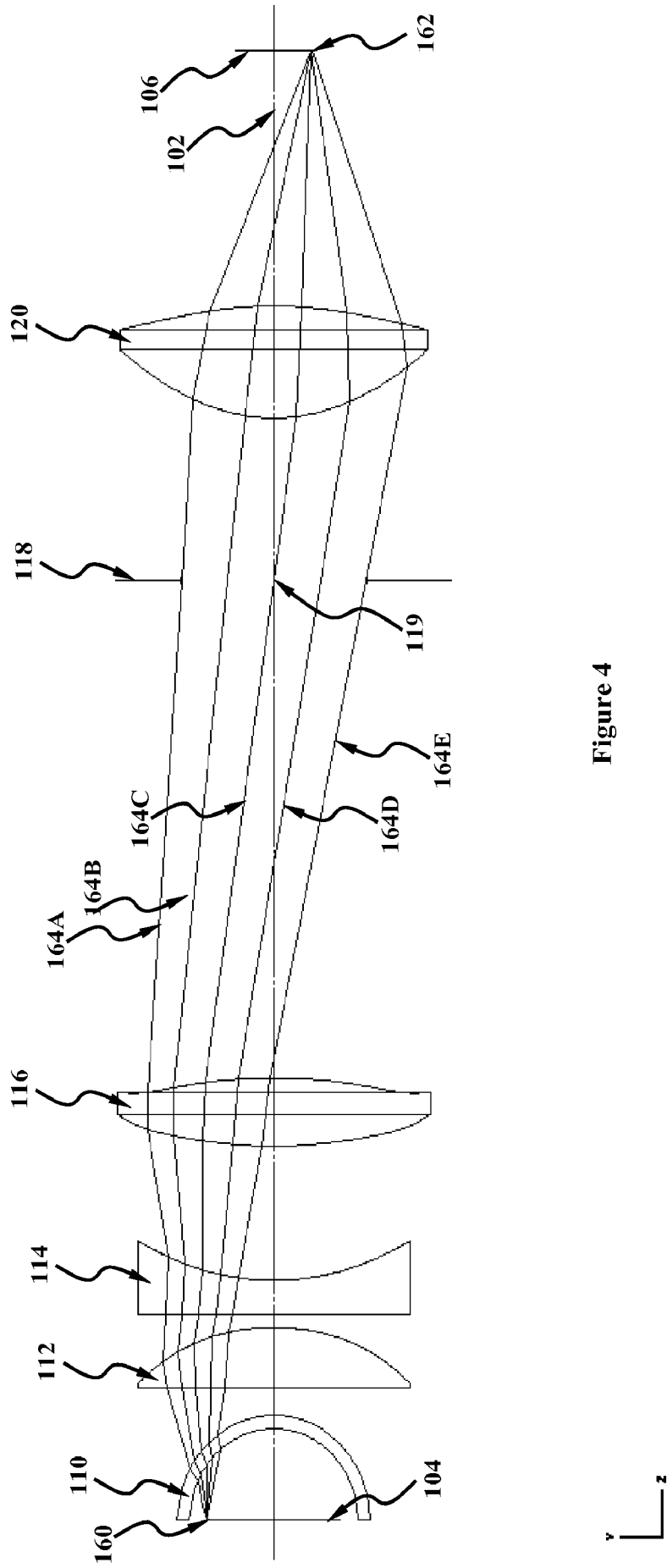


Figure 4

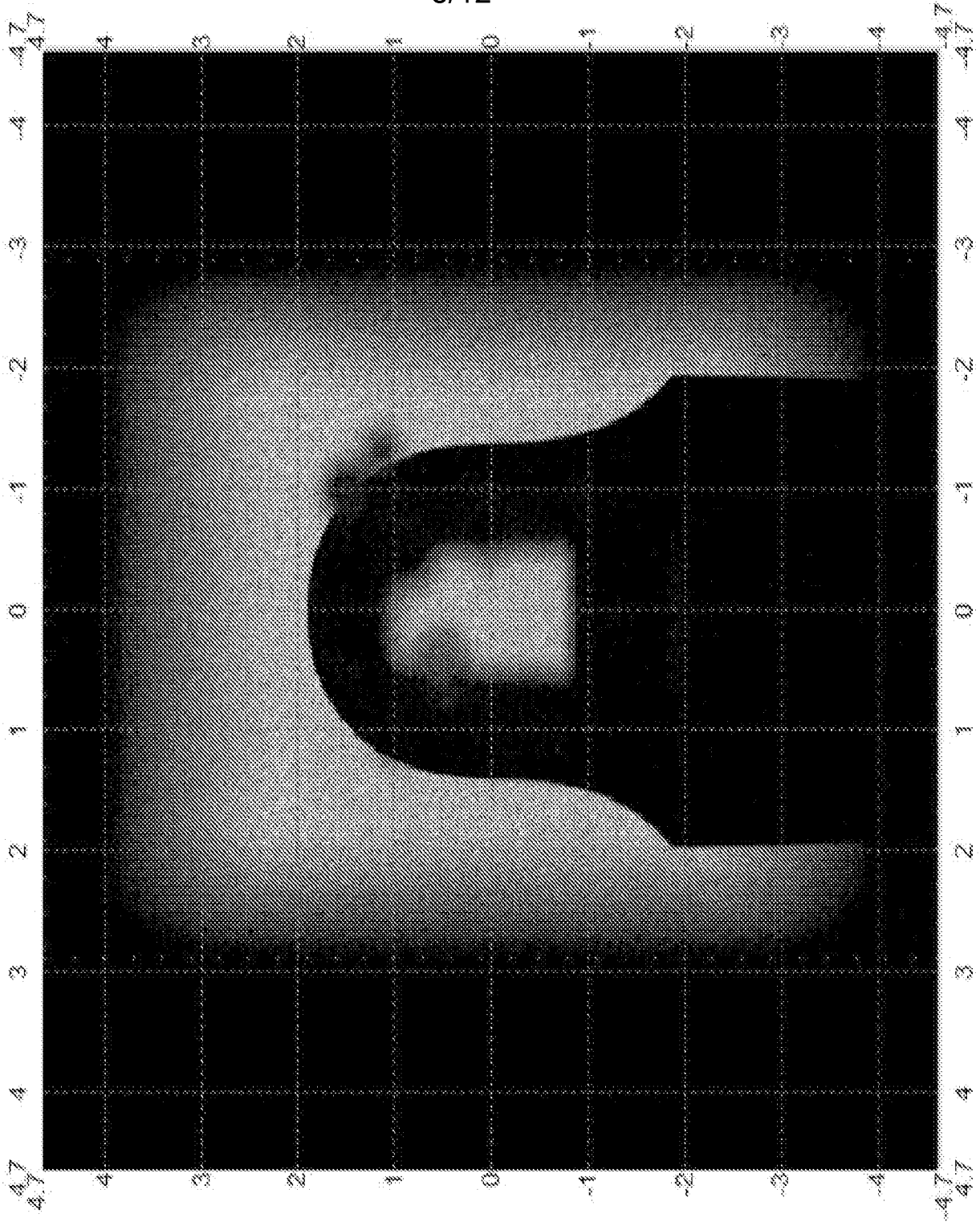


Figure 5

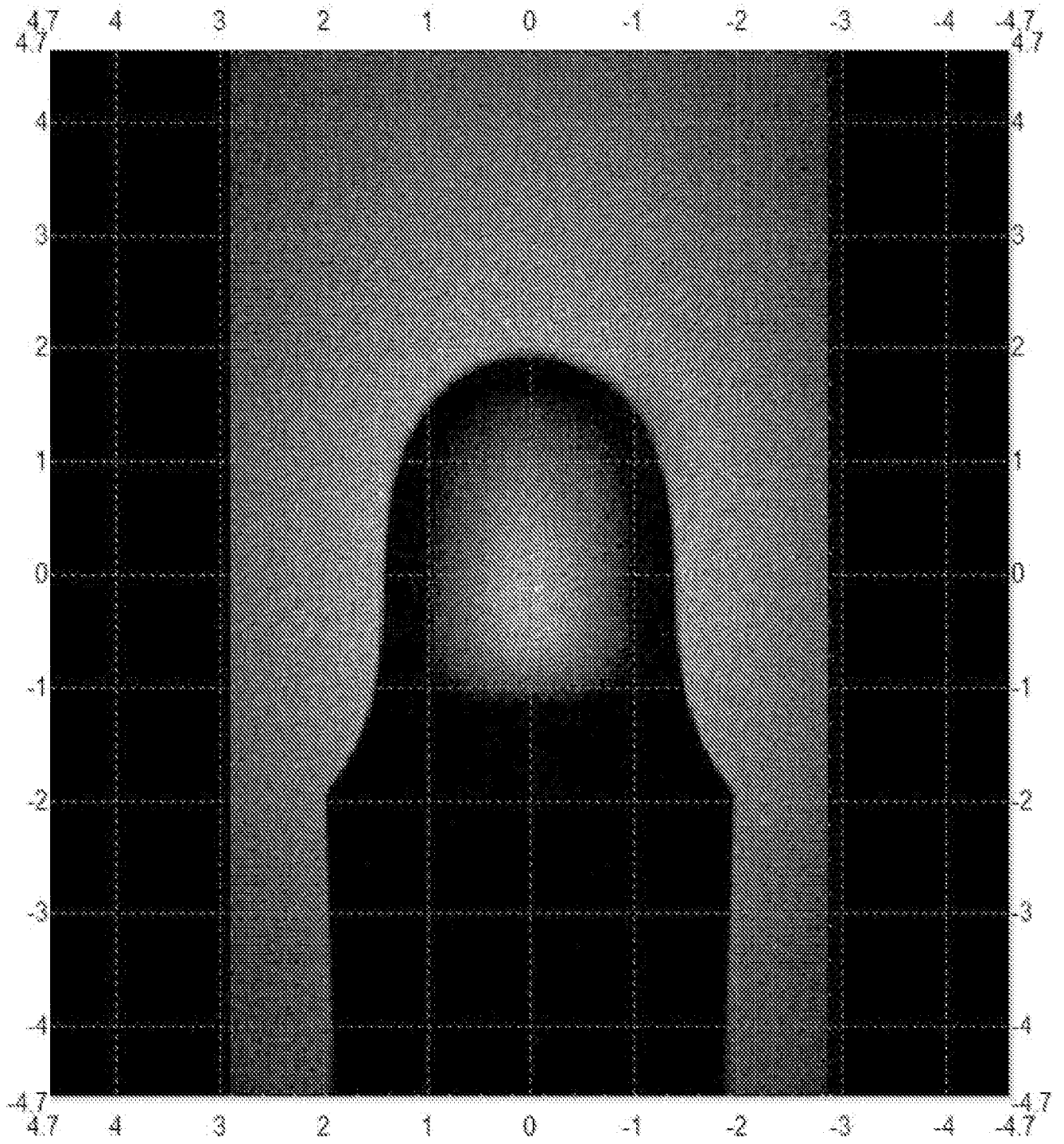


Figure 6

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GENERAL LENS DATA:
Surfaces          :          13
Stop              :          10
System Aperture   : Float By Stop Size = 7.5
Glass Catalogs    : SCHOTT GEL MISC OHARA PLASTICS
Ray Aiming        : Real Reference, Cache On
Effective Focal Length :      116.6152
Effective Focal Length :      116.6152 (in image space)
Back Focal Length  :      -42.29727
Total Track       :       108.1264
Image Space F/#    :       0.1659089
Paraxial Working F/# :       1.362284
Working F/#       :       1.405951
Image Space NA     :       0.3442676
Object Space NA    :       0.1894449
Stop Radius       :         7.5
Paraxial Image Height :       4.630334
Paraxial Magnification :      -0.5261743
Entrance Pupil Diameter :       702.908
Entrance Pupil Position :      1620.563
Exit Pupil Diameter :        51.2326
Exit Pupil Position :      -69.79702
Field Type        : Object height in Millimeters
Maximum Radial Field :         8.8
Primary Wavelength :         0.825  $\mu$ m
Lens Units        : Millimeters
Angular Magnification :       13.71995

Fields           : 6
Field Type: Object height in Millimeters
#      K-Value      Y-Value      Weight
1      0.000000      0.000000      1.000000
2      4.000000      0.000000      1.000000
3      8.000000      3.000000      1.000000
4      0.000000      5.500000      1.000000
5      0.000000      0.000000      1.000000
6      6.000000      3.500000      1.000000

Wavelengths      : 1
Units:  $\mu$ m
#      Value      Weight
1      0.825000      1.000000

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Figure 7A

SURFACE DATA SUMMARY:

Surf	Type	Radius	Thickness	Glass	Diameter
OBJ	STANDARD	Inf	1	17.6	0
1	STANDARD	Inf	5.8	20	0
2	TOROIDAL	-6.8	1	FIT_SIGMA_PVC	50
3	TOROIDAL	-7.8	2		50
4	EVENASPH	Inf	4.5	POLYSTYR	20.33
5	TOROIDAL	Inf	1		21.15
6	EVENASPH	Inf	3.5	POLYSTYR	22
7	TOROIDAL	Inf	9.96		22
8	EVENASPH	Inf	5.04	POLYSTYR	25.46
9	EVENASPH	Inf	37		24.96
STO	STANDARD	Inf	12		15
11	EVENASPH	Inf	0.32	POLYSTYR	25.04
12	EVENASPH	Inf	19		24.61
IMA	STANDARD	Inf			7.2

SURFACE DATA DETAIL:

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Surface OBJ      : STANDARD
Surface 1        : STANDARD
Surface 2        : TOROIDAL
  Aperture       : Rectangular Aperture
  X Half Width   :          35
  Y Half Width   :         16.8
Surface 3        : TOROIDAL
  Aperture       : Rectangular Aperture
  X Half Width   :          25
  Y Half Width   :         17.8
Surface 4        : EVENASPH
  Aperture       : Rectangular Aperture
  X Half Width   :          15
  Y Half Width   :          11
Surface 5        : TOROIDAL
  Rad of rev.    :           0
  Coeff on y^2   :    -0.025549442
  Coeff on y^4   :   -8.1952869e-005
  Coeff on y^6   :   -8.3959153e-008
  Coeff on y^8   :           0
  Aperture       : Rectangular Aperture
  X Half Width   :          15
  Y Half Width   :          11

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Figure 7B

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Surface 6      : EVENASPH
Aperture       : Rectangular Aperture
X Half Width   : 15
Y Half Width   : 11
Surface 7      : TOROIDAL
Rad of rev.    : 0
Coeff on y^2   : 0.022060242
Coeff on y^4   : 3.3507273e-005
Coeff on y^6   : -1.4393092e-007
Coeff on y^8   : 0
Aperture       : Rectangular Aperture
X Half Width   : 15
Y Half Width   : 11
Surface 8      : EVENASPH
Coeff on r 2   : 0.013908301
Coeff on r 4   : -6.1512189e-005
Coeff on r 6   : 4.1022487e-007
Coeff on r 8   : 0
Surface 9      : EVENASPH
Coeff on r 2   : -0.0085349991
Coeff on r 4   : -6.5122115e-005
Coeff on r 6   : 5.0103619e-007
Coeff on r 8   : 0
Surface SBO    : STANDARD
Aperture       : Circular Aperture
Minimum Radius : 0
Maximum Radius : 7.5
Surface 11     : EVENASPH
Coeff on r 2   : 0.03290815
Coeff on r 4   : -1.0138139e-005
Coeff on r 6   : 5.4218e-008
Coeff on r 8   : 0
Surface 12     : EVENASPH
Coeff on r 2   : -0.014651772
Coeff on r 4   : 2.3845993e-005
Coeff on r 6   : -1.3419746e-008
Coeff on r 8   : 0
Surface IMA    : STANDARD

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Figure 7C

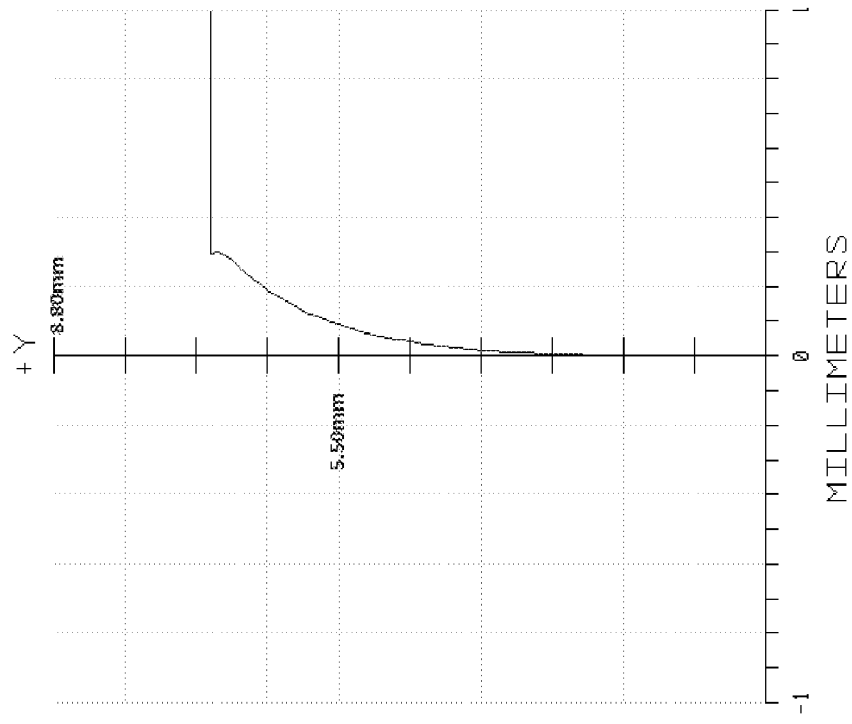


Figure 8B

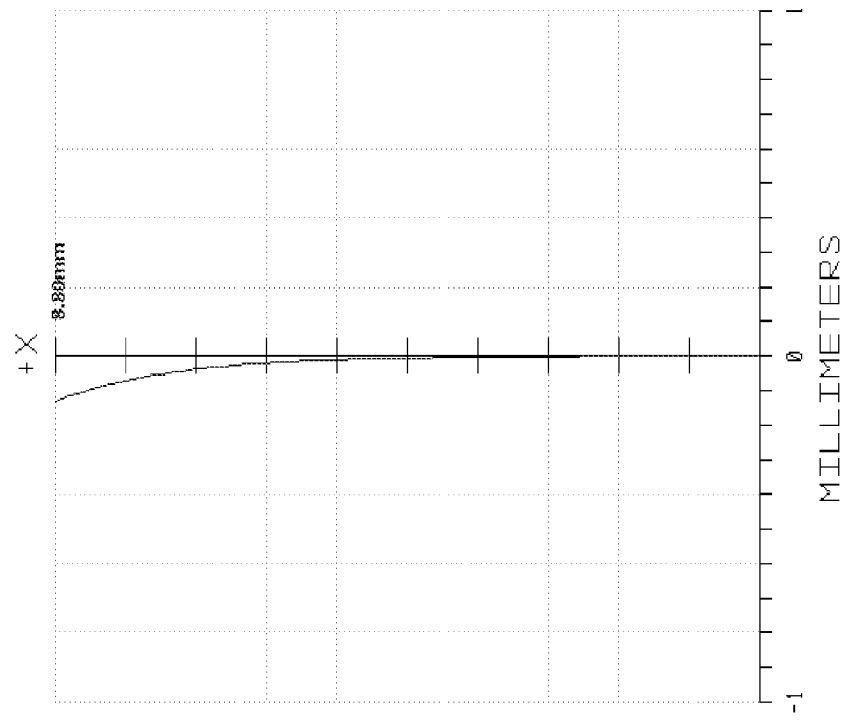


Figure 8A

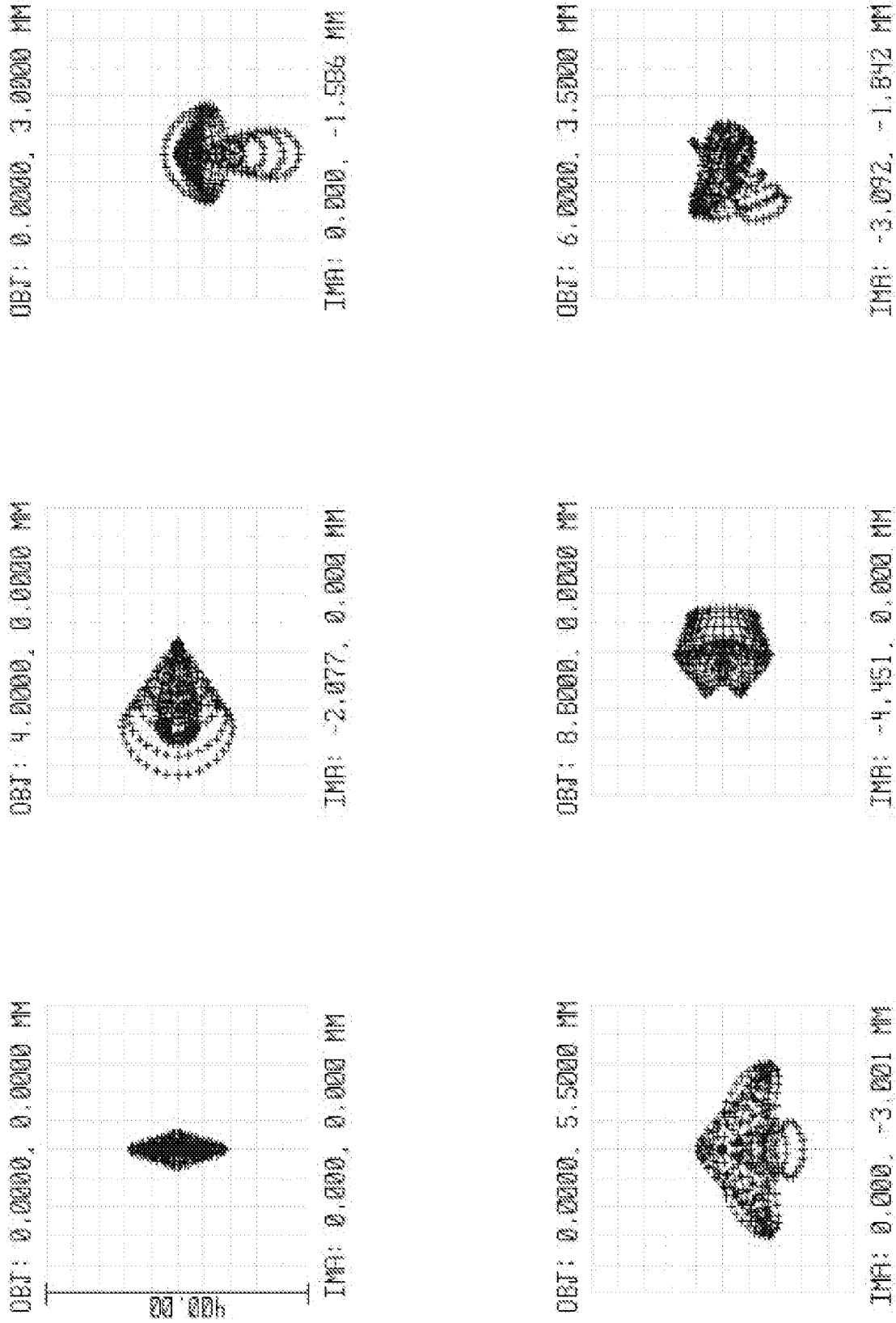


Figure 9

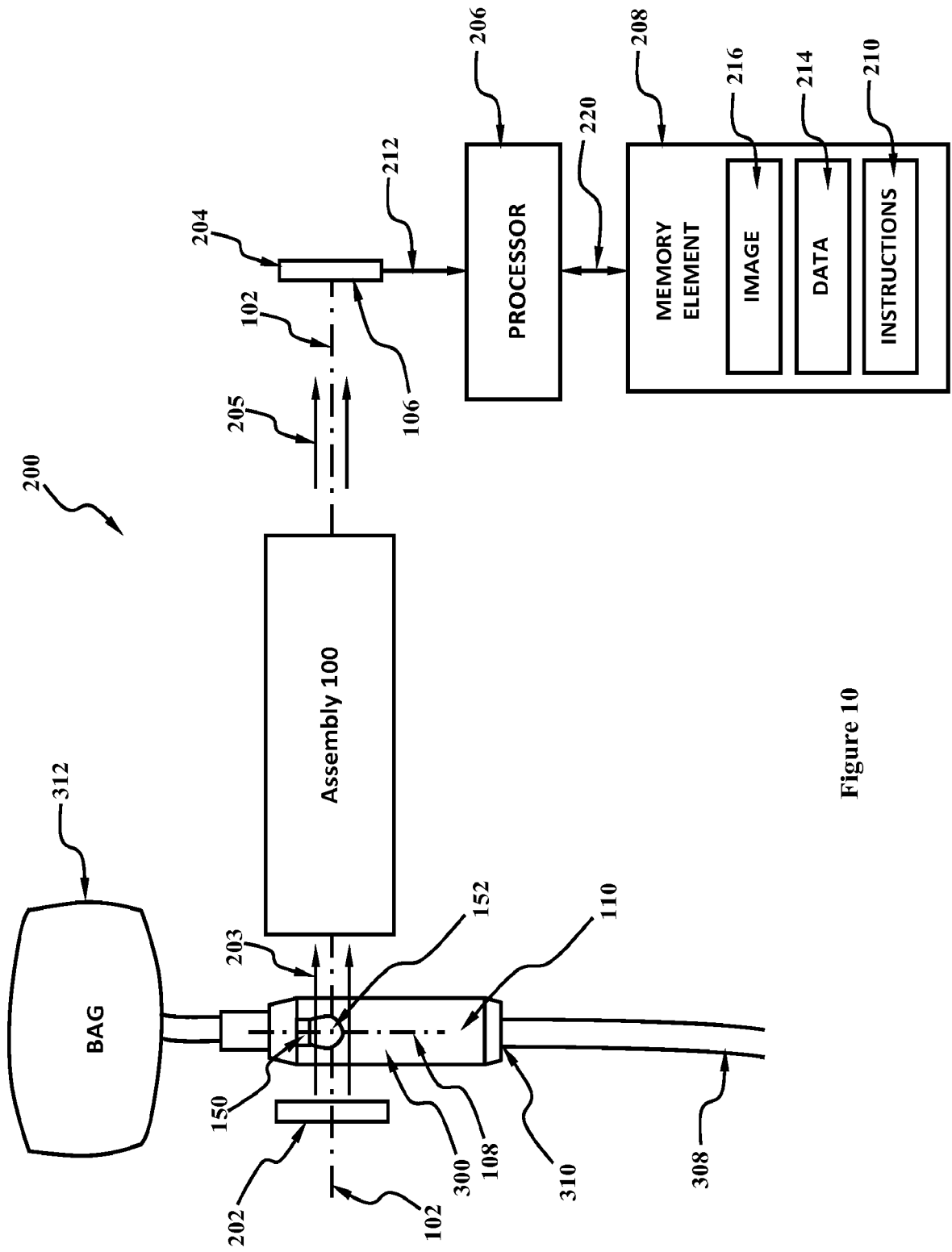


Figure 10