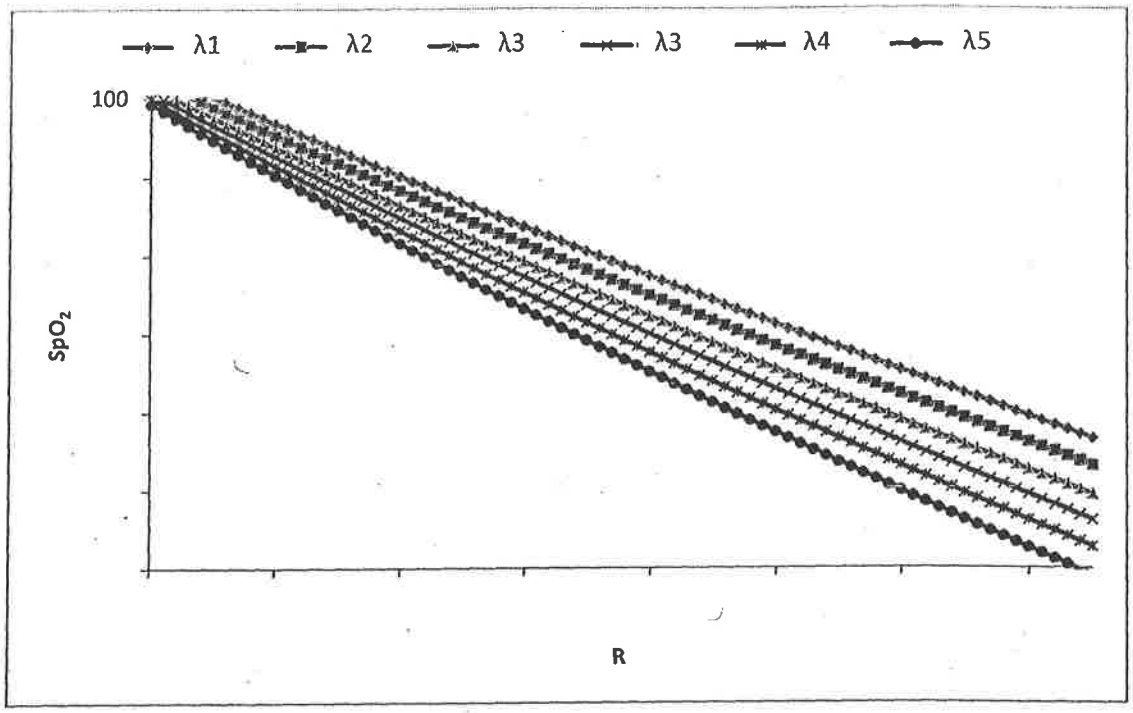


Fig. 1

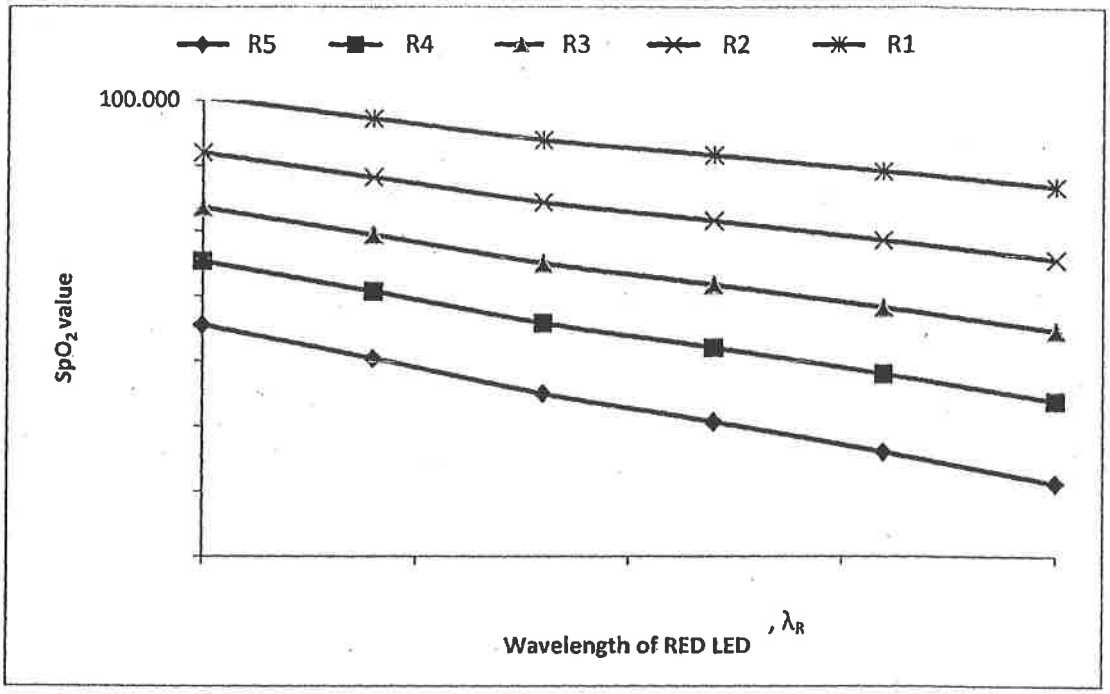


Fig. 2

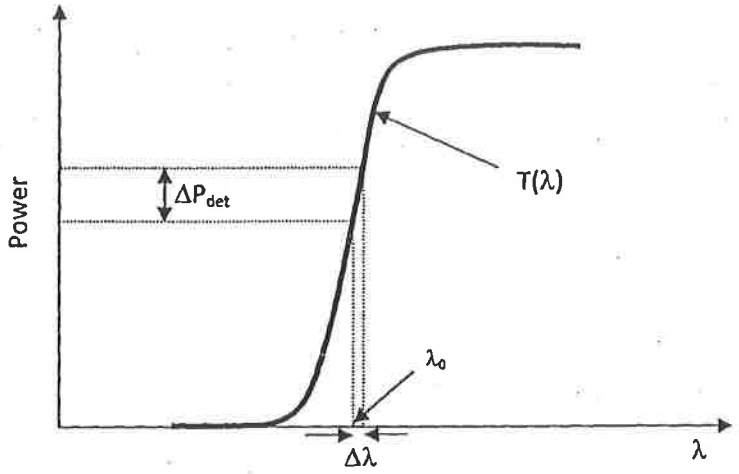


Fig. 3

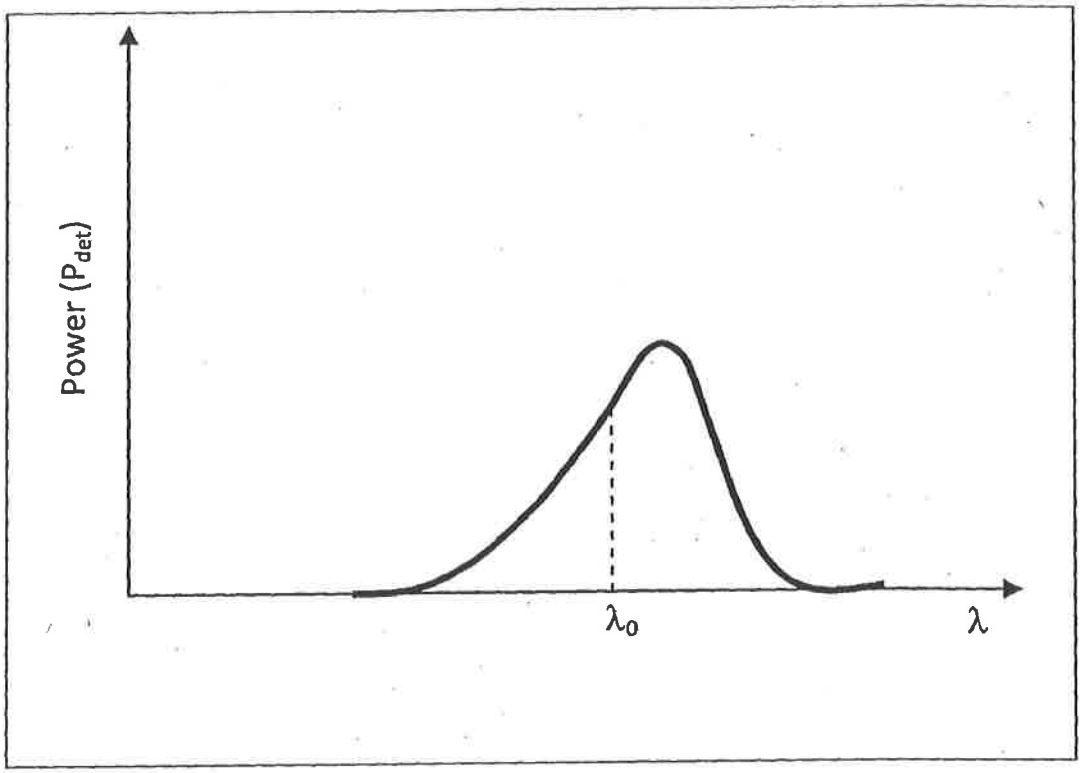


Fig. 4

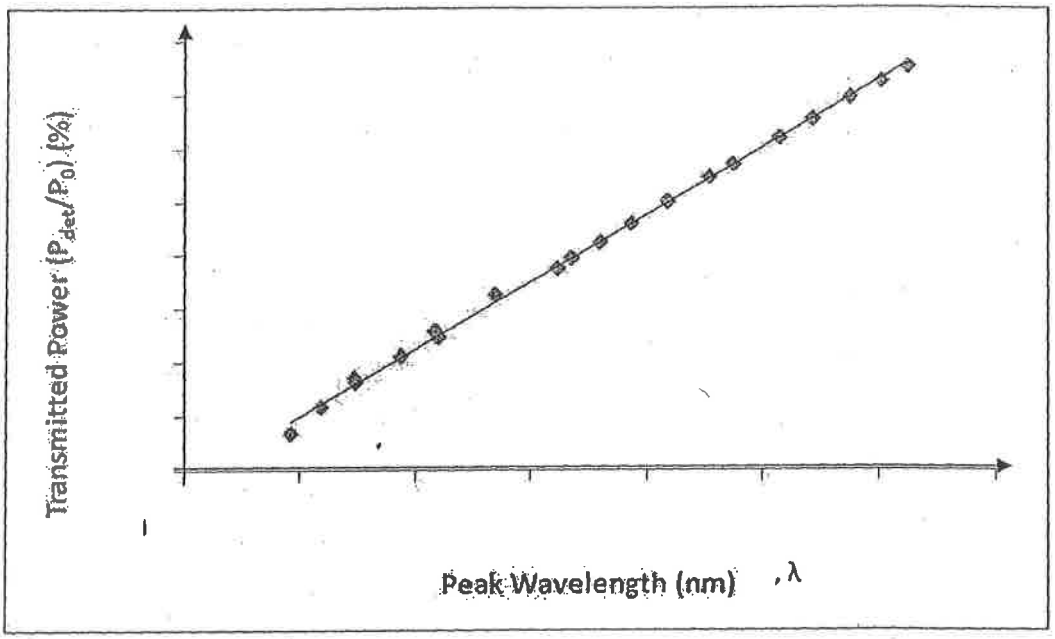


Fig. 5

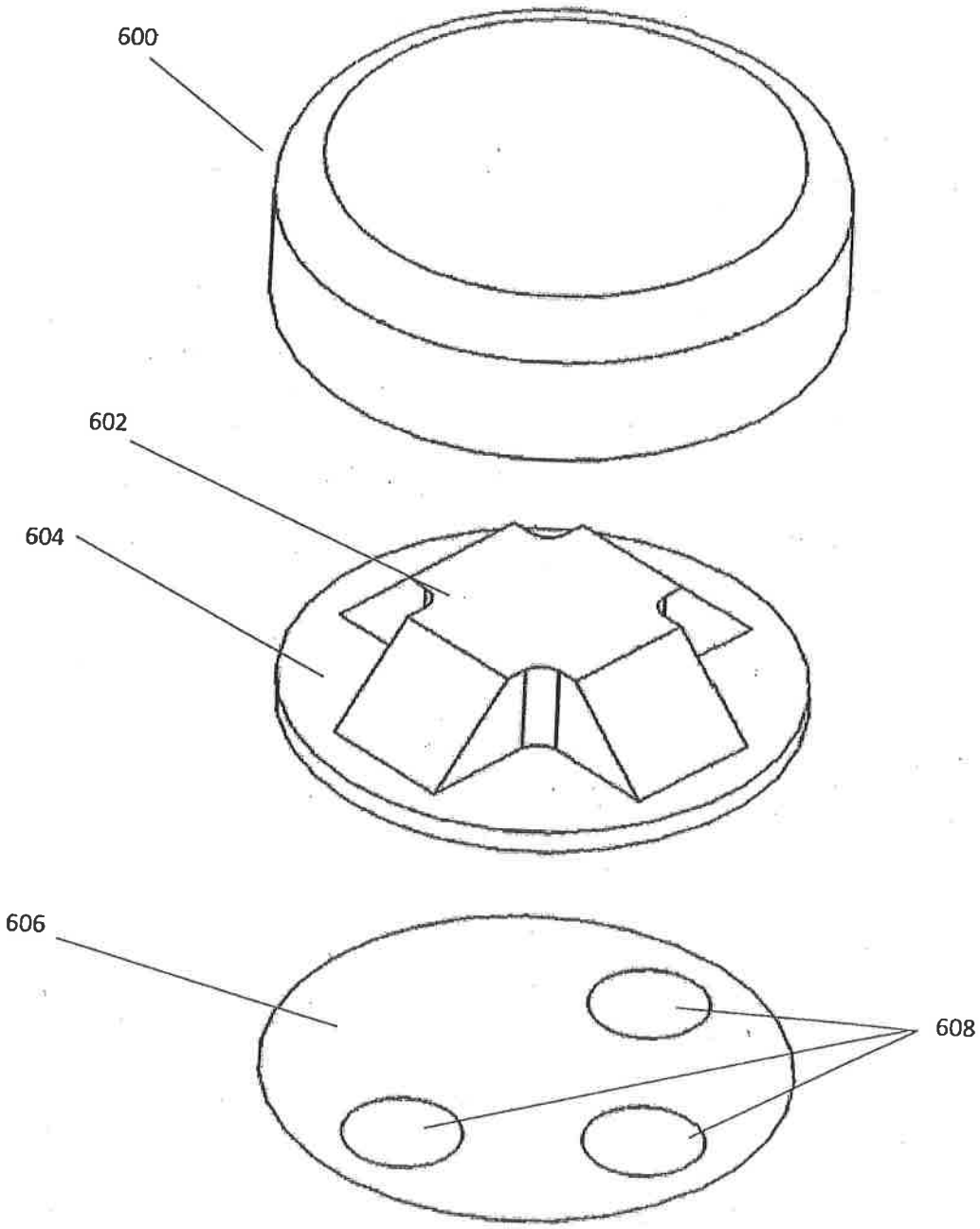


Fig. 6

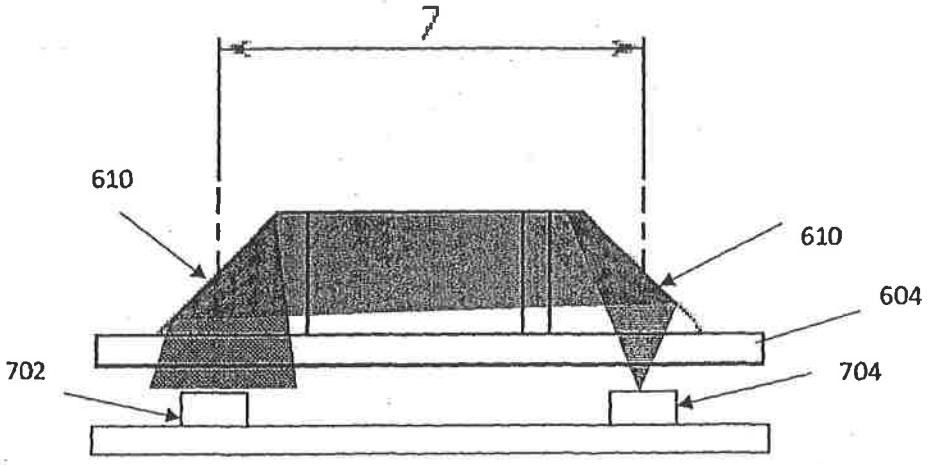


Fig. 7a

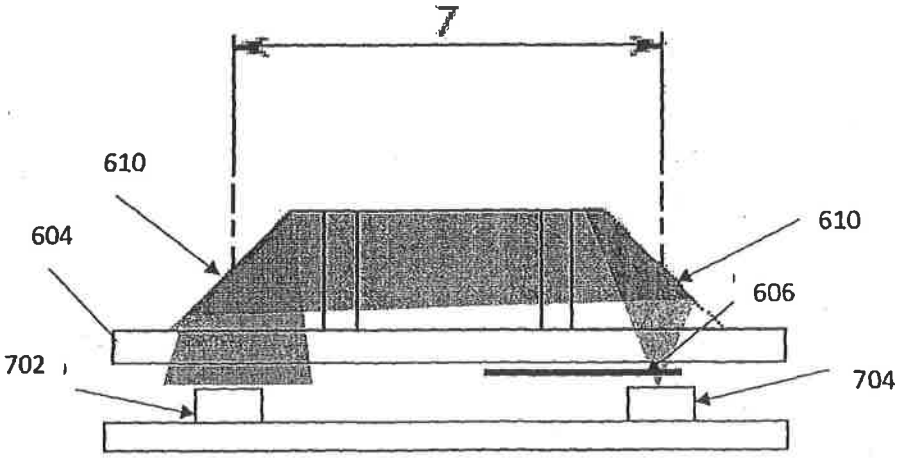


Fig. 7b

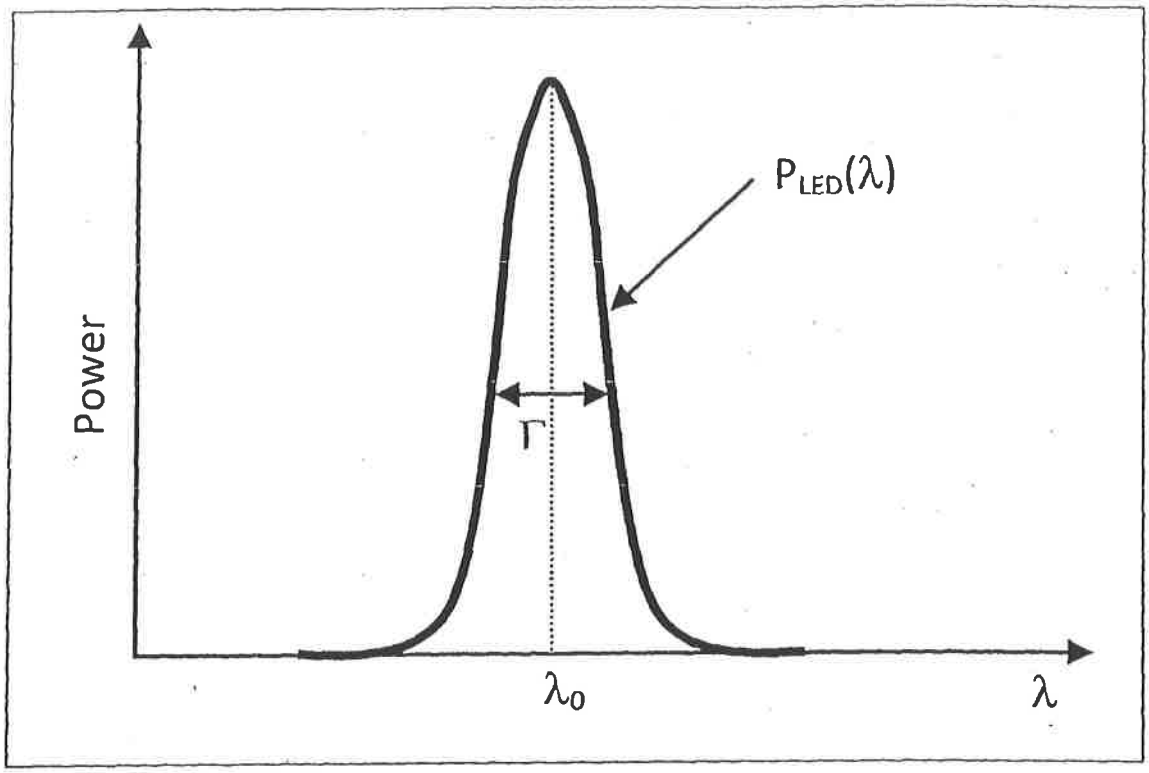


Fig. 8

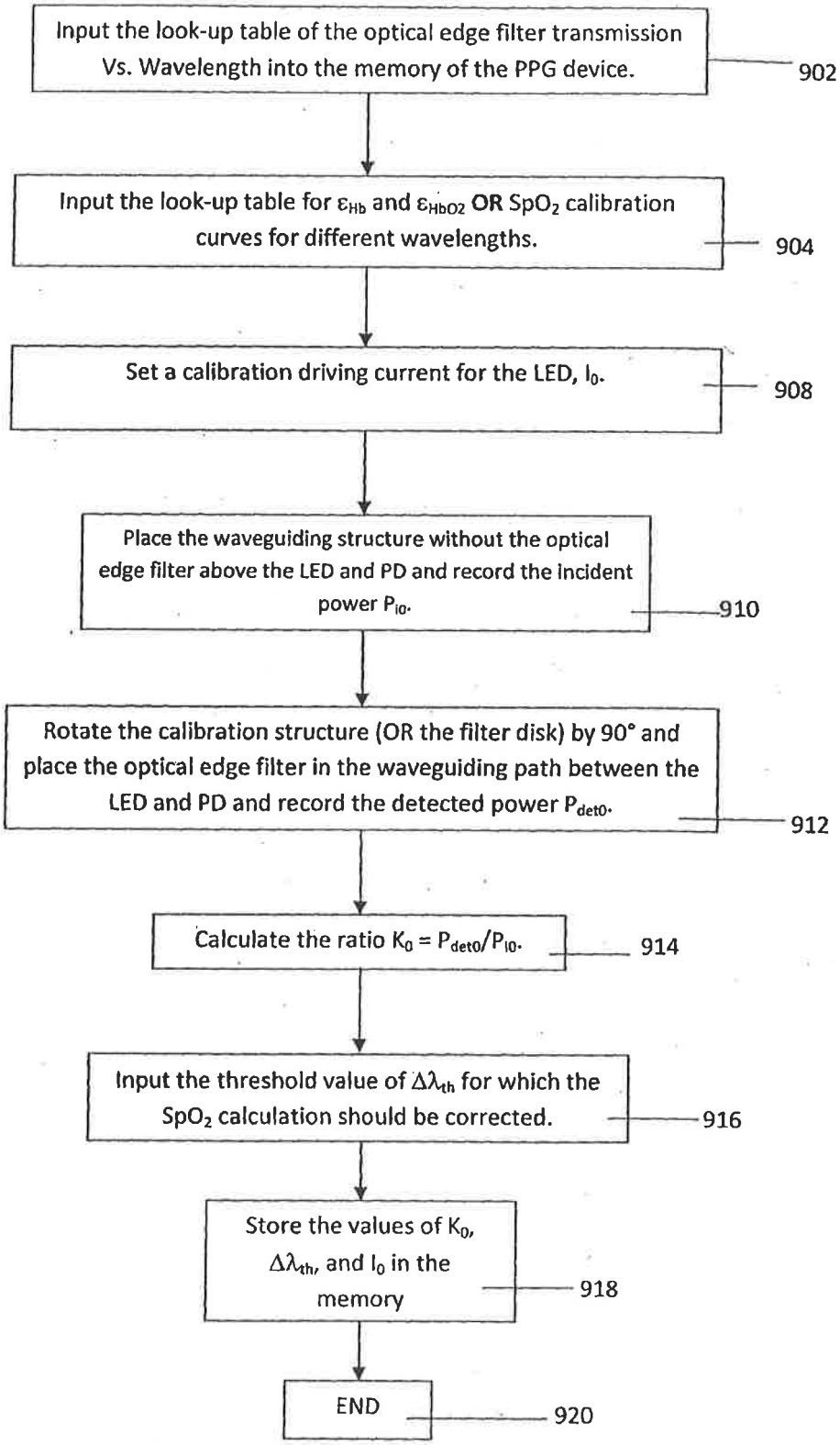

Input the look-up table of the optical edge filter transmission Vs. Wavelength into the memory of the PPG device.
902
Input the look-up table for ε_{Hb} and ε_{HbO2} OR SpO_2 calibration curves for different wavelengths.
904
Set a calibration driving current for the LED, I_0.
908
Place the waveguiding structure without the optical edge filter above the LED and PD and record the incident power P_{i0}.
910
Rotate the calibration structure (OR the filter disk) by 90° and place the optical edge filter in the waveguiding path between the LED and PD and record the detected power P_{det0}.
912
Calculate the ratio $K_0 = P_{det0}/P_{i0}$.
914
Input the threshold value of $\Delta\lambda_{th}$ for which the SpO_2 calculation should be corrected.
916
Store the values of K_0, $\Delta\lambda_{th}$, and I_0 in the memory
918
END
920

Fig. 9

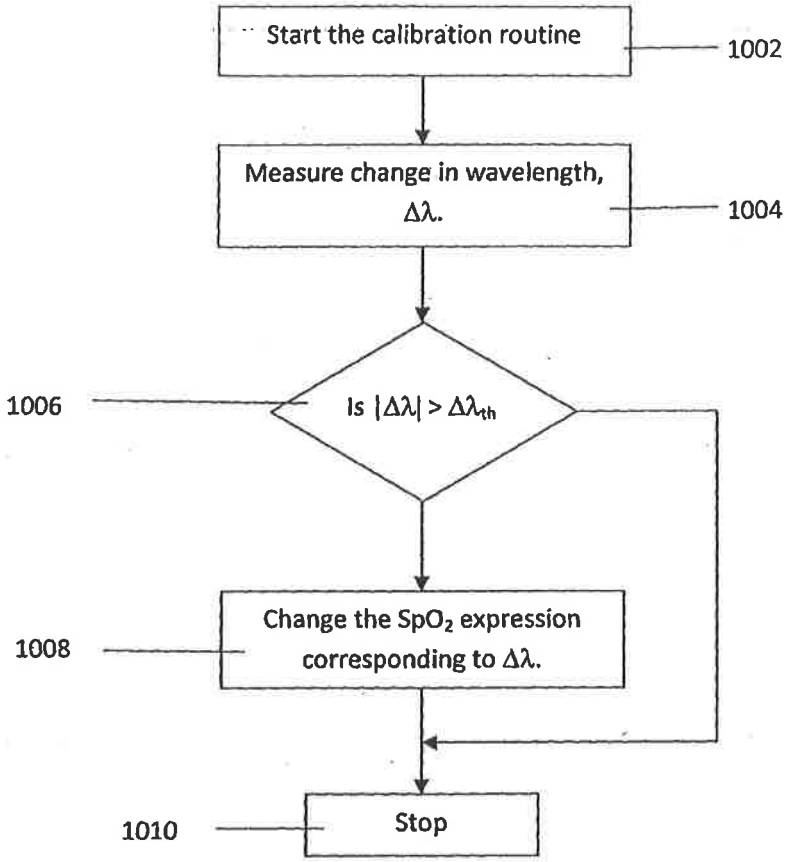

Start the calibration routine
1002
Measure change in wavelength, Δλ.
1004
1006
Is |Δλ| > Δλth
Change the SpO2 expression corresponding to Δλ.
1008
Stop
1010

Fig. 10

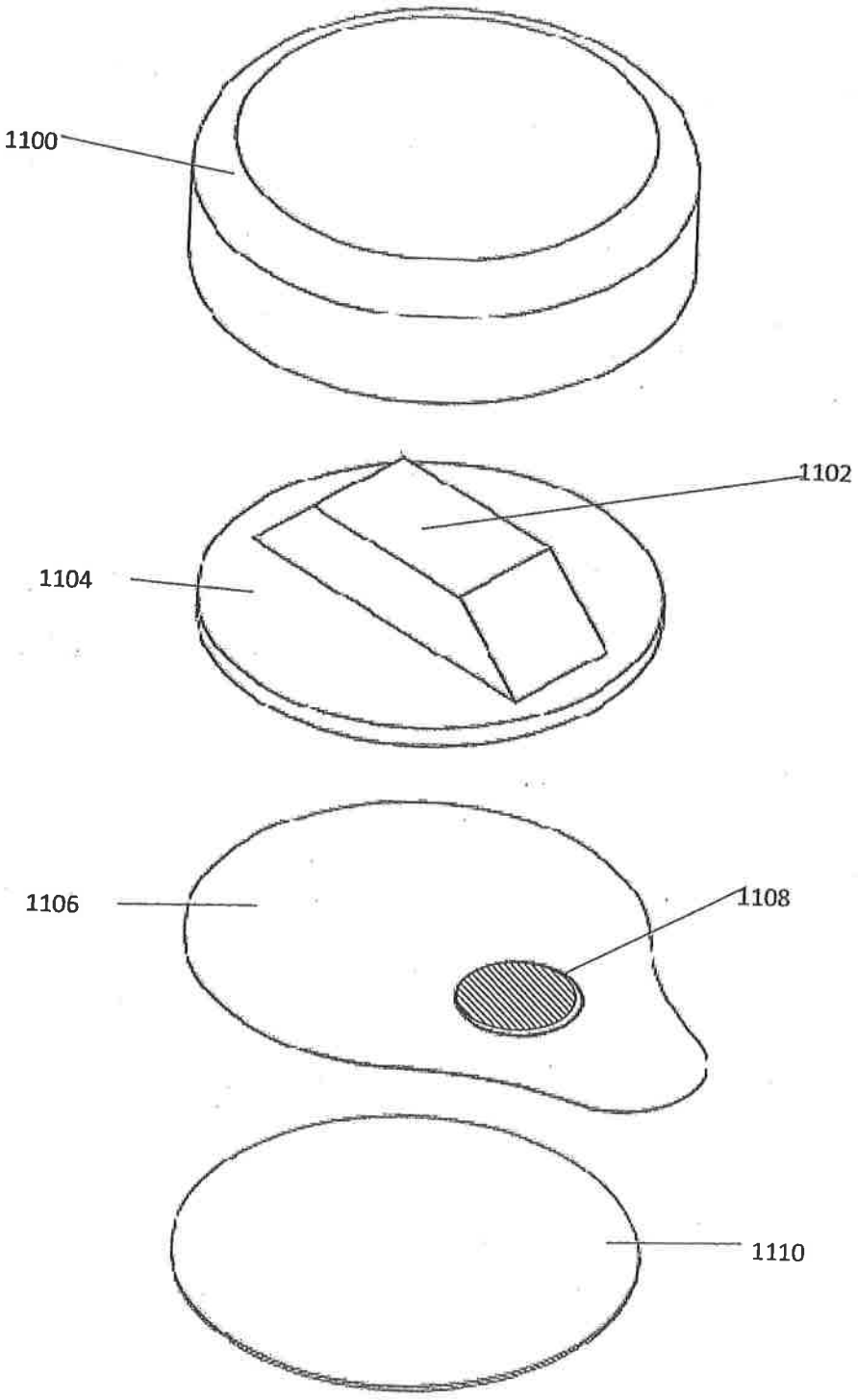


Fig. 11

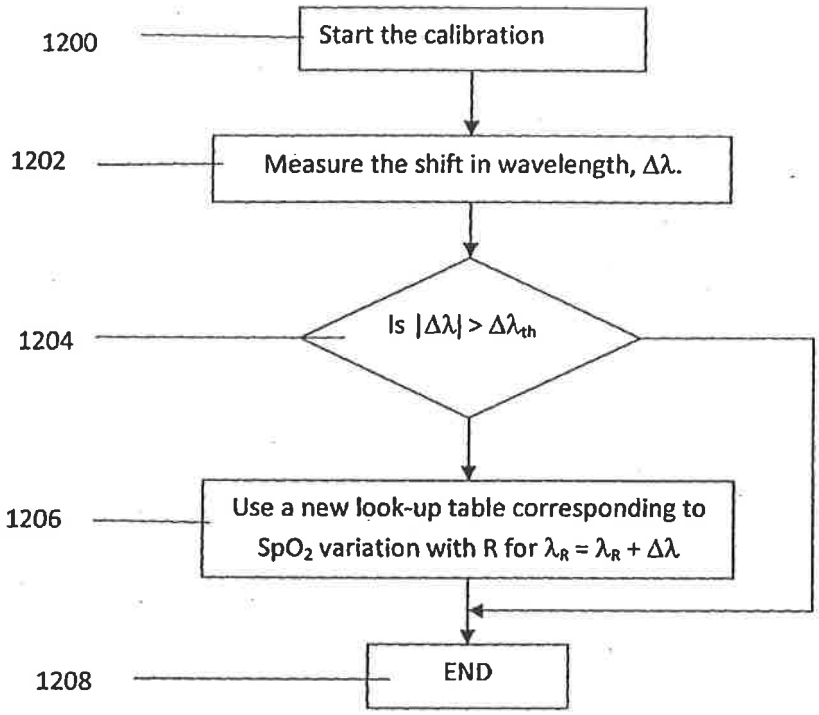

1200
Start the calibration
1202
Measure the shift in wavelength, Δλ.
1204
Is |Δλ| > Δλth
1206
Use a new look-up table corresponding to SpO2 variation with R for λR = λR + Δλ
1208
END

Fig. 12

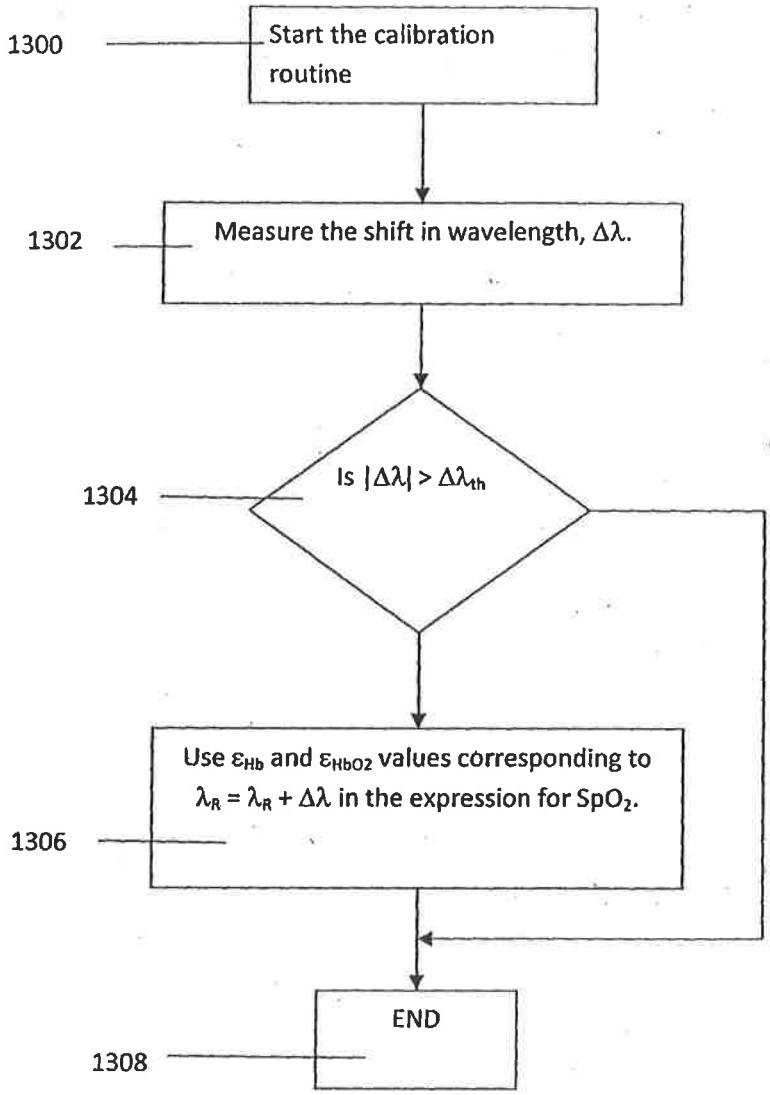

1300
Start the calibration routine
1302
Measure the shift in wavelength, Δλ.
1304
Is |Δλ| > Δλth
1306
Use εHb and εHbO2 values corresponding to λR = λR + Δλ in the expression for SpO2.
1308
END

Fig. 13

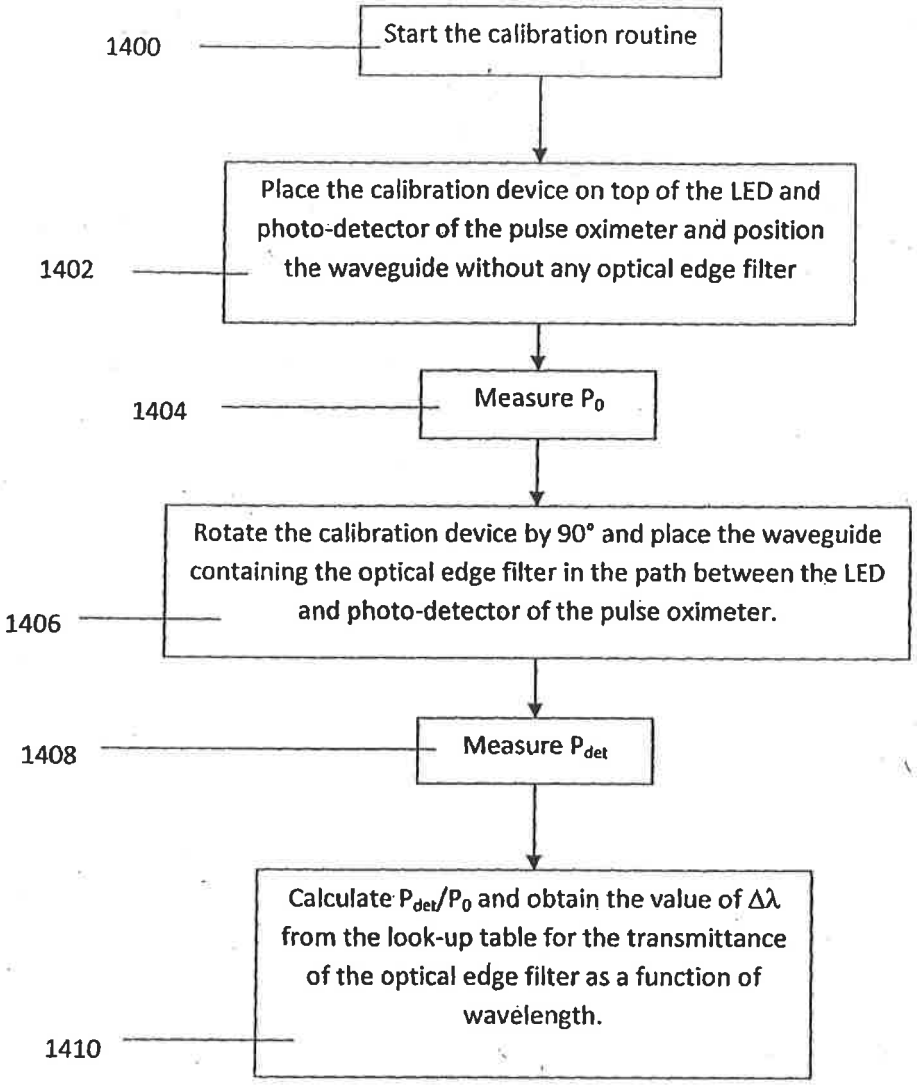

1400
Start the calibration routine
Place the calibration device on top of the LED and photo-detector of the pulse oximeter and position the waveguide without any optical edge filter
1402
Measure P_0
1404
Rotate the calibration device by 90° and place the waveguide containing the optical edge filter in the path between the LED and photo-detector of the pulse oximeter.
1406
Measure P_{det}
1408
Calculate P_{det}/P_0 and obtain the value of $\Delta\lambda$ from the look-up table for the transmittance of the optical edge filter as a function of wavelength.
1410

Fig. 14a

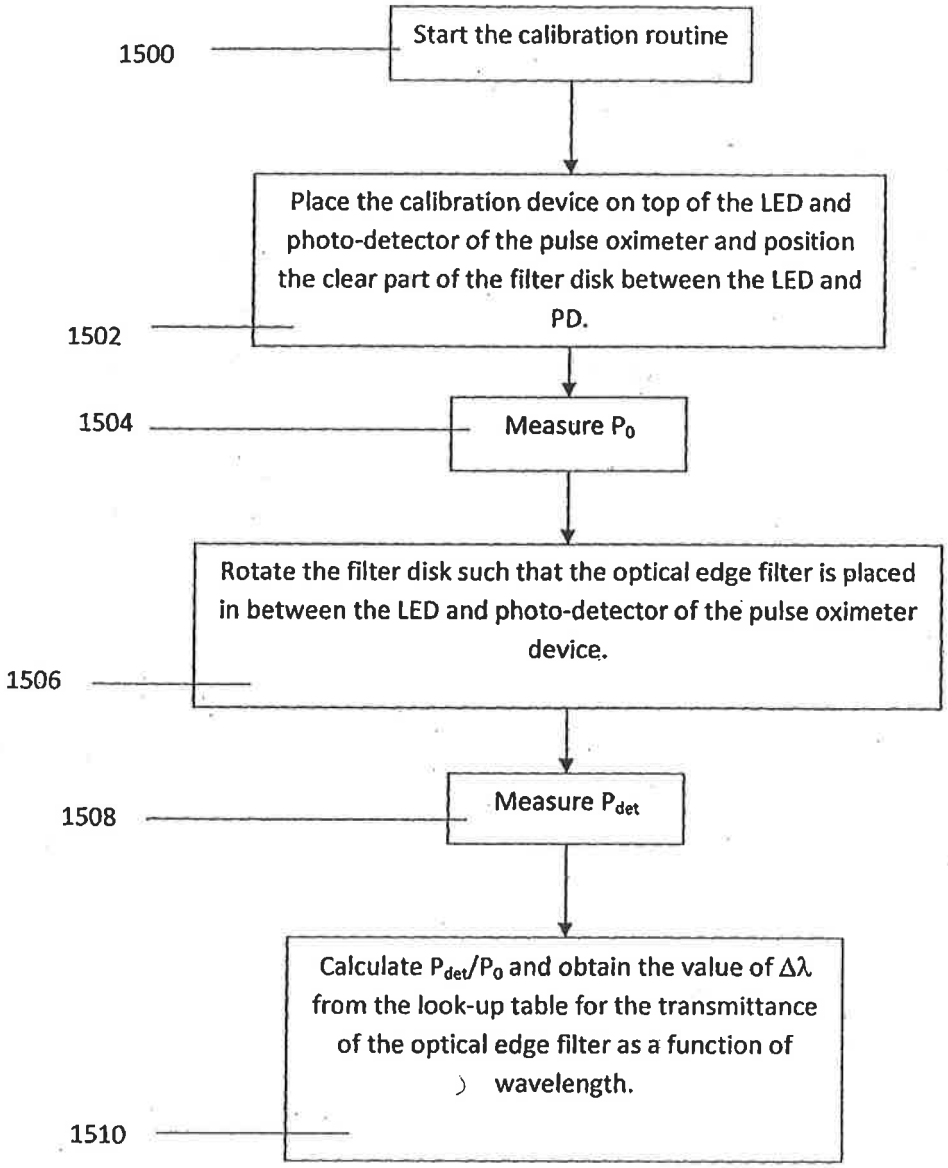

1500
Start the calibration routine
Place the calibration device on top of the LED and photo-detector of the pulse oximeter and position the clear part of the filter disk between the LED and PD.
1502
1504
Measure P_0
Rotate the filter disk such that the optical edge filter is placed in between the LED and photo-detector of the pulse oximeter device.
1506
Measure P_{det}
1508
Calculate P_{det}/P_0 and obtain the value of $\Delta\lambda$ from the look-up table for the transmittance of the optical edge filter as a function of wavelength.
1510

Fig. 14b

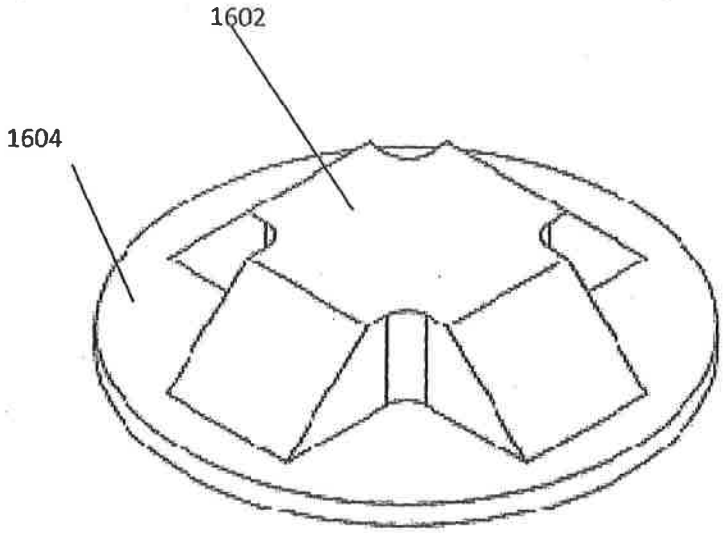


Fig. 15a

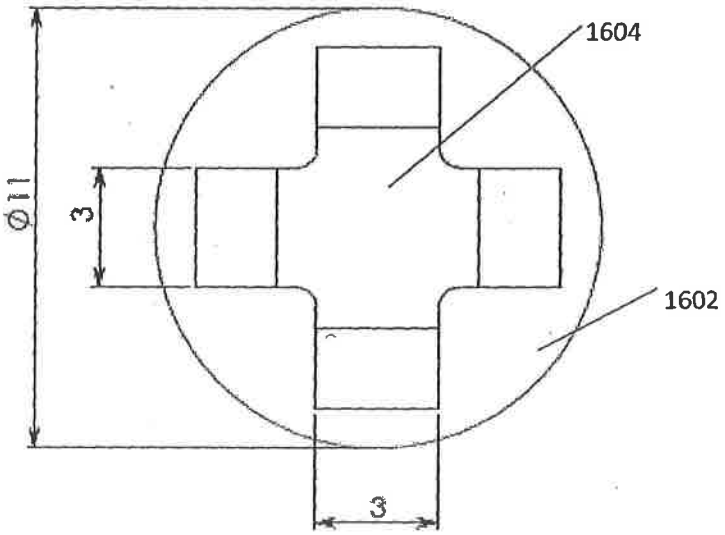


Fig. 15b