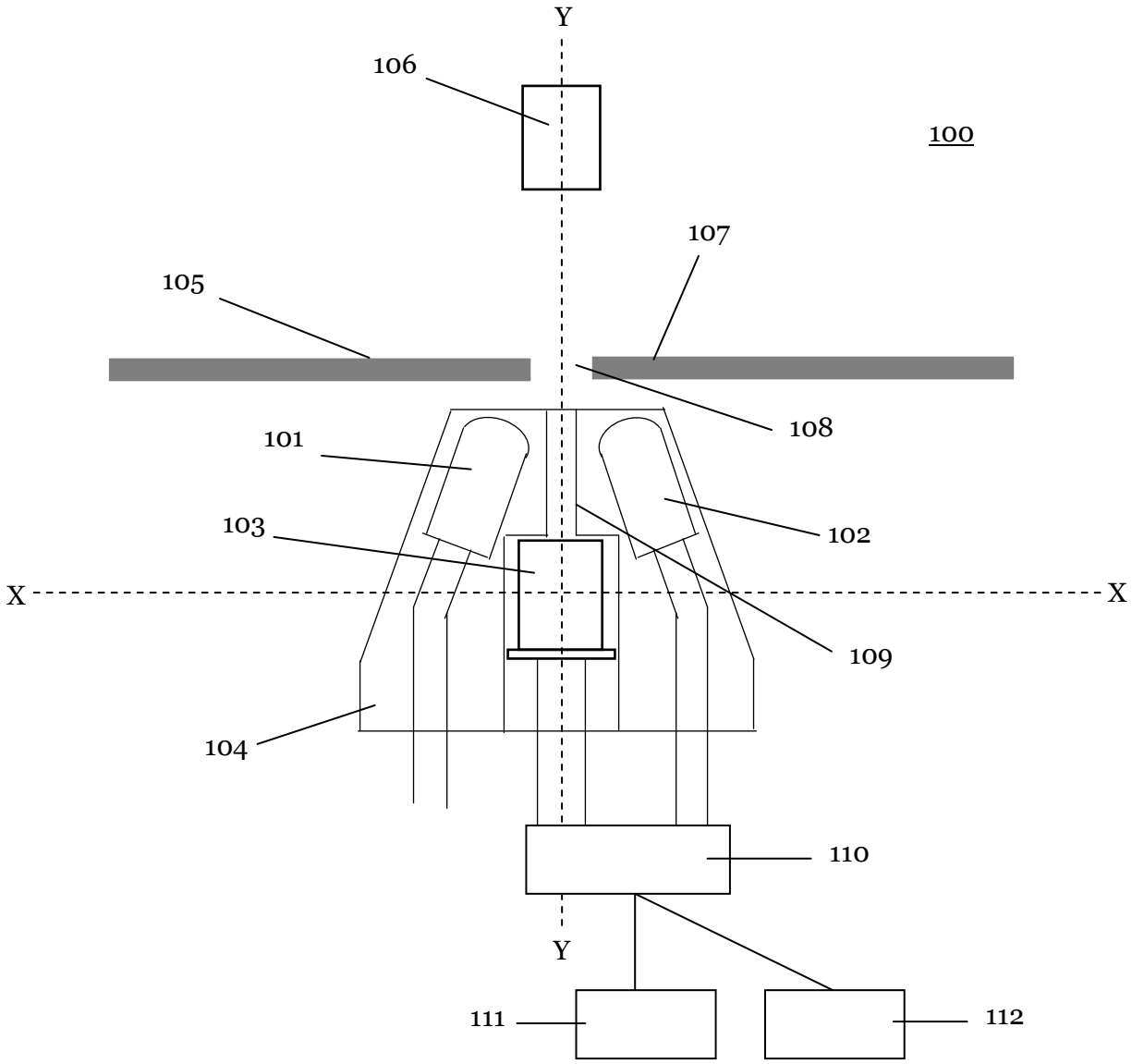


Figure 1

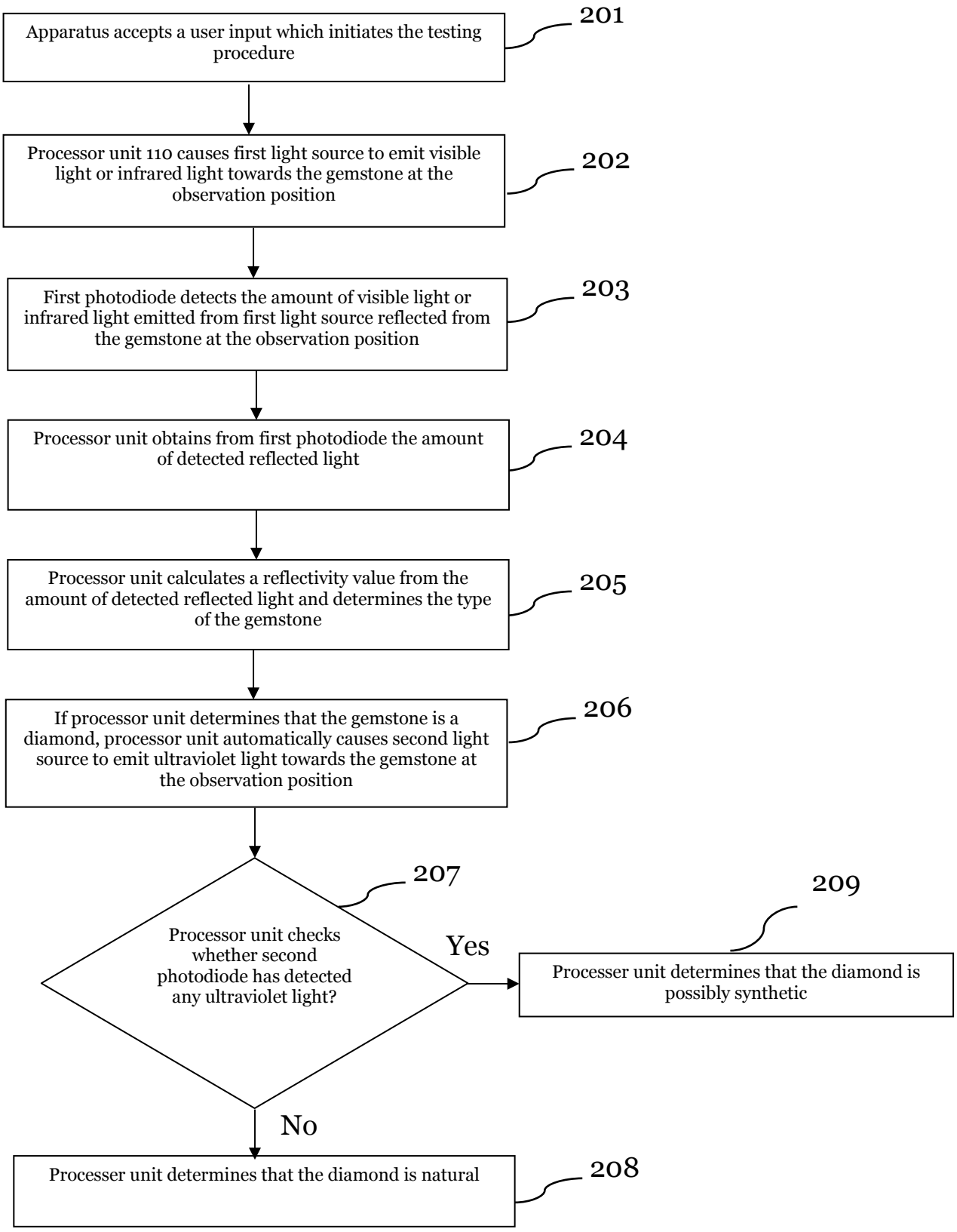

Apparatus accepts a user input which initiates the testing procedure
201
Processor unit 110 causes first light source to emit visible light or infrared light towards the gemstone at the observation position
202
First photodiode detects the amount of visible light or infrared light emitted from first light source reflected from the gemstone at the observation position
203
Processor unit obtains from first photodiode the amount of detected reflected light
204
Processor unit calculates a reflectivity value from the amount of detected reflected light and determines the type of the gemstone
205
If processor unit determines that the gemstone is a diamond, processor unit automatically causes second light source to emit ultraviolet light towards the gemstone at the observation position
206
Processor unit checks whether second photodiode has detected any ultraviolet light?
207
Yes
209
Processer unit determines that the diamond is possibly synthetic
No
Processer unit determines that the diamond is natural
208

Figure 2

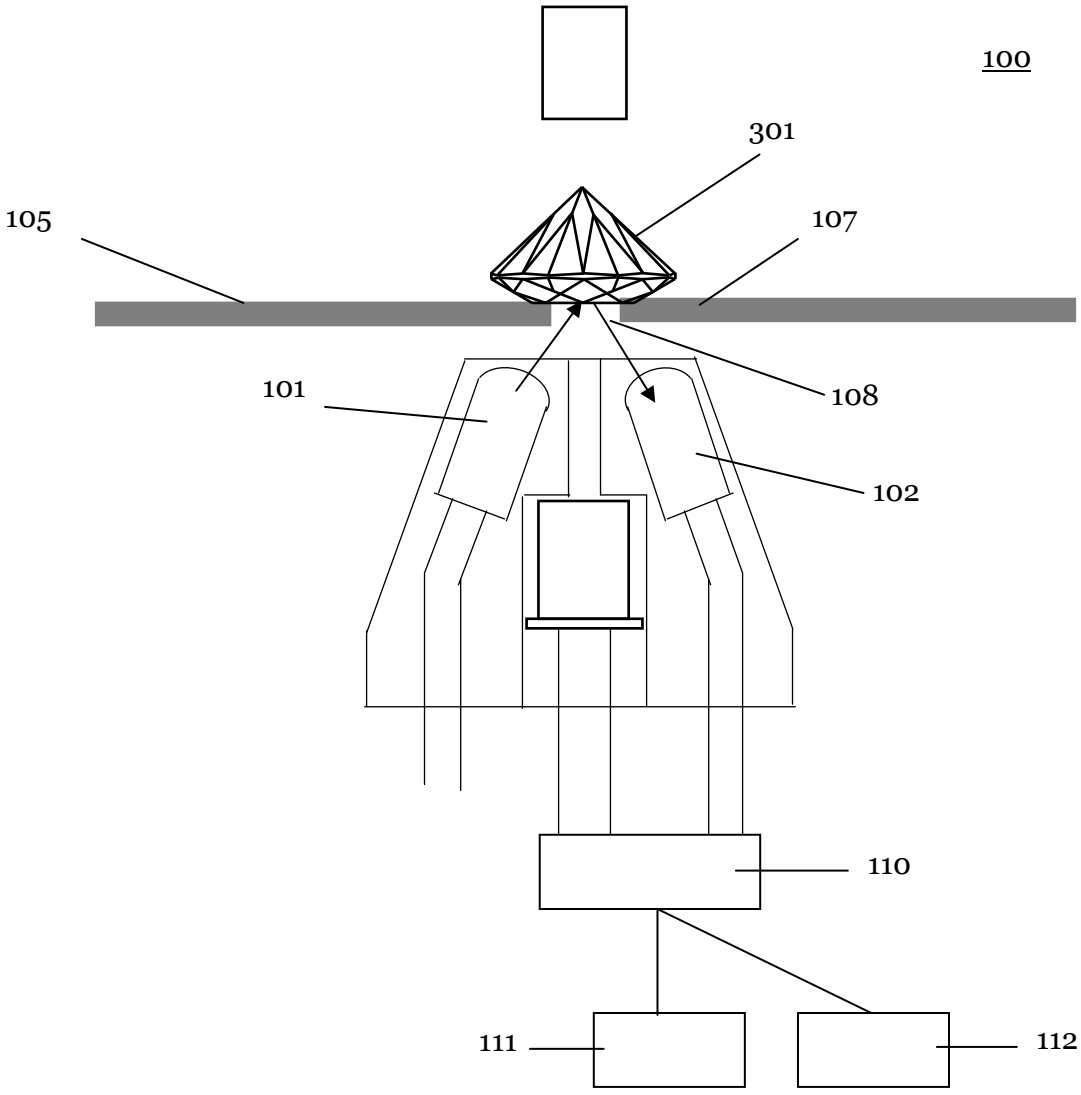


Figure 3

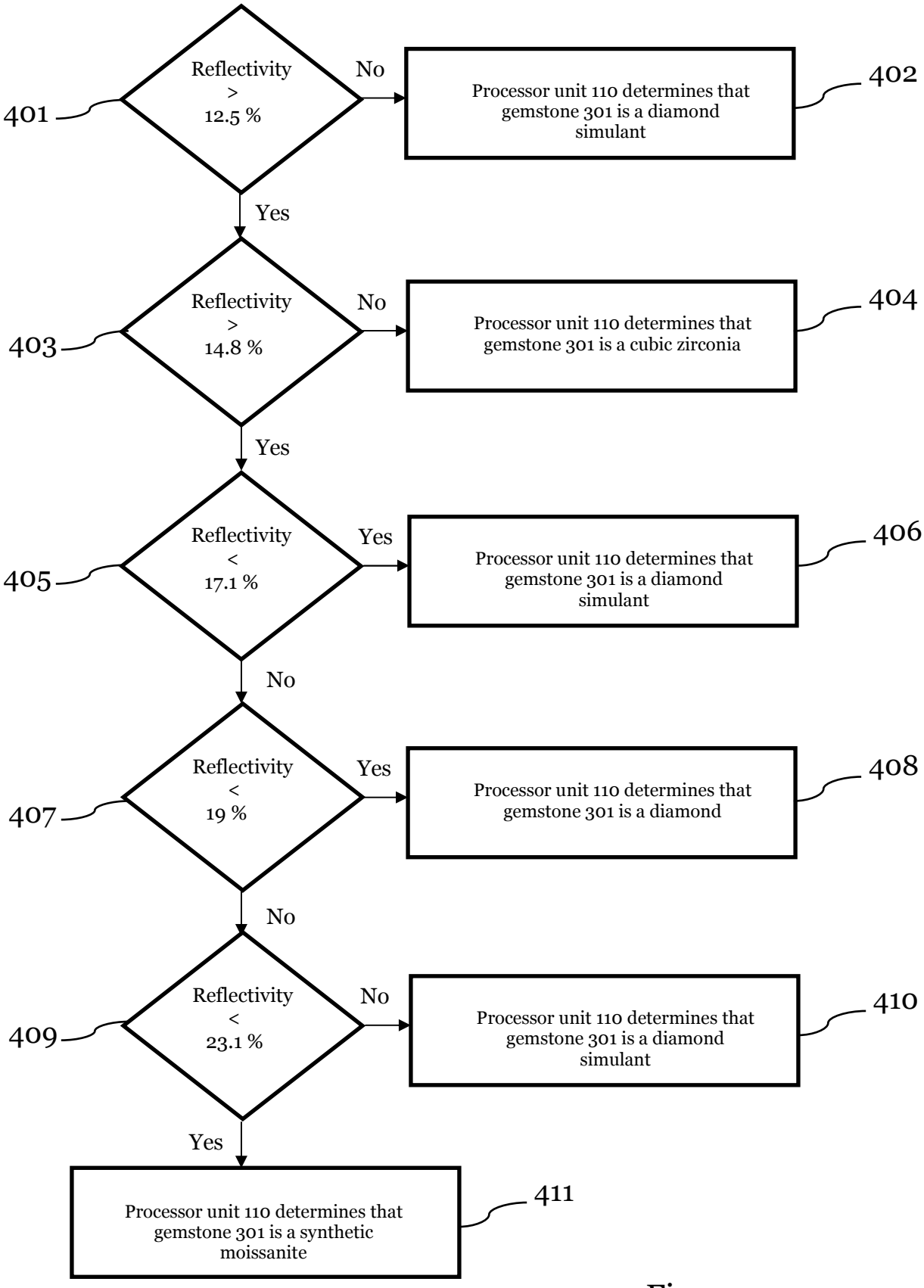

401
Reflectivity > 12.5 %
No
Processor unit 110 determines that gemstone 301 is a diamond simulant
402
Yes
403
Reflectivity > 14.8 %
No
Processor unit 110 determines that gemstone 301 is a cubic zirconia
404
Yes
405
Reflectivity < 17.1 %
Yes
Processor unit 110 determines that gemstone 301 is a diamond simulant
406
No
407
Reflectivity < 19 %
Yes
Processor unit 110 determines that gemstone 301 is a diamond
408
No
409
Reflectivity < 23.1 %
No
Processor unit 110 determines that gemstone 301 is a diamond simulant
410
Yes
Processor unit 110 determines that gemstone 301 is a synthetic moissanite
411

Figure 4

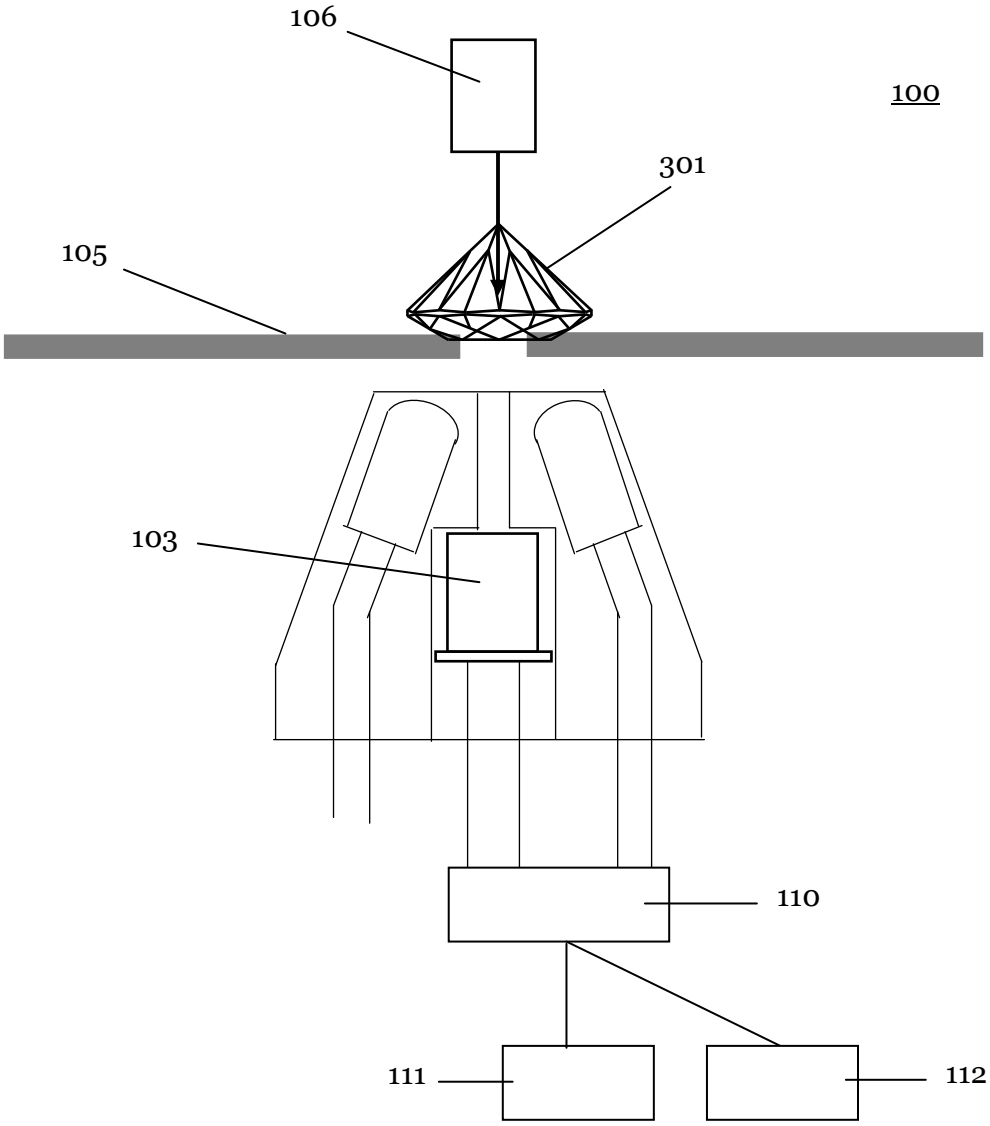


Figure 5