CLAIMS

1. A groove forming apparatus comprising:

a laser light source that emits a laser beam;

a multi-beam generator that divides the laser beam into a plurality of sub-laser beams;

a focusing lens unit that focuses the plurality of sub-laser beams on a processing target;

a first telecentric lens provided between the multi-beam generator and the focusing lens unit; and

a second telecentric lens provided between the first telecentric lens and the focusing lens unit,

wherein the above multi-beam generator divides the plurality of sub-laser beams, such that a spacing between the plurality of sub-laser beams on the processing target is 50 micrometers (μm) or greater.

2. The groove forming apparatus of claim 1, wherein a rear focal plane of the first telecentric lens and a front focal plane of the second telecentric lens overlap each other.

3. The groove forming apparatus of claim 1, wherein the first telecentric lens has a size for accommodating the plurality of sub-laser beams split at a maximum angle from the multi-beam generator.

4. The groove forming apparatus of claim 3, wherein the maximum angle is ±3°.

5. The groove forming apparatus of claim 1, wherein spacings between the plurality of sub-laser beams on the processing target are identical to one another.

6. The groove forming apparatus of claim 1, wherein at least two of the spacings between the plurality of sub-laser beams on the processing target are different from each other.

7. The groove forming apparatus of claim 1, wherein the plurality of sub-laser beams are symmetrically arranged on the processing target.

8. The groove forming apparatus of claim 1, wherein the plurality of sub-laser beams have a same intensity.

9. The groove forming apparatus of claim 1, wherein at least two of the plurality of sub-laser beams have different intensities from each other.

10. The groove forming apparatus of claim 1, further including a scan head,

wherein the focusing lens unit is disposed within the scan head, and

the multi-beam generator, the first telecentric lens, and the second telecentric lens are arranged outside the scan head.

11. The groove forming apparatus of claim 1, further comprising a stage for supporting the processing target,

wherein the stage adjusts a position at which the plurality of sub-laser beams are focused on the processing target.

12. A groove forming apparatus comprising:

a laser light source that emits a laser beam;

a multi-beam generator that divides the laser beam into a plurality of sub-laser beams; and

a focusing lens unit that focuses the plurality of sub-laser beams onto a processing target,

wherein the focusing lens unit is spaced apart from the multi-beam generator to accommodate the plurality of sub-laser beams that are split at a maximum angle from the multi-beam generator, and

the above multi-beam generator divides the plurality of sub-laser beams, such that a spacing between the plurality of sub-laser beams on the processing target is 50 micrometers (μm) or greater.

13. The groove forming apparatus of claim 12, wherein the maximum angle is ±3°.