WHAT IS CLAIMED IS:

1. A method of processing a workpiece using a laser processing apparatus including a pulsed laser beam applying unit having a laser oscillator for emitting a pulsed laser bream having a wavelength that is absorbable by the workpiece, a condensing lens for focusing the pulsed laser beam emitted from the laser oscillator, and a branching unit disposed between the laser oscillator and the condensing lens, for branching the pulsed laser beam into a plurality of pulses, forming a plurality of focused laser beam spots, a chuck table for holding the workpiece thereon, a processing feed unit for moving the chuck table and the condensing lens relatively to each other in a processing feed direction, an input unit for accepting laser processing conditions set by a user, and an alarm device for issuing a predetermined alarm information, the method comprising:

a laser processing step of applying the pulsed laser beams branched in the processing feed direction by the branching unit through the condensing lens to the workpiece held on the chuck table while the chuck table is being processed and fed in the processing feed direction with respect to the condensing lens,

wherein, in the laser processing step,

if it is assumed that branch intervals at which adjacent ones of the focused laser beam spots are spaced from each other on a surface of the workpiece are represented by L,

a value, represented by S, is calculated by dividing a processing feed speed at which the chuck table is moved with respect to the condensing lens by the processing feed unit, represented by V, by a frequency of the pulsed laser beam at a processing point, represented by f, and

any integer is represented by n,

the branch intervals, the processing feed speed, and the frequency are established to satisfy a relationship of $L \neq n \times S$, and $S = V/f$;

wherein an overlapping percentage of the focused laser beam spots is represented by P, the overlapping percentage is calculated by $P = W/D \times 100$ where P represents the overlapping percentage, D represents a beam diameter of the focused laser beam spots, and W is an overlap width which represents a length in the processing feed direction of each of overlapping portions of the focused laser beam spots formed by different pulses of the pulsed laser beam,

wherein the branch intervals, the processing feed

speed, and the frequency of the pulsed laser beam are established to satisfy the relationship of $0 \leq P < 80$, and

wherein the predetermined alarm information is issued when set values of the branch intervals, the processing feed speed, and the frequency of the pulsed laser beam satisfy the equation: $L = n \times V/f$.

2. The method of processing a workpiece using a laser processing apparatus according to claim 1, wherein

if the overlapping percentage is 80% or higher ($P \geq 80$), the workpiece tends to be overheated by the pulsed laser beam; and

thermal damage caused to the workpiece by the pulsed laser beam can be reduced by reducing the overlap width.