CLAIMS

1. Laser working machine for laser working of tubes and profiled sections (T), comprising

a working head (12) provided with a focussing device (18) arranged to emit a focussed laser beam on a surface of the tube or profiled section (T) to be worked,

a carriage (26) on which the working head (12) is mounted, and

a scanning system (20) arranged to scan at least a portion of the outline of the cross-section of the tube or profiled section (T),

wherein the carriage (26) is mounted so as to be able to translate relative to the tube or profiled section (T) both in a longitudinal direction (x) coinciding with the longitudinal axis of the tube (T) and in a transverse direction (y),

wherein the scanning system (20) comprises at least one laser scanning module (20) having a laser emitter (22) arranged to emit a light blade (L) with which to illuminate a portion of the tube or profiled section (T), a camera (24) arranged to acquire an image of the portion of tube or profiled section (T) illuminated by said light blade (L), and a processing unit configured to process the images acquired by each camera (24) to reconstruct the whole outline, or at least a portion thereof, of the cross-section of the tube or profiled section (T), and

wherein the working head (12) and said at least one laser scanning module (20) are mounted on said carriage (26) so as to be drivingly connected for translation therewith both in the longitudinal direction (x) and in the transverse direction (y).

2. Machine according to claim 1, wherein the laser scanning system comprises two or more laser scanning modules (20).

3. Machine according to claim 2, wherein the laser scanning modules (20) are arranged in such a manner that the light blades (L) generated by the respective laser emitters (22) lie in a same plane.

4. Machine according to claim 3, wherein said plane is a vertical plane.

5. Machine according to claim 4, wherein said plane passes through the optical axis (o_L) of the focussed laser beam emitted by the focussing device (18) of the working head (12).

6. Machine according to any of claims 2 to 5, wherein the laser emitters (22) of the laser scanning modules (20) are arranged to emit light blades (L) having the same wavelength.

7. Machine according to any of claims 2 to 5, wherein the laser emitters (22) of the laser scanning modules (20) are arranged to emit light blades (L) having different wavelengths.

8. Machine according to any of the preceding claims, wherein the laser emitter (22) and the camera (24) of said at least one laser scanning module (20) are mounted in such a manner that the optical axis (o_1) of the laser emitter (22) lies in a vertical plane and is inclined by a given angle (β) to the horizontal plane, while the optical axis (o_2) of the camera (24) lies in the same plane as the optical axis (o_1) of the laser emitter (22) and is inclined to the latter.

9. Machine according to any of the preceding claims, wherein said carriage (26) is also mounted so as to be able to translate in a vertical direction (z) relative to the tube or profiled section (T).

10. Machine according to any of the preceding claims, further comprising a feeding device (14) arranged to control translation of the tube or profiled section (T) along its longitudinal axis (x) and rotation of the tube or profiled section (T) about its longitudinal axis (x).