WHAT IS CLAIMED IS:

1. A cutting blade replacement apparatus mounted on a cutting apparatus including a chuck table that holds a workpiece, a cutting unit in which a cutting blade that cuts the workpiece held by the chuck table is mounted, an X-axis feed mechanism that executes processing feed in an X-axis direction, and a Y-axis feed mechanism that executes indexing feed in a Y-axis direction orthogonal to the X-axis direction, the cutting blade replacement apparatus being capable of attaching and detaching the cutting blade to and from the cutting unit,

the cutting unit having a spindle with a tip at which a flange is disposed and being configured in such a manner that mounting of the cutting blade is allowed by inserting a boss part that protrudes from a center of the flange into a central opening part of the cutting blade and screwing a nut to a male screw formed at an end part of the boss part,

the cutting blade replacement apparatus comprising:

a nut attaching-detaching unit including at least one nut holding part that holds the nut and a drive part that rotates the at least one nut holding part, wherein

when the nut is screwed to the male screw

formed at the end part of the boss part, one of the nut attaching-detaching unit and the cutting unit moves in the Y-axis direction in synchronization with a speed at which the boss part and the nut relatively move in the Y-axis direction due to the screwing of the nut, and the other of the nut attaching-detaching unit and the cutting unit escapes in the Y-axis direction when a pressing force equal to or larger than a predetermined value acts on the nut attaching-detaching unit or the cutting unit.

2. The cutting blade replacement apparatus according to claim 1, wherein

the Y-axis feed mechanism includes a first motor; and

the cutting blade replacement apparatus includes a Y-axis direction positioning mechanism having a second motor that moves the nut attaching-detaching unit in the Y-axis direction.

3. The cutting blade replacement apparatus according to any one of the preceding claims, wherein

the nut attaching-detaching unit includes blade holding parts that hold the cutting blade, and

the nut attaching-detaching unit comprises two blade holding parts per one nut holding part.

4. The cutting blade replacement apparatus according

to claim 3, wherein

the nut attaching-detaching unit includes a casing comprising sidewalls for mounting the at least one nut holding part and the blade holding parts, and

two nut holding parts are disposed on a pair of the sidewalls opposed to each other, and the blade holding parts are mounted on four of the sidewalls of the casing.

5. The cutting blade replacement apparatus according to any one of the preceding claims, wherein

a warning is issued when the nut is not screwed.

6. The cutting blade replacement apparatus according to claim 5, wherein

it is determined that the nut is not screwed when rotation of the at least one nut holding part has continued for a predetermined time or longer.

7. The cutting blade replacement apparatus according to any one of the preceding claims, wherein the speed of a movement of the one of the nut attaching-detaching unit and the cutting unit is calculated as a pitch of the nut multiplied by a rotation speed of the nut.