

WHAT IS CLAIMED IS:

1. A holding mechanism for that holdings a frame unit, ~~formed by positioning a wafer at an opening of an annular frame and attaching the wafer and the annular frame to an adhesive tape to integrate the annular frame with the wafer, the annular frame including a ferromagnetic material and being provided at a center thereof with the opening for accommodating the wafer,~~ the holding mechanism comprising:

a wafer holding section that holds athe wafer under suction; and

a frame support section that is disposed on an outer circumference of the wafer holding section and that supports anthe annular frame,

wherein the frame unit is formed by positioning the wafer at an opening of the annular frame and attaching the wafer and the annular frame to an adhesive tape to integrate the annular frame with the wafer, the annular frame including a ferromagnetic material and being provided at a center thereof with the opening for accommodating the wafer;

wherein the frame support section includes a release section that accommodates a permanent magnet, and the release section is configured to:

position the permanent magnet at a raised position where the permanent magnet can magnetically attract the annular frame; and

also position the permanent magnet at a lowered position where the annular frame can be released from magnetic attachment to the permanent magnet.

~~2. The holding mechanism according to claim 1, wherein the frame support section further includes a release section that releases the annular frame magnetically attached to the permanent magnet.~~

23. The holding mechanism according to claim 12, wherein the release section includes a tubular body that includes a nonmagnetic material and that accommodates the permanent magnet in the tubular body, and an advancing-retracting section that moves the permanent magnet relative to ~~ly advances and retracts the permanent magnet and~~ the tubular body, and

wherein when the permanent magnet is ~~relatively~~ retracted ~~from within~~ the tubular body, the permanent magnet is thus positioned at the lowered position and ~~to thereby release the annular frame~~ is released from the magnetic attachment to ~~from~~ the permanent magnet.

3. The holding mechanism according to any of claim 1 or claim 2, wherein the permanent magnet

comprises:

a cylindrical main section that magnetically attracts the annular frame at an upper surface thereof;
and

an annular flange section extending toward a radial-directionally outer side from a lower end of the main section.

4. The holding mechanism according to any one of claim 2 or claim 3, wherein

at the raised position, an upper surface of the permanent magnet and an upper surface of the tubular body are flush with each other; and

at the lowered position, the upper surface of the permanent magnet is located on a lower side relative to the upper surface of the tubular body.

5. The holding mechanism according to any one of claims 2 - 4, wherein

a partition wall is provided at a vertically intermediate part of the tubular body;

by the partition wall, the tubular body inside is partitioned into an upper-side accommodating chamber for accommodating the permanent magnet and a lower-side accommodating chamber for accommodating the advancing-retracting section; and

the partition wall is formed in its central portion with a through-hole.

6. The holding mechanism according to claim 5, wherein

on an upper end side of the upper-side accommodating chamber, a projecting section projecting toward a radial-directionally inner side of the tubular body is formed;

when an upward force is exerted on the permanent magnet from the advancing-retracting section, an upper end of the flange section of the permanent magnet is caught on a lower end of the projecting section, so that the permanent magnet is positioned at the raised position; and

when a downward force is exerted on the permanent magnet from the advancing-retracting section, a lower surface of the permanent magnet makes contact with an upper surface of the partition wall, so that the permanent magnet is positioned at the lowered position.

7. The holding mechanism according to any one of claim 5 or claim 6, wherein

the advancing-retracting section comprises:

a rod extending downward from a lower end of the permanent magnet through the through-hole;

a piston fixed to a lower end of the rod and
disposed in the lower-side accommodating chamber;

a coil spring disposed under the piston; and

a compressed air supply source connected to
an upper opening of the lower-side accommodating chamber.

8. The holding mechanism according to claim 7,
wherein in the advancing-retracting section:

when the supply of compressed air from the
compressed air supply source to the lower-side
accommodating chamber is stopped to push the piston
upward by the coil spring, an upward force is exerted on
the permanent magnet, the permanent magnet is raised
relative to the tubular body, and the permanent magnet is
thus positioned at the raised position; and

when compressed air is supplied from the
compressed air supply source into the lower-side
accommodating chamber to push the piston downward, a
downward force is exerted on the permanent magnet, the
permanent magnet is lowered relative to the tubular body,
and the permanent magnet is thus positioned at the
lowered position, and air is discharged through a lower
opening of the lower-side accommodating chamber.