WHAT IS CLAIMED IS:

1. A protective film forming apparatus for forming a water-soluble protective film on an upper surface of a wafer, the protective film forming apparatus comprising:

a holding table that retains a work set formed by affixing the wafer to a tape that is affixed to a ring frame so as to close an opening of the ring frame;

rotating means rotating the holding table about a center of a holding surface of the holding table; and

supplying means supplying a water-soluble resin to the upper surface of the wafer held by the holding table;

the supplying means including

a resin nozzle that supplies the water-soluble resin to a center of the upper surface of the wafer of the work set held by the holding table,

a water nozzle that supplies water to an upper surface of the ring frame of the work set held by the holding table, and

an air nozzle that supplies air to the upper surface of the ring frame of the work set held by the holding table,

the resin nozzle, the water nozzle, and the air nozzle being disposed on an arm extending in a direction of the holding surface of the holding table, and

the air nozzle being disposed downstream of the water nozzle in a direction of rotation of the holding table,

the arm being pivotable with one end as the axis in parallel direction to the holding surface, and

the resin nozzle being disposed on the arm positioning above the outside of the ring frame when supplying the air from the air nozzle and the water from the water nozzle to the upper surface of the ring frame by turning the arm.