

Claims

I Claim:

1. A dispensing head comprising:
a motor;
an air pump operably connected to and powered by the motor, the air pump including a first cylinder and a second cylinder; and
a first spindle connected to the first cylinder of the air pump and the second cylinder of the air pump, wherein the first cylinder of the air pump is configured to create a first airflow in the first spindle, wherein the second cylinder of the air pump is configured to create a second airflow in the first spindle.
2. The dispensing head of claim 1, further comprising a first air valve operably connected to the first cylinder of the air pump and the first spindle, wherein the first air valve is configured to create a vacuum in a first nozzle of the first spindle.
3. The dispensing head of claim 2, further comprising a second air valve operably connected the second cylinder of the air pump, wherein the second air valve is configured to create an airkiss in the first nozzle of the first spindle.
4. The dispensing head of claim 3, further comprising:
a second spindle connected to the air pump, wherein the air pump is configured to create airflow in the second spindle.
5. The dispensing head of claim 4, further comprising:
a third air valve operably connected to the air pump and the second spindle, wherein the third air valve is configured to create a vacuum in a second nozzle of the second spindle; and
a fourth air valve operably connected to the air pump and the second spindle, wherein the fourth air valve is configured to create an airkiss in the second nozzle of the second spindle.
6. The dispensing head of claim 1, wherein the air pump includes a piston and a diaphragm.

7. The dispensing head of claim 1, wherein the air pump is a multiple rotary vane pump.
8. The dispensing head of claim 1, wherein the dispensing head is attachable to a circuitous track such that the dispensing head is configured to rotate about the circuitous track.
9. The dispensing head of claim 1, wherein the dispensing head is a pick and place head configured to pick up electronic components and place the electronic components onto a circuit board.
10. A method of creating airflow in dispensing head comprising:
providing an assembly machine having a dispensing head, the dispensing having:
a motor;
an air pump operably connected to and powered by the motor, the air pump including a first cylinder and a second cylinder; and
a first spindle connected to the first cylinder of the air pump and the second cylinder of the air pump, wherein the first cylinder of the air pump is configured to create a first airflow in the first spindle, wherein the second cylinder of the air pump is configured to create a second airflow in the first spindle;
creating the first airflow in the first spindle with the first cylinder of the air pump located within the dispensing head; and
creating the second airflow in the first spindle with the second cylinder of the air pump located within the dispensing head.
11. The method of claim 10, wherein the creating airflow includes creating a vacuum in a nozzle of the first spindle with the first cylinder of the air pump.
12. The method of claim 10, wherein the creating airflow includes activating a gripper of the first spindle.

13. The method of claim 10, further comprising running the motor located in the dispensing head, the motor configured to power the air pump.
14. The method of claim 10, further comprising rotating the dispensing head about a circuitous track.
15. The method of claim 10, further comprising picking up an electronic component with the dispensing head and placing the electronic component on a circuit board.
16. An assembly machine system comprising:
 - a continuous circuitous track; and
 - a dispensing head attached to the continuous circuitous track and configured to rotate about the continuous circuitous track, the dispensing head including:
 - a motor;
 - a first spindle; and
 - a first air pump including a first cylinder and a second cylinder, the first air pump operably connected to and powered by the motor, the first cylinder of the first air pump configured to create airflow in the first spindle, the second cylinder of the first air pump configured to create a second airflow in the first spindle.
17. The assembly machine system of claim 16, wherein the dispensing head is a pick and place head configured to pick up electronic components and place the electronic components onto a circuit board.
18. The assembly machine system of claim 16, further comprising a second spindle, wherein a second air pump located in the dispensing head is dedicated to creating airflow in the second spindle.
19. The dispensing head of claim 1, further comprising a gripper operably connected to the first spindle, wherein at least one of the first air cylinder and the second air cylinder is configured to activate the gripper.

20. The assembly machine system of claim 16, wherein the first airflow is selected from the group consisting of a vacuum, an air kiss, and a gripper activation, and wherein the second airflow is selected from the group consisting of a vacuum, an air kiss and a gripper activation, and wherein the first airflow is different than the second airflow.