CLAIMS

1. A bioprocess vessel having an integrated pump comprising:

a flexible bag defining an interior volume and having a bottom surface, the bottom surface containing an aperture therein for the passage of fluid;

a port disposed in the aperture of the flexible bag, the port comprising a flanged end located outside of the flexible bag;

a pump comprising a pump head having a corresponding flanged end that is secured to the flanged end of the port with a clamp;

an inlet disposed on the pump head;

an outlet disposed on the pump head; and

a motor secured to the pump and configured to drive a plurality of diaphragms working in conjunction with respective check-valves to ensure the flow of fluid through the pump in one direction to pump fluid entering the inlet from the bioprocess vessel through the port and out the outlet.

2. The bioprocess vessel having an integrated pump of claim 1, wherein the port is secured to the bottom surface of the flexible bag by one of a bonded interface, a welded interface, and an adhesive or glue.

3. A bioprocess vessel having an integrated pump comprising:

a flexible bag defining an interior volume and having a bottom surface, the bottom surface containing an aperture therein for the passage of fluid;

a pump comprising a pump head secured to the flexible bag by one of a bonded interface, a welded interface, an adhesive or glue;

an inlet disposed on the pump head;

an outlet disposed on the pump head; and

a motor secured to the pump and configured to drive a plurality of diaphragms working in conjunction with respective check-valves to ensure the flow of fluid through the pump in one direction to pump fluid entering the inlet from the bioprocess vessel through the port and out the outlet.

4. A bioprocess vessel having an integrated pump comprising:

a flexible bag defining an interior volume and having a bottom surface, the bottom surface containing an aperture therein for the passage of fluid;

a pump comprising a pump head integrally molded or formed with the flexible bag;

an inlet disposed on the pump head;

an outlet disposed on the pump head; and

a motor secured to the pump and configured to drive a plurality of diaphragms working in conjunction with respective check-valves to ensure the flow of fluid through the pump in one direction to pump fluid entering the inlet from the bioprocess vessel through the port and out the outlet.

5. The bioprocess vessel having an integrated pump of claims 1, 3, or 4, further comprising a mixing adapter secured to the pump and disposed at least partially in the interior volume of the flexible bag, the mixing adapter at least partially covering the inlet of the pump.

6. The bioprocess vessel having an integrated pump of claims 1, 3, or 4, further comprising a mixing adapter secured to the pump via a plurality of fasteners extending through the bottom surface of the bag, the mixing adapter disposed in the interior volume of the flexible bag and at least partially covering the inlet of the pump.

7. The bioprocess vessel having an integrated pump of claim 1, wherein the motor is detachable from the pump.

8. The bioprocess vessel having an integrated pump of claims 1, 3, or 4, wherein the pump head is formed from a polymer or resin material.