CLAIMS

1. An apheresis system comprising:

a first tube having a lumen, fluidly associated with the needle, that moves whole blood from a donor through the lumen;

a draw pump engaged with the first tube that draws the whole blood into a centrifuge;

the centrifuge that spins to cause centrifugal force to act on the whole blood to separate the whole blood into a least plasma and a blood component comprising concentrated red blood cells;

a blood component collection bladder, inserted into the centrifuge and fluidly associated with the first tube, that separates the plasma from the whole blood;

a second tube, fluidly associated the blood collection bladder, that moves the plasma from the blood component collection bladder;

a collection container, fluidly associated with the second tube, that collects the plasma;

a first sensor positioned in physical proximity to the second tube to detect the presence of red blood cells in the second tube; and

after red blood cells are detected by the sensor and while the centrifuge continues to spin, a return pump, engaged with the second tube, that forces the plasma back towards the blood component collection bladder through the second tube to move at least the component comprising red blood cells from the blood component collection bladder into the first tube, and

a second sensor for detecting when the component containing red blood cells has been expelled from the blood component collection bladder through the first tube.

2. The apheresis system of claim 1, further comprising an anticoagulant pump to draw anticoagulant from an anticoagulant bag and mix the anticoagulant with whole blood at a manifold or junction fluidly associated with the first tube.

3. The apheresis system of claim 1, wherein the centrifuge includes a filler that spins the blood component collection bladder.

4. The apheresis system of claim 3, wherein the blood component collection bladder is inserted into a collection insert channel formed in the filler to hold the blood component collection bladder.

5. The apheresis system according to claim 1, further comprising a chamber in said first tube and a bypass tube in parallel with said chamber and means for directing the whole blood through said bypass tube and for directing said component comprising concentrated red blood cells through said chamber.

6. The apheresis system according to claim 5, wherein the chamber is a drip chamber.

7. The apheresis system of claim 1, wherein the second sensor is a pressure sensor.