$m = 500\,g = 0.5\,kg$

$d = 3/16\,in * \frac{25.4\,mm}{in} * \frac{m}{1000\,mm} = .00476\,m$

$\rho = 1000\,\frac{kg}{m^3}$

$h = 30\,in * \frac{25.4\,mm}{in} * \frac{m}{1000\,mm} = 0.762\,m$

$V = 12\,V$

$I = 1\,A$

$t = 30\,s$

(a) Find velocity v:

$$v = \frac{W}{\rho g A t} \quad \text{where } W = m \cdot g = 0.5\,kg \cdot 9.81\,\tfrac{m}{s^2} = 4.905\,N$$

$$A = \frac{\pi}{4} d^2 = \frac{\pi (.00476\,m)^2}{4} = .0000178\,m^2$$

$$= \frac{4.905\,N \left(\frac{kg \cdot m}{s^2}\right)}{1000\,\frac{kg}{m^3} \left| 9.81\,\frac{m}{s^2} \right| .0000178\,m^2 \left| 30\,s \right.}$$

$$\boxed{v = 0.937\,m/s}$$

(b) Find flow rate Q:

$$Q = v A = 0.937\,\tfrac{m}{s} * 0.0000178\,m^2 * \frac{L}{.001\,m^3} * \frac{60\,s}{min} = 1\,\frac{L}{min}$$

$$\boxed{Q = 1\,\tfrac{L}{min}}$$

(c) Find efficiency η:

$$\eta = \frac{\frac{1}{2} m v^2 + wh}{VIt} = \frac{\overbrace{\frac{1}{2}\,0.5\,kg\,(.937\,\tfrac{m}{s})^2}^{.219\,J} + \overbrace{4.905\,N \cdot 0.762\,m}^{3.738\,J}}{\underbrace{12\,V \cdot 1\,A \cdot 30\,s}_{360\,J}} = .0190$$

$$\boxed{\eta = 1.9\,\%}$$