$$W_{i,j} = -2\,\frac{u_{i,j+1} - u_{i,j}}{h^2}$$ derecha

$$W_{i,j} = -2\,\frac{u_{i,j-1} - u_{i,j}}{h^2}$$ izquierda

Usando Taylor para F: $u(x, y+h)$ nos queda que:

$$\omega = \frac{\partial v_x}{\partial x} - \frac{\partial v_x}{\partial y} \quad y \quad \omega = -\frac{\partial v_y}{\partial x}$$

Pero tenemos que $x = cte$ $\therefore$ $\omega = -\frac{\partial^2 v_x}{\partial y^2}$ y $\omega = -\frac{\partial^2 u}{\partial x^2}$

Reemplazamos en F:

$$u(x, y+h) = u(x,y) + \frac{\partial u}{\partial y}(x,y)h - \frac{\partial^2 u}{\partial y}(x,y)\frac{h^2}{2}$$

Nos dicen que $x, v_x = 0$ $\therefore$ $v_x = 0 = \frac{\partial u}{\partial y}$

Entonces tenemos:

$$-\frac{\partial^2 u}{\partial y^2} = -2\,\frac{(u(x,y+h) - u(x,y))}{h^2}$$

y sabemos que: $u(x, y+h) = u(x,y) - \frac{h^2}{2}(\omega)$
mostradas anteriormente

$$\therefore \omega = -2\,\frac{u(x,y+h) - u(x,y)}{h^2}$$