$$f(1,pushed)=pushed+1$$

$$f(unpushed,pushed)=\sum_{k>=1}^{pushed+1} f(unpushed-1,k)$$

$$f(n,0)=\sum_{k>=1}^{1} f(n-1,k)$$

$$f(n,0)=f(n-1,1)$$

$$=f(n-2,1)+f(n-2,2)$$

$$=2f(n-3,1)+2f(n-3,2)+f(n-3,3)$$

$$=5f(n-4,1)+5f(n-4,2)+3f(n-4,3)+f(n-4,4)$$

$$=14f(n-5,1)+14f(n-5,2)+9f(n-5,3)+4f(n-5,4)+f(n-5,5)$$

$$f(n-3,2)=f(n-4,1)+f(n-4,2)+f(n-4,3)$$

$$=3f(n-5,1)+3f(n-5,2)+2f(n-5,3)+1f(n-5,4)$$

$$=9f(n-6,1)+9f(n-6,2)+6f(n-6,3)+3f(n-6,4)+1f(n-6,5)$$

$$g(n)=\frac{1}{n+1}\binom{2n}{n}$$