$\overline{}$ MODULE $crackers3a$ $\overline{}$

CONSTANTS $Things$, $People$
VARIABLES $desires$, $holds$

$Init \;\triangleq\; \land desires = [p \in People \mapsto \{\}]$
$ \land holds \;\; = [p \in People \mapsto \{\}]$

$Desire(p) \;\triangleq\; \land desires[p] = \{\}$
$ \land \exists\, t \in Things :$
$ \land desires' = [desires \text{ EXCEPT } ![p] = \{t\}]$
$ \land \text{UNCHANGED } holds$

$Acquire(p) \;\triangleq\; \exists\, t \in desires[p] :$
$ \land t \notin holds[p]$
$ \land holds' = [holds \text{ EXCEPT } ![p] = holds[p] \cup \{t\}]$
$ \land \text{UNCHANGED } desires$

$Satiated(p) \;\triangleq\; \land desires[p] \neq \{\}$
$ \land \forall\, t \in desires[p] : t \in holds[p]$
$ \land desires' = [desires \text{ EXCEPT } ![p] = \{\}]$
$ \land \text{UNCHANGED } holds$

$Next \;\triangleq\; \exists\, p \in People :$
$ \lor Desire(p)$
$ \lor Acquire(p)$
$ \lor Satiated(p)$

$TidiesUp \;\triangleq\; \neg \exists\, p \in People :$
$ \land desires[p] \neq \{\}$
$ \land \exists\, l \in holds[p] : l \notin desires[p]$

$Spec \;\triangleq\; Init \land \Box[Next]_{\langle desires,\, holds \rangle}$