2.007 Cookbook: Triggers

Trigger that jams: (i.e., gets stuck; i.e., fails)

Trigger that doesn't:
The trigger force $F_T$ may result from the pull from a string attached to the shaft of a small motor, or from any other convenient mechanical action at a desired time, i.e., striking something.
**NOTE**  This is probably the safest trigger system, but the one that demands the highest trigger force $F_T$.

* A mere shift up or down in the effective pivot axis can tune a trigger into the desired mode or performance suitable to a given coefficient of friction.*
NOTE - The magnitude of $L_2$ controls the sensitivity. The system becomes metastable as $F_r \times L_1 = F_u \times L_2$. 

SHOOTS WHEN $F_t > \frac{(F_r \times L_1) - (F_u \times L_2)}{L_3}$
Ways to trigger a large force with a small one

1) Leverage - lever increasing pulling force

motor (above) can twist a string or wind a string....etc.

2) Mousetrap - Chain of levers, decreasing the force on trigger pin

Helen Shaughnessy
Original sketches courtesy of Crispin Miller
Over-Dead-Center Crank

Section:

rest, to support crank just below dead-center position

F

horizontal

OR

when crank is lifted through dead center, it flips on around, no longer resisting load

F

load

F

load

F

trigger