Morphological Sketch List						
Function	1.	2.	3.	4.	5.	6.
Driving mechanism	axle Axle	handerank Hand crank	Flywheel	Worm gear	Piston with gear	
Transmission of forces or motion	Chains	Belt transmission	Gear Transmission	Axel	Universal joint	Geers without teeth
Storing the trays	Sheetmetal Tower (1st option)	Sheetmetal tower (2 nd option)	Tower using rods	Sheetmetal tower on an angel	Sheetmetal tower with 2 tray stacks	
Separating the trays	Double "trapdoor" separator	Using gears to separate	Using threads to separate	On head gon a king risk year 1 teeth gear and a spring	Lever/piston design	
Placing	"Garbage machine" placing	Slide onto conveyer belt	"Trapdoor" on both sides	Slide + Plash, sale view	Let it "fall" on the conveyer	
Timed release	Double piston	Timed "pusher"	Gear from the bottom	Double trapdoor	ger from lep Side Gear from the top	Single piston
Aligning the trays	Senathing Sovel Funnel	"Pushers" to center	Funnel with bearings on the sides	No alignment		

Morphological sketch paths with explanation

Path 1: Threaded rod design (concept 1)

Morphological Sketch List							
Function	1.	2.	3.	4.	5.	6.	
Driving mechanism	axke Axte	hand crank	Flywheel	Worm gear	Piston with gear		
Transmission of forces or motion	Chains	Belt transmission	Gear Transmission	oxd Axel	Universal joint	Geers without teeth	
Storing the trays	Sheetmetal Tower (1st option)	Sheetmetal tower (2 nd ention)	Tower using rods	Sheetmetal tower on an angel	Sheetmetal tower with 2 tray stacks		
Separating the trays	Double "trapdoor"	Using gears to separate	Using threads to separate	Su sub gar 4 drug rik recu 1 teeth gear and a spring	Lever/piston design on one end		
Placing	Garbage "Garbage machine" placing	Slide onto conveyer belt	"Traphor" on both sides	Slide and pusher	Let it "fall" on the conveyer		
Timed release	Double piston	Timed "pusher"	Gear from the bottom	Double trapdoor	gur fron by Nike Can one a	Single piston	
Aligning the trays	Sagling Sand Funnel	"Pushers" to center	Funnel with bearings on the sides	No alignment			

Powering the machine by hand is in most cases best done by hand crank, thus it is used in this design as the other two concept designs. To separate a threaded rod is used to force the trays down and separate them in the process. To power this a belt transmission is used, since the threaded

rods are on the corner of the trays. Using a belt to power the system makes it less complex then using gears.

This design does not use a separate system for placing down the trays since the trays are forcibly separated. The trays are released just above the conveyer. Since a threaded rod is already timed there is also no timed release used. The threaded rods also double up as a "funnel" of some sorts, aligning the trays that go through.

Path 2: Gear system (concept 2)

Morphological	Sketch List					
unction	1.	2.	3.	4.	5.	6.
Oriving nechanism	axle Axle	Hand crank	Flywheel	Worm gear	Piston with gear	
ransmission of forces or notion	Chains	Belt transmission	Gear Transmiseion	oxel Axel	Universal joint	Gears without tee
Storing the trays	Sheetmetal lawer (1st option)	Sheetmetal tower (2 nd option)	Tower using rods	Sheetmetal tower on an angel	Sheetmetal tower with 2 tray stacks	
Separating the trays	Double "trapdoor"	Using gears to separate	Using threads to separate	Con Lake your 6 fing risk visus 1 teeth gear and a spring	Lever/piston design	
Placing	"Garbage machine" placing	Slide onto conveyer belt	Trapho his side criticy	Slide and pusher	Let it "fall" on the conveyer	
Timed release	Double piston	Timed "pusher"	Gear from the bottom	Double trapdoor	Gear from the top	Single piston
Aligning the trays	sleadon beef	"Pushers" to center	Funnel with bearings on the sides	No alignment		

The transmission of this machine consist mainly of gears, but also uses axels and chains. To store the trays, this system uses a sheetmetal tower, so that the trays go into the system straightend.

The system uses a gear system to separate the system, from where the trays slide down a "slide" that doubles up as a funnel. After which a single piston system makes sure the separated trays get released.

Path 3: Double piston (concept 3)

Morphological Sketch List							
Function	1.	2.	3.	4.	5.	6.	
Driving mechanism	axle Axle	bandsonk Hand crank	Flywheel	Worm gear	Piston with gear		
Transmissio n of forces or motion	Chains	Belt transmission	Gear Transmission	oxel Axel	Universal joint	Gears without teeth	
Storing the trays	Sheetmetal Tower (1st option)	Sheetmetal tower (2 nd option)	Tower using rods	Shelaski teer 60° 5ide Sheetmetal tower on an angel	Sheetmetal tower with 2 tray stacks		
Separating the trays	Double "trapdoor" separator	Using gears to separate	Using threads to separate	1 teeth gear and a spring	Lever/piston design		
Placing	"Garbage machine"	Side onto conveyer belt	Trapdoor" on both sides	Slide + Pish Sile Your	Let it "fall" on the conveyer		
Timed release	Double piston	Timed "pusher"	Gear from the bottom	Double trapdoor	gur from by file Gear from the top	Single piston	
Aligning the trays	Funnel	"Pushers" to center	Funnel with bearings on the sides	No alignment		to a tal to use	

This system uses a similar transmission as concept two. Trays are stored in a sheetmetal tower, since the trays must be in a straight tower before the separation. A double piston system releases the trays one by one, stopping the rest from falling.

The tray is then placed onto a "slide" and straightened out by a funnel. The trays are then released one by one by a gear from above. This gear then releases the trays one at a time and acts like a second "security" point in case the double piston fails.