

SPECIFICATION

"You are asked to design a safe means of emptying a wheelbarrow into a skip that could be hired at the same time as the skip and be used by the householder."

From this specification I have come up with a few points which will need to be fulfilled for the product, to be safe, efficient and useful.

Specification Point 1

The product must be simple to use. This point is important as the product is going to be used by the householder and they will not have any knowledge of the equipment that they are going to use. By making the product simple to use it means that less mistakes will happen and so then the product will become safer to use.

Specification Point 2

The product must attach securely to the skip. This point is also important as large weights are going to be put on it so if the product does not attach securely to the skip then there is an opportunity that someone may get injured. Alternately the product could be free standing if it was stable enough.

Specification Point 3

The product must be quick to operate. This point is important as many builders are stuck to a time scale and if it takes a long time for the product to be operated then it is not going to be very popular.

Specification Point 4

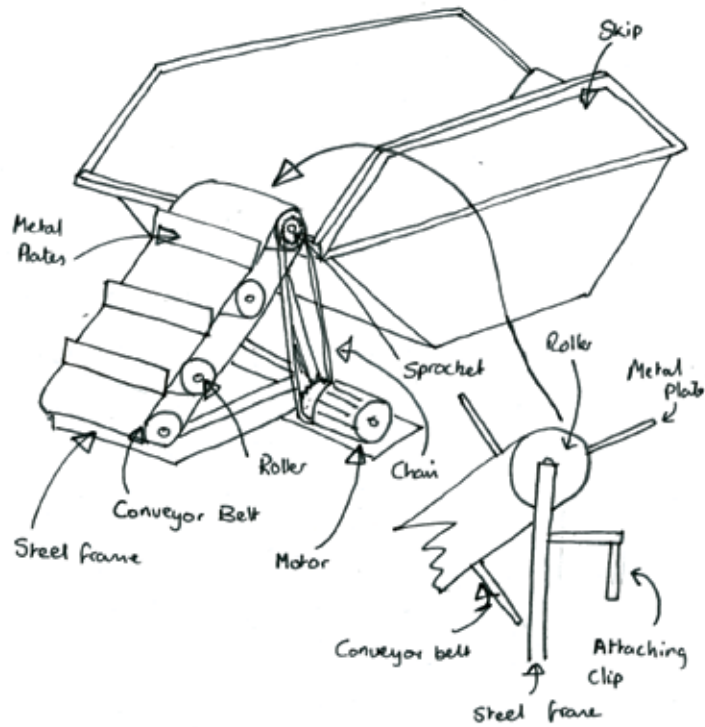
The product must be robust. This specification point is important as when a wheelbarrow is fully laden then it becomes extremely heavy. If the product is not very strong then it could collapse which could lead to injury.

Specification Point 5

The product must be of a suitable price. This point is important as the price will determine the number of things that you sell. If the price is too high - people will not buy the item whereas if the product is too cheap and poorly made then you will not sell any as they would not be good.

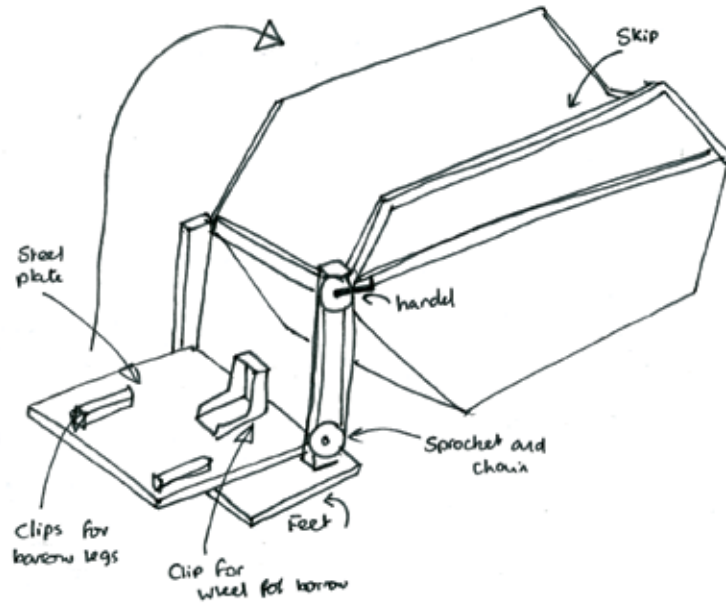
INITIAL IDEAS

1.



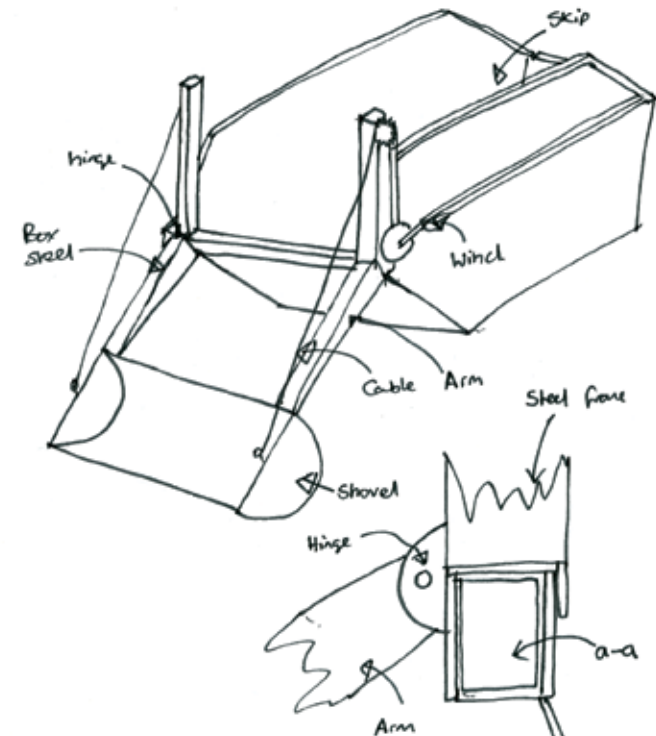
This design incorporates a conveyor belt which moves upwards taking the debris into the skip. The debris is poured slowly onto the belt at the base. An electric motor is linked via a sprocket and chain to the belt. This design means that the wheel barrow needs not to be lifted.

2.



This design uses the wheel barrow to tip in the debris. It clips the barrow to the plate and then is lifted up. Once at the top the barrow tips pouring the debris into the skip. It is all operated by one handle so no electricity is required. This means that it can be used on sites with no power.

3.



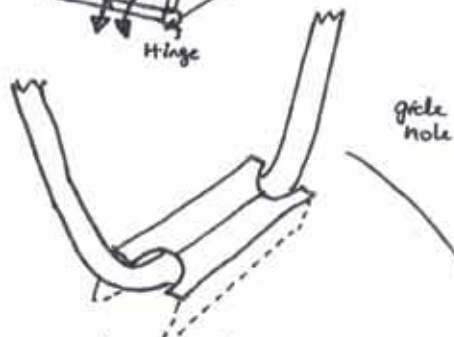
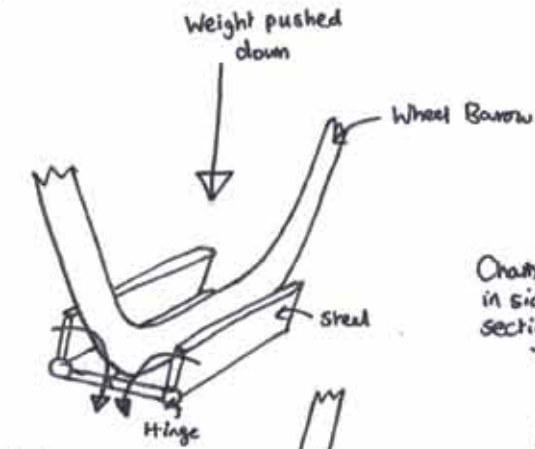
This design is similar to a scoop on a JCB as it lifts skip side over the top and drops its load into the skip. This is winched up by a hand winch and is very quiet, and doesn't involve any electricity so can be used on all different sites.

FINAL DESIGN

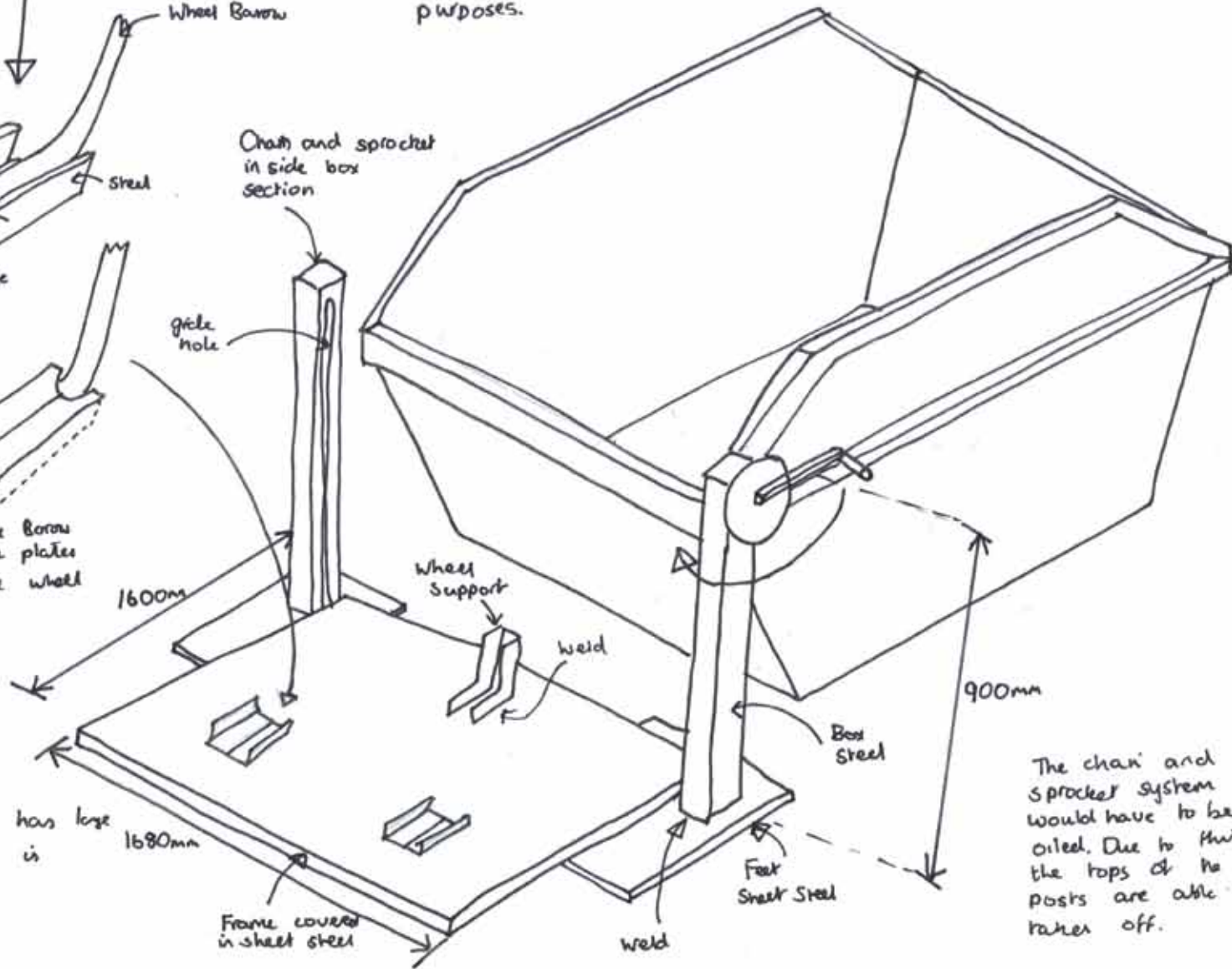
I have chosen to develop Initial Idea 2 into my final Design.

The main sections of this product would be able to be taken apart so they could be stored / fit inside an empty skip for transportation purposes.

The diagram below shows how the wheelbarrow will be positioned whilst up and also demonstrates the wheelbarrow locking system.



As the weight of the Barrow pushes down these plates rotate locking the wheel Barrow in place.



This system is free standing so has large steel feet so it is secure.

The chain and sprocket system would have to be oiled. Due to this the tops of the main posts are able to be taken off.

