

FD2 Drafting of Specifications

Thursday 17 October 2019 10:00 to 14:00

INSTRUCTIONS TO CANDIDATES

1. The whole assessment task is to be attempted.
2. The marks to be awarded are given at the end of the assessment task.
3. The total number of marks available for this paper is 100.
4. Start each part of your answer on a new sheet of paper.
5. Write your answers on alternate lines.
6. Do not state your name anywhere in the answers.
7. Write clearly, as examiners cannot award marks to answer scripts that cannot be read.
8. The scripts will be photocopied for marking purposes.
 - a) Use only **black ink**.
 - b) Write on one side of the paper only.
 - c) Write within the printed margins.
 - d) Do not use highlighter pens on your answer script.
9. Instructions on what to do at the end of the examination are on the Candidate Cover Sheet.
10. Any candidate script removed from the examination room will not be marked.
11. This question paper consists of **11 sheets**, including this sheet, and comprises:
 - Assessment task (1 sheet)
 - Client letter (3 sheets)
 - Document A – Client drawings (3 sheets)
 - A spare set of Document A – Client drawings for you to annotate and include in your answer if you wish (3 sheets).

Assessment Task

Your client sends you the correspondence listed on the Instructions to Candidates sheet regarding a new idea.

Your task is to prepare a complete patent specification that is ready for filing at the UK Intellectual Property Office. The specification should be drafted with a view to obtaining a UK patent.

Note the following:

- a) You should assume that the client's description of the prior art in the field is complete.
- b) You should not make use of any other prior art or special knowledge that you may have of the subject matter concerned.
- c) You should also assume that the client's description of the device and its operation is accurate, i.e. that the device works as described.

Allocation of marks

Introduction and Description: 46 marks
Claims: 50 marks
Abstract: 4 marks
Total: 100 marks

Client letter

Thank you for your help drafting the patent application for my drip catching umbrella bag last year. I now ask for your help to protect another invention in the UK.

As I imagine you're busy and come across many exciting things, I will assume you have no memory of last year's invention, so shall explain everything afresh in the light of the new issues that I have been looking at. With the umbrella bag, the basic issue I was addressing was that wet umbrellas are a nuisance, not just being unpleasant for the user when they go indoors, but water running off an umbrella can lead to wet floors, which people can slip on.

You may remember the art was (i) wrapping a layer of thin plastic, typically lightweight cellophane, around the umbrella several times, to create a waterproof barrier, (ii) using a long plastic bag, or (iii) using a perforated inner bag and a second, larger outer bag. The problem with the wrapping and the long bags is they hold the water in the wet umbrella, while the issue with the two-bag arrangement is the run-off water can flow both ways through the perforations. I have given you a figure (Figure 1) to illustrate the two-bag arrangement.

My previous idea based on this art was a single bag of unitary construction which had two portions: a first umbrella-holding portion, and a second water-collecting portion. The trick was to ensure there was a separator between the two portions which permitted water to pass from the first to the second portion, prevented the umbrella from passing into the second portion, and substantially stopped water in the second portion from coming back into the first portion. Collectively, this meant water coming off the umbrella stayed in the second portion, meaning when you took it out of the bag it was not as wet as with any of the other solutions. Again, I've included a figure (Figure 2) which illustrates what you need to know. The specifics of that bag are not important beyond some of the issues I'm addressing being the same.

I have been considering if there are further improvements we can make, as my bags are selling very well indeed and do address the basic issue of stopping drips getting on the floor. But, unfortunately, if you keep the bag on the umbrella for only a short period of time, it is not particularly good at drying the umbrella as there is no airflow between it and the water protective barrier, so you can end up taking your umbrella out of the bag and water still gets everywhere.

I've been speaking to some department stores about how they use the umbrella bags. They've been happy to offer shoppers a cloakroom service where, along with your wet coat and so on, they will take your umbrella and put it in one of my umbrella bags, so you don't need to carry it around if you don't want to – you just collect it later. But, if you're not in a store very long, you go and collect your umbrella and, when the assistant takes it out of the bag, the shop – and possibly you – still end up with water everywhere.

I've designed something more suited to use in shops which are happy to hold onto customers' umbrellas, which is more of a complete drying system. The existing umbrella bags don't really use much more than gravity to dry umbrellas. Now I aim to dry them more proactively.

I realised that I could just hang an umbrella from a conventional domestic drying rack or rotatable washing line, which, rather than compressing the umbrella canopy against the

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Client letter

inside of a bag, provides an air gap and lets air flow around it so it dries. See Figure 3 for an outline of what I started with. While testing my ideas, I used my hairdryer to see how fast I could make an umbrella dry, the answer to which was 'very quickly', but I had to be careful to not burn or melt it, and found the cold setting was nearly as good at drying as the hot. I'd like to secure the fan from the hairdryer to the dryer to save having to hold it up. It would probably be a good idea for a fan to be manually operated to save the risk of electricity being near water.

Now, the rack in Figure 3 isn't really ideal as it doesn't hold the umbrella properly – it can't hold umbrellas which don't have a hooked handle and those with one can fall off, especially with a fan blowing the fabric of the umbrella's canopy about. So, gripping or clamping an umbrella in place is a good idea. While experimenting, I used a clamp with a hole in which a threaded bar ran through with a soft squashy end on which pushes against the umbrella's handle to grip and secure it. The soft, deformable engagement piece compresses against the handle so it can accommodate different shapes and sizes, as well as protecting the handle from damage. I've shown you how this works in Figure 4.

There are lots of ways to speed up drying. I could try and spin the four arms (one of which is holding the umbrella) at the top of the dryer shown in Figure 3 but, unless it was well balanced with other umbrellas, it could topple over and, in any event, water would spray everywhere. Rotation certainly does have merit, after all, it's what washing machines do to wet clothes. One thing I have noticed is that, if the umbrella is not positioned roughly centrally, the whole thing is rather unstable. What I did was take two rings and place them on top of each other, to be concentric and overlapping, to provide a rotation mechanism in which the two rings are rotatable relative to each other (see Figure 5). There are plenty of ways in which the rings can be made to stay in place, so I don't feel the need to be too specific about how it's done. On the top ring I fashioned an arm which secures the umbrella in place fairly central to the rings so the umbrella is rotating about its central axis. To the lower one, I added some legs, which meant I could keep that ring in place and rotate the top ring, spinning it, and thus the arm and anything secured to it. I could add some low-friction material to one or other of the rings to help them spin. Otherwise, I could make a track in one or both and include ball bearings. Spinning the top part around by hand makes the umbrella dry faster thanks to the airflow around it. I could use some cogs and gears to create some sort of pedal arrangement so the rotation could be effected by foot to make the wet goods dry faster. It would be nice to have the option, anyway, as I suppose a better option would be to include an electric motor, not forgetting I would need to be careful with electricity near water.

Importantly, I added a rest below the arm, which is essentially a disk with a central hole in which the tip of the umbrella fits, for added support. The rest is pivotably and slidably connected to the arm, so I can move the arm and the rest closer or further away from each other so different length umbrellas can be secured.

This is, of course, only one half of the equation. I hung a waterproof jacket and pair of trousers on the dryer in Figure 5 and, only a few hours later, they were dry. But goodness there was a lot of water on the floor, which is slippery, and it was hard to get past it without brushing against it all and getting myself wet too. Clearly that's not ideal if you're going to

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Client letter

use my dryer in a shop with potentially lots of these in a cloakroom. By the way, I'd prefer not to pay any government fees for claims for this improvement.

I started testing with a normal thin, plastic bin liner that you'd find at home, which is flexible to follow the shape of the inside of a bin and means it can surround an umbrella without touching it, unlike my earlier umbrella bags where the canopy is squashed against the inside. This new design makes for faster drying. Being made of plastic, the bag is waterproof, meaning any water that falls from the umbrella gets captured by the bag – it simply runs down to the bottom – and you can brush against the outside without touching what's inside or getting yourself wet. I wouldn't want a lot of water to collect in the bottom before it's removed, so including a drain is a good idea.

Obviously, I could have more than one hook inside a bag. In fact, I could almost have a rack of them to hold a lot of wet goods if the bag was large enough, which would make for an efficient use of space in a shop. A rest isn't needed if the clamp is strong enough. Spacing the umbrella apart from the bag is important to permit drying, thus a clamp is good, but it is quite industrial and requires time and effort to use. Instead I could make the end securing the umbrella have a V-shaped profile and when an umbrella handle is pushed in hard enough it would be secured in place by friction. Adding a layer of rubber to the inside of the V-shape could further assist with grip and reduce the risk of damage, protecting the handle from scratches or marks. I've shown this in Figures 6A and 6B.

I would want to try and make the bag changeable as, over time, they will degrade with use, especially if I use the cheap ones. With my deluxe model in Figure 5, I could have hooks and eyes under the lower ring, or I could try hook and loop fasteners or clips, depending on what material the bag was made from. I wouldn't want to overcomplicate it, but can see the benefit in offering something to releasably secure a waterproof barrier.

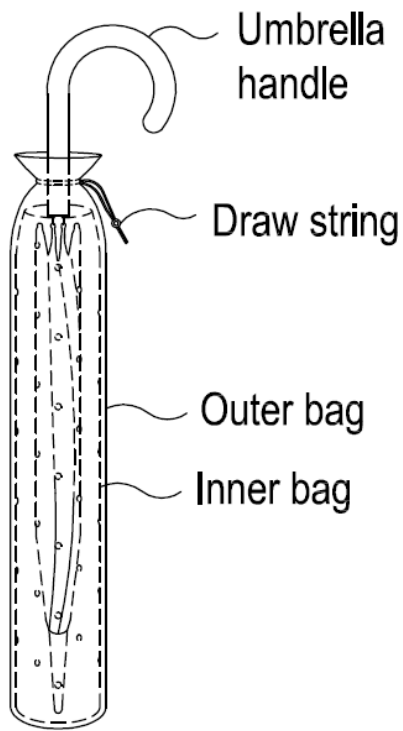


Figure 1

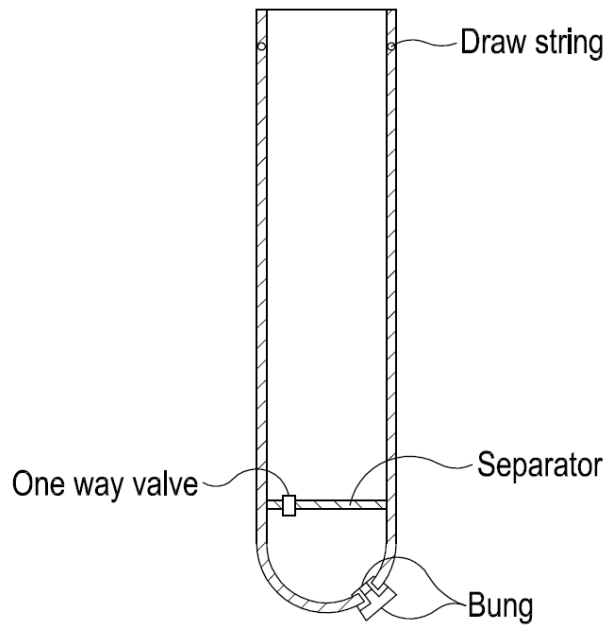


Figure 2

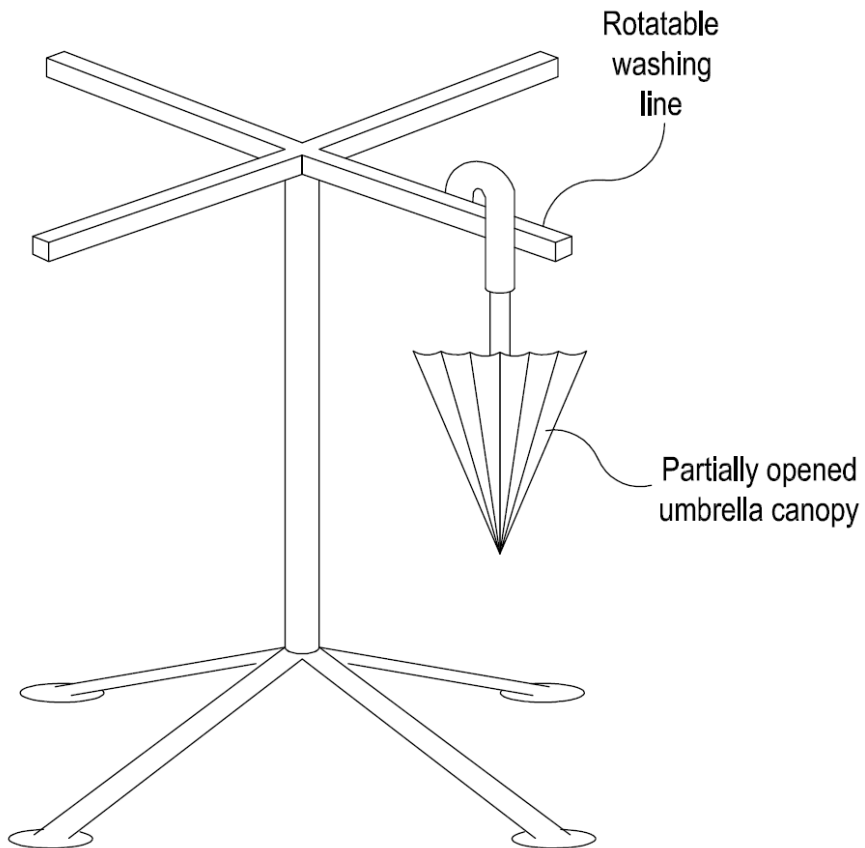


Figure 3

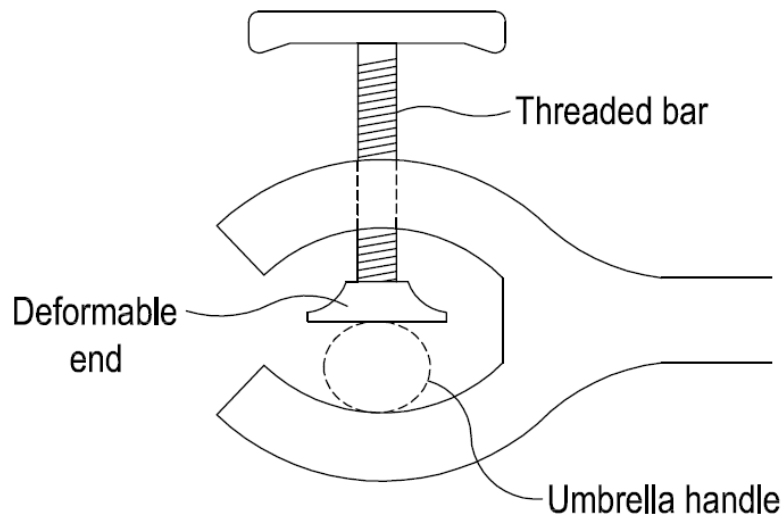


Figure 4

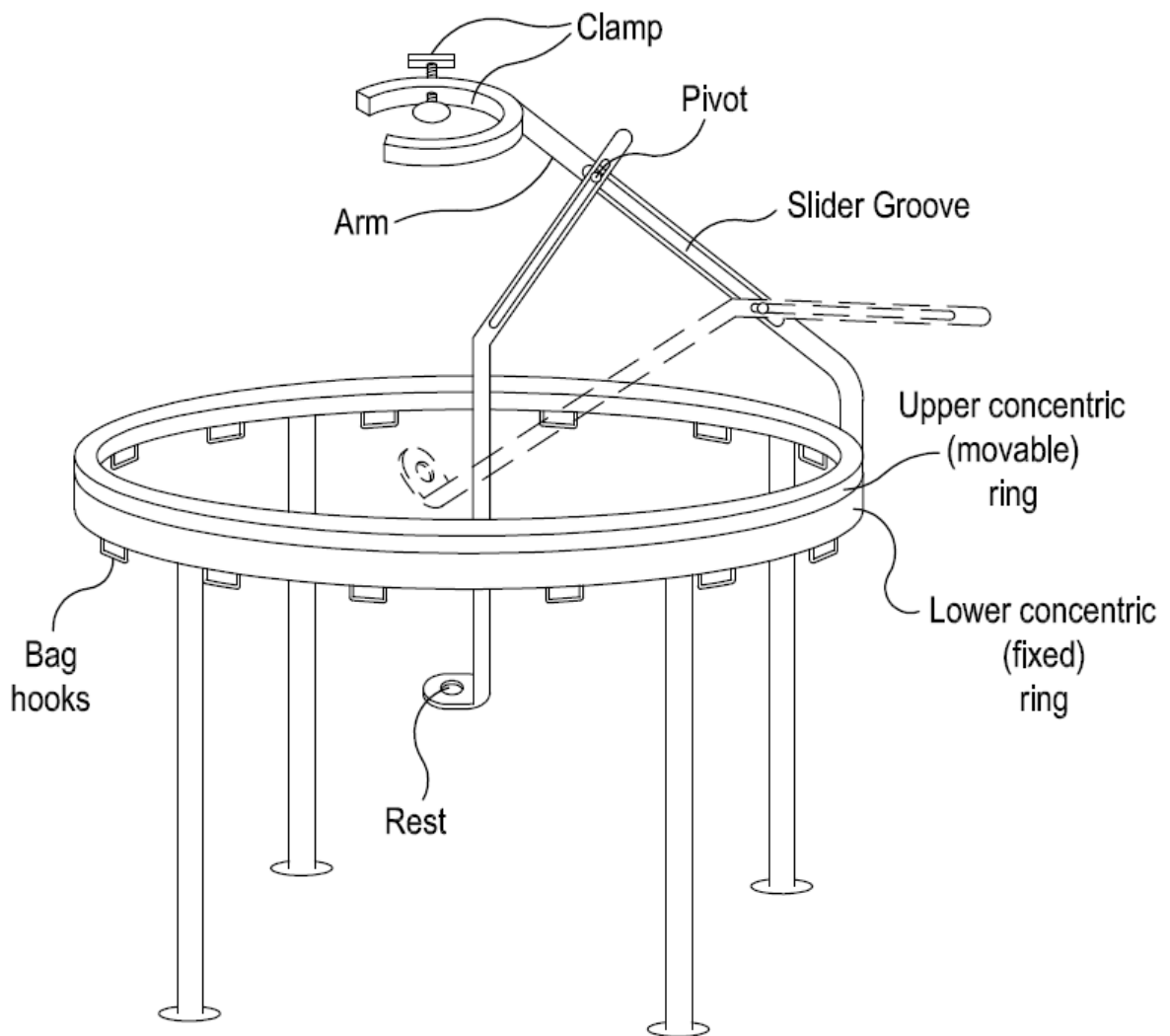


Figure 5

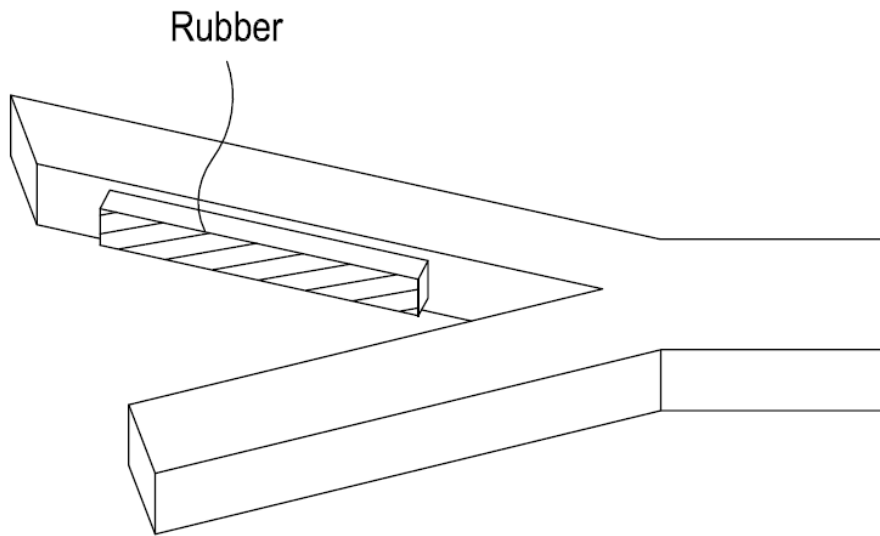


Figure 6A

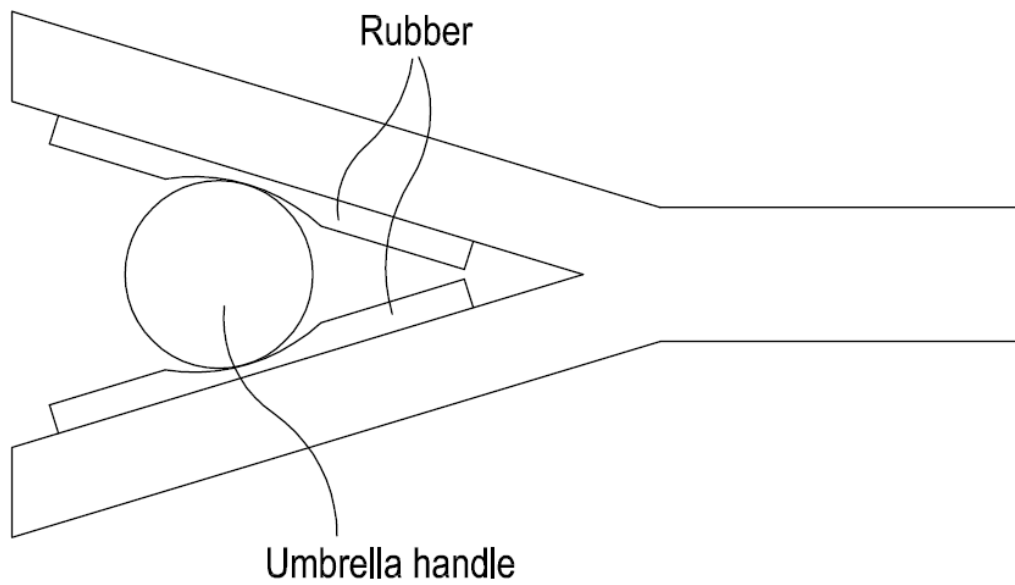


Figure 6B

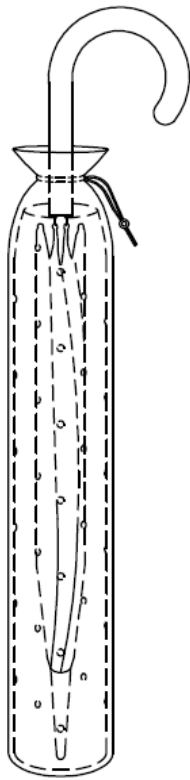


Figure 1

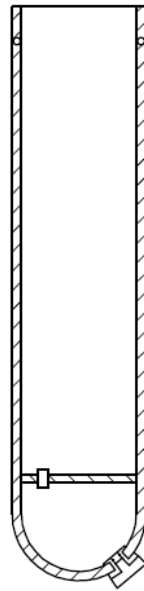


Figure 2

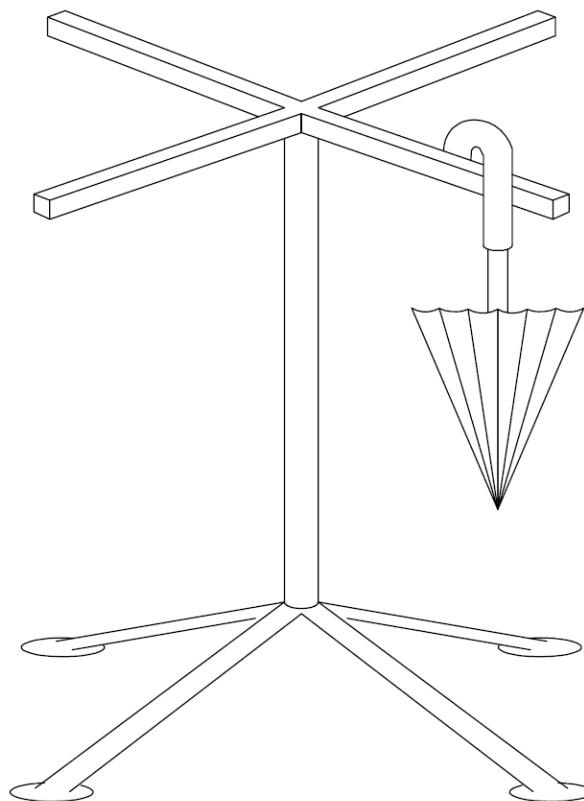


Figure 3

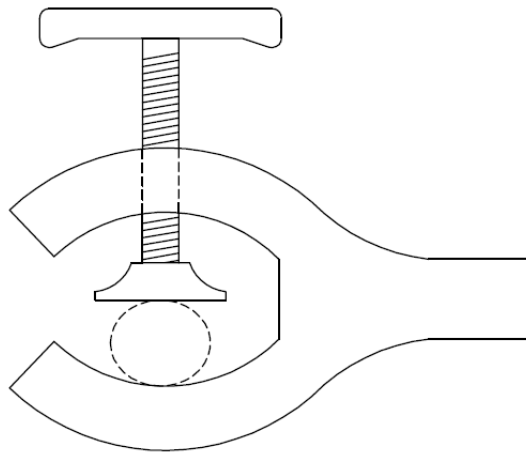


Figure 4

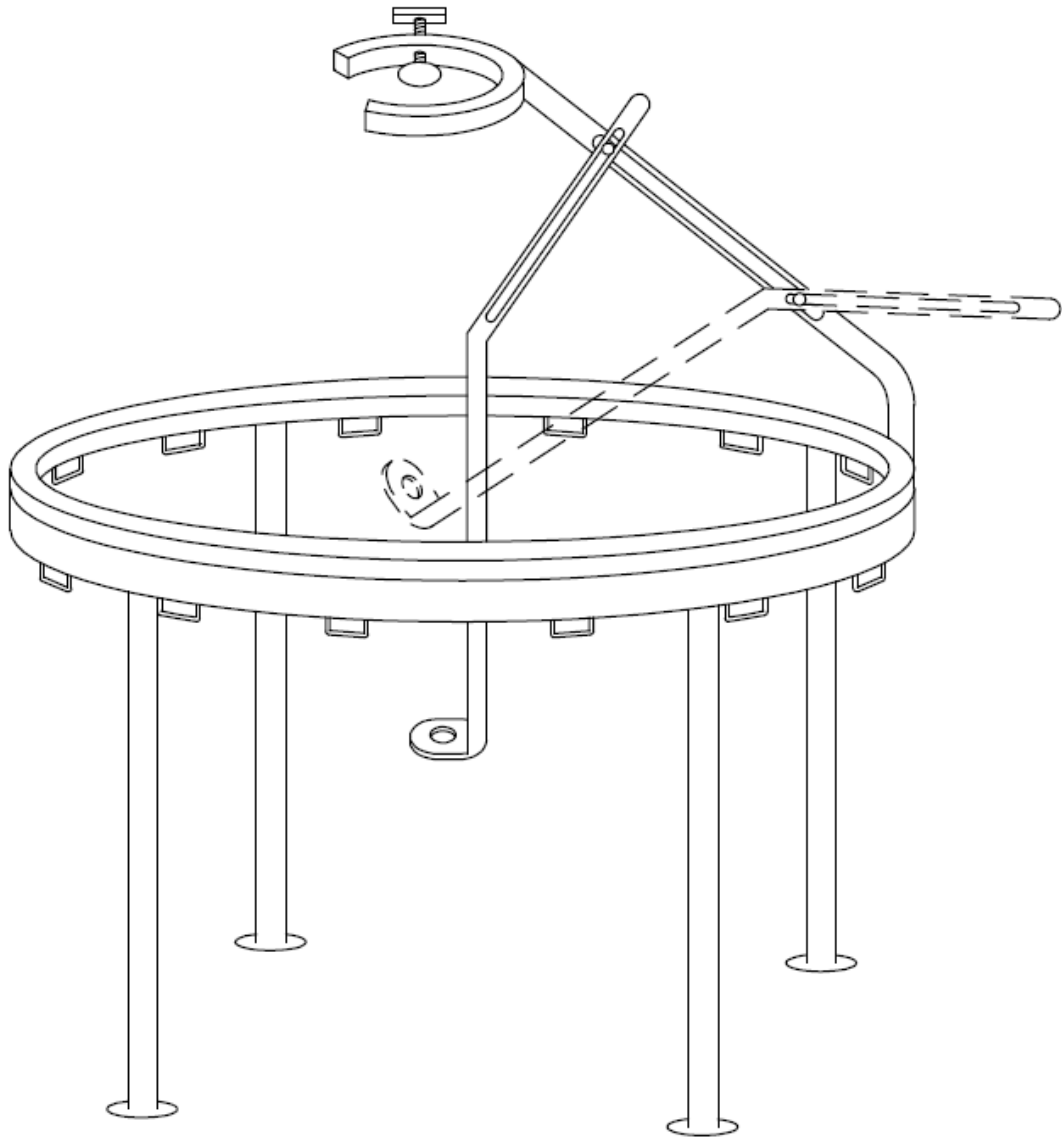


Figure 5

Document A – Client drawings (unannotated)

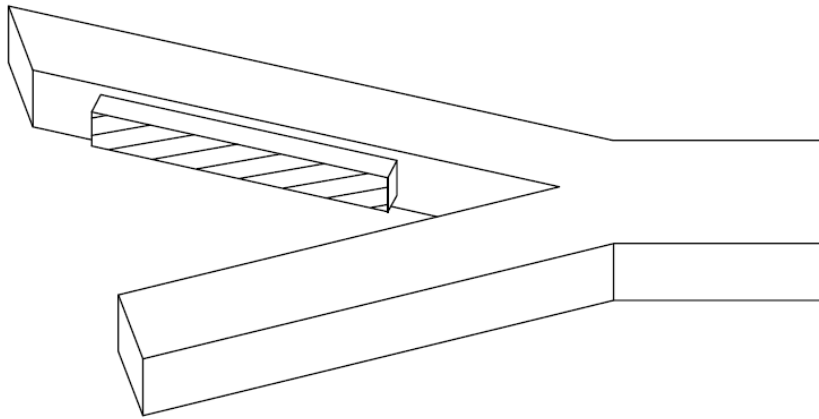


Figure 6A

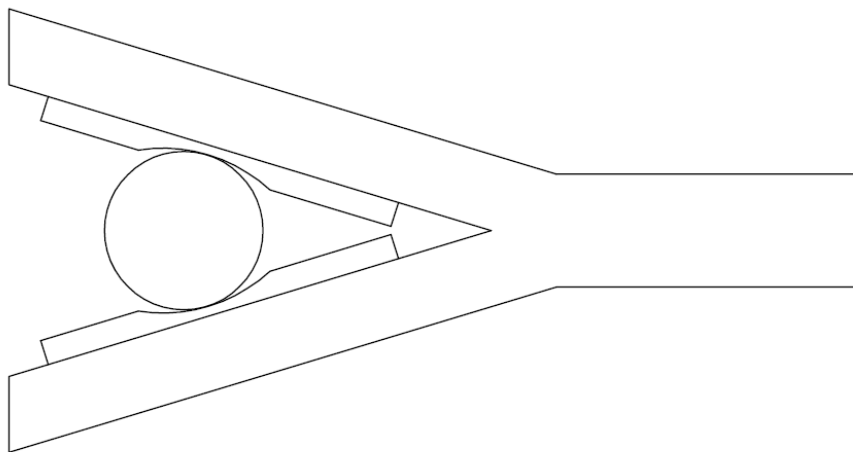


Figure 6B