October 2018: Candidate Cover Sheet

Patent Examination Board

Exam Paper: FD2 Drafting of Specifications

Candidate No:

Venue:

At the end of the examination:

1. Count up the number of sheets you have used which you wish to be marked.
2. Use the boxes on each sheet of the answer script to number the sheets: '1 of 25', '2 of 25' etc.
3. If you have used extra sheets, please add your candidate number and the examination reference to these sheets too.
4. Do not staple the sheets, or use adhesive tape or treasury tags.
5. Write the number of sheets of paper you have put in this envelope here (do NOT include this cover sheet in your calculations).

No. of Sheets	

6. Place the answer sheets that you wish to be marked in order in the white envelope provided with this sheet uppermost and the examination paper detail and your candidate details **showing through the envelope window**.
7. Seal the envelope and leave it on your desk face up.
8. Leave any spare answer script paper on your desk.
9. You may take the examination paper with you.

For examiner's use only:

	Assessment task			
	Introduction & Description	**Claims**	**Abstract**	**Total**
Marks available	46	50	4	100
Marks awarded				

CCS1

Final Diploma

Patent Examination Board

FD2 Drafting of Specifications

Thursday 04 October 2018 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 15 sheets, including this sheet, and comprises:
    Assessment task (1 sheet)
    Client letter (3 sheets)
    Document A – Client drawings (5 sheets)
    A spare set of Document A – Client drawings for you to annotate and include in your answer if you wish (5 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

I can see why people pay for their grocery shopping to be delivered to their home, even though you get charged extra. There I was, biodegradable paper bags in both hands, as well as Buster my prize-winning miniature dachshund tucked inside my quilted jacket and, thanks to the thunderstorms earlier in the day, an umbrella too. The umbrella was still wet and dissolved one of the bags so my pomegranates and artichokes scattered all over the floor.

From my time working in Tokyo I know the Japanese have long had solutions to wet umbrellas and I cannot understand why we don't have them here, even if they're not perfect.

Since the 1970's at least, if a customer arrived at a high-end department store with a wet umbrella, they would be asked to put it into a wrapping machine to stop water dripping on the floor. Wrapping machines wrap a layer of thin plastic, typically lightweight cellophane, around the umbrella several times, to make sure it is tightly wrapped, creating a waterproof barrier. This was excellent for the shop, and the customer, as it stopped the umbrella leaving water all over the floor; until the customer wanted to leave the shop and had to take the wrapping off the umbrella, which was difficult to do, leaving water and/or the wrapping on the floor, which defeated the object.

So, improvements were made, with a number of different drip-catching bags being manufactured. These are typically little more than long, thin plastic bags designed to hold a wet umbrella, usually branded in the shop's colours or with their logo prominently displayed (the right name is somewhat of a status symbol). These bags are made in different sizes to accommodate different length umbrellas and typically have a Velcro®/hook and loop fastener, drawstring, or elastic at the open end so that, once an umbrella is in, a user can stick the top together (or pull it tight) to secure the bag around the umbrella, ideally over or above the umbrella's handle so it is fully covered, and can carry it around using a handle. Unfortunately, when you take the umbrella out of the bag, water will still come out too.

To stop this, they made further improvements, which complicated matters, but led to a reduction in water on the umbrella, thanks to improved drainage. Outside a shop, you may find two different rolls of plastic bags on conventional wall-mounted dispensers. Each bag is separated by a tear-off strip or other line of weakness, meaning bags can be pulled off individually. One roll dispenses thin inner bags with holes in and the other roll has larger bags similar to the earlier ones. You pull a bag from each roll, insert your umbrella into the inner bag first and put umbrella plus bag into the bigger, outer bag. Water runs off the umbrella through the holes in the inner bag and collects in the outer bag, which, because it is larger, keeps the water away from the umbrella. Unfortunately, though, if you carry the wrapped umbrella around any which way up, collected water splashes back on to the umbrella from the outer bag through the holes in the inner bag. I've given you Figures 1 and 2 to show you what I am trying to describe.

After my last shopping experience, I have improved matters. I forgot about my umbrella and accidentally left the bags on. A few days later when I remembered to take it out, I could see water had collected at the bottom of the outer bag. I took my hair straighteners and crimped this bag about 10cm from the bottom. This melted the bag to itself and created a smaller chamber at the bottom of the outer bag which held water that had run off the umbrella. I could immediately see this would reduce the amount of water that would splash back up the

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umbrella when carrying it around, even if it wouldn't stop all of it. Figure 3 gives you an idea of what I did.
I realised you need to make the best possible separation between the bag and this new lower portion. The best solution I came up with is complicated but buyers want the best if their logo is going to be on the outside, so, even with the extra costs, I will probably be alright making really high-end versions. I used a single bag, getting rid of the inner bag, and made a water cavity using strong glue with a gap just big enough to let water through but not big enough to let the umbrella fall into the bottom portion: my original crimping wasn't quite enough to stop the water from coming back out but this could be remedied with a drawstring or something similar around the crimped waist – have a look at Figure 4. So, I have everything as a single unit.

Then I decided to pull apart one of my child's unused nappies and added the insert to the water-catching portion as it was all I could think of to soak up lots of water. From experience, I do know that a nappy insert has a super-absorbent polymer that absorbs a huge volume of water despite its size. This helps make sure water in the lower portion stays away from the umbrella once the umbrella is in the bag, even if the bag and umbrella falls over. This type of bag can be closed with a Ziplock®, clip or conventional zip.

I then experimented with a one-way valve separating the parts, formed from a number of layers of overlapping pieces of waterproof material having a slit in each layer. The slit needs to be shorter than the diameter of the average umbrella tip. The slits in each layer are offset from each other so the water has a tortuous path to follow. In my deluxe version, the layers of material also get thicker, with the top layer being the thinnest and the lower-most layer being the thickest. Water will work its way down over time as it doesn't have a straight path and relies on gravity. When there's an umbrella in the bag, the weight deforms the thinner layers, making the gaps at the top wider to allow faster water run-off, whereas the thick lower layers stay fairly in line and can impede some water progress by being pushed together, further trapping water. When the umbrella is taken out, the gaps return to normal and any trapped water will run through. I hope my Figure 7 helps you understand what I mean. This design benefited from reinforcement with an additional layer of glue around the edges to make sure the layers didn't come apart.

I also tried an off-the-shelf one-way valve in a separator layer, offsetting it from the centre so that the tip of the umbrella didn't block the valve. Water can run through the valve, but does not come back up, staying away from the umbrella, even when being bounced around when carried, or, indeed, irrespective of orientation. I'd also like to add a carry handle so a longer umbrella can be carried sideways more easily. To make sure the valve stayed in place I added a layer of waterproof reinforcing glue around the edge to really ensure the umbrella doesn't fall through. Another layer of reinforcing material might be best but this is all I had. I then made a hole in the bottom portion into which I pushed a bung. I'd like my bag to be reusable and a stopper like this in a resealable outlet can be removed to drain the water. The bag can be biodegradable as long as it doesn't break down on contact with water like paper bags do; it simply needs to be a flexible waterproof material. To help direct water downwards, it helps if the part that holds the umbrella is flared, i.e. wider at the top than the bottom.

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My 'bag' could be made from a non-flexible waterproof material, like some sort of tube or casing closable with a lid. I have experimented with this being made from a number of sections concertinaed together, which could be pulled away from each other like a normal drinking straw uses to help form a bend, which can be pulled away to accommodate different length umbrellas. Unfortunately, that seems too complicated to work and would risk the all-important name of the provider being distorted on the outside if there are too many sections collapsed. Two tubes, sized so that one fits inside the other and sliding telescopically, works well. They need to be watertight, of course, which can be achieved by having a sufficiently tight fit or a waterproof seal between them attached to one of the tubes. Pulling the inner one down would make for a longer case to take a bigger umbrella. Longitudinal ridges on the inside of the tube could help keep the umbrella away from the casing and make for faster drying as the canopy of the umbrella (the waterproof material itself) doesn't just stick against the wall, so water can shake off.

I also tried to separate things with a layer of water-permeable membrane around 10cm from the bottom, taken from an old, but expensive, sailing jacket, which was too worn to give to charity, and glued it in place. These expensive materials let water go through in one direction, not the other, even when they are breathable (i.e. they let air through). The umbrella tip simply rests on the material. It helps if the bottom portion is clear or has a see-through panel so that you can see how much water is in there. I've also thought I could use a bath sponge instead of raiding supplies of nappies.

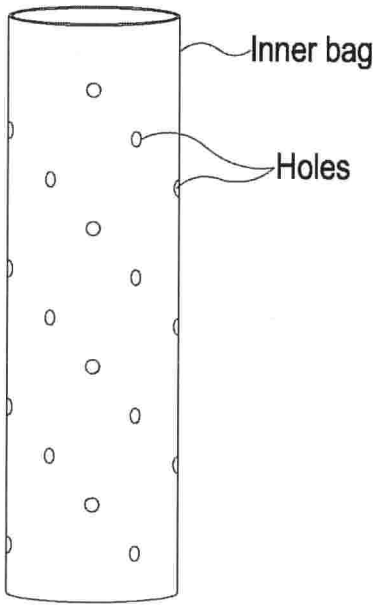


Figure 1a

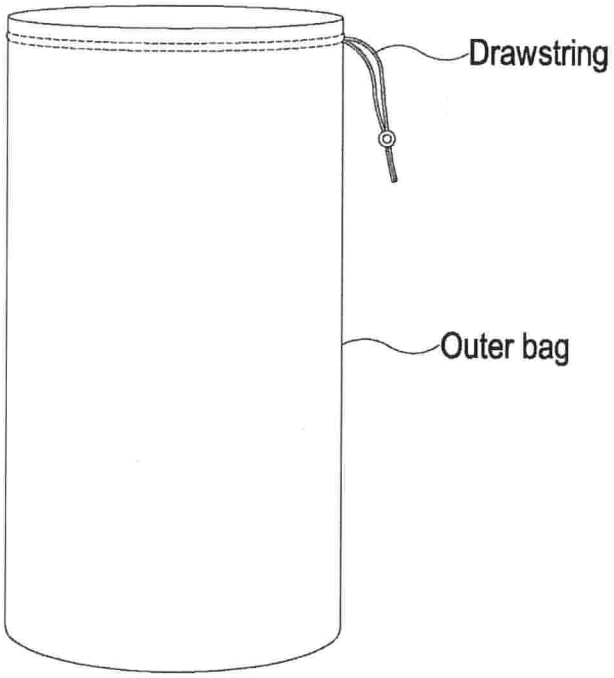


Figure 1b

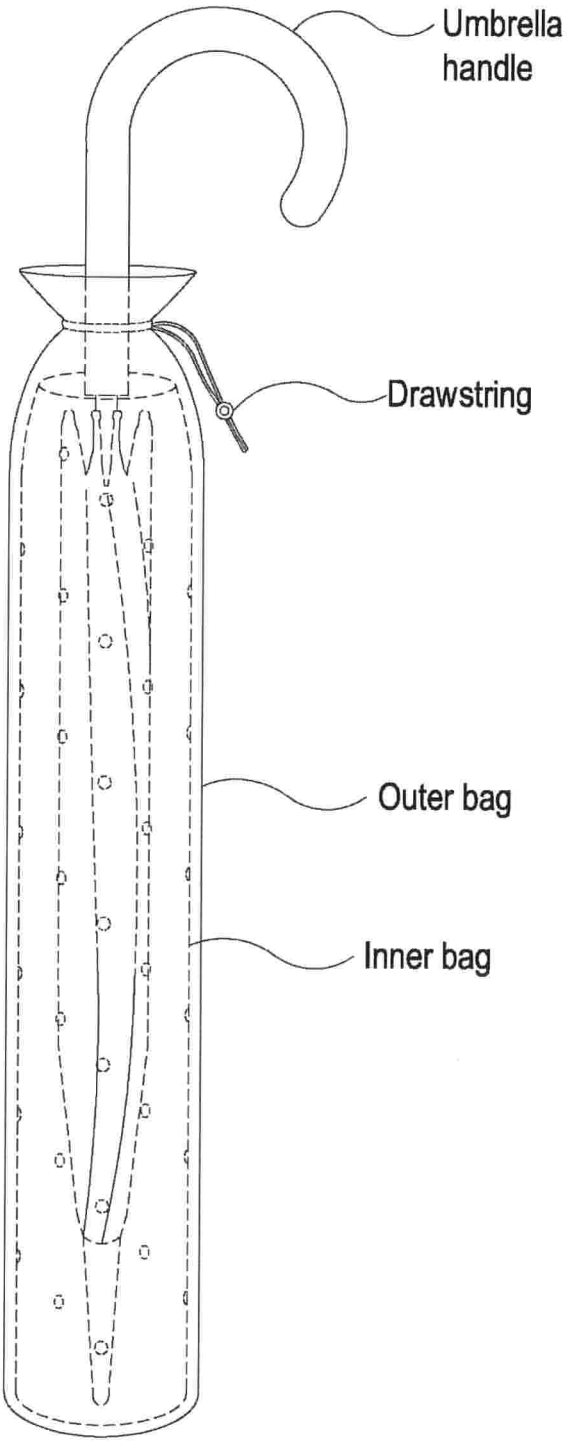


Figure 2

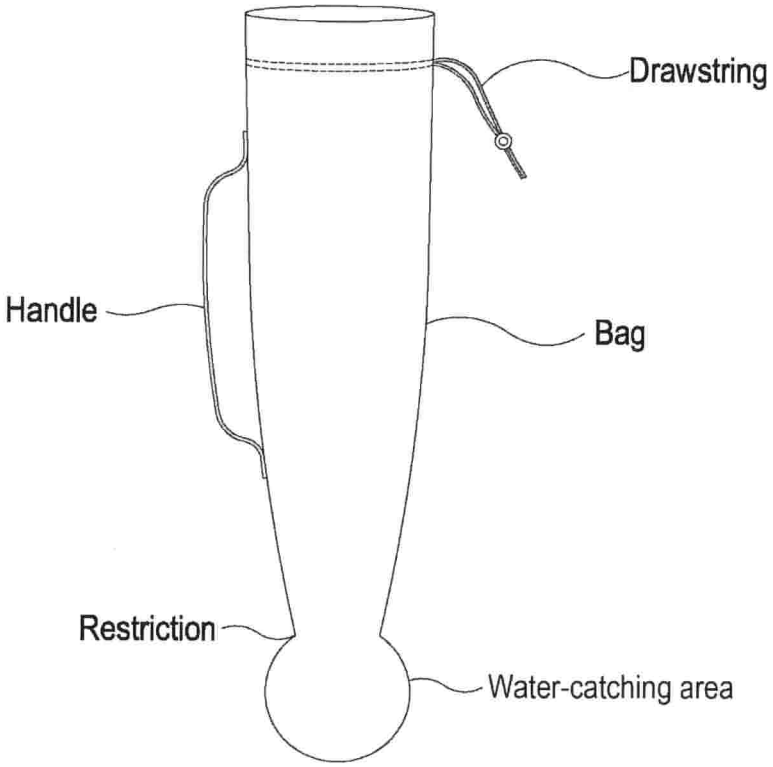


Figure 3

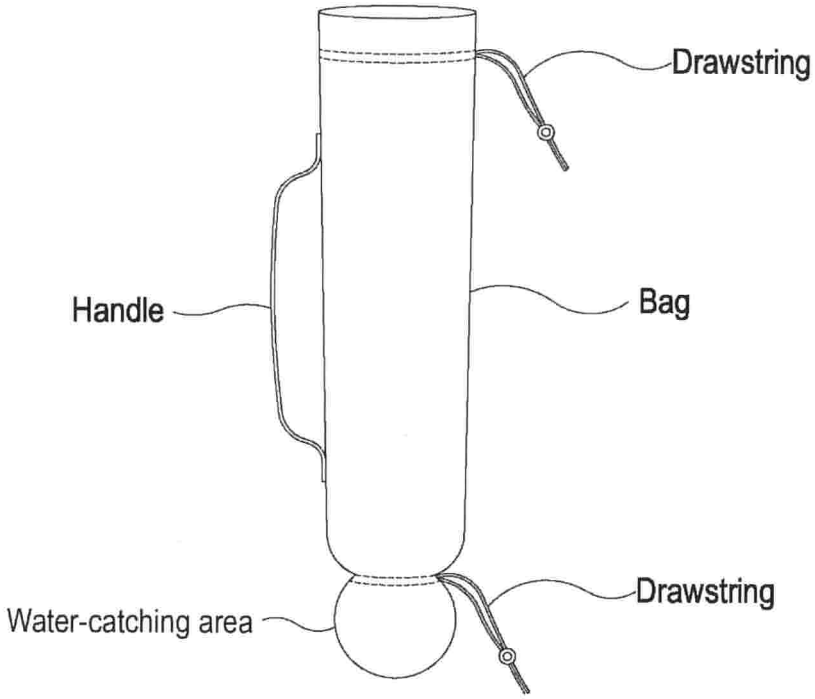


Figure 4

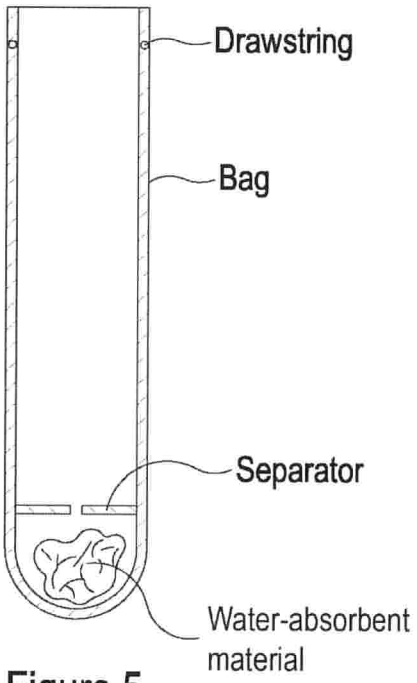


Figure 5

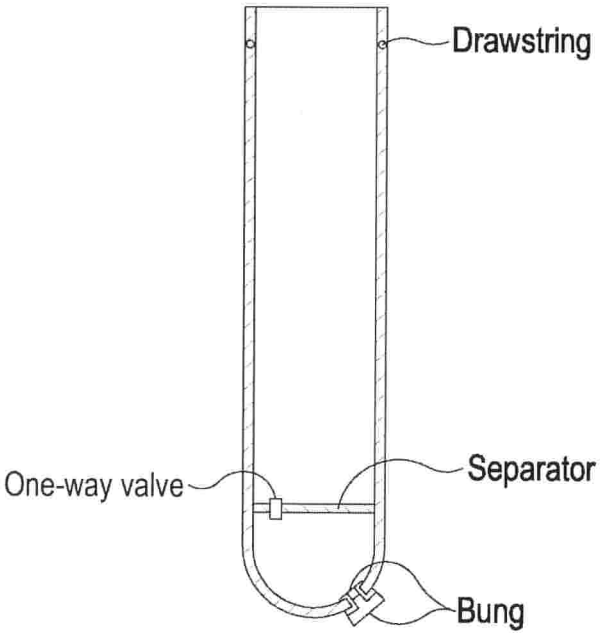


Figure 6

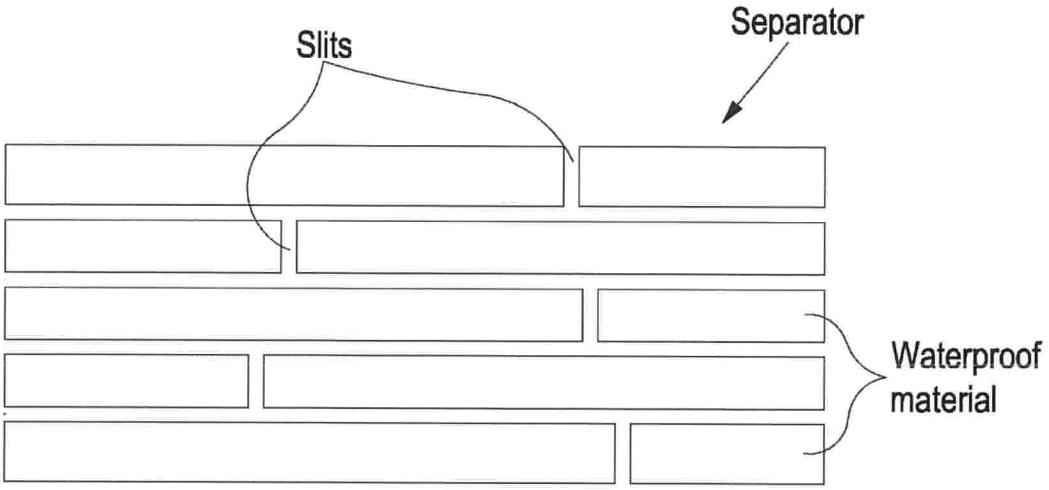


Figure 7a

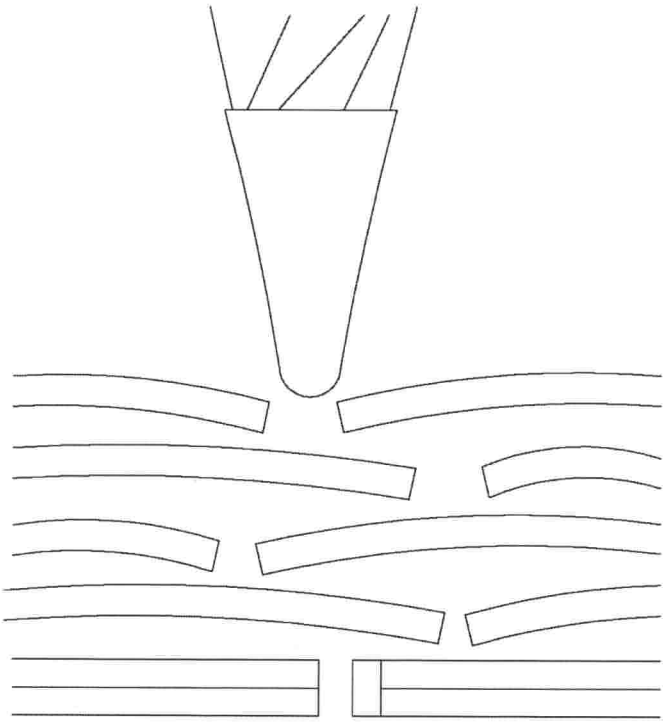
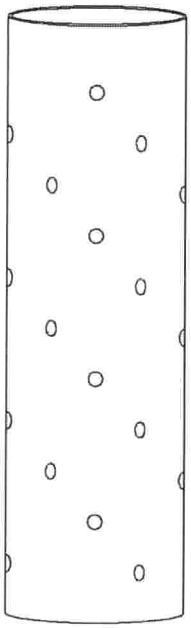
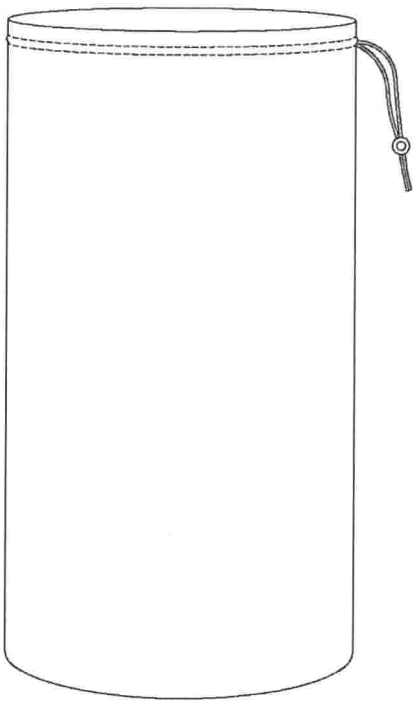


Figure 7b

Paper Ref	Question No.	Sheet	of	Your Candidate No.

Document A – Spare set of Client drawings (unannotated)





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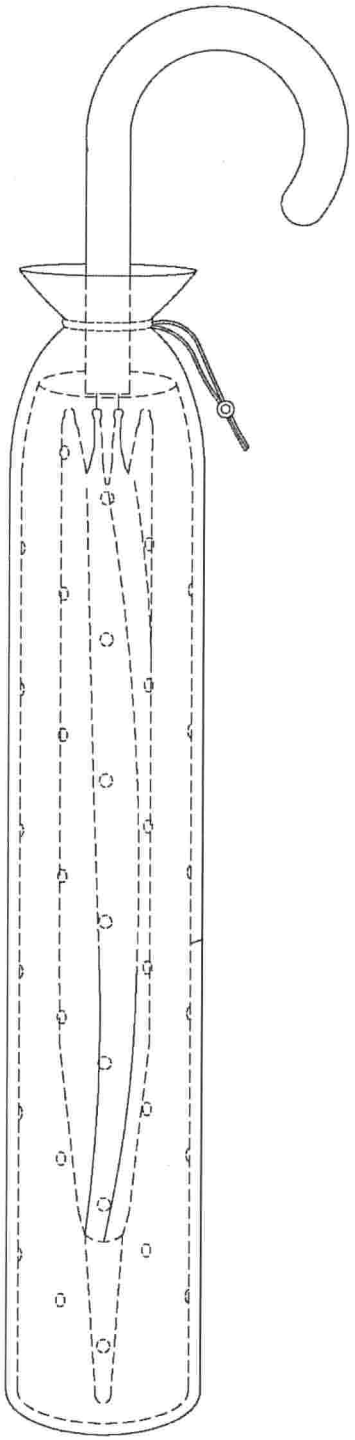

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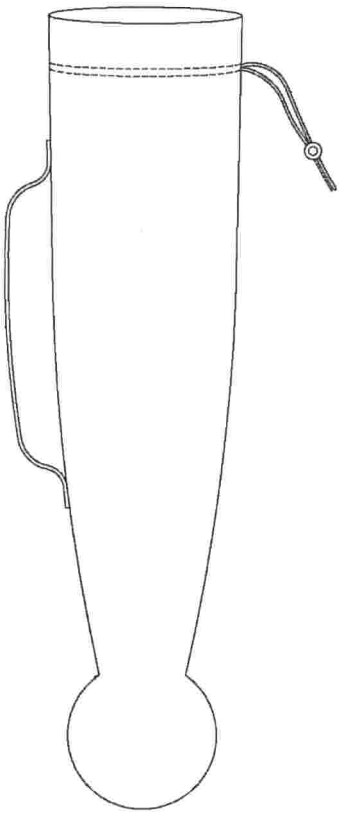

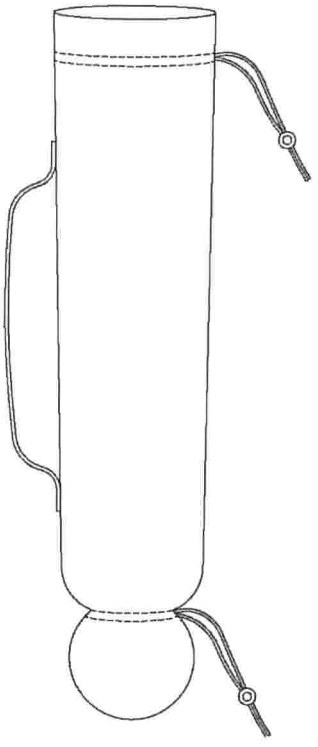

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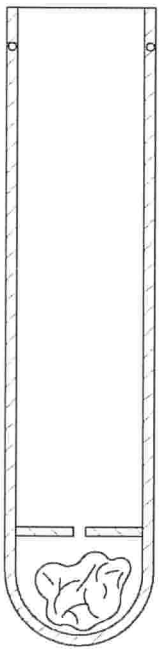

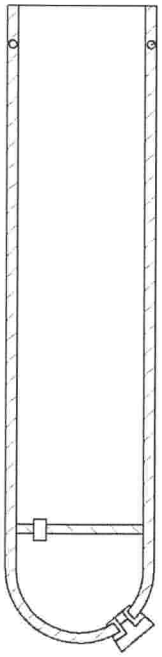

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