



PATENTS AND DESIGNS ACT, 1911

Form 1

Application for patent when the true and first inventor is sole or joint applicant. Section 3.

I (or we) **Md. Hafiz Hasan**, 20, Keramat Mostan Lane, Sadar, Kushtia, Kushtia, 7000, Bangladesh, Bangladesh hereby declare :-

(i) that I am (or we are) in possession of an invention for

Xylem-like pipe to uptake water using at least 50% less energy

(ii) that I am (or we are) (or the said)

Md Hafiz Hasan , 20, Keramat Mostan Lane, Tali Para, Sadar, Kushtia, Khulna, 7000, Bangladesh, claim be the true and first inventor thereof.

(iii) that the invention is not in use in Bangladesh by any other person;

(iv) that the Provisional specification filed with this application is, and any amended specification which may hereafter be filed in this behalf will be, true of the invention to which this application relates ;

(v) that the facts and matters stated herein are true to the best of my (or our) knowledge, information and belief.

I (or we) humbly pray that a patent may be granted to me (or us) for the said invention.

Dated this 28th day of October 2022

(Signed)

Md. Hafiz Hasan

To

The Registrar

Department of Patents, Designs and Trademarks,

Ministry of Industries

91 Motijheel C/A, Dhaka-1000.

Attachments:

*** Attachments - Others(Provisional Specification)

Invoice

Date :

Payment Method & Mode: Online (Others)

Payorder No. / Cheque No./

Bank Draft No. / Chalan No./

Scroll No.:

Bank Name -

Branch Name -

Application Fee:

In Word:

VAT(15%):

VAT(15%) In Word:



Form 3

PATENTS AND DESIGNS ACT, 1911

Provisional Specification. Section 4.

(a) Xylem-like pipe to uptake water using at least 50% less energy

(b) Md. Hafiz Hasan, Md. Hafiz Hasan, 20, Keramat Mostan Lane, Sadar, Kushtia, Kushtia, 7000,
Bangladesh, Bangladesh

The following specification describes the nature of this invention:-

Dated this 28th day of October 2022

Title: Xylem-like pipe to uptake water using at least 50% less energy.

Introduction: uptake of water from underground to the ground level or the reservoir tank at the top of a building requires a reasonable amount of energy, usually electric energy. A similar kind of water uptaking occurs through trees' xylem vessels without any energy from outside except the pressure difference, cohesion-tension force, evaporation, and transpiration. If we can mimic the type of pipe that would have been uplifting the water against the gravitational force without any external force, primarily electric energy. Alternatively, if we can copy part of the mechanisms that take place within the plant, it could save at least 50% of electric energy to uptake water at a certain height.

Claim:

It is a pipe that will be used to uptake water, which ignores the adhesion force between water molecules & pipe, and will use the cohesion-tension force and capillary movement properties of water. Furthermore, most importantly, the discharge point of the pipe will be such that it creates an equal pressure difference and vacuum-like force similar to evapotranspiration through stomata as a result the pipe will use at least 50% less electric or any other form of outside energy to uptake water.

Description of the pipe's design:

The skinny pipes will be the unit part of this xylem pipe. These thin pipes will be thin enough to hold the water cohesion tension up to the height the water is to be taken up. The longer the distance, the thinner the pipe would be. So, the water height to be taken up is reversely proportionate to the unit pipe's width.

Upper-facing rings inside the unit pipes would hold water, ignoring the adhesion force between the pipe and the water. Moreover, only the cohesion-tension force will work throughout the unit pipe's column will reduce the required electric energy to uptake the water.

At the top end of the pipe, it would bend towards the ground, and then there will have additional temporary storage. This temporary storage will be big enough to hold sufficient potential gravitational energy to bring up the water from the source either from underground or from ground level to the top of the building of any height.

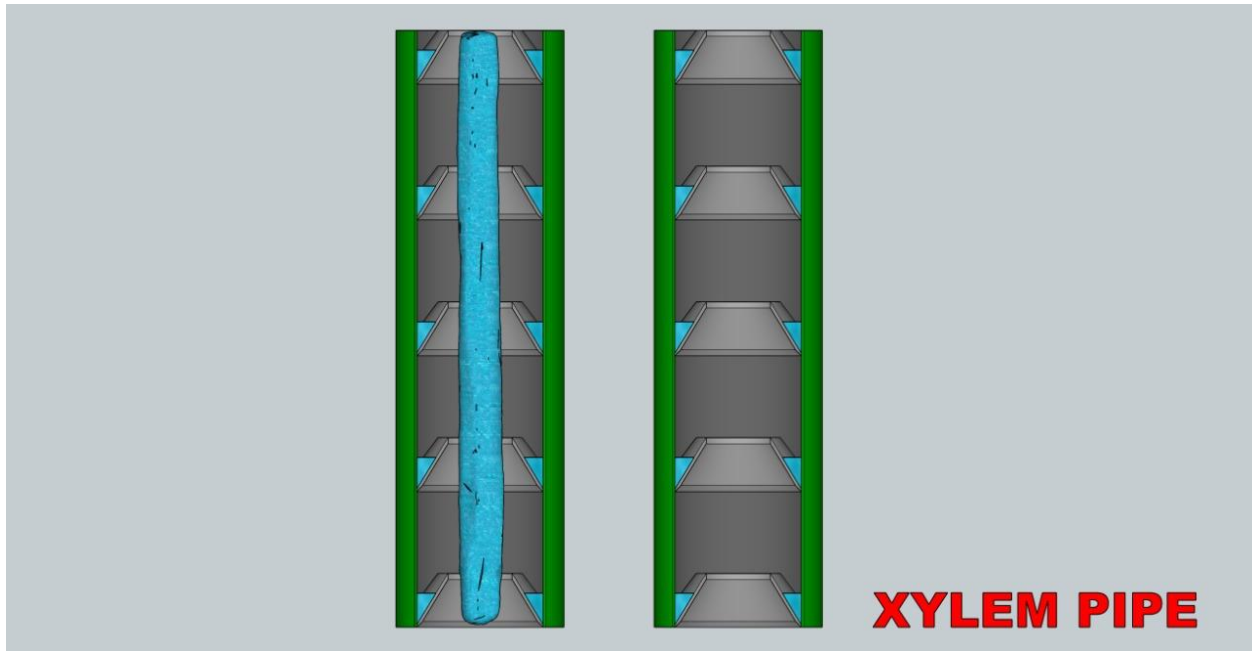


Figure 1: Inside of the Xylem-pipe. Upper-facing rings would hold water on it and thus help to ignore the adhesion force between water and pipe.

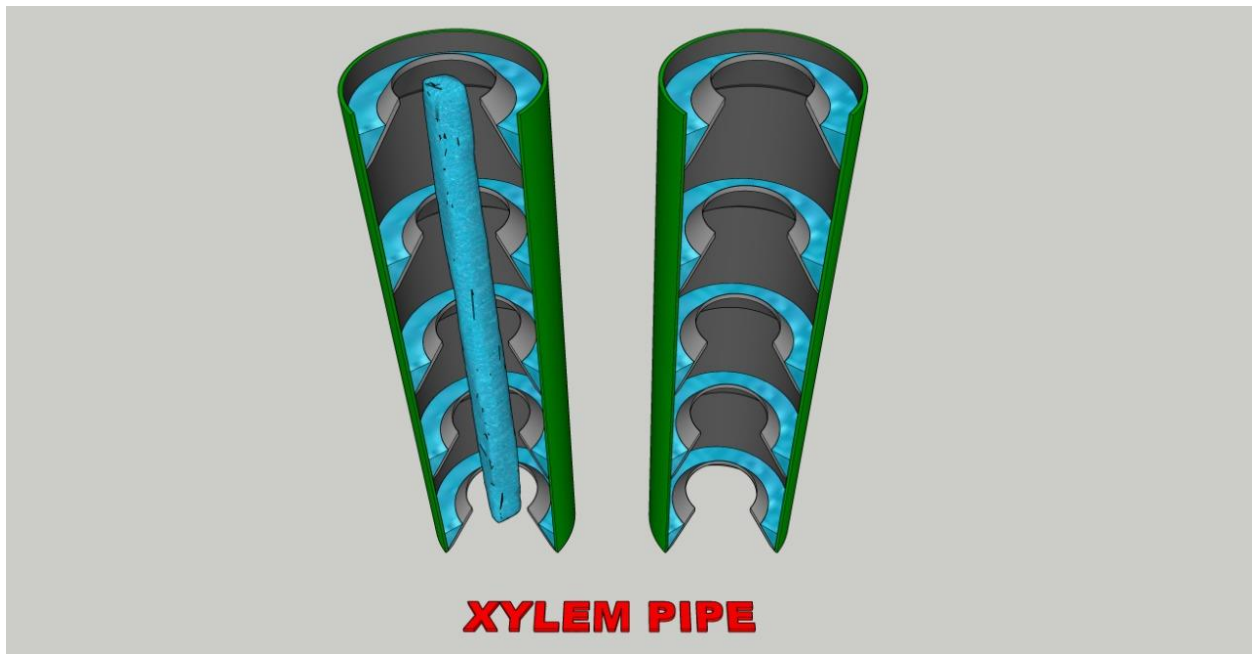


Figure 2: The lateral cross-section of Xylem pipe shows how the adhesion force will be ignored and the narrow channel of water to go up using the cohesion-tension force and capillary movement properties of water.

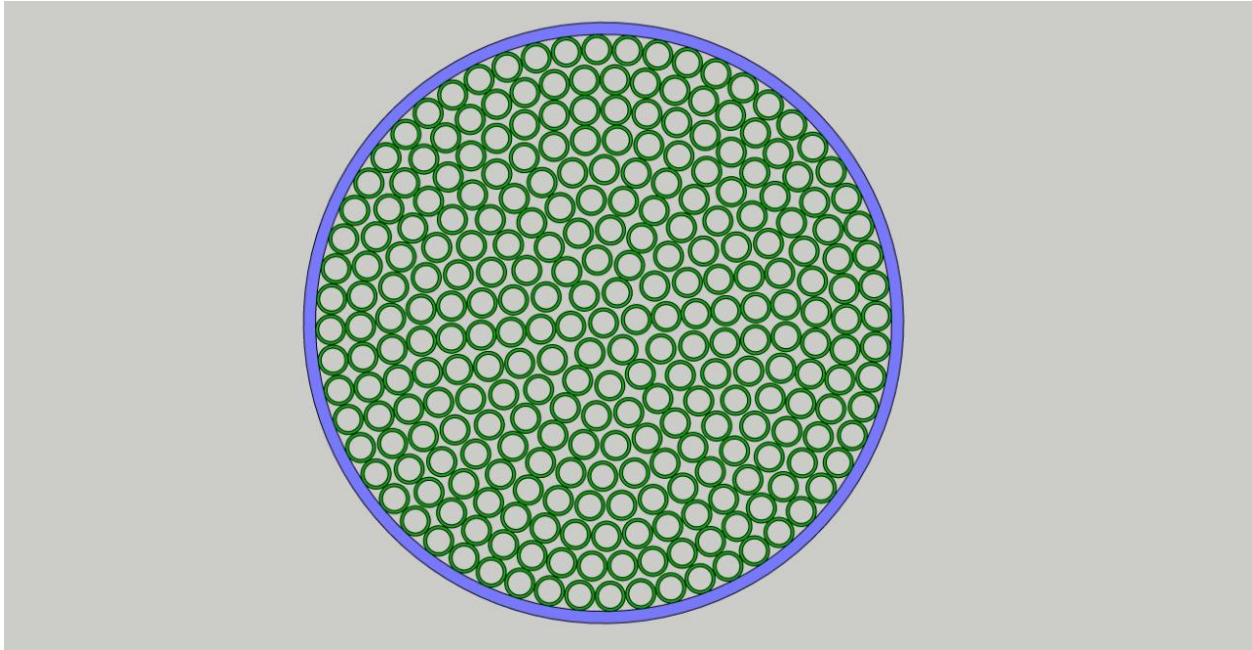


Figure 3: Vertical cross-section of xylem pipe. **NB: The unit pipe will be hexagonal and thus will save space among four adjacent circular unit pipes, which have not been properly drawn.**

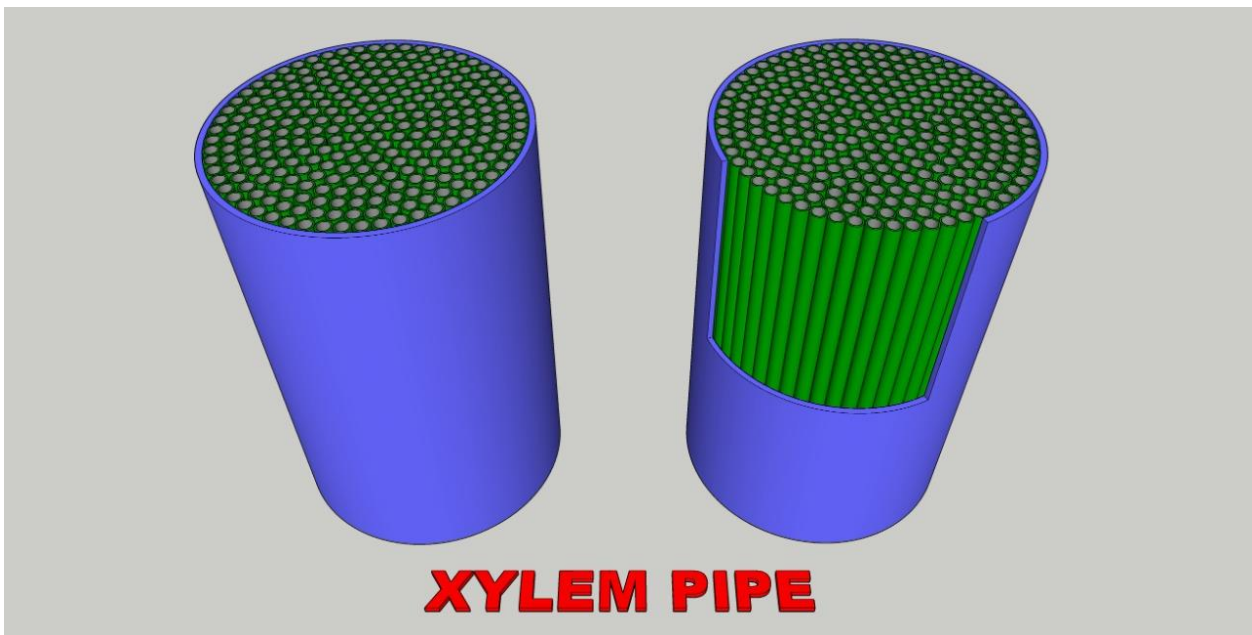


Figure 4: Lateral view of the inside of the Xylem pipe. **NB.: The unit circular pipe will be hexagonal in shape which has not been properly drawn.**

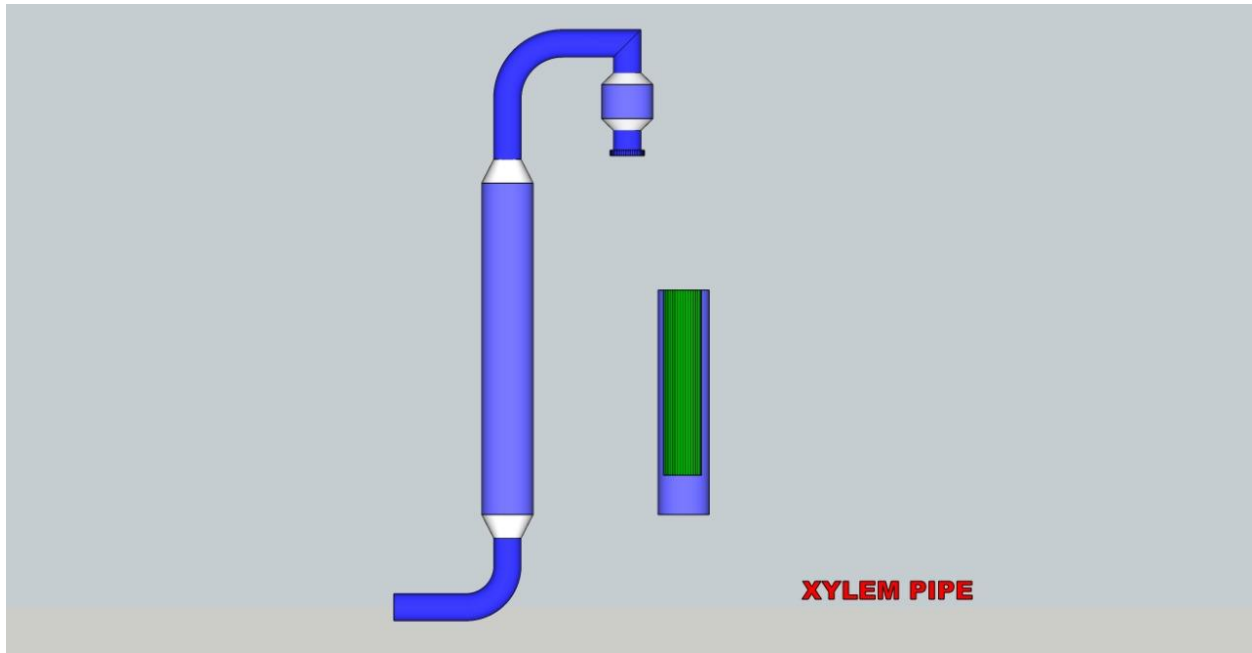


Figure 5: Upper end of the Xylem pipe has a temporary reservoir with a capacity to produce potential gravitational force. This temporary storage will be large enough to create vacuum pressure to draw the water out from the source at the bottom. As a thumb rule, it should have the capacity of at least two times the volume of the entire xylem pipe from the source to the temporary reservoir. **NB.: The xylem-like pipe will continue until the temporary reservoir, which was wrongly drawn in the picture above.**