Mark Sheahan is the first ever 'inventor in residence' at the British Library, while **Patrick Andrews** is determined to achieve one invention each day. A glimpse into their inbox this issue reveals an attempt to prevent their (metaphorical) thinking caps from getting soaked under a (literal) downpour

inventors' inbox

IT NEVER RAINS BUT IT POURS

Patrick: Unless you are a motorcyclist or a mountaineer, umbrellas can be useful.

A good-sized one will shield you from the worst monsoon imaginable in a way that no clothing, short of a deep-sea drysuit, can manage. Nothing's perfect, however, and the problems with umbrella design are numerous:

Even a well-steered umbrella is often close to taking someone's eye out.

The umbrella'd have only one free hand, making door opening and bag carrying mutually exclusive.

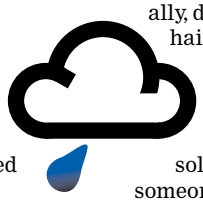
Umbrellas really aren't that cool. A lot of men won't use them, and the small collapsible ones, sold at under £4, are now disposable items.

When it rains, it's often windy. Even the most robust folding brolly will find itself pretty quickly inside out (a week ago, outside Euston, I was tripping over the skeletons of these discarded 'windverts').

Worst of all, if you buy one that can be accommodated in a bag or pocket, it's always too small to keep you dry.

So, I'd suggest replacing all that folding framework over one's head with a set of flexible, rotating blades attached to the top of the shaft. These would rotate like a propeller, fast enough to stop raindrops getting through.

The whole shebang, made of foam rubber, can be driven by a cordless drill motor (aerofoil-section petals might then help support the weight).

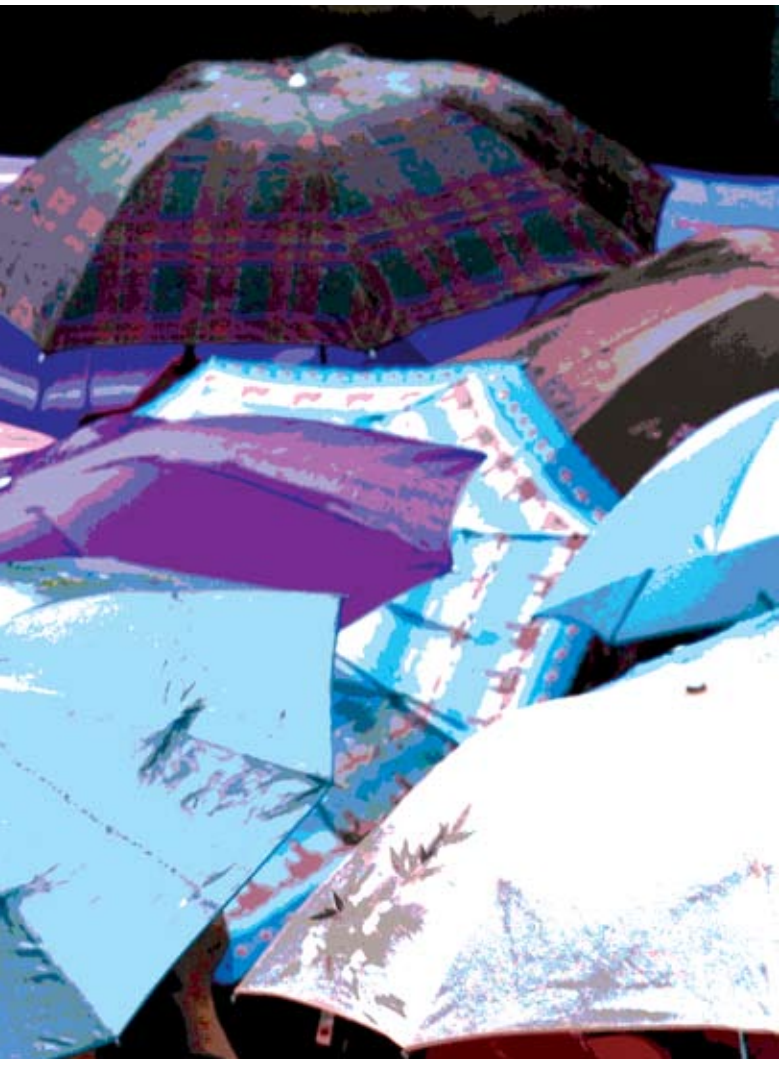


Mark: Houston... calling Patrick... check your air... I think we may have a problem!

Your rotating blades idea may take off, not in sales, but literally, delivering a free GI haircut to-boot.

Jokes apart, as you might have gathered, I think there are some gaping holes with this solution. What's worse: someone losing an eye, or someone having the top of their head surgically removed by the 'propeller umbrella'?

I am not sure if the thought of designing a new umbrella excites me that much, not because I feel above such things, but because, much like the combustion engine, it has been engineered to perfec-



tion, making it difficult to be innovative.

■ **Patrick:** You, finding it difficult to be innovative?

■ **Mark:** That said, and with my commercial head on, it is certainly worth the effort if you could capture 1 per cent of the global market. I suspect there are more umbrellas than rats in the world.

Where do we start? I think we need to look at the history of the umbrella first, because we will be fighting the past to get a new type accepted. People will gawk at you if it looks too different. Although there are some who would happily put a dead cat on their head, if it kept them dry.

■ **Patrick:** That whole 'dead-cat' thing has already been done to death as a source of inventions, hasn't it?

■ **Mark:** Umbrellas are old enough to have their own folk law and are seen as quintessentially British. I even read somewhere that Her Majesty the Queen swears by a clear dome-shaped umbrella (with good depth), as it covers the head and shoulders well and wind cannot easily get underneath.

Having recently seen inflatable clothes and a skateboard, my first design thought was: why not an inflatable umbrella? I suspected there were hundreds of patents but decided not to do a patent search yet, as it could influence me too much.

My idea is to use a lightweight multi-purpose pump (think of a thin, long bicycle pump) which fully inflates and deflates the umbrella, when opening and closing, and acts as the its main pole and handle. This pump, incorporated into the design, would need to work in a different way to normal ones pumping air in on the outward stroke and out on the inward.

For internal strength, a frame is still required, but only to operate at about half of the coverage of a conventional umbrella, yet collaborating with eight detached extended rods. It is the extended frame connections that are most vulnerable to bending and breaking in high winds.

The top of the canopy, which is connected to the pump, will house an inflatable 'squashed' ball, with eight evenly spaced tubes emanating from it. Each tube is threaded through one of the frame's hollow rods, then into and through a hollow detached extended rod, sticking out at the far end. The protruding tube creates a soft ending – to avoid taking people's eyes out.

OPENING ACTION:

Pull the pump handle and push the frame ring up simultaneously. When both are fully-extended, they should lock. At this stage, the ball and tubes are fully-inflated, producing a rigid connection between the frame's rods and the extended rods, but with some 'give' – so it will not damage easily if blown inside out.

Actually, the system reminds me of a toy I once had as a boy. When you pressed the bottom, a figure stood up, or was it the other way round?

■ **Patrick:** I still think it's lacking in the 'cool' department that might be necessary to reach that mythical 1 per cent of customers (not that I'm an expert). Here are a couple of wacky alternatives:

Imagine staying dry under a geodesic dome, like half a large football, made of interlocking, transparent hexagons and pentagons. The edges of these will be linked by a fishing line: tensioning the line would cause the dome to form; loosening it would allow the tiles to be made into a stack small enough to fit in one's pocket (an action not unlike the springloaded toy you mention). This would be light enough to be carried conveniently on a small, shoulder-mounted bipod. Just like the propeller, it could be exploited as a modern sandwich board, raising advertising revenue for the user (funded perhaps by one's favourite football club sponsor).

Or, if that's too tame, how about a virtual brolly? When being rained on, one's outer clothing could start to shake itself, just like a long-haired dog. This might be driven by a small number of mobile phone oscillators attached inside the garments. If you wanted to get extra-funky (my usual recommendation), these might periodically shudder in time to the music on the wearer's MP3 player. "... singin' and dancin' in the rain..." etc.

■ **Mark:** Personally, I think 'Houston' was too late! That said, using fishing lines for my design, rather than an intergraded pump and inflatable core, is better. Cheaper fabrication, no puncturing to worry about and it would be quite comforting (like the toy) to pull a telescopic handle to make a functional rigid canopy – umbrella shaped! – out of all the chaos. ■

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■ A search carried out by the British Library Research Service (www.bl.uk/research) on 'creating an umbrella shape with wires and interlocking rods, where a wire is pulled, via opening a telescopic handle' revealed six patents FR2894788, UA22195U, DE202006003362U, WO2004062417, GB990458 and WO2004062418 which can be viewed on Espacenet. Readers can send their own thoughts to engtechmag@theiet.org