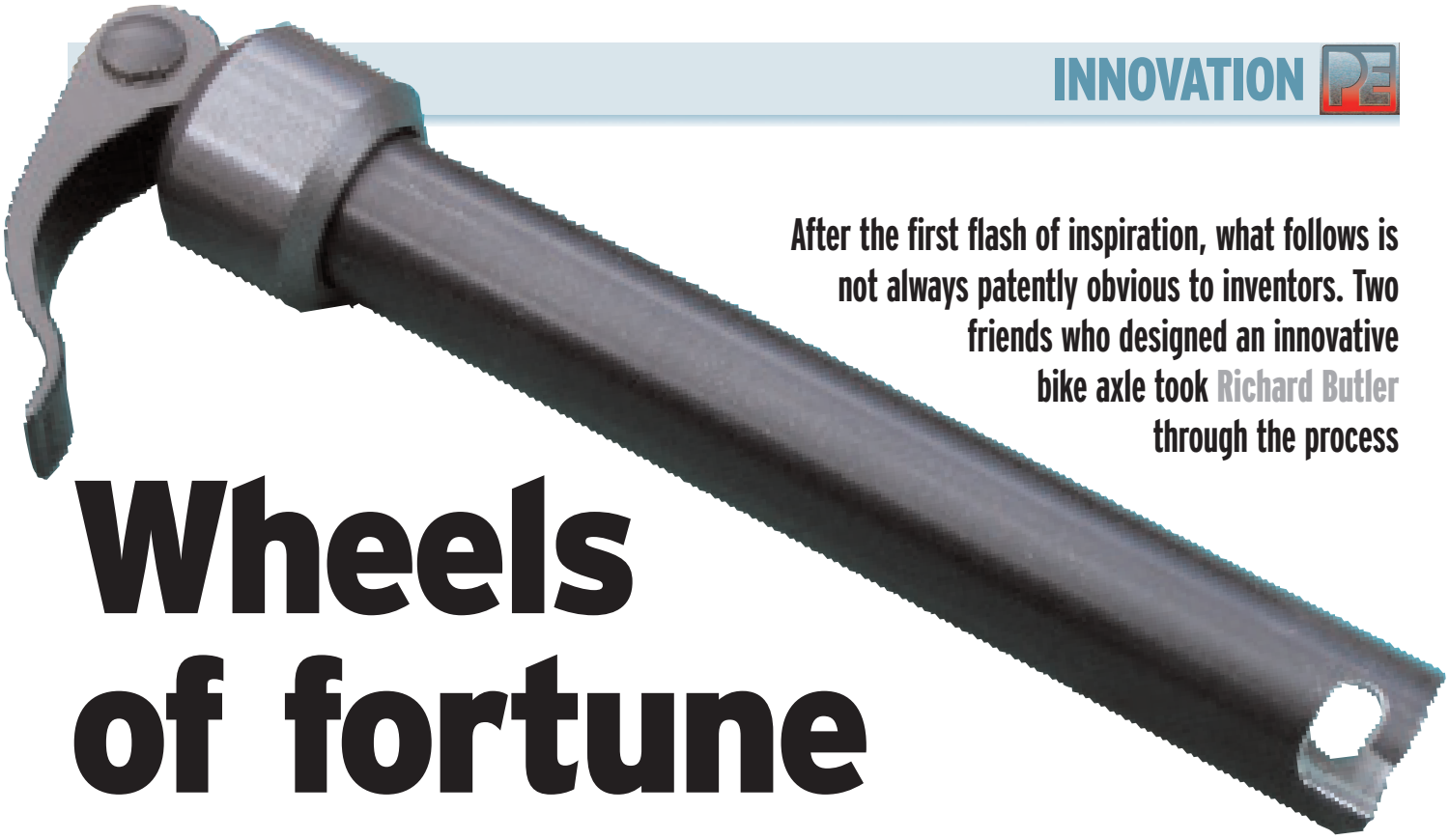

After the first flash of inspiration, what follows is not always patently obvious to inventors. Two friends who designed an innovative bike axle took Richard Butler through the process

Wheels of fortune

After all the years of training and amassing experience as an engineer, it is sometimes a fleeting idea that can lead to the big breakthrough. And those ideas can come at any time. The challenge, of course, is to protect and develop an idea into a product with a market value.

For Nick Hart, who trained in computer-aided engineering, the idea came in a pub. He and his friend Charlie Bartlett had been mountain-biking and were contemplating the need for a better method of attaching bike wheels.

The demands put on mountain bikes are very different to those of road-racing bicycles of the 1920s, for which the quick-release wheel skewer was designed. Disc brakes and suspension forks with seven or eight inches of travel are increasingly popular and demand a stiffer, more secure fixing. Various bolt-through axles exist but all require tools and more complexity than the venerable quick-release.

Bartlett had tried several systems but found them awkward and impractical, having lost fiddly components on wet hillsides. Hart's idea was to add a bayonet to one end of a through-axle, then using a quick-release lever at the other end to pull it taut and secure it.

"It's just using proven technology in a different application," Hart says. "We sobered up and found ourselves thinking, 'I wish someone would do something like that.' " Bartlett continues: "Three or four months later, we realised that it would have to be us."

Hart's background in engineering allowed him to progress the idea himself. "To start, we made a steel prototype that could be fitted into an existing pair of forks." Having convinced themselves the idea worked, the next step was obvious. "We both come from industries that are based around intellectual property, so we knew enough about patents to know that we needed one," Bartlett says.

"We went to the Patent Office and they gave us a little booklet on how to write your own patent," says Hart. "For all the help that was, it may as well have been written in Swahili." They couldn't master the particular language required and knew it was something they had to get right.

> Our agent wasn't mechanically minded, so the patent became unbelievably unwieldy

"The realisation was that if what we're selling is intellectual property, then what we need is a really solid patent application," says Bartlett. "We enlisted a patent agent who was a friend-of-a-friend. We managed to secure a flat-rate fee and kept that price down by agreeing to do the prior art searching and technical drawings ourselves." A prior art search helps to determine if the invention is new.

Hart and Bartlett quickly found that it is best to use a patent agent who is familiar with the technology involved. Bartlett says: "Our agent wasn't mechanically minded." As a result, "the patent became unbelievably unwieldy".

Getting this part of the process right is crucial financially, says Hart: "If I had not done the drawings myself or we'd not got our agent to agree to a flat fee, it could have been enormously costly."

To protect their idea in a wider number of countries, the pair decided to register a claim under the Patent Co-operation Treaty. A PCT application can be obtained in the 12 months after an initial patent has been filed and offers protection in 125 countries that have signed the treaty. It lasts for 30 months from the original patent filing and gives some breathing space to test claims and decide which countries to apply for local patents in.

"For our PCT we used a different agent, recommended by the people who were doing some testing for us. She's been excellent," says Hart. "When choosing a patent agent, you really do need a recommendation."

Bartlett adds: "For just a few hours' work she beat the existing patent into shape. We've just found out that the European Patent Office has granted us all of our claims, so the patent is either too specific in what it's claiming or she's done a really great job. The reality is probably somewhere between."

Axle to grind: The inventors of the Hartlett system have protected the idea in more than 120 countries

Next came the testing. SportsPulse, a consortium led by Sheffield University that promotes business growth through sport, secured European funding for much of the testing of the Hartlett axle system, as it is known. The results have been positive, showing it to be competitive, in terms of stiffness, with the more complicated bolt-through axles despite being easier to use than a quick-release.

These benefits to the user and the ease of manufacture have caught the attention of fork and frame builders, to whom Hart and Bartlett hope to license or sell their idea. Their own website has been significant in this respect, says Hart: "It's been invaluable, particularly for international sales. We've put on there videos of how the axle works. It doesn't need language; it sells itself."

If they can sign up a major manufacturer, their hard work, all conducted in their own time, will have been worthwhile. "There's a possibly massive revenue to be made but we're not in this to be rich," Hart says. "We're in it because we like bikes. We want them to be safe and easier to use."

■ **For more information visit: www.hartlett.co.uk**