



# Mutha of invention

Developing your own bike parts is difficult but exciting. Tech guru Smiffy finds out what's involved and meets two guys who might just have revolutionised the through-axle...

Words and pics Paul Smith »

The Hartlett system combines quick release speed with bolt-through stiffness

Like us, you've probably had ideas about new bike components. Usually, these crop up in the pub, you talk about them with your mates and they go no further. This is a shame because some of the world's greatest designs were sketched on beer mats, napkins, the backs of envelopes.... Take the original Mini for example – it was sketched on the back of a napkin, allegedly under the influence of alcohol, and it's arguably the finest car design ever.

Fast forward through time to a pub in Sheffield with two guys talking about through-axes. They're fed up with rounded allen bolts, stripped threads and the five-minute ritual of fiddling to remove the front wheel from the fork. They have an idea to make the through-axe simpler and doodle it, but they don't stop there. They go off and make a prototype, fit it to a fork, and it works. Then they tell us about it. Even with just that level of progression, I'm impressed.

### Ideas men

The guys behind this new through-axe idea are Nick Hart and Charlie Bartlett. Nick is a 34-year-old design engineer now working as a design and technology teacher and Charlie is a 32-year-old environmental consultant. They've both been riding bikes for a long time. They're also regulars at the Sportsman pub in Walkley, Sheffield, where they had the idea.

Now Sheffield has brought us many things for which we should be thankful, notably downhill masters Will Longden and Steve Peat as well as BMX component pioneer George French, knives, forks, spoons and a couple of cranes with Christmas lights on them. It's also

brought us a tram system and a big shopping complex called Meadowhall, but the less said about them the better. In the late 80s Sheffield was also a hotbed of BMX street talent and a leading urban graphic design centre. There must be something in the water up there.

### Hartlett system

Most through-axe designs consist of an axle that is fed through a hole in one fork leg, through the hub of the wheel and then into a hole in the other fork leg. The last hole it goes into can be threaded and the holes in the fork legs are usually split to form a clamp. Small allen key bolts then tighten down to clamp the dropouts on to the axle. To remove the axle you have to loosen two or four allen key bolts and then unscrew the axle before sliding it out of the fork and hub.

Nick and Charlie's bolt-through system – named the Hartlett QR as a combination of the guys' surnames, Hart and Bartlett – is simple in comparison. The axle has a slot in one end, in a sort-of L shape, and this engages with a pin that runs through a hole in the far dropout on the fork. You simply slide the axle into the fork and through the hub, twist it to engage the pin in the slot and then clamp it all down using a regular-style quick release lever. It takes about eight seconds to fit or remove a wheel, it weighs no more than a regular through-axe system and it's actually lighter than some existing set-ups. So what's the catch?

### No adoption

There is a problem though, and it's very simple: the system is not being adopted by any fork or frame

THE HARTLETT IS SO SIMPLE,  
OBVIOUS AND ELEGANT

### JARGON BUSTER THROUGH AXLE

This is a mechanism to hold your wheels onto your bike more securely than is possible with a standard skewer and slotted drop-outs. The axle is pushed through the circular, enclosed dropout of one fork leg, through the hub, and then into a similar dropout on the other fork leg. It is then tightened in place with allen bolts. Also called a thru axle.



The slot in the axle (shown above) engages with the pin in the insert (right) which itself sits in the fork dropout (as shown far right)



manufacturers at the time of writing. I've seen plenty of inventions and designs in my time, but there hasn't been one that is as blatantly obvious, simple and elegant as this one. And yet mountain bike companies seem to be faffing about instead of just buying a licence from Hartlett and putting the system into their products.

Clearly, things are not as simple as that because existing designs would have to be changed, and even re-tooled for certain forks, but the added selling point of having the system on their product should more than offset the tooling and design change costs (unless, of course, a company decides to spend way too much money on a research and design team who waste time and

money, which is frankly their own fault). It would be an easy process for manufacturers of frames that currently feature a through-axle system to produce some redesigned dropouts, and these could be slipped into a production run or mid 2006 frame manufacturing runs. The only extra thing they have to make is the axle itself, and it's such a simple unit that the overall cost increase would be small.

### The future

I would like to see several things happen with the Hartlett system. The collar on the end should be lower profile so it doesn't protrude from the outer surface of the dropout as much. I'd like to see the quick release lever move inboard too, and be

recessed into a groove or slot in the outer face of the collar. As you've probably guessed by now, I would like to see the system adopted as a standard by a couple of companies at least. This would get the thing out there where it belongs as a benefit to riders who run through-axle gear. Above all I want this to work for Nick and Charlie – I detest seeing good designs vanish.

For more information on the Hartlett system check out [www.hartlett.co.uk](http://www.hartlett.co.uk). The CAD video on there is by far the best way of seeing just how simple the system is. ⚙

## INVENT YOUR OWN A BEGINNER'S GUIDE

If you think you've come up with a good bike component idea, first get your design down on paper, both as drawings and a written description (you don't need technical drawings at this stage, just something that shows the thing and what it does). Next contact a solicitor and get him/her to file a sealed, witnessed and dated copy of the drawing. Then post copies of the drawings to yourself. When they arrive don't open them; keep them safe and make sure the postal date is visible. That's the prior-art deal taken care of – it rarely stands up in court, but it's a handy catch-all just in case.

Now apply for a patent to protect your design. Visit [www.patent.gov.uk](http://www.patent.gov.uk) for more info. But whatever you do, get it in early. Follow the simple steps, and if you get stuck, ask for help. The Patents Office is rammed with helpful people so talk to them.

Once you've filed your patent application you can start touting the product around manufacturers, going into production yourself or selling licences to make it. If you're serious about production, get legal advice from a solicitor with patent application experience.

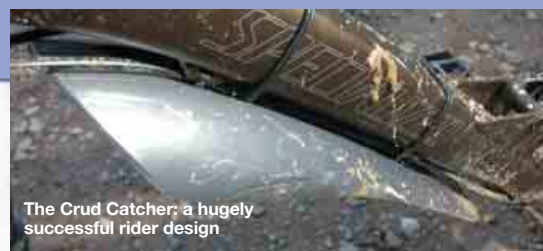


## RIDER DESIGNS SUCCESS VS FAILURE

### SUCCESS

Mountain biker Pete Tomkins designed the Crud Catcher after becoming tired of getting covered in mud while he was out riding.

It's a simple piece of plastic that fastens to the down tube using O-rings and is shaped to catch the crud thrown up from the front wheel. It's narrow enough that it doesn't get in the way, it's light and easy to fit. It proved a hit, and rightly so – it works, it's affordable and it was the first of its kind on the market. The branding and the name worked too. The Crud Catcher was soon used on the bikes of top level riders who were in *MBUK* regularly, further establishing the brand identity. There's a lesson to be learnt here: make sure the product is seen; get it used by riders who are respected by other riders and magazine readers around



The Crud Catcher; a hugely successful rider design

the world, and it'll sell. The Crud Catcher remains massively successful, and is being used by Team *MBUK*/Santa Cruz this coming season.

### FAILURE

Failure happens when you make a product that offers no real-world benefits to bike riders as a whole. The key is to not start the hype with claims that your product simply can't live up to. Consumers are very wise now and journalists are even more clued up, so making questionable or simply laughable claims such as

"frictionless" bearings will only get you, well, laughed at. Just tell people what the product is and what it does.

Ask the journos who test your stuff for feedback, tell them you want to make it better, more affordable, easier to produce and that you would appreciate all comments, good or bad. Consumers (you and me) want to see tests and reviews before buying so make sure you get your product to mags and websites to check out. If it's a good product and you get coverage to back that up, it will succeed – it's not rocket science.