

19th Century Kite Design—Lex Kraaijeveld

Besides flying kites, I also enjoy digging into the history of kites and kite-flying. As most of my kite collection consists of dual-liners, my historical digging is biased towards kites with two lines. Assuming for now that the very first kite was held by a single line, and I think that's a reasonable assumption, who was the first person to come up with the idea of adding a second line to make the kite more steerable? Where and when was that, and, most importantly, what did that first dual-line kite look like?

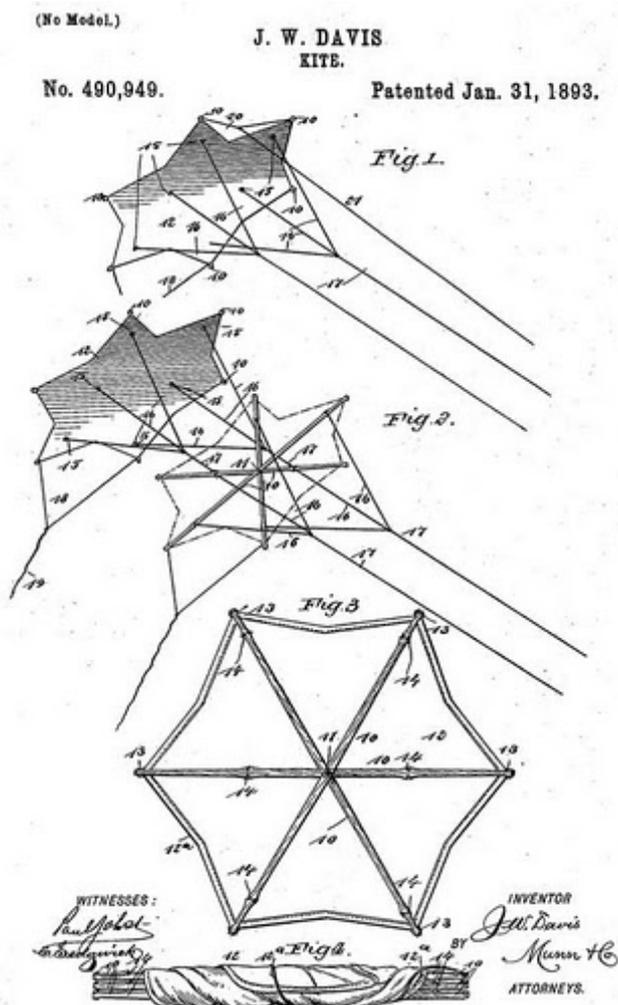
Pick up a standard book on kites, and you're likely to read that flying kites with two lines started in the 1970s, with Peter Powell. It's definitely true that dual-line kites were brought to the attention of the public in a major way by the likes of Peter Powell (and I'll skip over the discussion for now as to whether the Peter Powell or the Dunford Flying Machine was the first on the market). Peter Powell kites were an enormous success,

and were quickly followed by a host of clones on both sides of the Atlantic (such as Ace and Trlby, to name just a few). The kiting world has never been the same. However, Peter Powells were definitely not the first dual-line kites. For instance, in the 1960s the Glite was sold without bridle, but the instructions given with the kite allowed for bridling as a single-liner or as a dual-liner.

It seems that very few people actually took this opportunity, and most Glites flew as single-liners. But even if the Glite was one of the very first dual-liners to be specifically marketed to the public, it certainly wasn't the first dual-line kite. Dig a bit further and you will come across the Garber Target kite. Used to train gunners on board of war ships in WWII, the Garber Target kite was basically a dual-line controlled Eddy kite, which sported the silhouette of a (Japanese or German) fighter plane. The two lines were connected to a rudder and movement of that rudder caused the kite to perform all kinds of manoeuvres simulating a real fighter plane. Target kites do pop up on eBay occasionally, usually complete with holes and in one or two cases that I saw, reduced to little more than a few tatters ...

For quite a while, I thought that the Garber Target kite was the first dual-liner, until I got my hands on a copy of Ron Moulton and Pat Lloyd's 1992 book *Kites*. In the chapter on steerable kites, they of course mention Peter Powell, Dunford, Glite and Target kites, but also make clear that there were a few dual-line kites that preceded them all. The oldest they mention is a star-shaped kite dating from 1893, and designed by J Woodbridge Davis to deliver a rope from a stricken ship to either the shore or another ship. My curiosity was definitely prodded: a dual-line kite pre-dating the Target kite by something like 50 years! I had to know more!

Despite the power of Google, I struggled to find more on this 19th century star-shaped rescue kite. Besides a few brief mentions here and there, the only really new source of information I found was the original patent, filed by J Woodbridge Davis on Jan 31, 1893. As it seemed extremely unlikely that an original 'Davis Star' kite would ever pop up on



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eBay, I decided to try and build one myself; it would be my second self-built kite (my first one was a Wazo three-liner). The patent gave very little information on the size of the kite, and the materials used. The original kite was probably made from some sort of canvas and was likely to have wooden spars, but I decided to create a modern interpretation rather than a true replica, and use ripstop and carbon spars.

As to size, since the kite was meant to carry a rope, it can't have been too small; I felt a wing span of ~2m wouldn't be too far off the mark. Not too long before, I had picked up quite a stretch of shiny khaki-brown ripstop on eBay, and felt that that would be perfect to give the impression of something like oil cloth. To make the sail a bit more interesting than purely khaki-brown, I decided to add some yellow and black. For the spars, I got 6mm carbon tubes.



The building process basically involved making a template for the twelve sections of the sail, hot-cutting the ripstop sections and sewing them together, strengthening the edges and corners of the sail with Dacron, connecting end nocks and bungee cords to the six corners, sawing the carbon tubes to size, and finally constructing and putting in place the three-point bridles. Throughout the whole build, I had to make things up as I went along, as the patent description gave no detailed building information whatsoever. For the tail I cheated, and simply bought a 12m plastic tube tail at a stand at the Bristol Kite Festival.

Kite done, but would it fly?? Only one way to find out My girlfriend and I took the kite to our usual flying spot, Stoney Cross Plain in the New Forest, and I laid out 40m lines. The wind was relatively light, 6-8mph, as I didn't want to try the kite first in strong winds and then see it ripped to shreds or crash horribly. Kite leaning back, lines taught, and the moment of truth was there as I stepped back and pulled the lines. Gracefully, the kite took off, and steadily climbed, pulling the tail along. It all looked pretty stable; so far so good!

Would I be able to steer it? Careful pulled on one of the lines, and the kite moved accordingly, pulled on the other line, and the kite moved back. Turned out that the kite oversteered very easily, so controlling it took some getting used to, but at some point I even managed to fly one or two loops! Landing was easy: after flying the kite towards the edge of the wind window it gracefully came down and landed. Beforehand, I didn't really know what to expect, but the kite flew way better than I had dared hope for, given that it is essentially a flat kite.



So my modern interpretation of the 'Davis Star' flew remarkably well, but what about the original? Was it ever used for its intended purpose? Did it ever fly? As I said earlier, I could not find any information on the kite ever being used for rescuing ships in trouble, but on the GWTW forum, indigo_wolf (if you read this: thanks, Sam!) pointed me to the *Outdoor Handy Book*, by Daniel Carter Beard,

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and originally published in 1914.

This book mentions a 'two-stringed star kite, an invention of Professor J Woodbridge Davis of New York':

"Seven years ago the professor began to experiment in flying kites, and being displeased with the stationary position ordinarily assumed by them, and not satisfied with the wig-waggle of the short-tailed or the darting of the light-tailed variety, which imparts so much excitement to the young novice, he added two bellybands and two stings, by means of which after a little practice he was able to steer his kite around the sky and make it perform all manner of absurd antics, to the great delight of the small boys. It is said that the professor became so proficient with his kite that he could make it cut out letters in the sky, dance and dive, and do other marvelous things. He also found that he could make it go off the wind many degrees. In speaking of what he could now make the kite do, he said it would not sail upon the wind as the Vigilant and Valkyrie did, but it could make some very remarkable tacks."

The accompanying picture intriguingly shows the kite with a two-point bridle, not the three-point bridle as shown on the patent. Did JWD change his design, or did the illustrator get his/her bridles wrong? We may never know, but the important thing is that it appears that Davis' rescue kite *did* fly in the hands of its inventor! And who knows, it might have taken almost 100 years before an updated version took to the sky again; I hope

JWD would have enjoyed seeing my version of his invention fly after such a long time.

For anyone interested to see some pictures of the building process, look here: <https://picasaweb.google.com/101060338022497435191/DavisStarProject#>

A brief video of its maiden flight is posted on Youtube and can be found here: <http://www.youtube.com/watch?v=ftUJvc96PEI>

As to whether JWD's star-shaped rescue kite really was the first dual-line kite, something tells me it wasn't ... so I'll just have to keep digging, won't I? And if anyone has additional information on this 'Davis Star' kite Or *especially* on any dual-line kite older than 1893, please let me know: arkraa@soton.ac.uk

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