Vane Sailing School

by David Mathers

Most racing boats which we sail in the VMYG have Vane steering but to many of us it is seen as a Black Art, which, only those few who were inducted in to the secrets of the vane sailing cult, know how to do.

When I tried to learn a few years ago, I found that the books fell into two groups. Either they assumed you already had a working knowledge of the vane gear or they focused on one particular version of it, may be Jones or Clem. Every tool-maker, back in the 1950/60, thought that he could design a better one so there is a plethora of designs which only muddy the water.

Theory and Practice

This is going to be the first of a series of articles in Turning Pole, intending to give the total beginner the ability to confidently sail a vane steered boat. Along with this, I am preparing two boats that we can use for practical sessions. More on this later.

Initially the articles will explain the very simplest use of vane gear, so that the basics can be clearly understood. Then move on to do a few tricks such as self tacking and guying (explanations later). I will use the "Ezi-built" vane gear for these articles, it was described at the back of Turning Pole 26. I have used one of these very successfully for the past few years.

To begin at the beginning.

What does a Vane gear do? Its purpose is to keep a boat sailing at a constant angle to the wind. (Don't confuse with the angle that the boat heels over). So if you set the sails for say a reach then the vane gear will keep it sailing on a reach even if the wind shifts direction. So the boat will keep sailing at its maximum speed for the way that you have set the sails. What it wont do, is to keep going towards the same point on the opposite bank; if the wind direction changes slightly then the destination point changes slightly.

Imagine a weather vane (like the one on the top of a building). But we have ours at the back of the boat, as the wind changes direction, the vane moves. We have a simple system of levers between vane and the rudder. If the vane shifts a little then so does the rudder and the boat is steered back onto its original course, relative to the wind. (Not relative to the bank).

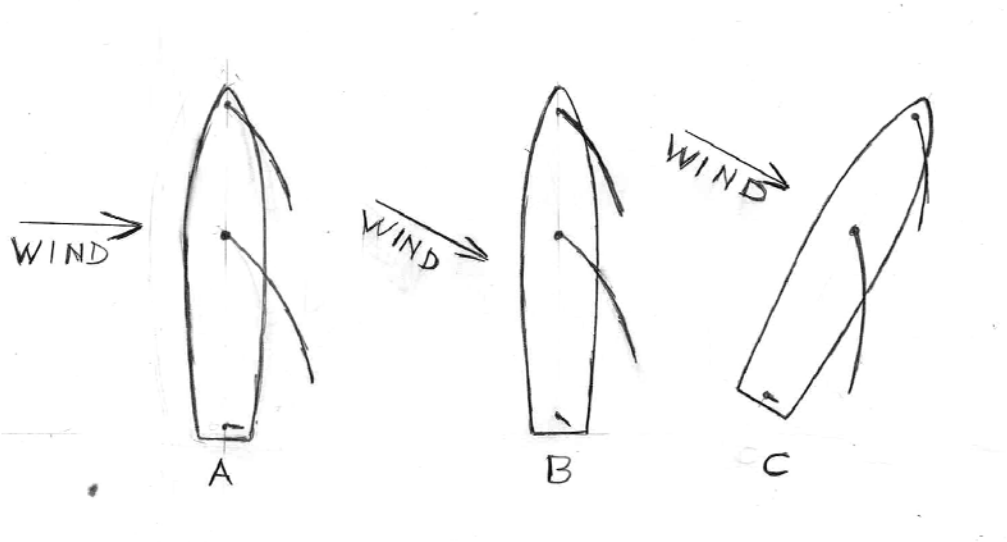

Fig 1

See fig1-A, the wind is from the west and the boat is sailing north on a reach. Fig1-B if the wind changes to come from the north-west, the vane gear will alter the course of the boat from north, to become north east, shown in Fig1-C. The boat will still be on a reach and sailing at its maximum speed for the way that the sails have been set. But it will no longer be heading for the original point on the far bank. It will be going a bit to the right of it.

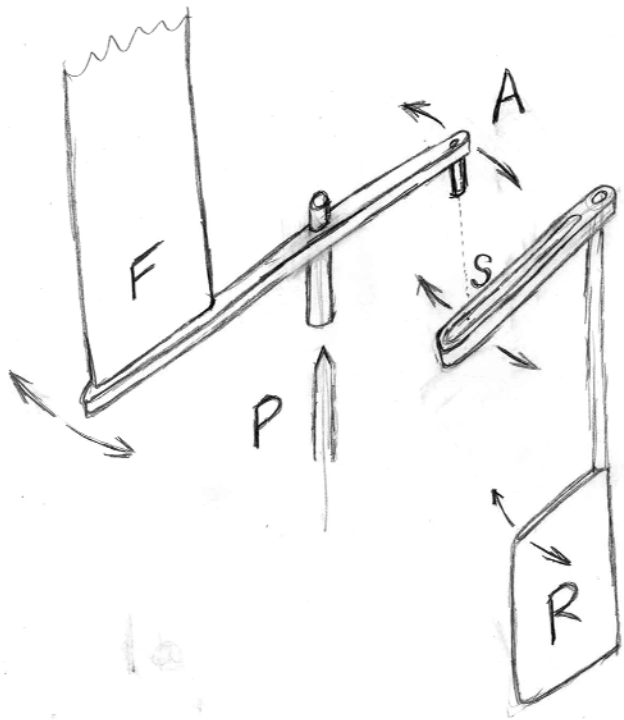

Fig 2

Lets look at the mechanism that performs this, in Fig 2. The arm F-A sits down on the pintle P so that the pin at A fits into the slot S. As the wind blows on the feather F, it pivots about

the pintle P and moves the arm S. As this rotates, the rudder R turns. That is the principle of the Vane Gear.

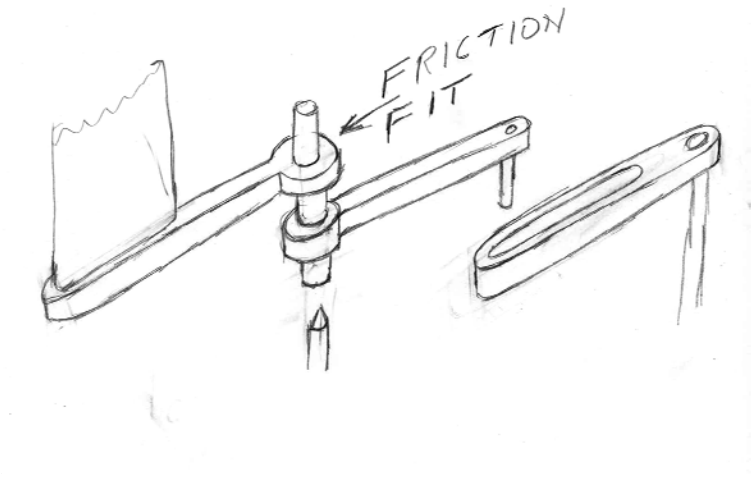

Fig 3

In practice, we want to be able to sail at different angles to the wind. One way would be to have lots of different arms A-F, all bent at different angles, but this would be rather silly. What we do is to have a friction fit as shown in diagram Fig 3 so that the arm with the feather can be rotated to any angle. This is shown in Fig 4, here the feather has been rotated to the port side of the boat, where it would be if the wind was coming from the starboard side and the boat was on a reach.

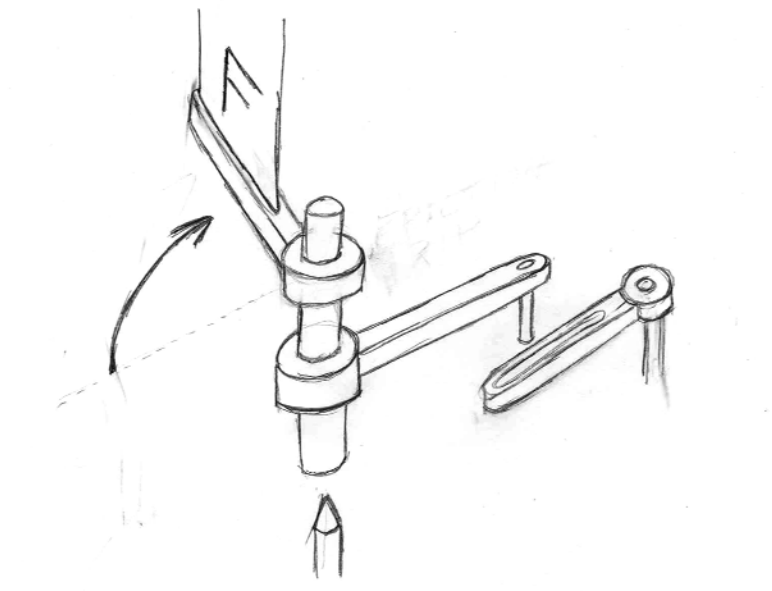

Fig 4

There is only one problem remaining, as the boat heals at different angles, the weight of the arm and feather will cause it to swing about and affect the rudder. We don't want this, so

we have a balance weight to keep it steady. See Fig 5. Note that it acts like a balanced round-about not like a see-saw.

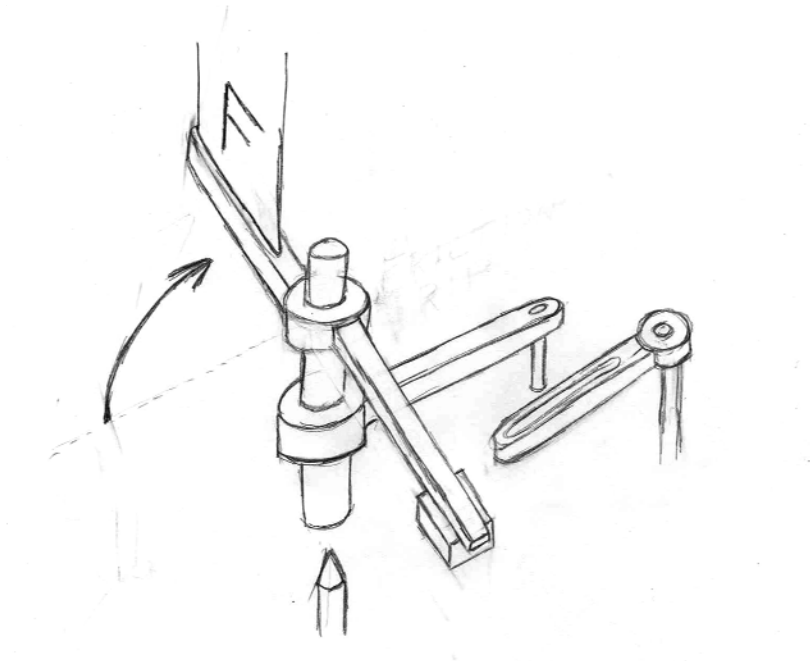

Fig 5

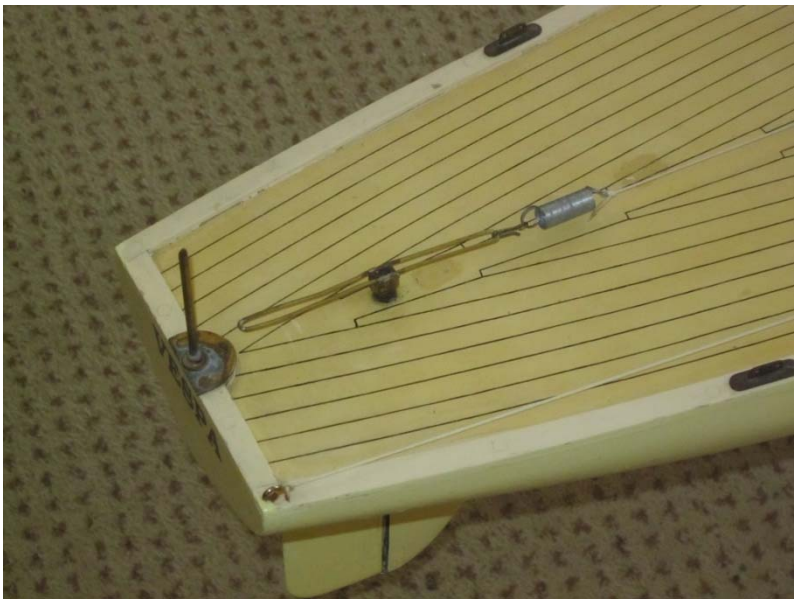

Fig 6

How does this look on a real boat? Fig 6 shows the rear of the boat with only the pintle and the arm previously marked with an S in Fig 2. This particular boat also has an arm going forward with a spring, to act as a self centring device.

Fig 7

Fig 7 shows the vane in place. Referring again to Fig 2, notice how the pin marked A is in the slot S on diagram. The feather marked F is made of balsa wood painted white. The balance weight is the square block to the right. The black disc has a scale marked in degrees, it is used to measure how much the arm has been turned. The rest of the bits on the vane gear will be explained in subsequent articles.

How do we use it in practice? Let us assume that we want to send the boat off from the bank on a reach, with the wind coming over the starboard side. Set the sails appropriately (out at about 45 degrees). Rotate the boat so that it is pointing in the direction that it is going to sail. Rotate the vane gear so that it is like picture Fig 7. Notice that the balance weight is now pointing directly into the wind, this simple piece of information is very significant when setting a vane gear and is the basics for all points of sail. The rudder should be straight ahead when the balance weight is pointing directly in to the wind and the feather is directly down wind. Make any small corrections that are necessary to achieve this. With the boat in the water and pointing in the appropriate direction, give it a gentle push to help it on its way. We give it a gentle push because when a boat is stationary, the rudder has no effect. We do not want our boat to be blown off course before it has even started moving. It will sail steadily across the lake, changing its course slightly if the wind changes direction.

So that is it for this article, we have learnt the theory behind the basic vane gear and how to sail a reach. Next time, we will look at running, close hauled and self tacking.

The Practical Part

I am preparing 2 boats that people can have a go with. I'll bring them to events such as our "Sailing Days" so that people can try their hand at vane sailing or to other places by arrangement.

Fig 8

The boats will be Marbleheads, to a design from the 1970's called Elfin, shown in fig 8. See the picture of Alan Oxlade and me at the John Gale day, Hampton Court. You will be able to sail the boat that I am holding on the left and a similar one which I am preparing at the moment. That is two boats so we can have some races. More information in the spring edition of Turning Pole, get ready to come and give it a try.