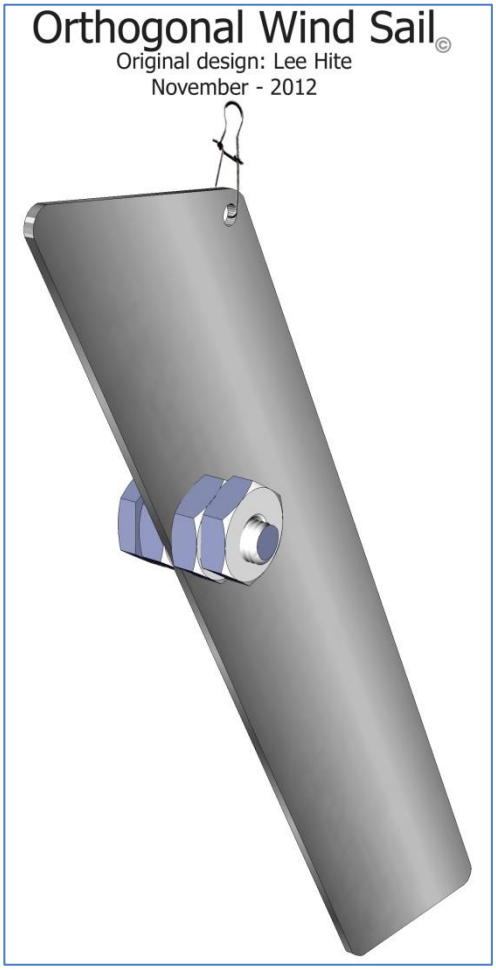
Orthogonal Wind Sailing

Wind Chime ─ Wind Sail

By Lee Hite, November, 2012

From: www.leehite.org/Chimes.htm



Dangle a string in a breeze and it will blow away from the wind. Dangle a heavier object like the sail for a wind chime and it will either push away from the wind and return or just hang there and spin in a circle.

Normally this is sufficient activity to cause an acceptable movement of the wind chime striker. There may be an occasional pendulum effect when the sail continues to swing to and from the direction of the wind, aka the dingdong effect discussed in the DIY Tubular Bell Chimes Handbook.

In an effort to strike a chord rather than individual notes in a wind chime set, we developed a radial striker, aka the keeper striker pictured left. This rotary motion works quite well to approximate striking a chord but requires more energy than normally supplied by the traditional wind sail.

The strike energy from a radial striker is better distributed among the chimes in the set than it would be from a single circular shaped striker. Each chime receives less energy because of this distribution and produces a somewhat muted sound. Therefore, a more robust strike is required to increase the loudness of the chimes.

Toward that end, we developed a wind sail with the ability to deliver considerable energy to the striker. We often describe the motion of an object in terms of displacement, velocity, or acceleration. However, an additional motion description seldom used is the rate of change of acceleration. The unit of measurement is often termed jerk but also known as jolt, surge, or lurch. Jerk supplies the sudden and rapid motion from the wind sail to the rotary keeper-striker.

The sail has the unique ability to fly aggressively at right angles to the wind direction. If the wind is from the North, the sail will fly East and West, thus the name Orthogonal Wind Sail. The aggressive motion of the sail will eventually exceed its ability to fly, fall into a chaotic state, and stall. Immediately the process repeats and continues to supply considerable energy to the radial striker. The design is simple and easy to build. See the next page.

Orthogonal Wind Sail©

Original design: Lee Hite
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- CAUTION -

The orthogonal sail can be dangerous. We do not recommend hanging the chime set where the sail can contact children, adults, or animals. The sail makes no noise and can swing a full 180 degrees in a half circle motion. This quiet operation and wide swing can cause people to be unaware of the danger. The sail is flat thin metal and can possibly cut the skin or damage an eye as it swings. BE CAREFUL !