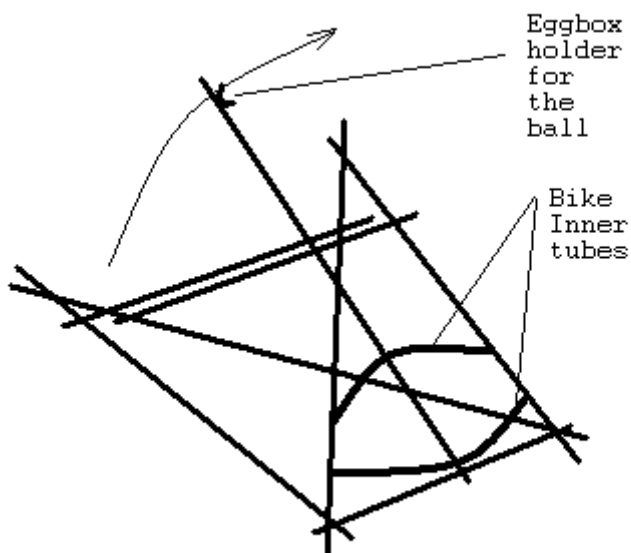




Fun Pioneering – Table-Tennis Ball Ballista.

This project should appeal to Scouts as it involves moving parts and balls flying through the air – more fun than just creating something static.

This is what mine looked like – about 1m wide at the front, 1.2m high and 1.7 meters long and built of garden canes with 2 bike tires for propulsion and an egg box holder for the ball:



This one was used in our Troop room, with the ball flying about 15m, but if you have less room, you could build smaller ones, and if outside, use larger pioneering poles and a tennis rather than table-tennis ball.

Equipment needed:

- 1 x 1m pole
- 2 x 1.3m poles
- 5 x 1.7m poles
- 2 old bike inner tubes – ask your local bike repair shop for some
- egg box to cut up to create ball holder
- Sisal/thin rope for 10 lashings and tying throwing arm to tubes

Construction:

1. Create the front A frame. Use square lashings to connect the two 1.3m poles to either end of the 1m pole. Then bend the top together and fasten with a diagonal lashing.

2. Again with square lashings, connect 2 of the 1.7m poles to either side of the base of the A frame, then again connect the end with a diagonal lashing. (During this time, the A frame will tend to fall over, so you may need someone else to support it).
3. Double the bike inner tubes and slide them down the sides of the A frame. One needs to end up about 10cm above the bottom pole of the A frame, the other about 20cm above the lower one.
4. Now connect 2 more of the 1.7m poles from the rear of the base to a point about 10cm below the top lashing of the A frame. The aim is to get these 2 poles parallel with a gap of about 10cm between them for the throwing arm to move/slide between. The A frame wants to be leaning back towards the rear of the ballista by about 15 degrees from vertical.
5. Connect the throwing arm. Firstly, insert short (20cm) sticks in the bike tubes and twist them round and round to make them fairly taught. Whilst holding the two tubes taught, insert the throwing arm through the center of the two twisted tubes. Try out the tension in the tubes by pulling back on the other end of the throwing arm – it needs to be able to be pulled back to the base and when you let go, fly at a reasonable speed back and hit the top of the A frame. You may want to tie the throwing arm to the two tubes to stop it sliding about, and adjust the tension in the tubes so the throwing arm moves nicely.
6. Cut out one section from the egg box and connect it to the free end of the throwing arm. Make small holes in the bottom of the egg box section and tie it round the pole.

Points to Remember

Be safe when using this – keep everyone clear when testing! Try and keep the A frame and base triangular for strength. Try and get the two poles either side of the throwing arm parallel. Adjust the tension of the bike tubes to get a decent throw – too tight and the throwing arm will break or the lashing at the top of the A frame will give up, too loose and the ball will not fly! Try adjusting the angle of the A frame – the ball needs start traveling upwards when the throwing arm hits the A frame. Competition I found enough garden canes and small (2-3cm diameter) poles for each patrol to make a ballista. They were given 1½ hours to create what they could then we had a competition – best of 3 'throws' won. Points towards the Patrol competition.

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