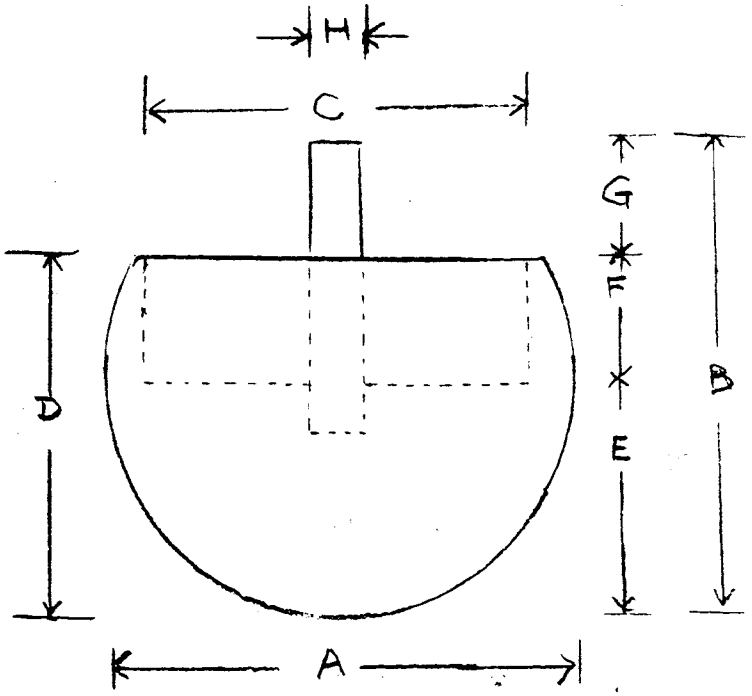
TIPPY TOPS



To explain these numbers . . .

The dimensions were obtained with a couple of tops that flipped fairly well. Since the diameter of the sphere is a given, I've then shown the other measurements relative to the diameter.

I think they should work for tops within the range of 1" to 2" diameter. If you want to make a monster bigger than that, you're on your own!

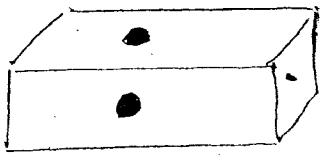
		Sphere size			
		1.25"		1.5"	
	%	ins.	mm.	ins.	mm.
A	100	1.25	32	1.5	39
B	110	1.4	35	1.7	43
C	64	0,8	20	1.0	25
D	80	1.0	26	1.25	31
E	49	0.6	16	0.75	19
F	30	0.4	10	0.5	12
G	30	0.4	10	0.5	12
H	15	0.2	5	0.25	6

Don't take these numbers too literally – after all, 0.5 mm. or 0.06 ins. is not much of a jump!

It's useful to start with a slightly larger number than given here since spare wood can always be removed. In particular, make your first draft of the stem a couple of mm. long. I've found that it is a useful point to make adjustments when you take your top out for its first flight.

BP 6/15

Making a Collet Chuck for a 1.25 in. Sphere

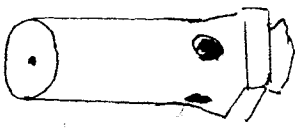


Step 1.

Size wood to 2" square, 3" or so long (and maybe make a couple in case anything goes wrong with the first attempt). Wood should be smooth, tight grain, no faults.

On each of the four sides, measure down 1.75" from top; drill hole 3/8" wide, 3/8" deep.

Mark center at each end.



Step 2.

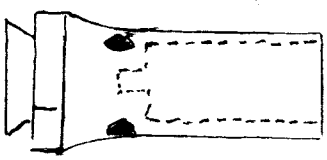
Insert piece in lathe.

Round most of block to 2" diam. but leave tail end square. (This leaves strength at the end.) Shape bevel at tail-stock end to fit in lathe chuck.

Step 3.

Remount block, inserting bevel in chuck. Complete exterior rounding of block (except next to bevel) to sphere diameter + 1/4".

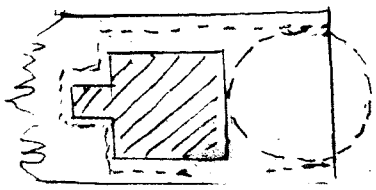
Starting 1/2" from tailstock. make ashallow groove 1/2" wide to accommodate the clamp. (See Step 7 diagram below).



Step 4.

Using large drill (sphere diameter + 1/8"), drill to just below side holes. (Alternatively, use a gouge here if you don't have the right drill.)

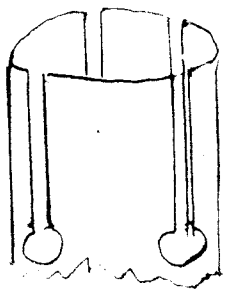
Using 1/4" drill, extend this recess another 1/4" plus.



Step 5.

Turn the block to be inserted in the Step 4 hole: it includes the main part of the block plus a 1/4" projection to fit in the small hole drilled in Step 4.

This is an important step. The space remaining between the top of the inserted block and the end of the collet chuck, needs to be ***half the radius of the sphere plus 1/8"***. This is where the sphere will eventually sit.



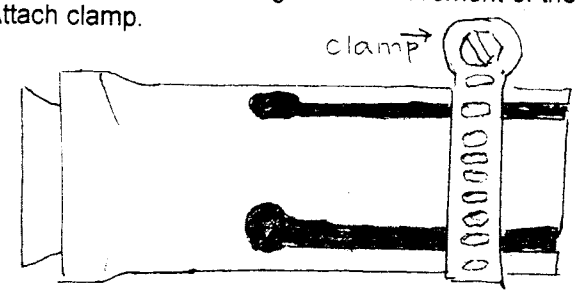
Step 6.

Put glue on the bottom and plug of the insert (not on the sides) and push the insert into place.

Step 7.

Use the saws to cut slots on each side, reaching from the 3/8" side holes to the top. (This yields you four "arms" that will grab the sphere when you come to work with it.)

Sand to ensure nothing blocks movement of the "arms." Attach clamp.



6/13/15

Tools needed

Gouge(s) for initial rounding and bevel, shaping insert (see Step 4)

Drills: 3/8"; diameter of sphere + 1/8"; 1/4"..

Handsaws: fine cut ("gentleman's saw") and wide cut (maybe plasterer's saw?).