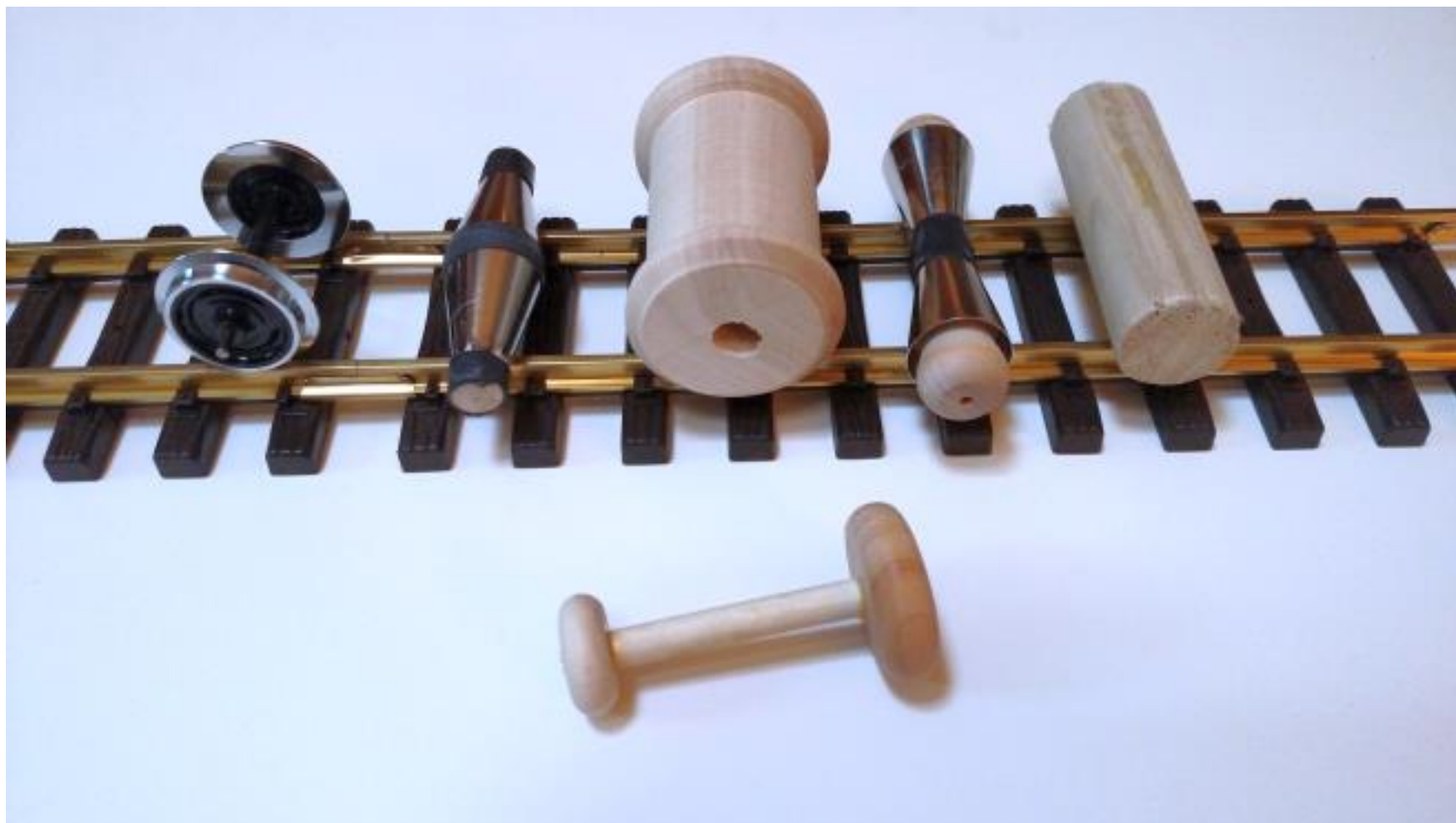


Re-Creating Dr. Chris Barkan's Track Toys without a Lathe or Machine Shop

Parts List and Assembly Instructions

Rev. 0

Track Toys



Cylindrical Wheel – No Flange

- Shows limited stability and lack of curving
- 3-1/2" Length of 1-1/8" dowel cut from full length dowel.



Cylindrical Wheel – Outside Flange

- Shows curving ability.
- Shows lack of lateral constraint when curvature overturning lifts inside flange above rail.
- Large Bobbin un-modified.



Unequal Rolling Radius Wheels



- Shows curving due to unequal rolling radius like a tapered wheel shifting across rails.
- 3-1/2" long 3/8" dowel cut from full dowel.
- Drill hubs and glue wheels to axle
- Done.

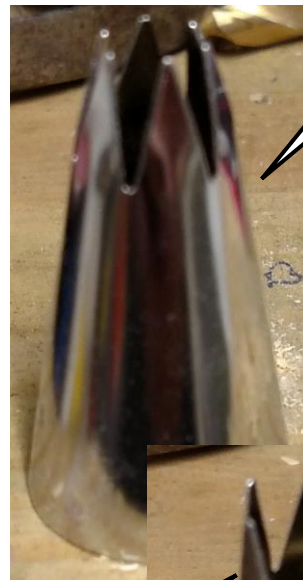
Tapered Wheels Set – Outside Taper 1/4

- Shows severe dynamic instability with no self correction.



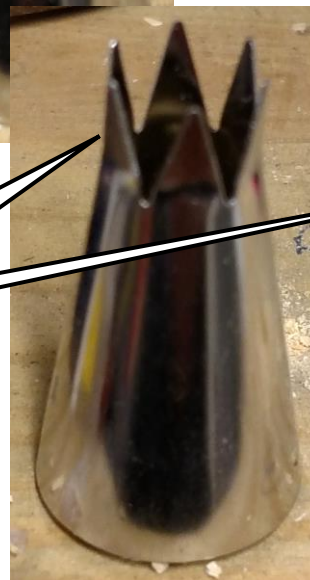
Tapered Wheels Set – Outside Taper 2/4

- 3" long ½" dowel cut from full length dowel.
- Cake Decorating Tip - Bend Tangs out.



#1M

#2D

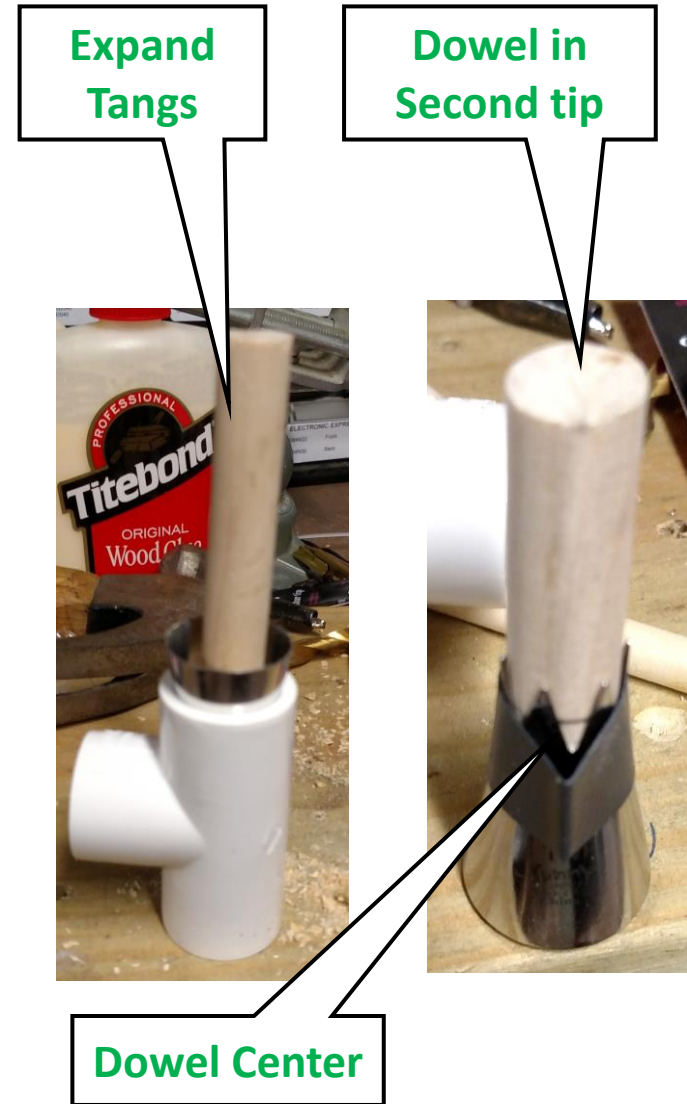


Tangs Bent out



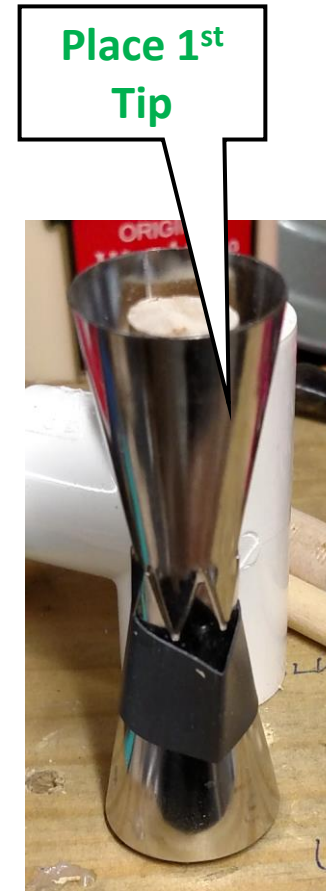
Tapered Wheels Set – Outside Taper 3/4

- Drive 1/2" dowel into one of the tips to expand tangs, remove dowel.
- PVC tee holds the tip while driving.
- Drive dowel through second tip until center of dowel is between tangs.
- Place heat shrink tubing.



Tapered Wheels Set – Outside Taper 4/4

- Slide first tip onto dowel and interlock tangs.
- Glue candle cup to dowel, making sure the cup fully engages the tip to center it on the dowel.
- Shrink heat shrink tubing.
- Done.



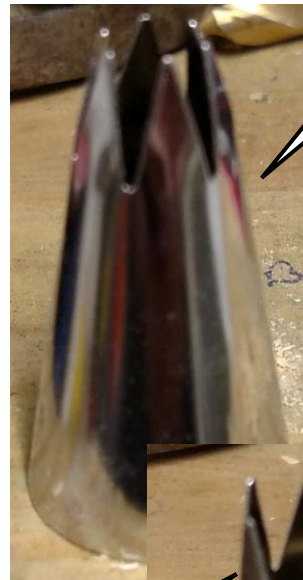
Tapered Wheels Set – Inside Taper 1/3

- Shows some dynamic stability with self correction.
- Shows curving ability

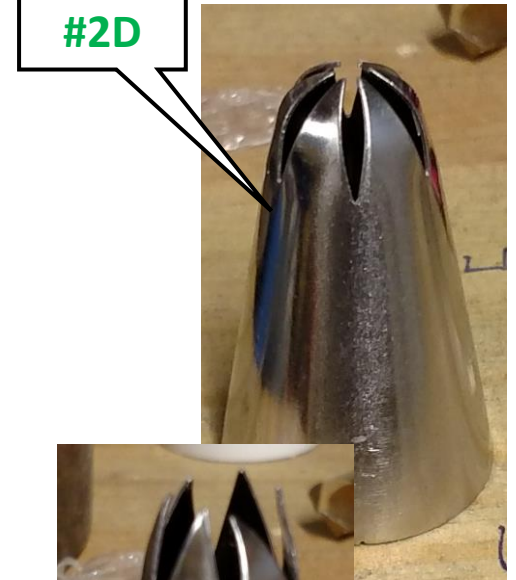


Tapered Wheels Set – Inside Taper 2/3

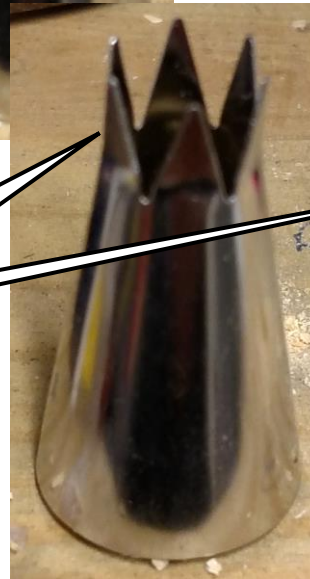
- 3-1/2" long 1/2" dowel cut from full length dowel.
- Cake Decorating Tip - Bend Tangs out.



#1M



#2D



Tangs Bent out



Tapered Wheels Set – Outside Taper 3/3

- Drive ½” dowel into one of the tips to expand tangs.
- PVC tee holds the tip while driving.
- Flip dowel and tip and drive into second tip until ends touch.
- Place and shrink heat shrink tubing to align base of cone.
- Done

Expand
Tangs 1st tip



Dowel in
2nd tip



Railroad Tapered Wheels Set

- Shows improved dynamic stability with self correction.
- Shows curving ability.
- Shows lateral restraint with inside wheel lift in curve.
- Unmodified wheel set



Parts List

| | Qty. | Supplier | Part Number |
|--|------|-------------------------|-------------|
| Cake Decorating Tip #1M or #2D | 2 | Hobby Lobby & A C Moore | |
| ½" Wooden Dowel | 1 | Hobby Lobby & A C Moore | |
| 3/8" Wooden Dowel | 1 | Hobby Lobby & A C Moore | |
| 1-1/8" Wooden Dowel | | Hobby Lobby & A C Moore | |
| Candle Cups Wood Parts | 1 | Hobby Lobby & A C Moore | 211318 |
| Wooden Toy Wheels 1-1/8" | 1 | Hobby Lobby & A C Moore | |
| Wooden Toy Wheels 1-1/8" | 1 | Hobby Lobby & A C Moore | |
| Large Bobbin | 1 | Hobby Lobby & A C Moore | |
| Heat Shrink Tubing 3/4" to 3/8" and 1-1/2" to 1" | misc | Home Depot | |
| LGB 67319 Spoke Wheel Sets, Metal, | 1 | OnlyTrains.com | |

Tools and Supplies

Small Hammer

Miter Box and back Saw

Needle Nose Pliers

Sandpaper

Hair Dryer

Drill and Bits

Wood Glue