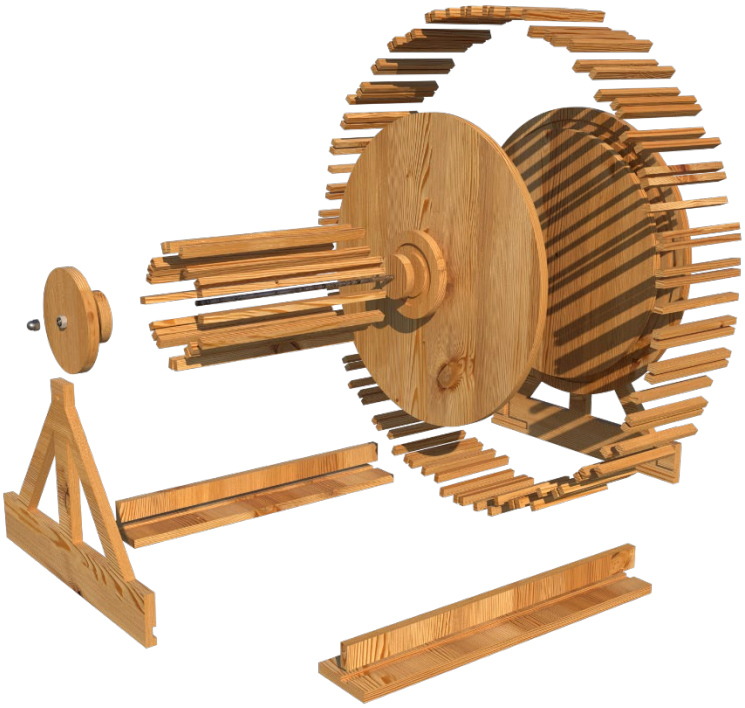
Tambour

Scale one to four model

Scale model of a tambour or (shaft and) drum, used for baroque machinery experiments and demonstrations. A tambour is used as a “gear system” to reduce the force needed for a movement. The model can be built in a basic, but well equipped workshop.



Content

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Materials list

Circles					
Number	Type	thickness	diameter	center hole	remark
2	Cirkel	15 mm	70 mm	8mm	
2	Cirkel	15 mm	140 mm	8mm	
2	Cirkel	15 mm	430 mm	8mm	
2	Cirkel	15 mm	500 mm	8mm	

Slats					
Number	Type	thickness	width	lenght	
2	slat with grove	15 mm	100 mm	550 mm	grove see drawing
2	slat	15 mm	30 mm	550 mm	
19	slat	15 mm	15 mm	306 mm	
90	slat	15 mm	15 mm	168 mm	

Other					
Number	Type	Thickness			
2	feet frames	15 mm			see drawing for details

Other materials	
580 cm	threaded rod M8
2 pc.	nut 8 mm
2 pc.	washer 8 mm
2 pc.	head nut M8
12 pc	Screws 3.5 x 20mm
3 pc	Screws 3.5 x 35mm
	glue

Notes:

The different parts can be cut out of one 15 mm multiplex plate.

The slats (15 mm x 15 mm) can be cut out of leftover material.

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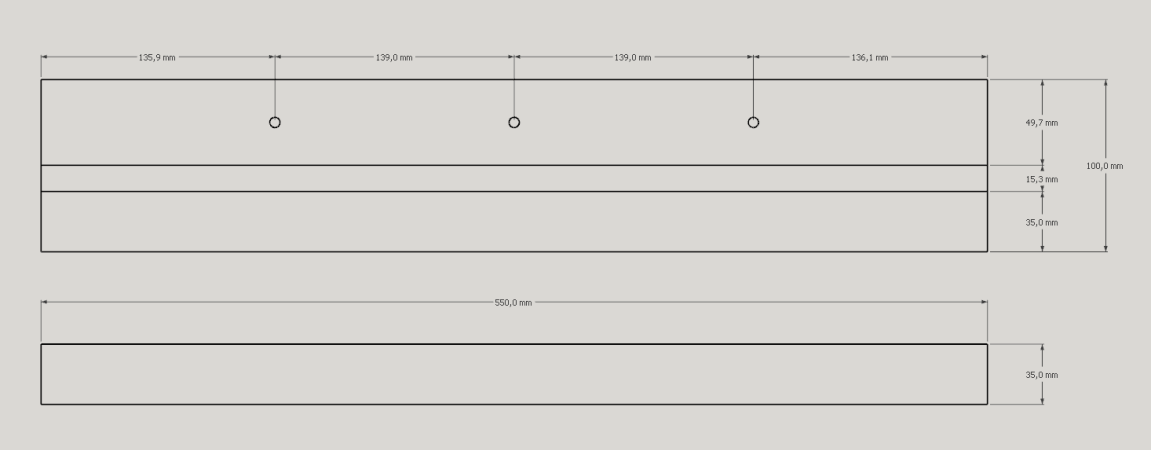
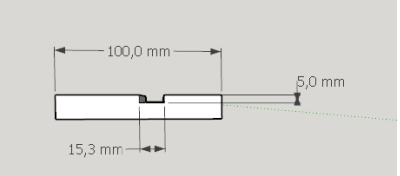
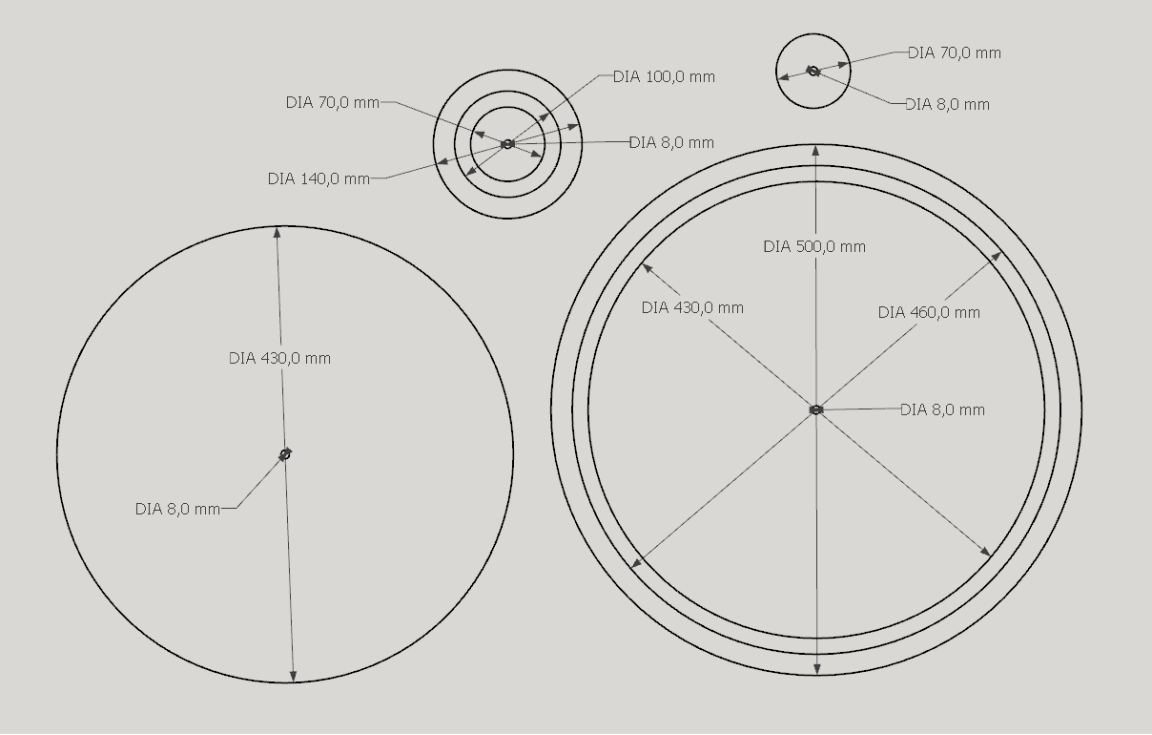
Detail drawings



(all grooves are 5 mm)

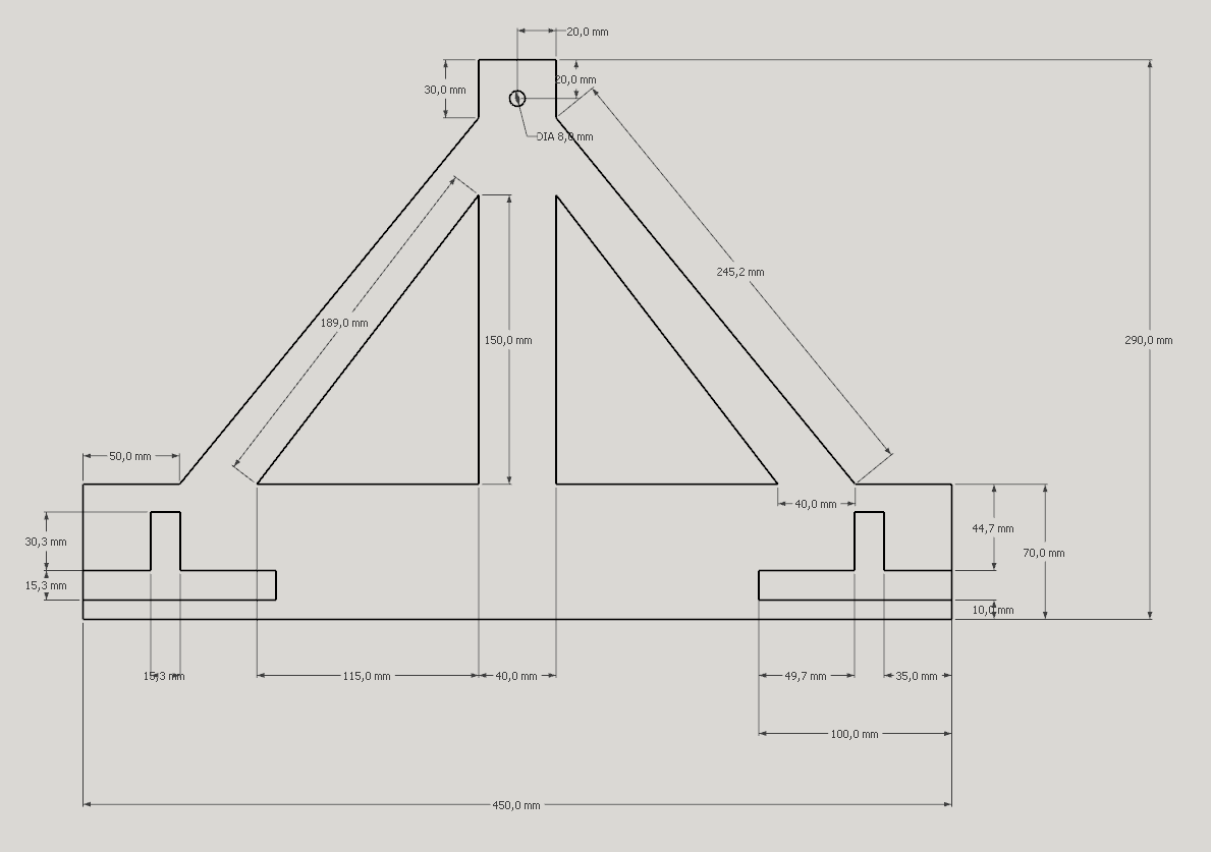




(all grooves are 5 mm)

Canon THEATRE TECHNICAL HISTORY	Tambour	Drawing by: Beno Van Goethem	
Canon Tools	Construction drawing	Version: 01.01	Version date: 20/12/2022

Tambour



(all grooves are 5 mm)

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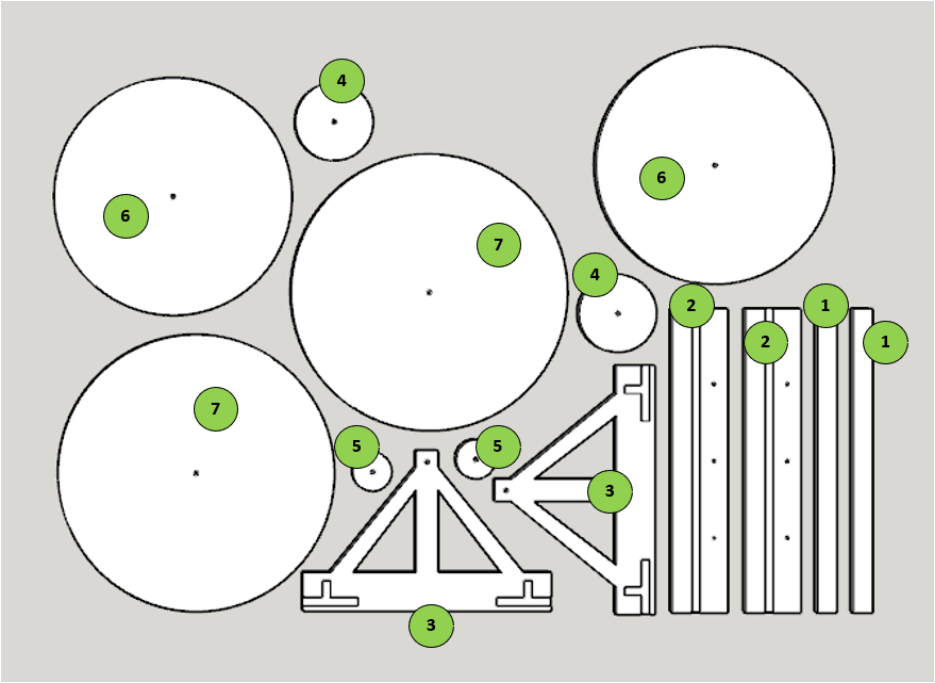
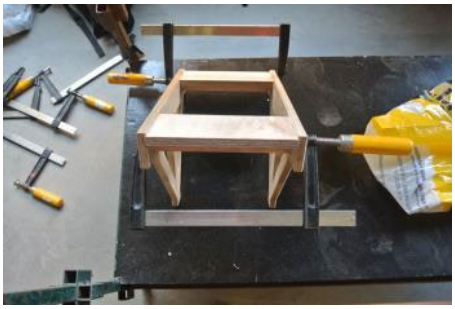
Construction

1. Cut all the parts to size. This can be done by CNC or hand in a good workshop.



2. Make sure all milled-out areas are dust-free.
3. The straight milled-out slots are not perfectly straight in the corners, take a breaker knife and remove the remaining obstacles in the corners of these slots.
4. Glue board 1 into the milled-out slot of board 2. Do this 2 times
5. You now have a combined board of board 1 and board 2. Now glue this in the milled-out groove in board 3.
6. Glue now the second board 3 to the other side of the combined boards 1and 2.
7. Put 2 clamps on the glued section and let it dry for a few hours. If you don't have glue clamps make sure you put at least 5kg/cm of pressure on the glued parts.
8. The basic structure is now ready.



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9. Glue board 4 in the cambered area of board 5. To make this a perfect fit, you can use a bolt M8 and put this through board 4 and 5 so that they are fixed. Now screw some screws from board 4 to board 5 so that they become fixed. This will prevent these screws from being visible. Do the same for board 6 and 7.
10. Now take a combined board 4 and 5 and a combined board 6 and 7.
11. Glue these 2 boards together with the uncombed side, take an M8 bolt and put it through the drilled hole in both boards. Now screw some screws from board 4 to board 6 so that they become fixed. This will prevent these screws from being visible.
12. Take all sawn slats of 15mm x 15mm x 168mm.
13. Glue these slats into the remaining groove between board 6 and 7, as shown in figure aside.
14. When the slot is completely full, take paper tape and tape around the batten so that it is secured and cannot fall out.
15. Now you can glue the board 6 and 7 with the board 4 and 5 attached to it on the other side of the slats.
16. Clamp this like the basic structure and let it dry for a few hours.

17. Once everything is dry, we can now finish the small drum.
18. Now take all sawn slats 9 of 10mm x 15mm x 306mm
19. Take the large drum with the attached boards 4 and 5 on it.
20. Now glue all slats in the remaining slot between boards 4 and 5.
21. When the slot is completely full, take paper tape and tape around the slats so that they are secured and cannot fall out.
22. Now glue the last composite board 4 and 5 to the slats.
23. Clamp this like the basic structure and let it dry for a few hours.

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24. Now take a 580 mm threaded rod
25. Put the threaded rod through the first hole of the base structure. Put a nut between the base structure and the drum with a washer between the nut and the base structure. Continue turning until you are through the drum. Put another nut and washer between the drum and the base structure. Now keep turning the nuts to get the threaded rod through the last hole. Once you are through all the holes, you can now secure everything with a head nut on each side.

26. Your shaft and drum is now ready

Credits

The drawings and construction method are based on the Final work of Rens Plankaert, RITCS 2014.

The drawings are remade, updated and transformed in 3D Sketchup by Beno van Goethem, , Signyture design.

Translation, text and lay-out is done by Chris Van Goethem, RITCS.