1/4" 4 2/5/8 Rasp saw dowel photo

A Leo on Wheels Do at Home Activity

Leonardo's Gravity Bridge

Leonardo da Vinci was into bridges—all kinds—and all very clever and innovative*

One especially simple and easy, but tricky, one is this one:

da Vinci sketch L3 model

Insert photos

weights — balance wts. in office

Kitchen stuff 5# sugar, etc.

Here's what you need:

2---1/4 inch diameter soft wood dowels, at least 4 ft long (any store that sells hardware or lumber should have these for less than a dollar each)
1—1/4 inch round file (lots of folks have one in their tool box)
1—small hand saw

Cut the dowels in 6 inch segments—you need 15 pieces for the bridge.

5 dowels are used as is, just gently sand the ends to minimize getting slivers.
10 dowels need to be gently filed in 3 places, like this:

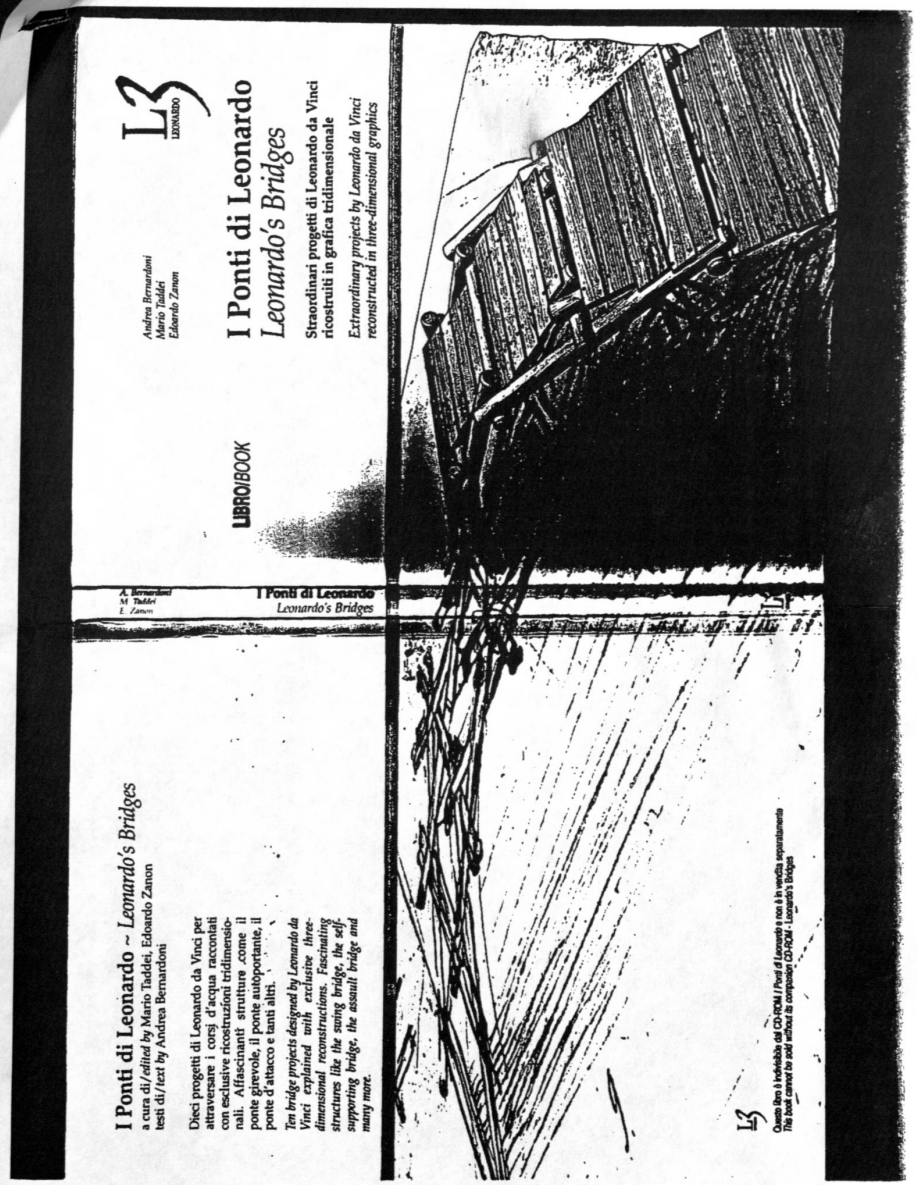
picture

Assembly (careful!):

Pictures

Testing:

That's all!



Il ponte autoportante *Self-supporting bridge*

I Ponti di Leonardo *Leonardo's Bridges*

■ 07 :

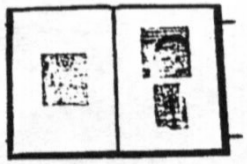
Sequenza di montaggio del modellino
La sequenza di montaggio del ponte è semplice. Una volta svolti i primi passi (a, b, c), quelli successivi sono uguali e il montaggio della struttura risulta molto rapido. Quando la struttura è completata, se ne può testare la robustezza facendo pressione con una mano sopra il ponte. All'aumentare della forza esercitata gli incastri dei bastoni eserciteranno una forza maggiore, rendendo l'intera struttura ancora più rigida.

Sequence for assembling the model
The sequence for assembling the bridge is simple. Once the first stages (a, b, c) have been accomplished the rest of the work is similar, so the construction process is very quick. Once the structure is complete you can test its strength by putting your hand on top of the bridge. As you increase the load, the joints of the beams will exert greater pressure, thus making the entire structure even more rigid.

■ a ■ b ■ c ■ d ■ e

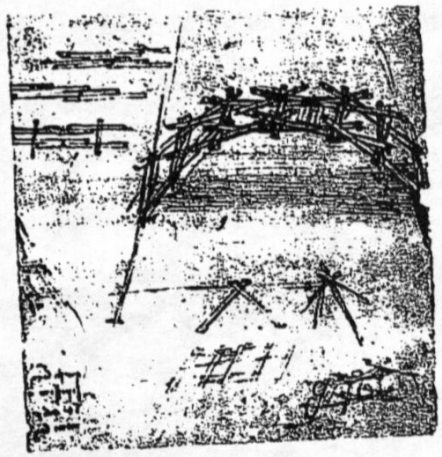
■ f ■ g ■ h ■ i ■ l

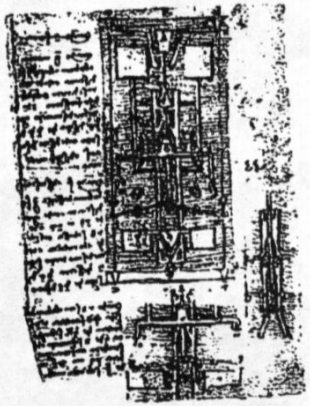
*Leonardo's Bridges, by A Bernardoni, M Taddei, and E Zanon, is a book, kit, and CD game available from and at www.leonardo3.net; www.leonardo3.net/leonardo/store_eng.htm#ponti



Ponte autoportante e cassa idraulica

Codice Atlantico foglio 69r [228 x 214 mm e 201 x 144 mm]





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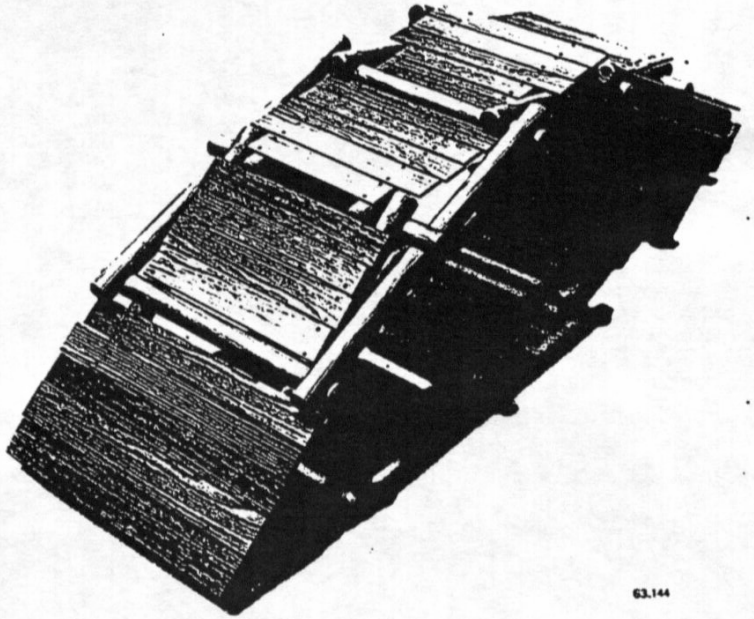
Ponte autoportante e cassa idraulica
Self-supporting bridge and water chamber

Nella parte superiore del manoscritto Leonardo disegna, sopra a un fiume, un ponte autoportante realizzato con tronchi o pezzi di legno uguali. Il ponte, probabilmente pensato per un uso militare, sta in piedi senza nessuna legatura grazie soltanto alla geniale tecnica d'incastro. Nel secondo fòglio un complesso sistema di galleggianti, valvole e leve serve per automatizzare l'ingresso e la fuoriuscita dell'acqua nel recipiente. Il disegno è visto in sezione verticale.

At the top of the manuscript Leonardo has drawn, above a river, a self-supporting bridge built of wood logs or wood pieces of equal size. The bridge, probably intended for military use, remains standing without any kind of fastening, thanks to the ingenious technique of interlocking joints. On the second page a complex system of floats, valves and levers serves to automate the in- and outflow of water to the container. This design is shown as a vertical section.

Self-supporting bridge and water chamber

Codex Atlanticus fo6o 69r [8.9 x 8.4 in., 7.9 x 5.7 in.]



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