

All illustrations are supplied by the author with the exception of the literary quotation in fig. 33.20.

Fig. 33.01 (leading photograph) R-6-Boat mill at Cițcău, Județul Cluj. UTMn 34/712/5333. On several of these boat mill photographs it looks as if some sort of dam or weir is thrown across the river to divert water to the boat mill. This does restrict the mobility of the mill - geographically, but still allows the mill the important function of following the fluctuation of the water level in the river.

Fig. 33.02 (above) Molinographic Map of România, to scale 1/5 M, showing the location of the boat mills mentioned in this paper. The position of other boat mills in România is found in fig. 32.09, to scale 1/2 500 000.

Fig. 33.03 (frontispiece) R-1-Boat mill from Lucăcești, Județul Maramureș, on the River Someș, 34/677/5259.

Fig. 33.04 The author.

CHAPTER 33

R R

FLOATING MILLS ON BOATS IN ROMÂNIA

by

CORNEL IRIMIE



In România, all types of traditional grinding mills could be found, down to the present day, and when I began field researches in 1953 to support the foundation of a museum of traditional craftsmanship and techniques, mills and the vertical-wheeled mills (both overshot and undershot), I also discovered the existence of the floating mills.

The logical explanation may be found in the general economic and historical conditions in România, and in the exploitation of the very varied and interesting geographical conditions which have supported a culture that, from its origins with powerful Thracian and Roman influence, has flourished to this day.

Although documentary evidence rarely mentions this type of mill, oral tradition confirms the existence of many such equipment on the large rivers; the Dunarea (Danube), the Olt, the Mures, the Somes, the Siret, and so on.

In 1957, 35 floating mills could still be found at 29 places; on the Olt, the Mures, and the Somes. Almost all of them were at work, but industrialisation was making abandonment imminent for many. By 1968, their numbers were reduced to about 8.

The floating mills in România can only be found on the big rivers, where the water has a large flow and a moderate velocity. They have both advantages and disadvantages compared with other mills. For example, they are mobile, and can work in all seasons, but they must be protected from floating ice in the winter, and the boats require repair almost every year. Their fundamental principle is the same as the other mills; only the technical details are different.

These mills have two main parts; the supporting boats, and the grinding equipment. Each mill has two boats; a large one carrying the mill, and a small one supporting the outboard bearing for the waterwheel axle. The boats are connected at their ends by two beams.

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mânia.



R-1-Lucăcești, Județul Maramures, River Someș, UTMn 34/677/5259. Sketches c. 1/100:

Fig. 33.05 Side view of house-boat.

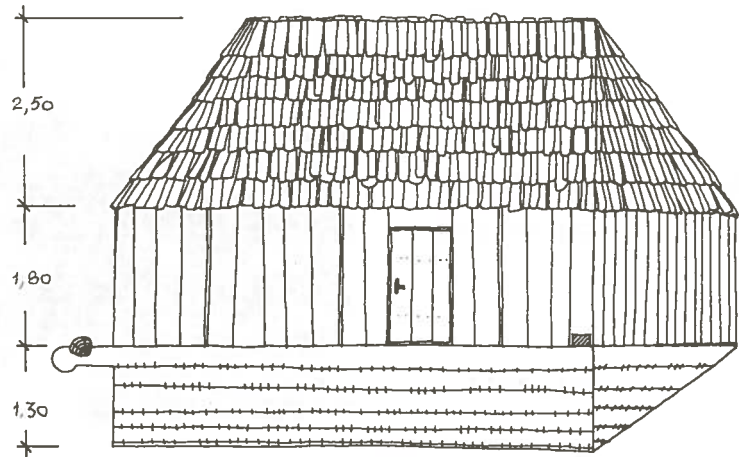
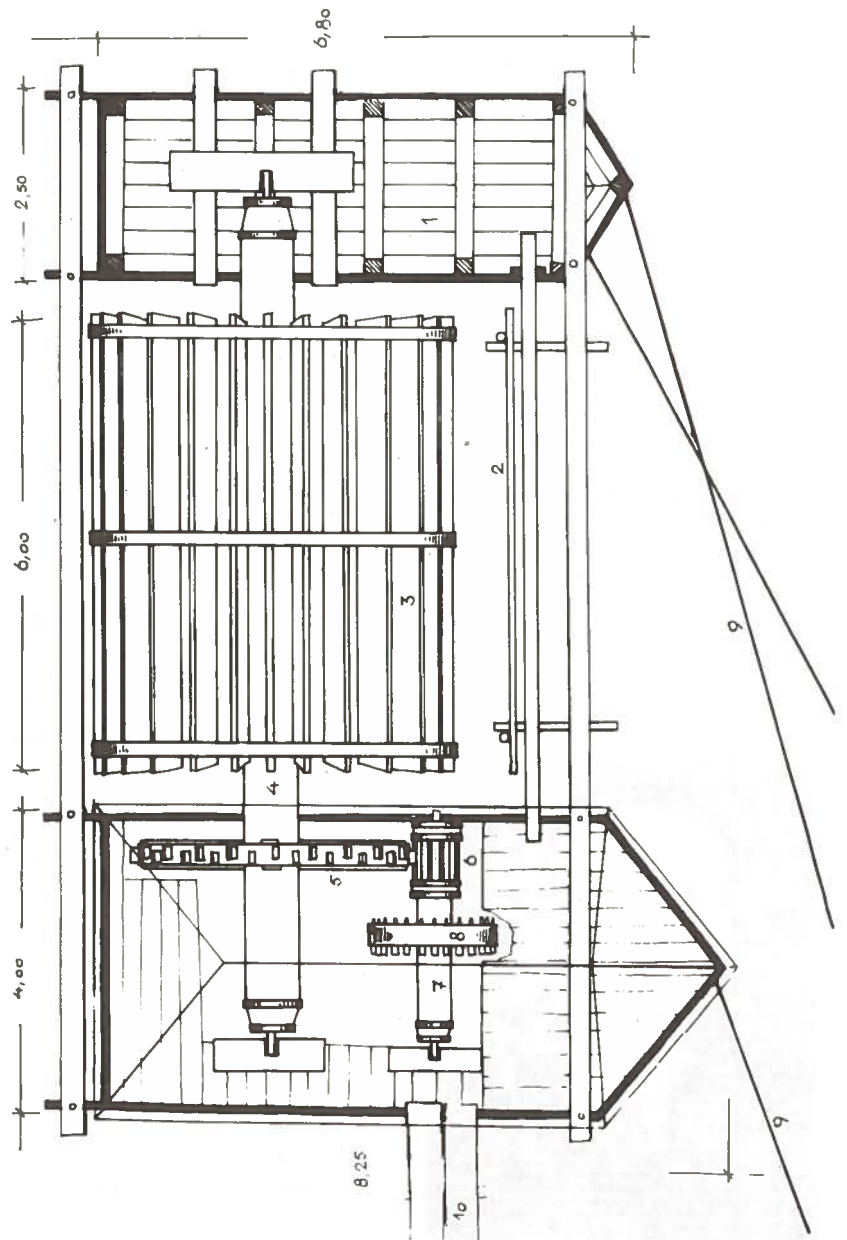
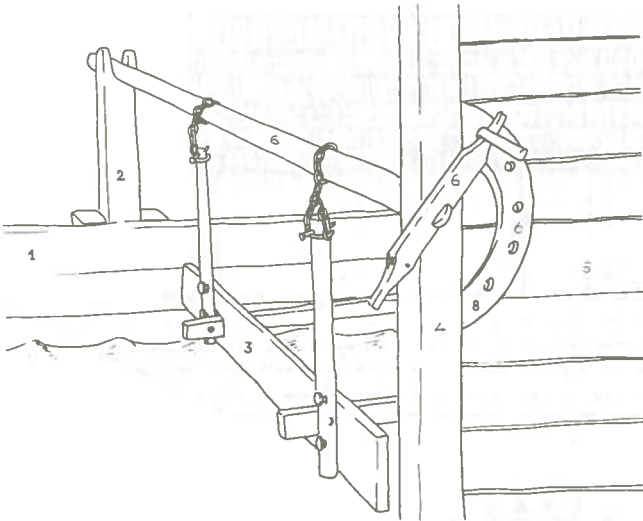


Fig. 33.06 Plan of mill:

- 1) Small boat (bearing-boat).
- 2) Gate.
- 3) Waterwheel.
- 4) Main shaft.
- 5) Spurwheel.
- 6) Trundle.
- 7) Intermediate shaft.
- 8) Pit wheel.
- 9) Mooring ropes.
- 10) Foot plank.





R-1-Lucăcești Boat Mill (see also opposite):

Fig. 33.07 (above left) Sluice gate arrangement:

- 1) Small boat.
- 2) Post.
- 3) Gate.
- 4) Door frame of mill building.
- 5) Wall.
- 6) Elevating mechanism for gate.

Fig. 33.08 (above right) Gearing details of boat mill during re-erection at the Open Air Museum in Sibiu, 35/278/5077.



We can distinguish two types of floating mill in România, which are differentiated by the form and construction of the boats.

In the northern part of the country, on the Somes for instance, the boats are of pentagonal form, with the sharp bow pointing upstream, and the superstructure housing the mill continuing the plan of the boat carrying it. In the southern Carpathians, such as on the Olt, the boats are long and rectangular, with a straight stern and a shovel-shaped bow.

The waterwheel (about 6 m long and 3 - 4 m diameter) is between the two boats. It is provided with long vanes set in motion by the water flowing past the mill. There is also a water-collecting and guiding system, formed by dikes, and the water flow might be adjusted by a gate of the same width as the wheel. The gate may be raised or lowered allowing more or less water to strike on the wheel as required.

The boat mill is tied to the bank by ropes and may be directed into a stronger current when more power is required.

Access to the mill is obtained by a plank.

Regarding its mechanism; the floating mills have a two-step gear, which increases its output.

In all its features: the boat construction details (such as the thousands of oak parts tied with iron cramps, the caulking with hemp tow and tree moss, or the mill section built as a multi-sided shingle-roofed house), the adaptation of the mechanism to local conditions, the names of the mill parts, the tools, and the operations performed with them - the floating mill forms a most interesting chapter in the traditional civilisation of the Romanian people.

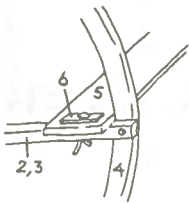
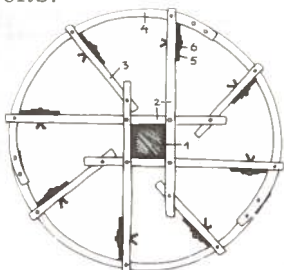


Fig. 33.09 (above) Detail of waterwheel,

Fig. 33.10 (below) Side view of same, ca. 1/100 (R-1)

- 1) Wheel shaft.
- 2) Arms.
- 3) Starts.
- 4) Rim.
- 5) Floats.
- 6) Bolts.



R-4-Munteni Boat Mill, Județul Vâlcea, River Olt. UTMn 35/281/4982: Diagrammatic sketches. The Editor has tried his best to aim at 1/100.

Fig. 33.11 Side view of house-boat.

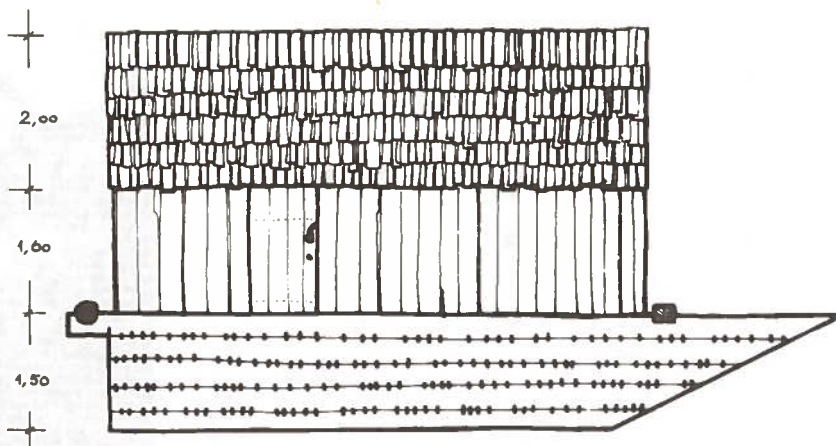


Fig. 33.12 Side view and detail of waterwheel.

5) Straps of oak wood to fix the floats to the rim.

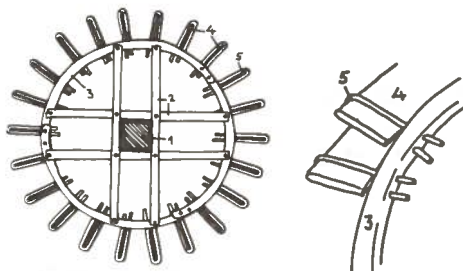
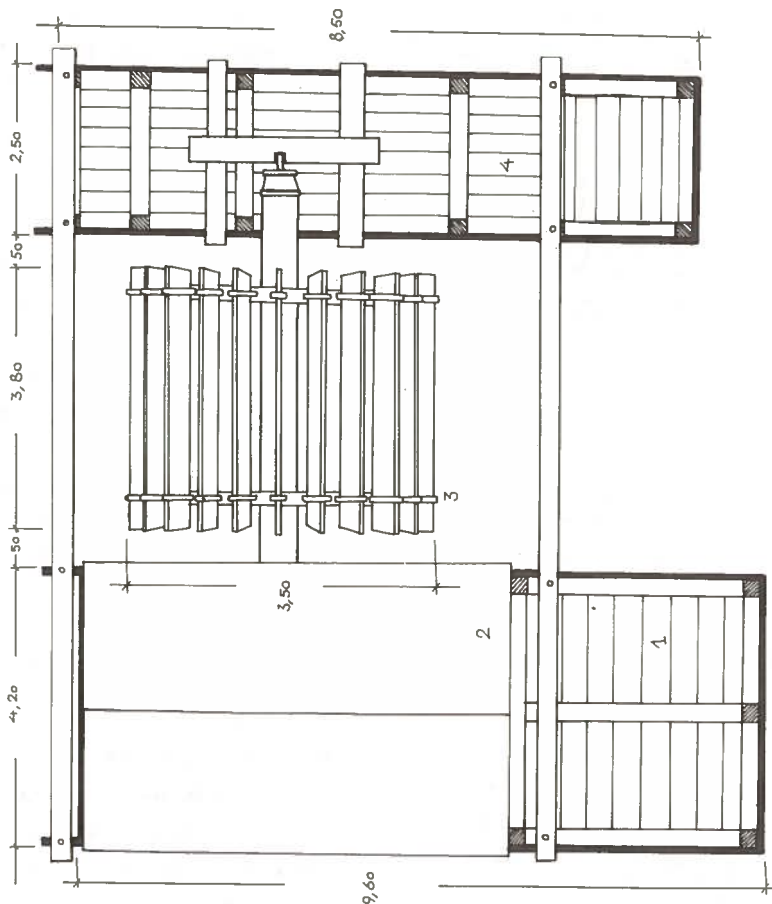


Fig. 33.13 Plan of mill:

- 1) Large boat (house-boat).
- 2) Mill house.
- 3) Waterwheel.
- 4) Small boat.



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The photographs:

R-4-Munteni Boat Mill (see opposite).

Fig. 33.14 (right, top) The mill in the Museum in Sibiu, 35/278/5077.

Fig. 33.16 (right, bottom) The mill in its original setting on the River Olt.

Mill equipment, ca. 1/10:

Fig. 33.15 Capra ~ instrument for raising the runner stone for dressing.

Fig. 33.17 Flour shovel.

Fig. 33.18 Flour scraper.

Fig. 33.19 Pitch gauge for cog wheels.

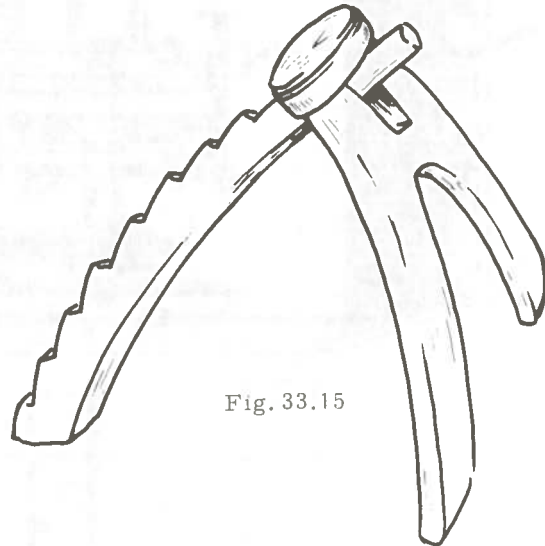
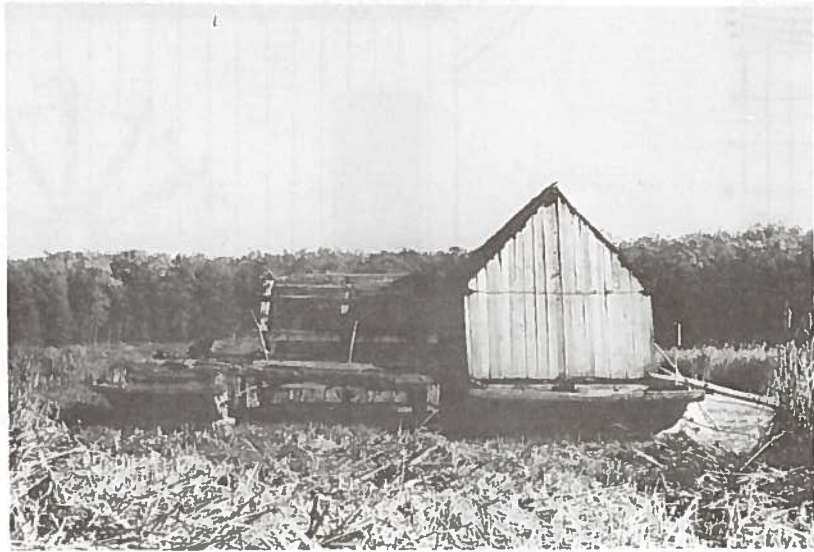


Fig. 33.17

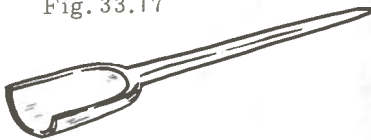


Fig. 33.18



Fig. 33.19



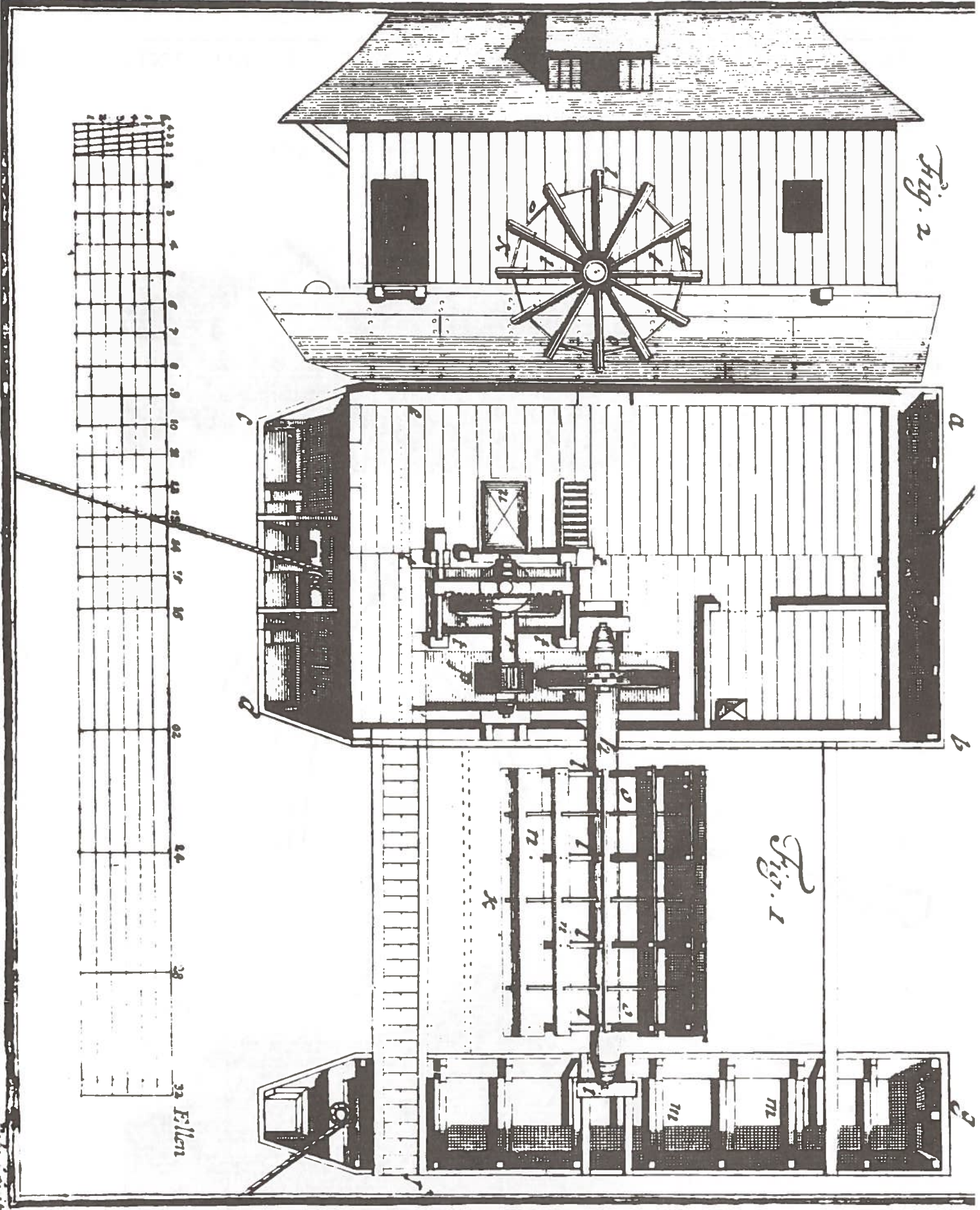
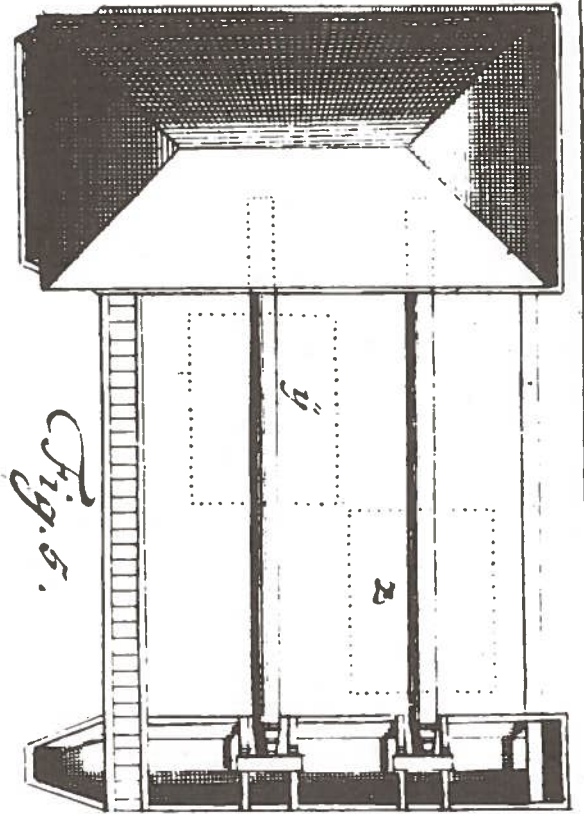
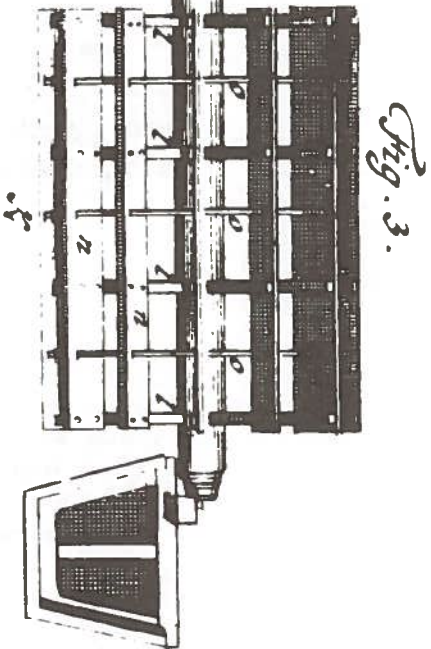
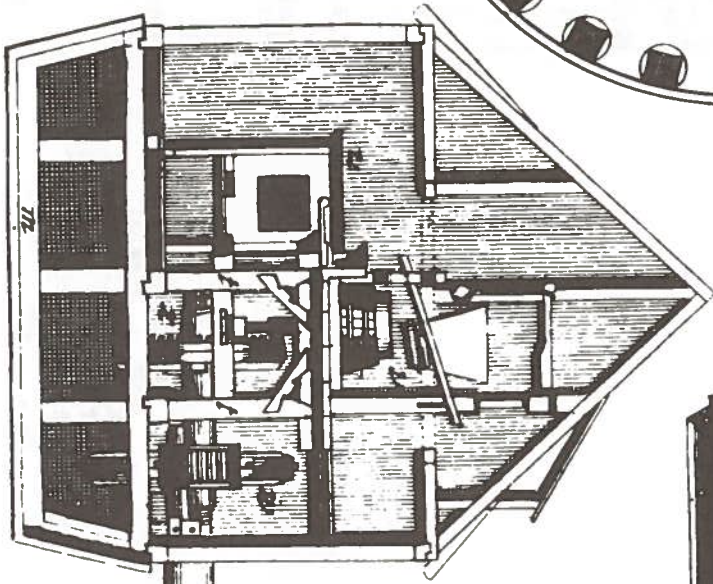
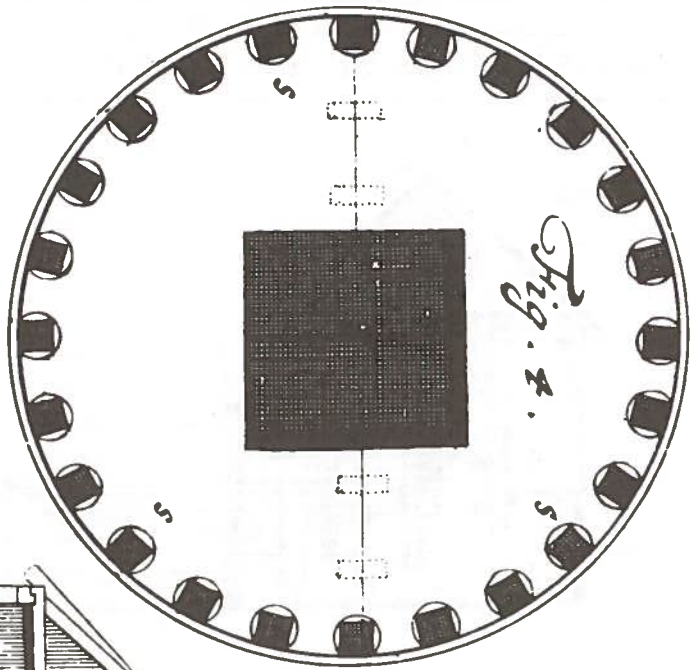


Fig. 33.20 For comparison with the Românian boat mills is brought the above example from *Theatrum Mechinarum Molarium (oder Schau=Platz der Mühlen=Bau=Kunst &c)*, Johann Matthias Beyern und Consorten, Leipzig & Rudelstadt 1735. The scale of the main drawings is 1/100.

TAB. XXIV.



1/100

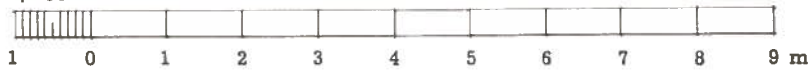


Fig. 33.21

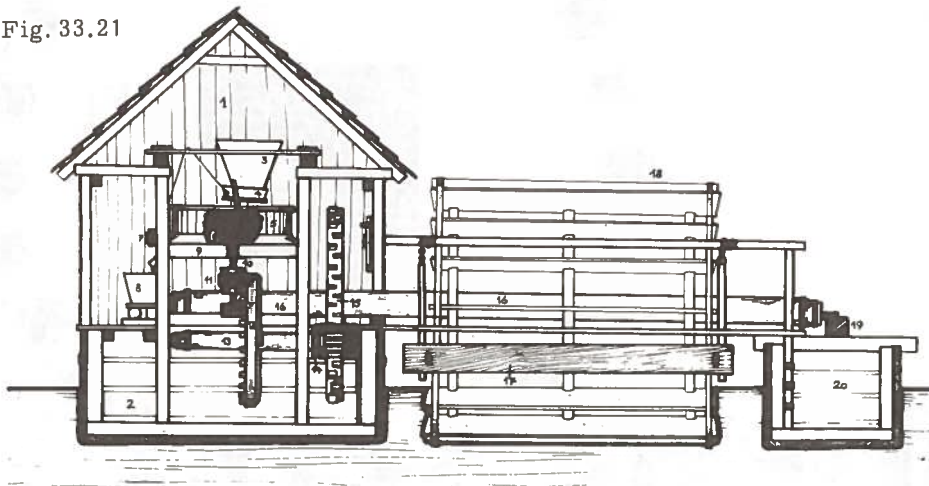


Fig. 33.22

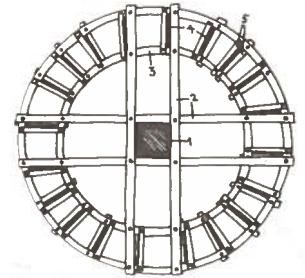
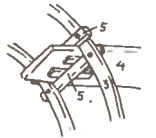


Fig. 33.23

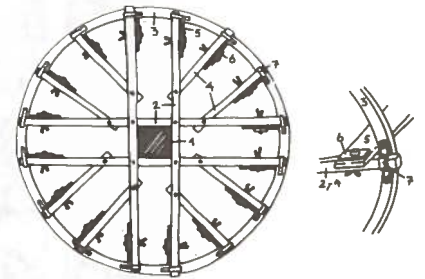


Fig. 33.21 (above) Cross section of a boat mill, scale ca. 1/100:

- 1) Mill house.
- 2) Large boat.
- 3) Hopper.
- 4) Shoe.
- 5) Vat.
- 6) Mill stones.
- 7) Knob to adjust incline of shoe.
- 8) Flour box.
- 9) Stone ledge.
- 10) Stone spindle.
- 11) Stone nut.
- 12) Pit wheel.
- 13) Intermediate shaft.
- 14) Trundle.
- 15) Spurwheel.
- 16) Waterwheel shaft.
- 17) Sluice gate.
- 18) Stream wheel.
- 19) Outer bearing.
- 20) Small boat.

Fig. 33.22 (above, right) Side view of waterwheel.

Fig. 33.23 (right) Waterwheel from R-5-Vad Boat Mill on the River Somes. UTMn 34/709/5236, scale ca. 1/100 :

- 6) Fixing the floats with nut and washer.
- 7) Iron straps to join the arms to the rim.

Fig. 33.24 -.25 -.26 -.27 -.28 Details of boat construction:

- 1) Oak planks.
- 2) Waterproofing lath.
- 3) Iron clamps.
- 4) Proofing with moss or hemp.
- 5) Stem of the large boat.
- 6) Frame timber.
- 7) Gunwale.
- 8) Cross beam (~ keel).
- 9) Sole planking.
- 10) Stern of large boat.

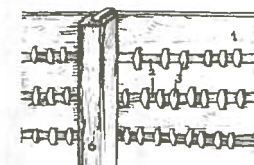
Fig. 33.24 Detail of plank clamps.

Fig. 33.25 R-1, Fig. 33.26 R-4.

Fig. 33.27 Longitudinal section of large boat.

Fig. 33.28 Cross section through large boat.

Fig. 33.24



.25 .26

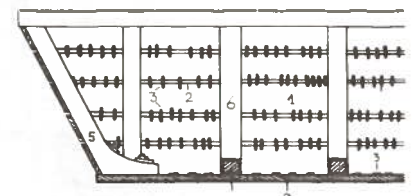
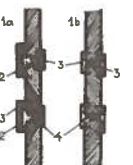
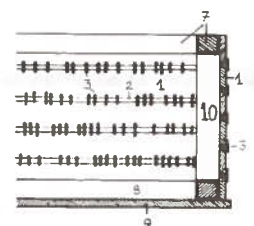


Fig. 33.27

Fig. 33.28



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Fig. 33.29 R-2-Fărcașa Boat Mill, Județul Maramures. UTM 34/675/5266.

-- Looking downstream.



Fig. 33.30 R-3-Cițcău Boat Mill Județul Cluj. UTMn 34/712/5233.

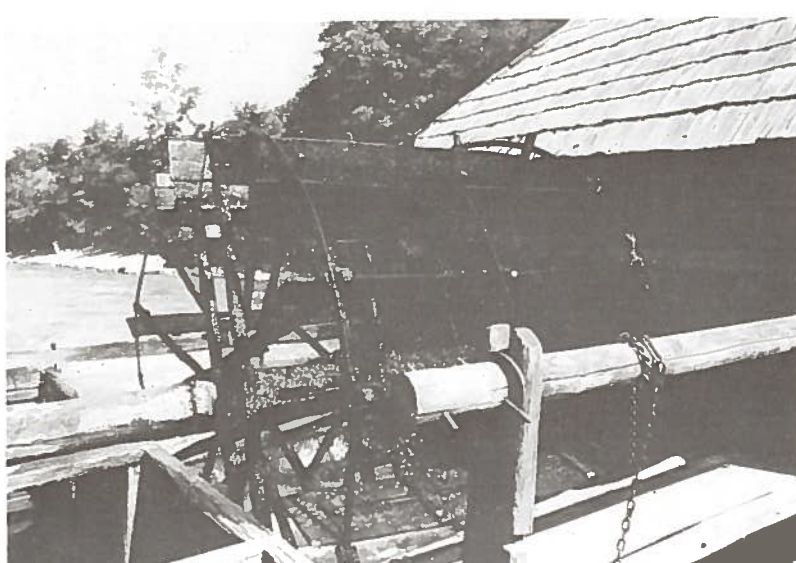
The double row of fascines in the left foreground leads the water towards the boat mill. Looking downstream.



Fig. 33.31 R-3 (as above).

Close-up of waterwheel in operation. The very light structure of the wheel is possible in an undershot wheel which "rides" on the water as opposed to the overshot wheel which must carry the load of the water.

Below: a number list of Romanian boat mills mentioned in this paper:



VANDMØLLER (BOAT MILLS)		PAGE	
ROMÂNIA		GRID UTMn	
NUMBER LIST		NR R-1	
		R-24	
number	name of mill	partiti	kmarg
			grid reference
00			
R- 01	Lucărești		34/677/5250
02	Fărcașa		34/675/5266
03	Cițcău (1)		34/712/5233
04	Munteii		35/581/4982
05	Vad		34/509/5258
06	Cițcău (2)		34/712/5233
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