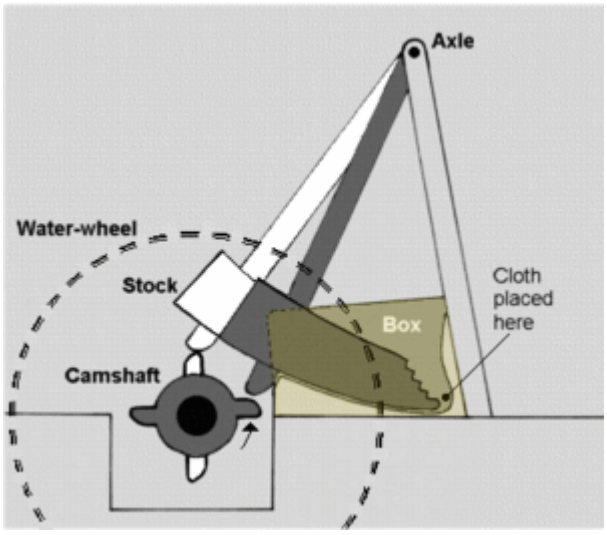
Notes on Fulling and Fulling Mills

When cloth comes from the loom, it is an open weave, and also greasy since the yarn needs to be lubricated for easy weaving. Fulling both removes the grease so that the cloth will later take dye, and felts it, with the fibres tangling together to form a full cloth that is continuous in two dimensions and no longer shows the pattern of the weaving. The process requires the cloth to be beaten while immersed in a mixture of water with fuller's earth (a kind of clay), urine, and certain soapy plant extracts.

Small articles like hosiery or caps could be beaten by hand or with a club, but lengths of cloth were normally 'walked', trodden underfoot in shallow troughs. (The French term *fouler* still has the secondary meaning of 'to trample underfoot'). This was a very long, labour intensive, business, which may have had to be repeated several times.

Mechanisation therefore came early. Isolated mentions in France date to the later eleventh century, but the earliest known examples in England are a hundred years later. By about 1200, documents have to distinguish fulling from corn mills, indicating that both sorts were in existence. Many fulling mills were in ecclesiastical estates. By the early thirteenth century, the bishops of Winchester possessed two such mills at Witney, among other places, and the nunnery at Godstow was partly supported by tithes from fulling mills. By the middle of the century, manual fulling seems to have been obsolete except for cloths of the very highest quality - which also would have used yarn spun with a spindle whorl, not on the wheel.



(Source: http://www.btinternet.com/~rob.martin1/full/full.htm)

The principle, as shown, is for the cloth to pass through a carefully shaped trough containing the fulling medium, where it is beaten with a set of shaped mallets or 'stocks' which are raised and dropped by a camshaft attached to a water wheel. I presume, though it is not made clear in any of the descriptions or diagrams I have seen, that the stocks also 'walk' the cloth through the mill so that it does not have to be manually pulled. The economic advantage is spectacular; according to one source, a standard cloth which needed 1000 man-hours to be fulled could now be processed with only fifty; a less optimistic accounts reckons that the proportion of the cost of a finished cloth represented by fulling declined from 20% to 5% after mechanisation.

Note that the procedure was extremely noisy, and some towns banished fulling mills to their periphery.

After fulling, the cloth had to be stretched to regain some of the inevitable shrinkage, so fulling mills are normally associated with tentering grounds. It might finish at about three-quarters of the original length and breadth, but correspondingly thicker. It might be sold at this stage, but more often would be subjected to napping with teasels, shearing to remove the raised nap and produce a smoother finish, and dyeing.

References:
E.M Carus-Wilson, 'An Industrial Revolution of the Thirteenth Century' in ib. *Essays in Economic History* (1954) pp. 41-60
Peter Spufford, *Power and Profit; the Merchant in Medieval Europe* (2002), pp. 244, 417.
URL: http://www.btinternet.com/~rob.martin1/full/full.htm