

THE FRANCESTOWN HERITAGE MUSEUM



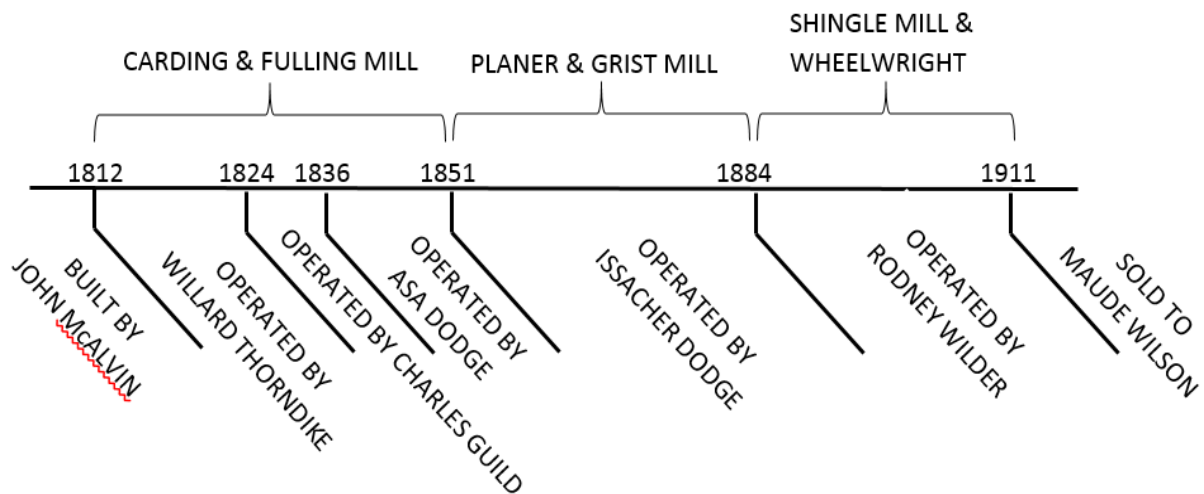
Newsletter

JUNE 2019

The Mills #2 - I

The April newsletter contained a brief synopsis of the history of the mills in Francestown. The map showed the location of 11 of the more significant mills and that issue included some detail of Mill #1 on the map – The Sleeper Sawmill. In this issue we will concentrate on Mill #2 on the map – The McAlvin Carding and Fulling Mill. While this was built as a Carding and Fulling **mill** it was converted to several other uses during its lifetime. This was the case with a number of the mills, for while their machinery was specific to the task they were readily convertible as no matter the use of the mill, it was always powered by water. This common factor meant that all were situated near a source of water power, all had provisions for directing that water for use in the mill, all had the controls necessary to regulate the flow of that **water** and all had a water wheel or water turbine that drove a central drive shaft. That being accomplished what type equipment/machinery was ultimately connected to the drive shaft was what determined what the mill type was. This was also not a terribly complicated endeavor as all machinery and equipment was driven by large leather belts allowing most any type of machine to be placed anywhere in the mill. That is a bit of an oversimplification but helps one to understand how these mills were converted from one use to another. Some of the mills made two or more entirely separate goods due to the ability to readily connect any machine to the mill power source.

With that in mind it makes some sense that the McAlvin Mill saw several entirely different uses over its century of service. The following time line helps to illustrate the many owners and uses of this mill.



The mill was built as a **carding** and **fulling** mill in 1812 by John McAlvin and his nephew Daniel on the banks of the Piscataquog **River** in the Mill Village section of town. For reasons unknown they sold the newly constructed mill to Willard Thorndike the same year (1812). Perhaps the War of 1812 played some role in this decision but history does not record reasons for this short ownership. Willard operated the mill until 1824 when he sold it to a Charles Guild who ran the mill until 1836. In that year he sold it to Asa Dodge who continued to operate the mill until 1851.

The mid 1800's saw a real upsurge in the Industrial Revolution. This was typified by the founding and building of the Amoskeag Mills in Manchester which rapidly grew into a mechanized textile center. It became difficult for small local mills to compete with this giant and in 1851 Asa Dodge sold the mill to his cousin, Issacher Dodge. Issacher immediately converted this Carding and Fulling Mill to a new use as a Planer Mill and Grist Mill. This he operated until 1884 when it was sold again, this time to Rodney Wilder who also converted the mill, this time into a Shingle Mill and Wheelwright which he operated until 1911. This conversion was also quite likely due to the Industrial Revolution as it became more and more difficult for grist mills to compete with the larger mechanized mills in the industrial cities. The final sale was in 1911 to Maude Wilson but records give no indication as to what the property was used for. Whether the closing of this mill had any relation to the closing of the nearby soapstone mill in 1906 can only be speculation and today only the remains of the foundation are extant.

CARDING and FULLING MILL

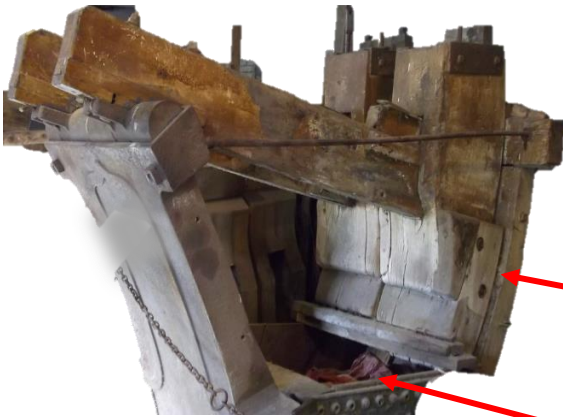
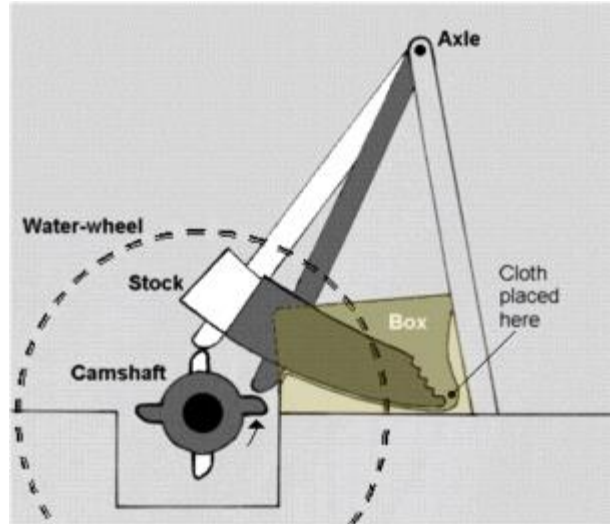
THE FULLING PROCESS –

If you have ever had a close up encounter with a wet sheep you know what a mess that **wool** can become. If you intend to use that wool in textiles it has to have a good bit of improvement. Once sheared, the wool has to undergo a number of steps to make it suitable for use. First off it needs to be cleaned in a process known as scouring and milling (or thickening). These steps are known as the fulling processes. In ancient time this was done by placing the wool in ankle deep tubs filled with stale urine (which contained ammonium salts that cleaned and whitened the wool). Slaves were made to walk in these tubs to work the cloth. In fact, urine was so important in this process that the Romans used to tax it (store that away for your next trivia game). Our ancestors had advanced and instead used "fuller's earth" in this cleaning process which nowadays uses soap and chemical mixtures. Following the scouring, the rinsed wool was matted together to thicken it and give it strength. In our ancestors' fulling mills the cloth was beaten with wooden hammers known as fulling stocks or fulling hammers. This mechanical matting was effective because the microscopic barbs on the surface of wool fibers hooked together. While we have no such mill in the Heritage Museum below are several photos of what those in the Francestown mills may have resembled. The hammers in our local mills were powered by the water of the Piscataquog River.



Power to operate these hammers is supplied by the same type of mill equipment that we explored in the last issue of the **Francestown Heritage Museum Newsletter**.

This would be a simplified illustration of the fulling hammers shown above. The water wheel is turning the drive shaft which is attached to the camshaft. As the drive shaft turns it causes the camshaft to swing the hammers against the wool in the box and beat it against the rear striking plate in the box. Thus the fibers are matted together and thickened to give it strength.



A more detailed look at an actual fulling mill hammer showing the hammers and the box holding the wool and solution.

HAMMERS

BOX OR TUB HOLDING WOOL AND SOLUTION

THE CARDING PROCESS -

After the wool has been scoured it is carded. Carding is a mechanical process that disentangles, cleans and intermixes the fibers to make a continuous web or sliver (yes, that is what they call it) suitable for subsequent processing. The carding machine in the mill accomplishes this by passing the fibers between differentially moving surfaces covered with card clothing. It breaks up the unorganized clumps of fiber and then aligns the individual fibers to be parallel with each other.



FIG. 1

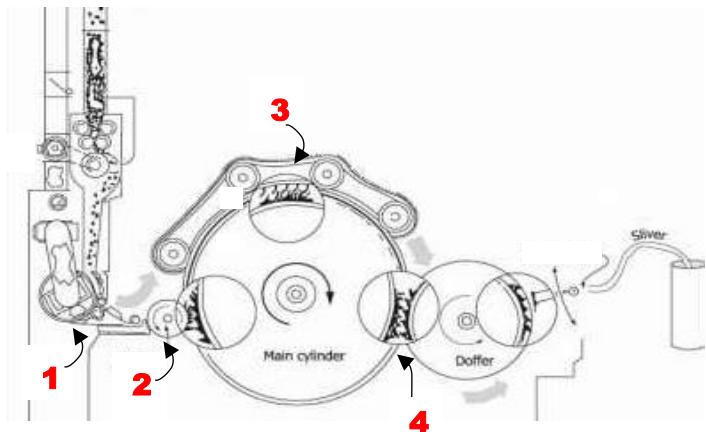


FIG. 2

The carding machine in Figure 1 is probably smaller than the one found in the McAlvin Mill but notice the belt drive which in the mill would have been powered by the water wheel. Figure 2 is a schematic showing how the machine works as outlined here:

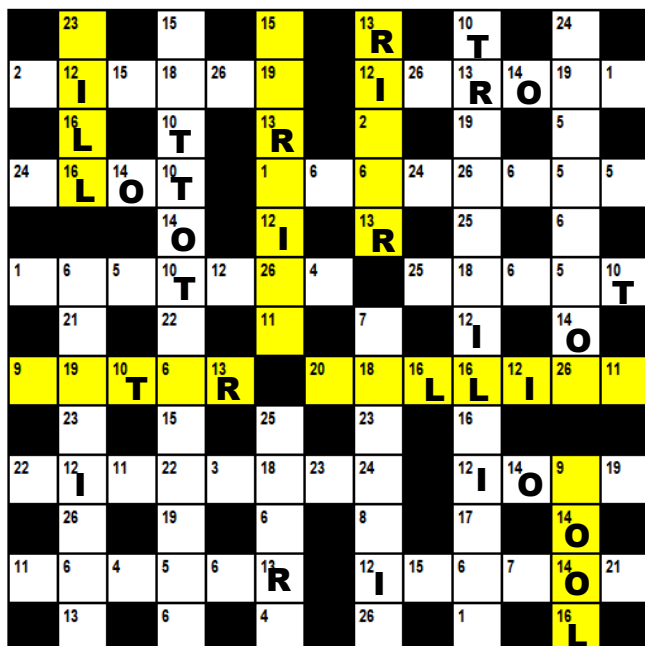
The carding machine accomplishes four things:

- 1) Combing – where the feed roller and an intake roller have pins that face in the same direction and turn in the same direction so that they comb (or straighten and parallel) the fibers.
- 2) Carding – where cylinders having pins facing in opposite directions rotate in opposite directions at different speeds to individualize the fibers.
- 3) Stripping – where cylinders with pins facing in the same direction rotate in the same direction aligning the fibers.
- 4) Doffing - where the low speed doffer roll takes the fiber from the high speed stripping roll and makes a condensed web for forming the yarn or sliver.

So the above descriptions depict the first two uses of the mill up to 1851. In next month’s newsletter we will look at the next two uses of this mill – that being a Planer Mill and Grist Mill from 1851-1884 and a Shingle Mill and Wheelwright from 1884-1911. But enough of this technical business, here is a coded crossword – enjoy!

A THEME CODED CROSSWORD

This is a coded crossword and there are no clues. The answer words in the puzzle are represented by numbers. Each number represents a different letter of the alphabet. When you are sure of a letter put it in the coded key chart. All 26 letters of the alphabet are used. A group of letters has been entered to get you started. As always, the theme words are in the yellow cubes and all come from this newsletter’s subject text.



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