

Friends of the Pine Creek Grist Mill

Wildcat Den State Park, Muscatine, Iowa

Progress Report

Where we stand November 8, 2008

Since we did not have an October meeting this year, I have combined the September and October progress reports into one this time. The past two months we had good weather. Working at the mill is a lot more pleasant when it is not 95 degrees! Like the rest of the 2008 restoration season, our work has been a combination of restoration and maintenance work.

Heritage Day

Naturally during this time period Heritage Day took up a great deal of our time. Not only do you have to get the mill and its machinery ready, after Heritage Day there are always things that have to be repaired and cleaned up. On the whole as far as the mill's machinery is concerned this year's Heritage Day was a great success. Having the steam engine in motion made a great attraction this year.

Steam Engine Drive

We are not shy about correcting mistakes that we have made in earlier restoration work. During testing of the steam engine belting we discovered that the lag bolts that hold the speed reduction jackshaft mount were pulling free. The cause of the problem is the large amount of torque on the drive chains when the mill's electric drive motor is started or stopped.

The solution was simple. All we needed to do it remount the jackshaft using bolts run through the 12" wood beam that it sat on. Once remounted the jackshaft has been stable.

The Clipper Belt Splicer

Last year someone donated to us a Clipper belt lacing machine. There are several methods that can be used to splice a flat belt. Up to now we have used Alligator splicing as it can be installed using only a hammer.

Clipper splicing has two rows of fine steel wires that are pressed through the belt with a spec-



ial machine. The wire cause less damage to the belts than the large steel teeth of the appropriately named Alligator splicing. Learning how to use the splicing machine and install the Clipper splices took some effort. In the end we were very satisfied with the results. We plan to increase our use of the Clipper system as needed to improve the reliability of our belting. While this change in methods is a minor thing, it is all part of our larger plan to improve the reliability of the mill's machinery.

Millstone Exhibit

The millstones that were donated to the Friends last year are now on exhibit, one at the mill and one by the parking lot. Joe Clark brought his power washer out to the mill one Tuesday and cleaned the stone by the mill. After a lot of scrubbing he revealed the stone to be made from a single piece of pink granite. Stones of this color often came from quarries in Georgia.

Back to the Boiler Feed Pump Again!

Now that the steam engine is turning we decided to change the belt that powers the boiler feed pump. Originally the pump was directly powered off of a sheave on the engine's flywheel shaft. Before we got the engine turning we powered the pump off of the main line shaft. With the engine now turning we could change the pump drive belt back over to the engine.

As usual the belt and pulleys fought us every inch of the way. The idler that we had used before did not work properly because of its location in relationship with the pump pulley. Scott Gibbs made a new mount for the idler that allowed us to position it correctly. Although the belts still would not track as perfectly as we wanted, results with the new idler mount were better. In the spring when work resumes we plan to modify the idler mount further to make the pump drive as trouble free as possible.

Progress Report Where we stand

New Governor Pulley

With the steam engine turning at 1/4 of its original speed, we decided the engines Gardner flyball governor turned too slowly.

The engine's governor is mounted above the valve chest over the cylinder. The governor is driven by its own pulley that is offset from the engine's flywheel shaft. Because of this offset the governor has to be driven via a jackshaft that is mounted over the engine.

The simplest way to make the governor spin faster is make the diameter of the pulley that drives the governor larger. Seeing as we are considering going into the pulley business Scott Gibbs built a new split center pulley as an experiment. As you can see the pulley turned out very well.



The pulley is a split type made in two pieces. It is designed to clamp around the shaft it drives. In the photo you can see two large bolts that hold the two halves together.

The outer cylindrical portion of the pulley is made from small curved sections of wood that were cut out with a band saw. They are laminated together with glue and secured with screws. The screw holes are recessed and plugged to conceal the screws. This basic pattern of construction can be used for larger pulleys as well.

The End of the Restoration Season

This report marks the end of the 2008 Mill restoration season. Our final job this year was to clean up the shop / storage area on the second floor. Yes, we got rid of a lot of accumulated junk and found quite a few "lost" items in the process. With that job completed we gave the mill a good lubrication and shut down for the year. Following is a list of projects that we completed:

1. New wood steps in the basement line shaft area.
2. Line shaft speed reducer as part of the larger project to place the steam engine in motion.
3. Rebuilt the flat belt drive to the Big Bolter on the first floor.
4. New cloth chute for the millstone feed.
5. Mill tachometer restored and installed
6. Missing grist chutes restored and installed
7. New cabinet and wall built and installed in the mill office to conceal the electrical panels and conduits.
8. Windows and shutters on the north side of the mill rebuilt.
9. The Pulley Machine completed and tested! This is a major project that two years to complete.
10. Missel steam engine oiler installed.
11. Restoration of the millstone feed system and feed hopper.
12. Installation of the steam engine idler pulley and the repair of its mounting trapeze.

Plus the crew spent a considerable amount of time doing maintenance on the mill's machinery and keeping its flat belt drive system in adjustment and working. All in all we had a good year and great deal of fun.

The new steam engine belt idler pulley that we turned on our new pulley machine can be seen here. The beams it is mounted on are called the "trapeze." A winch and cable control how tight the idler makes the engine belt.



Joe Clark brought out his pressure washer and a lot of elbow grease to clean the millstone we have on exhibit outside the mill.

Peter Allenger and Scott Gibbs installing the new steam engine governor drive pulley that Scott built.





Joe Clark and Peter Allenger are unjamming our three roller corn mill. Once jammed it takes a careful cleaning to get it to run again.



Here Joe and Peter are remounting the steam engine speed reducer jackshaft. You can see how the main line shaft has been split to accommodate the two 2:1 steps of speed reduction.

Scott Gibbs and Jerry Kieth installing the new idler mount for the water pump drive belt.



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