

#### IV. Mill Operation

Before start up, make a complete visual inspection of all moving parts. Walk around the mill; examine the water wheel to make certain the tailrace is clear of debris. Completely close the gate valve over the water wheel. Water will seep around the gate and the wheel may turn if the stones are not engaged. Make sure the forebay overflow gate is also completely closed.

Inspect the bull gear and lantern gears in order to be certain there are no broken teeth. The stones should be raised apart so they will never touch each other during operations. Before the water is released from the dam, the corn stone should be engaged. Once the water is released from the dam, leakage around the main gate valve over the wheel may be so great that the wheel cannot be stopped in order to engage the stone. Therefore, the corn stone should be engaged first.



Remove the safety wedge behind the end of the wallower shaft.

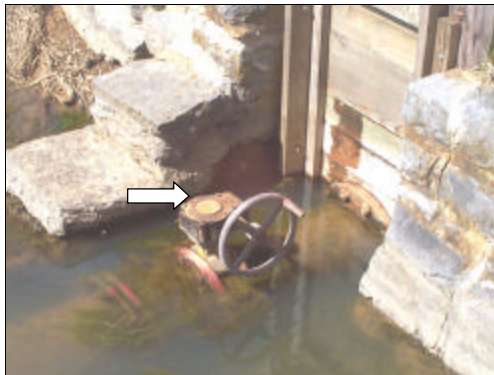
Then use the brake to completely stop the water wheel if it is turning.





Once the wheel is completely stopped, push forward the lever to engage the lantern wallower with the bull gear. Make sure it is completely engaged.

Drop in the wedge that will hold the wallower shaft in place. This is necessary because the wallower shaft will work itself loose during operation if this safety wedge is not in place.



The next step in starting up the mill is to open the gate valve at the dam. This valve located on the face of the dam controls the flow of water to the mill. During times when the mill is not operating a small amount of water is allowed to flow in order to keep the water wheel turning for esthetic purposes only. The water wheel is not connected to the stones. The setting of the gate valve (arrow) for these circumstances is no more than 1/8 open.

For operational purposes, it is necessary to open the valve to one-fourth to one-half, depending on the duration of grinding. If the mill is just to be running and not grinding grain or

under a load, then one-fourth gate may be adequate. However, when the stones are grinding grain, more water is needed to sustain the speed of the mill. It is then necessary to open the gate up to one-half open. During operation of the mill it may be necessary to adjust the volume of water periodically, depending on the duration of operation and the level of the pond. The finer the grind, the more water it takes to turn the runner stone because of increased friction.

Once the dam valve is set, return to the mill. Again, check the millstones to be certain that they are sufficiently apart in order that they do not start up touching. Close the forebay's overflow gate and allow the forebay to fill with water until it is flowing over the top of the overflow gate.



Use the lever inside the mill on the second floor to slowly open the gate over the wheel. Allow just enough water to start the water wheel turning. Once the wheel and stones are turning, examine the mill again. Check all the running parts on the first level. Make sure all things “look and sound right.” After some experience, one will be able to recognize unusual sounds during operation that may indicate a problem.

Grain is now poured into the hopper of the corn stone. Slowly lower the shoe (right) which is controlled by the knob connected by a leather strap to the shoe. The shoe controls the amount of grain flowing from the hopper to the millstone.



Start with a small amount of grain. Once the grain is between the stones, start lowering the stones. A clockwise turning of the screw (left) will lower the stones. As the stones get closer together, check your grind through the opening at the base of the vat. It may be now necessary to give the mill more water to sustain a consistent speed. The mill is now under a load and requires more power (water) to maintain an adequate grinding speed.

Continue to lower the stones until a favorable grind is obtained. The operator will need to determine when the grind is just right. Now, a balance must be maintained between the volume of grain being fed into the stones and the amount of water given to the water wheel. However, one must caution against giving the stone too much grain when the stone is turning to slow. The grain will back up into the eye of the stone and could, in extreme cases, completely choke the stone to a halt, causing possible damage to the gearing below. Conversely too little grain may cause the stones to “run dry.” This is easily detected by a burnt smell coming from the stones and in the product. A large production of meal is not necessary for these demonstrational purposes; therefore a small volume of grain passing through the shoe is sufficient.

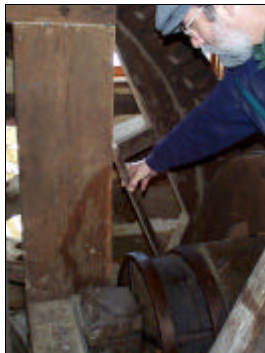
During grinding, the meal may start to stick or choke in the chute leading to the meal chest on the first floor. It will periodically be necessary to tap on this chute in order to keep it clear of meal (right). This chute does not currently have sufficient fall to prevent this problem from happening.



When grinding is finished, a reverse of the preceding process must take place. The most important thing to remember is not to let the stones run dry. Also, never let them touch.

First start raising the stones. This is a counter clockwise turn of the screw. Once the stones are sufficiently apart, lift the shoe in order to cut off the grain to the stones. Now the stones are no longer under a load and the mill will speed up rapidly. It is now necessary to lower

the gate over the wheel and reduce the amount of water flowing to the wheel. Adjust the water to an idling speed. When it is time to completely shut the mill down, close the gate completely. The mill will stop. Go back to the dam and close the gate valve back to 1/8 of a gate.



On return to the mill it will be necessary to disengage the stone. Remember to remove the safety wedge and then pull the wallower shaft out of gear (left). Remember to replace the safety wedge that goes behind the wallower shaft.

Concerning the operation of the elevator leg and the bolting reel, these two mechanisms need not be operating during the use of the corn stone. However, for demonstration purposes it may be necessary to operate them from time to time. It is not recommended that they be operated

when grain is being ground. The operator should concentrate on the operation of the millstones and not be distracted by the tending of these mechanisms, as well.



The bolting reel and elevator leg are operated or engaged (pull out) on the first floor of the mill. There is an arm sticking out of the mill beam.

This arm must be thrust forward, which will engage a gear on the other end with the bull gear. Before doing this, a safety pin holding the arm in place will need to be removed (right). Once the pin has been removed, the gear can now be engaged. Make sure the mill is not turning.



The engaging of this gear will then turn a vertical shaft going to the third level (arrow at left). This shaft then powers the head of the elevator leg, as well as the bolting reel.