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Hit and Miss in Rural Gilboa

Tim Brainerd

Early Gilboa farms were dependent on large farm animals to do field work, and water- and steam-power was used for stationary work in area gristmills and sawmills. The majority of other work on the farm, however, was manual work accomplished by the farmer family.

In 1863, the Otto and Langen Atmospheric Engine caused a revolution around the farm. This early engine was complicated, with slide valves and a "hot tube" heated with natural gas to provide ignition. Over time, improvements were introduced and by the late 1800s "hit and miss" engines were common on Gilboa farms. The term "hit and miss" refers to the way that the engine governs speed measured in revolutions per minute (rpms). When up to speed, an adjustable governor would hold the exhaust valve open so there would be no compression and heavy flywheels would keep the engine "free wheeling." When the engine speed dropped off, however, the governor would release the exhaust valve and this would cause air, fuel, and spark to be sent to the cylinder and then a power stroke would return the engine to full, free wheeling speed.

The hit and miss engine runs much slower than modern engines (which runs at about 450-500 rpms) and this speed and firing/free wheeling rhythm creates a unique, low whomp, thump, thump, thump, thump, thump, thump, thump. (Yes, by adjusting the load, you can two-step to the beat).

Standard ignition came from a battery and a coil, but magnetos were available at extra cost. The mufflers on these engines were little more than spark arrestors. Hit and miss engines did not have an oil-filled crank case, but used oil cups to release about 6 drops of oil per minute on the piston and bearings of the rod and shaft. Most engines were cooled by water in a hopper above the cylinder that acted as a heat sink, and under a full load this water could come to a boil. Some engines were air cooled.

Locally, Edward Burgett in Middleburgh made two air-cooled hit and miss engines (1/2 horsepower and 3 horsepower). Equivalent and larger engines were available from companies like International, McCormick-Deering, John Deere, Detroit, Rockwell, Hillsdale (Tecumseh), and Waterloo.

The power from these machines was generally transferred by a flat belt driven on a slightly barrel-shaped cylinder that was attached to the flywheel. Counterintuitively, the belt does not slide off the edges of the cylinder, but rather is centrifugally drawn to the largest-diameter (fastest moving) portion of the cylinder in the middle. A farmer could also buy an engine with a vacuum pump that could generate several inches of vacuum.

Hit and miss engines came bolted to a skid so that two people could move them as if they were carrying a stretcher. Most farmers added wheels to the skid for mobility, and added a handle or harness for pulling. The engines would be moved around and attached to different machines for different purposes. And, just like today, some engines ran easily and well while others could be cantankerous. The best solution when dealing with a cranky machine would be to walk away, let the machine (and yourself) cool down, and later, come back and start afresh (reboot) after referring to the extensive manuals that came with each engine.

Pictured here are machines that determined the fate of many corn cobs: the corn would be shucked and stored in a corn crib for drying; sent through a sheller to strip the kernels from the cob; and the kernels then would be passed through a grinder for use as animal feed. Controlling the fineness of the resulting feed, you can make coarse cow and horse feed or very fine meal (as we use it now) for chickens, finches, and chickadees. Our collection includes many engines that were used on the farms in the area. For instance, one engine has a vacuum pump that Emmet Souer used on his Shew Hollow farm for milking the cows.



This oil cup lubricates moving parts of hit and miss engines



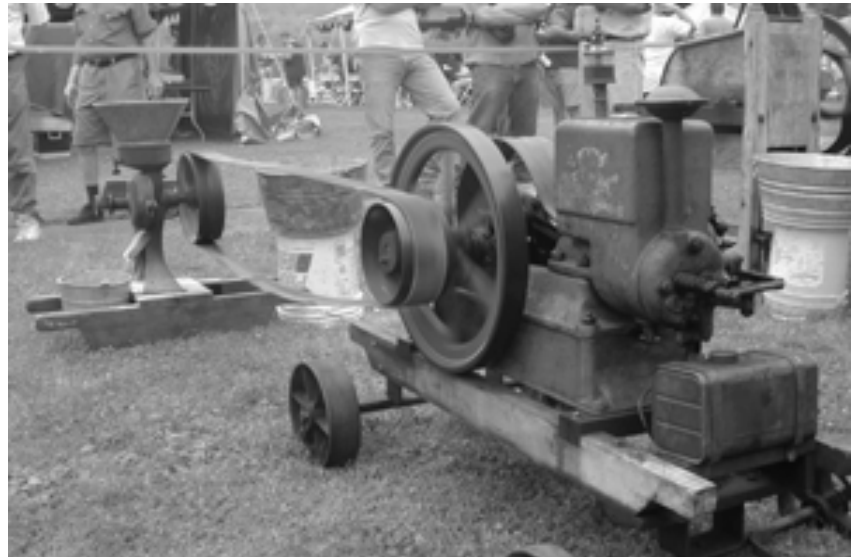
Ears of dried corn are fed into this corn sheller by my father, and the individual kernels are removed from the ears.



This water pump from the Maybie farm has been adapted to run by belt and could easily water the 125-head dairy herd.



This milk can lifter from the Raymond Maybie Farm can easily heft 100-pound milk cans.



This corn grinder takes the individual kernels of shelled corn from the machine pictured above, and crushes it to make cracked corn for livestock.

Of equal interest, however, are some of the local machines that were driven by these hit and miss engines. There is a house just east of the firehouse off 990V in West Conesville that in the early part of the last century was a barrel maker's shop. The building housed a hit and miss engine, shapers for staves, and a barrel top maker that we are now restoring. Other area business used machines to separate cream and churn butter in the creameries; to turn blades and stones in mills; and generally to turn the wheels of many area businesses.



Tim Brainerd maintains heavy machinery for Schoharie County while also scratching the antique machinery bug he caught from his grandfather.

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