The Woodsum Traction Engine and Victor Clover Huller

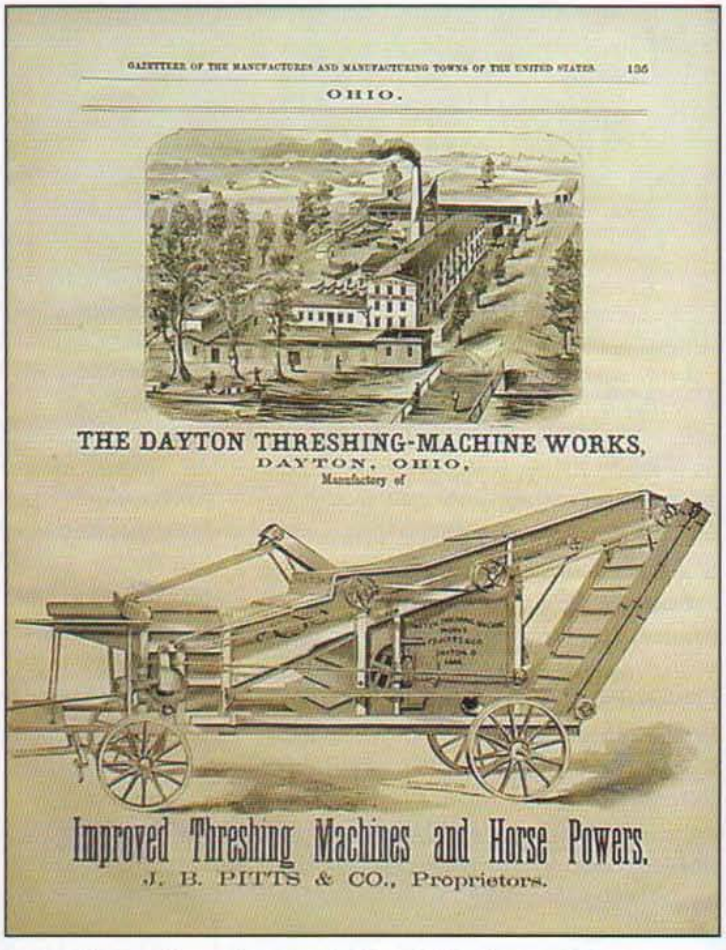
By Mike McKnight and Robert T. Rhode

The engine in John F. Spalding's whole plate tintype (one measuring 8.5" by 6.5") is a Woodsum traction engine built in Dayton, Ohio.

In 1854, Rufus Dutton erected the Dutton Agricultural Works on the canal that ran along the edge of Dayton, Ohio. In 1856, the property was sold at sheriff's sale to C. Wight, William Bomberger, and John Dodds. In 1863, J. B. Pitts & Company bought the firm. John B. Pitts was the son of John Avery Pitts, who was a brother to Hiram Abial Pitts. By 1847, the legendary Pitts brothers were selling threshers in Illinois. John A. left Illinois to market threshers in Ohio. In 1851, John A. traveled to Buffalo, New York, where he built the well-known Buffalo Pitts threshers. Meanwhile, his brother, Hiram A., built the Chicago Pitts threshers. John A. died in 1859; Hiram, in 1860. When John B. Pitts acquired the plant in Dayton, he first assembled threshers that were shipped to him from Buffalo, but John B. soon was manufacturing his own machines. In 1866 (a mere three years after buying the Dayton property), John B. Pitts sold the firm to Stephen F. Woodsum and Lucius A. Tenney. Meanwhile, John B. formed the Brayley and Pitts Works in Buffalo. (The firm of Pitts & Brayley existed beforehand.) Woodsum was licensed to produce the Pitts thresher, and the Pitts name remained painted in large letters on the main building of the factory. In 1875, the Woodsum Machine Company became incorporated. George W. Shaw served as president and treasurer; B. F. Hargrave, vice-president; J. F. Perrine, secretary. Lucius A. Tenney died in 1876. Stephen F. Woodsum died on the 22nd of July in 1879, less than two months before his firm exhibited a traction engine at the Cincinnati Industrial Exposition. *The History of Montgomery County, Ohio*, published in 1882, describes the Woodsum firm as manufacturers of "the Improved Pitts and Globe Threshing Machines, and Portable and Traction Engines, a ready sale for which is found in all parts of the globe." In 1886, the property was sold to the Barney & Smith Manufacturing Company, builders of rolling stock for railroads.

Only a few manufacturers of farm steam engines built side mounted engines (with the crankshaft in front of the smokebox). Here are several:

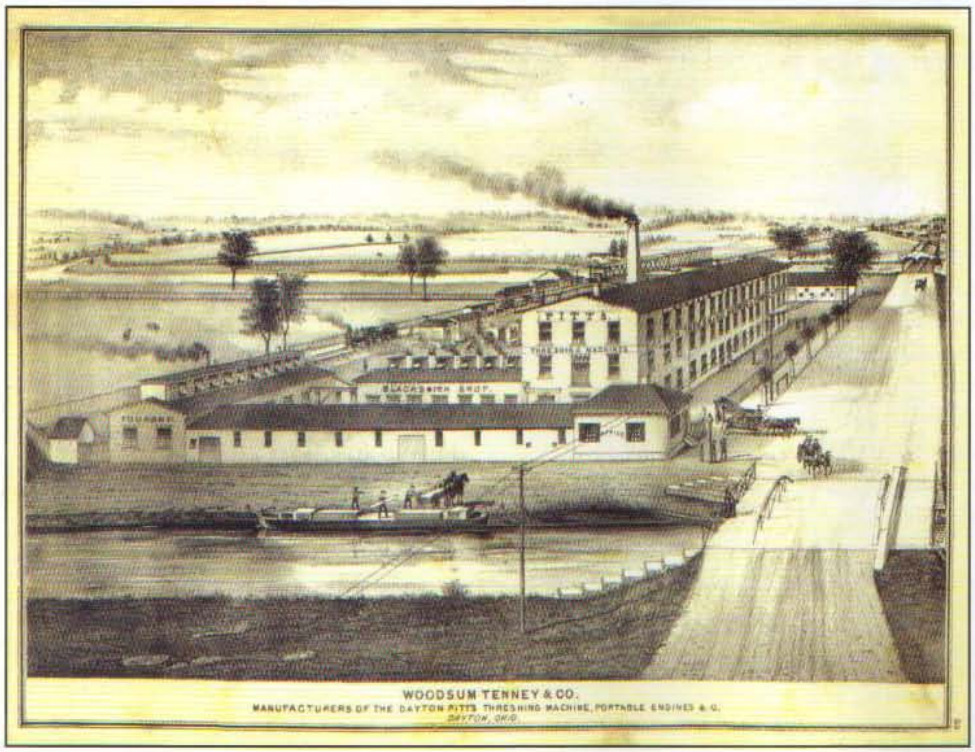
Abram Gaar's Spring Foundry in Richmond, Indiana
Anderson Foundry and Machine Works in Anderson, Indiana
Brownell, Roberts & Lee and Brownell & Roberts, the predecessors of the Brownell and Kielmeier Manufacturing Company in Dayton, Ohio
Buckeye in Salem, Ohio
Eagle Machine Works in Indianapolis, Indiana
William Heilman of the Heilman Machine Works in Evansville, Indiana
Landis brothers (F. F. and A. B. Landis), the predecessors of John Best & Company in Lancaster, Pennsylvania
Lane & Bodley in Cincinnati, Ohio
Owens, Lane & Dyer in Hamilton, Ohio
Robinson Machine Works in Richmond, Indiana
Sinker, Davis & Company in Indianapolis, Indiana
Stephen F. Woodsum and William Tenney in Dayton, Ohio
Swamscot Machine Company in Newmarket, near Newfields, New Hampshire
Tredegar Iron Works in Richmond, Virginia



An online seller advertised this 1866 view of the Dayton (Ohio) Threshing-Machine Works. At least thirteen years later, the factory would produce the Woodsum traction engine featured in John Spalding's column. (See page 24 in *Engineers and Engines Magazine* for August and September of 2018.) John B. Pitts & Company had entered into business at this location only three years earlier for the purpose of selling the Pitts threshers in Ohio. In the year of this ad, Pitts sold the firm to Stephen F. Woodsum and Lucius A. Tenney.

According to page 95 of the *Report of the Board of Commissioners of the Seventh Cincinnati Industrial Exposition*, held from the 10th of September through the 11th of October in 1879, the Woodsum firm exhibited "The Woodsum," which is described as "a portable converted into a traction engine, and is a fair engine for farm use." John Spalding's tintype depicts an engine that either *is* the traction conversion from 1879 or one similar to it. The engine most likely has a chain drive. Charles M. Giddings, whose articles from 1916 through 1917 on the history of traction engineering were published under the title *Development of the Traction Engine in America*, says that several firms built engines having a chain drive, and he implies that they did so *after* the 1875 and 1876 bevel drives proved to be inefficient, hogging the power. The Benson Ford Research Center of the Henry Ford Museum has a Woodsum catalog from around 1885 that depicts a top mounted geared traction engine. It is obviously a later design than that seen in the tintype. A Woodsum traction engine was on exhibit at the Illinois State Fair in 1883, but no cut or photograph of it has come to light. The circa 1885 catalog calls attention to the large Woodsum dome: "The dome is made of wrought iron and very large, giving ample steam room and insuring dry steam while the engine is in rapid motion." The catalog also offers these reassuring statements: "In getting up our pamphlet for this season we have aimed to call to your notice the principle [sic] features of our machinery and present them in a plain comprehensive manner, preferring to leave out all blow about what we have done, can do, or intend to do, also leaving out all 'comic pictures' and simply asking you to consider carefully the points of superiority and improvement which we mention and then give us a chance to prove to you that 'actions speak louder than words.' We also leave out all testimonials, as the merits of our machinery are to [sic] well known too [sic] make them necessary."

The clover huller depicted in John Spalding's tintype has been identified as a Victor Clover Huller, manufactured by the Newark Machine Company of Newark, Ohio. The story behind the Victor Clover Huller and other clover hullers manufactured in the mid-to-late 1800s is quite colorful and reveals the cutthroat manufacturing and sales practices of the firms that built these almost-forgotten machines. Many battles were waged in courtrooms during the 1800s in a time period that could aptly be called the "Clover Huller Wars" as firms competed with each other to gain a foothold in the lucrative market that emerged when farmers began raising vast amounts of clover not only as a hay crop but also as a valuable cover crop. Wholesale production of clover seed was made possible by the invention of machines that could efficiently remove the tiny clover seeds from the hulls.



This detailed cut, or engraving, of Woodsum, Tenney & Company depicts the Miami and Erie Canal in the foreground. (Readers may see the Mad River in the background. The stream was named for its furious current.) Teams of horses pull a portable steam engine and threshing machine through the factory gate to the right.

No discussion of clover hullers in the United States can fail to mention Birdsell Manufacturing Company, a mammoth manufacturer that produced clover hullers in the United States during the steam era and well into the gasoline era of farming. Most existing clover hullers seen in the preservation era are Birdsells. John Comly Birdsell, Sr. (1815–1894) was born in Westchester County, New York, to a Quaker family. In 1822, his family moved to a farm in Monroe County, New York, where Birdsell was raised. By 1855, Birdsell had invented a clover huller that combined the hulling and threshing mechanisms in one machine, and, in 1858, he obtained U.S. Patent Number 20,249 for his invention. Birdsell erected a factory in West Henrietta, New York, to manufacture his clover hullers. The *Hamilton County Democrat* for the 23rd of June in 1882 revealed that, in the first year of manufacturing, Birdsell sold only five hullers. After a period of disappointing sales, Birdsell offered to sell his clover huller patent to Cornelius Aultman of Aultman & Taylor for the meager sum of $1,000. Aultman rejected the offer, saying "the profits on all the machines he could make and sell during the life of the patent would not amount to $1,000." How wrong Aultman would be!

In 1864, after his factory burned,

Portable Engines at Cincinnati Industrial Exposition, 1876.

Number for reference.	Name.	Length of trial. Hrs	Diameter of cylinder. In.	Stroke of piston. In.	Revolutions per minute.	Point of cut-off from commencement of stroke. In.	Pressure above atmosphere, in pounds per square inch. In boiler.	Initial.	Mean effective.	Horse-power. Indicated.	Net.	Ratio of net to indicated.	Pounds of water per hour. Per indicated horse-power.	Per net horse-power.	Pounds of coal per hour. Per indicated horse-power.	Per net horse-power.	Number for reference.
11	Lane & Bodley	5·0	7·0	12·0	203·3	....	72·3	....	....	18·46	15·06	·816	40·81	50·01	6·56	8·04	11
12	Woodsum Machine Co.	5·0	6·5	12·5	208·3	....	75·3	...	....	12·53	10·47	·836	71·46	85·22	11·43	13·67	12
13	Robinson Machine Works	5·0	6·5	12·0	205·8	..	74·6	....	....	14·95	11·58	·775	53·13	68·7	9·22	11·9	13
14	Gaar, Scott & Co.	5·0	6·5	13·0	188·4	....	74·4	....	....	15·36	12·34	·803	64·6	68·01	8·89	11·07	14
15	Brownell & Kielmeier Manufacturing Co	5·0	6·0	10·0	197·6	....	74·2	....	....	9·87	8·34	·845	61·1	72·31	9·99	11·82	15

Here is a table comparing the specifications of Woodsum portable steam engines to those of portables built by other manufacturers. The table appears in the second volume of *A Manual of the Mechanics of Engineering and of the Construction of Machines* (New York: John Wiley & Sons, 1878).

Birdsell decided to move his manufacturing concern to South Bend, Indiana, where it stayed until it closed in the 1930s. In 1865, Birdsell began the publication of his own paper called the *Clover Leaf*, which extolled the virtues of clover as a viable cash crop. During its publication from 1865 to 1881, the paper cost $75,000 for Birdsell to publish and distribute.

By 1867, Birdsell was building a portable clover huller mounted on wheels that was easily towed from farm to farm and could be powered by either horses or steam power. After obtaining the first of his patents on clover huller designs, Birdsell vigorously sought to block competitors that he felt infringed on his patent rights. In addition to obtaining new patents, Birdsell was able to obtain renewals on his original patent until the late 1870s.

One of the chief competitors that Birdsell fought in the developing clover huller market was the Hagerstown Agricultural Implement Manufacturing Company of Hagerstown, Maryland. Abraham Miller (1831–1900) was born in Sharpsburg, Maryland. At the young age of eight, Miller built a small working threshing machine that he used to hull beans and radish seeds. At the age of 18, Miller moved to Hagerstown, where he worked as an apprentice to learn the trade of carpenter. His pay during his apprenticeship was only $25 a year for only three years.

In 1856, Miller entered into a partnership with William Jones of Hagerstown to manufacture agricultural implements. In 1864, Jones and Miller received U.S. Patent Number 44,431 for their clover huller design. In 1867, the firm of Miller, Protzman & Company was formed by Abraham Miller, William H. Protzman, William D. Updegraff, and Alphonsus R. Appleman. Miller had married Protzman's sister Sophia in 1862. In early 1869, the company was reorganized as the Hagerstown Agricultural Implement Manufacturing Company. This firm manufactured clover hullers, grain drills, hay rakes, manure spreaders, and other farm implements.

In 1874, the Hagerstown firm found itself in court with Birdsell over their clover huller patents. Birdsell was able to defeat Hagerstown, prompting Miller to design a new clover huller, that used two separate hulling cylinders. In 1877, Miller received U.S. Patent Number 188,064 for his double cylinder clover huller. Miller's new design used the upper cylinder to separate the coarser material from the

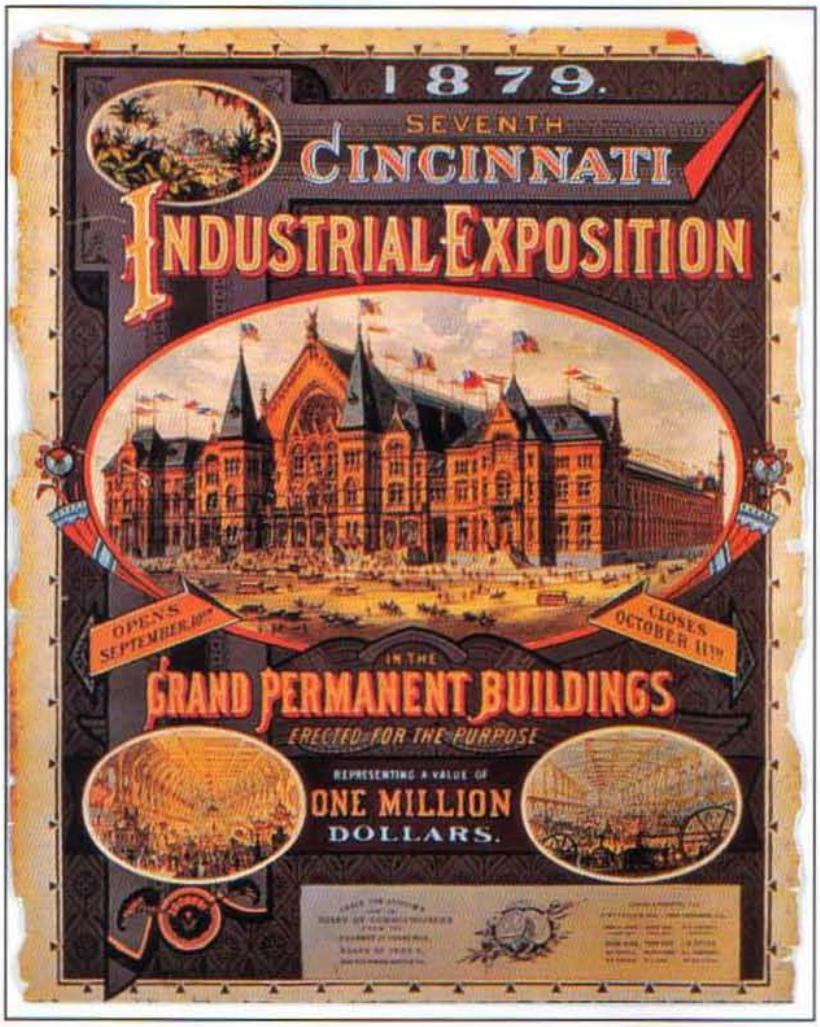
This advertisement with a cut of a Woodsum portable engine ran in the *Farmers' Home Journal*, Louisville, Kentucky, in June and July of 1879. On the 22nd of July in that year, Stephen F. Woodsum passed away. In less than two months, the Woodsum firm would exhibit a traction engine at the Cincinnati Industrial Exposition.

clover and the lower cylinder to finish the threshing.

Birdsell took Hagerstown to court again in 1877, but, this time, Miller came out on top. In 1879, several manufacturing firms collaborated in court to block the renewal of Birdsell's original patent.

In 1879, Hagerstown received the trademark Victor, a name that the firm's hullers sported for decades afterwards. That same year, the company reported it would produce about $200,000 worth of implements and run production for 11 hours a day. In 1880, the company manufactured $280,000 worth of equipment. That same year, the Victor Clover Huller handily defeated a Birdsell Monitor Junior Clover Huller at the St. Joseph County Fair in Michigan: a victory that the company proudly proclaimed in advertising.

By 1881, sales of Hagerstown had grown so much that the company decided to move to a larger facility. The city of Newark, Ohio, convinced the firm to move there by selling $37,500 in bonds to finance the purchase of land and machinery and by erecting a new factory building for the company. After moving to Newark, the firm assumed the name of the defunct Newark Machine Company, which had built steam engines and threshing machinery in Newark several years prior. By 1882, the firm was employing 244 men in their new factory at Newark, which covered some 7.5 acres of ground.



This colorful poster advertised the Seventh Cincinnati Industrial Exposition, which ran from the 10th of September through the 11th of October in 1879. The Woodsum firm exhibited "The Woodsum," described as "a portable converted into a traction engine" and "a fair engine for farm use." John Spalding's tintype depicts an engine that either *is* the traction conversion from 1879 or one similar to it.

The Newark factory burned in July of 1884. Newark Machine Company kept production going by contracting out the woodworking portion of the firm's clover hullers and other machines while rebuilding.

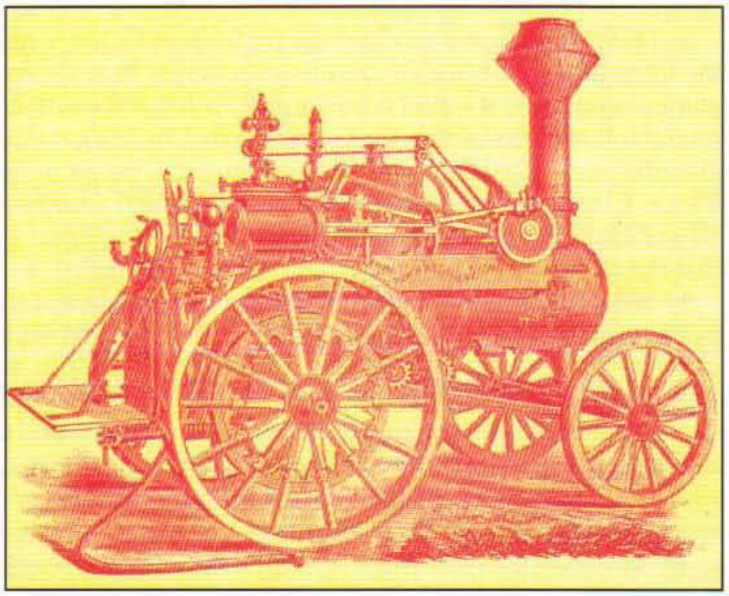
This slow time enabled other clover huller manufacturing firms to take some of Newark's business, which did not sit well with Newark. After being sued repeatedly in the past over his clover huller design, Miller decided to turn the tables and take his competitors to court in 1884. In a pointed letter dated August 15, 1884, that Newark sent out to newspapers under headlines screaming "A BIG FRAUD," Newark claimed, "We have learned that some Manufacturers are building and selling Clover Hullers which infringe on our patents, among them are our PATENT ROUGH HULLER CYLINDER RUBBERS and our PATENT GRUBE SEED CLEANER, and Elevator. Some of their Agents are representing to the Public that since our fire of July 5 we cannot build Victor Hullers *enough to supply our trade* and that the Hullers they offer are MADE LIKE THE VICTOR and that they have a right to build them, and that our Patents have run out, and are urging purchasers to buy for these reasons. We now notify the Public that these statements are all false, and that we are building 8 Hullers per day, and can furnish good paying customers with Hullers, and that our Patents upon the same run from 10 to 16 years, and that no manufacturers have a right to build Hullers with our PATENT ROUGH RUBBERS or SPIKES THAT ARE PUT IN LOWER CYLINDERS WITH TAPS UPON THEM, nor have they a right to use our Patent Seed Cleaner or Small Elevator, as they are our property and we will protect them by suit if compelled to. We dislike very much to go to law, and we now notify and forewarn all agents and users of Clover Hullers that we will expect them to PAY US DAMAGES for selling or using any Clover Huller that has in it roughened Rubbers or spikes in lower cylinder with taps upon them or any Seed Cleaner with small elevator as contained in our Patent granted us by the United States Courts against any vender or use of any such Huller, so do not blame us if you get into a lawsuit for selling and using fraudulently made Hullers."

Such words must have stung Gaar, Scott & Co., although the firm was not named in Newark's August letter. In its own letter dated the 1st of October, 1884, the threshing machinery giant fired back in newspapers claiming, "The Newark Machine Co., of Newark, Ohio, is flooding the country with circulars and advertisements unlawfully seeking to prevent the sale of the Gaar–Scott Clover Huller, and declare that we are guilty of a '*fraud upon the public*,' by building and selling this Huller, and by false representations that we infringe their patents." Gaar also vowed to "*protect and defend all the Agents who sell and all parties who*

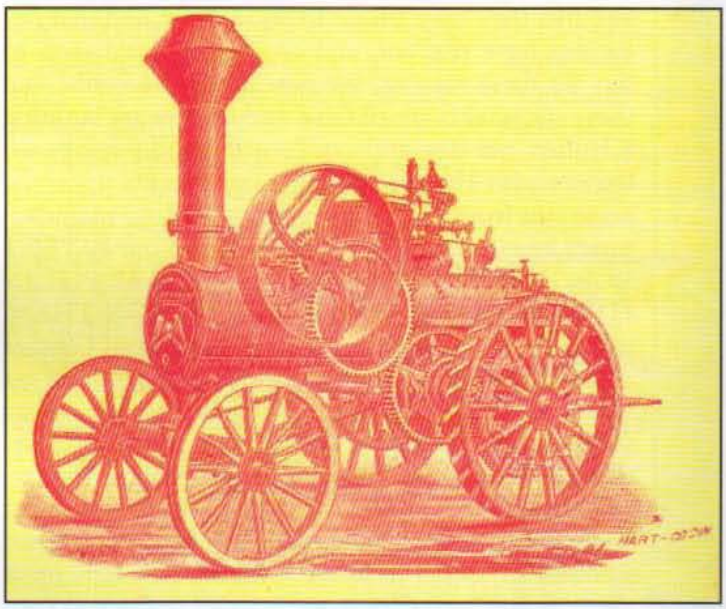
buy and use the Gaar–Scott Clover Huller, from any damage that may result from so doing, and if any suits at law are brought against them, we have retained Wood & Boyd, eminent Patent Attorneys, of Cincinnati, Ohio, and instructed them to appear and defend any and all suits against our agents or customers, *at our expense*."

Gaar–Scott was not the only company harassed by Newark during this time. On the 22nd of May, 1885, the *Daily Times* reported that Ashland Machine Company sent out notices that, because of the fire, Newark could not manufacture hullers and that Ashland could sell hullers as good as Newark's. By this point, Newark went so far as to claim that Gaar–Scott bought one of their hullers, tore it down, studied its design, built their own huller based on Miller's design, and tried to file patents on it! Newark again threatened to hold anyone that bought hullers from Gaar–Scott liable for damages, promising to sue Gaar–Scott sales agents and owners of Gaar–Scott clover hullers for $100 apiece. In 1886, Gaar–Scott won the case that Newark brought against the manufacturer.

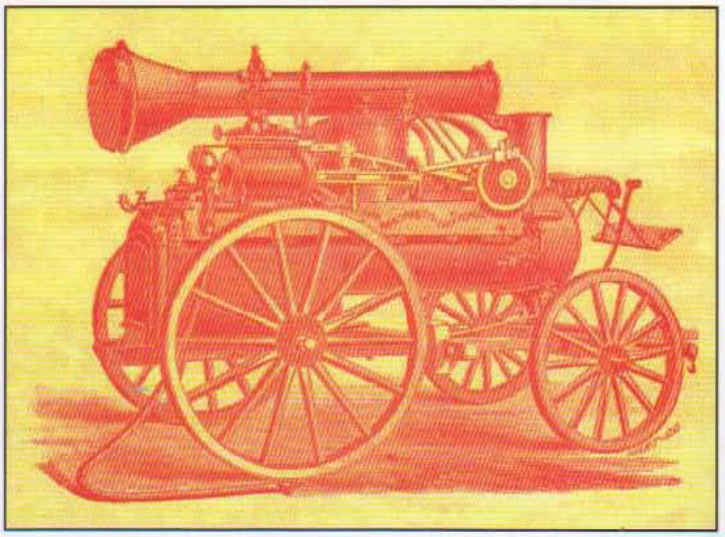
After a protracted legal battle with the firm's insurance company over the payout for the fire, Newark moved its factory to land rented where the old Gill Car Works plant stood in Columbus, Ohio, in early 1885. After building machinery at their new plant for a few years, the Newark Company



Here is another engraving of a Woodsum traction engine from around 1885, also from the catalog in the collection of the Benson Ford Research Center.



The Benson Ford Research Center of the Henry Ford Museum has given permission to publish this cut of a Woodsum top mounted, geared traction engine from a Woodsum catalog circa 1885 in the museum's collection. The Woodsum traction engine depicted here differs markedly from the earlier side mounted engines.



As may be seen in this cut, the Woodsum portable steam engine had been redesigned by the time the Benson Ford Research Center's catalog was published.

Right: This table provides specifications descriptive of the Woodsum traction engine in the catalog circa 1885 belonging to the Henry Ford Museum.

HORSE POWER.	Diameter of bore of cylinder in inches.	Stroke of cylinder in inches.	Diameter of fly-wheel in inches.	Face of fly-wheel in inches.	Revolutions of fly-wheel per minute.	Diameter of round part of boiler in inch.	Length of fire box in inches.	Width of fire box in inches.	Height of fire box in inches.	Number of flues.	Diameter of flues in inches.	Length of flues in inches.
EIGHT.....	6½	10½	37	6½	220	25	31½	21	31	28	2	60
TEN.....	6½	12½	41	7¼	200	27	37½	23	36	25	2¼	60
THIRTEEN.....	7½	12½	41	7¼	200	27	37½	23	36	34	2¼	60

faced having to move their plant yet again after the land was sold to the T. & O. C. Railroad in the early 1890s. In 1894, the city of Newark enticed the company to return to Newark. This time, the city paid the firm $20,000, dropped lawsuits it had filed against the company for not staying in Newark after the fire, and offered land on which to erect a new factory. In the same year, John C. Birdsell died, and his sons assumed control of his business.

Abraham Miller received numerous patents during his life not only for clover hullers but also for a straw stacker, clover huller detainers, a tool to cut the detainers, recleaners for a clover huller, and grain drills. Miller passed away on the 23rd of December in 1900. On the 11th of December in 1940, the *Newark Advocate* recalled that Miller stayed active in the business up to the time of his death, designing improvements on a manure spreader. Shortly before he passed away, Miller received news from the pattern makers and mechanics at Newark that the prototype of his new machine performed perfectly.

By 1912, the Newark Machine Company had been bought out by Blair Manufacturing Company, which built Blair Motor Trucks in Newark until 1918.

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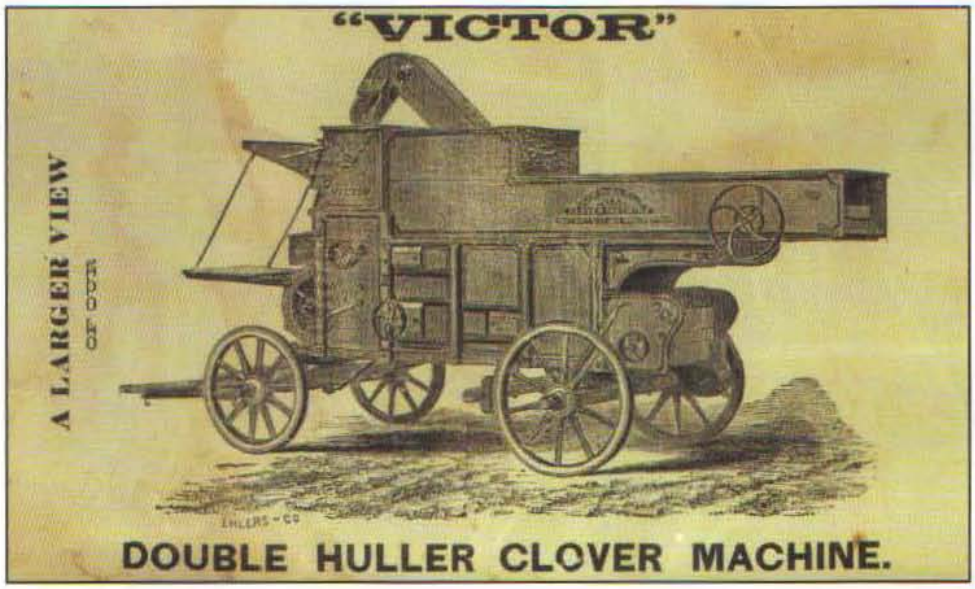
Right: This bright chromolithograph advertises the Victor huller as manufactured by the Newark (Ohio) Machine Company after its relocation to Columbus in 1885. The Hagerstown firm had moved to Newark in 1881 and was destined to move back to Newark from Columbus in 1894.

Iowa State University has granted permission to publish this cut of a Victor Double Huller Clover Machine built by the Hagerstown (Maryland) Agricultural Implement Manufacturing Company and depicted in a Hagerstown catalog circa 1878 in the university's collection. Abraham Miller (1831–1900) was the inventive genius behind the clover huller, as well as other machines. John Spalding's tintype shows a Victor huller belted to the Woodsum traction engine.



Here is another engraving of a Victor huller from around 1878, also from the catalog in the collection of Iowa State University.