

An American Chain-Drive Velocipede Tricycle: 1860s

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This paper describes a chain-driven velocipede tricycle, shown in **Figure 1a** with some details described in **Figure 1b**. The original photograph came into my possession some time ago, and I have been able to piece together the story behind its origin with help from several friends who are acknowledged in the endnotes to this paper.

The Inventor

The tricycle was built by Mr. Faulkner Isaac Norton [**Figures 2 & 3**]. Norton was born on March 2nd, 1811, in Cambridge, Washington County, N.Y. He left home at 13 years of age and began clerking in Keysville, N.Y. He learned the saddle and harness making trade in Saratoga County, N.Y. At 20 years of age in 1833, Norton moved to Lower Sandusky, Ohio. The area was a rich farming community with a need for suitable tools and implements.

In 1835, at age 22, he traveled to Claremont, New Hampshire, where he married Harrietta M. Willard, and then returned to Lower Sandusky. The Nortons had three children; two sons and a daughter. In 1840 he went into partnership with Cornelius Letcher to manufacture plows in a small foundry. The company was called Norton & Letcher. After two years the company moved to a much larger facility near the river bank at Garrison and River Streets. After Mr. Letcher passed away, Norton carried on as sole proprietor.

On April 25, 1848, at age 37, Norton took out U.S. Patent No. 5,530 for "A new and valuable improvement in Endless

Fig. 1a. Tricycle Velocipede by Faulkner Isaac Norton, a highly unusual combination of hand cranks, chainwheels, endless chain, and foot propelled chainwheels. Accessorized with an umbrella and a hanging candle lamp (Lampion from France). Image is ca. 1869. The Albumen photograph would have been taken by a wet plate camera. Size is 2-7/16" x 4". Unidentified photographer. American.

NOTE: All photographic images are originals from the author's collection.



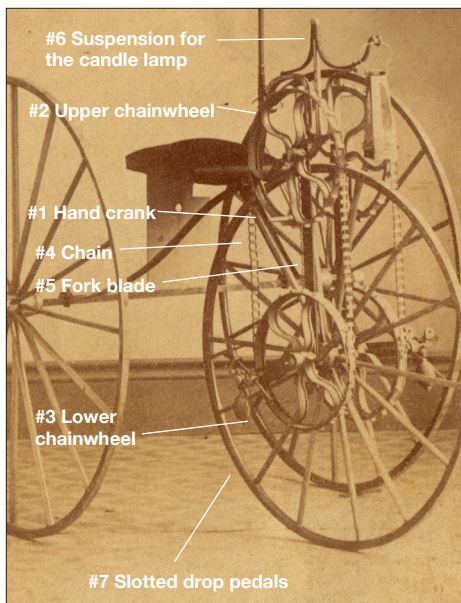


Fig. 1b. Function and Action of the Componentry. Hand-and-foot-operated—by the feet with a set of chainwheels mounted to either side of the front hub and having slotted cranks with adjustable weighted acorn pedals mounted on cranks. By the hands with chains running from both lower chainwheels upwards vertically to a second set of chainwheels. The top-positioned chainwheels are attached to stud axles that are positioned at the crown of the fork blades. Handles are added to the upper set of the chainwheels and, of note in the photo, are shown at the 6 and 12 o'clock position, this being 90° offset from the lower pedal positions, shown at approximately 3 and 9 o'clock. By positioning the two sets of chainwheels in this manner, all sense of dead top and dead bottom (lost motion or a dead spot) has been

eliminated. This is accomplished by the hand action aiding in the rotating momentum of the lower pedal/crank assembly. As the four chainwheels are identical in size and have the same number of teeth there is no gearing up or down. Both sets turn at the same rate and provide direct drive to the front wheel. All four chainwheels are linked via the two chains, the action being akin to that of a Kangaroo type bicycle. Steering is done by turning the upper and lower chainwheel/fork assembly together with arm and foot action. There appears to be a set of tabs with drilled holes. The function of these has yet to be determined. One suggestion is that these are attachments for straps that would then fix to the upper handles to further aid in propulsion. The extension acts as a holder for a "Lampion" pattern candle lamp.

Chain Racks and Inclined Rotating Platform". [Figure 5] From the 1848 patent we can readily see his grasp of chainwheels with endless chain technology. In 1853, Norton, then 44, sold out to Messrs. June & Curtis. In 1861, at age 50, Norton began to manufacture (wooden) spokes in the same location. In 1863 he built a brick building on Arch St. between Croghan and Garrison Streets, staying there until 1874, when he sold the building. In the 1869 *Sandusky County Directory*, F. I. Norton & Son is listed as a "Hub, spoke, and fellow manf."

Norton died peacefully at his home in Fremont, Ohio, at the age of 67 on Nov. 4th, 1878. His wife and two sons were with him at the time, and his daughter arrived by train from Washington, D.C., the next day. [Figure 6]

The Machine

The machine is the tricycle velocipede shown in Figures 1a & 1b. Additional details of this machine are shown in Figure 7 with detailed descriptions given in the respective captions to these figures.

Considering Norton's early trade of saddle & harness making, his existing 1848 patent, and the velocipede boom of 1868 and 1869, it is not surprising that he was able to conceive of and then manufacture this unique tricycle. However, Norton was not amongst the several people who took out a velocipede patent, whereas in 1868 he did take out a patent for "Developing a steaming and drying chamber for wagon

hubs" (U.S. Patent No. 77,305) and another patent in 1869 for the "Apparatus for drying lumber" (U.S. Patent No. 96,471). This circumstantial evidence suggests that if Norton felt there was a future for his tricycle he would have initiated a patent.

The Back Story

Curious objects are often created within

the worlds of tinkerers, tradesmen, and inventors. Back in the early days of manumotive and pedimotive transport, nonconformity was almost the norm. By 1870 the first Industrial Revolution (1760 – ca. 1840) had long since ended, but there was some overlap with a second Industrial Revolution later in the 19th century. Virtually every American adult had

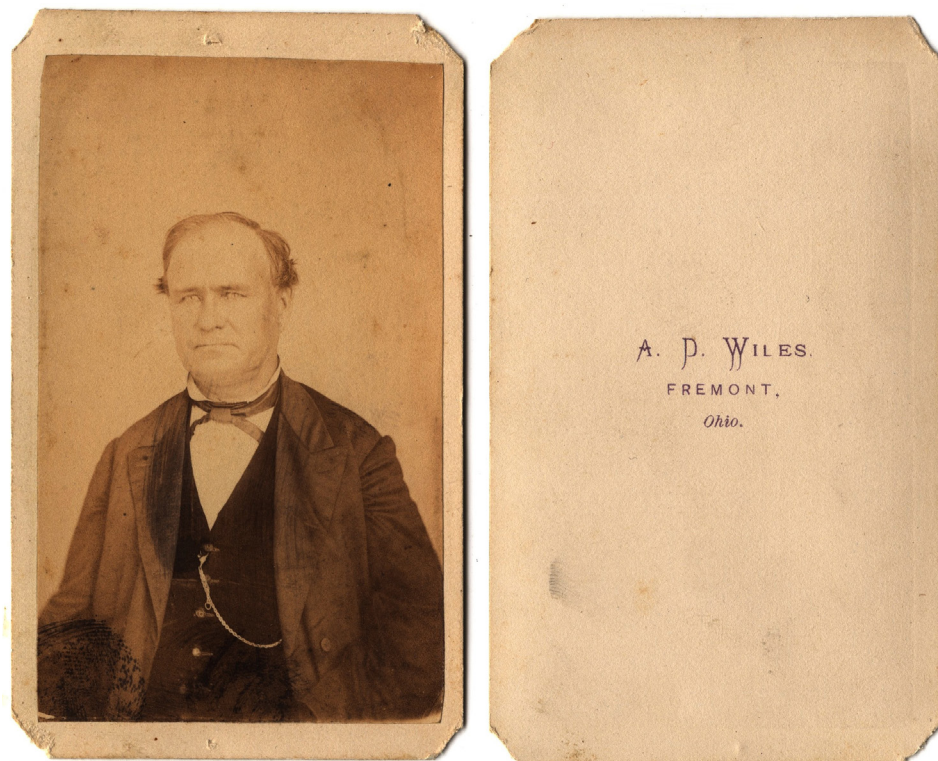


Fig. 2. Mr. Faulkner Isaac Norton. An albumen Carte de Yisite sized 2 1/2" x 4" taken with a wet plate camera ca, 1869. Photographer is A. D. Wiles of Fremont, Ohio. American.



Fig. 3. Identification from the original photo album pages. Bottom sections of the pages that held the two relevant photos taken from the Cartes de Visite Album. These photos found together of "F. I. Norton, Sr." and the "Bicycle invented by F. I. Norton, Sr." are highly important as they give both a face to the maker and a provenance to the tricycle.

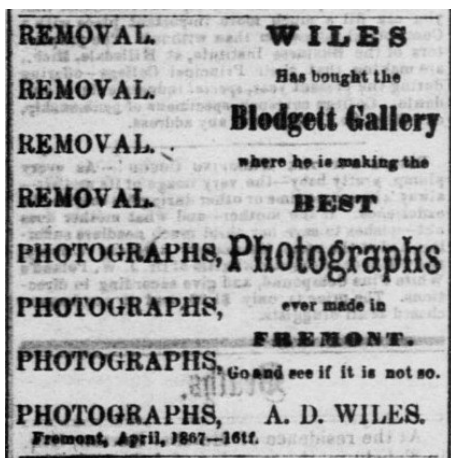


Fig. 4. Photographer's information. The photographer, A. D. Wiles is properly identified as Alfred Dean Wiles, who operated in Fremont, Ohio, 1851-73. This advertisement was published in "The Fremont", July 19, 1867.

either taken part in, or at least witnessed, changes in urban and rural society which, until then, had been unimaginable. Very few items are created in a total vacuum. To make an item successful, the invention itself represents only one side of a triangle. The other two sides consisted of practicality and marketing. All go hand in hand.

Scrutiny of the USA Patent books during the time that this tricycle must have been created in which the word "chain" appears somewhere within the specifications are:

- Oscillating Seat: 1, in 1869
- Foot & Hand-propelled: 0 (this would have been the category for Norton's tricycle)
- Hand-propelled: 1, in 1869
- Foot-propelled: 5 (between 1869 and 1871)

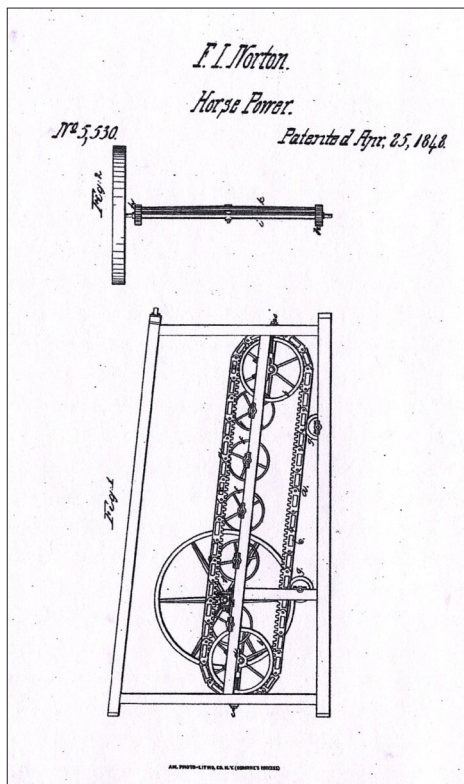


Fig. 5. The inventive Mr. Faulkner Isaac Norton. On April 25th, 1848, Norton was granted U.S. Patent No. 5,530. It is clear that the idea of propulsion with a system of endless chain and chainwheels was well conceived in Norton's mind when he invented his Velocipede tricycle.

Furthermore, chainwheels with chain propulsion were commonly used in the American farm machinery industry during this time.

There is no known proof as to when this tricycle was produced. As it is in the form of a basic velocipede tricycle built in America, it is almost impossible for it to have been built before 1869. Using the photographer's location, it is improbable that it was after 1873. I

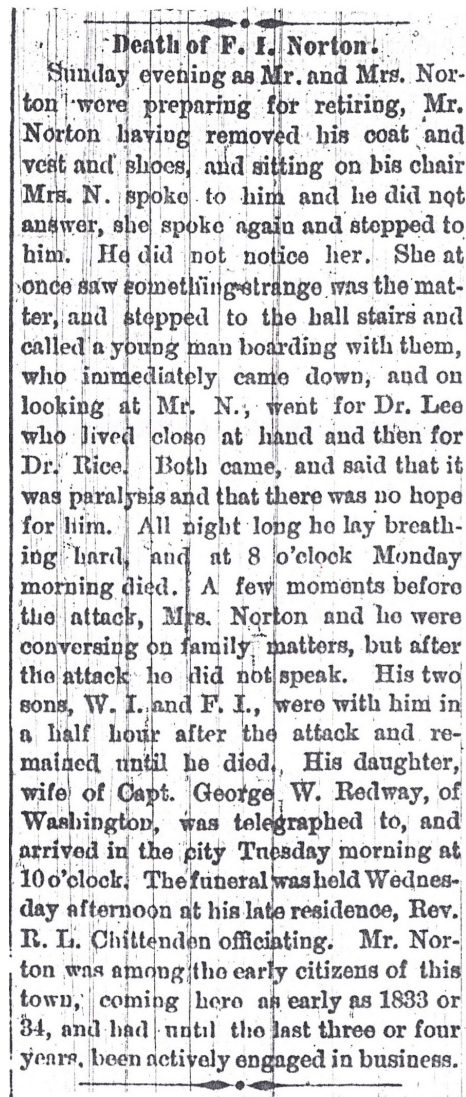


Fig. 6. Notice of Mr. Faulkner Isaac Norton's passing on November 4, 1878, that gives a summary of his life.

personally take it as 1869, but it could be one or two years later.

One can speculate what would have happened had the velocipede craze not ended so abruptly in 1869 in America. This prototype was likely a "one-off," and may not even have been intended for industrial production. We are fortunate the photo has survived, since no other record of its existence has been located up till now.

Acknowledgements

I am indebted for the help of many in researching the vehicle and its history.

- Dr. Chris Brooks for his help and identification of the "Lampion" lamp.
- Glen Eames who diligently worked with me to keep everything in context and simplify the explanation so that it

this 11th day of November A. D. one thousand eight hundred and Seventy-eight

E. F. Dickinson Probate Judge.

THE STATE OF OHIO, } We, the undersigned, do make solemn oath that we will
Sandusky County, ss. } truly, honestly and impartially appraise the estate and
property that may be exhibited to us, belonging to the estate of
deceased, and perform the other duties required by law of us in the premises as appraisers, &c.,
according to the best of our knowledge and ability.

M. H. Hennessey
David Jones
Stephen Buckland

Sworn to and Subscribed, before me, this day of A. D. 18

We, the undersigned, appraisers of the estate and property of Faulkner I. Norton, deceased, after being duly sworn, have made an inventory and appraisal thereof, as hereinafter set forth.

SCHEDULE A.

Personal Goods and Chattels belonging to the estate of Faulkner I. Norton, deceased, which are assets and in the hands of the Administrator as shown to us.

APPRAISED VALUE.

1	Balting Saw 38 Inch & table Complete	\$ 50.00
1	Boring machine & 2 augers	20 " "
1	Lathe	20 " "
2	mounting machines & counter shafts	2.00 " "
1	Hub Reaming machine	12 " "
1	" Lathe	20 " "
1	Small Saw & arbor	6 " "
1	grind stone & frame	15 " "
2	Spoke Lathes & Counter shafts	120 " "
1	Lathe Head & lat. Block	10 " "
1	Rest for grinding Bits	12 " "
1	Rep Saw table & arbor	12 " "
1	Emery Gummer	15 " "
1	stone & pipe	6 " "
1	Vice	5 " "

	A Lot of Old Belting for the above machines	25	00
	a " " Tools for machines	15	00
	Small boring machine	4	00
	one Engine & Boiler 50 horse power	1500	00
	one man's Belt for Saw	15	00
	one Iron Killen 14 x 18	20	00
	685 ft 1" gas pipe in Killen 3/4	20	00
	306 " 1/2 " " " " 1 1/2 "	10	15
	3 Stop Cocks	3	75
	one Double Belting machine	12	00
	1768 lbs Shopfings & Cuplings 5/4	88	00

"read" comfortably.

- Steven Evans, a personal friend and photographic historian, who has always helped me view photographs in a manner that broadens my knowledge while testing his patience. His teaching skills have been of immeasurable benefit.

- Dr. Hans-Erhard Lessing who went out of his way to help in the explanation of the mechanism and how it worked.

- Susan Glendening for sharing her American Patent information, collection and technical expertise. My trip to North Haven was immeasurably enhanced because of her.

- Louis Schultz III who, without a doubt, was crucial in my researching this paper. Louis, who lives in Sandusky Ohio, made many trips to local libraries and historical societies, and he used his own library to help research Faulkner Isaac Norton and his enterprises. I am immeasurably indebted to Louis for his insight, research, time, photocopies, and scans.

- John Weiss who has always assisted in editing much of my text. John not only assists with the text but always adds suggestions when he feels that they will enhance these efforts.

- Carey Williams who happens to see things my eyes don't see. Not only does Carey do that for me, he always adds information which proves of great benefit.

This paper was the result of a collaborative effort of each and every one of you. I thank you.

Endnotes

1. Louis Schultz III of Sandusky, Ohio, did the research on the genealogy and work history of Faulkner Isaac Norton.

2. Gary W. Sanderson (2010). "Velocipede-mania in the USA (1868-1869)," Tables 1 & 2 and Fig. 8 on pp. 13-16. Cycle History 19 (JPMPF, Birmingham, UK).

3. There was a second Industrial Revolution later in the 19th century which is noted in the Encyclopedia Britannica. Despite considerable overlapping with the "old," there was mounting evidence for a "new" Industrial Revolution in the late 19th and 20th centuries. HYPERLINK "<https://www.britannica.com/event/Industrial-Revolution>" <https://www.britannica.com/event/Industrial-Revolution>.

4. Digest of Cycles or Velocipedes with Attachments, Patented in the United States, from 1789 to 1892. By Authority of the Hon. Commissioner of Patents. Washington, D.C., Vols. 1 & 2, and Patents for Inventions; Abridgements of Specifications; Class 136, Velocipedes; Periods 1855-66 & 1867-76. London W.C. (England).

Fig. 7. Our man was a successful businessman. Faulkner Isaac Norton passed away on Nov. 4, 1878, leaving behind his wife, two sons and a daughter. He was a successful businessman, and he left a will in which he valued his company at over \$2,000.