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Article Summary: Four Fairbanks scales like those used in nineteenth century trading posts and stores throughout the frontier went down with the *Bertrand* in 1865. Salvors recovered them more than a hundred years later.

Cataloging Information:

Names: Joseph P Fairbanks, Thaddeus Fairbanks, Erastus Fairbanks, Charles Hosmer Morse

Place Names: Portage LaForce, Nebraska Territory; Fort Benton, Montana Territory; St. Johnsbury, Vermont

Fairbanks Scales Found on the *Bertrand*: portable platform scale, uneven balance "Union" or "Family" scale, equal arm counter scale

Keywords: *Bertrand*, E & T Fairbanks and Company, Joseph P Fairbanks, Thaddeus Fairbanks, Erastus Fairbanks, Charles Hosmer Morse

Photographs / Images: the hulk of the *Bertrand* during the removal of cargo in 1970; Fig 1a: base of Portable Platform Scale; Fig 1b: brass beam for Portable Platform Scale, calibrated in 5-pound increments; Fig 2: uneven balance "Union" or "Family" scale; Fig 3: Equal Arm Counter Scale; Fig 4: cast iron poises for Equal Arm Counter Scale



The hulk of the steamer Bertrand during the removal of cargo in 1970.

FAIRBANKS WEIGHING DEVICES ON THE STEAMBOAT BERTRAND

By RONALD R. SWITZER

The use of weighing devices on the American frontier, like so many other items of material culture, is poorly documented, especially for the period during and subsequent to the Civil War. The purpose of this article is to identify and describe Fairbanks weighing devices found on the steamboat *Bertrand*, a small sternwheel river packet that sank in the Missouri River at Portage La Force in Nebraska Territory on April 1, 1865.* Enroute to Fort Benton in Montana Territory, the heavily loaded steamer struck a snag in the river and sank in only a few minutes, and subsequent salvage attempts met with little success (Switzer, 1974:1; Petsche, 1974:12, 18).

While the weighing devices described are not directly related to gold mining, agriculture, or the fur trade, scales were in common use in 19th century trading posts and mercantiles throughout the frontier. During the Civil War era high profits on commodities sold or exchanged for gold, furs, and other valuables were in direct proportion to the exactness of business transactions. A scale was a necessity if one was to show a profit in a small frontier business (Hanson, 1965:4). Four scales recovered from the *Bertrand* were manufactured by E. & T. Fairbanks and Company of St. Johnsbury, Vermont (Johnson, Personal Communication: 1973). Their description, and the

*Site of the sinking is now in Washington County, Nebraska, on the "Iowa" side of the river. It may be reached by crossing the bridge on Highway U.S. 30 east of Blair, Nebraska, or by crossing the river at Omaha and following northward Interstate Highway 29. The *Bertrand* was excavated by salvors in 1970. The U.S. Department of the Interior Fish and Wildlife Service, which administers the nearby DeSoto National Wildlife Refuge, maintains a small interpretive museum of *Bertrand* objects.

story of Fairbanks' manufacturing should be of particular interest to archeologists, historians, and antiquarians.

At the beginning of the 19th century, the young republic of the United States hummed with the activities of material expansion and cultural development. The character of America was one of limitless faith in the future, a time to capitalize on the opportunities of progress. One such opportunist was Major Joseph P. Fairbanks, who in the spring of 1815 set out from Brimfield, Massachusetts, to homestead on five acres on the Sleeper River, Vermont. He paid \$300 for the land and the rights to the falls, where he and his two eldest sons built a dam to provide water power for a grist mill and sawmill. Later, on the same site Joseph's sons constructed the Fairbanks scale factory.

With the completion of the sawmill, 19-year-old Thaddeus Fairbanks began making wagons, and by 1823 had started a small but profitable iron foundry. One year later his older brother Erastus gave up the general store which he had established, and the two brothers began manufacturing wagons, plows, and stoves. Turning his energies to invention, Thaddeus patented a new plow in April, 1826, and by 1829-1830 Erastus and Thaddeus were producing gear wheels and machines to flute rollers for Haynes hemp dressing machines then in common use in Vermont. Thaddeus eventually secured a patent for an improved hemp dressing machine and became manager of the unsuccessful St. Johnsbury Hemp Company.

Weighing wagonloads of hemp in a primitive Roman-style steelyard suspended in a gallows frame, Thaddeus got the idea for construction of a weighing platform supported on an A-shaped lever, the tip of which was connected by a rod to a calibrated steelyard or beam. Applying for a patent, Thaddeus immediately set about improving his invention. In doing so he solved the problem of weighing on a platform by accurately transmitting weight by levers from the corners of the platform to a calibrated steelyard. The rediscovery by Thaddeus Fairbanks of the principle that a small mass could be brought into equilibrium with a large one by a combination of levers not only made accurate weighing of large loads a reality, but also made a great contribution to the speed with which business

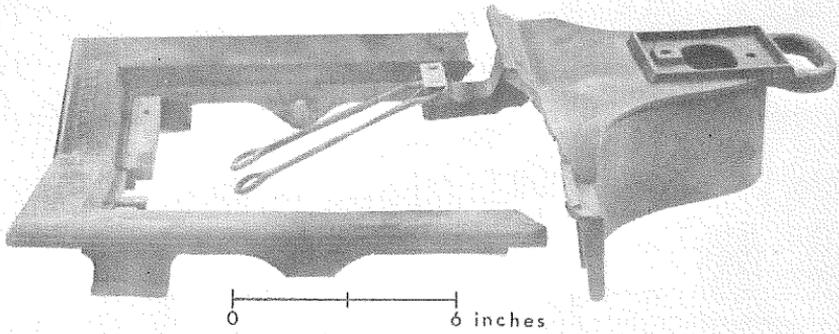


Figure 1a. Base of Portable Platform Scale

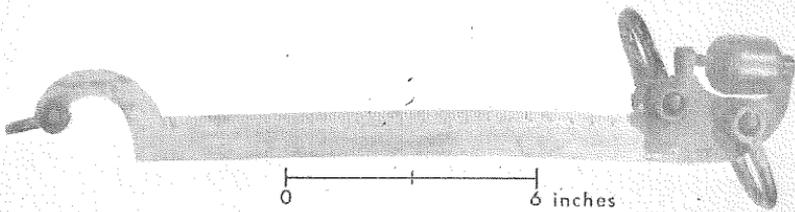


Figure 1b. Brass beam for Portable Platform Scale calibrated in 5-pound increments.

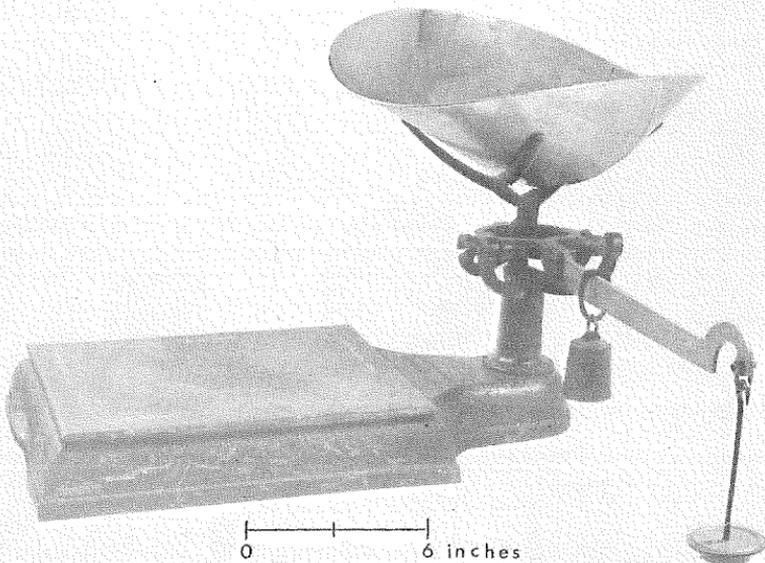


Figure 2. Uneven balance "Union" or "Family" scale (weights not shown).



Figure 3. Equal Arm Counter Scale.

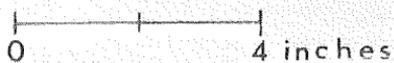
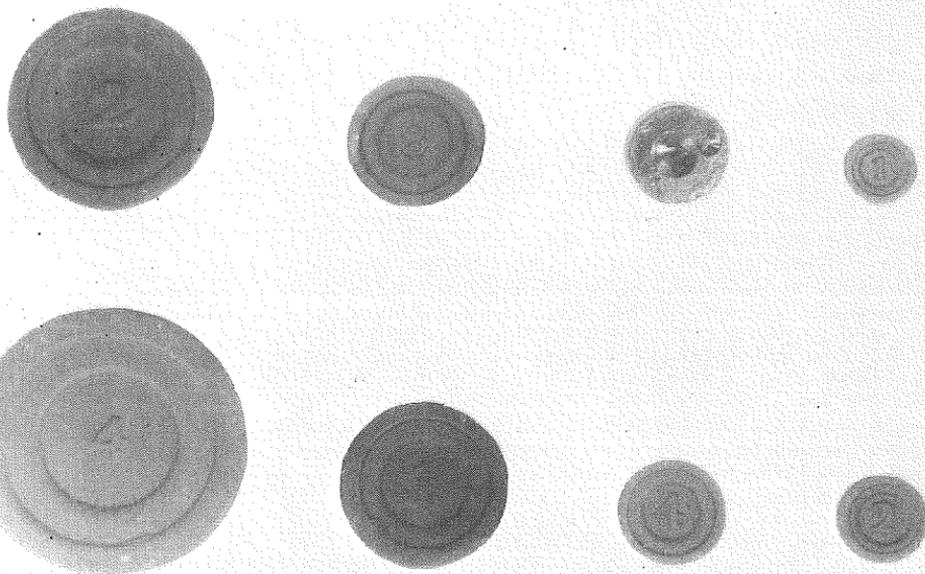


Figure 4. Cast iron poises for Equal Arm Counter Scale.

transactions could be consummated. The invention of the platform scale formed the basis for a flourishing world-wide business, and between 1835 and 1861 Fairbanks' scales were patented and marketed in England, and scales were exported to Bolivia, China, Mexico, Cuba, Venezuela, Peru, Chile, Argentina, and Brazil.

In subsequent years Thaddeus developed the familiar portable platform scale still seen today in stores, factories, and warehouses, as well as several unequal arm scales and even balance scales. A few years after the founding of the scale business, Joseph P. Fairbanks gave up his law practice and became a partner in the firm of E. & T. Fairbanks and Company. By 1843 the company was grossing \$50,000, and thereafter it doubled its output about every three years until 1857.

Erastus Fairbanks headed the growing business, and managed it successfully for thirty years. For fifty-five years Thaddeus Fairbanks served the firm as an inventor and designer of scales and machinery with which to make them. Joseph Fairbanks directed his talents toward marketing, in which capacity he served the company for twenty-two years. Early marketing of the company's products was done solely by the three brothers. Later itinerant agents or salesmen were hired, and the business of selling scales spread to sales houses in Boston, New York, and the West Indies.

Outstanding among the company's many employees was Charles Hosmer Morse, nephew of Zelotus Hosmer, the first sales agent for Fairbanks' scales. At 17 years of age, the locally educated, self-disciplined Charles Morse bound himself in December, 1850, to E. & T. Fairbanks and Company for a three-year apprenticeship as a factory clerk and accountant. Subsequent to the apprenticeship, Charles was sent to work under his uncle in the company's Boston sales house and later advanced to another position in the New York office.

In 1857 Charles Morse went west to assist in establishing the Chicago sales agency and made significant contributions to the company in the following eight years. Perhaps his most significant venture was the founding of the branch of the business in Cincinnati in 1865 known as Fairbanks, Morse and

Company. Subsequently, he began other successful branch offices in Cleveland, Pittsburgh, and Indianapolis. Business in the western territories could not support an organization based solely on the sale of scales, and in 1866 Morse opened a factory in Cincinnati to make letter presses, waybill presses, and warehouse trucks. Later, the firm also sold coffee mills and the famous Remington typewriter.

E. & T. Fairbanks and Company was one of the early large advertisers in America. Beginning in 1856 the company made frequent use of advertisements in *The Illustrated American Advertiser* and in newspapers throughout the world. A sample of the advertising copy used by the firm is quoted below from an 1861 edition of the *Nebraska Republican* at Nebraska City (1861:3):

Fairbanks Scales—It is a significant fact, which the public will appreciate, that whenever new scales are put upon the market, as large numbers have been from time to time, during the last thirty years, it seems to be the first and chief aim of the makers to show that they are the same as Fairbanks', or like them, or are improvements upon them, or have taken premiums over them, thus recognizing and showing the strong hold they have upon the public confidence. It is a well-known fact that while most of these scales have, after more or less, trial, passed mainly out of use, Fairbanks' have gone steadily forward, increasing in public favor year after year, and now much more generally used than all others, not only in this country, but wherever American commerce has been carried. This could not be so if they were not all that is claimed for them in respect to their durability, as well as convenience and accuracy.

The Fairbankses were active in civic and state affairs, and Erastus Fairbanks was twice elected governor of Vermont. While serving his second term during the Civil War, Erastus Fairbanks was asked by President Abraham Lincoln to declare St. Johnsbury as a repository for the safekeeping of the official standard weights of the United States. The St. Johnsbury scale factory was also converted to produce stirrups, brass cavalry trimmings, artillery harness irons, and curb bits for the Northern cavalry. After the Civil War the management and direction of the Fairbanks scale business passed from its founders to their sons.

It was an accident of history that Fairbanks scales were part of the cargo on the steamer *Bertrand*, and we can only speculate about their point of origin. The *Bertrand* had been constructed in the summer of 1864 in Wheeling, West Virginia, and was

piloted down the Ohio to its confluence with the Mississippi, and up river to St. Louis in the spring of 1865. The steamer almost certainly stopped to take on cargo at Cincinnati before proceeding down the Ohio, making other stops along the way. Thirty-five lots of cut nails and spikes in 100-pound kegs found in the cargo were produced in Clinton, Ohio, and probably were being transshipped through St. Louis. Their ultimate destination was Worden and Co., Hell Gate, and Stuart and Co., Deer Lodge, both in Montana Territory. At first it was thought that the Fairbanks scales recovered from the *Bertrand* had been sold to frontier merchants by Fairbanks, Morse and Company in Cincinnati and were being shipped to an as yet unidentified destination in Montana. However, Cincinnati directories of the period indicate that the branch office of Fairbanks, Morse and Company did not begin to function until after the sinking of the *Bertrand* (Williams & Company, 1865:132; Williams, 1866:276; Anderson, Personal Communications:1973).

All four scales are calibrated to avoirdupois weight based on the sixteen ounce pound.

The largest scale is a portable platform type with wheels. Constructed of japanned cast iron and bearing a hardwood platform and brass beam calibrated in five-pound increments (Figure 1), the No. 10 1/2 scale was badly broken but had the full complement of parts. Scales such as this came in several sizes with capacities of 400 to 2,000 pounds. The No. 10 1/2 size had a capacity of 900 pounds and in 1872 sold for \$48.00 (Figure 1). Four slotted cast iron poises accompanied this weighing device, the weights and sizes of which are:

<i>Stamped Size</i>	<i>Diameter</i>	<i>Height</i>	<i>Weight</i>
400	4 1/16"	1 3/8"	4.42 lbs.
200	4 1/8"	1 1/16"	2.63 lbs.
100	4"	3/8"	.996 lbs.
100	4"	3/8"	.997 lbs.

The platform base bears the cast marks "FAIRBANKS' PATENT. N° 10 1/2 and the beam stabilizer is marked "PATENTED FEB. 11 18/6/2." The beam itself is stamped "FAIRBANKS/PATENT" at the center of one side and "125073" on the bottom edge. The mechanism end of the beam is stamped "PATENTED [AP] R 9 1850."

An uneven balance "Union" or "Family" scale was present in the collection (Figure 2). Meant for use on a counter, the cast iron, brass beam scale was equipped with a large, brass scoop pan; a loop-shanked, one-pound beam weight; and three slotted, cast-iron weights or poises of two sizes:

<i>Cast Mark</i>	<i>Diameter</i>	<i>Height</i>	<i>Weight</i>
10-80	3"	1"	1.81 lbs.
10-80	3"	15/16"	1.81 lbs.
5-40	3"	1/2"	.74 lbs.

Poises have been indented on the backs by drilling to adjust the cast weight to a more accurate size. The brass beam is calibrated on both sides with two scales, the upper in pounds and the lower in quarter pounds and lesser fractions. A one pound counterpoise of cast iron is suspended from the end of the beam by means of a hooked rod. Cast lettering on the scale base at the head of the platform reads "E. & T. FAIRBANKS & CO./ST. JOHNSBURY VT./PATENTED JULY 24, 1855." The scale is capable of weighing 1/2 ounce to 240 pounds, the base is scrolled with red and gold lacquer.

The two smallest scales from the *Bertrand* cargo are even balances or equal arm counter scales of a type common during the last half of the 19th century (Figure 3). Scale capacities are from 1/2 ounce to 10 pounds, and both were equipped with tinned metal scoop pans and sets of seven cast iron poises, of which three in one set are now missing. The nested weights have been bored with two to four indentations to adjust the cast weight to the specific weight desired (Figure 4). A description of one set of weights follows:

<i>Cast Mark</i>	<i>Diameter</i>	<i>Height</i>	<i>Weight</i>
4	4 3/8"	1 3/4"	4 lbs. 1 1/2 oz.
2	3 1/4"	1 1/16"	2.30 lbs.
1	2 3/4"	7/8"	.99 lbs.
8	2 3/16"	5/8"	.49 lbs.
4	1 3/4"	1/2"	.25 lbs.
2	1 1/2"	5/16"	.12 lbs.
1	1 3/16"	1/4"	.06 lbs.

This article, while limited in scope, describes characteristics of several types of scales commonly in use on the American

frontier, and presents the story of one group of industrial pioneers, who contributed significantly to the technology and growth of the nation.

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