

History and Technology of the American Paper Industry in the 1800s

Purpose: Eight-frame exhibit presents the history and technology of the American paper industry during the 19th century. Its goal is to provide the viewer an education regarding the activities of people and places as discovered in cards and letters.

Scope: Exhibit represents the final century when paper was made from rags, the "Rag Paper Era." The material presented is postal history and private express mails. Emphasis is placed on centers of paper-making, technological advances, and paper mills. This is also a travel log, following industry growth from its roots in the Atlantic states to the far western reaches of the country.

Background: In 1800 America had 90 handmade paper mills and was a net importer of paper from Europe (England, France, etc.). During the 1820s and 1830s paper machine technology was transferred from England to America, sometimes by nefarious means. By mid-century America out-produced both England and France combined. At the end of the century the U.S.A. had roughly 1200 paper mills and was the leading paper producer in the world.

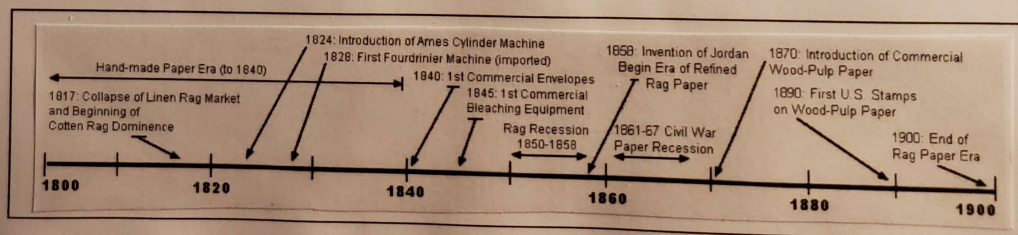
Industrial Development: Paper was originally made by hand from linen rags, although by 1820 linen faded from the market in favor of cotton rags. Commercial paper machines (ie. Cylinder machine) were first introduced in 1824. Fourdrinier machine manufacturing began in 1828, and the Fourdrinier came to dominate the industry. Envelopes were introduced in 1840 and commercial bleaching in 1845. Wood-pulp paper was introduced in 1870, but several more technical advances were required before it eventually dominated the market. By 1885 rag mills went into decline, eventually becoming obsolete in 1900. (see timeline below)

Significant Items: Within this exhibit **students of American Philately** should note that manufacturers of **US Post Office Stamp and Stationery papers** are identified by pages with black borders. An index of important events and technological developments is provided on the final page.

Outline:

Chapter 1: Handmade Rag Paper Industry
Chapter 2: The Ames Cylinder Machine
Chapter 3: Lee, Mass.--Papertown USA.
Chapter 4: Atlantic States and the Erie Canal
Chapter 5: Philadelphia.
Chapter 6: The Fourdrinier Machine
Chapter 7: New York City

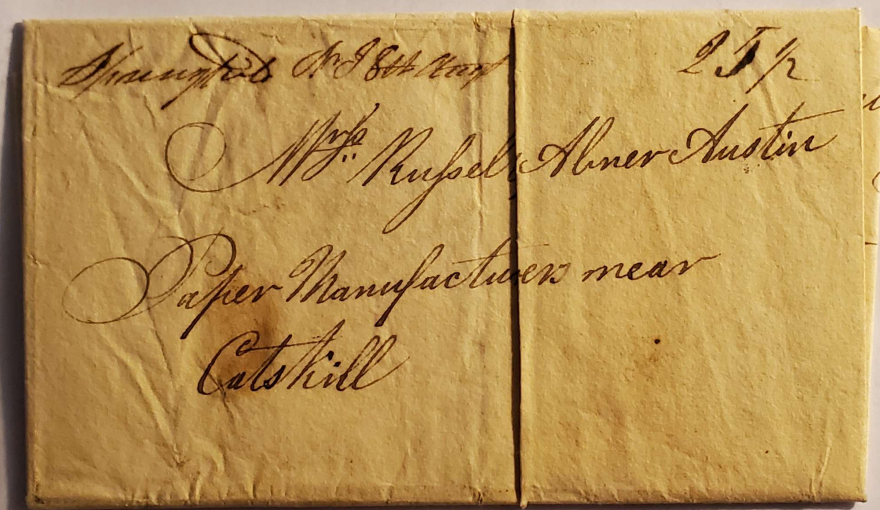
Chapter 8: Baltimore & Washington D.C.
Chapter 9: Southern States
Chapter 10: Boston.
Chapter 11: Connecticut & New England
Chapter 12: Wood-Pulp Papers
Chapter 13: Chicago and the Mid-West
Chapter 14: Holyoke--The Paper City



Chapter 1: Handmade Rag Paper Industry

In the early 19th century rag collection in the local area was organized by the owner of the paper mill. In Berkshire County, Massachusetts, the center of papermaking in the U.S., post riders carried rag collections of local merchants to a central depot where they were distributed to area paper mills.

(Below) SFL to Catskill, N.Y. Manuscript, "Springfield N.J." Manuscript "25 1/2 (cents) for single rate letter travelling 90 to 125 miles. Note: The letter would normally have been charged 12 1/2 cents, however under the 1814 War Rate all postage was doubled, making this letter 25 cents. The additional 1/2 cent charge appears to be superfluous.



Content: "I am in daily expectation of a large supply of wire from England of a very superior quality. If it arrives I shall be able to supply you with moulds of a better quality than any other mould maker in the United States." James Henderson, Mould-Maker, Springfield, NJ, August 7, 1815.

(Historical Note: Of paper mill correspondence, only three (3) letters posted prior to 1825 are known. Also, the War of 1812 only ended February of that year, so the delay in a shipment of English steel wire is entirely plausible.)

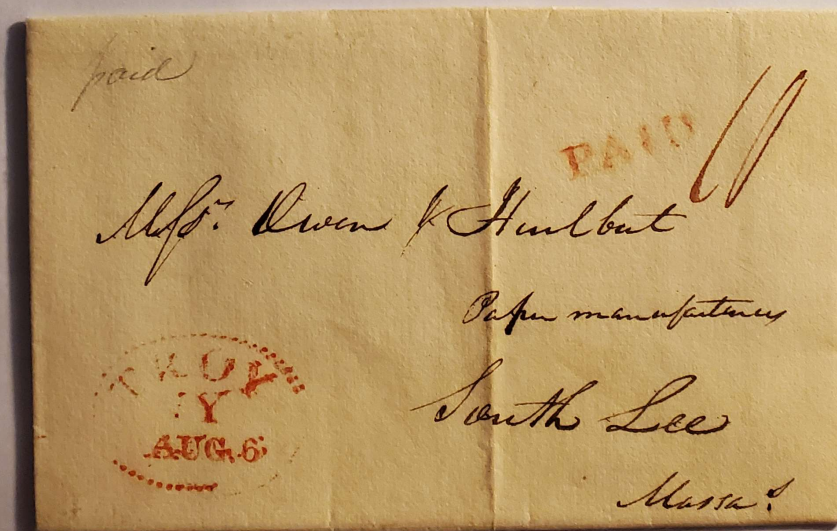
1.1 The Sorting and Bailing of Rags

(Below) SFL drop letter. Black Lee Ms. May 27 (1834) 30mm CDC. addressed to South Lee MA. There is no rate marking as this drop letter was addressed to the postmaster of neighboring town, and no charge if picked-up locally.



Content: Please send us your note for bill of rags & 11 of your bales <in> N.Y. <acquired on> Apr. 30, 1834, as we have made no entry in our books here." W.W. & C. Laflin, Paper-maker, Lee, Mass. May 27, 1834.

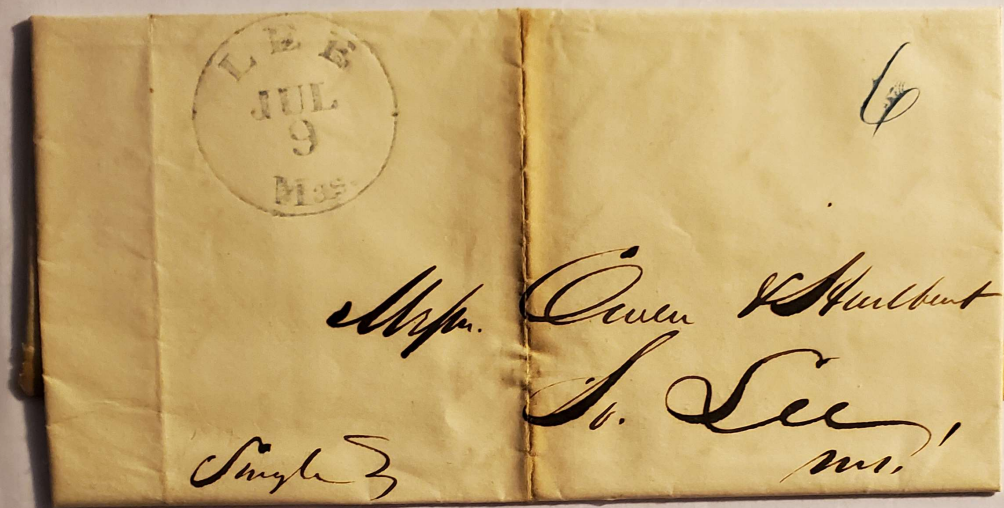
(Below) SFL to South Lee, Mass. Red TROY NY AUG 6 (1827) 31x24mm oval with matching 'PAID' and manuscript '10' (cents) for mail travelling between 30 and 80 mi.



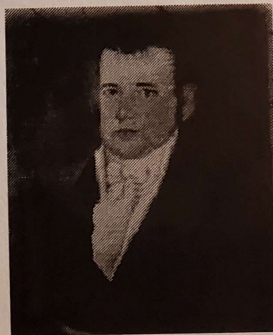
Content: "I had no knowledge of any difference between the top or bottom of the heap rags (i.e. linen vs. cotton rags) . . ." William S. Parker, merchant, Troy NY. August 4, 1827.

1.2 Zenas Crane & Sons Paper Mill Specialized in the Manufacture of High Quality Rag Paper

(Below): SFL to South Lee, Mass. Blue Lee Mas. Jul 9 (1839) 30mm CDC. Manuscript '6' (cents) for mail travelling less than 30mi.



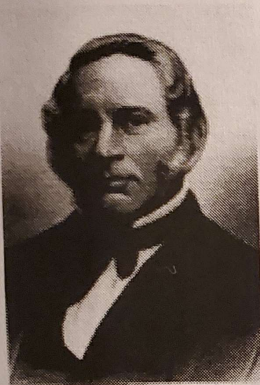
Content: "We have on hand between one and two tons of black rags, same as you had from last year. -- Do you want them? If so please let me know, and what you can pay." Z. Crane & Sons, papermakers, Dalton, Mass. July 8, 1839.



Zenus Crane established the first paper mill (1804) in Berkshire Co., Mass. (from **175 Years of Crane Papermaking**)

Mr. Crane was also responsible for establishing the rag depot and organizing rag collection throughout the County. (also see page 1.4)

1.3 Rag Depot in West Stockbridge, Mass.

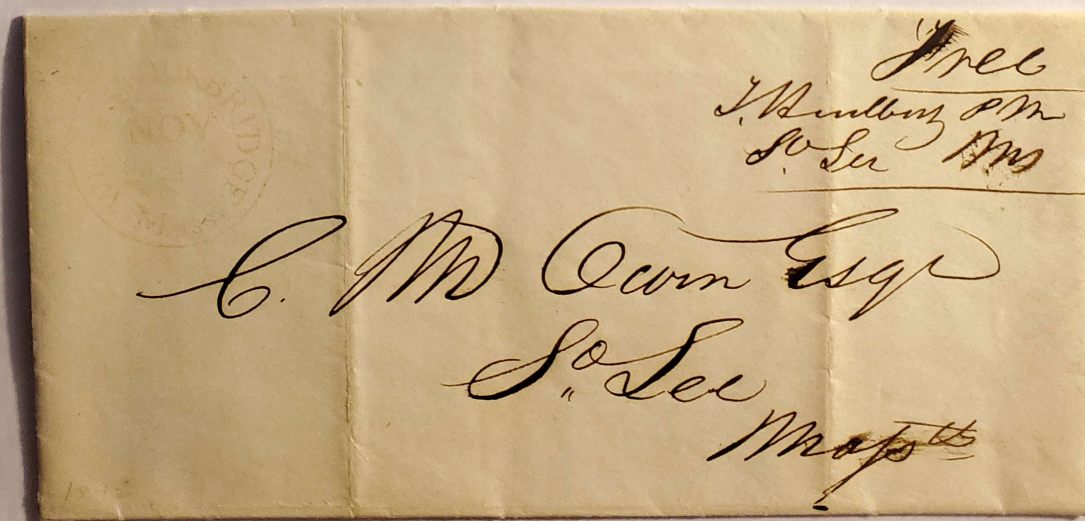


(left) Thomas Hurlbut, postmaster of South Lee (1827-1848). (from *Postal History of Berkshire County Massachusetts 1790-1981*).

(right) Ream label depicting South Lee mill. Mr. Hurlbut was one of the principal owners in partnership with Charles Owen.



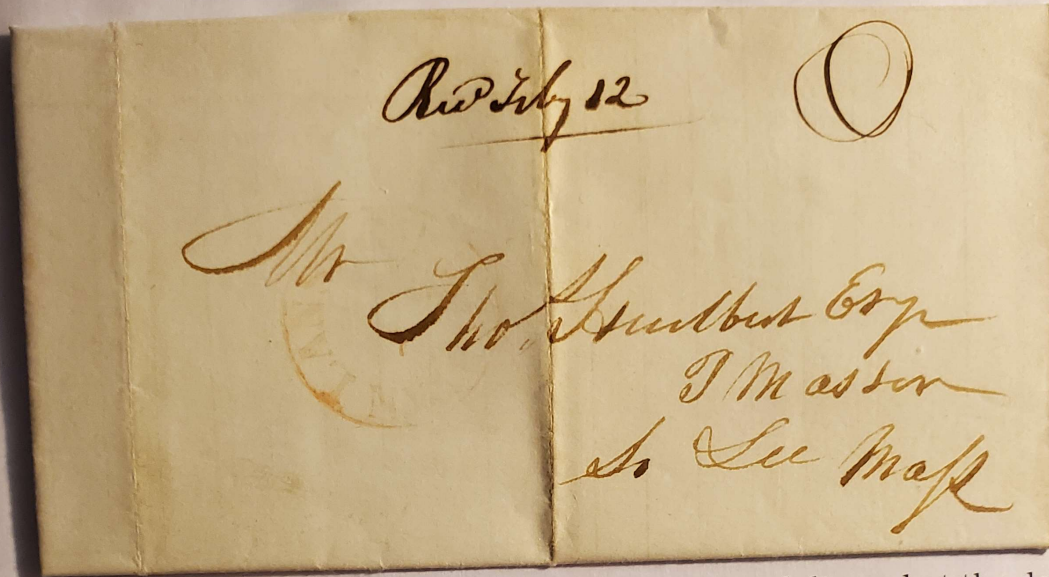
(Below): SFL to South Lee, Mass. Manuscript "FREE," T. Hurlbut PM So. Lee Ms. (3c postmaster privilege).



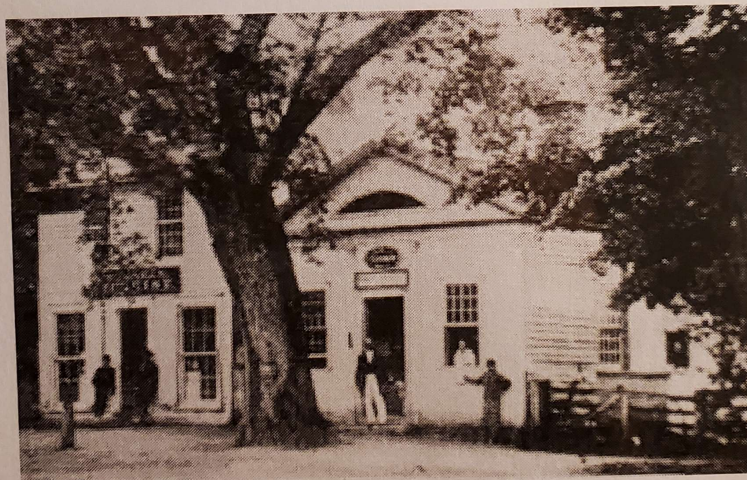
Content: "I am informed there is 38 sacks of rags at the depot in W. Stockbridge for us." Thomas Hurlbut, Postmaster South Lee, Mass. November 2, 1842. (also see page 1.4)

1.4 Rag Collection Aided by Post Riders

(Below) SFL to South Lee, Mass. Red Lansingboro, NY 28mm CDC Feb. 1 (1844) . Manuscript "0" (zero) representing FREE (3-ct postmaster privilege).



"Above you have the amount <7 sacks> of white rags delivered at the depot . . . in good order . . . **Platner & Porter will have them should you not.**"
Edwin Tilly, Rag Merchant, Lansingboro, NY. February 6, 1844.



(Above) Photograph of West Stockbridge Post Office (from, **Postal History of Berkshire County Massachusetts 1790-1981**). This office served as Berkshire County's main distribution point, and it maintained horse stables used by post riders to conduct US mail to various post offices in the county. On their return route post riders carried certain merchant's rag collections back to the rag depot also located in West Stockbridge. (also see page 1.3)

1.5 International Rags on the London Market

(Below): International DFL to Boston. Black London transit marking "BO" 24 SE(PT.) 1850. Manuscript "American Steamer via Liverpool." Manuscript "6" pense indicating double English inland postage. Forwarded to Liverpool and carried by Collins Line SS **Atlantic** departing Liverpool 25 September, arriving New York 9 October. Black 48 cts. due New York exchange marking representing double rate for over 1/2 oz. letter.



Content: "... We have rec'd the further order for bundles rags with your remarks as to quality, which we have every reason to believe were defilth (sic) attended ... as the picking is all done under them only and in their own warehouse. ... Pileaus Ferguson, Broker. September 24, 1850.

1.6 Shipping Rags by Canal Boat From Ohio

(Below): SFL to South Lee, Mass. SFL to South Lee, Mass. Red Cayhoga Falls O. JAN 22 (1851) 30mm CDC. Franked by pair 5c 1847 (pale red brown) cancelled by red 7-bar grids. Postage paid for mail travelling greater than 300 mi.



Content: "I shall ship about 20 tons No 1. rags in the spring, early. Will you make me an offer for their delivery at East Albany. My No 2. (rags) are worth more to me to work here than are to ship." T. L. Miller Co., Paper Manufacturer, Cayhoga Falls, OH., January 21, 1851.

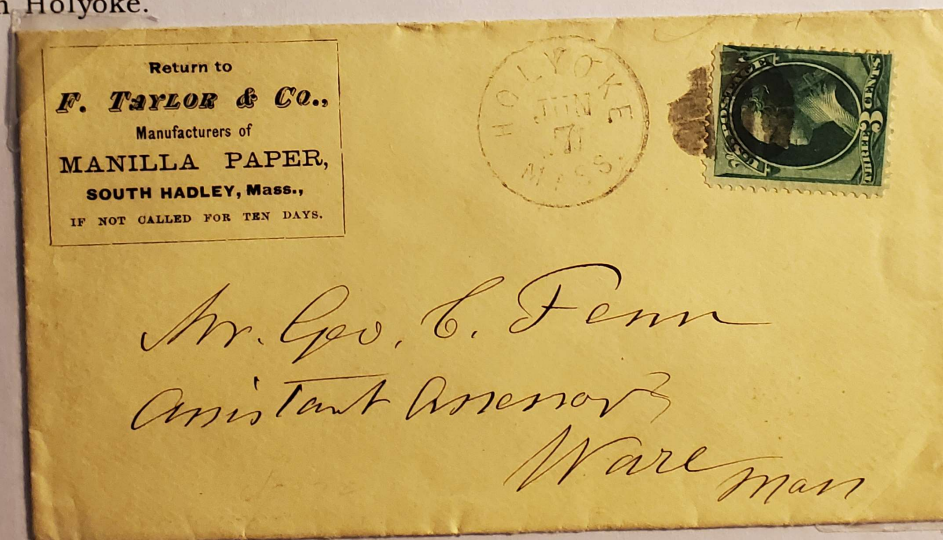
(Philaelic Note: According to current census, only four (4) known pairs of 5-cent 1847 are known from Ohio.)

Chapter 2: The Ames Cylinder Machine

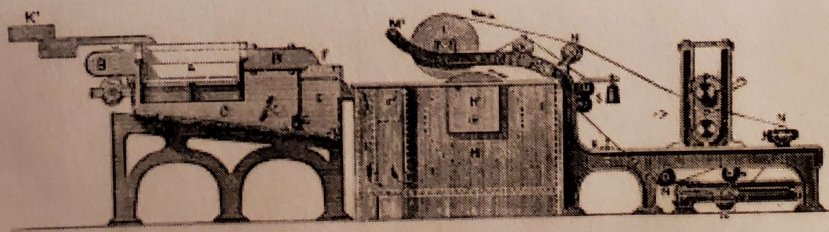
Paper machine manufacture in the U.S. began in 1822 when John Ames traveled to London to purchase the rights to the Dickinson paper machine. Letters concerning the Ames machine, and other related mill equipment and their patents are rare.

John and his brother David erected five (5) paper machines at their plant in South Hadley, Mass., and thereafter built additional paper machines for sale to other mills around the country. These were called the Ames machine because they were built under patent. Most letters from D&J Ames emanate from the experimental Watershops Mill in Springfield Mass., where papermaking equipment was built and tested.

(Below) Envelope to Ware, Mass. Black Holyoke duplex with cork killer, franked by 3-cent green 1871. The corner card indicates the sender was from South Hadley, which is located just across the Connecticut River from Holyoke.



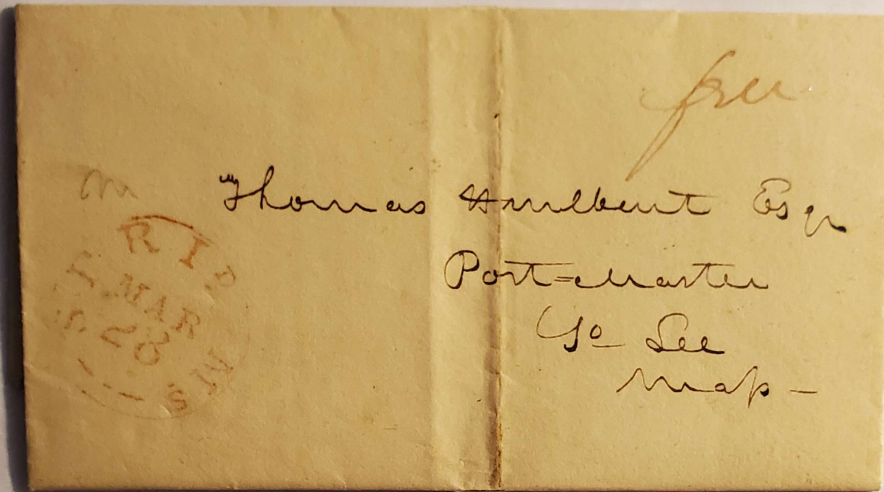
(Historical Note: The original Ames mill in South Hadley (est. 1825) was later sold to Frank Taylor, who converted it to the manufacture of manilla paper.



Ames Cylinder-Wire Machine

2.1 Cost of Patent Rights for a new Paper Machine

(Below) SFL to South Lee Mass. Red SPRID Ms. Jan 5 (1831) 28mm CDC of Springfield Mass. Manuscript Free (3-cts. postmaster privilege).

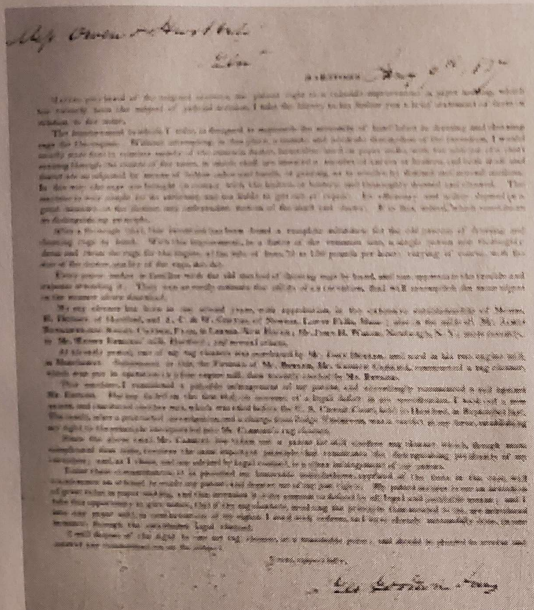


Content: "We shall charge you one hundred and fifty dollars for our patent right for a one engine mill and two hundred for a two engine. You will find a great deal in the use of them, and all those that work fine stock as you do ought to have them." D. & J. Ames, March 28, 1831.



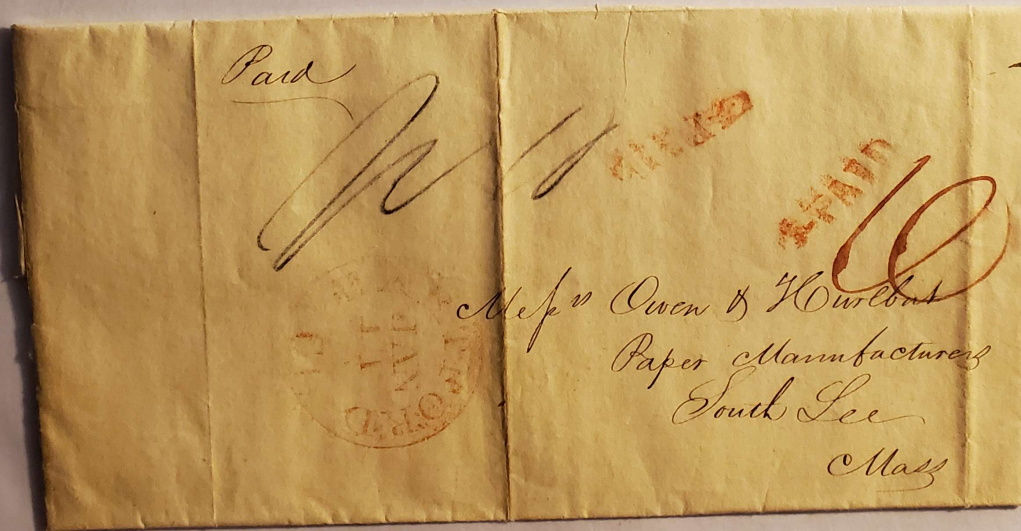
(Above) Woodcut engraving of Ames' Watershops Mill and Factory in Springfield, Mass. where paper machine were built. Illustration from Ames ream label circa 1835.

2.2 Circular of Rag Cutter Patent sold to Mr. Goodwin



(Left) Details of circular.

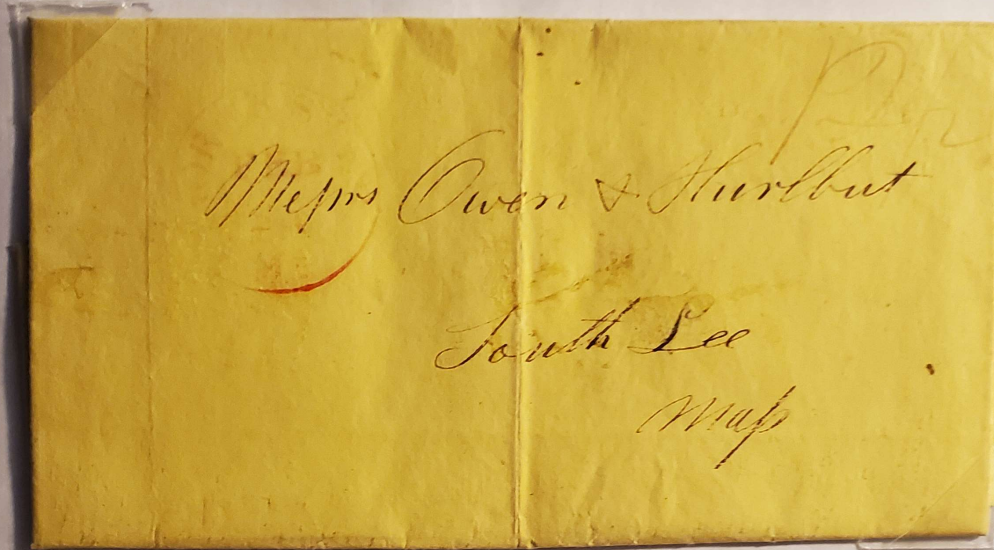
(Below) Single circular to South Lee Mass. Red Hartford Ct. Jan 11 (1837) 30mm CDC. Red 'pointing hand PAID' and manuscript 10 (cents) for mail travelling between 30 and 80mi.. A second, inverted, 'pointing hand Paid' with pencil mark 'N 10' indicating payment for a bundle of ten such flyers sent to same local. (Note: Ten (10) paper mills in the region received this circular)



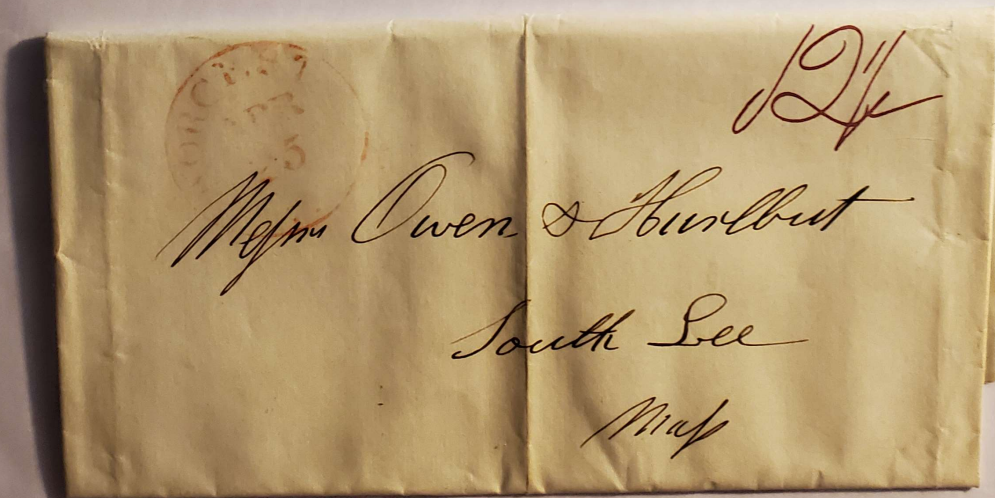
Content: "Having purchased of the original inventor (see 6.1) the patent right to a valuable improvement [rag cutter], which has recently been the subject of judicial decision . . . I will dispose of the right to use my rag cleaner (sic) at a reasonable price; and shall be pleased to receive, and answer, any communication on the subject." George Goodwin Sr, patent-holder, Hartford Conn. January 9th 1837. (also see page 9.1)

2.3 Introduction of New Drying Machine from England.

(Below): SFL's to South Lee Mass. Two 1837 letters from Worcester, Mass. Red Worcester Ma. Feb 27, and May 3, 30mm CDC's. Manuscript '12.5' (cents) for mail travelling between 80 and 150mi.. and (bottom) same manuscript in magenta.



Content: "The [dryer] felting is here, but I am going to Boston this day & I shall carry it back & get some better." Henry P Howe, Millwright, Worcester, Mass. February 27th, 1837.

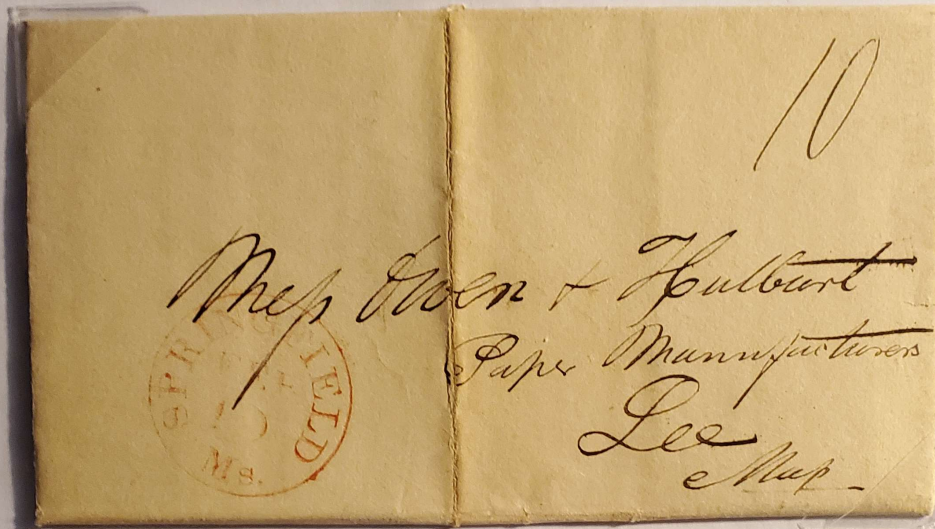


Content: "Mr. Cranes (new) steam Dryer goes beyond any Dryers in use.." Henry P. Howe, Millwright, Worcester, Mass. May 3, 1837.

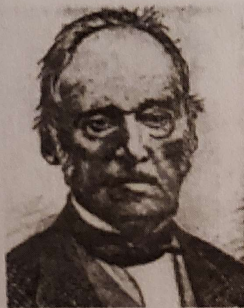
(Historical note: The above is currently the earliest known use of commercial bleach white paper.

2.4 John Ames Ream-Trimming Machine Patent

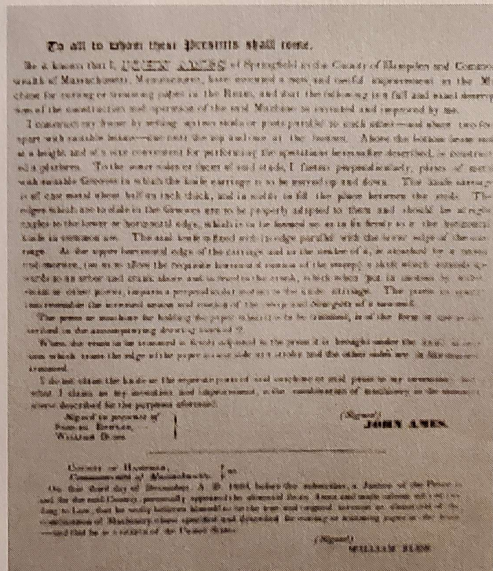
(Below) SFL to South Lee Mass. Red Springfield MS (30mm) Feb 10 (1839)
CDC. Manuscript '10' (cents) for mail travelling 30 to 80mi.



Content: "On the other side please find my specification for trimming reams."
John Ames, patent-holder, Springfield, Mass. February 9, 1839.



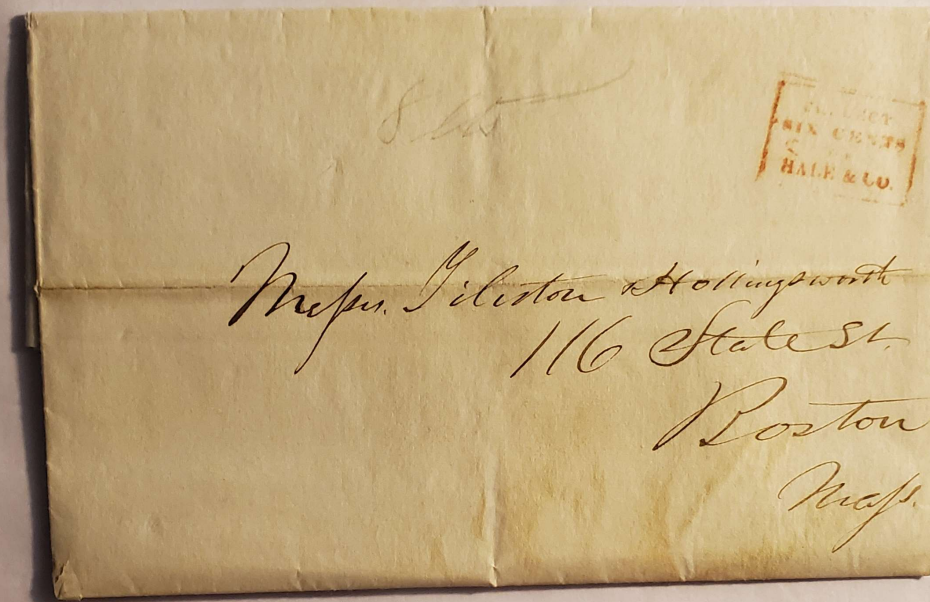
John Ames
Patent-holder and
manufacturer of
cylinder machine,
and related paper
machinery.



Ames Ream Trimmer Patent

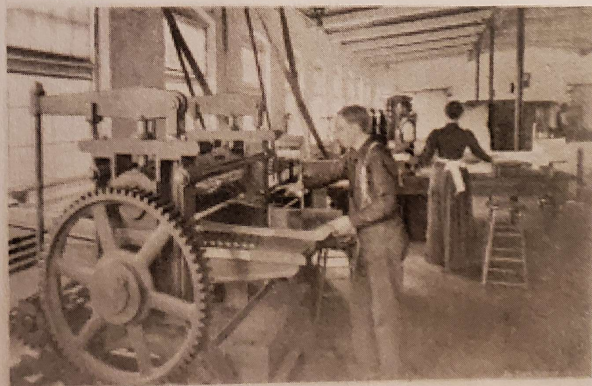
2.5 Early use of Plate Paper

(Below) SFL to Boston. Red Hales & Co. "Collect 6-cents" Private express charge from New York to Boston. Manuscript in pencil "8 cts" due on receipt. The 2-cents added was for carrier fee in Boston.



Content: "We are all out again of plate paper 21x27. Pray hasten some as fast as possible." Burnop & Babcock, Paper & Papermaking Supplies Warehouse, NYC, November 30, 1844.

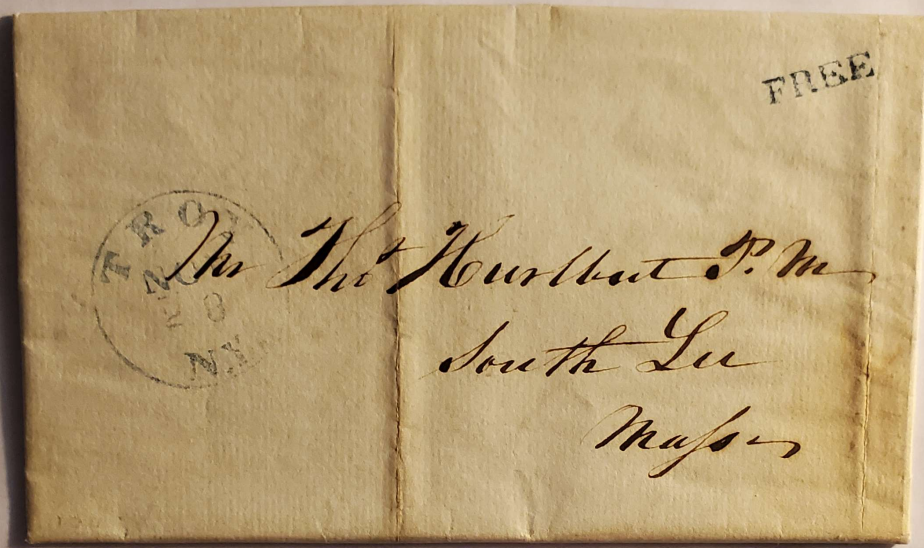
(right) Photograph of
Plating Machine at
Government Mill
(Circa 1890).
(From ***The First 175 Years
of Crane Papermaking.***)



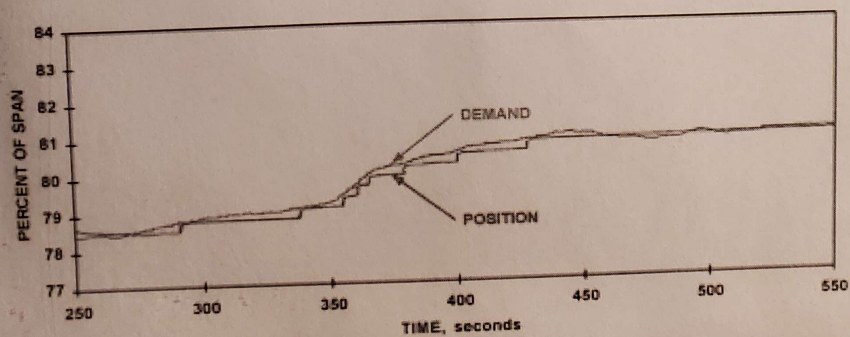
(Historical Note: Plate paper had an ultra-smooth finish and was used primarily for intaglio, such as the printing of bonds, banknotes, and other security instruments including stamps.)

2.6 First Paper Machine Pulp Regulator

(Below) SFL to South Lee Mass. Blue Troy NY NOV 28 (1843) 30mm CDC with matching 'FREE' (3-cts. postmaster privilege).



Content: "I have to inform you that the regulator that you speak of that Howe & Goddard put in my mill I am very much pleased with it, and would advise you to get one for it will regulate the making of paper." Thomas Howland, Troy, NY. November 27, 1843.



(Historical Note: The invention of the pulp regulator allowed operators to change the thickness of the paper on-the-fly)

2.7 Automatic Paper Stacking Machinery

(Below) SFL to South Lee Mass. Blue Troy N.Y. OCT 7 (1847) 32mm CDC w/ integral '5cts' postage for mail travelling less than 300mi.



Content: "Some months ago I had a conversation with you in regard to a machine for laying paper. I have been ready to put on on for several weeks, but found upon inquiry that I could not display any machine until I got my documents from Washington and the Patent Office being overrun with foreigners in the queue of the long delay." J.C. Kneeland, Inventor, Patent Holder, Troy, N.Y. October 7, 1847.

(right) Patent drawing of Kneeland "Layboy," used to automatically stack paper at the end of line.

