

### EARLY AMERICAN CONTRIBUTIONS TO TEXTILE FINISHING MACHINERY.

**T**HE records of the Patent Office for its first quarter century show that during the earlier years of American independence the attention of our inventors was very largely directed to the origination and improvement of textile machinery. This was natural, since the rude domestic appliances for cloth making which had been handed down from almost prehistoric times required for their use an abundance of domestic help not found in the new country.

England's commercial development had made a fair beginning and the demand for woven goods by her adventurous shipmasters in foreign trade had called into existence the beginnings of the great factories which subsequently won for England a large part of her industrial supremacy. Steam machinery was becoming an important industrial factor in such establishments, and their owners were competing for labor-saving processes and appliances. The origin of many of these has hitherto remained untraced, the presumption being that they were of English invention. Doubtless most of them were; yet when a more critical study of the history of a single branch of textile operations is made it is surprising to see how largely the mother country was indebted to American inventors for the means of her industrial success. It is hardly possible that the branch of manufacture referred to was entirely exceptional in its history.

During the past fifteen or sixteen years, Dr. Hermon Grothe, of Berlin, the highest European authority on textile technology, has been making an elaborate and minute study of the history of machinery for finishing cloth and other woven fabrics; and in a communication to the National association of Wool Manufacturers (*Bulletin*, Nos. I and II, 1881.) he sets forth a large number of interesting discoveries touching the contributions of early American inventors to this branch of the art. The idea has generally prevailed that all the inventions of textile machinery until the beginning of this century were made in England; but on examining the letters patent and specifications of England since 1616 he finds that many of the inventions were only imitations and improvements. To trace their origin he has examined the literature of technology and many old pamphlets and journals, finding "repeated proof that American finishing machinery has been exported to England and France, and essentially contributed to establishing in those countries the industry of the construction of this class of machinery." "This," Dr. Grothe adds, "is prominently the case with machinery for fulling, gigging, and shearing cloth."

We have gone over the evidence cited by Dr. Grothe with considerable care, and have been able to verify most of his references, except for dates earlier than 1793, the beginning of the United States patent record. It would be an interesting task to examine the lists of British patents before the American Revolution to discover what contributions were made from the colonies. The invention of Walter Burt (1774) must have been of that number, and possibly also that of John Dyer, whose name does not appear in the records of the United States Patent Office. The date of his patent as given (1833) must be wrong; perhaps 1733 was the date intended. Another obvious slip in that part of Dr. Grothe's communication printed below is corrected, and the number of details elsewhere added in brackets. The name "Ellis Jonathan" does not appear in the American record. Mr. Jonathan Ellis, who took out a patent in 1807, is probably the person meant. Dr. Grothe says:

"The fulling mill with rollers is completely an American invention, namely, that of John Dyer (patented 1833), and was introduced by Hall, Powell and Scott from Boston to Rouen, France as the brevets and bulletins of France fully establish.

The invention of the double-crank fulling mill was made by Levi Osborn in America, (Fairchild Conn.) in 1804, commencing a great series of construction on the same principle. The first idea of a gigging mill is contained in James Delabard's patent No. 237, in England, and several inventions were made by others; but all these constructions have only imitated the operations of gigging by hand. In 1774 Walter Burt had in America a patent for a gigging mill, and after his time the gigging mills with a rotating barrel became common in England, with improvements of Lewis, Price, and others. All these English machines were patented after the gigging mills in America of Jerseys, Christie (Joseph A., Elizabeth, N. J., 1816), Olney, (Joseph, Westmoreland, N. Y., 1813-1817), Barrows, Beck, Wells, and others had appeared.

"Very important, I find, is the portion of merit which I must concede to American inventors. The merit of the invention of the cylinder shearing machine belongs to Samuel Griswold Dorr, (Albany, N. Y.,) (patented October 20, 1792). He named his machine the 'wheel of knives,' which are arranged radically, and parallel to the axis of the cylinder, and around it; but the construction of 1793 contains the knives radically and *spirally* arranged around the cylinder. The constructors, Price, Lewis, and Davis, of England, have imitated this construction, and with much merit improved it, after 1815. It will be observed that the English inventors from 1792 to 1815 had taken out many patents for shearing machines; but all of them followed the construction of the old hand-shears, or the old shearing machine of Harmer, containing a series of hand-shears. In 1806 and 1810, Beriah Swift, of Washington, had obtained patents for a shearing machine with an oscillating cylinder. This invention appeared in England as that of one Miles, and was patented in the name of the latter; but Miles was only the agent of Swift. A document relating to 'the importation of American shearing machines with spiral knives,' contained in the testimony of A Mr. Rathgate in Galashiels in 1823, shows that such shearing machines were built in England at that time as had been imported from America ten years before. Mr. Alcan has also shown that a Mr. Ellis Jonathan, in 1812, had received a patent in France for a cylinder shearing machine which George Bass had exported to France from Boston. This was a longitudinal shearing machine with a spiral cylinder. That much attention was given in America to the improvement of shearing machines is demonstrated by list of patents from 1792 to 1817. At this latter date all the improvements then known in these machines had been completed in America, and after that time commenced the construction of the improved machines in Europe. The fact is interesting that Edmond Durrin of Weathersfield, N. Y., (Vermont) in 1814 invented a shearing machine with two saw blades, one of which was fast, and the other moved with great celerity over the fast blade.

This machine was patented in Europe in 1823, under the name of John Bainbridge.

"The invention of the pressing machine with steam belongs to Seth Hart (Hempstead N. Y.), who received a patent in America in 1812. This invention appeared in 1824 in Europe, John Jones taking out a patent for the same in England. It appears that John Beverly, an owner of woolen and cotton mills in America, made the first use of the hydraulic press in 1803 (patented Dec, 26 1803). He named his construction a 'hydro-mechanical press.' Bowker & Hall of Boston, constructed, in 1814, a rotating cylinder press, heated by steam. This press is believed to have contained the first idea of the steam cylinder cloth-press, now so much in use."

The volume which Dr. Grothe is at work upon will no doubt clear up many doubtful points in the history of cloth finishing machinery, and Americans will rejoice with him in his ability "to award the merit of priority in invention claimed for England to America, the country which has created inventors through her system of home industry and personal liberty"—aided, Dr. Grothe should have added, by an official disposition to deal justly with inventors.

[We reproduce the above article from an old number of the *Scientific American*, believing that it will prove interesting to our many readers.—Ed.]