SEWING@@1 MACHINES. The sewing machine, as is the case with most mechanical inventions, is the result of the efforts of many persons, although it would appear that the most merit­orious of these worked in ignorance of the labours and successes of others in the same field. Many of the early attempts to sew by machinery went on the lines of imitating ordinary hand-sewing, and all such inventions proved failures. The method of hand-sewing is of necessity slow and intermittent, seeing that only a definite length of thread is used, which passes its full extent through the cloth at every stitch, thus causing the working arm, human or otherwise, to travel a great length for every stitch made, and demanding frequent renewals of thread.

The foundation of machine-sewing was laid by the invention of a double-pointed needle, with the eye in the centre, patented by Charles F. Weisenthal in 1755, with the object of avoiding the necessity for inverting the needle in sewing or embroidering. Many of the features of the sewing machine are distinctly specified in a patent secured in England by Thomas Saint in 1790, in which he, *inter alia,* described a machine for stitching, quilting, or sewing. Saint’s machine, which appears to have been intended principally for leather work, was fitted with an awl which, working vertically, pierced a hole for the thread. A spindle and projection laid the thread over this hole, and a descending forked' needle pressed a loop of thread through it. The loop was caught on the under side by a reciprocating hook; a feed moved the work forward the extent of one stitch; and a second loop was formed by the same motions as the first. It, however, descended within the first, which was thrown off by the hook as it caught the second, and being thus secured and tightened up an ordinary tambour or chain stitch was formed. Had Saint hit on the idea of the eye-pointed needle his machine would have been a complete anticipation of the modern chain- stitch machine.

The inventor who first devised a real working machine was a poor tailor, Barthélemy Thimmomer, of St Étienne, who obtained letters patent in France in 1830. In Thimmonier’s apparatus the needle was crocheted, and descending through the cloth it brought up with it a loop of thread which it carried through the previously made loop, and thus it formed a chain on the upper surface of the fabric. Though the machine was rather clumsy, made principally of wood, as many as eighty were being worked in Paris in 1841, making army clothing, when an ignorant and furious crowd wrecked the establishment and nearly murdered the unfortunate inventor. Thimmonier, how- ever, was not discouraged, for in 1845 he twice patented improvements on it, and in 1848 he obtained both in England and the United Kingdom patents for further improvements. The machine was then made entirely of metal, and vastly improved on the first model. But the troubles of 1848 blasted the prospects of the resolute inventor. His patent rights for Great Britain were sold; a machine shown in the Great Exhibi­tion of 1851 attracted no attention, and he died in 1857 un­friended and unrewarded.

The most important ideas of an eye-pointed needle and a double thread or lock-stitch are strictly of American origin, and that combination was first conceived by Walter Hunt of New York about 1832-1834. Hunt reaped nothing of the enormous pecuniary reward which has been shared among the introducers of the sewing machine, and it is therefore all the more necessary that his great merit as an inventor should be insisted on. He constructed a machine having a vibrating arm, at the extremity of which he fixed a curved needle with an eye near its point. By this needle a loop of thread was formed under the cloth to be sewn, and through that loop a thread carried in an oscillating shuttle was passed, thus making the lock- stitch of all ordinary two-thread machines. Hunt’s invention was purchased by a blacksmith named Arrowsmith, and a good deal was done towards improving its mechanical details, but no patent was sought, nor was any serious attempt made to draw attention to the invention. After the success of machines

based on his two devices was fully established, Hunt in 1853 applied for a patent; but his claim was disallowed on the ground of abandonment. The most important feature in Hunt’s invention—the eye-pointed needle—was first patented in the United Kingdom by Newton and Archbold in 1841, in connexion with glove-stitching.

Apparently unconscious of the invention of Walter Hunt, Elias Howe, a native of Spencer, Mass., directed his attention to machine-sewing about

the year 1843. In 1844

he completed a rough

model, and in 1846 he

patented his sewing

machine (fig. 1). Howe

was thus the first to

patent a lock-stitch

machine, but his in­

vention had the two

essential features—the

curved eye-pointed

needle and the under-

thread shuttle—which

were invented by

Walter Hunt twelve

years previously.

Howe’s invention was

sold in England to

William F. Thomas of

Cheapside, London, a

corset manufacturer,

for £250. Thomas

secured in December

1846 the English patent in his own name, and engaged Howe on weekly wages to adapt the machine for his manu­facturing purposes. The career of the inventor in London was unsuccessful; and, having pawned his American patent rights in England, he returned in April 1849 in poverty to America. There in the meantime the sewing machine was beginning to excite public curiosity, and various persons were making machines which Howe found to trench on his patent rights. The most prominent of the manufacturers, if not of inventors, ultimately appeared in Isaac Merritt Singer (1811- 1875), who in 1851 secured a patent for his machine (fig. 2). Howe now became alert to vindicate his rights, and, after regaining possession of his pawned patent, he instituted suits against the infringers.

An enormous amount

of litigation ensued,

in which Singer figured

as a most obstinate

defendant, but ultim­ately all makers

became tributary to

Elias Howe. It is

calculated that Howe

received in the form

of royalties on machines made up to

the period of the

expiry of his extended

patent (September 1867—he died in the next month) a sum of not less than two millions of dollars.

The practicability of machine-sewing being demonstrated, inventions of considerable originality and merit followed in quick succession. One of the most ingenious of all the inventors —who worked also without knowledge of previous efforts—was Mr Allan B. Wilson. In 1849 he devised the rotary hook and bobbin combination, forming the special feature of the Wheeler & Wilson machine. Wilson obtained a patent for bis machine, which included the important and effective four-motion feed for moving the work after every stitch, in November 1850. In February 1851 William O. Grover, a tailor, of Boston, patented

@@@1 “ Sew ” for stitching with a needle, is a word common to Indo-European languages; cf. Lat. *suere,* Gr. koøvùéif, *καττ⅜e⅜v,* Sansk. *siυ.*