



## SEWING MACHINES.

**AN AMERICAN INVENTION. — AN EVIDENCE OF THE SPIRIT OF MODERN TIMES. — INVENTIONS PREVIOUS TO THE SEWING MACHINE. — THEIR VALUE AS STEPS TOWARDS IT. — THE FIRST PATENT. — HOWE'S PATENT. — THE NUMBER OF PATENTS ISSUED. — CLASSIFICATION OF SEWING MACHINES. — THE VERDICT OF THE PARIS EXPOSITION OF 1867. — THE COMMITTEE OF THE AMERICAN INSTITUTE; OF THE MARYLAND INSTITUTE. — THE POINTS WHICH THE MANUFACTURERS NOW SEEK TO REACH IN SEWING MACHINES. — THE G. F. MACHINE. — ITS DESIGNER. — THE POINTS OF ITS SUPERIORITY. — A DESCRIPTION OF THE METHOD OF ITS CONSTRUCTION. — THE EFFECT OF ORGANIZATION UPON THE MANUFACTURE OF SEWING MACHINES. — THEIR PRESENT PRICES COMPARED WITH THOSE OF THIRTY YEARS AGO. — THE SOCIAL EFFECTS OF THE SEWING MACHINE.**

The introduction of the sewing machine, by which the slow and tedious process of hand sewing is so largely done away with, is due entirely to American ingenuity and enterprise. Such an application of the modern spirit of industry, which seeks in every way to dignify labor by lifting it above the plane of drudgery, and by introducing the necessity for brains, as well as simple muscular force, into all the operations of industry, tends to make the operative more of a human being, exercising in his business of life more of the faculties which form the distinctive characteristic of man in the hierarchy of nature, and is analogous to the political equality which underlies the theory of our government, and which seeks to make of any individual of the body politic a citizen, conscious of the responsibilities of such a position, instead of a subject dependent upon others for a knowledge of his duties or his rights.

The steps which, before the completion of a practically working machine, were made in this general direction, will be seen to have been only such as in no way detract from the claim of America to have originated and perfected this industrial appliance. The ultimate effects of the sewing machine, though by no means yet fully attained, are still already sufficiently manifest to justify the assertion that this invention ranks among the foremost of this century.

The earliest patent which appears to have been granted for a machine to improve or facilitate the process of sewing, was granted in England, on the 24th of July, 1755, to Charles F. Weisenthal, for an improved method of embroidering. Under this patent he claimed a needle, pointed at both ends, and having the eye in the middle, so that it could be passed both ways through the cloth without being turned round. The next patent was granted to Robert Alsop, in 1770, for the use of two or more shuttles in embroidery, their purpose being to secure the stitches. In 1804 John Duncan took out a patent for an improved process by the use of barbed or hooked needles, by which the loops were made and secured somewhat as the stitch is made in the single-thread sewing machine. In 1807 James Winter patented in England an appliance for sewing leather gloves, the importance of which here arises only from the fact that the material was held in position by metallic jaws, thus leaving the operator's hands free. On July 17, 1830, a French patent was granted to M. Thimonier for a machine to do crochet work, which could also be applied to sewing. In this machine a hooked needle was used. In 1848 this machine was improved by M. Maguin, a partner of the inventor, and in 1851 was exhibited in the great London World's Fair of that date. None of these machines, however, were intended really for the purpose which the sewing machine performs, and are mentioned here simply because each of them in turn was a partial step in the use of some mechanical process, which was afterwards introduced in the sewing machine.

In the Patent Office at Washington is the model of a "machine to sew a straight seam," which was patented February 21, 1842, by James Greenough, of Washington. This machine made what is known as the "shoemaker's stitch." The needle was made with the eye in the centre, and pointed at both ends, being pushed through and then drawn back by means of pinchers. In 1843 other patents were granted to G. R. Corliss and B. W. Bean. Bean's machine worked by crimping the material, by running it through corrugated rollers, and then sewed by thrusting a needle through the folds, thus, in fact, basting it. Another machine was patented in 1844, by Rogers. The next year, 1846, Elias Howe, Jr., patented his, on September 10. This was the first practicable machine for sewing.

Though not patented until this year, Mr. Howe had invented the machine some years before, and working without the knowl-

edge of what had been done before by others, he had used some devices which others had used, but had so combined them in novel shapes or arrangements that the machine, as a whole, was entirely his own invention. His patent claims, substantially, the use of a needle with the eye in the point, and a shuttle for the purpose of uniting two edges in a seam, or their equivalent, making the stitch by interlocking two threads. He improved his machine as originally invented, but failed in exciting sufficient attention to it, either in the United States or in England, to raise the capital necessary for its successful introduction into popular use. His attempts to do this exhausted his means, and reduced him to great poverty.

Though he afterwards received very large amounts of money from the subsequent inventors, who manufactured their machines under a royalty to him for the use of the appliances governed by his patent, yet the heavy expenses of the lawsuits he was forced to undertake to enforce his claims absorbed so much of the money he received that he died in comparative poverty.

While Howe was attempting to introduce his machine to notice, the attention of inventors began to be turned to the subject of sewing machines, and patents for improvements, modifications, or new arrangements of the parts began to flow in a steady stream from the Patent Office. Between the year when Howe's patent was issued to the year 1871 nearly one thousand different patents relating to sewing machines have been issued, and as many applications for patents have been rejected. Of this number thirty-seven were issued in 1857, seventy-two in each of the two succeeding years, and with an average of nearly fifty for each year until 1869, when eighty-eight patents were issued, being the largest number in any single year up to that date.

Of all these patents, of course the large majority have never been carried so far as the production of machines for popular use, while many of them were simply for modification and improvements upon the mechanical devices already in use, or for new combinations of them. At present, therefore, all the sewing machines presented before the public may be classed, according to the variety of stitch they make, into three classes.

The first are those sewing machines which make the lock-stitch, using two threads, and consequently a shuttle. The use of this kind of stitch consumes about two and a half yards of thread in sewing a seam a yard long.

The next kind of stitch is the loop or double-chain stitch, which consumes about six yards of thread in sewing a seam a yard in length.

The third class is the chain-stitch, or the twisted loop-stitch, which is made with a single thread, and consumes about four yards of thread in sewing a seam a yard in length.

In the Paris Exposition of 1867 there were numerous machines exhibited which made the loop or the chain-stitch, but not one of them was noticed by the international juries as deserving of mention for any special merit.

The classification of sewing machines, made by a committee appointed by the American Institute of New York for the purpose of examining their comparative merits, was as follows:—

The committee divided them into four classes, ranging them in the order of their merits. The first class included the *shuttle* or *lock-stitch* machines, made for family use, and the committee assigned this position to machines of this kind on account of the "elasticity, permanence, beauty, and general desirableness of the stitching when done," and also for the wide range of its application.

The second class made by the committee embraced the *shuttle* or *lock-stitch* machines, intended for manufacturing purposes.

The third class included the *double chain-stitch*, while the fourth class included the *single thread*, *tambour*, or *chain-stitch* machines.

Of the first and second class, the Weed, the Howe, the Singer, the Wheeler and Wilson, the Florence, and others are the chief representatives. Of the third class, the Grover and Baker is the chief representative. Of these, while the committee acknowledged that this stitch can be used most successfully for embroidery purposes, yet they objected to it from the fact that it consumes so much more thread than the others, and leaves a ridge projecting upon one side of the seam, which makes it unfit for many garments.

In the fourth class the Willcox and Gibbs is the chief representative. With these machines the committee considered that the tendency of the stitch to ravel formed so serious an objection that they refused to recommend it for a premium.

Of the various machines, therefore, the question of the best becomes narrowed down to the consideration as to which of those making the lock-stitch has the most special claims to consideration. Not only does the verdict of the judges maintain this, but it would

seem to be also the judgment of the public, who, as consumers, are practically interested in deciding between the adverse claims put forward by the various machines offered for their acceptance. This becomes evident when it is remembered that at least five-sixths of the machines manufactured and used in the world are machines which make the lock-stitch.

Machines making the lock-stitch are all good machines, and have been practically tested by so many thousands that it would be absurd to deny that they do their work well. The claim of any one of them to being superior to the others must depend upon certain technical points in which it is superior to the others. By a careful comparison of these machines, it is evident that the Weed machine, which obtained the highest prize at the Paris Exposition of 1867, was then rightly judged, and is to-day, for family use, the best there is.

Nor, after a careful consideration of the following points, can any one without prejudice fail to come to the same opinion. In the first place it is the simplest in its construction; it has a straight needle; it will readily stitch either thick or thin material; the upper and lower thread have the same tension — a most important point; it will work as well with both threads of the same thickness; its needle can be set without the use of a screw-driver, or any other tool; the needle is moved perpendicularly, instead of at the end of an arm, by which it is moved through the segment of a circle. This is an important point, since the differences of the atmosphere affect the length of the arm, so that to this cause the best judges assign the singular "fits" which so often affect sewing machines when they refuse to work correctly. Its machinery is below the table, where it is free from dust. It is so well balanced that it is worked both easily and noiselessly. These points and others of less importance were allowed, in the Maryland Institute, in 1869, to constitute the superiority of the Weed machine over its competitors, and to entitle it to the highest premium.

Now that the sewing machine is so popularly accepted, and the demand has risen to such proportions that to supply it requires a production of nearly two thousand machines a day, or over six hundred thousand a year, the best mechanical ingenuity in the country finds in it a most profitable field for employment, and the workmanship displayed in the machines from the best manufacturers is exquisitely perfect.

It is no longer a question concerning the practicability of sew-

ing by machinery, but the efforts of the various manufacturers are devoted to producing machines which shall sew most noiselessly; which shall be so accurately fitted, and so evenly hung, that they can be worked with the least expenditure of force; while the simplicity of their mechanism and its accuracy shall make them, under use, more durable and more easily kept in order.

As an interesting evidence of the success attained in perfecting the sewing machine in these important points, we would mention here a new machine introduced by the Weed Company under the trademark of G. F., or "General Favorite," as these initials are ordinarily translated.

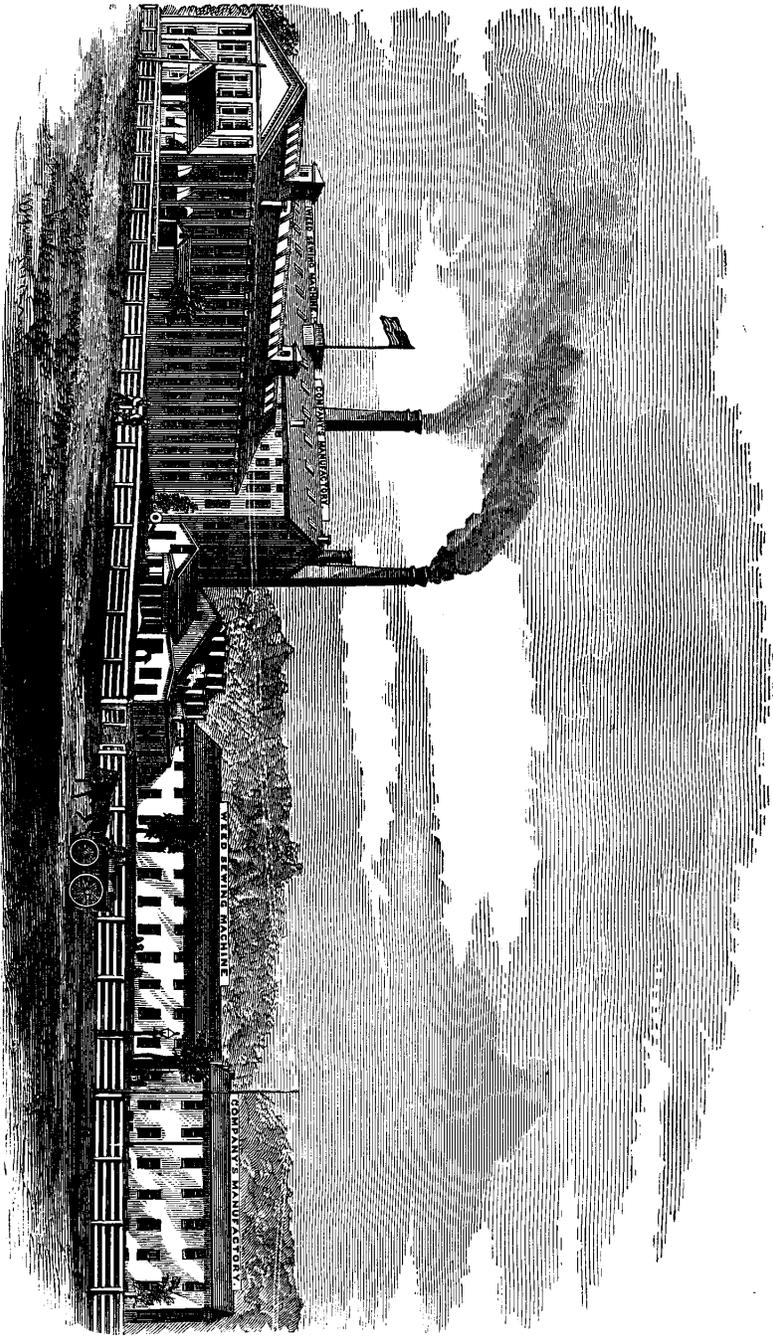
This machine was designed by Mr. George Fairfield, the superintendent of the Weed Company's works, to whose mechanical genius and talent for organization the productions of the company chiefly owe their well-earned reputation. The credit of its ingenious mechanism, which makes a new era in the history of sewing machines, is due entirely to him, and this the Weed Company have acknowledged in branding it with his initials.

The chief point aimed at in the construction of this new machine was to make it a really noiseless one; and early in his endeavors to attain this end, Mr. Fairfield found that he must abandon the mechanical devices heretofore used in sewing machines, such as cams, gears, and similar appliances, and replace them by something else. With this view, he introduced in their place a swinging or rock motion, by which to avoid the nervous grinding of the cams, and the harsh clatter of the cogs and gears in ordinary use.

The essential merit of this new combination is simplicity and perfection of mechanical motion, together with a perfect freedom from the friction and jarring incident to the ordinary mechanism of the sewing machines heretofore made.

By this means, also, not only is all noise avoided, but a rate of speed much higher than that heretofore attained becomes possible with these machines. This merit is one which will specially commend the G. F. to manufacturers, with whom time is most practically money.

A still further improvement in this machine is a novel device for feeding, by which all wearing points are avoided, and which is readily adjusted from the top of the bed. As it works also directly under the material to be sewn, it avoids all long levers and the



MANUFACTORY OF THE WEED SEWING MACHINE COMPANY, HARTFORD, CONN.

variations in the length of the stitches which are caused by their springing.

The uneven tension between the upper and lower threads, which all experts know is an objectionable feature in almost all the machines heretofore made, is also avoided in the Weed machines by the introduction of a delicate, adjustable pad arranged in the shuttle, and under which the thread passes. Its tension is thus secured without the necessity for the short curves and corners, by which it is chafed, and which have heretofore rendered it impossible to secure a perfect tension.

With the upper thread, also, in the sewing machines as constructed ordinarily, the tension is secured by passing the thread round corrugated wheels, or between disks, or under a spring or clamp.

All of these various methods are objectionable. The corrugated wheels may stick; or, when the thread passes between disks, the twist in the thread is destroyed; or, in this case, as also when it passes under a clamp, a knot, or any unevenness in the thread itself, makes a difficulty in the way of its even tension and regular supply.

In the G. F. machine, however, these objections are all overcome by the introduction of a vibrating or an anti-friction pad, which readily adjusts itself to any ordinary imperfection in the thread, and renders all unevenness of the tension impossible.

These improvements in the tension obviate the difficulties which have heretofore been, perhaps, the most evident in the way of perfecting the sewing machine, and their advantage will appear manifest to any one practically acquainted with the use of sewing machines.

In this machine, also, the shuttle is driven by a ball and socket joint, which is universally acknowledged to be the best mechanical device known for imparting motion; while all the joints and bearings in its mechanism are arranged to be so adjustable that any wear which may arise from long-continued, constant use, for manufacturing or other purposes, may be readily taken up without trouble to the operator, or expense for repairing. This is an improvement which appeals most forcibly to those who have had experience in the use of sewing machines for industrial purposes.

The increase of the consumption of sewing machines has raised their manufacture to one of the most important of the mechanical

industries of the country, and the economic value to the consumers of the organization of industry is, perhaps, nowhere shown more strikingly than in this branch of manufactures.

With the first introduction of the sewing machine, its cost appeared to be an almost effectual bar to its general acceptance. It would cost to-day some hundreds of dollars for a mechanic to make a single sewing machine, from a model before him; and the first sewing machines made cost fully this amount.

The first introduction of sewing machines was less than thirty years ago, and yet, at that time, it has been stated that the original inventor could not have filled an order for a dozen machines at a less price than five hundred dollars each. There was not the machinery in existence to make the various parts, and they had, consequently, to be all made by the tedious and expensive process of hand labor. Now, however, in a well-furnished and properly-organized manufactory, like that of the Weed Company, every aid of machinery is made use of, and sewing machines, constructed with a perfection of accuracy which it would have been impossible to attain thirty years ago, are now made in large numbers daily, and sold at a price which places them within the reach of every family of thrifty habits.

The influence of the change in our methods of domestic labor, which the sewing machine has been chiefly instrumental in producing, can hardly be over-estimated. We have seen only its beginning. The greater intensity and activity of the social forces set in action by the new spirit of industry, and the extension of the means for enjoying the luxury of propriety in dress among all classes, will produce in our social organization a change similar to that produced in the political world by the extension of political rights and responsibilities.

We live in an age of universal ideas, and the material questions of the time are rising to claim their proper position as the truly moral questions, which must be answered in the interest of no one class, but of all.

