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Margaret Gerrish of Salem — Massachusetts —

Letters Patent.

The Schedule referred to in these Letters Patent, and making part of the same, containing a description in the words of the said Margaret Gerrish herself of her discovery, material in the fibres of the external and internal cortex of the Asclepias Syriaca, and the method of manufacturing the same, —

To all to whom these presents shall come,

Be it known that I, Margaret Gerrish of Salem in the County of Essex, and State of Massachusetts, have discovered a new and useful Material in the fibres of the external and internal cortex of the Asclepias Syriaca and the following is a full and exact description of the said Material as discovered by me, viz.

It consists in a beautiful, plentiful long and strong fibre, and having been more or less engaged in making experiments upon the same and manufacturing it, altho upon a small scale, the five years past, the results have been such, I think, as to authorize the conclusion, that it will produce a fabric much superior in strength and beauty to linen — and one important advantage that it possesses over that article in common with cotton &c. is that it requires no bleaching. Very important when it is considered, that from linen thread is said to loose by the operation of bleaching from one third to one fourth of its weight, besides the time, labor, and expense of bleaching. The Asclepias also possesses the singular property of sustaining the repeated action of water immersed and evaporated to a degree unknown in other similar substances and this is an advantage that it has over silk which is much known will not bear the action of water, and it may be so prepared as to resemble silk in many other it is spun, in some preparations linen — it is being washed it resembles a delicately soft woolen yarn, in another

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case where it has been longer subjected to the action of a solution of soap and washed after it is spun it resembles silk, and in some dressings it has somewhat the appearance of linen, and even cotton, so that the conclusion is, that by different preparations of the material, different fabricks may be produced, and while it partakes in appearance of the properties of each of those materials it differs from all of them and is indeed a new material

Some description of the plant Asclepias Syriaca — This plant is a native of these States, and is thus described by Doctr Bigelow, in his "Florula Bostoniensis." Asclepias Syriaca common silk weed or milk weed, very common by road sides and borders of fields, Stem three or four feet high undivided, Leaves opposite, large oblong, umbels of flowers lateral and terminal, nodding July. Pyramidal Dr Cutler, observes, as quoted into Dr Thatchers Dispensatory, that this species of Asclepias rises from three feet to six, I have measured it five feet eight inches, and I have since seen some that could not have been less than seven feet, the flowers are of a pale purplish or pinkish hue, and remarkably sweet scented, the pods or pallicles which may average six or eight upon a stem, contain from two to three hundred seeds each, which when fully ripened and the pods dried, they open into two parts, and the winged seeds are scattered by the winds, there appears to be a slight difference in the manner of its growth, certain some of its sides, up with a smooth round stem, others grow more of a square form, and not so smooth, but the round smooth ones are generally to be preferred, these have also fewer knots, which makes the stripping of the bark easier and makes less breakage in the fibres, among all the plants producing a thread like fibre, which I have met with I have observed none that are so coarse, to that degree that this is, i.e, not the cadebarrow common to most plants, but abounding

in a milk similar at least in appearance to a rich animal milk, like the secretion of the cow, indeed approaching to cream in appearance, and which on breaking off the stems, or leaves, exudes most profusely, from which comparatively exclusive property no doubt this species is distinguished from the others by the name of Milk weed, as from the milken down contained in the follicles, it is also called in common with the other species, Silk weed, but which now from its promising importance should forever drop the name of weed, and be allowed to take that of plant, The fibres being nourished with this rich milk, doubtless acquire that glossy and silk-like appearance, which they possess in a high degree, I have not observed any thing of the kind in linum but in unwinding the cocoon of the bombyx, I have perceived an adhesive gum,

Season of Cutting —

The proper time for cutting, is when the plant is in full blow, which is in July, but in some seasons extends to August, at which time it is also in full milk and full fibre, - and the fibres are much more silk-like and beautiful at this period than at any other, and are much easier stripped from the cuticle at this period, The cutting however, may be continued to September —

Process of preparing it to Manufacture —

Mow out which should be soon with the sickle, take off the leaves, tops, and flowers, with a small knife, beginning at the lower part of the stem, dividing the exterior cortex, say, into four parts, which makes a convenient width for stripping which done, it may be stripped piece by piece, generally the whole length of the stem; a considerable quantity may thus be stripped in a very short time after which the fibres are to be separated from the bark, which is very easily effected, by rubbing across the hand

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bark and turning it back, with a small knife, when will instantly be presented, the delicately white and glossy fibres beautifully arranged as it were for a web of cloth, which by taking hold of with the thumb and fore finger may be stripped out from two to four feet in length, The fibres thus stripped from the interior of the exterior cortex, may be laid along together carefully, lest they become entangled till a small parcel be acquired convenient for handling, when it may be tied together and thrown into pure water, where it may remain for days or weeks shifting the water occasionally, After which it may be thrown into a warm but weak solution of white or common soap, which separates the fibres from whatever of the green tinder bark or milky particles which may still adhere to them, which leaves them perfectly white and soft, they may then be rinsed in pure water, and the same process repeated if necessary, Or it may be prepared by a cold process which in some cases, and for some purposes, is preferable to any other, But the most expeditious method of doing it is, to immerge it immediately into a warm solution of soap and raise the temperature if you wish to quicken the operation, It should be wrung out with care as the fibres are very delicate and being wet renders them liable to be broken, Shake it loosly and open it a little out but when nearly dry is the best time to open it effectually, It may then be dried in the sun or shade, but the sun is to be preferred, After which it will require to be more opened - when it will be necessary to pass it through a fine comb but it is not always necessary to pass it through a comb, it may be sufficiently opened by hand for common purposes, It is then prepared for manufacturing, I think from the experiments which I have made, that the fibres can be taken from the bark before the bark has been whipped for two or three days, and that the bark can be whipped from

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The skein equally well after the lapse of several days or more which may sometimes be found convenient, the process of preparation being extremely simple, as has been shown, so much so, that it comes within the means of the humblest peasant. No apparatus being necessary but a small knife, a tub or two of water &

P. The shorter fibres which remain in the comb, after combing may be again subjected to the action of a hot or boiling solution of soap, until the fibres be sufficiently broken off for carding, which when done makes a very light, delicate and almost transparent batting, which can be manufactured into a wadding particularly suitable for silk dresses, and which may be coloured to correspond to any required shade.

Spinning

After having been thus dressed it is fit for spinning, which is done upon the common linen wheel, with a slight alteration in the present construction of a part of that Machine termed the distaff. In spinning this material there is much less to injure the eyes and lungs, than in cotton or flax, —

Colouring.

This material when manufactured into a Thread, as above described, washed or boiled in a solution of soap, mineral or fair water and slightly alumned is duly prepared to receive the colouring you may chuse to give it. Its attraction for colouring matter appears to be as strong and equal as that of silk, indeed it attracts the colouring particles more equally than that material, if we may judge from the account of those acquainted with the business, and decidedly more than that of cotton or linen, which I should conjecture a highly important object+ "we are told that cotton and linen do not take blacks like unto resist soap." and that when intended to be dyed, they must be subjected to the operation of scouring, alumming, and galling, and that the impregnation of silk with alum, is necessary in the same" which the

+ Nicholson Dict. Art Dyeing -

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Asclepias readily takes the coloring matter without even the alumming, as is the case of some of those specimens offered for inspection but when the alumming makes the color strike deeper hold faster and appear brighter ——

N. B. The Asclepias Syriaca, is said to be cultivated in Europe and in this country, for the silken down attached to the seed, which is used as a substitute for feather, fur, and cotton. The tender sprouts are eaten in the spring for greens, and the *bark of the root of this species is also highly medicinal* it is said to be very pleasant to travel in the woods where it grows, especially in the evening, the flowers are so very odoriferous, and that in Canada they make sugar of them - gathering them in the morning when they are covered with dew. If sugar can be procured from the flowers, the value of the plant will be greatly enhanced, because, the proper time for cutting the plant to manufacture into cloth, is when it is in full blossom which would be just the proper time for gathering the flowers to make sugar, which otherwise would be thrown away. A Comparative view of the culture and preperation of Asclepias with linnen and cassipium

When we compare the culture of this plant and the preparations necessary to the manufacturing of it, with that of linen, or even cotton, we think, that the results are immensely in favour of the Asclepias. Let us take one allusion for a moment to the subject, transplanting it into a compact state, from the straggling state in which it is naturally found to grow, as also that would be necessary in the outset, or perhaps sowing the seed as it would succeed after that portugale style, being a perennial or it would not require to be resowed annually as flax does, and sowing it even with this seed, as would be necessary, would just

* Bigelow Am. Medic. Bot. '96,

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it in proper order, I should suppose its natural soil being the way side, by walls and hedges, and borders of deserted spots and fields; this natural circumstance appears to be that any common soil is the most proper for it, we will suppose it thus transplanted, and being well rooted and grown to maturity, and in full blossom in full milk, and consequently in full fibre, we have only to apply the sharp sickle, or some similar instrument I suppose) and in a few moments thousands of this pound heads may be cut down with the swath. When the simple process as before described may be fully resorted to. For flax we are told, that the land must be , well ploughed and laid flat and even, then the seed are to be sown, and if a wet season weeding will be necessary (and every hot or three crops, the, the soil are to be renewed) and this is to be repeated every year, when full grown it is to be pulled, to be tied up in handfulls, set up to dry and when perfectly dried, housed, It is then to be watered this process is said to be performed to the greatest advantage in pits constructed on the banks of rivers, where the water may be changed often enough to prevent a degree of putrefaction that would injure the flax, and be prejudicial to the workmen, After this process, it is again to be dried and twice swingled, and to pass through hees hackles, But for the finest use it is to be pulled into rolls and put into a trough and carefully beaten, then opened and passed through the finest hackle and three different sizes only, Of the waste in dressing there is no comparison, If required to be white it must be subjected to the operation of bleaching. For cotton we are informed, that the soil should be exceedingly well prepared and of the best quality for the reception of cotton seeds when rips the pods are to be picked, and after the

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seeds have been disengaged, the cotton is put to two mills, one of a coarser operation than the other, for separating the seeds from the cotton. But after this it is not completely freed from its seed, and other foreign matter. It is then carefully picked by Women and Children, The next operation of importance is the process of washing it with soap, It is then to be pressed, after pressing it is to be spread and brought to the stove to be dried, It is next to be carded, and then passed through the drawing machine, as many times as may be necessary to obtain the required fineness, then through the roving machine after which it arrives at the spinning frame, and this article in common with linen, if required to be white, must be subjected to the operation of bleaching * Into thread, batting, socks and various other articles Some of which together with the material in its natural state, and in a prepared state for manufacturing have been presented as true specimens of the above described material and manufacture as discovered and manufactured by me

Witnesses
D. Sands Sander
Wm A Sander

Margaret Gerrish

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