

CLOTH.

CLOTH, in *Commerce*, in its general sense, includes all kinds of stuffs woven or manufactured on the loom, whether their threads be of wool, hemp, or flax.

CLOTH is more peculiarly applied to a web, or tissue of woollen threads interwoven; whereof some called the *warp*, are extended lengthwise, from one end of the piece to the other; the rest, called the *woof*, are disposed across the first, or breadthwise of the piece.

CLOTHS, *Superfine*; the best of these are made entirely of Spanish wool; the finest sorts of which are the Leonera and Segovia.

Of English wools, those of Hereford and Sussex approach the nearest in fineness to the Spanish, and from the choicest of these are manufactured superfines of an inferior sort. From the rest of the English wools are made the seconds, liveries, and coarser cloths, varying in price according to their qualities.

The goodness of cloth consists, 1st. In the fineness of the wool. 2d. In the clearness, richness, and beauty of the colour. 3d. In its being evenly spun, always observing that the thread of the warp be closer twisted, and one-fourth part smaller than that of the woof. 4th. In the cloth's being well wrought and beaten on the loom, so as to be in every part equally close and compact. 5th. In being milled or fulled evenly, clean scoured, and of a proper thickness or substance. 6th. In being well dressed, so that the hair or knap of the wool be fully and evenly drawn out and ranged on the surface, and in being shorn close, yet without laying the ground or threads bare. 7th. In its not being overstretched in the rack, or pulled farther than is necessary to set it smooth, and bring it to its just length and breadth. Lastly. In the cloth itself appearing smooth and neat on the face, free from small knobs, spots, and other imperfections; in being firm yet pliable, and feeling soft and fine to the touch.

CLOTH, *manufacture of*. A detail of the manner in which superfine cloths are manufactured in Wiltshire, may serve for the whole; the inferior sorts differing little, but in the coarser and less delicate modes of performing the same operations.

It is previously to be observed, that all the cloths which are designed for scarlets, greens, and blacks, as well as many of the most lively and delicate colours, are manufactured white, and dyed in the piece after they are finished.

The wool, being taken out of the bale, must first be picked, to clear it from the pitch which adheres to it, and from the other extraneous substances with which it abounds. It must then be scoured, by putting it into a furnace containing a liquor composed of three parts of water, and one of urine. After it has been well stirred about therein, and the grease it contains dissolved, it must be taken out, drained, and washed in running water, and in that state it is fit to be committed to the dye-furnace.

After dyeing it must be again washed and well dried, when it must be beaten with rods on wooden hurdles, to free it

from the dye-stuff, which still hangs about it; or else the same effect is produced by putting it into a wool mill, formed of a four-flapped vane or fan thinly set with iron spikes, and swiftly revolving within a hollow cylinder, composed of small wooden rods or staves, sufficiently wide apart to suffer the dust to fall through, as the wool becomes slightly separated by the motion of the fans. It is then once more carefully picked, in order to take out the locks which are unevenly dyed, and also the lint, and other filth with which wool in this state generally abounds.

In making mixed cloths, wool of the different colours, being weighed out in their requisite proportions, are first shaken well together; they are then further mixed by being well turned in the wool mill, and by being afterwards *twice* passed through the scribbling engine instead of *once*, they are generally found to be sufficiently intermixed.

The wool, thus prepared, must now be spread abroad on a floor, and oil of olives (in the proportion of 3lb. to 20lb. of wool), evenly sprinkled over it, and beat into it with heavy rods, when it is in a proper state to be carried to the scribbling engine.

This is a machine composed of ten or more wooden cylinders, of various sizes, covered with cards, the teeth or wire of which are of different degrees of fineness, and bent or hooked in opposite directions. These are combined in a strong wooden frame, and so fitted as just to touch and work against each other, as they swiftly revolve on being set in motion by a common handle, adapted to be turned either by men's labour, or any sort of mill work. By passing through this engine, the locks of wool, which before were close and matted together, are drawn abroad, the fibres are separated, and it is formed into light flakes; it is then taken to the carder, which is a smaller engine of the same kind, only covered with finer cards, and with the addition of a fluted roller revolving in a trough at the tail of the machine; by which the wool, after being still finer and better mixed and carded, is formed, as it drops out, into separate and smooth rolls of 28 inches long, and half an inch in thickness, which are immediately taken by boys, and joined or attached to the spindles of the roving or slubbing machine.

This is a contrivance, by which 50 or more iron spindles, being set upright in a wooden frame, are turned by one motion, yielding their threads to a common slider, at every move of which the 50 rolls of wool are drawn out and formed into as many large slightly twisted threads, and at the same time wound off into balls of a size and shape adapted to the next operation, or spinning.

This is performed by a machine called the *spinning jenny*, which also is a frame containing 70 or more upright spindles, twirled like the former by a common motion, and yielding their threads to one and the same slider; by this the large hollow threads are further twisted and drawn out to the degrees of smallness and strength requisite for the different purposes for which they are designed. The threads, being thus spun, are reeled into skains and prepared for the loom. The larger sort, destined for the woof, is wound on spools, which are small tubes, so formed as to be easily placed in the eye or hollow of the shuttle. That for the warp is wound on large wooden bobbins, from which, by the warping bar, it is conveniently formed into the proper lengths and divisions, and so arranged and disposed as to form the chain or warp of the piece.

The chain, thus prepared, must be stiffened by a size, which is made by dissolving 3lbs. of glue (the best sort of which is made from shreds of parchment) in a quantity of water sufficient to moisten and saturate the whole, and when dried it is ready to be turned on the loom.

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In weaving broad-cloth, there are two weavers in a loom, one on each side, who at the same time tread alternately on the same treadle, *i. e.* now on the right side and now on the left, which raises and lowers the threads of the warp equally, between which they throw, transversely, the shuttle from the one to the other. At each time that the shuttle is thrown (and so a thread of the woof inserted within the warp), they strike it conjointly with a moving frame, wherein is fastened the flay, which is a kind of comb, composed of thin pieces of cane, between whose teeth the threads of the warp are passed, repeating the strokes six or seven times with the warp open, and again as many times after it has crossed and closed on the woof. The whole warp being filled with woof, the cloth is finished.

Being next taken to the fulling-mill, it is there soaked with urine or hog's dung, and afterwards scoured with clean water; it is thus freed from the oil and filth contracted in dyeing, and delivered perfectly clean, in a state fit for the next operation, which is burling.

By this process (performed by women with little iron nippers) the cloth is cleared from all the knots, lint, small straws, and lesser filth; and if, by the carelessness of the spinner, it contains any large uneven threads, they must now be gently taken out; and if any small hole or rent is made, it must be carefully drawn up, and mended with some of the warp-yarn of the same cloth.

But that compactness and density which distinguish woollen cloth from all other manufactures, and renders it so peculiarly adapted to our wear in these northern climates, are derived from the next operation, which is fulling, or milling, by which a cloth of 40 yards long, and 100 inches wide, being first sprinkled over with a liquor prepared from 5lbs. of fine soap (made from the oil of olives) dissolved in hot water, is laid in the mill-trough, and there pounded or stamped on by two heavy wooden hammers, alternately raised and depressed by the cogs of a mill-wheel. By this process it becomes by degrees (generally in about 8 hours) so thickened and shrunk up, as to be reduced to 30 yards long and 60 inches wide, which renders it of the proper substance and thickness of common superfine cloth. During this operation, it must be taken out from the trough from time to time, to have more soap added, and to be smoothed from the wrinkles and creases which it would otherwise contract.

This faculty of being rendered thicker by compression, is peculiar to woollen substances. In vain may fabrics of silk or cotton be subjected to the same process; they would not, in any length of time, be rendered thicker by it, or more compact in the smallest degree. To account for this, it has been observed, that the single hairs of wool, when viewed in a microscope, are discovered to be thickly set with rough and jagged protuberances, adapted to catch and entangle with each other. Whence it seems probable, that during the violent agitation the cloth undergoes in the mill-trough, the fibres being, at every stroke of the mill hammer, strongly impelled together, and driven into the closest possible contact, at length hook into each other, drawing closer and closer as the process continues, till they become thus firmly and inextricably united; each thread, both of the warp and the woof, being so joined and compacted with those that are contiguous to it, that the whole seems formed into one substance, not being liable, like other fabrics, when cut with shears, to unravel and become ragged at the edges.

The cloth, thus milled to its proper thickness, must be scoured with clean water till it be perfectly free from the soap. In this part of the process, a preparation of fullers-earth and bullock's gall is found very serviceable, rendering the cloth at the same time soft and mellow.

The cloth must now be taken to the cloth-worker, in order to be dressed, which is performed by first properly drawing out, and arranging in one direction, all the hairs or fibres of the wool that can possibly be brought to the surface, and then shearing it as close as it will admit, without discovering the ground of the cloth, or laying the threads bare.

The instruments employed in this operation, are the wire cards, and teazels, to raise and draw out the hair, and the shears to cut off what is too long and superfluous. (The teazel is a large kind of thistle, with the points growing very strong and hooked; to use them the heads are cut off, and set close together in small wooden frames called *bundles*.) These instruments, although hitherto worked by men's hands, with great labour and expence, have of late been so ingeniously adapted to machinery turned by mill-wheels, as to perform the same operations with much more preciseness and effect, as well as great saving in point of expence; and the machines for this purpose are various, and continually improving. The method hitherto employed is generally as follows.

The cloth being drawn over a frame, constructed of boards laid sloping, and covered with hair-cloth, is, during its passage, in order to raise the wool, regularly scraped, or rubbed from one end to the other, with the cards or teazels, being all the time kept as wet as possible by continually pouring water upon it. It is then laid on the shearing boards, which are made of wooden planks covered with coarse cloth, and forming a kind of hard cushion, where the wool thus raised is cut off with long heavy shears, which are pressed close to the cloth with leaden weights, and gradually slide forward at every motion or cut, till they have proceeded from one list to the other. The cloth is then returned to be again scraped or rubbed; these operations are repeated three times, every time with finer cards, or teazels, when the wool becomes sufficiently raised. It must now be taken to the rack, on which being fastened by the lists with small hooks or tenters, it must be drawn or strained thereon, until it be of an even breadth throughout; when dry it is returned to the shearing boards, on which the cutting is repeated three times more on the right side, and once on the other or back side. After this it is given to the cloth-drawers, who, having first, with small picking irons, made very sharp at the points, drawn out all the small straws and bits of lint which have before escaped notice, carefully fine-draw or mend the small holes or rents, if any such have been made in it.

Nothing now remains to be done but pressing; preparatory to which, the cloth being doubled and laid in even folds, a leaf, or sheet of glazed pasteboard, is inserted between each fold or plait of the cloth; it is then laid in the press, and covered with thin wooden boards or fences, on which are laid iron plates properly heated, and on the whole (by means of a lever turning a screw) the top of the press is brought down, with the degree of force judged necessary to give it the proper gloss. When cold, it may be taken out of the press, in order to be folded and packed, ready for sale.

The statute book contains a variety of laws relating to the *woollen manufacture*; the principal of which will be recited under that article: we shall here subjoin an account of the most important laws pertaining to cloth and clothiers. Every fuller of cloth shall use tayfels, or teazels, and no cards, deceitfully impairing the said cloth, on pain of double damage, to be determined by a justice of the peace, mayor, master, warden, bailiff, portreeve, constable of hundred, and steward of leet, who may commit the offender to the next gaol till payment; information may be made by any person not grieved to any of the above magistrates or officers; and the offender shall

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shall forfeit to the king, or to such persons as shall be intitled to fines or amercements within their jurisdiction, *3s. 4d.* 4 Edw. IV. c. 1. No cloth, not fulled, shall be exported, on pain of forfeiting the same, half to the king and half to him that will sue. 7 Edw. VI. c. 3. For the measuring of cloth, the statutes generally provide that the yard shall consist of a standard yard, and the breadth of a man's thumb; or 37 inches in the whole. In every parish or hamlet where cloths are made, two justices shall appoint overseers for taking care that the statutes relating to the regulation of cloth be observed. 3 and 4 Edw. VI. c. 2. 39 Eliz. c. 20. 43 Eliz. c. 10. These overseers are empowered to search or try the cloth, and persons refusing or resisting search shall, on conviction at the sessions, forfeit for the first offence *10l.* for the second *20l.* and for the third, stand upon the pillory in the next market town; of the forfeitures one third shall belong to the overseers, one third to the king, and one third to the poor. 39 Eliz. c. 20. The length, breadth, and weight of the several sorts of cloth are settled; allowance in weight, for dyeing, dressing, roving, and chafing, in broad cloth *4lbs.* in long cloth *5lbs.* and so in proportion, is adjusted, and an increase of weight by any liquid is forbidden on pain of *40s.* half to the king, and half to the buyer that shall sue, by 4 Jac. I. c. 1. c. 2. Before sale the maker shall fix his seal of lead to the same, containing the length and weight, to be tried by the water, and the overseer shall fix such seal to the cloth, with the word "searched." 39 Eliz. c. 20. On the penalty of his recognizance he shall set his christian and surname upon the seal, and no other shall be good. 21 Jac. c. 18. Any person setting any seal to cloth, or taking any seal away, without warrant, shall on conviction at the sessions, for the first offence forfeit *10l.* for the second *20l.* and the pillory; one third of the forfeitures to the overseers, one third to the king, and one third to the poor. Cloth offered to be sold unsealed shall be seized by the overseers. 39 Eliz. c. 20. For each of the cloths under the sealed measure in length, *6s. 8d.* per yard shall be forfeited, besides abatement of the price for what is wanting; for every yard of the said cloth above the lengths, *10s.* shall be forfeited; and for the same wanting breadth throughout, shall be forfeited *20s.* wanting for half the length *10s.* under half, *5s.*; and for every pound wanting above *2lbs.* in weight shall be forfeited *10s.* Jac. c. 20. For the encouragement of dressing and dyeing of cloth, no person shall export any white woollen broad cloth, until he have paid duty of *5s.* for every such cloth, on pain of forfeiting the same, or value; half to the king, and half to him that shall seize, inform, or sue. 6 Ann. c. 8. The legislature has enacted other laws with regard to dyeing of cloth, for which see DYEING. No person shall have or use any tenter, with a lower bar, &c. for stretching any rough and unwrought woollen cloth, on pain of *20l.* half to the king, and half to him that shall sue. No person shall stretch (or sell the same stretched) any wrought woollen broad cloth above one yard in length, and half a quarter in breadth; or half cloth, above half a yard in length, and half a quarter in breadth, &c. on pain of forfeiting the same, half to the overseer or informer, and half to the poor. 43 Eliz. c. 10. If any cloth remaining on the tenters be stolen in the night, and the same is found on any person, on a justice's warrant to search, such offender shall forfeit to the owner treble value, leviable by distress and sale, or be committed to gaol for three months, or till the fine be paid; but for a second offence he shall suffer six months imprisonment; and for the third offence, he shall be guilty of felony, and transported for seven years. 15 Geo. II. c. 27. No woollen cloth shall be exported, till it be barbed, rowed, and shorn, on pain of forfeiting the same, half to the king, and

half to him that will sue. 3 Hen. VII. c. 11. No person shall use iron cards, or pickards, in rowing of cloth, on pain of forfeiting the cards, and *20s.*; nor shall any person put any flocks, chalk, flour, or starch, or other deceivable thing on cloth, on pain of *40s.* 3 and 4 Edw. VI. c. 2. No cloth shall be rowed or raised with oil, grease, or any liquid, except on the edge of the shears with fetter or oils, on pain of *13s. 4d.*; and there shall be no cutting of wool from the backsides of cloth, except with shears, in pain also of *13s. 4d.*; nor shall any liquid be used on the side of the cloth, to make it look better than the inside; nor shall the sides be raised, fulled, rowed, or shorn, better than the middle, on the like penalty. 4 Jac. c. 2. No person shall press cloth with a hot press, on pain of forfeiting the same or value. 5 and 6 Edw. VI. c. 6. And pressing of cloth with hot boards shall be punished with like forfeiture. 21 Jac. c. 18. With regard to mixed or medley broad cloth, it is provided by 10 Ann. c. 16. and 1 Geo. II. c. 15. that the fulling miller shall take an oath before a neighbouring justice, to duly measure such cloth fulled at his mill, when fulled and wet, affix to it a seal of lead, marked with a crown, and stamped with his name; together with the length and breadth of the cloth; for which he shall have one penny, and enter in a book the marks, sort, number, length, and breadth of it; under a penalty of *20l.* on conviction in *40* days, before one justice, or on oath of one witness, leviable by distress; or, in want of distress, commitment to the gaol or house of correction for three months. Counterfeiting, defacing, or altering the seal incur the same forfeiture of *20l.* Selling cloth before it is so sealed subjects to a forfeiture of one-sixth part of the cloth. If the buyer is not satisfied with the measure, he may have it again measured in the water, within eight days after delivery; the buyer and seller choosing each a measurer; and if it does not contain the quantity specified in the seal, the owner or seller shall forfeit one sixth part of the value. By 13 Geo. c. 23. inspectors of mills and tenters shall be appointed by justices at Easter sessions, in the counties of Gloucester, Wilts, and Somerset, for examining and sealing cloths; and millmen sending home cloths before inspection shall forfeit *40s.* persons refusing entrance to the inspector shall forfeit *10l.*; and the inspector acting against his oath, shall forfeit *20l.* Such inspectors shall be paid *2d.* for each cloth by the clothiers; the Yorkshire manufacture is subject to peculiar regulations by 11 Geo. II. c. 28. 5 Geo. III. c. 51. 6 Geo. III. c. 23. No foreign woollen cloth shall be imported, on pain of forfeiture, and further punishment at the king's will. 11 Edw. III. c. 3. 4 Edw. IV. c. 1. Woollen manufactures shall be exported custom free. 11 and 12 W. c. 20. By 12 Geo. c. 34. if any weavers of cloth enter into any combination for advancing their wages, or lessening their usual hours of work, or departing before the end of their terms agreed, return any work unfinished, &c. they shall be convicted by two justices of peace to the house of correction for three months; and clothiers are to pay their work-people their full wages agreed upon in money, under the penalty of *10l.* &c.