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Thesis

Abstract of a Thesis

on

Cotton Manufacture and the Ring Frame

by

F. W. Gilsbee.

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The great starting point of the Cotton Manufacture in England may be dated from 1760, and it was introduced into this country about 1787. the first factory being built at Beverly Mass.

The various machines through which the cotton passes are the following; 1st The Beater or Opener. 2nd The Picker or Lapper. 3rd The Carding Machine. 4th The Roubing Head. 5th Two Drawing Frames. 6th Three Fly Frames. 7th The Spinning Machines, either the Throstle, or Ring Frame, or Mule. 8th The Spooler. 9th The Warper. 10th The Slasher or Dresser. 11th The Loom.

The Ring Frame was invented in 1829, or 1830, by John Thorp of Providence, but was put in its present working shape by Mr. William Mason of Taunton.

The essential difference between the Throstle and Ring Frame consists in dispensing, in the latter, with the flyer and substituting a ring fixed in the lifting rail, which is made to traverse for the filling of the bobbins. The winding on or drag is obtained by means of a flat steel wire, bent in a half circular form with the ends turned in, called a traveller. There is an immense variety of spindles used, of which the most employed are, the Ordinary Spindle weighing about 10 ounces, the Sawyer, the Rabbeth, the Excelsior, and the Pearl.

The principal advantages of the Ring Frame are saving of power over the Throstle, and the fact that it can do more work in the same time. It requires more power however than the Mule but takes up less room, and the yarn produced is better for the warp although it is rather harsher and therefore not quite so good for the filling.

The traveller is dragged round by the

yarn, and the no. of revolutions which it makes in a minute = the no. of revs. of spindle per minute – the no. of times the yarn has been wrapped round the bobbin in that time.

There is a difference between what may be called the real, and apparent twist per inch. The real twist = the no. of revs. of spindle per minute ÷ the no. of inches of yarn delivered by the front roll in that time. The apparent twist = the no. of revs. of the traveller in a minute ÷ the no. of inches delivered in that time. The speed of the traveller is greater the larger the bobbin becomes, therefore the apparent twist is greater when the bobbin is full; but this difference is slight. The rule for determining the proper twist for a given number of yarn is T = c√{no. of the number}. The value of c is usually 4.5 or 5

The result of calculations on the work of friction of the Mc. Mullen and Sawyer spindle, show that 36 per cent of the difference of power required to drive the two frames, is due to the difference of weight of the spindles. The speed of the traveller through space is usually about 30 miles per hour.