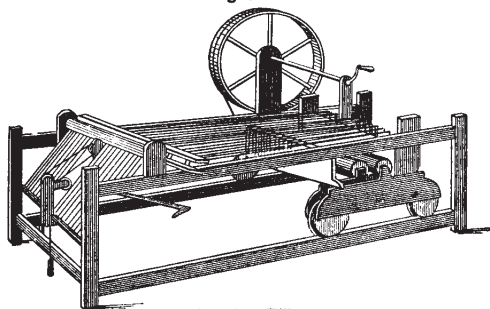


Slub'bing-machine. A *slubbing-billy*. A machine for giving a light twist to the *cardings* of wool.

The *slubbing-billy* consists of a wooden frame, within which is a carriage called the *billy-gate*, moving upon the lower side-rails, and containing a number of spindles which are made to rotate by a series of

Fig. 5211.



Slubbing-Billy.

cords passing round the pulley of each spindle and connected with a drum extending the whole breadth of the carriage. The drum is turned by a crank-handle on a shaft connected by a band with the drum.

The *cardings* are arranged upon an inclined leather apron, and pass from thence under a wooden roller called the *billy-roller*, which compresses them slightly. In advance of the roller is a movable rail, which is lifted to allow the *cardings* to be drawn out by the carriage, and is shut down when the portions

of the *cardings* beyond the clasp are to be drawn out into an elongated thread.

The machine was introduced soon after the invention by Hargreaves of the *spinning-jenny*, about 1767. The *Jenny* was the original of the *slubbing-billy* and the *mule*; the traveling carriage carrying spindles, the interrupted paying out of the carding or roving, the elongation of the roving and spinning of the thread during the forward motion of the carriage, and the winding of the *cop* during the return motion, are common to the *slubbing-machine* and the *mule*. The points of difference between the two machines last cited and the *Jenny* may be seen by comparing them with the latter. See SPINNING-JENNY.

In operation, the spindle-carriage is wheeled close up to the *billy-roller*, and the clasp is opened by means of a lever to release all the *cardings*. The carriage, being drawn forward a short distance from the clasp, pulls forward a corresponding length of the *cardings*; the clasp is then lowered, holding the *cardings* firmly, while the carriage, continuing to recede, stretches and twists that portion of each *carding* which is included between the spindles and the clasp. During the motion of the carriage, the attendant rotates the crank-shaft, and the spindles are rapidly revolved, giving the *cardings* the required degree of twist for this part of the process. The *slubbing-machine* does not make *yarn* but *slubs*, which have only a partial twist. The inclined position of the spindles prevents the *cardings* from unwinding upon them during the twisting part of the process, the rovings continually slipping over the points of the spindles as the latter rotate. When the requisite elongation and twist is attained, the attendant drops the *faller-wire*, which bears down the rovings from the points of the spindles and causes the *slubbing* to wind upon the spindles as the carriage is pushed back toward the *billy-roller*.

The *cardings* are very tender, and will not bear drawing upon the inclined apron, so the latter is caused to move upward with the *cardings* to an extent and at a time coincident with the paying out of the *carding* by the *billy-roller* at the early part of each forward motion of the spindle-carriage. New lengths are added to the ends of each *carding* as they are gradually fed through the roller, the junction being made by a peculiar rolling of the ends together by the fingers of the children in attendance. One *carding-machine* will keep a *slubbing-machine* of 60 spindles in work. One boy will manage 30 *cardings*.

The *slubbing-billy* is sometimes employed to spin coarse *yarn*, but usually leaves the *slub* about double the size that the *yarn* is intended to be. The farther reduction — that is, elongation and twist — is obtained in the *mule*.

Another form of *slubbing-machine* is termed a *condenser*, and requires a different preliminary treatment of the wool. The *scribbling-machine*, or first *carding-machine*, delivers the *fleece* or *lap* on to a wooden cylinder, round which it winds as it is taken off the *doffer* by the *comb*. When the *fleece* has wound round the roller a certain number of times, a bell is rung mechanically, which gives notice for the removal of the *fleece*, which is done by running the finger lengthwise along the periphery of the roller, dividing the *fleece*, which is removed in a sheet to the second *carding-machine*, whose feed-cloth it just covers.

The *doffing-cylinder* of the second *carding-machine* has circumferential rings of cards around, each about $\frac{1}{4}$ inch broad, and divided by spaces of $\frac{1}{4}$ inch. These rings become charged with wool, which is removed by the *comb* or *doffing-knife* in the form of separate slivers, one from each ring, the slivers being subsequently formed into continuous *slubbings* by means of the *condenser*.

The *condenser* consists of a pair of rollers supporting a traversing belt of leather, on which the slivers are carried; a third roller of leather lies transversely upon the slivers and the leather belt, having, in addition to its rotary motion, an endwise motion, which rolls the slivers into a somewhat cylindrical form, compacting them and causing the fibers to interlace. By this means the *slubbings* acquire sufficient strength to enable them to stand the operation of spinning. The effect is similar to rubbing the sliver between the hands.

The *slubbings* thus formed are wound upon a horizontal reel, as long as the width of the machine. This, when full, is removed and placed on the *mule*, which draws from it, the same as it would from bobbins on a *creel*.