Sept. 13, 1927. 1,642,178

L. SCHORSCH

LAP MACHINE

Filed March 22, 1926

Fig. 1.

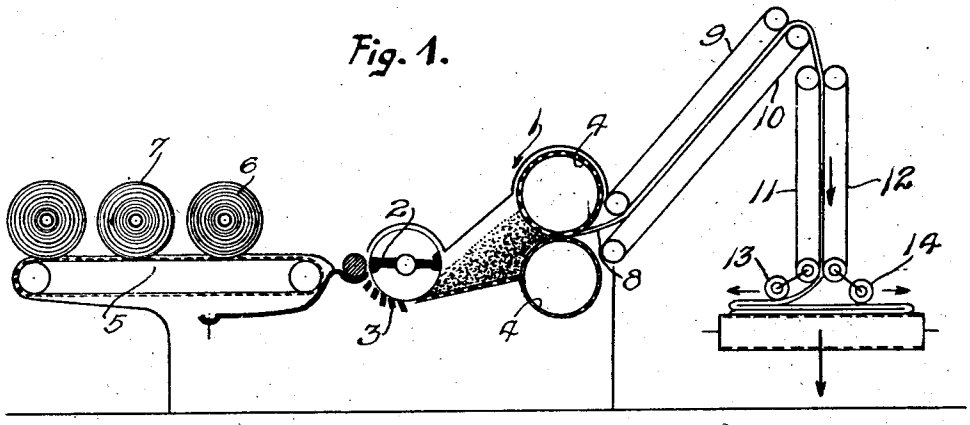


Fig. 2.

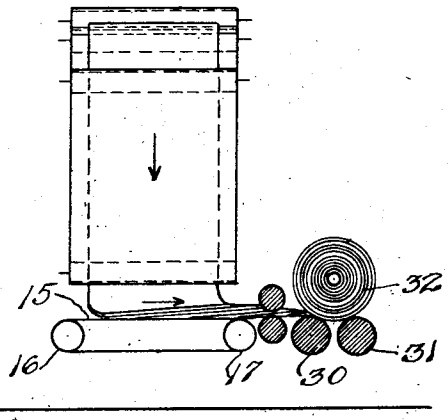
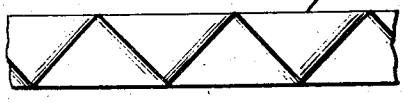


Fig. 3.



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UNITED STATES PATENT OFFICE.

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LAP MACHINE.

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This invention pertains to cotton manufacture and particularly to apparatus for producing laps of uniform character. Commonly the cotton fiber is beaten out and formed into laps by means of pickers or lappers and the laps thus produced are then delivered to the cards. The picker laps are often uneven, exhibiting thick and thin places side by side, although the average thickness of the lap transversely of its width may correspond to the desired lap count. If such an uneven lap be fed to a card in which the entire web delivered from the doffing comb is formed into a single sliver, the irregularities in the thickness of the lap widthwise of the latter compensate each other and no particular difficulty is experienced in obtaining a substantially uniform sliver. However, if, as is sometimes done, the picker lap is fed to a spinning card which divides the web delivered by the doffing comb into a plurality of strips, each of which is condensed to form a separate sliver, then the irregularities in thickness of the lap become manifest in the individual slivers, the latter being so uneven that, except for the very coarsest yarn counts, it would be impractical to spin them, without intervening evening processes, into yarns of acceptable character.

In accordance with the so-called carded yarn system of yarn manufacture, it is common to use two or three cards in succession and to arrange the lap which is delivered by one card in transverse layers or, in other words, to "double" it before feeding it to the next card of the series, in order to bring about an equalization of the differences in thickness.

The principal object of the present invention is to provide apparatus which will produce a lap of such uniform transverse thickness that if it be divided longitudinally, the several strips thus obtained will be of substantially uniform character so that they may be spun into yarn, thus simplifying the process while, at the same time, providing yarn of acceptable character.

In accordance with the present invention the picker employed may be of any usual type, for example, a simple picker comprising the usual beater wings and condensers, or preferably it may be of that type sometimes known as a carding beater or express card provided with any of the usual precarding devices, for example, cylinders covered with card clothing or similar material. The picker, of whatever type employed, may be fed in any usual manner, for example, by means of an automatic weighing feeder or with lap rolls from a preceding picker.

In the accompanying drawings a preferred embodiment of the invention has been shown by way of example, and in the drawings,

Fig. 1 is a fragmentary and somewhat diagrammatic plan view of apparatus of a preferred form embodying the present invention;

Fig. 2 is an elevation from the right-hand side of Fig. 1; and

Fig. 3 is a fragmentary plan view illustrating the general appearance of the improved bat produced by the apparatus herein described.

Referring to the drawings, the numeral 1 designates generally a picker or lapper of a type well known in the manufacture of cotton yarn, such picker or lapper comprising a rotary beater 2, the grid 3 and the condenser cylinders or screens 4. This apparatus also comprises a feeding apron 5 adapted to feed the fiber to the beater 2. The picker herein illustrated is supplied from a plurality of rolled bats 6 and 7 arranged to feed in superposed relation to the beater.

The bat 8, delivered from the condenser cylinders 4, is carried upwardly by a suitable elevator here shown as consisting of a pair of parallel endless belts or aprons 9 and 10 respectively. These belts or aprons, if desired, may be provided with spikes to insure proper movement of the bat engaged between them, but it is to be understood that this elevator is not an essential part of the mechanism provided the picker be at such an elevation relative to the distributor hereinafter described as to make an elevator unnecessary.

The bat is delivered from the upper end of the elevator to the upper end of any suitable type of distributor herein shown, for example, as comprising a pair of parallel endless belts or aprons 11 and 12. Like the belts 9 and 10, the belts or aprons of the distributor may, if desired, be furnished with spikes or teeth in order properly to control the lap which is disposed between them. Preferably the distributing device is provided at its lower end with a pair of mangle

rolls 13 and 14 adapted as hereinafter described to compress the folded lap as it is delivered from the distributor.

The lap delivered from the lower end of the distributor is deposited upon the upper surface of a moving support 15, preferably an endless belt or apron travelling in a direction at right angles to the path of the bat as delivered by the picker. This belt or apron is supported by rollers 16 and 17 one or both of which may be driven to impart a continuous forward movement to the apron.

The distributor comprising the belts 11 and 12 is preferably supported to swing about an axis adjacent to its upper end, and this distributor is oscillated by means of any suitable mechanism preferably permitting the throw of the distributor to be adjusted. In the arrangement disclosed the combined movement of the belt 15 and of the distributor, when the latter is oscillated as above described, causes the bat as deposited from the distributor to fall in overlapping folds 8^a upon the moving surface of the belt 15. The general appearance of the bat as it is deposited on the belt 15 is shown in Fig. 3. As the bat is deposited upon the support, the mangle rolls 13 and 14 alternately engage it, guiding it and determining the outer limits of the folds. These rolls compress the folded bat, and are preferably adjustable toward and from each other to vary the width of the folded bat.

The relative movement of the distributor and belt is such as above described as to lay the lap in the form of zig-zag folds upon the surface of the belt 15 and this folded bat travels forward with the belt 15.

The bat from the apron 15 is delivered to a pair of winding rolls 30 and 31 which are adapted to wind it upon itself or upon a suitable core to form a lap roll 32. Such a lap roll may be used for feeding a card not closely associated with the picker or, in fact, any other machine to which it is desired to feed a bat of uniform and even character. Obviously a plurality of lap rolls 32 produced by this mechanism could be combined for feeding to a subsequent machine although the evenness of the bat produced by the mechanism herein described is usually sufficient for ordinary purposes without such further doubling.

As already stated, I prefer to employ a precarding picker in making the bat, for example, a picker such as disclosed in German patent to Werner No. 381,994, in which the usual beater is replaced by rollers provided with teeth. Such a precarding picker delivers the cotton fiber in a fully open state and the fibers upon the exterior of the bat, delivered by such apparatus, are already partially carded. Such a bat may be made thinner than one produced by the ordinary beater without danger of rupture and can thus be folded or doubled a greater number of times in producing the lap. When the lap thus produced is fed to a spinning card and divided into independent slivers, such slivers may be spun directly into yarn or quite uniform character so that it is unnecessary to use two or three cards in succession, the single spinning card sufficing to produce slivers adapted for spinning.

Inasmuch as the apparatus above described will produce sufficient lap to supply several spinning cards, and since, as above stated, a single spinning card replaces the two or three successive cards usually employed, it is manifest that the present invention greatly simplifies the spinning process and increases economy of production, while furthermore, as the precarding picker is very effective in cleaning cotton fiber containing hulls, or in cleaning cotton waste, the product obtained is cleaner than that produced by the usual method.

Having thus described a preferred embodiment of apparatus for performing the desired operation and with the understanding that such apparatus may be modified as circumstances may warrant without departing from the spirit of the invention.

I claim:

1. Apparatus for use in the manufacture of cotton yarn comprising in combination with a picker or lapper, a belt conveyor, a distributor for delivering the bat from the picker onto one run of the conveyor, and means for moving the distributor and conveyor relatively to one another to lay the bat in the form of overlapping folds extending transversely of the direction of movement of the conveyor.

2. Apparatus for use in the manufacture of cotton yarn comprising in combination with a picker or lapper, having bat-forming means, a support, means for delivering the bat from the forming means to the support, the support and delivery means being moved relatively to each other to dispose the bat in the form of overlapping folds, the individual folds extending transversely of the length of the folded bat, and means for compressing the folds whereby to produce an evened bat.

3. Apparatus for use in the manufacture of cotton yarn comprising in combination with the condenser of a picker or lapper, a moving support, an oscillatory distributor for laying the bat delivered by the condenser onto the upper surface of the support to form folds extending transversely of the direction of movement of the support, said distributor comprising mangle rolls for compressing said folds as they are deposited upon the support.

4. Apparatus for use in the manufacture of cotton yarn comprising in combination with the condenser of a picker or lapper, a belt conveyor oriented to run at an angle to

the direction of delivery of the bat from the condenser, and an oscillating distributor provided with spaced mangle rolls adapted to lay the bat delivered from the condenser in the form of overlapping folds upon the belt conveyor and to compress said folds as laid, the folds extending transversely of the conveyor.

5. Apparatus for use in the manufacture of cotton yarn comprising in combination with the condenser of a picker or lapper, a travelling conveyor, means for delivering the bat from the condenser onto the conveyor in the form of overlapping layers extending transversely of the conveyor, means for compressing said layers, and means disposed adjacent to the delivery end of the conveyor for winding the bat into the form of a roll.

6. Apparatus for use in the manufacture of cotton yarn comprising in combination with a picker or lapper having a condenser, a movable support, a distributor comprising a slat apron for feeding the bat delivered from the condenser to the movable support, said support and slat apron being movable relatively to one another to cause the bat to form diagonally overlapping folds upon the surface of the support, and mangle rolls carried by the distributor for compressing said folds.

7. Apparatus of the class described for use in the manufacture of cotton yarn comprising in combination with a picker or lapper having a condenser, lap-winding means, an elongate movable support intermediate the picker and winding means, means for moving the support in the direction of its length, a double slat apron for feeding the bat delivered by the condenser to the movable support, and means for relatively moving the support and slat apron in such a way as to lay the bat in overlapping folds extending diagonally of the length of the support whereby to form an evened multi-ply bat.

In testimony, that I claim the foregoing as my invention I have signed my name this 1st day of December, 1925.

LUDWIG SCHORSCH.