P. NUCKOLS.

LAP DRAWING MACHINE.

APPLICATION FILED DEC. 2, 1919.

1,351,678.

Patented Aug. 31, 1920.

5 SHEETS—SHEET 1.

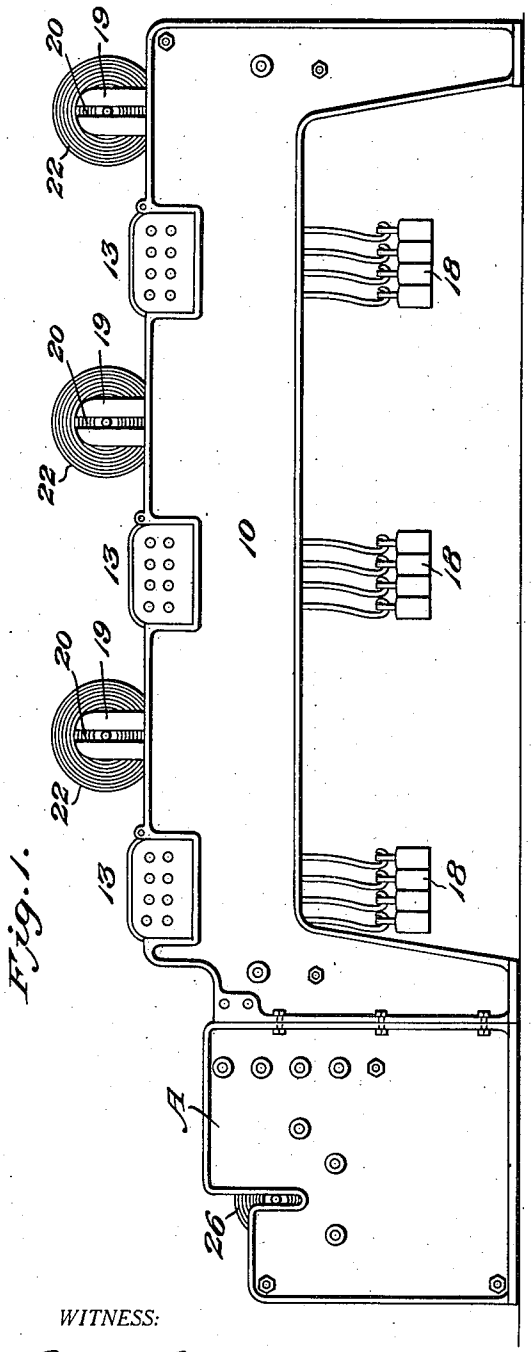


Fig. 1.

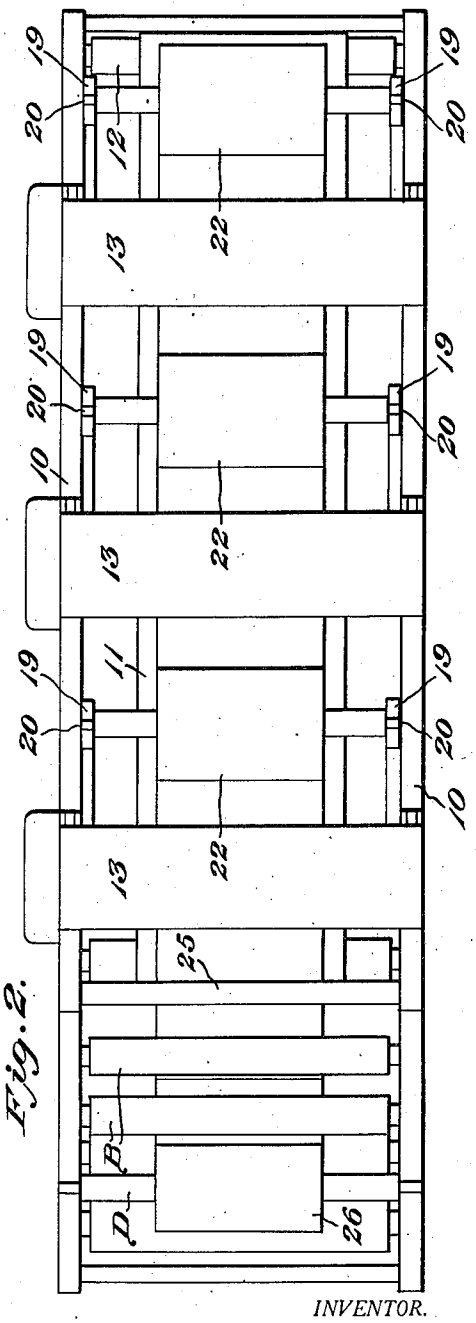


Fig. 2.

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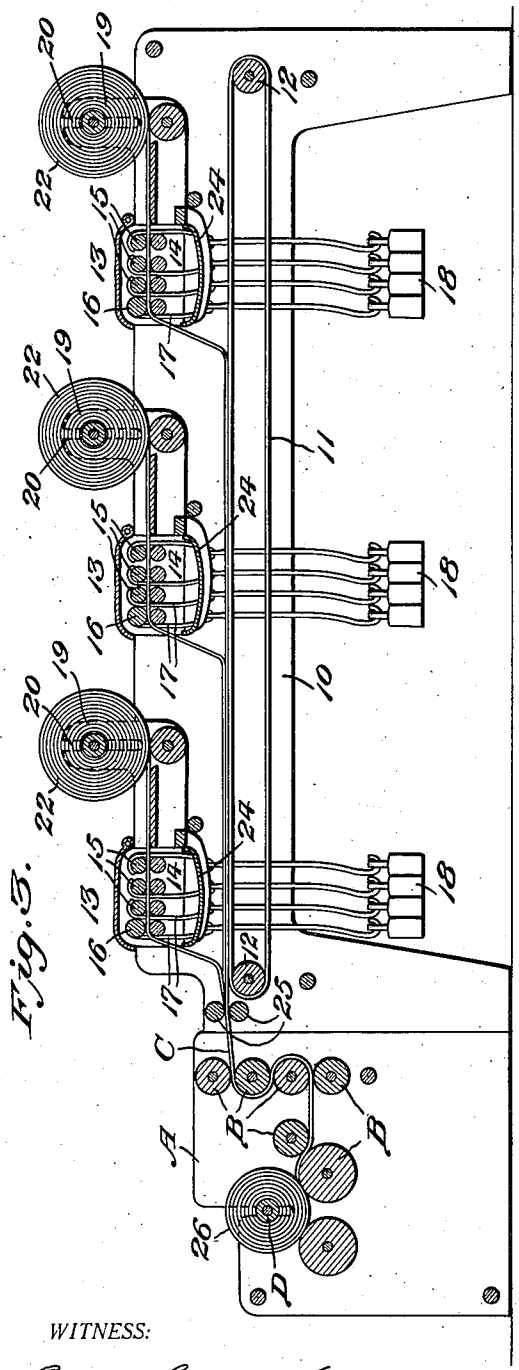


Fig. 3.

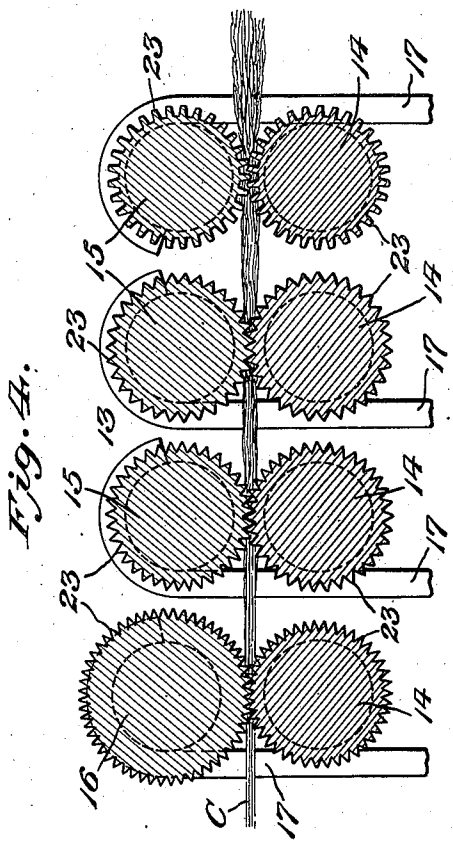


Fig. 4.

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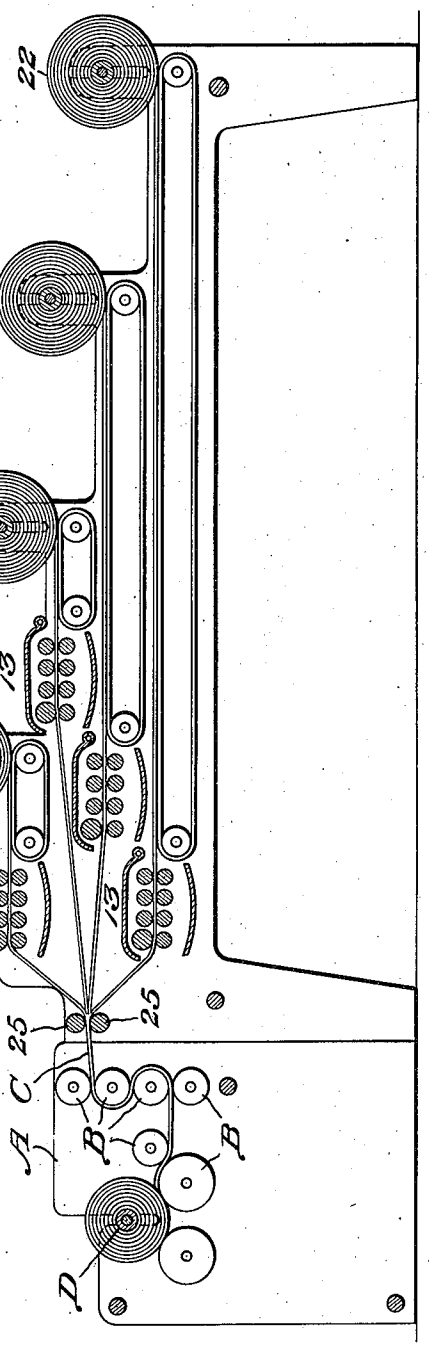
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Fig. 5.



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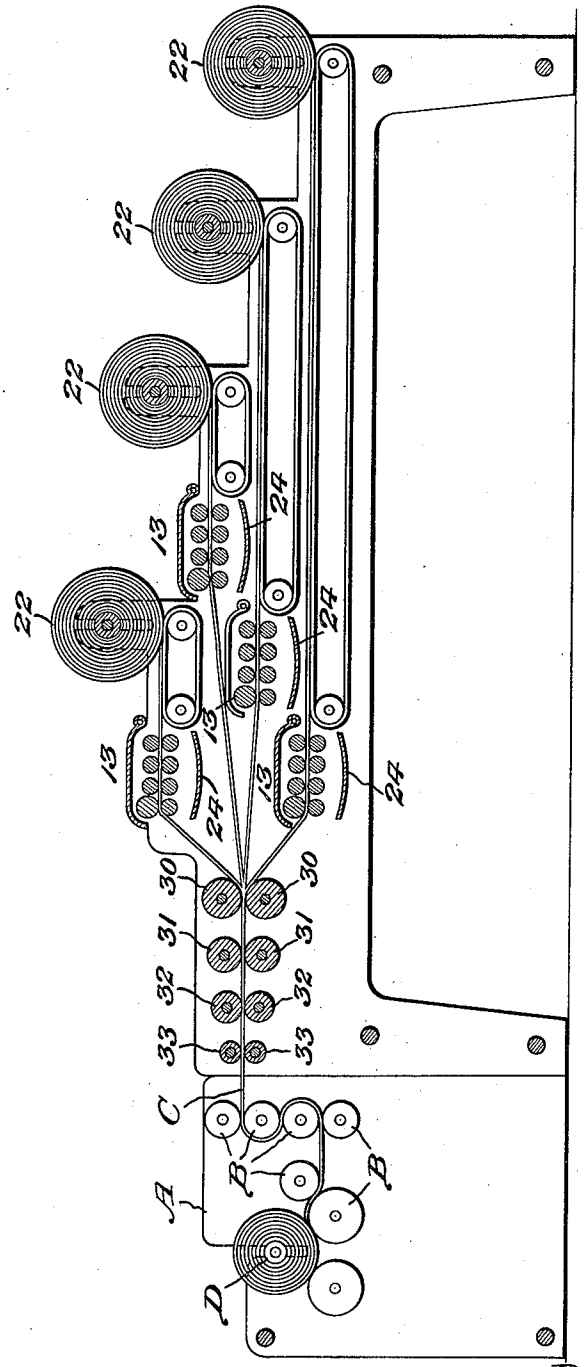


Fig. 6.

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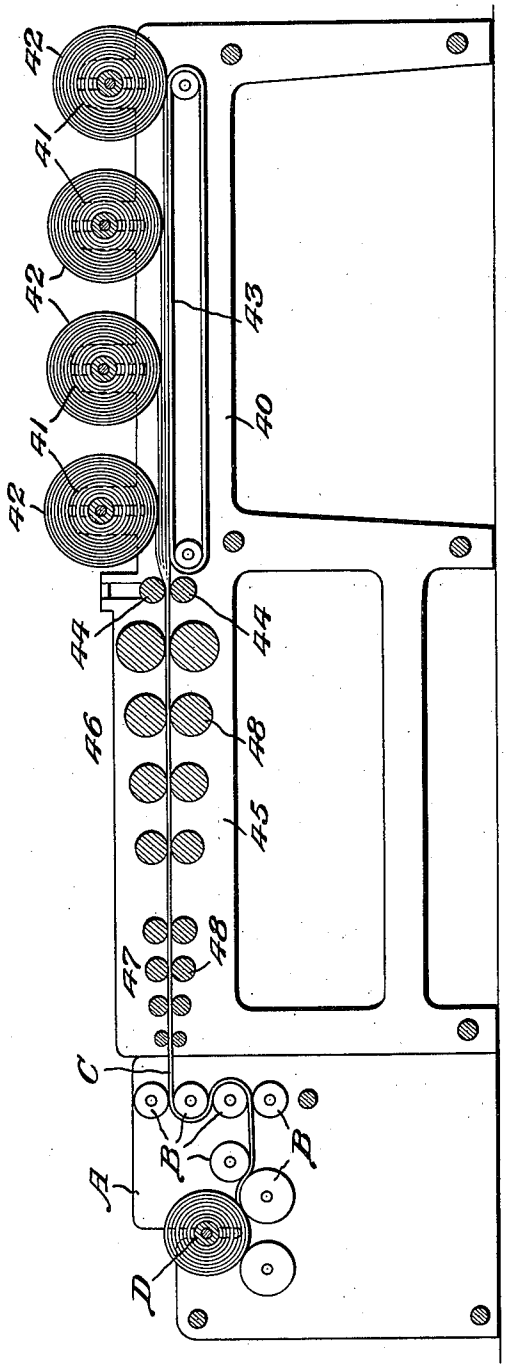


Fig. 7.

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UNITED STATES PATENT OFFICE.

PAUL NUCKOLS, OF CORDOVA, ALABAMA.

LAP-DRAWING MACHINE.

1,351,678. Specification of Letters Patent. Patented Aug. 31, 1920.

Application filed December 2, 1919. Serial No. 341,888.

To all whom it may concern:

Be it known that I, PAUL NUCKOLS, a citizen of the United States, residing at Cordova, in the county of Walker and State of Alabama, have invented new and useful Improvements in Lap-Drawing Machines, of which the following is a specification.

This invention relates to cotton mill machinery and has for its object the provision of a device whereby the fibers in a lap of cotton may be drawn out and laid parallel prior to the entrance of the lap into the carding machine, it being well known that heretofore this parallelization has been accomplished at the drawing after the cotton has been carded.

An important object is the provision of a device of this character which is used in conjunction with the regular well known lap head and which is so constructed that it will cause the fibers in the lap to be laid parallel ready for the card, thus permitting the card teeth to catch the fibers by the ends instead of in the middle, thereby allowing the card to do its work very efficiently with the production of less white waste and the removal of more foreign matter as the fibers are parallel and lend themselves to the cleaning action of the card.

Another object is the provision of a device of this character which is so constructed as to efficiently perform its function in a quick and thorough manner independently of the use of various devices which have heretofore been used, the use of my device eliminating, particularly, the necessity for the employment of the well known breaker card, sliver lap machine, and ribbon lap machine, and where the work is combed the finisher card.

An additional object is the provision of a device of this character which will be comparatively simple and inexpensive in manufacture, highly efficient in use, durable and labor saving in service, and a general improvement in the art.

With the above and other objects and advantages in view, the invention consists in the details of construction to be hereinafter more fully described and claimed, and illustrated in the accompanying drawings in which—

Figure 1 is a side elevation of my device, showing the preferred form thereof,

Fig. 2 is a plan view,

Fig. 3 is a longitudinal sectional view,

Fig. 4 is a cross sectional view,

Fig. 5 is a longitudinal sectional view showing a modified form of the invention,

Fig. 6 shows a further modification, and

Fig. 7 shows a still further modification.

Referring more particularly to the drawings, I have shown my device as used in conjunction with the ordinary and well known type of lap head designated by the letter A and this lap head includes a plurality of suitable rollers B about which is trained the lap C which is wound onto a roller D. As lap heads of this type have been well known in the art for many years, a description of the operation thereof is deemed entirely unnecessary.

In carrying out my invention, I provide a suitable supporting frame 10 which is preferably, though not necessarily, bolted to the lap head frame by any suitable means. This frame 10 carries a longitudinally extending traveling apron 11 which is trained about rollers 12 at the ends of the frame 10 and which is formed of canvas or other suitable material. The function of this apron is to deliver continually to the lap head A the lap which is formed by my device. In carrying out my invention I further employ a plurality of sets 13 of co-acting rollers, each of which is independent in action but all of which produce laps leading to the lap head A. Each set 13 comprises parallel superposed rows of rollers, all the lowermost 14 of which and all three of the rear uppermost 15 of which are of the same diameter and the forward uppermost one of which 16 is of larger diameter. All these rollers in each set are driven by the train of gears shown and as this particular arrangement of gearing is well known in the art, it is believed that detailed description thereof is unnecessary in view of the fact that it is so clearly shown in the drawings. These rollers 14, 15 and 16 are journaled transversely of the frame 10 and of course are fluted the proper distance to leave the proper cuffs at the end portions thereof.

Suspended from the axles of all the rollers 14, 15, and 16 in each set, are suitable rods 17 which have curved upper ends engaging the axles and which have their lower ends extending below the pulleys 11 and carrying adjustable weights 18 whereby the pressure of the rollers upon the lap may be easily regulated. Also associated with each set 13 of rollers is a bracket structure 19

having slots 20 within which are disposed the ends of the spindle 21 carrying the roll 22 of cotton to be treated. It will be observed that the sets 13 of rollers in this form are arranged in the same horizontal plane and that the brackets 20 and rolls 22 of cotton are also similarly arranged to provide the proper train.

The individual rollers 14, 15 and 16 are formed in the ordinary way with the usual teeth 23 which are adapted to catch the fibers in the laps.

In order to catch the matter which should be removed from the cotton, I provide under each set 13 of rollers, a pan 24 which is disposed transversely of the frame 10 and secured thereto either fixedly or removably by any proper means.

In the operation of the device, the rolls of cotton to be treated are disposed with their spindles within the brackets 20 so as to be fed to the sets of rollers of my device, instead of being passed through the sliver and ribbon lap machines, as is now the common practice. When the various rollers 22 are disposed upon the brackets 20, the ends of the cotton thereon are introduced between the rearmost rollers 14 and 15 after which the action of these rollers, owing to the gearing, will draw the lap between the upper and lower series of rollers in each set. As this is done the teeth 23 on the co-acting rollers will catch the fibers and as the gearing is such that the forward rollers rotate more rapidly than the others, the ends of the fibers caught by the teeth will be pulled, as will be apparent so that the fibers will be drawn out and laid parallel. The action of the teeth 23 also removes the trash and other foreign matter in the cotton and this trash falls into the pan 24. The end of each sheet of cotton after leaving the associated set of rollers, is deposited upon the constantly moving apron or conveyer 11 and all the sheets are thus carried together to the lap head A, it being preferable to provide a pair of guide rollers 25 journaled transversely of the frame 10 adjacent its connection with the lap head A. In this way it will be seen that the sheet of cotton entering the lap head will be laminated and will be composed of sheets from all the rolls 22. The roll 26 thus formed in the lap head will then be ready for the carding machine without further treatment.

In Fig. 5 I have shown a modified form of the device. In this form the principle is the same and the same frame-work is provided as well as the same number of sets of co-acting rollers. In this form, however, the sets of rollers are not all disposed in the same horizontal plane as it is seen that some of them are superposed and others are in staggered relation. Furthermore, in this arrangement each set of rollers has associated therewith an endless conveyer or belt whereby the sheet of cotton acted upon by each set of rollers will be conducted to the lap head A. In other respects the operation of this form, as well as the construction, is the same as that of the previously described form.

Referring to Fig. 6, it will be seen that the structure is practically the same as that shown in Fig. 5 except that interposed between the lap head A and the sets of co-acting rollers is a series of guide rollers 30, 31, 32 and 33, arranged in pairs and of gradually decreasing diameters. These last mentioned rollers are driven by gearing in a manner similar to the gearing for the sets of rollers. In other respects the construction of this form is the same as that shown in the previously described forms.

In Fig. 7 the structure is somewhat different. In this form I employ a frame 40 having solid bracket members 41 within which are engaged the ends of the spindles of a plurality of rolls 42 of cotton to be treated and these rolls are all arranged in horizontal alinement laterally with respect to one another. Disposed beneath all of the rolls 42 is an endless continually moving apron or conveyer 43 which conducts the sheets of cotton from the different rolls to a pair of guide rollers 44 journaled at the forward end of the frame 40. Interposed between this frame 40 and the lap head A is a frame 45 within which are journaled two sets 46 and 47 of transversely disposed suitably gear driven rollers 48 which are individually of the same construction as the rollers in the first described form. The sheet of cotton formed by the pressing together of the sheets from the successive rolls 42, passes through and is acted upon by the two sets of co-acting rollers 46 and 47, after which this final sheet is carried into the lap head A.

In all forms of the invention the action is the same as only the specific arrangement of parts and location of the sets of rollers is varied. In all forms it will be observed that the fibers will be caught and laid parallel in a thorough and efficient manner all ready for the card without any necessity for the utilization of the ordinary sliver and ribbon process heretofore used.

While I have shown and described the preferred forms of the device it will of course be understood that I reserve the right to make whatever changes in the form, construction, and arrangement of parts I desire, without departing from the spirit of the invention or the scope of the subjoined claims.

Having thus described my invention, I claim:

1. In combination with a lap head, a lap drawing device comprising a frame, a plu-

rality of sets of rollers journaled transversely of said frame and geared together for co-action, each set of rollers having associated therewith a spindle of a roll of cotton to be treated, guide rollers disposed between said frame and the lap head, and a traveling apron adapted to receive the sheets of cotton and deliver the same to said guide rollers, the rollers in each set being provided with co-acting teeth.

2. In combination with a lap head, a lap drawing device comprising a frame, a plurality of sets of rollers journaled transversely of the frame, means for driving said rollers, each set of rollers having disposed there adjacent the spindle of a roll of cotton to be treated with the sheet from the roll passing between the rollers in the set, means for varying the pressure of the rollers in each set upon the cotton sheet, co-acting teeth on the corresponding upper and lower rollers in each set, the forward ones of said rollers traveling at a greater rate than the others, guide rollers disposed between said frame and the lap head, and a traveling conveyer conducting all of said sheets to said guide rollers.

3. In combination with a lap head, a lap drawing device comprising a frame, bracket members carried by said frame and adapted to journally support the spindles of a plurality of rolls of sheet cotton to be treated, a set of rollers associated with each roll and arranged adjacent the associated brackets, each set of rollers including upper and lower rows coöperating for engagement with the sheet of cotton, means for driving the rollers in each set, co-acting teeth formed on the corresponding upper and lower rollers in each set, and means for conducting the sheet of cotton from each set of rollers to the lap head.

4. In combination with a lap head, a lap drawing device comprising a frame, bracket members carried by said frame and adapted to journally support the spindles of a plurality of rolls of sheet cotton to be treated, a set of rollers associated with each roll and arranged adjacent the associated brackets, each set of rollers including upper and lower rows coöperating for engagement with the sheet of cotton, means for driving the rollers in each set,—co-acting teeth formed on the corresponding upper and lower rollers in each set, and means for conducting the sheet of cotton from each set of rollers to the lap head, said means comprising a plurality of guide rollers interposed between said frame and said lap head.

5. In combination with a lap head, a lap drawing device comprising a frame, bracket members carried by said frame and adapted to journally support the spindles of a plurality of rolls of sheet cotton to be treated, a set of rollers associated with each roll and arranged adjacent the associated brackets, each set of rollers including upper and lower rows coöperating for engagement with the sheet of cotton, means for driving the rollers in each set, co-acting teeth formed on the corresponding upper and lower rollers in each set, and means for conducting the sheet of cotton from each set of rollers to the lap head, said means comprising a plurality of guide rollers arranged in coöperative relation and in pairs.

6. In combination with a lap head, a lap drawing device comprising a frame, bracket members carried by said frame and adapted to journally support the spindles of a plurality of rolls of sheet cotton to be treated, a set of rollers associated with each roll and arranged adjacent the associated brackets, each set of rollers including upper and lower rows coöperating for engagement with the sheet of cotton, means for driving the rollers in each set, co-acting teeth formed on the corresponding upper and lower rollers in each set, and means for conducting the sheet of cotton from each set of rollers to the lap head, said means comprising a plurality of guide rollers arranged in coöperative relation and in pairs, the guide rollers in each pair being successively of decreasing diameters.

In testimony whereof I affix my signature.

PAUL NUCKOLS.