Nov. 24, 1931. T. W. ALLEN ET AL 1,833,811

PROCESS AND APPARATUS FOR MAKING BATTING AND FELTS

Filed April 18, 1929 3 Sheets-Sheet 1

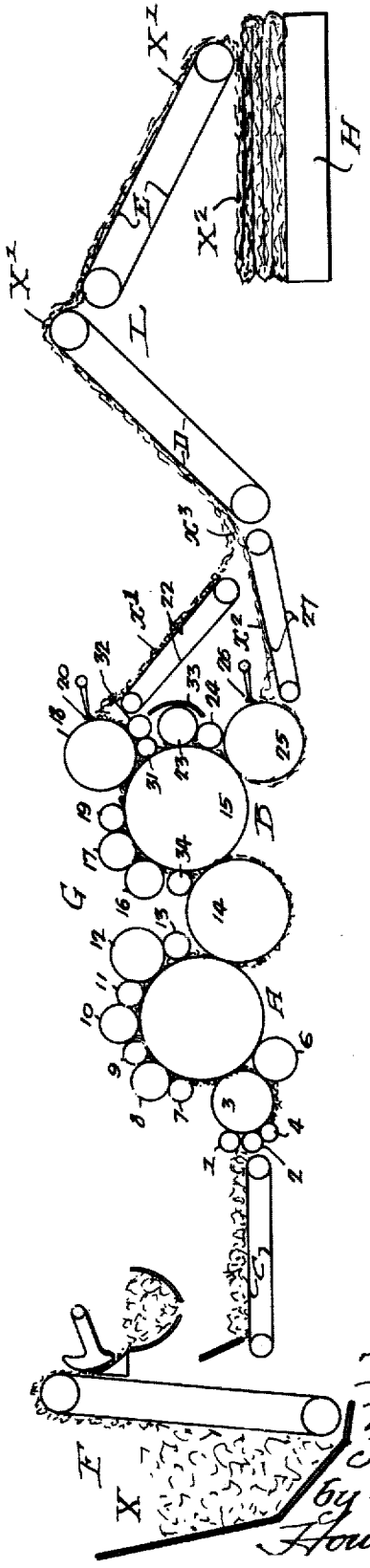


Fig. 1.

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PROCESS AND APPARATUS FOR MAKING BATTING AND FELTS

Filed April 18, 1929 3 Sheets-Sheet 2

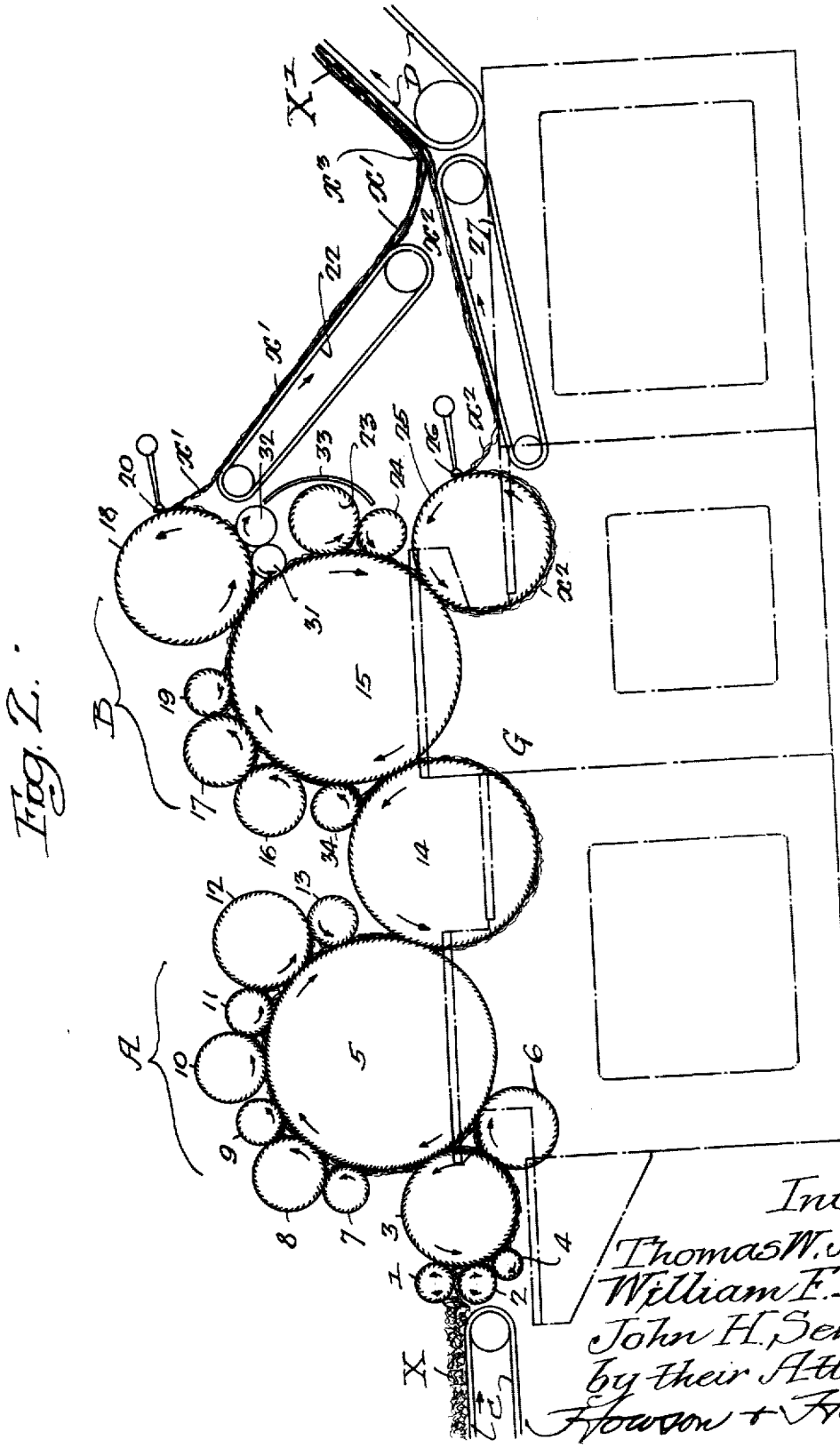


Fig. 2.

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PROCESS AND APPARATUS FOR MAKING BATTING AND FELTS

Filed April 18, 1929 3 Sheets-Sheet 3

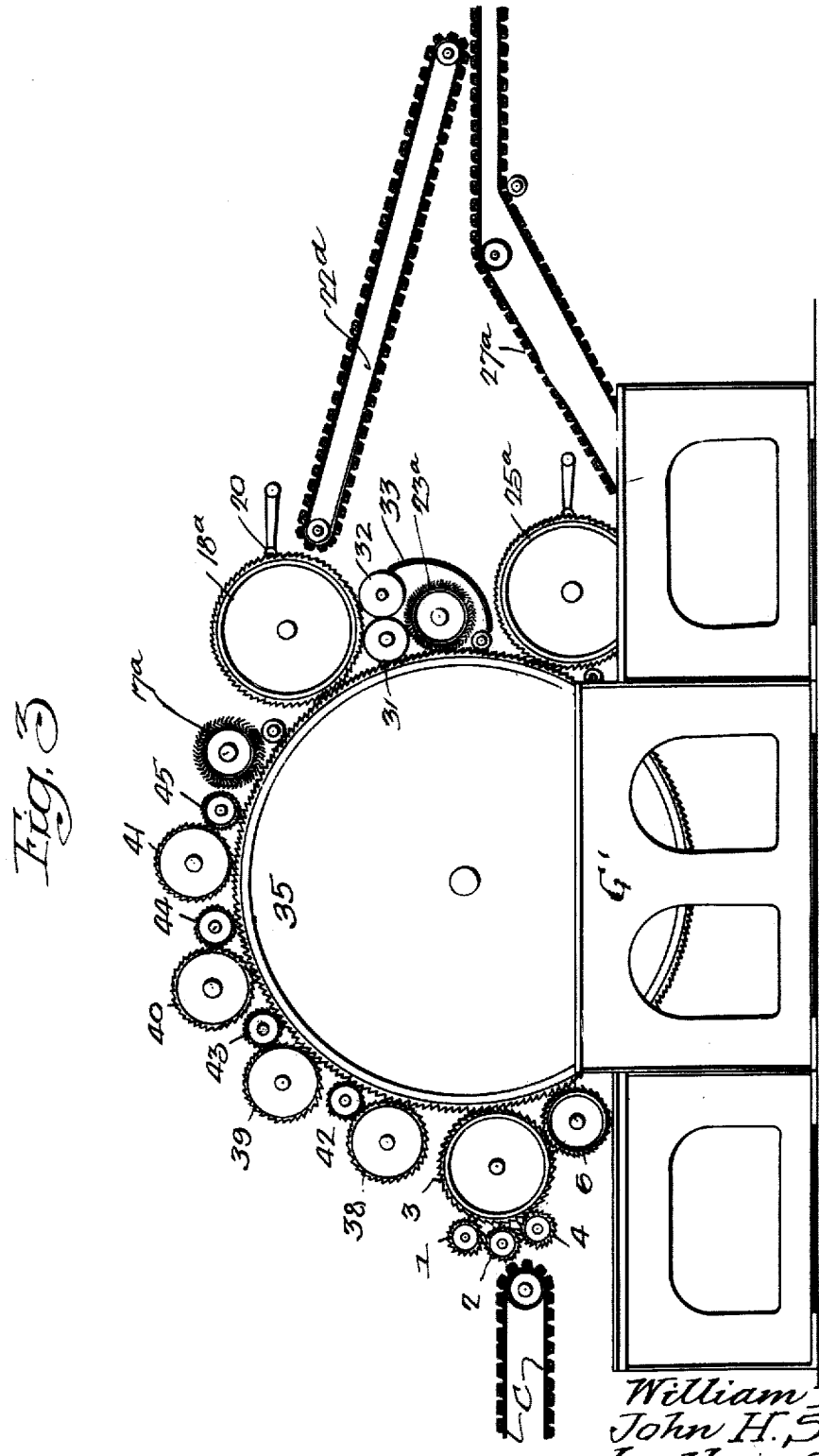


Fig. 3

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Patented Nov. 24, 1931 1,833,811

UNITED STATES PATENT OFFICE

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PROCESS AND APPARATUS FOR MAKING BATTING AND FELTS

Application filed April 18, 1929. Serial No. 356,118.

This invention relates to a continuous process for making finished batting, or felts, from raw material such as cotton, hair, jute, or other natural or synthetic fibers.

The invention also relates to certain improvements in Garnett machines used in the manufacture of batting and felts, and particularly to a machine capable of handling short staple fibers, such as cotton linters derived from the second or third ginnings, which are commonly used in the making of batting of the class employed for stuffing mattresses and other upholstered furniture.

Prior to this invention the Garnett machines employed in producing bats from the class of stock above described, owing to several conditions, have had an extremely limited hour production, for example, the maximum output of a single machine has been approximately 150 pounds per hour.

One of the conditions which limited the hour production of this type of machine was the rate of speed at which the conveyer of the lapping machine, which carries the batting away from the Garnett machine, could be safely operated. This maximum speed has been found to be about 80 feet per minute, which if increased causes the batting to be blown into lumps or to be entirely blown off the lapping machine apron, therefore, the speed of the lapping apron must not exceed the safety point above noted.

The prior art machines for handling cotton and similar fibers of the finer grades, usually consist of two sets of co-operating rollers known to the trade as the "preliminary set" and the "finishing set", while the machines employed in the handling of hair, jute and other fibers of the coarser grades usually comprise but a single set of co-operating rollers.

In the handling of the finer grade fibers the stock is fed to the "preliminary set", by a conventional type of weighing feeder designed to place a given amount of stock, in a more or less rough, tangled, and lumpy state, upon a conveyer which carries the stock from the weighing machine to the preliminary set of the Garnett machine.

Around the periphery of the cylinder, which for ordinary purposes is usually approximately 20 inches in diameter and operated at about 250 R. P. M., is arranged a series of relatively small workers, for example, each worker roll is about four inches in diameter and the number of workers in a preliminary set is usually five. These workers are usually operated at about 14 R. P. M.

The workers are usually so arranged with respect to each other that the successive workers strip the fibers from each other and lay them back on the cylinder. Co-operating with the last worker of the series is a stripper roll provided with the usual form of teeth and adapted to strip the fibers from the last worker and lay them back upon the surface of the cylinder.

Following in succession, after the worker stripper, is a fancy roll which is provided with the usual form of teeth and rotated at a relatively high speed, about 950 R. P. M., being of a diameter substantially twice that of the relatively small workers.

A stripper roll, usually about the same size as the relatively small workers, is provided adjacent the fancy roll for the purpose of stripping the fibers, which may have been picked up by the fancy roll, from the said fancy roll and laying the fibers back on the body of the stock carried by the cylinder.

The partially formed bat is then transferred from the "preliminary set" to the "finishing set" by a single doffing roll operating at about 23 R. P. M., which picks the stock from the teeth of the cylinder of the preliminary set and carries the same to, and deposits it upon, the surface of the cylinder of the finishing set, a stripper roll being provided in the angle formed between the periphery of the transfer doffer and the periphery of the cylinder of the finishing set, which strips the fibers from the teeth of the transfer doffer and lays them on the cylinder of the finishing set.

The finishing set is usually composed of a cylinder of substantially the same diameter and operated at about the same rate of speed as that of the preliminary set; and a series of workers of the same diameter as those of the preliminary set is provided around the periphery of the cylinder, however, in

the finishing set there are usually four of these relatively small workers, operating at about 12 R. P. M., which are followed by the usual worker stripper, of the same relatively small diameter, a fancy roll, and a fancy stripper of the character and relationship previously described with respect to the preliminary set.

The stock is removed from the finishing cylinder by a single doffing roll of the same general character as that previously described for picking the fibers from the cylinder of the preliminary set.

The single doffer of the finishing set operates at about 15 to 20 R. P. M., and picks the fibers from the cylinder of the finishing set and deposits them upon a single conveyer, which carries the bat thus formed from the Garnett machine and transfers it to the apron of the lapping machine.

Attempts have been made to increase the production of the machines by providing weighing feeders of larger capacity and by speeding up the feeder apron so that a greater amount of stock would be forced or crowded into the feed rolls of the Garnett machine, thereby packing a greater amount of stock upon the cylinder of the machines. The result has been that the increased stock could not be properly handled by the relatively small workers operated at the relatively slow speeds above noted, and consequently the stock accumulated between the workers and the cylinder and was rolled into small balls which in the trade is known as "pilling".

In order to overcome the pilling of the stock the arrangement of the workers was changed, in both of the above noted types of machines, by increasing the diameters of the workers, to increase the relative surface speeds between the workers and the cylinders, and the workers were spaced apart and a separate stripper provided for each worker.

This improved combination of relatively large workers and an independent stripper for each of the relatively large workers operated at the greatly increased speeds above noted was successful in handling the increased volume of stock and successfully overcame the pilling of the stock at the workers; however, the increased volume of stock being delivered to the single doffer of the finishing set caused a pilling of the stock at and between the said doffer of the finishing set and the cylinder of the finishing set.

The surface speed of the doffer of the finishing set in order to obtain the best results should not be any greater than the maximum surface speed of the conveyer which receives the finishing set bat from the said doffing roll of the finishing set.

We have found, after considerable experiment, that we can successfully handle the increased amount of stock, and to still produce a high-grade bat, by providing, in the finishing set, a single relatively large worker, for example, a worker of approximately six inches in diameter operated at the said 50 R. P. M., followed by a single fancy roll of approximately the same diameter as this single worker and operated at 950 R. P. M., and a relatively small fancy stripper, approximately four inches in diameter and operated at 170 R. P. M.; and by further providing the finishing set with a pair of relatively spaced doffers operating respectively at about 35 R. P. M., the first of which is spaced apart from the fancy stripper but follows the said fancy stripper in the sequence of operations.

This first doffer is spaced slightly from the surface of the cylinder of the finishing set and thereby picks up approximately half of the thickness of the layer of stock on the finishing cylinder, it being understood that the layer of stock has been previously raised out of the gullets of the cylinder teeth by the preceding single fancy roll. This first half of the total thickness of the layer of stock is carried around the bottom of the first doffer and is removed therefrom by an oscillating comb, which clears the doffer and lays the half portion bat or web on an inclined conveyer, for reasons hereinafter set forth.

The remaining half portion of the total thickness of the layer of stock which still remains on the finishing cylinder is carried around and removed from the said cylinder by a second doffing roll which is set close to the periphery of the cylinder and thereby removes the said remaining half portion of the stock in the form of a second web, it being understood that this remaining half portion is raised out of the gullets of the teeth of the finishing cylinder by a second fancy roll positioned intermediate the two doffing rolls.

As is generally known in the art, the fancy rolls are rotated at a relatively high speed, as above noted, which causes currents of air to be thrown out from the said rapidly rotating roll. In order to prevent these currents of air from blowing the first half portion of the layer of stock from the first doffing roll, we provide a pair of wind rolls which are positioned side by side, their centers lying in a plane extending substantially radially of the cylinder of the finishing set and intermediate the first doffer and the fancy roll preceding the second doffer, a suitable shield being provided around this fancy roll for preventing the currents of air, created thereby, from blowing the stock off the conveyer which carries the stock away from the first doffing roll.

Intermediate the second doffing roll and the said second fancy roll a relatively small fancy stripper is provided which clears the said second fancy roll of any fibers that may be

picked up thereby, and places them back on the cylinder of the finishing set.

The said second portion of the layer of stock when picked up from the cylinder by the second doffing roll is carried around said doffing roll and removed therefrom by a vibrating comb which lays the said second half portion of the layer of stock in the form of a web on a conveyer, which carries the said stock away from the said second doffing roll.

The two conveyers which respectively carry the separate webs formed of the half portions of the total layer of stock are convergent with respect to each other, the delivery end of the conveyer which carries the web from the first doffer being positioned above the carrying run of the conveyer which carries the web away from the second doffer. The carrying runs of the respective conveyers travel the same general direction away from the Garnett machine and, due to the converging relationship of these conveyers, the conveyer carrying the web formed by the first half portion of the stock lays this said web upon the web formed by the other half portion of the stock, which is carried by the second conveyer. This second or underlying conveyer then carries the re-united webs, which together form the total layer of stock to the apron of an ordinary type of camel-back lapping machine.

The single set machines which handle the coarser grades of fibers are likewise provided with double doffers which function in the same general manner as noted above.

In the drawings:

Fig. 1 illustrates diagrammatically an apparatus for carrying out the method forming the subject of our invention;

Fig. 2 diagrammatically illustrates a Garnett machine of the multiple set type, showing the combination of rolls in the preliminary set; and in the finishing set including the double doffers the two separate conveyers which carry the separated portions of the finished bat from the respective doffers and the manner in which these two separated portions of the bat are united to form the complete finished bat;

Fig. 3 diagrammatically illustrates a machine of a single set type, showing the double doffers and conveyers for separating and reuniting the webs of stock taken off the doffers.

In Fig. 2 of the drawings, the preliminary set of co-operating rollers is generally illustrated at A while the finishing set of co-operating rollers is generally indicated at B. The feeder apron is illustrated at C.

The drawings illustrate the feeder apron C as carrying a batch of raw uncarded stock X and delivering the said stock to and between the feed rolls indicated at 1 and 2 respectively. These feed rolls 1 and 2 deliver the stock to the lickerin roll 3. A feed roll clearer is illustrated at 4 which is adapted to clear the feed roll 2 of any of the stock which may become lodged in the gullets of the teeth of said feed roll, depositing such stock on the surface of the layer being carried around the lower part of the lickerin roll 3.

The lickerin roll 3 carries the layer of stock to the cylinder 5 of the preliminary set A, a lump roll 6 being located in the angle formed between the periphery of the lickerin roll 3 and the periphery of the cylinder 5 of the preliminary set A.

The function of the lump roll 6 is generally known to the art, its purpose being to catch, break up, and tear apart any large lumps of stock which may be carried by the lickerin roll 3, in order that the said lickerin roll may deposit the stock on the surface of the cylinder 5 in a fairly even layer.

The cylinder 5, rotating in the direction of the arrows thereon, carries the layer of stock upwardly, the stock being engaged first by the before mentioned relatively small worker 7, which causes a further disintegration of the lumps and starts the carding of the stock carried by the cylinder.

The stock is next engaged by the above mentioned relatively large worker roll 8 which further assists in the straightening out and paralleling of the fibers of which the stock is composed. This relatively large worker 8 also acts to strip the stock from the relatively small worker 7 returning the stock to the cylinder 5.

Co-operating with the relatively large worker 8 is a relatively small stripper 9 which functions to remove the stock from the worker roll 8 and to deposit it again on the cylinder 5.

The stock then passes to a second relatively large worker 10 which further assists in straightening the fibers of the stock and completes the preliminary treatment of the stock by the preliminary set A.

A relatively small stripper 11 is provided for stripping the stock from the second worker roll 10 and for depositing the same upon the cylinder 5.

Continued rotation of the cylinder 5 carries the stock past a fancy roll 12 which, as above noted, is rotated at a relatively high rate of speed and functions to raise the stock, or to loosen the stock, from the gullets of the teeth of the cylinder 5, a relatively small fancy stripper 13 being provided for clearing the fancy roll 12 and returning the fibers to the body of the stock carried on the cylinder 5.

As the cylinder 5 is rotated the stock is engaged by the teeth of a single relatively large doffing roll 14 which picks up the entire layer of partially carded stock from the surface of the cylinder 5 and transfers the same to the cylinder 15 of the finishing set B, a relatively small stripper 34 being located in the angle formed between the periphery

of the doffer 14 and the cylinder 15 for the purpose of clearing the doffer 14 and returning the stock to the surface of the cylinder 15. To successfully carry off the increased amount of stock carried by the preliminary cylinder the speed of this transfer doffer is increased.

In the finishing set B, the stock is acted upon by a single relatively large worker 16 which finishes the straightening and paralleling of the fibers of the stock, the layer of stock being then in condition to be removed from the Garnett machine.

Continued rotation of the cylinder 15, of the finishing set B, carries the stock past the first fancy roll 17 of the finishing set. This fancy roll raises the layer of finished stock out of the gullets of the teeth of the cylinder 15 and thereby prepares the stock to be subsequently acted upon by the first doffer 18 of the finishing set B, a relatively small fancy stripper 19 being located intermediate the fancy roll 17 and the doffer 18 for the purpose of clearing the stock from the fancy and returning the fibers to the cylinder 15.

The doffer 18 is set a little distance away from the periphery of the cylinder 15, consequently this doffer 18 picks up but about one-half of the total thickness of the layer of stock carried on the cylinder 15. This half portion of the stock, of web, which is indicated at x^1, is carried around the underside of the doffer 18 and is removed from the teeth of the doffer 18 by a vibrating comb 20 of ordinary construction. This half bat or web x^1 is deposited on an inclined conveyer 22 of ordinary construction common to Garnett machines.

The remaining half bat or web indicated at x^2 remains on the surface of the cylinder 15 and is further drawn out of the gullets of the teeth of said cylinder by a second fancy roll 23, for subsequent removal from the said cylinder by a second doffing roll 25, a relatively small fancy stripper 24 being positioned intermediate the second doffer 25 and the second fancy 23. This second doffer 25 is set in close contact with the periphery of the cylinder 15 and removes all of the remaining fibers from the cylinder 15.

The web or half bat x^2 is carried around the lower side of the second doffer 25 and is removed therefrom by a vibrating comb 26, also of ordinary construction. Upon being combed from the doffer 25 by the vibrating comb 26 the half bat x^2 passes onto an inclined conveyer 27.

The inclined conveyer 27 carries the half bat or web x^2 under the lower end of the conveyer 22 which is carrying the half bat or web x^1 from the first doffer 18.

The web x^2 passes from the conveyer 27 onto the inclined apron D of an ordinary lapping machine and the web x^1 passes from the conveyer 22 onto the top of the web x^2, the two webs x^1 and x^2 thereby uniting to form the full complete bat X^1 on the apron D of the lapping machine.

The construction just described successfully eliminates the pilling of the increased volume of stock at the doffers by splitting the finished bat into two layers on the finishing cylinder and carrying these two layers away from said cylinder independently of each other, the two layers, half bats, or webs, being re-united at a distant point which is common to the planes of travel of the two discharge conveyers 22 and 27.

By this construction the previous maximum output of a single Garnett machine handling the class of stock above referred to is increased from the above noted 150 pounds per hour to approximately 400 pounds per hour without necessitating a movement of the delivery conveyers at a greater speed than the above mentioned rate of speed which is considered safe in the handling of such material.

As shown in Fig. 2 of the drawings, a pair of wind rolls 31 and 32 are positioned side by side with their centers lying in a plane extending substantially radially of the cylinder 15 intermediate the first doffer 18 and the second fancy 23, for the purpose of preventing the currents of air created by the fancy roll 23 from blowing the stock forming the half bat x^1 from the doffer roll 18 and a casing or baffle 33 is placed around the fancy roll 23 to prevent the said currents of air created thereby from blowing the stock forming the half bat x^1 from the conveyer 22.

Fig. 1 of the drawings diagrammatically illustrates a weighing feeder F; a Garnett machine G; and a lapping machine L arranged in line one behind the other in a manner to carry out our improved process for making battings or felts.

The weighing feeder F is of the type shown and described in the U. S. patent to William F. Bokum, one of the inventors named in the present application, No. 1,660,249, dated February 21, 1928; and the lapping machine L is either of the type shown and described in the U. S. patent to the present applicants William F. Bokum and John H. Senior, No. 1,554,838, dated September 22, 1925, or of the type shown and described in U. S. Patent No. 1,517,945 to the same W. F. Bokum and J. H. Senior, dated December 2, 1924.

The improved process primarily consists of continuously and uniformly feeding raw stock to a Garnett machine, splitting the layer of stock on the cylinder of the Garnett machine into a plurality of independent webs, removing the independent webs from the cylinder independently of each other, reuniting the webs at a point removed from the Garnett machine and running the re-united webs through a lapping machine, to complete the formation of a multi-layer bat.

While the process as described above suc-

cessfully takes care of the increased amount of stock fed to the Garnett machine, the increased rate of speed at which the relatively large workers are operated further assists in the successful handling of the increased amount of stock and further improves the quality of the bat by presenting an increased number of clear teeth per second to the stock carried by the cylinder, whereby a better carding of the stock is effected, because the stock does not have an opportunity to become packed in the gullets of the teeth of the workers.

As shown in Fig. 1, the raw stock is delivered by the weighing feeder F to the Garnett machine G uniformly and continuously, quantities of the stock being weighed and dumped at intervals in the feeder apron C.

The feeder apron C delivers the stock X to the Garnett machine which cards the stock in the manner above noted, the layer of carded stock being split while on the cylinder 15 and removed from the cylinder as a plurality of independent webs x^1 and x^2 by the doffers 18 and 25 respectively.

The independent webs x^1 and x^2 are reunited at the point x^3 which is spaced apart from the Garnett machine proper.

The united webs then pass onto the apron D of the lapping machine L, being passed from the upwardly inclined apron D to the downwardly inclined apron E of the lapping machine.

As shown and described in the above mentioned lapping machine patent, the lower end of the apron E moves back and forth across a platform or other conveyer H, laying or lapping the united web x^1 in a series of superposed layers x^2, to form a complete bat.

If desired, especially in the batting of the coarser fibers, the double set Garnett machine G may be replaced by a single set machine G^1 shown in Fig. 3, which includes a single cylinder 35, a series of relatively large workers 38, 39, 40, 41, with their attendant strippers 42, 43, 44 and 45, a pair of doffers 18*a* and 25*a*, a pair of fancy rolls 17*a* and 23*a*.

Conveyers 22*a* and 27*a* carry the separate webs away from the doffers 18*a* and 25*a* in the manner above noted.

In the construction shown in Fig. 3, the cylinder 35 is of a greater diameter than the cylinders 5 and 15 of the tandem set machine shown in Fig. 2, for the purpose of accommodating the increased number of large workers around its periphery.

In the single set machine shown in Fig. 3, the rigid teeth of the several rollers and the cylinder are of a relatively coarser pitch than those of the tandem machine shown in Fig. 2, the latter being used with the finer fibers, while the former is used for the coarser fibers.

Obviously the layer of stock on the cylinder of the Garnett machine may be split into more than two, or into a plurality of independent webs which are respectively removed by independent doffers and re-united after being drawn away from the cylinder, without departing from the essential features of the invention.

We claim:

1. In a Garnett machine, the combination of a cylinder provided with rigid teeth on its peripheral surface for combing fibers, a plurality of doffer rolls spaced apart around the cylinder and respectively provided with rigid teeth on their peripheral surfaces, said doffers being adapted to remove successively portions of the unitary web of said fibers from said cylinder as independent webs, a plurality of conveyers adapted to receive the independent webs from said doffers respectively, said conveyers converging and being adapted thereby to unite said webs at a point remotely situated with respect to said cylinder, a fancy roll preceding each of said doffers for raising the fibers from the gullets of the teeth of said cylinder for subsequent engagement with the teeth of the doffers, and a pair of wind rolls positioned side by side intermediate one of said doffers and the fancy rolls preceding the next doffer.

2. In a Garnett machine, the combination of a cylinder provided with rigid teeth on its peripheral surface for combing fibers, a plurality of doffer rolls spaced apart around the cylinder and respectively provided with rigid teeth on their peripheral surfaces, said doffers being adapted to remove successively portions of the unitary web of said fibers from said cylinder as independent webs, a plurality of conveyers adapted to receive the independent webs from said doffers respectively, said conveyers converging and being adapted thereby to unite said webs at a point remotely situated with respect to said cylinder, a fancy roll preceding each of said doffers for raising the fibers from the gullets of the teeth of said cylinder for subsequent engagement with the teeth of the doffers, a stripper co-operating with each fancy roll for clearing the fibers from the teeth of the fancy roll and replacing the said fibers in the cylinder, a pair of wind rolls positioned side by side intermediate one of said doffers and the fancy rolls preceding the next doffer, and a shield extending around said fancy roll from a point adjacent the said wind rolls to a point adjacent the stripper for said fancy roll.

3. In a Garnett machine comprising a preliminary set and a finishing set coupled tandem, the combination in said finishing set of a rigid toothed cylinder, a single rigid toothed worker co-operating with said cylinder for combing fibers on said cylinder, a pair of relatively spaced rigid toothed doffers, a fancy roll intermediate said doffers, and a pair of wind rolls arranged side by side in a plane extending substantially radially of said cylinder intermediate the first of said doffers

and the fancy roll positioned intermediate said doffers.

4. In a Garnett machine comprising a preliminary set and a finishing set coupled tandem, the combination in said finishing set of a rigid toothed cylinder, a single rigid toothed worker co-operating with said cylinder for combing fibers on said cylinder, a pair of relatively spaced rigid toothed doffers, a fancy intermediate said doffers, a pair of wind rolls arranged side by side in a plane extending substantially radially of said cylinder intermediate the first of said doffers and the fancy roll positioned intermediate said doffers, and a fancy stripper intermediate said fancy roll and the second of said doffers.

5. In a Garnett machine comprising a preliminary set and a finishing set coupled tandem, the combination in said finishing set of a rigid toothed cylinder, a single rigid toothed worker co-operating with said cylinder for combing fibers on said cylinder, a fancy roll adjacent said worker for raising the fibers on the cylinder, a fancy stripper adjacent said fancy roll, a rigid toothed doffer adjacent said fancy stripper, a conveyer for receiving the fibers from said doffer in the form of a web, a second rigid toothed doffer spaced apart from said first doffer, a second fancy roll intermediate said doffers for again raising the fibers on the cylinder, a fancy stripper between the said second fancy roll and the second doffer, a pair of wind rolls positioned side by side in a plane substantially radially of said cylinder and intermediate said first doffer and the fancy roll lying between said pair of doffers, a conveyer for receiving the fibers from said second doffer in the form of a second web, the said conveyers converging and thereby uniting the webs at a point common to the planes of travel of both conveyers.

6. In a Garnett machine comprising a preliminary set and a finishing set coupled tandem, the combination in said finishing set of a rigid toothed cylinder, a single rigid toothed worker co-operating with said cylinder for combing fibers on said cylinder, a fancy roll adjacent said worker for raising the fibers on the cylinder, a fancy stripper adjacent said fancy roll, a rigid toothed doffer adjacent said fancy stripper, a conveyer for receiving the fibers from said doffer in the form of a web, a second rigid toothed doffer spaced apart from said first doffer, a second fancy roll intermediate said doffers for again raising the fibers on the cylinder, a fancy stripper between the said second fancy roll and the second doffer, a pair of wind rolls positioned side by side in a plane substantially radially of said cylinder and intermediate said first doffer and the fancy roll lying between said pair of doffers, a wind shield extending around the second fancy roll from a point adjacent said wind rolls to a point adjacent the stripper for said fancy roll, a conveyer for receiving the fibers from said second doffer in the form of a second web, the said conveyers converging and thereby uniting the webs at a point common to the planes of travel of both conveyers.

7. In a Garnett machine comprising a preliminary set and a finishing set coupled tandem, the combination of a main rigid toothed cylinder and a plurality of rigid toothed rolls co-operating therewith for combing fibers on the cylinders in each set including a rigid toothed lickerin roll for feeding the fibrous stock to the main cylinder of the preliminary set, a relatively small rigid toothed worker spaced from said lickerin roll, a relatively larger rigid toothed worker adjacent said small worker and acting as a stripper therefor, a second relatively large rigid toothed worker spaced apart from the first said large worker, a stripper adjacent and co-operating with each of said larger workers, a fancy roll following the stripper for said second relative large worker, a fancy stripper adjacent and co-operating with said fancy roll; a rigid toothed doffer for transferring the partially combed stock from the main rigid toothed cylinder of the preliminary set to the main rigid toothed cylinder of the finishing set; a stripper for said transfer doffer adjacent the main cylinder of the finishing set, a single relatively large rigid toothed worker in said finishing set and spaced from said transfer doffer, a fancy roll in said finishing set adjacent said relatively large worker, a fancy stripper in said finishing set co-operating with the said fancy roll thereof, a rigid toothed doffer following said fancy stripper in said finishing set for removing a portion of the layer of combed fibers from the cylinder of the finishing set in the form of a web, a second rigid toothed doffer spaced apart from the first said doffer and adapted to remove the remaining fibers from the cylinder of said finishing set in the form of a second web; a fancy roll intermediate said doffers in said finishing set; a pair of convergent conveyers for respectively receiving the webs from the doffers and uniting the webs at a point remotely situated with respect to the said doffers, and a pair of wind rolls positioned side by side in a plane extending substantially radially from the main cylinder of the finishing set intermediate the first doffer and the fancy located between the doffers for preventing the fibers from being removed from the first doffer and its conveyer by wind created by the second said fancy roll.

8. In a Garnett machine comprising a preliminary set and a finishing set coupled tandem, the combination of a main rigid toothed cylinder and a plurality of rigid toothed rolls co-operating therewith for combing fibers on the said cylinders in each set including a rigid toothed lickerin roll for feeding

the stock to the main cylinder of the preliminary set, a relatively small rigid toothed worker spaced from said lickerin roll, a relatively larger rigid toothed worker adjacent said small worker and acting as a stripper therefor, a second relatively large rigid toothed worker spaced apart from the first said large worker, a stripper adjacent and co-operating with each of said larger workers, a fancy following the stripper for said second relative large worker, a fancy roll stripper adjacent and co-operating with said fancy roll; a rigid toothed doffer for transferring the partially combed stock from the main cylinder of the preliminary set to the main cylinder of the finishing set; a stripper for said transfer doffer adjacent the main cylinder of the finishing set, a single relatively large rigid toothed worker in said finishing set and spaced from said transfer doffer, a fancy roll in said finishing set adjacent said relatively large worker, a fancy stripper in said finishing set co-operating with the said fancy roll thereof, a rigid toothed doffer following said fancy stripper in said finishing set for removing a portion of the layer of combed fibers from the cylinder of the finishing set in the form of a web, a second rigid toother doffer spaced apart from the first said doffer in said finishing set and adapted to remove the remaining fibers from the cylinder of the finishing set in the form of a second web; a fancy roll intermediate said doffers in said finishing set; a pair of convergent conveyers adapted to receive the webs from the said doffers of the finishing set respectively and to unite the said webs at a point remotely situated with respect to said doffers; a pair of wind rolls positioned side by side in a plane extending substantially radially from the main cylinder of the finishing set intermediate the first doffer and the fancy roll located between the doffers; and a fancy stripper co-operating with the last said fancy roll and located between said fancy roll and the last said doffer.

9. In a Garnett machine comprising a preliminary set and a finishing set coupled tandem, the combination of a main rigid toothed cylinder and a plurality of rigid toothed rolls co-operating therewith for combing fibers on the cylinder in each set including a rigid toothed lickerin roll for feeding the fibrous stock to the main cylinder of the preliminary set, a relatively small rigid toothed worker spaced from said likerin roll, a relatively larger rigid toothed worker adjacent said small worker and acting as a stripper therefor, a second relatively large rigid toothed worker spaced apart from the first said large worker, a stripper adjacent and co-operating with each of said larger workers, fancy roll following the stripper for said second relative large worker, a fancy stripper adjacent and co-operating with said fancy roll; a rigid toothed doffer for transferring the partially combed stock from the main cylinder of the preliminary set to the main cylinder of the finishing set; a stripper for said transfer doffer adjacent the main cylinder of the finishing set, a single relatively large rigid toothed worker in said finishing set and spaced from said transfer doffer, a fancy roll in said finishing set adjacent said relatively large worker, a fancy stripper in said finishing set co-operating with the said fancy roll thereof, a rigid toothed doffer following said fancy stripper in said finishing set and adapted to remove a portion of the layer of combed fibers from the cylinder of the finishing set in the form of a web, a second rigid toothed doffer spaced apart from the first said doffer in said finishing set and adapted to remove the remaining fibers from the cylinder of the finishing set in the form of a second web; a fancy roll intermediate said doffers in said finishing set, a pair of converging conveyers for receiving the webs from said doffers respectively and uniting the webs at a point remotely situated with respect to the said doffers, a pair of wind rolls positioned side by side in a plane extending substantially radially from the main cylinder of the finishing set intermediate the first doffer and the fancy roll located between the doffers, a fancy stripper co-operating with the last said fancy and located between said fancy and the last said doffer, and a wind shield extending around the last said fancy roll from a point adjacent the said wind rolls to a point adjacent the last said stripper.

10. In a Garnett machine, the combination of a cylinder provided with rigid teeth on its peripheral surface for combing fibers, a plurality of doffer rolls spaced apart around the cylinder and respectively provided with rigid teeth on their peripheral surfaces, said doffers being adapted to remove successively portions of the unitary web of said fibers from said cylinder as independent webs, a plurality of conveyers adapted to receive the independent webs from said doffers respectively, said conveyers converging and being adapted thereby to unite said webs at a point remotely situated with respect to said cylinder, a fancy roll preceding each of said doffers for raising the fibers from the gullets of the teeth of said cylinder for subsequent engagement with the teeth of the doffers, and a wind roll positioned intermediate one of said doffers and the fancy roll preceding the next doffer.

11. In a Garnett machine, the combination of a cylinder provided with rigid teeth on its peripheral surface for combing fibers, a plurality of doffer rolls spaced apart around the cylinder and respectively provided with rigid teeth on their peripheral surfaces, said doffers being adapted to remove successively portions of the unitary web of said fibers

from said cylinder as independent webs, a plurality of conveyers adapted to receive the independent webs from said doffers respectively, said conveyers converging and being adapted thereby to unite said webs at a point remotely situated with respect to said cylinder, a fancy roll preceding each of said doffers for raising the fibers from the gullets of the teeth of said cylinder for subsequent engagement with the teeth of the doffers, and a predetermined number of wind rolls positioned side by side intermediate one of said doffers and the fancy rolls preceding the next doffer.

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