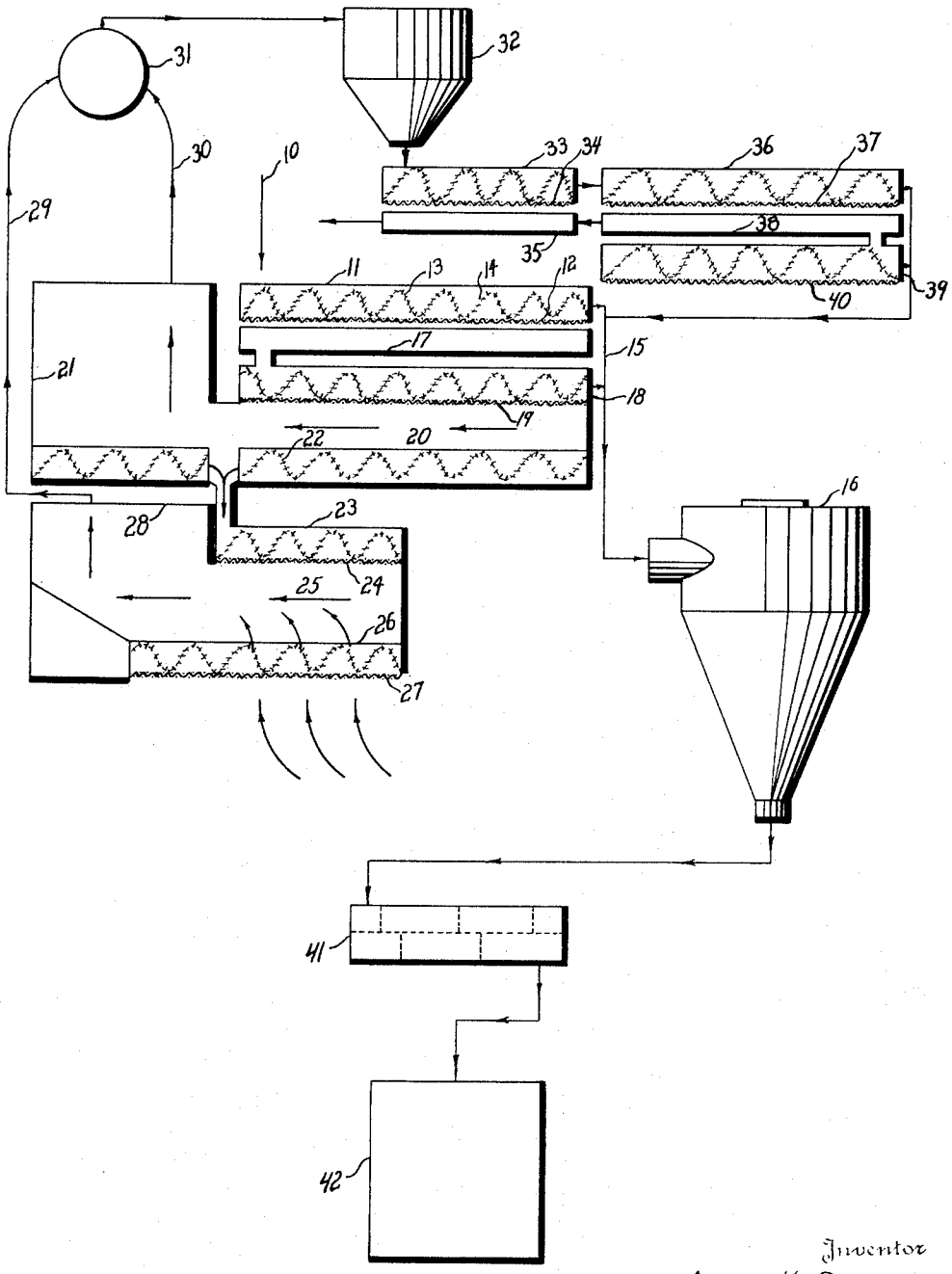
April 22, 1941. A. K. SCHWARTZ ET AL 2,239,059

METHOD OF AND MEANS FOR PROCESSING LINT

Filed July 24, 1939



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Patented Apr. 22, 1941 2,239,059

UNITED STATES PATENT OFFICE

2,239,059

METHOD OF AND MEANS FOR PROCESSING LINT

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Application July 24, 1939, Serial No. 286,122

11 Claims. (Cl. 19—72)

This invention relates to new and useful improvements in methods of processing lint.

In the usual procedure of processing lint of any type, such as cotton lint, no provision is made for removing large particles of foreign matter from the lint. In this case an object the size of a pea would be considered as being large-size foreign matter. Also, no provision is made for the recovery of lint that has been carried along with the extraneous matter removed from the lint. This loss of lint limits the amount of cleaning which may be performed on said lint and, consequently and necessarily reduces the purity and cleanliness of the finished product to a minimum.

Therefore, one object of this invention is to provide an improved method of processing lint wherein the lint is agitated over screens or perforated plates in order to shake the foreign or extraneous matter out of the lint and beat it through the screens, and also the lint and foreign matter are separated by expansion of an air current in which the lint and matter are carried so as to permit the latter, which is heavier, to drop away from the lint and fall to the bottom of the apparatus, while the lint is carried upwardly.

A particular object of the invention is to provide an improved method for processing lint wherein the lint is agitated over a foraminous surface in an upwardly directed current of air which is of sufficient velocity to pick up the lint fibers and carry them off and at the same time allow the heavier dirt and foreign matter to fall through the screen and be discarded.

Another object of the invention is to provide an improved method of processing lint wherein all foreign matter, such as broken hulls, clay, shale, hull pepper, motes and the like, is removed from the lint and a much cleaner and superior product is obtained.

An important object of the invention is to provide an improved method of processing lint wherein different types and lengths of lint fiber may be obtained in different parts of the apparatus and may be blended to give a product of any desired lint fiber composition.

A further object of the invention is to provide an improved method of processing lint wherein a finished product containing a higher cellulose content is obtained and wherein more product is obtained per pound of raw product processed because the very short fibers may be recovered and blended with the longer fibers in any desired proportion.

A construction designed to carry out the invention will be hereinafter described, together with other features of the invention.

The invention will be more readily understood from a reading of the following specification and by reference to the accompanying drawing, in which an example of the invention is shown, and wherein the figure is a diagrammatic view of an apparatus for carrying out the improved method.

In carrying out the invention the lint, containing foreign or extraneous matter, is brought from the linters (not shown) and conducted into the apparatus or system by means of a conduit 10. The lint enters directly into a beater 11 having a foraminous bottom surface 12 and being provided with a longitudinally disposed screw-conveyor 13. The screw-conveyor 13 is formed with paddles or prongs 14 which serve to agitate and beat the lint and to force any foreign or extraneous matter out of the lint and through the openings in the surface 12. The lint travels to the far end of the beater 11 from where it is ejected into a duct 15 leading to a cyclone 16. The foreign matter and any lint carried therealong drops through the foraminous surface 12 into an agitator 17 having a solid bottom. A screw-conveyor mounted in the agitator serves to agitate and ball the lint and pass it to the far end of said agitator from where the lint drops into a second beater 18 similar to the beater 11. The clean lint is passed from the far end of this beater into the conduit 15, while the foreign matter and remaining lint drop through a screen 19 at the bottom of the beater 18 into a conduit 20.

A current of air is forced through this conduit, by suitable means to be explained hereinafter, and serves to pick up the lint and fine dust particles and carry them on to an enlarged portion 21 of the conduit 20. Obviously, the velocity of the stream of air is materially reduced upon entering this enlarged section of the conduit and any heavy particles such as dirt and foreign matter will drop out to the bottom of said conduit. This rubbish or trash may be removed from the conduit in any desirable fashion. The lint, being light and buoyant, will remain suspended in the stream of air and will be carried on out of the upper part of the enlarged portion 21. A conveyor 22 is located in the bottom of the conduit 20 and is so arranged as to deliver the mixture of uncleaned lint and foreign matter into a third beater 23.

From the conveyor 22 the foreign matter and

any small amount of lint contained therein passes to a third beater 23 similar to the first two beaters. Here, the foreign matter and lint is beaten through a foraminous surface 24 located in the bottom portion of the beater 23 and falls into a second conduit 25. This action tends to place the lint and the foreign matter in a condition in which they may be more easily separated. A suitable stream of air passing through the conduit 25 picks up any lint and fine material that may remain. The larger foreign matter falls directly into a fourth beater 26 which is located in the bottom portion of the conduit 25 directly below the beater 23. The beater 26 has a similar foraminous surface 27 mounted in its bottom portion, and it is through this surface that the stream of air enters the conduit 25. Any rubbish, still remaining, will fall through this surface and be discarded, while the lint being buoyant will be picked up by the air stream and carried through the conduit 25. This lint and any small amount of foreign matter still remaining enters an enlarged portion 28 of the conduit 25, wherein the reduced velocity of the air will allow any traces of foreign matter to drop to the bottom of said conduit so that it may be removed. At the same time, the lint will be carried upwardly to the top of the enlarged portion 28.

The lint from the enlarged portion 21 of the first conduit and the lint from the enlarged portion 28 of the second conduit pass through suitable ducts 29 and 30 to a suction fan 31. The fan 31 is the source of the air streams in the conduits 20 and 25, and serves to draw the lint from these conduits. The lint from the suction fan, the combined air streams and the lint contained therein are conducted to a cyclone 32 wherein the lint and foreign matter are dropped out of the air stream and drops into a fifth beater. This material is composed largely of finely divided foreign matter, along with some short-fibered lint. For this reason the beater 33 is provided with a fine mesh foraminous surface 34 in its bottom portion, said foraminous surface allowing only the very fine material to pass therethrough. The surface 34 may be of any desirable mesh size which fulfills this purpose. 50 mesh screen has proved very satisfactory but any other suitable mesh size may be used.

As stated hereinbefore, the finely divided foreign matter is beaten out of the lint and dropped through the surface 34 from where it passes into a screw-conveyor 35 and is discarded as hull pepper. The clean lint passes out the far end of the beater 33 into a sixth beater 36 which is constructed substantially in the same manner as the beaters described hereinbefore and carries a foraminous surface 37 in its bottom portion. The surface 37 is of slightly larger mesh size than the foraminous surface 34. For example, 16 mesh screen could be used satisfactorily for this purpose but the invention is not limited to this size screen. The material passing through the foraminous surface 37 drops into an agitator 38 from which it may either be discarded or may be passed on into a seventh beater 39. This beater is substantially identical with the beater 36 and serves to recover any lint which may have passed through the foraminous surface 27. Said beater 39 is provided with a foraminous surface 40 in its bottom portion and the foreign matter is beaten through this surface while the short-fibered lint is retained and passed out into the duct 15. The lint retained on the foraminous surface 37 is also conveyed into the duct 15.

The lint from the beaters 11, 18, 36 and 39 is carried by a current of air through the duct 15 into the cyclone 16, wherein it is allowed to settle out of the air stream and drop into a blending beater 41 and on into a bailing press 42. The blending beater 41 serves merely to thoroughly mix the different lengths of fibers arriving from different parts of the apparatus and, thus, insure a homogeneous product.

It is pointed out that the air streams used in the apparatus are controlled and that their velocity is so regulated as to be merely sufficient to pick up the lint and at the same time allow the dirt and trash to fall to the bottom of the apparatus. It is noted that any type of construction may be used to carry out the various steps hereinbefore explained and that the invention is not to be limited to the specific structure described. It is also noted that any type of beater or any device causing a current of air to flow may be used.

The various beaters described hereinbefore have different functions in the carrying out of the invention. Beaters 11 and 18 have their foraminous surfaces 12 and 19 composed of fairly large mesh metal. This insures the passing therethrough of all of the foreign matter present along with short-fibered lint. Only the long lint fibers are retained on the surfaces 12 and 19 to be passed into the duct 15. The removal of the long fibers materially reduces the load on the subsequent beaters and also aids in the cleaning of the remaining lint. The long-fibered lint tends to entangle the foreign matter present and thus render its removal more difficult. It is obvious therefore that the removal of said lint will facilitate the cleaning of the remaining lint. Beater 23 and also beater 18 serve to ball and tumble the lint and foreign matter thereby placing them in such a condition as to allow them to be more easily separated.

It will be readily seen that the hereinbefore described method for processing lint will result in a much cleaner and higher grade product than may be produced by other systems. It is also possible by this method to produce a finished lint product which has a much higher cellulose content and also to obtain more lint product per pound of raw lint and seed processed.

Various changes, alterations and modifications may be made in the size, shape and arrangement of the herein described elements, within the scope of the appended claims.

What we claim and desire to secure by Letters Patent, is:

1. A system for processing lint which includes, passing the lint over a foraminous surface, agitating the lint so as to cause foreign matter present therein to fall out of said lint and through said foraminous surface, subjecting said lint to an air stream whereby said lint is picked up by said air stream while the foreign matter and some lint falls out of the air stream, subjecting said foreign matter and lint to a second stream of air whereby all the lint present and some finely divided foreign matter are picked up by the stream of air and the larger particles of foreign matter drop out of said air stream, reducing the velocity of said air streams whereby additional foreign matter is dropped out of said air streams while the lint is carried onwardly, separating said lint and foreign matter from said air streams, passing said lint and foreign matter over a foraminous surface, agitating said lint so as to cause foreign matter to drop out of said lint and through said forami-

nous surface, and collecting and blending the lint retained on the various foraminous surfaces.

2. A system for processing lint which includes, passing the lint over a foraminous surface, agitating the lint so as to cause foreign matter present therein to fall out of said lint and through said foraminous surface, subjecting said lint to an air stream whereby said lint is picked up by said air stream while the foreign matter and some lint falls out of the air stream, subjecting said foreign matter and lint to a second stream of air whereby all the lint present and some finely divided matter are picked up by the stream of air and the larger particles of foreign matter drop out of said air stream, reducing the velocity of said air streams whereby additional foreign matter is dropped out of said air streams while the lint is carried onwardly, separating said lint and foreign matter from said air streams, passing said lint and foreign matter over a foraminous surface, and agitating said lint so as to cause foreign matter to drop out of said lint and through said foraminous surface.

3. A system for processing lint which includes, passing the lint over a foraminous surface, agitating the lint so as to cause foreign matter present therein to fall out of said lint and through said foraminous surface, subjecting said lint to an air stream whereby said lint is picked up by said air stream while the foreign matter and some lint falls out of the air stream, reducing the velocity of said air stream whereby additional foreign matter is dropped out of said air stream while the lint is carried onwardly, separating said lint and foreign matter from said air stream, passing said lint and foreign matter over a foraminous surface, agitating said lint so as to cause foreign matter to drop out of said lint and through said foraminous surface, and collecting and blending the lint retained on the various foraminous surfaces.

4. A system for processing lint which includes, passing the lint over a foraminous surface, agitating the lint so as to cause foreign matter present therein to fall out of said lint and through said foraminous surface, subjecting said lint to an air stream whereby said lint is picked up by said air stream while the foreign matter and some lint falls out of the air stream, reducing the velocity of said air stream whereby additional foreign matter is dropped out of said air stream while the lint is carried onwardly, separating said lint and foreign matter from said air stream, passing said lint and foreign matter over a foraminous surface, and agitating said lint so as to cause foreign matter to drop out of said lint and through said foraminous surface.

5. A system for processing lint which includes, passing the lint over a foraminous surface, agitating the lint so as to cause foreign matter present therein to fall out of said lint and through said foraminous surface, subjecting said lint to an air stream whereby said lint is picked up by said air stream while the foreign matter and some lint falls out of the air stream, subjecting said foreign matter and lint to a second stream of air whereby all the lint present and some finely divided foreign matter are picked up by the stream of air and the larger particles of foreign matter drop out of said air stream, separating said lint and foreign matter from said air stream, passing said lint and foreign matter over a foraminous surface, agitating said lint so as to cause foreign matter to drop out of said lint and through said foraminous surface, and collecting and blending the lint retained on the various foraminous surfaces.

6. A system for processing lint which includes, passing the lint over a foraminous surface, agitating the lint so as to cause foreign matter present therein to fall out of said lint and through said foraminous surface, subjecting said lint to an air stream whereby said lint is picked up by said air stream while the foreign matter and some lint falls out of the air stream, subjecting said foreign matter and lint to a second stream of air whereby all of the lint present and some finely divided foreign matter are picked up by the stream of air and the larger particles of foreign matter drop out of said air stream, reducing the velocity of said air streams whereby additional foreign matter is dropped out of said air streams while the lint is carried onwardly, passing said lint and foreign matter over a foraminous surface, agitating said lint so as to cause foreign matter to drop out of said lint and through said foraminous surface, and collecting and blending the lint retained on the various foraminous surfaces.

7. A system for processing lint which includes, passing the lint over a foraminous surface, agitating the lint so as to cause foreign matter present therein to fall out of said lint and through said foraminous surface, subjecting said lint to an air stream whereby said lint is picked up by said air stream while the foreign matter and some lint falls out of the air stream, subjecting said foreign matter and lint to a second stream of air whereby all the lint present and some finely divided foreign matter are picked up by the stream of air and the larger particles of foreign matter drop out of said air stream, reducing the velocity of said air streams whereby additional foreign matter is dropped out of said air streams while the lint is carried onwardly, passing said lint and foreign matter over a foraminous surface, and agitating said lint so as to cause foreign matter to drop out of said lint and through said foraminous surface.

8. A system for processing lint which includes, passing the lint over a foraminous surface, agitating the lint so as to cause foreign matter present therein to fall out of said lint and through said foraminous surface, subjecting said lint to an air stream whereby said lint is picked up by said air stream while the foreign matter and some lint falls out of the air stream, separating said lint and foreign matter from said air streams, passing said lint and foreign matter over a foraminous surface, and agitating said lint so as to cause foreign matter to drop out of said lint and through said foraminous surface.

9. A system for processing lint which includes, passing the lint over a foraminous surface, agitating the lint so as to cause the foreign matter present therein to fall out of said lint and through said foraminous surface, subjecting said lint to an air stream whereby said lint is picked up by said air stream while the foreign matter and some lint falls out of the air stream, reducing the velocity of said air stream whereby additional foreign matter is dropped out of said air stream while the lint is carried onwardly, passing said lint and foreign matter over a foraminous surface, and agitating said lint so as to cause foreign matter to drop out of said lint and through said foraminous surface.

10. A system for processing lint which includes, passing the lint over a foraminous surface, agitating the lint so that the foreign matter is con-

centrated, subjecting the lint to an air current so as to effect a separation of said lint and the large foreign matter, and removing the small foreign matter by passing the lint over a foraminous surface and beating the same.

11. The system of processing cotton lint which includes, conducting the lint and extraneous matter through an agitating and sifting step, carrying off cleaned lint from said step, sifting the short lint and extraneous matter into an air stream and settling foreign matter out of said stream, expanding the air stream and dropping out additional extraneous matter while carrying off the clean lint.

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