

June 3, 1941.

A. L. SMITH

2,244,544

APPARATUS FOR COLLECTING AND BLENDING LINT

Filed Nov. 5, 1938

3 Sheets-Sheet 1

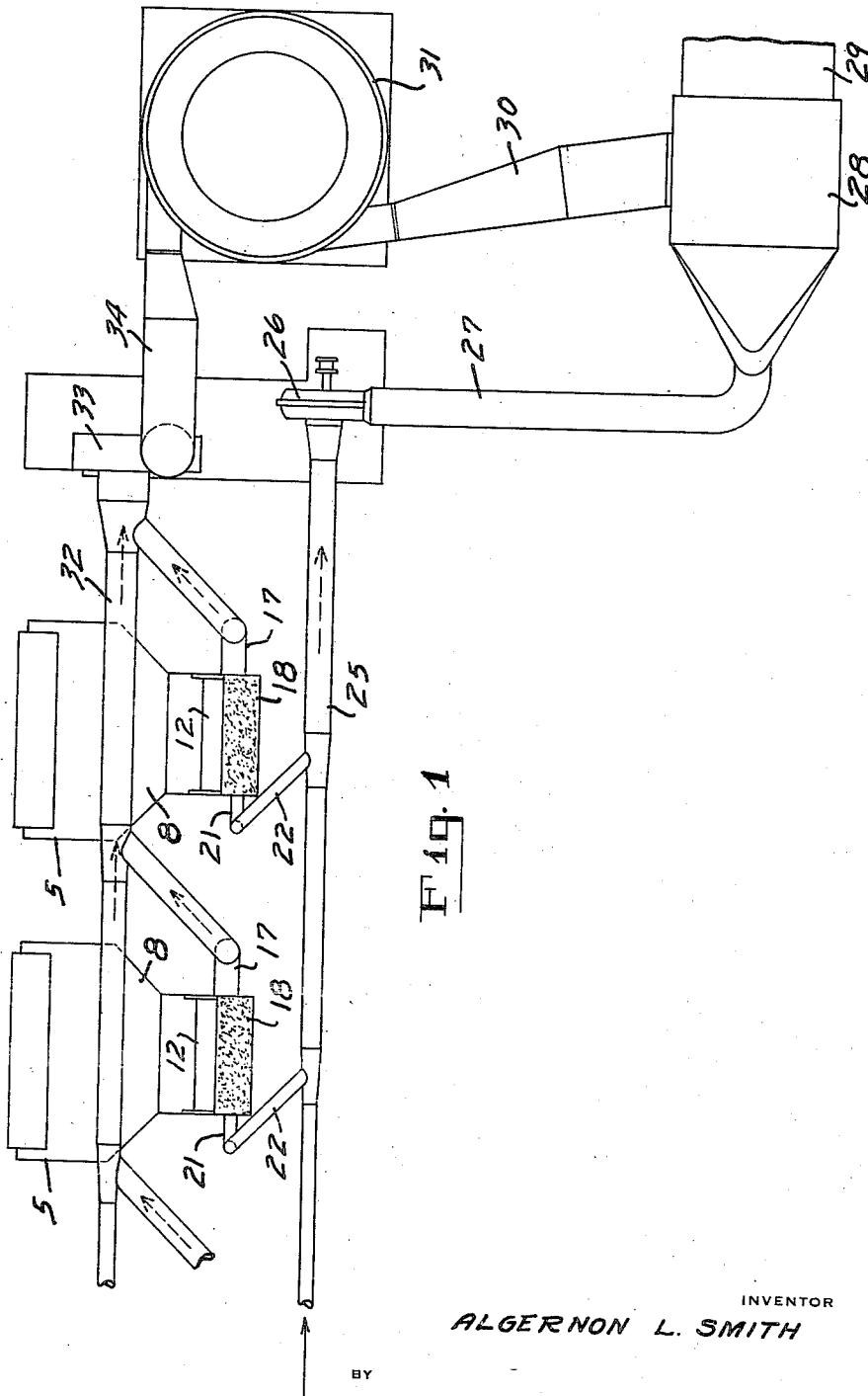


Fig. 1

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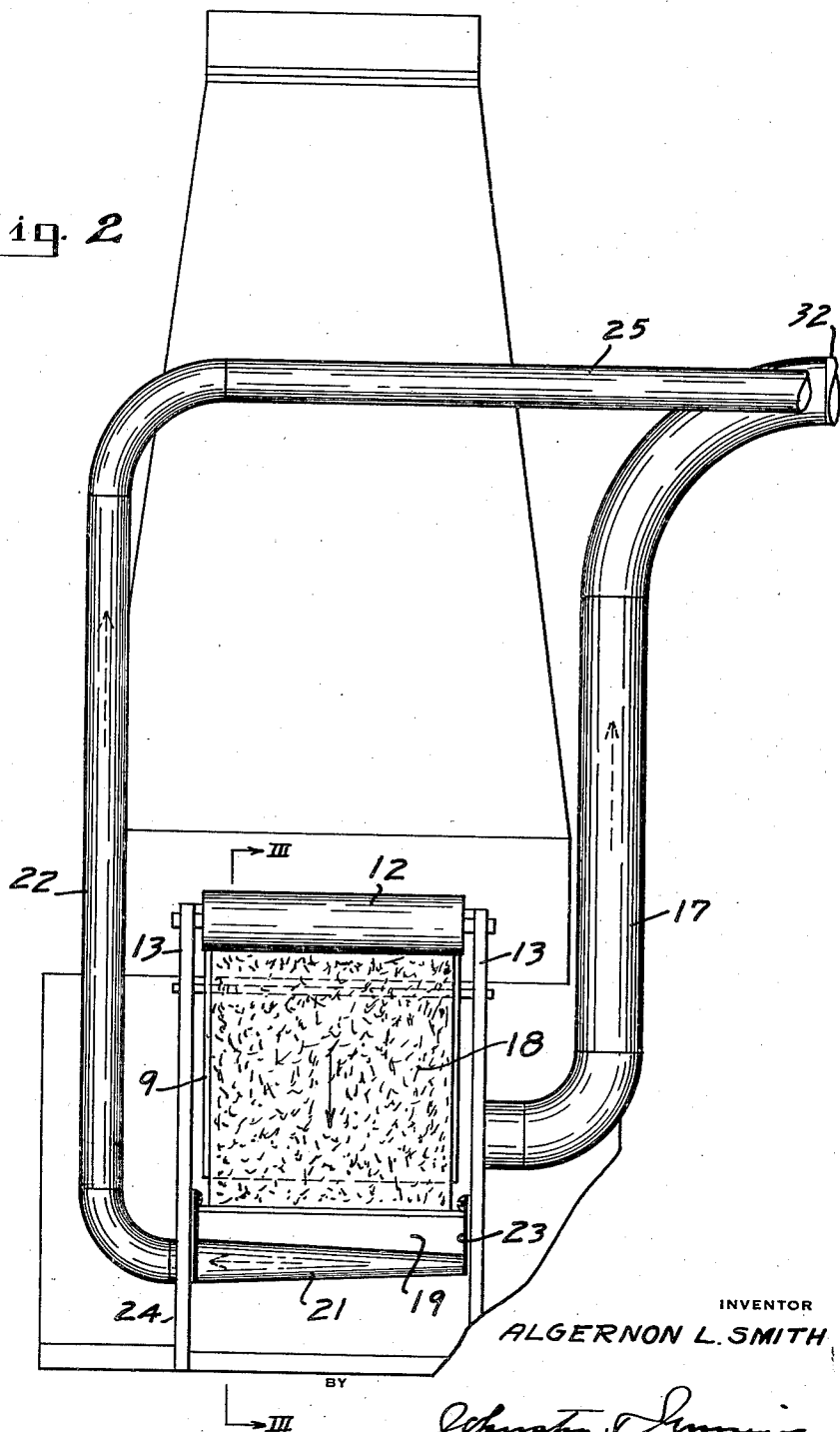
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Fig. 2



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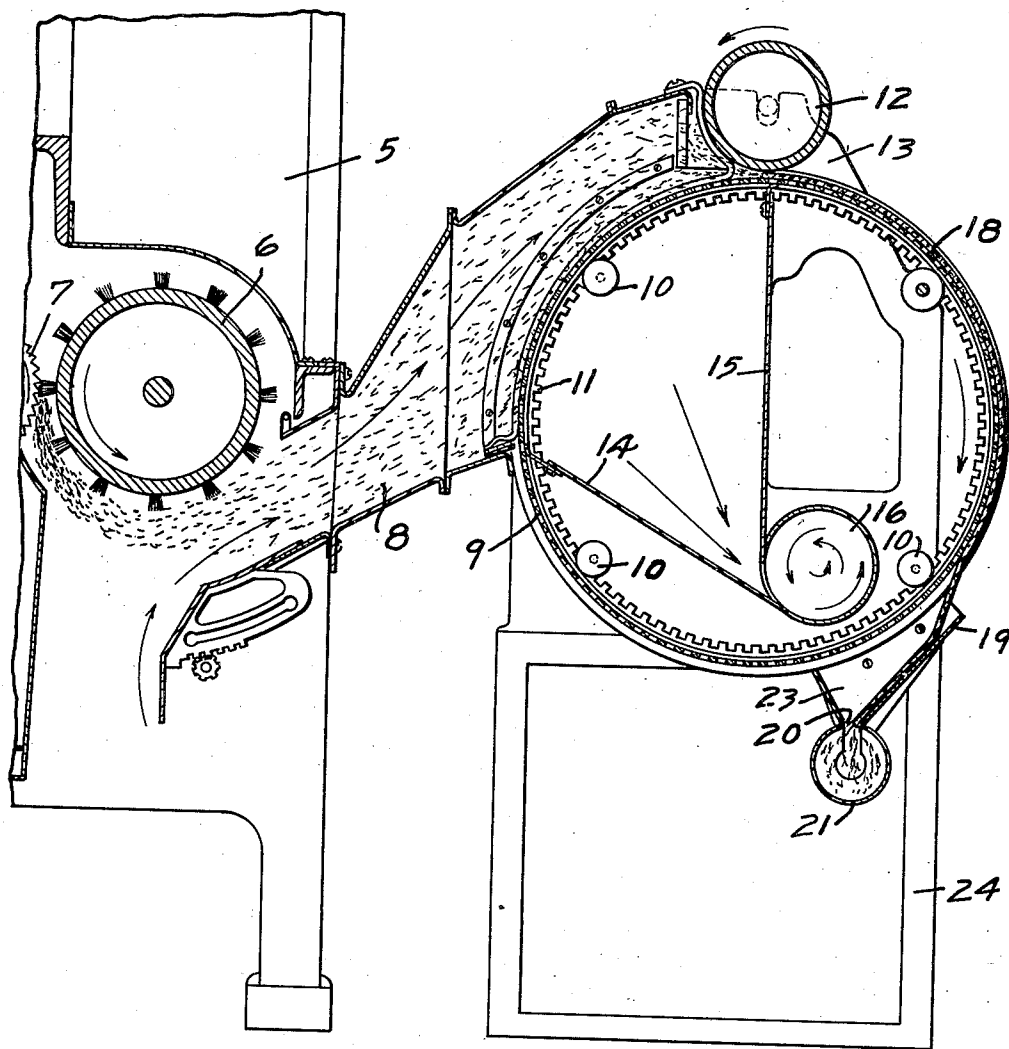


Fig. 3

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APPARATUS FOR COLLECTING AND BLEND-
ING LINTAlgernon L. Smith, Birmingham, Ala., assignor to
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Application November 5, 1938, Serial No. 239,182

1 Claim. (Cl. 19—156)

My invention relates to an apparatus for collecting and blending the lint delivered from a battery of linter gins, each of which is provided with a condenser adapted to separate lint from the air currents induced by or flowing through its respective gin.

It is often the practice, for most economical operation, to combine a large number of linter gins in a battery and, to reduce the expense of piping for the collection of the lint from these gins, it has been proposed to conduct the lint from each gin through a manifold conveyor system by an exhaust blower or air blast accompanied by no more air than was needed to suspend the lint and convey it effectively to the battery condenser. While, for the purpose of economy, such collection of lint from a large number of gins has many advantages, it remains of prime importance that the operator should be able consistently and readily to make an effective examination of the lint as it is collected by each gin before it enters the manifold conveyor system and loses its identity, so that when any gin is not operating properly or efficiently, that fact can be promptly detected and the trouble corrected, thereby maintaining a high standard of quality and uniformity in the lint collected by the final or battery condenser.

To this end I propose, as one of the distinctive features of my present invention, to provide each linter gin with its respective condenser and to arrange its lint collecting hopper and flue below the condenser drum and its bat forming roller at the upper portion of said drum so as to cause the bat formed on the drum in its travel from the bat roller to the flue hopper to be exposed for its full width over a sector of the drum large enough to enable an effective inspection of the quality of lint forming the bats produced by the several gins to be made at a glance in walking past the condensers of a battery of gins.

A further feature of my system for collecting lint from the individual gin condensers is that the lint flue for carrying off the lint from each gin condenser is provided with a chute so related to the under portion of its respective condenser drum on its down-going side that the bat as it disengages itself from the under drum surface will fall thereinto like a curtain and slide down the hopper into its lint flue outlet, thus enabling the bat to be doffed without machinery or equipment from each gin condenser, said outlets for a battery of condensers being so restricted that in the aggregate they allow no more air to enter the manifold conveyor system than

is necessary to suspend and convey with it the several accumulating lint masses and deliver same to the final or battery condenser.

It is also important to employ a suction fan interposed in the lint conducting manifold in such position that the lint derived from all gins of the battery must pass through its blades so as to be broken up effectively and blended into a uniform lint before delivery to the battery condenser and thence to the final bat roller or press as the case may be.

My invention further comprises the novel details of construction and arrangements of parts which, in their preferred embodiment only, are illustrated in the accompanying drawings that form a part of this specification, and in which—

Fig. 1 is a diagrammatic plan view illustrating only two of a battery comprising any desired number of linter gins having their respective condensers connected to suitable manifold conveyor systems, one of which collects the lint and the other the mote bearing air currents and separately conducts them to their respective receivers.

Fig. 2 is a rear view showing in elevation the delivery end of the condenser of the initial gin of a battery row.

Fig. 3 is an enlarged vertical cross-sectional view taken on the line III—III of Fig. 2, showing only a portion of the linter gin itself.

Similar reference numerals refer to similar parts throughout the drawings.

In the embodiment of my invention illustrated, I show a battery of linter gins 5 which may be of any standard construction, each having a doffing brush 6 coacting with its respective saw cylinder 7 and adapted to deliver the lint, along with an induced air current, through the conduit 8 into engagement with the foraminous cylindrical drum 9 of its respective condenser, which drum is rotatably supported in operating position by means of internal bearing rollers 10 engaging the inner periphery of a track forming part of the internal ring gear 11 in the drum which meshes a driving gear, not shown, by means of which the drum is rotated in a clockwise direction. The lint passing through the conduit 8 collects upon the up-going drum surface that is exposed within the conduit and comes into engagement with a bat roller 12 of the usual construction, disposed at the top of, and lengthwise with respect to, said drum and journaled for vertical play in slots in the end frames 13 of the condenser. Suitable baffle walls 14 and 15 disposed within the condenser drum define there-

in a chamber connecting tangentially with the suction pipe 16 leading outwardly from one end of the condenser and connected to the air and dust manifold pipe 17 to which the corresponding pipes 16 of the several gin condensers of the battery are likewise connected.

The lint collected on the rotating drum and rolled into a coherent mat upon its surface forms a bat 18 which clings to the down-going exposed surface of the drum, as is more clearly seen in Fig. 2, and finally, being free from internal suction, it falls away from the under portion of the drum, as shown in Fig. 3, and enters the hopper 19 from which it is drawn, along with a restricted current of room air, through a longitudinal slot 20 provided therefor into the lint flue 21 of its respective gin.

This lint flue 21 is tapered with its larger end connected to the lint manifold pipe 22 leading from the several gin condensers of the battery. The shape of the lint flue 21 and its top slot 20 is such as to obtain a uniform suction action upon the entering lint bat and to draw in with the latter into the system only sufficient air to suspend the lint and convey it to the intended receiver. The hopper 19 is provided with end walls 23 attached to the base 24 upon which its respective gin condenser is mounted. The wall of the hopper which receives the bat slopes outwardly and underhangs the down-going peripheral edge of the drum, while the inner wall of the hopper rises almost vertically into close juxtaposition to the drum, thus causing the main air taken in at each lint flue to be drawn in between the bat bearing wall of the hopper and the condenser drum so that the bat itself is interposed in the path of the entering air and will be drawn in with it into the lint flue 21.

The lint and accompanying air are drawn from the manifold pipes 22 of the several gin condensers of the battery to a trunk line 25 by the action of a suction fan 26, the blades of which are disposed and adapted to receive and break up the fiber masses delivered thereto from the several gin condensers and blow same at right angles through the flue 27 into the battery condenser 28, whence the lint is delivered to a baling press 29 or bat roll, as may be desired, while the air separated from the lint in the condenser, passes off through a pipe 30 into a centrifugal separator 31 which effects the separation therefrom of any lint and other matter and makes suitable disposition thereof. In like manner the several air manifold pipes 17 from the several gin condensers deliver into a trunk line 32, responsive to the action of a suction fan 33 which blows this air along with motes, lint, and foreign matter suspended therein, through the duct 34 into the separator 31.

It will be understood that the trunk lines 25 and 32 are suitably arranged so that they may have appropriate connection to the gin condensers of the whole battery if such be desired, and as such batteries often comprise as many as fifty linter gins, the importance of the facilities afforded for the frequent and rapid inspection of the lint bats from all of these gins, as well as the very effective commingling and blending of the lint they produce as the result of the action of the suction fan 26, will be immediately apparent. A single operator, without being required to manipulate any part of the gin condensers, may make such frequent inspections of the linting action in the several gins as will keep them up to a high standard of operation, thus improving the quality and value of the resultant lint product which, by reason of the uniformity attained by the blending action of the fan blower will command a higher price.

It is to be understood that the gin condenser showing does not form, in its detailed structure, any essential part of my present invention as it is typical of any condenser the bat roller and lint collecting hopper of which are so spaced and arranged as to afford full and ample vision of the bat being produced before its delivery into the manifold lint conveying system.

While I have shown my invention in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various changes and modifications, without departing from the spirit thereof, and I desire, therefore, that only such limitations shall be placed thereupon as are imposed by the prior art or as are specifically set forth in the appended claim.

What I claim is:

In a lint collecting apparatus for a battery of linter gin condensers, each having a moving condenser element, means to cause the lint to be deposited thereon, a roller to form the lint into a bat, and a bat receiving hopper fitted to the under portion of its down-going side and spaced from its respective bat roller to leave a substantial portion of the formed bat, sufficient for its ready inspection, exposed before it enters its respective hopper, said hoppers being each provided with a bottom slot substantially coextensive in length with the width of the bat for delivering the bat with a restricted air volume into a manifold system, and a manifold lint conveyor system connected to, and adapted to collect lint from, said hoppers and comprising a suction fan and means to apply substantially uniform suction along the hopper slots.

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