Dec. 1, 1959 J. W. BUZICK, JR 2,914,809

LINT SLIDE

Filed Sept. 10, 1954 3 Sheets-Sheet 1

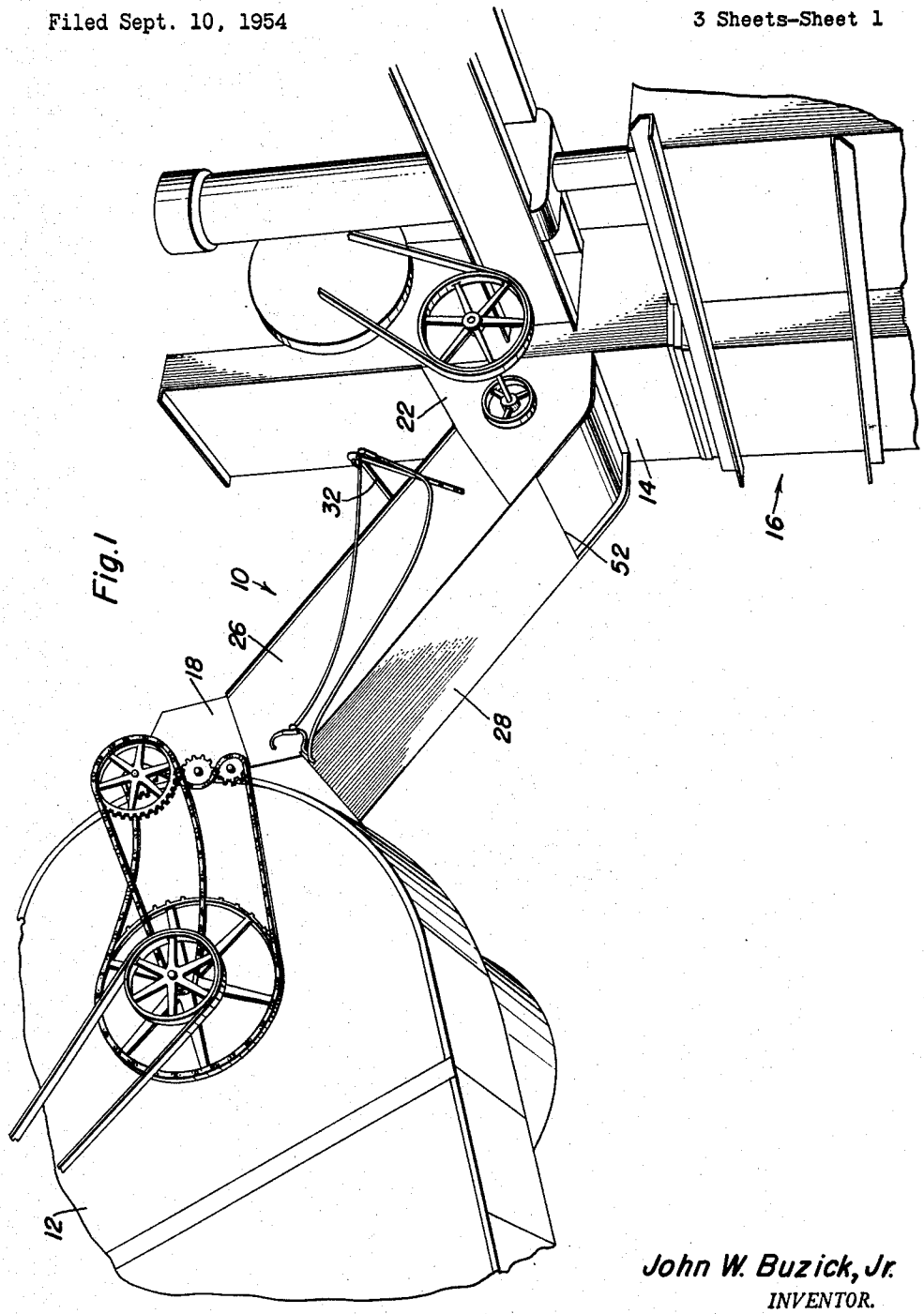


Fig. 1

John W. Buzick, Jr.
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

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LINT SLIDE

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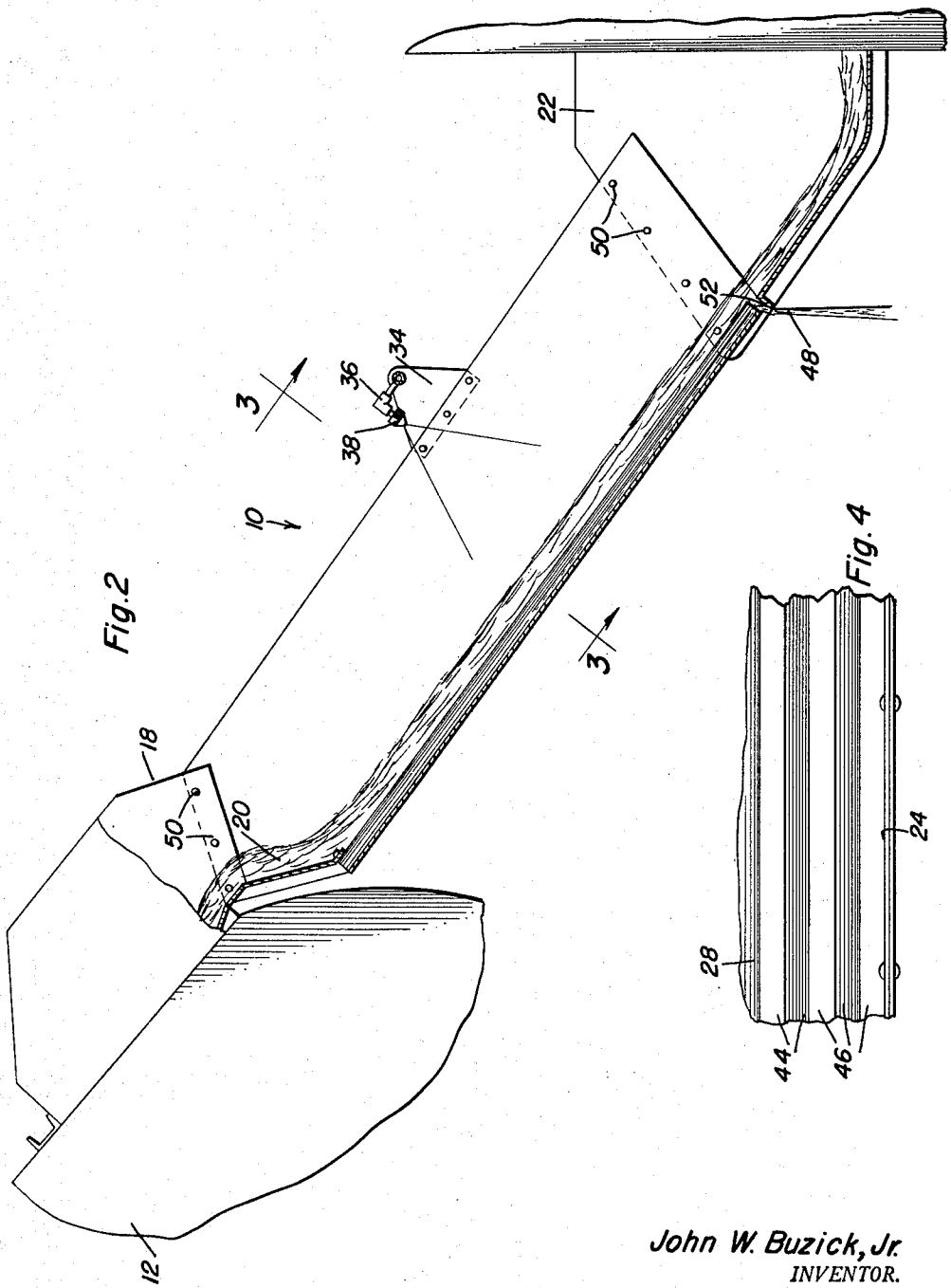


Fig. 2

Fig. 4

John W. Buzick, Jr.
INVENTOR.

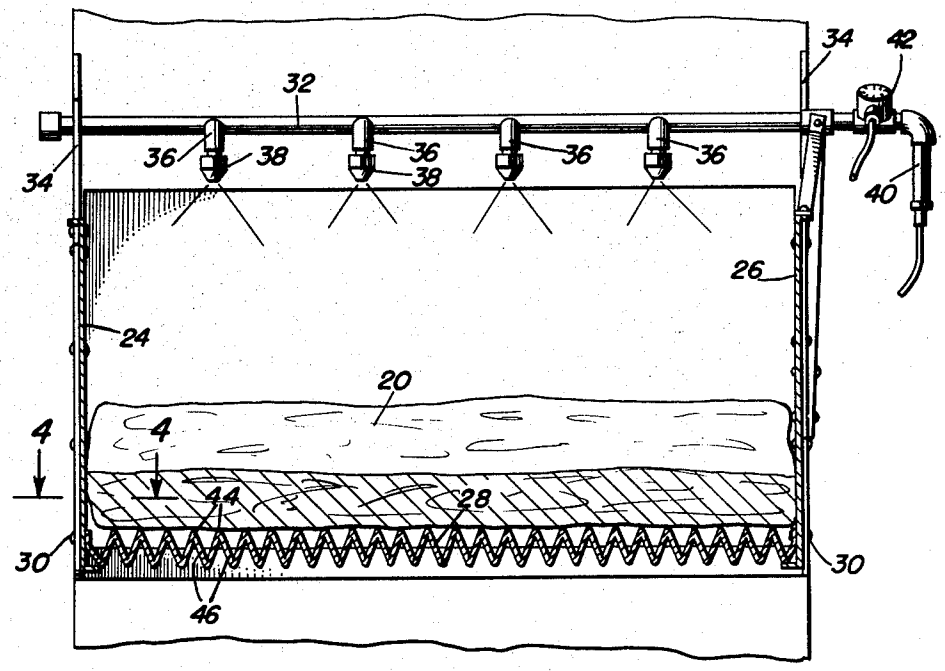
BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

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LINT SLIDE

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Fig. 3



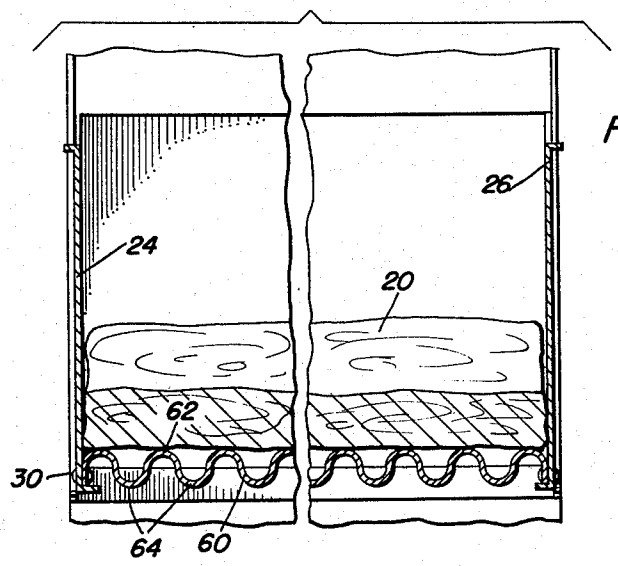


Fig. 5

John W. Buzick, Jr.
INVENTOR.

BY Thomas A. O'Brien and Harvey B. Jacobson
Attorneys

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2,914,809

LINT SLIDE

John W. Buzick, Jr., Monette, Ark.

Application September 10, 1954, Serial No. 455,320

7 Claims. (Cl. 19—66)

This invention comprises novel and useful improvements in a lint slide, and more specifically pertains to an improved construction of lint slide whereby excessive moisture will be prevented from accumulating upon the bottom surface of the lint slide as the result of moisture sprayed upon the batt discharged from the condenser and delivered by the lint slide to the baler.

It has now become conventional practice to supply moisture in the form of a spray to the batt of lint cotton as the latter is delivered by the lint slide from the lint condenser to the lint baler, in order to restore the depleted moisture content resulting from present day methods of drying the cotton fiber as a prelude to cleaning the same and passing the cleaned seed cotton through the gin stands and lint condenser of a ginning plant.

However, it frequently happens that the spraying apparatus for supplying moisture to the surface of a lint batt as the latter descends the lint slide to the baler, will directly supply moisture to the bottom of the lint slide if for any reason the passage of a lint batt thereover is interrupted. When this occurs, the excess moisture accumulating on the bottom of the lint slide adheres to the surface of the same and soaks the bottom portion of the lint batt producing undue wetting of the same, as well as impeding the sliding of the batt down the surface of the slide.

It is therefore a primary purpose of this invention to provide a simple construction of lint slide which may be employed in conjunction with moistening of the lint batt for moisture regain of the lint fiber, without the aforesaid disadvantages.

A further object of the invention is to provide a lint slide construction which will prevent the accumulation of moisture thereon, even when sprayed directly thereon by the sprayers, without impeding in any way the passage of a lint batt therealong.

Yet another object of the invention is to provide a lint slide in accordance with the preceding objects which shall be of inexpensive construction, easily installed in conventional ginning plants between the lint condenser and the baler, and shall be highly efficient for the purposes intended.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a perspective view showing a portion of a ginning plant including the lint condenser and the baler and showing the lint slide operatively interposed therebetween in the conventional manner and to which the principles of this invention are applied;

Figure 2 is a vertical central longitudinal sectional view through the lint slide of Figure 1, and showing the attachment of the lint slide to the discharge hood of the condenser and the inlet hopper of the baling press;

Figure 3 is a vertical transverse sectional view taken substantially upon the plane indicated by the section line 3—3 of Figure 2 and upon an enlarged scale, and showing especially the construction of the improved bottom wall of the lint slide in accordance with this invention and its relation to the moisture spraying assembly of the lint slide;

Figure 4 is a horizontal sectional detail view taken substantially upon the plane indicated by the section line 4—4 of Figure 3 and showing in top plan a portion of the bottom wall of the lint slide; and

Figure 5 is a fragmentary view similar to Figure 3 but showing a somewhat modified construction of a lint slide bottom wall.

The use of present day heating systems for the seed cotton in cotton ginning plants produces such enormous heating effects that in order to ensure that all of the seed cotton will be sufficiently dried for most effective cleaning purposes, an excessive or overdrying is produced which leaves the seed cotton and the lint cotton deficient or subnormal as regards optimum moisture content. Such lint cotton, from its overdrying, is detrimentally affected as to its physical characteristics, and thus commands a lower price in the market; and the loss of weight resulting from the excessive removal of moisture from the fibers represents a financial loss to the cotton grower and the gin operator, since the prices which they receive are based upon the weight of the baled lint cotton. It has therefore come to be accepted practice to attempt to restore at least in part this excessive moisture loss from the cotton fibers, by spraying moisture upon the surface of the lint batt as the same descends from the lint condenser to the baler.

However, this practice seeking to regain the lost moisture of the cotton fibers, possesses the serious disadvantage that if the continuous flow of the batt of lint cotton down the lint slide is momentarily interrupted, as by stoppage of the flow of cotton through the ginning plant for any reason, or a momentary rupturing of the batt or the like, the continuous spraying of moisture from the spray assembly mounted above the lint slide serves to wet the bottom wall of the same.

Moisture collecting upon the bottom wall of the lint slide is thus directly applied to the bottom surface of the batt where the same, in some instances at least, serves to overwet the bottom layer of the batt, thereby detrimentally affecting its properties and value. Still further, the wet bottom wall of the lint slide prevents the easy flow of the lint batts down the same, causing a sticking of the batt to the bottom wall or a wadding up of the batt, all of which detrimentally affects the structure and texture of the batt and consequently, of the bale of lint cotton produced therefrom.

In order to overcome the difficulties arising from moisture collecting upon the bottom wall of the lint slide and being applied to the bottom surface of the batt, the present invention provides an improved lint slide construction wherein the bottom wall is so designed as to prevent the accumulation of moisture thereon, and to minimize the area of any moistened surface which contacts the bottom of the lint batt.

Referring now more specifically to the drawings which illustrate one practical manner in which the principles of this invention may be applied to existing and conventional types of ginning plant equipment, it will be observed that the improved lint slide indicated generally by the numeral **10**, and which constitutes the subject of this invention, constitutes a shute which is uni-directional and is shown operatively connected to a lint condenser **12** and the tamper **14** of a baling press which is indicated generally by the numeral **16**. As will be seen by reference to Figures 1 and 2, the lint condenser **12**

which is of any conventional and known design, is provided with a customary discharge hood **18** by means of which the lint batt formed upon the condenser cylinder and removed from the same by the doffing roller, not shown, is discharged to the lint slide. This batt is indicated by the numeral **20** in Figure 2, and as shown, flows downwardly from the downward outlet opening of the discharge hood **18** into the upper end of the lint slide **10**. From the lower end of the lint slide, the cotton batt passes into the inlet hopper **22** which communicates with the interior of the tamper **14**, the cotton batt being pressed by this tamper down into the baling press **16** in a manner well understood in the art.

It should be observed that the discharge hood **18** of the lint condenser and the inlet hopper **22** of the tamper chamber of the baling press are of any conventional design, and the conventional lint slide **10** which is in the form of a trough having an open top, is replaced by the improved lint slide construction of this invention, to obtain the improved results set forth in this application.

Referring now more specifically to Figure 3, it will be seen that the lint slide includes a pair of parallel vertically and longitudinally extending side walls **24** and **26**, between which is secured at the bottom portions of the side walls, a bottom wall **28**, as by rivets or bolts **30**. The lint slide **10** in accordance with this invention, may be identical with a conventional lint slide as to the side walls **24** and **26**, the customary bottom wall being replaced by the particular construction of bottom wall shown at **28** and which forms the essential feature of this invention.

Likewise shown in the drawings is a header **32** which is supported transversely above the top of the side walls, as by a pair of supporting brackets **34**, this header having a plurality of downturned discharge nipples **36**, each of which has a spray nozzle **38** thereon. These nozzles are so positioned that the spray therefrom will be discharged substantially uniformly across the entire width of the batt and in proper quantity to supply the additional moisture to be introduced into the fibers of the batt. The moisture for the header is supplied from any suitable source in the form of water or steam, as by a supply conduit **40** under the control of any suitable valve member **42** of any conventional design. Since this portion of the apparatus is of conventional design and forms no part of the present invention, a further description and discussion of the same is deemed to be unnecessary for the purposes of understanding the invention claimed hereinafter.

As will be best apparent from Figure 3, the bottom wall **28** is formed preferably of a sheet of light weight material and is provided with alternate elevations or ridges **44**, interspersed by troughs or channels **46**, the ridges and channels extending longitudinally of the bottom wall to provide a corrugated effect therefor. The elevations or ridges **44** serve to support for sliding movement the bottom surface of the batt **20**, as will now be apparent from a consideration of Figure 3, so that the bottom surface of the batt is held elevated above the bottoms of the troughs or channels **46** which thus serve to collect any moisture which may strike the bottom wall, as for example, under the conditions hereinbefore mentioned.

Owing to the incline of the bottom wall, it is obvious that any moisture collecting in the troughs will move to the lower end of the same and will be discharged therefrom as in the form of a stream **48**, as shown in Figure 2.

It will be observed that the upper portion of the side walls and bottom wall of the lint slide are connected in any desired manner about the side walls and bottom of the discharge hood **18**, and may be detachably secured thereto, as by fasteners **50** of any desired character. In a similar manner, the lower end of the side walls and bottom wall of the lint slide are received within the side walls and bottom wall of the inlet hopper **22**, being likewise secured thereto as by fasteners **50**.

In order to remove any moisture collecting upon the bottom wall and running down the length of the same by means of the channels or troughs **46**, a venting means is provided between the bottom edge of the lint slide and the bottom wall of the inlet hopper **22**, this vent means conveniently taking the form of an opening or the like **52**. Thus, moisture collecting upon the bottom wall of the lint slide will be discharged before it reaches the lint batt inlet hopper **22**; thereby preventing the accumulation of sufficient moisture upon the bottom wall of the lint slide to detrimentally affect the lint batt.

It is obvious that the principles of this invention are not limited to any particular configuration of the self-draining bottom wall of the lint slide. As shown in Figure 3, this bottom wall has V-shaped ridges and troughs, and the top edges of the ridges serve as the support for the cotton batt and due to their relatively small area in contact with the batt, ensure that only a minimum amount of moisture will be imparted from the bottom wall to the bottom surface of the batt. Further, the moisture collecting in the troughs is depressed below the supported surface of the lint batt so as to be out of contact with the latter.

However, the supporting ridges as well as the troughs may be of various cross-sectional shapes. Thus, the top surface of the ridges may be flat rather than pointed in order to provide a greater batt supporting area if desired, and in some instances, the side walls of the troughs will be undercut so as to provide a greater width at the bottom of the troughs than at their upper open ends. This will ensure maximum moisture removal capacity together with a maximum supporting surface area for the bottom wall of the lint slide.

Disclosed in the modified construction of Figure 5 is a modified form of bottom wall **60**, which is mounted in the lint slide in exactly the same manner as the bottom wall **28**. The modified bottom wall **60** has preferably rounded ridges **62** and channels or troughs **64**. The operation of this form of the invention, however, is the same as that previously described.

In some instances, I may prefer to provide slots or openings extending through the bottom walls of the troughs **46** or **64** for the purpose of venting moisture therefrom at other locations than at the lower ends of the troughs. In view thereof, it may then be found expedient to omit the drainage opening **52** and to rely solely upon these openings in the bottom wall of the trough for venting of the moisture collecting upon the bottom wall. Since such constructions are readily apparent and understandable, and fall within the scope of this invention, a further detailed illustration of the same is deemed to be unnecessary.

It should be observed that the corrugated effect of the bottom wall serves the dual functions of removing excess moisture from the lint slide; providing a reduced bearing surface engaging the underside of the lint batt and thereby facilitating downward sliding movement of the latter through the lint slide; and serves to impart rigidity and strength to the bottom wall, thereby enabling the latter to be economically constructed from relatively thin sheet material.

As one example of a satisfactory construction, the openings **52** may be about ½" wide and formed between the lower end of the bottom wall of the slide and slightly higher than and disposed above the upper end of the hopper bottom wall.

The present invention is specifically adapted as an attachment or replacement for existing conventional lint slides or the bottom walls thereof in order to adapt them to overcome the disadvantages and defects resulting from the application of moisture to a lint batt as the latter passes down the lint slide.

From the foregoing, the construction and operation of the device will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claims.

What is claimed as new is as follows:

1. In a cotton ginning plant, an inclined lint slide connecting a cotton lint fiber condenser with a lint baler, said lint slide having side and bottom walls together with a spray assembly operatively associated therewith for imparting controlled moisture directly to the top side of a lint batt, passing by gravity along the slide from the lint condenser to the lint baler, the bottom and side walls of the lint slide being of substantially the same width as that of a lint batt discharged from the lint condenser whereby to maintain unaltered the shape and texture of the lint batt during its passage down the slide, said bottom wall being continuous from the condenser to the baler, moisture drainage means associated with said bottom wall for discharging excess moisture applied to and not absorbed by the lint batt to thereby prevent moisture soaking the bottom surface of the lint batt, longitudinally extending relatively raised and depressed portions in said bottom wall, said depressed portions having their lower ends extending to the lower end of said bottom wall and collecting and discharging moisture accumulating upon said bottom wall and said raised portions serving to support the underside of a lint batt above and out of contact with moisture collecting in said depressed portions, said depressions at their lower end communicating with a discharge opening in said bottom wall.

2. In a cotton ginning plant having a lint condenser and a lint baler, an inclined lint slide comprising a continuous chute extending from said condenser at its upper end to said baler at its lower end and along which a lint batt from said condenser slides by gravity to said baler, a spray assembly supported upon said slide and mounted above said chute for imparting controlled moisture directly to and across the entire top surface of a lint batt passing along said chute, said chute comprising a bottom wall of substantially the same width as that of a lint batt discharged from said condenser and a pair of side walls whereby to maintain unaltered the shape and texture of the lint batt during its passage down the slide, said bottom wall comprising a sheet-like panel having longitudinally extending relatively raised and relatively depressed portions, said depressed portions comprising drainage channels for moisture collecting upon said panel and said raised portions supporting the bottom surface of the batt above moisture accumulating in said depressed portions and means for discharging moisture collecting in said depressed portions.

3. The combination of claim 2 wherein said panel is imperforate, said depressed portions having their lower ends extending to the lower ends of said panel, said moisture discharge means being disposed at the lower end of said panel and having said lower ends of said depressed portions communicating therewith.

4. The combination of claim 3 wherein said raised portions are disposed in alternation with said depressed portions.

5. The combination of claim 2 wherein said raised portions are disposed in alternation with said depressed portions.

6. The combination of claim 3 wherein said raised portions are disposed in alternation with said depressed portions, said depressed portions being of greater width and cross-sectional area than said raised portions.

7. The combination of claim 3 wherein said raised portions are disposed in alternation with said depressed portions, said panel having V-shaped ribs projecting thereabove, the apices of the ribs constituting said raised portions and the V-shaped valleys between said ribs constituting said depressed portions.

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