April 24, 1934. B. McGINNIS 1,956,450

COTTON MOISTENING DEVICE

Filed Aug. 3, 1931 3 Sheets-Sheet 1

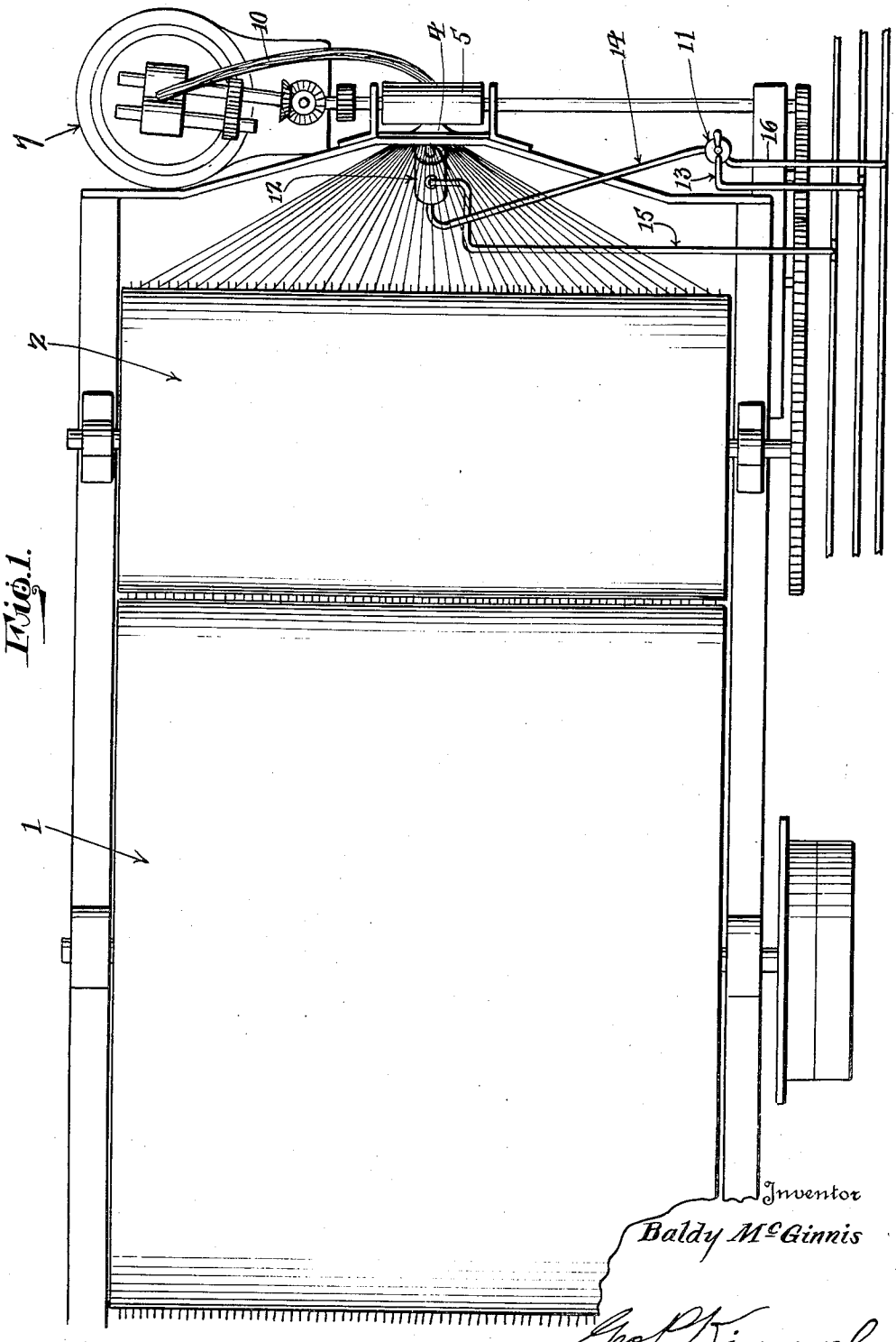


Fig. 1.

Inventor
Baldy McGinnis

Geo. P. Kimmel
Attorney

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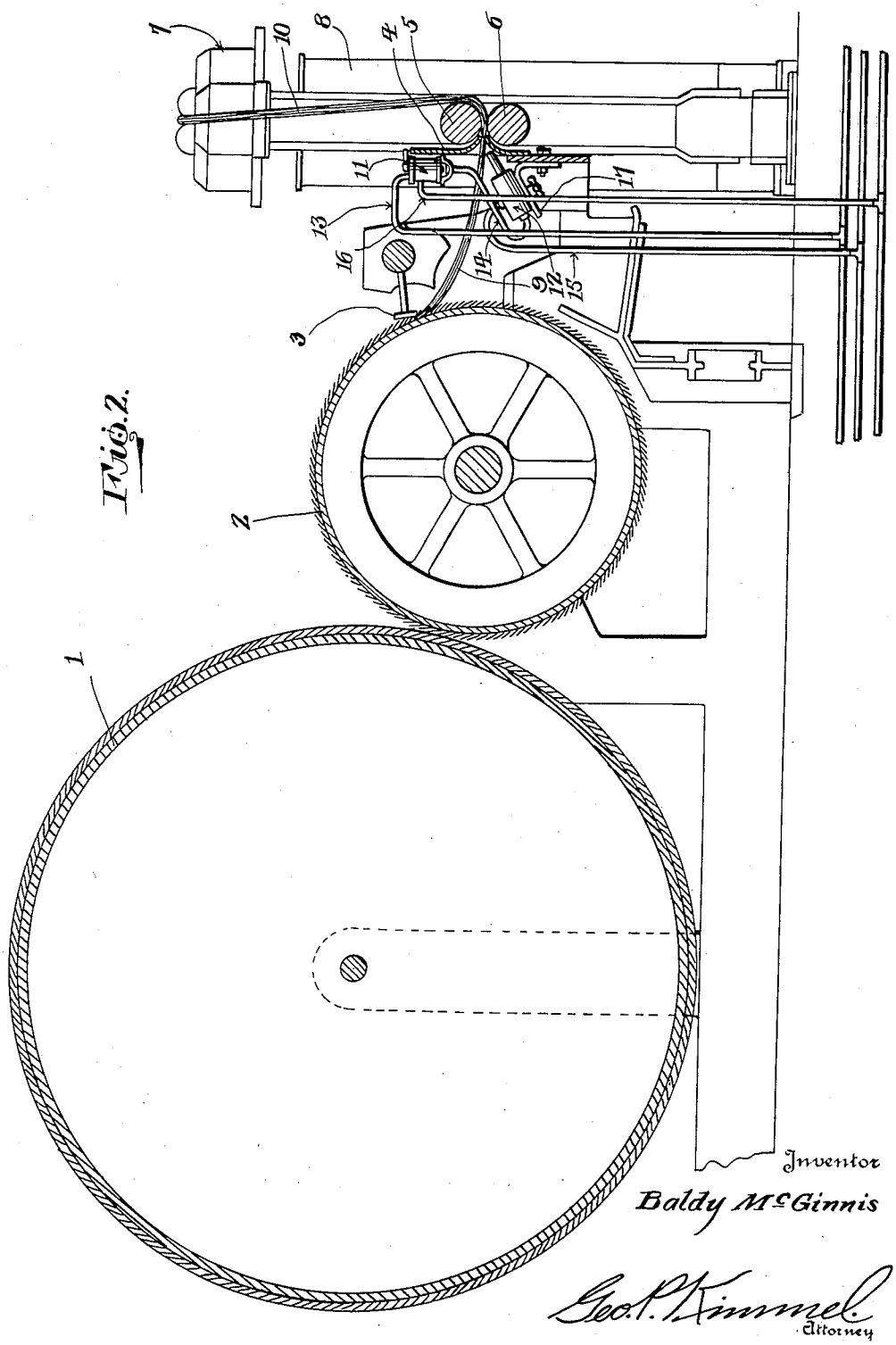


Fig. 2.

Inventor
Baldy McGinnis

Geo. P. Kimmel
Attorney

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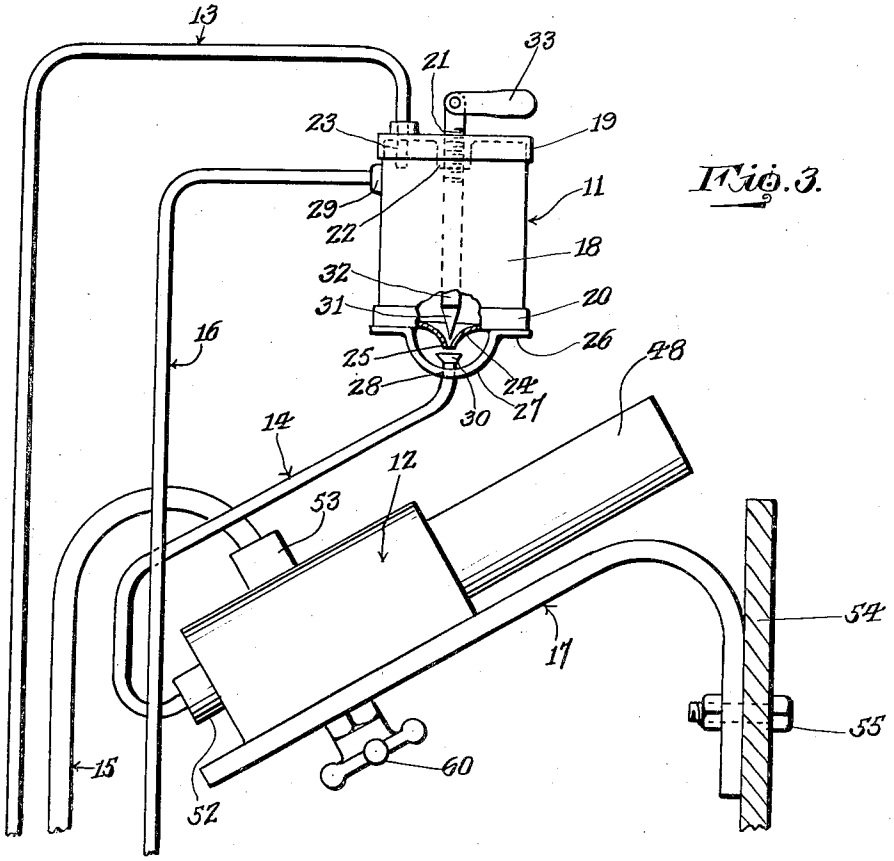


Fig. 3.

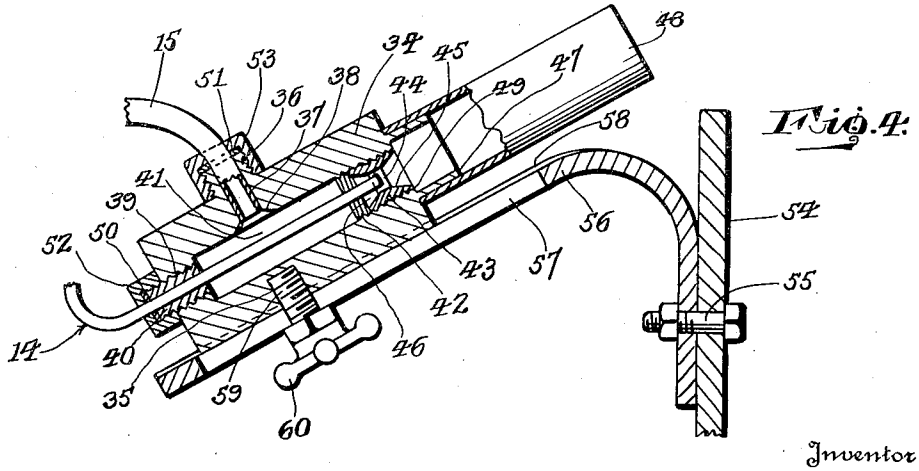


Fig. 4.

Inventor

Baldy McGinnis

By Geo. P. Kimmel

Attorney

Patented Apr. 24, 1934

1,956,450

UNITED STATES PATENT OFFICE

1,956,450

COTTON MOISTENING DEVICE

Baldy McGinnis, Roswell, Ga.

Application August 3, 1931, Serial No. 554,832

5 Claims. (Cl. 19—66)

My invention relates to a cotton moistening device for application to cotton cards.

As cotton comes to the mill, it contains various amounts of moisture, but in passing through the first cleaning process, namely the pickers and carding machines, it loses a great amount of this moisture which should be retained or put back. Means have been heretofore employed for moistening cotton positioned on the back of the breaker picker and on the front of the finisher breaker, but which have been unsatisfactory for the reason that the pickers and carding machines in cleaning the cotton would remove the supplied moisture out and further it would retard the cleaning operation. The cleaning of cotton is one of the biggest problems in cotton mills, as cotton cleans better when dry. The device, in accordance with this invention is applied at a point on the card after the cotton has passed through the pickers and carding machines, thus aiding the retention of the moisture applied at this point. The cotton as it leaves the doffer cylinder is in the form of a transparent web which is condensed on its passage out into a round strand of sliver by being drawn through a trumpet by a pair of calender rolls. The device, in accordance with this invention applies moisture, in the form of a spray to the cotton while the latter is traveling through the trumpet.

The essential object of my invention is to maintain a more steady normal moisture content during the entire processing of cotton yarns resulting in the work going better on all the different processes; increase production by reason of the work going better; requiring less twist on the different processes thus increasing production; less waste resulting in increased production and the producing of more pounds of yarn per pound of cotton; enabling the use of short staple cotton thus effecting a saving; a cleaner atmosphere as the fibers will hold together better; stronger yarn; and to attain these ends in a strong, durable, compact, thoroughly efficient, readily installed and comparatively inexpensive structure.

To the above ends essentially my invention consists in such parts and in combination of parts as fall within the scope of the invention as claimed.

In the drawings:

Figure 1 is a top plan view of a cotton card showing the adaptation therewith of a cotton moistening device in accordance with this invention.

Figure 2 is a longitudinal sectional view of a cotton card showing the adaptation therewith of a cotton moistening device in accordance with this invention.

Figure 3 is an elevation of the cotton moistening device.

Figure 4 is a longitudinal sectional view of the device.

Referring to the drawings, 1 denotes a carding cylinder, 2 a doffer cylinder, 3 a doffer comb, 4 a trumpet, 5, 6 upper and lower calender rolls, 7 a coiler, 8 a cam for the sliver, 9 the web of cotton as it leaves the doffer and travels into and through the trumpet to be condensed into a round strand of sliver and 10 the sliver. The foregoing elements are of known construction.

In the arrangement illustrated the moisture is placed into the inside of the strand of sliver which leaves the space between the doffer cylinder and trumpet open whereby the carding may be inspected at all times. The device is arranged in the space between the doffer cylinder and trumpet so that it will be out of the way of the operator who has to restart the web of sliver through the trumpet several times during the day. By arranging the device in the manner as stated, it results in the carding machine being run in a regular routine manner without loss of production and extra trouble.

The device includes a dropper element, a bodily adjustable spray element, a water feed line, a moisture supply line leading from the dropper element to the spray element, a compressed air supply line, an overflow line for the dropper element, a support for the spray element and which are indicated generally at 11, 12, 13, 14, 15, 16 and 17 respectively. The lines 14 and 15 are flexible.

The dropper element 11 includes a cylinder 18 provided with heads 19, 20 of the rim type which are fixedly secured to opposite ends of cylinder 18. The head 19 is centrally apertured, as at 21 and is also formed with an integral, depending, internally threaded short sleeve 22 forming a continuation of the wall of aperture 21. The head 19 is further provided with an opening 23. The head 20 has a centrally arranged, depending funnel shaped portion 24 formed with an outlet 25. Secured to the head 20 are the flanges 26 of a depending semi-circular supporting bracket 27 having a central opening 28. The cylinder 18, near the head 19 has a lateral overflow nipple 29 to which is attached the overflow line 16. Connected to the wall of opening 23 and depending into the cylinder 18 is the water feed line 13 which leads from a source not shown. Extending through the opening 28 is the moisture feed line 14, and the

latter is formed with a mouth piece 30 arranged in proximity to and directly below the outlet 25 for receiving moisture from element 11. Coacting with the portion 24 for regulating the discharge of water through the outlet is an adjustable regulating element consisting of a needle valve 31 formed at the inner end of a peripherally threaded stem 32. The latter extends upwardly through sleeve 22 and opening 21 and above head 19. The stem 32 threadedly engages with the sleeve 22 and carries on its outer end a handle piece 33. The regulating element provides for the discharge of the water from cylinder 18 in a drop like manner.

The spray element 12 includes an upwardly inclined housing 34 and the inclination of the latter is in a direction towards the trumpet 4. The housing is arranged in close proximity to the lower part of trumpet 4 and includes a socket 35 opening at its bottom. Socket 35 has a threaded wall. The housing 34 has a peripherally threaded collar 36 on its top intermediate its ends and an opening 37 having its wall registering with the inner face of collar 36. The inner end of the wall of opening 27 is flared as at 38. The lower end of housing 34 has an opening 39 formed with a threaded wall and engaging with the latter, as well as projecting from the lower end of housing 34 is a peripherally threaded tubular member 40. The housing 34 provides a lengthwise extending chamber 41 which opens at the upper end of the housing. The wall of the chamber 41, has a portion thereof threaded as at 42 and engaging said portion is a peripherally threaded annulus 43 having the central part 44 of its inner edge squared and its remaining part flaring in opposite directions from part 44 as at 45, 46. Formed integral with the upper end of housing 34 and of greater diameter than that of the open end of chamber 41 is a coupling band 47 for a tubular nozzle 48 positioned to extend into the trumpet 4 into close proximity to but below the web 9 and centrally with respect to the latter. The annulus 43 is adjustable for regulating the spray and is termed a spray regulating member. The annulus 43 in longitudinal section is of less length than portion 42 and it is adjustable towards and from the open end 49 of chamber 41 for the purpose of regulating the moisture spray. Extending through collar 36 and into opening 37 to the flaring portion of the wall of the latter is the compressed air supply pipe 15. Extending through the tubular member 40 to within, centrally of and in spaced relation with respect to annulus 43 is the moisture supply pipe or line 14. Packing washers 50, 51 surround pipes 14, 15 respectively and are clamped against member 40 and collar 36 by nuts 52, 53 respectively.

The support 17 includes a plate 54 which is secured to the frame of the cotton card adjacent the inner end of the trumpet 4 and which has secured thereto, by the holdfast means 55 a supporting member 56 formed with a lengthwise slot 57 and a lengthwise groove 58 in its upper face. Seated in the groove is the spray element 12 and the latter is capable of being shiftable lengthwise in opposite directions of the member 56 for the purpose of shifting the nozzle 48 at varying distances with respect to trumpet 4. Engaging the wall of socket 35 is a threaded member 59 which depends through slot 57 and carries a clamping nut 60 which coacts with member 56 to clamp element 12 in its adjusted position. The member 59, nut 60 and support 17 provide a combined suspending and retaining device for element 12.

The dropper element 11 is positioned over the sprayer element 12 and in proximity to the upper portion of the inner end of the trumpet. The several lines 13, 14, 15 and 16 are positioned in a manner as not to interfere with the web 9 as it travels toward the trumpet 4. The dropper is secured in position by any suitable means.

The discharge end of the nozzle 48 will come up into the trumpet as close as possible, leaving sufficient clearance for the passage of the web 9. The moisture is applied near the center of the web and as near the bite of the calender rolls as is possible, so as not to bend the fibers out of their true direction, although the moisture will be applied in such a gentle manner that there will be no likelihood of this happening. The object in putting the moisture in the center of the sliver is to facilitate the passage through the coiler. The moisture is applied in an angular direction and the reason therefor is not to interfere with the passage of the web over and around it. By reason of the numerous processes for doubling and drowning out the fibers, after the sliver leaves the carding machines, the moisture will be perfectly diffused through all the cotton by the time it is finished and by the aid of the present humidifiers used in the mills the moisture will be retained.

What I claim is:—

1. In moistening cotton, the combination of a doffer cylinder, a trumpet spaced from the latter for receiving the cotton web from the doffer for forming the web into a sliver, a moisture spraying element interposed between said cylinder and trumpet positioned below the web and including means extending into the trumpet from the intake end of the latter for discharging moisture in spray-like-form in and substantially centrally of the web as the latter travels through the trumpet, said element being spaced from the doffer cylinder, said means disposed at an upward inclination towards the web to provide for the discharge of the moisture at an inclination, in a direction towards the discharge end of the trumpet, a combined suspending and retaining device for said element and upon which the latter can be adjusted towards and from the trumpet, and said device and element having coacting means for fixedly securing said element in adjusted position.

2. In moistening cotton, the combination of a doffer cylinder, a trumpet for receiving the cotton web from the doffer for forming the web into a sliver, a moisture spraying element interposed between said cylinder and trumpet positioned below the web and including means extending into the trumpet from the intake end of the latter for discharging moisture in spray-like-form in and substantially centrally of the web as the latter travels through the trumpet, a moisture supply pipe extending through and opening into said element at the inner end of said means, a compressed air supply pipe opening into said element intermediate its ends, and a regulatable moisture dropper element discharging into said supply line, and a water feed line opening into said dropper element.

3. In moistening cotton, the combination of a doffer cylinder, a trumpet for receiving the cotton web from the doffer of forming the web into a sliver, a moisture spraying element interposed between said cylinder and trumpet positioned below the web and including means extending

into the trumpet from the intake end of the latter for discharging moisture in spray-like form in and substantially centrally of the web as the latter travels through the trumpet, said means disposed at an upward inclination towards the web to provide for the discharge of the moisture at an inclination in a direction towards the discharge end of the trumpet, a moisture supply pipe extending through and opening into said element at the inner end of said means, a compressed air supply pipe opening into said element intermediate its ends, a regulatable moisture dropper element discharging into said supply line, and a water feed line opening into said dropper element.

4. A cotton moistening device, comprising a bodily adjustable, inclined moisture spraying element having a spray regulating member, a moisture supply pipe extending into said element from one end thereof, a compressed air supply pipe opening into said element intermediate its ends, a water feed line, and a regulatable moisture dropper element communicating with said feed line and discharging into said moisture supply line.

5. A cotton moistening means comprising, an inclined spraying element having means for extending into a trumpet from the inlet end thereof for spraying in proximity to the outlet end of the trumpet a cotton web, from its under side as it passes through the trumpet, a regulatable moisture dropper arranged above said element, a moisture supply line for receiving the discharge from the dropper element and conducting it to the spraying element, and a compressed air line opening into said spraying element.

BALDY McGINNIS.