

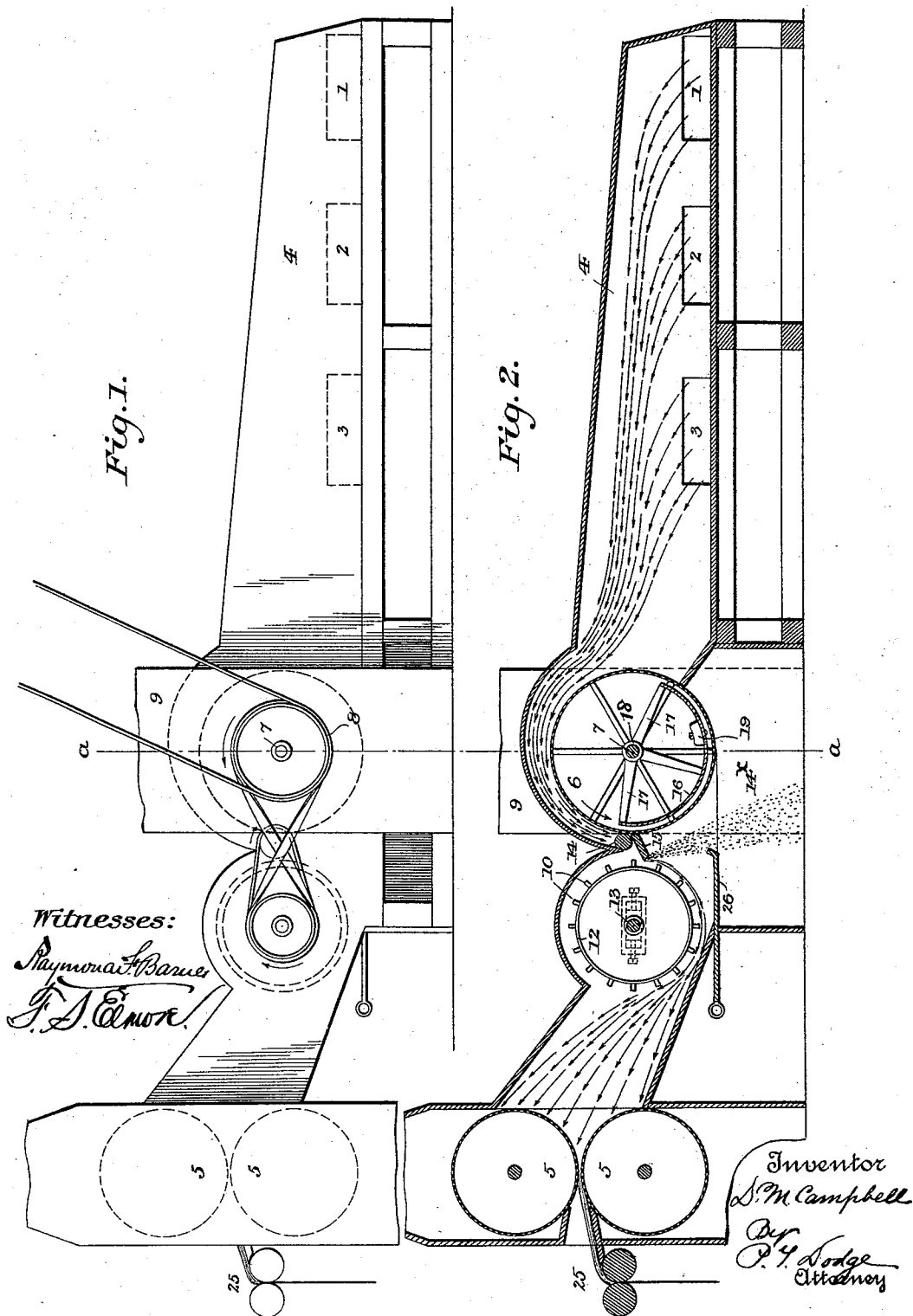
(No Model.)

2 Sheets—Sheet 1.

D. M. CAMPBELL.
APPARATUS FOR HANDLING LINT COTTON.

No. 535,976.

Patented Mar. 19, 1895.



2 Sheets—Sheet 2.

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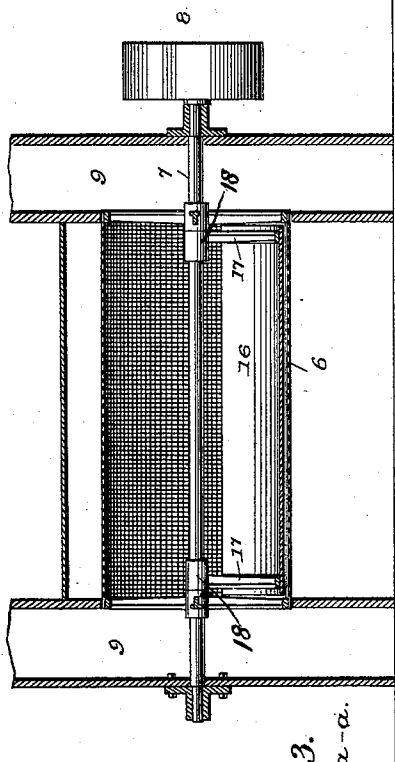


Fig. 3.

Witnesses
Raymond H. Barnes.
J. J. Elmore.

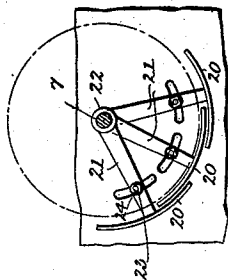


Fig. 4.

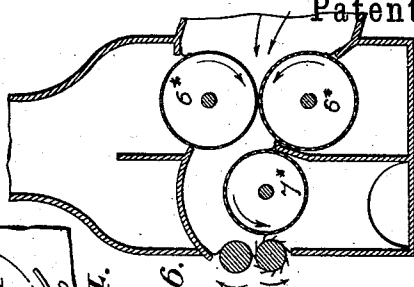


Fig. 6.

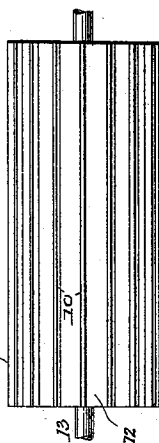
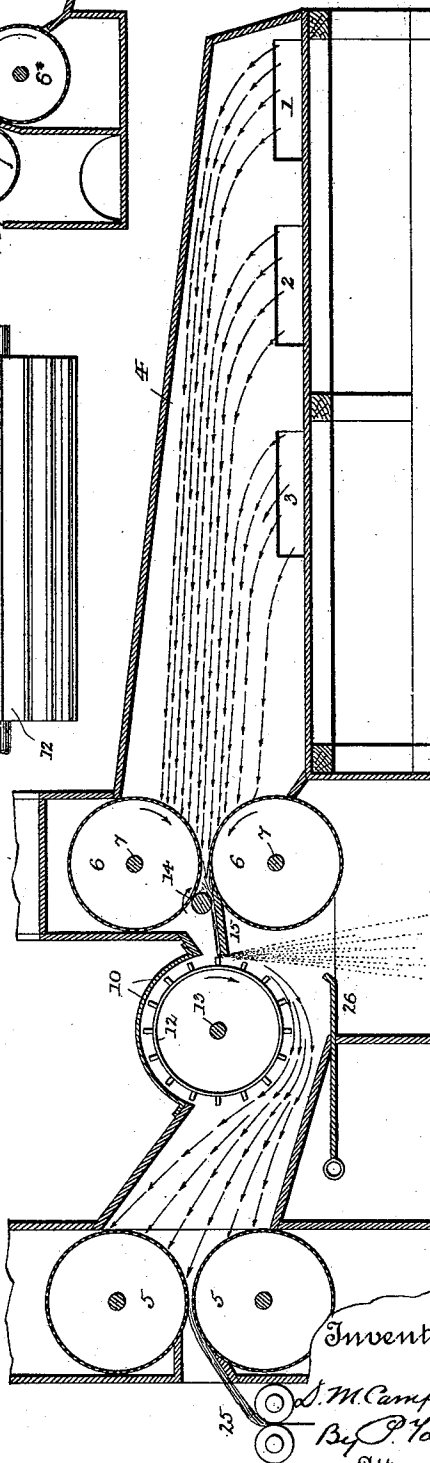


Fig. 2.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR HANDLING LINT-COTTON.

SPECIFICATION forming part of Letters Patent No. 535,976, dated March 19, 1895.

Application filed August 25, 1894. Serial No. 521,267. (No model.)

To all whom it may concern:

Be it known that I, DOUGLAS M. CAMPBELL, of Galveston, county of Galveston, and State of Texas, have invented a new and useful Improvement in Apparatus for Handling Lint-Cotton, of which the following is a specification.

At the present day it is a common practice to deliver the lint laden blast from two or more gins into a common flue leading to a condensing mechanism. In order that the gins may operate in the most effective manner and to thoroughly cleanse the cotton, it is necessary that the air shall escape from the receiving trunk freely, or without material obstruction or retardation. Any resistance to the free escape of the air checks the velocity of the outgoing current, and results in a back pressure or diminution of pressure technically known as "back draft," which materially impairs the action of the gins.

The object of my invention is to permit the free delivery of the air and the consequent avoidance of the back pressure, and at the same time to form the fiber into a bat of such thickness as will meet practical requirements.

The simplest form of mechanism embodying my invention consists of the combination with a trunk into which a series of gins deliver, of a primary condenser having a high surface speed, so that it will rapidly remove the fiber and prevent the bat from building up of such thickness as to check the escape of air, and a second condenser having a slower surface speed and arranged to receive the lint from the first condenser and form it into a thicker bat.

In certain cases I propose to interpose between the primary condenser and the main condenser a device for creating a current of air for the purpose of loosening the cotton forming the thin bat and conveying the same to the main condenser. Further I propose incidentally to effect the cleansing of the cotton fiber of motes after it leaves the gins and before it reaches the main condenser. For this purpose I locate adjacent to the rapidly revolving primary condenser and in advance of the same, a series of rapidly moving beaters, so arranged that they will subject the thin bat from the primary condenser to a se-

ries of successive blows which will act to loosen the cotton, positively separate therefrom motes and analogous substances and create a draft of air in which the cleansed cotton will be caught and conveyed to the condenser.

In the accompanying drawings, Figure 1 is a side elevation of an apparatus constructed in accordance with my invention in the form I prefer to adopt. Fig 2 is a longitudinal section through the same partly in elevation. Fig. 3 is a transverse section on the line *a-a* of Fig. 1. Fig. 4 is a view of a detail in modified form. Fig. 5 is a view of my apparatus in modified form. Fig. 6 is a view of another modification. Fig. 7 is an elevation of the beater cylinder.

Referring to the drawings, 1, 2 and 3 represent gin openings of the usual form arranged to discharge at intervals along the sides of a trunk or flue 4 near one end, at the opposite end of which is located a condensing mechanism 5, in the form of two horizontal condensing rolls of the customary construction.

My improvement consists in locating within the flue between the gins and the condensing mechanism, a primary condenser consisting of a horizontal perforate revolving drum 6, which is carried by a horizontal shaft 7, mounted in bearings on the side of the trunk, the end of the shaft being provided with a driving pulley 8. At this point the top of the flue is curved to conform approximately to the shape of the revolving drum 6 except that the space for the passage of the cotton gradually contracts in the direction of the beaters, as more fully described hereinafter. The primary condenser is open at its ends where it communicates with two passages 9, leading to the external atmosphere. This condenser being rapidly revolved in the direction indicated by the arrow in Fig. 2, receives on its surface a thin layer of the lint cotton, which layer will not prevent the passage of air through the same, and out at its end into the passages. In this way any excess of pressure of air within the trunk will be effectually disposed of. The cotton on the condenser is carried around to the opposite side where it is separated and delivered to the condensing rollers. To effect the separation of the cotton

from the drum, I prefer to provide a series of rapidly moving beaters 10 in the form of blades projecting from the surface of a horizontal cylinder 12, the blades being so arranged that they will revolve adjacent to the thin bat, but out of contact therewith. This cylinder is carried by a shaft 13 mounted in bearings on the sides of the trunk. It is rotated in a direction opposite to the movement of the primary condenser, and at a very much higher rate of speed, its action being to create a draft of air which will cause the separation of the cotton forming the bat and carry the same forward in a loose state to the condensing rollers.

In cases where the cotton is to be cleansed during its passage through the trunk, I so arrange the beaters that they will contact with the thin bat and positively subject the same to a series of successive blows, the result being that the cotton will be separated, the motes and analogous foreign substances positively cast down from the same into a receptacle 14*, and the cleansed cotton caught in the draft of air created by the beaters and conveyed to the condensers.

The beaters may be arranged to act on the cotton while it is on the condenser, but I prefer to introduce between the same and the beaters a horizontal roller 14, acting in connection with an underlying inclined ledge 15, the parts being so disposed relatively as to receive between them the thin layer of cotton from the drum, the roller acting to push this layer to the edge of the ledge, at which point the beaters will act on the same and effect the separation of the motes.

Owing to the location of the primary condenser within the trunk in the path of the incoming cotton, there is a tendency of the air to pass transversely through the same and interfere with the action of the beaters on the cotton as it arrives at the edge of the ledge. To avoid this I provide the drum with an adjustable deflector in the form of a semi-circular shield 16, which is sustained on the outer ends of arms 17, their inner ends being connected to a collar 18, which loosely encircles the shaft of the drum. This shield is provided with a weight 19, adjustable to and from its center for the purpose of maintaining the shield by gravity in its proper position. Normally the shield occupies the position indicated in Fig. 2, covering a portion of the drum and thus compelling the air to pass out at its ends into the air passages instead of passing transversely through the drum.

As shown in Fig. 4, the shield may be arranged on the outside of the drum, in which event it will be composed of three telescopic sections 20, carried by the outer ends of arms 21 which are connected at their inner ends to collars 22, mounted on the shaft of the drum. The sections are adjusted to vary the surface of the deflector by providing the arms with bolts 23, which extend through slots in the

side of the trunk, the bolts being provided on their ends with tightening nuts 24.

In Fig. 5 I have represented my improved apparatus in modified form. In this case it will be seen that instead of a single primary condenser as heretofore described, I employ two, one above the other, which are revolved in opposite directions indicated by the arrows. The lint cotton in passing through the trunk will adhere to the surfaces of these drums in the form of a thin bat which will be carried between them and presented to the action of the beaters. In this case the upper portion of the trunk adjacent to the screen does not follow its surface as in the first case described.

In Fig. 2 I have shown the beater cylinder adjustable to and from the rapidly revolving condenser. The purpose of this is to adapt the machine for either effecting the cleansing of the cotton of motes, or for simply separating the bat and conveying the cotton to the cylinder. In certain seasons the cotton is in such a condition that it is not necessary to cleanse the same, in which case the beater cylinder 12 may be moved slightly to the left, so as not to actually contact with the bat from the drum.

In Fig. 6, I have represented still another modification which shows the embodiment of the first part of my invention in its simplest form. In this case I do not provide a separate device for creating a draft of air to separate the cotton forming the thin bat and convey the same to the condenser, but I depend upon the draft of air passing through the trunk for loosening the bat and lodging the cotton against the condensing roller. This figure shows two rapidly revolving condensers 6* and adjacent to the same a slowly revolving condensing roller 7*, the cotton adhering to the drums as heretofore in the form of a loose bat passing between the same and accumulating on the slowly moving condensing roller in the form of a thicker condensed bat which may be removed in any suitable manner to be subsequently baled.

My invention is peculiarly applicable in connection with apparatus in which two or more gins deliver their contents into a single trunk, and is not to be confounded with other apparatus wherein a single gin discharges into a trunk inasmuch as the conditions surrounding such constructions are not of such a nature as to render "back draft" liable.

In the drawings I have represented beyond the condenser rolls, a pair of compression rollers 25, designed to subject the condensed bat to an extreme degree of compression, this compressed sheet being finally accumulated in the form of a bale, transferred to the baling press and tied. While my invention is not to be limited in its application to this particular form of compressing apparatus, it is of peculiar advantage in connection with the same, for the reason that the cotton being

free from all impurities after being subjected to my cleansing process, it is in the most favorable condition to be acted on by the compression rolls. In cases where extreme compression is given to impure cotton containing dirt, motes, seeds, &c., these impurities are crushed and so intermingled with the fiber as to seriously affect the value of the staple.

The size of the entrance to the receptacle 14^x may be varied by employing a horizontal sliding valve or plug 26, as shown in Fig. 2.

It will be, of course, understood that my invention is not to be limited to the use of three gins, as the number may be increased or diminished, the invention being applicable in all cases where two or more gins are employed discharging into a single trunk.

Having thus described my invention, what I claim is—

1. In an organized mechanism for treating cotton, the combination of a common trunk, a series of separate gins discharging thereinto near one end, a main slowly moving condensing mechanism located at the opposite end of the trunk and adapted to permit the formation of a thick condensed bat suitable for baling, a primary rapidly moving condenser adapted to permit the formation of a thin pervious bat, said primary condenser located in the trunk intermediate of the gins and the main condenser, driving devices for imparting to the two condensers their proper relative speeds, a passage connecting the interior of the primary condenser with the external air, and means for separating the cotton from the primary condenser and collecting the same on the main condenser; whereby egress of the surplus air is afforded through the thin bat on the primary condenser to the exterior thereby preventing "back-draft" in the trunk.

2. In an organized mechanism for treating ginned cotton the combination of a common trunk, a series of gins discharging thereinto near one end, a main slowly moving condenser located at the opposite end of the trunk and adapted to permit the formation of a thick condensed bat suitable for baling, a primary rapidly revolving condenser located in the trunk intermediate of the gin openings and the main condenser and adapted to permit the formation of a thin pervious bat, suitable driving mechanisms for imparting to the two condensers their proper relative speeds, a passage connecting the interior of the primary condenser with the external air, and rapidly moving beaters traveling in a direction opposite to that of the primary condenser and arranged to act on the cotton thereon; whereby egress of the surplus air is afforded through the thin bat on the primary condenser thereby preventing "back-draft" in the trunk, the

motes positively separated by the beaters from the cotton, and a draft of air created by which the cleansed cotton is conveyed to the main condenser.

3. In a mechanism for treating cotton the combination of a trunk, a gin discharging thereinto, a horizontal perforate drum located within the trunk and adapted to receive on its surface the lint cotton, rapidly revolving beaters moving in a direction opposite to that of the drum, and an intermediate mechanism between the drum and beaters for removing the cotton from the drum in a layer and presenting it to the action of the beaters.

4. In a mechanism for the treatment of cotton, the combination of a trunk, a series of gins discharging into the same near one end, a condensing mechanism at the opposite end of the trunk, a horizontal perforate rotary drum located within the trunk intermediate of the gins and condenser, passages connecting the interior of the drum with the external air, rapidly revolving beaters adjacent to the drum, a horizontal roller between the drum and beaters, and a ledge underlying the roller; whereby the roller will act in connection with the ledge to remove the lint cotton from the drum in a layer and present it to the action of the beaters.

5. In a mechanism for treating cotton the combination of a trunk, a series of gins discharging thereinto near one end, a condensing mechanism at the opposite end, a horizontal perforate drum located within the trunk, passages connecting the ends of the drum with the external air, an adjustable shield located within the drum and movable on a horizontal axis, means for adjusting the shield on its axis and rapidly revolving beaters to act on the cotton.

6. In a mechanism for treating cotton the combination of a trunk, a series of gins discharging into the same near one end, a condensing mechanism at the opposite end, a horizontal perforate drum located within the trunk intermediate of the gins and condenser, passages connecting the ends of the drum with the external air, a shield for the drum arranged to prevent a transverse current of air through the same, rapidly revolving blades and a conveying mechanism between the drum and blades for removing the cotton from the drum in a layer and presenting it to the blades.

In testimony whereof I hereunto set my hand, this 5th day of July, 1894, in the presence of two attesting witnesses.

DOUGLAS M. CAMPBELL.

Witnesses:

J. P. VOGEL,
W. D. PADEN.